

# **GALGOTIAS UNIVERSITY ENG. & ADMIN BLOCK**

## **TENDER DOCUMENT FOR STP WORKS**

**February 2024**

### **:CLIENT:**

**Smt. SHAKUNTLA EDUCATIONAL & WELFARE SOCIETY  
GALGOTIAS UNIVERSITY**

PLOT NO. 2, YAMUNA EXPY, SECTOR 17A,  
GREATER NOIDA, UTTAR PRADESH -203201, INDIA

### **:PROJECT MANAGER:**

**CBRE South Asia Pvt. Ltd | PJM Group - India**  
6<sup>th</sup> & 7<sup>th</sup> Floor | DLF Square Building | Jacaranda Marg  
DLF Phase II | Gurgaon 122002, India

### **: ARCHITECT:**

**ARCOP ASSOCIATES PVT. LTD.**

E-106, GREATER KAILASH ENCLAVE-I  
NEW DELHI, INDIA

### **: MEP SERVICES CONSULTANTS:**

**SUNIL NAYYAR CONSULTING ENGINEERS LLP**

206, 206A, 2nd Floor, Time Centre,  
DLF Golf Course Road, Sector-54, Gurgaon-122 002

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**SECTION: 1**  
**NOTICE INVITING TENDER**

## NOTICE INVITING TENDER

Tender is invited by The Registrar, M/s **SMT SHAKUNTLA EDUCATIONAL & WELFARE SOCIETY, Galgotias University, PLOT 02, YAMUNA EXPY, SECTOR 17A, GREATER NOIDA, UTTAR PRADESH** for **STP Works**, for New Admin & Engg. Block, Greater Noida, Uttar Pradesh.

Bidders to download the Tender Documents and submit the duly filled Tender documents in all respect to [tender.stpworks@galgotiasuniversity.edu.in](mailto:tender.stpworks@galgotiasuniversity.edu.in) **On or Before 10<sup>th</sup> Day from the “Date of Publication”**. Please send Pre-Bid queries by email only.

**Following Tender Documents are to be submitted by the bidders:**

| Sl. No | Description   | Duly Signed & Stamped   |
|--------|---|---|
| A      | Notice Inviting Tender (NIT) & Form of Tender   | 1 Original<br>(NIT with duly filled-in Form of Tender & Appendix) |
| B      | GCC, SCC & Formats of No Claim Certificate, Articles of Agreement, Indemnity Bond, RBG & Performance Bank Guarantee | 1 Original  |
| C      | Bill Of Quantities  | 1 Original  |
| D      | Power of Attorney authorizing the signatory of Tender & Contract  | 1 Original  |
| E      | Proposed Methodology of Work  | 1 Original  |
| F      | Proposed Schedule of Work   | 1 Original  |
| G      | List of Plant & Machinery along with Schedule of Deployment at site   | 1 Original  |
| H      | Proposed Site Organization Chart along with Manpower Deployment Schedule  | 1 Original  |
| I      | Details of works in Hand  | 1 Original  |
| J      | Litigation History  | 1 Original  |
| K      | Project Quality Plan  | 1 Original  |
| L      | Environment, Health, and Safety Plan  | 1 Original  |

***Bidders shall put his stamp and signatures on every page of the Tender including every Tender drawing at the lower right-hand corner.***

**All the rates mentioned in the tender shall be inclusive of transportation, loading & unloading, government statutory requirement charges, etc., and shall remain firm till completion of work. No escalation of the prices shall be allowed for any reasons whatsoever. GST and Labour Cess shall be mentioned separately.**

Bidders are advised to submit the Tenders strictly based on the conditions of contract and specifications contained in the Tender documents and are advised not to stipulate any deviations. Deviations may, however, be stipulated in case of unavoidable circumstances. Exceptions and deviations, which Bidder may desire to stipulate, shall be listed separately. The PMC, client & the Architect reserve the right to reject any such deviations or evaluate the Tender containing deviations having financial implication, by adding the cost for such deviations as may be determined by the PMC or the client or the Architect.

We intend to adhere to a very strict timeline in administering this Tender.

***Proposals received beyond the mentioned time and date will not be considered.***

Incomplete responses shall be liable to be disqualified at GALGOTIAS UNIVERSITY's sole discretion.

***This Notice Inviting Tender shall form part of the contract.***

For,

**SMT SAKUNTALA EDUCATIONAL & WELFARE SOCIETY  
Galgotias University**

**Authorized Signatory**

**SECTION: 2**  
**FORM OF TENDER**

**FORM OF TENDER**

To,  
**SMT SAKUNTLA EDUCATIONAL & WELFARE SOCIETY**  
**Galgotias University**  
PLOT 02, YAMUNA  
EXPY, SECTOR 17A,  
GREATER NOIDA,  
UTTAR PRADESH,  
INDIA-203201

Dear Sir,

Having examined the conditions of contract, specifications, Tender drawings and Bill of quantities relating to the works specified in the Tender hereinafter set out and having examined the site of the works specified and having acquired the requisite information relating thereto as affecting the tender, I/We hereby offer to execute the works specified, within the time specified & at the rates mentioned in the attached bill of quantities and in accordance, in all respect, with the specifications, designs, drawings and instructions in writing referred to the GCC, SCC, Technical Specifications & (Tender drawings) of the said Tender.

Should this tender be accepted, I/We hereby agree to abide by and fulfil the terms and provision of the said conditions of Contract as per Tender document to so far as they may be applicable or in default thereof to forfeit and pay to **Galgotias University**, the amount as per the said conditions.

I/We have deposited Earnest Money Deposit (If applicable) in the form of Bank Guarantee in favour of **Galgotias University** as specified in Appendix to Form of Tender. Should I/We fail to execute the contract when called upon to do so, I/We do hereby agree that this sum shall be forfeited by **Galgotias University**.

All information and documents as required to be submitted as per Tender Document are enclosed.

Our banker(s) (Name & complete address):

The names of partners of our firm are:

- 1.
- 2.

Name of the partner of the firm  
authorized to sign OR

Name of person having Power of Attorney to sign the Tender & Contract (Certified true copy of the Power of Attorney shall be attached)

Yours faithfully,

Signatures of Tenderer Stamp Name & Address

- i. Witness 1 (Signatures, Name & Address):
- ii. Witness 2 (Signatures, Name & Address):

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**Performance Bank Guarantee**

**Schedule II**  
**Contract Agreement**

**General Conditions of Contract (GCC)**

**1. DEFINITIONS & INTERPRETATIONS**

**1.1. Definitions**

The following words and expressions shall have the meanings hereby assigned to them, except where the context otherwise requires:

- (a) "**Acceptance Defects Notice**" has the meaning given to it in Clause 11.3.(c).
- (b) "**Affiliate**" means any entity which directly or indirectly:
  - (i) owns or Controls such entity;
  - (ii) is owned or Controlled by such entity;
  - (iii) is under common ownership or Control with such entity.
- (c) "**Affected Party**" has the meaning given to it in Clause 31.1.
- (d) "**Applicable Law**" means, with respect to any Governmental Authority, national, regional or local law, directive, statute, rule, regulation, ordinance, treat, order, decree, judgment, decision, determination, interpretation, certificate, injunction, registration, license, permits, authorization, guideline, approval,

consent or requirement of/by such Governmental Authority, as construed from time to time by any Governmental Authority.

- (e) "**Application for Change Proposal**" has the meaning given to it in Clause 22.4(a).
- (f) "**Approved List**" has the meaning given to it in Clause 16.2.
- (g) "**Architect**" means the person/entity appointed as the architect for the Project by the Client and as notified by the Client to the Contractor pursuant to Clause 13.1.
- (h) "**Bid**" has the meaning given to it in the Instructions to Bidders.
- (i) "**Bidding Documents**" means the Notice Inviting Bids ("**NIB**"), Tender Drawings, Instructions to Bidders ("**ITB**"), Drawings, Technical Specifications, Bid Forms, Technical Bid, Price Bid, Contract and General Conditions of Contract ("**GCC**").
- (j) "**Change**" has the meaning given to it in Clause 22.1.
- (k) "**Change in Law**" has the meaning given to it in Clause 32.1.
- (l) "**Change Order**" has the meaning given to it in Clause 22.3(e).
- (m) "**Change Proposal**" has the meaning given to it in Clause 22.3(a).
- (n) "**CIBIL**" means Credit Information Bureau (India) Limited.
- (o) "**Codes and Standards**" means the codes and standards as more fully detailed in the Technical Specifications, in relation to the design, specification, construction, fabrication and inspection of the New admin. & Engg. Block.
- (p) "**Commencement Date**" has the meaning given to it in Clause 7.1.
- (q) "**Completion**" has the meaning given to it in Clause 11.1(a).
- (r) "**Completion Certificate**" has the meaning given to it in Clause 11.1(b).
- (s) "**Completion Date**" has the meaning given to it in Clause 7.2(a).
- (t) "**Contract**" means (i) the Contract Agreement; (ii) GCC; (iii) Technical Specifications; and (iv) any other documents listed in the Contract Agreement.
- (u) "**Contractor**" means Who has been awarded the Work.
- (v) "**Contract Agreement**" means the agreement to be executed on [ ] between the Contractor and the Client in the form set out in **Schedule II** for undertaking and completing Works with respect to the Project including all annexures and schedules, as the same may be amended, supplemented or modified from time to time by mutual written agreement. [**input the date of execution of the Contract.**]
- (w) "**Contract Price**" has the meaning given to it in Clause 23.1.
- (x) "**Contract Schedule**" has the meaning given to it in Clause 5.22(b).

- (y) "**Contractor's Equipment**" means all appliances, things or equipment of whatsoever nature required for the execution and completion of the Works and the remedying of any defects therein.
- (z) "**Contractor's Personnel**" means the Contractor's Representative, Works Manager and each individual and collectively the Contractor's employees, labour (skilled, semi-skilled and unskilled) Sub-Contractors, and their respective employees, contractors (of the Sub-Contractors), officers, licensees, invitees, agents and representatives, who are provided and/or utilized by Contractor for the execution of the Works and any other personnel notified to the Client by the Contractor as the Contractor's Personnel.
- (aa) "**Contractor's Representative**" means the person identified in Clause 5.23.(a), or the replacement of such Person who is nominated and approved in accordance with the procedure provided in Clause 5.23.(d).
- (bb) "**Control**" means (and related terms shall refer accordingly to), with respect to any person, (i) the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of such person whether through the ownership of voting securities, by agreement or otherwise or the power to elect more than one-half of the directors of such person; or (ii) the possession, directly or indirectly, of a voting interest of more than 50% (fifty percent); or (iii) the power to veto decisions of such person, whether through ownership of voting securities, by contract, or otherwise;
- (cc) "**Defects Notice**" has the meaning given to it in Clause 11.1(c).
- (dd) "**Defect Liability Period**" has the meaning given to it in Clause 21.2.
- (ee) "**Dispute**" has the meaning given to it in Clause 35.2.
- (ff) "**Documents**" means the data in the form of text, worksheets, Drawings (including as-built drawings) designs, specifications, plans or reports in print or electronic form and complying with the requirements of the Technical Specifications, to be submitted by the Contractor, in relation to the Works required for developing the New admin. & Engg. Block, including but not limited to engineering data, STP and construction drawings, documents required to satisfy all regulatory approvals and other such descriptive material as specified under the Technical Specifications.
- (gg) "**Drawings**" means the drawings for the New admin. & Engg. Block including for the STP and structural Works required to build the New admin. & Engg. Block and as referred to in the Technical Specifications and any modification to such drawings as approved by the Client, Architect and Project Manager and such other drawings as may, from time to time be provided by the Client to the Contractor.
- (hh) "**Environmental Standards**" means Applicable Law, codes, rules and regulations relating to: (a) pollution, contamination, clean-up, protection and reclamation of the environment; (b) health or safety, including, without limitation, the exposure of employees or other persons to any Hazardous Materials; (c) the release or threatened release of any Hazardous Materials; (d) the management of any Hazardous Materials, including, without limitation, the manufacture, generation, formulation, processing, labelling, distribution, introduction into commerce, registration, use, treatment, handling, storage, disposal of materials, the discharge of chemicals, gases or other substances or materials into the environment, the presence of such materials, chemicals, gases or other substances in or around the New admin. & Engg. Block, transportation, reuse, recycling or reclamation of any Hazardous Materials; and (e) any governmental approval issued by a Governmental Authority with respect to the foregoing.
- (ii) "**Final Acceptance Certificate**" has the meaning given to it in Clause 11.3.(b).
- (jj) "**Final Completion**" has the meaning given to it in Clause 11.3.(a).
- (kk) "**Force Majeure Event**" has the meaning given to it in Clause 31.1.



- (ll) "**Governmental Authority**" means any Indian national, regional, state, municipal or local government, and any division, ministry, department, agency or other emanation of any of the same, including any judicial body, commission, board, branch or similar authority of such government and anybody empowered to grant, withdraw or determine the terms and conditions of any applicable permit and the organs of the Government of India or as the case may be, the Government of the Indian State where the Site is located.
- (mm) "**Hazardous Materials**" means (i) any element, compound, substance, preparation, chemical, physio-chemical properties or biological derivative, radiation, noise, vibration, material or combination thereof which by reason of its composition or characteristics is defined in Applicable Law as a hazardous material, or (ii) any other material which any Government Instrumentality determines from time to time is harmful, toxic, or dangerous, or otherwise ineligible for handling, storage or disposal by unregulated means or is liable to cause harm to human beings, other living creatures, plant, micro-organism, property or the environment.
- (nn) "**Indemnified Party**" has the meaning given to it in Clause 28.3.
- (oo) "**Indemnifying Party**" has the meaning given to it in Clause 28.3.
- (pp) "**Information**" has the meaning given to it in Clause 29.1.
- (qq) "**Intellectual Property**" means any licenses, permissions or agreements from licensors of any materials, goods, processes, methods and systems incorporated or to be incorporated in the New admin. & Engg. Block, proprietary information, patents, trademark rights, technology, utility model, registered design, know-how, trade secrets, data bases, industrial processes, source codes, copyrights (including rights in computer software) and any other intellectual or industrial property rights (whether registered or unregistered) subsisting or recognised under the Applicable Law or laws of any other applicable jurisdiction.
- (rr) "**Invoice**" has the meaning given to it in Clause 24.4(a).
- (ss) "**Instructions to Bidders (ITB)**" means the instructions to bidders issued by the Client or Project manager as part of the Bidding Documents in relation to the Works to be completed by the Contractor dated 07th December 22 bearing no. RMH-STP-001.
- (tt) "**KMP**" means the key managerial personnel as defined under the Companies Act, 2013.
- (uu) "**Latent Defect**" has the meaning given to it in Clause 21.12.(a).
- (vv) "**Letter of Award (LOA)**" means the formal acceptance in writing by the Client by way of registered letter or by email notifying the Contractor that its bid has been accepted.
- (ww) "**Losses**" has the meaning given to it in Clause 28.1.
- (xx) "**Materials**" means and includes all the materials required for undertaking the Works including STP works and activities required for developing the Project and building the New admin. & Engg. Block.
- (yy) "**Miscellaneous Invoice**" has the meaning given to it in Clause 24.4.(j).
- (zz) "**Notice Inviting Bids (NIB)**" means the notice inviting bids issued by the Client as part of the Bidding Documents in relation to the Works to be completed by the Contractor dated 7th December 22 bearing no. RMH-STP-001.

- (aaa) "**Notice of Completion**" has the meaning given to it in Clause 11.1.(a)(iv).
- (bbb) "**Notice of Final Completion**" has the meaning given to it in Clause 11.3.(ix).
- (ccc) "**Notice of Provisional Acceptance**" has the meaning given to it in Clause 11.2.(a).
- (ddd) "**Occupancy Certificate**" means the final occupancy certificate for the New admin. & Engg. Block issued by Governmental Authority certifying the New admin. & Engg. Block can be occupied and used for its intended purpose.
- (eee) "**Pending Agreement Change Order**" has the meaning given to it in Clause 22.3.(i).
- (fff) "**Performance Bank Guarantee**" has the meaning given to it in Clause 3.1.
- (ggg) "**Performance Parameters**" has the meaning given to it in Clause 9.
- (hhh) "**Price Bid**" has the meaning given to it in the Instructions to Bidders.
- (iii) "**Prohibited Payment**" has the meaning given to it in Clause 36.9(a).
- (jjj) "**Project**" means the development, construction and operation of the New admin. & Engg. Block by the Contractor, located at the Site.
- (kkk) "**Project Manager**" has the meaning given to it in the Instructions to Bidders.
- (lll) "**Provisional Acceptance**" has the meaning given to it in Clause 11.2(a).
- (mmm) "**Provisional Acceptance Certificate**" has the meaning given to it in Clause 11.2(b).
- (nnn) "**Provisional Defects Notice**" has the meaning given to it in Clause 11.2.(c).
- (ooo) "**Prudent Industry Practices**" means the practices, methods, techniques and standards, as they may be modified from time to time, which are generally followed in the STP Works industry; including those expected from a reasonably skilled, prudent and experience person engaged in Works for completion of buildings and performing works and services and providing and supplying equipment and materials as required to be performed or supplied by the Contractor, Sub-Contractors, their employees and other third party agents of the Contractor under the Contract.
- (ppp) "**Public Official**" has the meaning given to it in Clause 36.9.(b).
- (qqq) "**Purpose**" has the meaning given to it in Clause 29.2.
- (rrr) "**Quality Assurance Programme**" has the meaning given to it in Clause 8.2 and means the quality assurance programme as approved by the Client and as set out in the Technical Specifications.
- (sss) "**Quality Engineer**" has the meaning given to it in Clause 5.35(d)(i).
- (ttt) "**RBI**" means the Reserve Bank of India.
- (uuu) "**Request for Change Proposal**" has the meaning given to it in Clause 22.3(a).
- (vvv) "**Safety Officer**" has the meaning given to it in Clause 5.35(d)(ii).

- (www) "**Serial Defect**" has the meaning given to it in Clause 21.13(a).
- (xxx) "**Site**" means all parcels of land on which the New admin. & Engg. Block has to be built and developed as shown in **Schedule XVII**.
- (yyy) "**New admin. & Engg. Block**" means the New admin. & Engg. Block to be built on the Site based on the designs and drawings provided by the Architect and other specifications as provided for and detailed under the Technical Specifications, which shall without limitation, include.
- (zzz) "**Sub-Contractor**" means any person, including vendor of the Contractor to whom execution of any part of the Works is contracted by the Contractors and includes their successors or permitted assignees.
- (aaaa) "**Successful Bidder**" has the meaning given to it in the Instructions to Bidders.
- (bbbb) "**Take Over**" means the handing over of the New admin. & Engg. Block by the Contractor to the Client, pursuant to Clause 11.4, pursuant to the issuance of a Take Over Certificate.
- (cccc) "**Take Over Certificate**" means the certificate issued by the Client pursuant to Clause 11.4.
- (dddd) "**Taxes**" include all taxes, duties, cesses, imposts, fees, levies (including without limitation, all central, state and local government taxes, octroi, excise duties, customs duties, sales tax, countervailing duties, value added tax, works contract tax, service tax, building and construction workers cess and withholding taxes on income) imposed under any Applicable Law (whether within India or outside India) in connection with the Works, the Project, the Parties or performance by the Contractor/Sub-Contractor of its obligations and responsibilities under the Contract.
- (eeee) "**Technical Bid**" has the meaning given to it in the Instructions to Bidders.
- (ffff) "**Technical Specifications**" means the technical specifications attached to the Contract.
- (gggg) "**Work Product**" has the meaning given to it in Clause 30.1.
- (hhhh) "**Works**" means the works and services as set out in the Technical Specifications laid down into the Contract, to be executed by the Contractor in relation to the New admin. & Engg. Block and the Project, in accordance with the terms of the Contract. Works shall also include works to be executed by the Contractor under the Contract, which are contracted by the Contractor to the Sub-Contractor(s).
- (iiii) "**Works Manager**" has the meaning given to it in Clause 5.23(h).

## 1.2. Interpretation

- (a) Reference to the singular shall include reference to the plural and vice-versa and a reference to any gender shall include a reference to the other genders, except where the context otherwise requires.
- (b) The headings and marginal notes in the Contract are included for ease of reference, and shall not affect the meaning or the interpretation of the Contract.

- (c) The Schedules and Technical Specifications to and of the Contract form an integral part of the Contract and will be of full force and effect as though they were expressly set out in the body of the Contract.
- (d) Unless the context otherwise requires, a reference to any Article, Clause, recital and Schedule shall be to an Article, Clause, recital and Schedule of the Contract respectively.
- (e) Reference to any law or regulation having force of law includes a reference to that law or regulation, as from time to time, amended, modified, supplemented, extended or re-enacted.
- (f) Reference to time shall, except where the context otherwise requires, be construed as a reference to Indian Standard Time. Any reference to calendar shall be construed as reference to the Gregorian calendar.
- (g) The words "include" or "including" shall be deemed to be followed by "without limitation" or "but not limited to" whether or not they are followed by such phrases.
- (h) In case of any discrepancy between words and figures, the words shall prevail over the figures.
- (i) The provisions of all the documents comprising the Contract and the Documents shall be interpreted harmoniously and only if the provisions of the said agreements and documents cannot be interpreted harmoniously with each other on account of inconsistencies or ambiguities then, unless expressly stated otherwise in the Contract Agreement, the priority of the documents shall be in accordance with the following sequence; (i) the Contract; (ii) GCC (iii) Technical Specifications; and (iv) any other documents listed in the Contract.
- (j) Whenever provision is made for the giving of notice, approval or consent by any Person, unless otherwise specified, such notice, approval or consent shall be in writing and the words "notify" and "approve" shall be construed accordingly.
- (k) Provisions including the word "agree", "agreed", "agreement" require the agreement to be recorded in writing.
- (l) The terms "written" or "in writing" means hand-written, type-written, printed or electronically made, and resulting in a permanent record.
- (m) When any timeframe in terms of number of days is prescribed in the Contract, the same shall be reckoned exclusively of the first and inclusively of the last day, except for a payment obligation, in which case, in the event the last day does not fall on a business day, then the last day shall be the next succeeding business day.
- (n) The rule of construction, if any, that a contract should be interpreted against the Party responsible for the drafting and preparation thereof, shall not apply.
- (o) Reference to any agreement, deed, document, instrument, or the like shall mean a reference to the same as may have been duly amended, modified or replaced. For the avoidance of doubt, it is clarified that a document shall be construed as amended, modified or replaced only if such amendment, modification or replacement is executed in compliance with the provisions of such document(s).
- (p) The word "cost" shall be deemed to be all-inclusive also including overhead costs and all taxes under Applicable Law whether on or off the Site.

- (q) Wherever provision is made for the giving or issue of any notice, consent, approval, certificate or determination by any person, unless otherwise specified such notice, consent, approval, certificate or determination shall be in writing and the words "notify", "certify" or "determine" shall be construed accordingly.
- (r) Any reference to any Applicable Law shall include such law/provision as is from time to time modified or re-enacted or consolidated.
- (s) Terms defined in the Schedules, Annexure and Appendices unless contradictory shall have the same meaning throughout the Contract.
- (t) Review and comment by the Client or its personnel, with respect to any of such documents or other information shall not relieve or release the Contractor from any of its duties, obligations or liabilities provided for under the terms of the Contract.

## 2. SCOPE OF WORK

- 2.1. The Contractor shall execute all the Works as set out in **(attached separately as BOQ)**, including all activities required or appropriate to design, fabricate, manufacture, procure and deliver all supplies and Materials required for undertaking the Works for the New admin. & Engg. Block. The Contractor shall carry out and complete the Works in entirety which includes, the supply of all equipment, Materials, plant and machinery, tools, transportation, scaffolding, labour and everything else necessary for the proper execution and successful completion of the Works. The Works shall be undertaken and completed in such a manner that the New admin. & Engg. Block is fit for the purposes.
- 2.2. The Contractor shall be solely responsible for all means, methods, techniques, sequences, procedures and safety measures programmes in connection with execution of Works.
- 2.3. The Contractor shall be fully responsible and liable for everything and all matters in connection with or arising out of or being a result or consequence of it carrying out or omitting to carry out any part of the Works. The Contractor is bound to carry out any items of Works necessary for the completion of the New admin. & Engg. Block even though such items of work may not be expressly described in the Bidding Documents.
- 2.4. The Contractor shall execute the Works consistent with the requirements set forth in the Contract. The Contractor agrees to execute the Works and do all other things required/considered prudent to so do, in relation thereto, in accordance with the parameters set forth in this Clause 2. The Contractor shall be solely responsible for all means, methods, techniques, sequences, procedures and safety programmes in connection with the undertaking the Works under the provisions of the Contract. Without limiting the generality of the foregoing, the Contractor shall execute the Works:
  - (a) in a continuous manner;
  - (b) in a proper workmanlike and careful manner and in its entirety, in compliance with Applicable Law and the Codes and Standards, by using methods and Contractor's Equipment which are acceptable as per Prudent Industry Practice;
  - (c) with safety, dependability, efficiency and economy, in each case, using qualified, competent and where necessary, licensed Contractor's Personnel, so as to successfully achieve the Performance Parameters;
  - (d) by ensuring that all Works are performed in accordance with the design and instructions provided by the Client;

- (e) in accordance with the Quality Assurance Programme; and
- (f) with properly equipped facilities and non-Hazardous Materials, except as otherwise specified in the Contract.

2.5. The Contractor shall also execute all such Works and/or supply all such items and Materials that:

- (a) can be reasonably inferred from the Contract as being required for attaining Final Completion and Take Over, and which are/is needed for the safe, trouble free and normal operation;
- (b) can be reasonably inferred in accordance with Prudent Industry Practice, that the provision or causing the provision of such Works and/or supply of such items and materials, was contemplated as part of the Contract;
- (c) is/are necessary to enable the Contractor to fulfill its obligations under the Contract and comply with the warranties set out in the Contract;
- (d) is/are necessary to satisfy the provisions of the Technical Specifications; or
- (e) although not stated in the Contract, are necessary for stability or for the completion, or safe and proper operation, of the Works;

in each case, as if such Works and/or Materials were expressly mentioned in the Contract and the same shall be considered a part of the Works and shall be executed/supplied by the Contractor, without any additional cost to the Client.

2.6. In the absence of any standard specification in relation to any part of the Works, the Parties shall discuss and mutually agree upon such technical matters pertaining to the Works. In the event the Parties cannot reach a mutual agreement within a period of [15 (fifteen)] days from the date of commencement of such discussions, then the instructions/directions of the Client or Project Manager regarding such technical matters shall be carried out by the Contractor under the Contract.

2.7. Except as otherwise expressly provided in the Contract, the Contractor agrees and acknowledges that it shall perform all its obligations and responsibilities under the Contract, at its own risk, cost and expense.

2.8. As part of the scope of obligations under the Contract, the Contractor shall procure and pay for, in its own name, as an independent contractor and not as an agent of the Client, all items, materials and services necessary in connection with the execution of the Works and all other obligations under the Contract.

2.9. The Client reserves the right to increase or decrease the scope of the Works on any or all items or to change the nature of the Works involved in any or all items or to completely delete any item(s) of the Works under the Contract. The Contractor shall not be entitled to claim for loss of anticipated profits, for mobilization of additional resources, or for any other such reason on account of such instructions. In the event that the Client elects in writing to add an item to scope of the Works or to delete an item from its scope, the Client shall be entitled to increase/reduce (as the case may be) an appropriate amount from the Contract Price.

### **3. CONTRACTOR'S PERFORMANCE BANK GUARANTEE**

3.1. The Contractor shall, at its cost, within [15 (fifteen)] days from the issuance of the Letter of Award and on or before the execution of the Contract Agreement, submit to the Client an unconditional and irrevocable bank guarantee from a reputable bank acceptable to the Client for an amount of INR [ ] amounting to

5% (five percent) of the Contract Price in the form as set out in **Schedule I ("Performance Bank Guarantee")**. The Performance Bank Guarantee shall be valid up to the expiry of the Defect Liability Period and shall have a claim period of 3 (three) months from the date of its expiry.

- 3.2. If requested by the Client, the Contractor undertakes to extend the validity period of the Performance Bank Guarantee or to issue a further Performance Bank Guarantee in the event that the duration of the Contract is for any reason extended beyond such validity date.
- 3.3. Notwithstanding anything contained to the contrary in the Contract and/or the Bidding Documents, no payments due to the Contractor from the Client under the Contract shall be payable by the Client to the Contractor until the Performance Bank Guarantee has been delivered to and approved by the Client.
- 3.4. Without prejudice to the rights to the Client under Applicable Law or otherwise, the Contractor acknowledges and agrees that the Client shall have the right to invoke the Performance Bank Guarantee in the event of:
  - (a) failure of the Contractor to commence and/or complete the Works to the Client's satisfaction within the time period specified in Clause 7;
  - (b) any breach of the Contract by the Contractor which breach has not been remedied within 30 (thirty) days of notice from the Client; or
  - (c) to recover any amount that may become due to the Client from the Contractor.

#### 4. **STP Works OF THE NEW ADMIN. & ENGG. BLOCK**

##### 4.1. **Setting Out**

- (a) The Contractor shall execute all Works in relation to the STP works of the New admin. & Engg. Block in accordance with the requirements of the Technical Specifications and to the satisfaction of the Client and the Project Manager. The Contractor shall set-out the Works in accordance with the procedures set out under the Technical Specifications or provided to it by the Client and/or the Project Manager.
- (b) The Contractor shall be responsible for undertaking the Works. If, at any time during the STP works of the New admin. & Engg. Block, the Contractor becomes aware of any error, the Contractor shall promptly and in any event, no later than 15 (fifteen) days from the detection of such error, notify the Client and thereafter at its own expense, immediately rectify such error, to the reasonable satisfaction of the Client.
- (c) The Contractor shall be responsible for the true and proper setting out of the Works in relation to instructions given by the Client/Project Manager/Architect in writing and for the correctness, subject as above mentioned, of STP Works and for the provision of all necessary instruments, appliances and labour in connection therewith. If, at all any error shall appear or arise in the Works of any part of the Works, the Contractor, on being required to do so by the Client and/or the Project Manager, shall, at its own cost, rectify such error to the satisfaction of the Client. The checking of any defect in the Works by the Client/Project Manager/Architect shall not in any way relieve the Contractor of its responsibility for the correctness thereof and the Contractor shall carefully protect and preserve all bench marks, sight-rails, pegs and other things used in the Works.

##### 4.2. **Contractor's Supervision**

The Contractor shall, during the STP Works of the New admin. & Engg. Block, provide all necessary superintendence and ensure that the appropriate Contractor's Personnel are at all times present at the Site, to provide such full-time superintendence. In relation to the supervision during the Works to be undertaken at the Site, the Contractor shall deploy only such Contractor's Personnel at the Site, who are skilled and experienced in their respective fields and supervisory staff who are competent to adequately supervise the said Works.

#### **4.3. Inspection**

- (a) The Contractor shall provide to the Client and the Project Manager, access to any place on the Site where the New admin. & Engg. Block is being developed, in order to inspect the progress of the Works.
- (b) The Contractor shall give the Client and the Project Manager's personnel full opportunity to carry out the activities set forth in this Clause 4.3, including providing access, facilities, permissions and safety equipment. Provided that, no such activity shall relieve the Contractor from any obligation or responsibility under the Contract.

### **5. CONTRACTOR'S OBLIGATIONS**

#### **5.1. Contractor's general responsibilities**

- (a) The Contractor shall execute the Works in accordance with the terms of the Contract, Applicable Law and Prudent Industry Practices. The Contractor shall be liable and responsible for provision of labour and materials for undertaking the Works required to for the New admin. & Engg. Block in accordance with the Contract.
- (b) The Contractor shall take full responsibility for the adequacy, stability and safety of all the Works on the Site.
- (c) The Contractor shall keep the Client informed of the progress of the Works at regular intervals as required by the Client.
- (d) The Contractor shall keep the Client informed of any and all requirements and claims under any Applicable Laws and keep informed the Client of compliance thereunder.
- (e) The Contractor shall be responsible for obtaining all information required for the performance of its obligations under the Contract.
- (f) The Contractor has clarified and carefully examined all the documents, information and such other matters as may be necessary or desirable for performing its obligations under the Contract, to its entire satisfaction. The Contractor shall not, except as expressly provided in the Contract, be entitled to any extension of time or to any adjustment of the Contract Price, on grounds of misinterpretation or misunderstanding of any such matter.
- (g) The Client shall not be responsible for any error, inaccuracy or omission of any kind in the Bidding Documents and shall not be deemed to have given any representation of accuracy or completeness of any data or information. Any data or information received by the Contractor, from the Client and/or Project Manager or otherwise, shall not relieve the Contractor from its responsibility for undertaking the Works.



- (h) The Contractor has, prior to the execution of the Contract obtained all information and taken into consideration the restrictions imposed to coordinate its activities for the Works with the other contractors required for completion of the Project.
- (i) The Contractor represents that it is fully informed of all general and local conditions near the Site and other factors that may have an effect on the compliance of its obligations under the Contract. The Contractor cannot claim an extension of time or an increase in the Contract Price as a result of such local conditions or factors.
- (j) The Contractor represents and confirms that it has entered into the Contract Agreement on the basis of its proper examination of the Site by its checking or carrying out its own investigations as may be required, including the suitability and availability of the access routes thereto and that it is aware about the conditions of the Site and its surroundings and has satisfied itself as to all technical, commercial, social and general conditions of and all circumstances affecting the Site. The Contractor represents and confirms that by signing the Contract, the Contractor accepts total responsibility for having foreseen all difficulties and costs of successfully completing the Works and that the effect of all contingencies have been considered by the Contractor prior to entering into the Contract Agreement and that the Contractor shall not be entitled to extension of time or an increase in the Contract Price on account of the same.
- (k) The Contractor acknowledges that any failure to verify and interpret any data and information in relation to the Site and/or the New admin. & Engg. Block shall not relieve it of its responsibility for properly estimating the difficulty or cost of successfully performing its obligations under the Contract.

#### **5.2. Water and power for carrying out the Works**

Water and electricity for carrying out the Works shall be arranged by the Contractor at its own risk and costs. The Contractor shall, so far as is reasonably practicable, having regard to local conditions provide on the Site at its own cost, water for the use of the Contractor's Personnel, staff, and work people at the Site.

#### **5.3. Temporary works and arrangements**

The Contractor shall furnish to the Client full particulars, Drawings, etc., of all temporary works necessary for the completion of the Works and shall allow sufficient time for the Client to consider the same. The Client reserves the right to alter/ comment on the Contractor's proposals if it considers that modifications should be made. The Contractor shall be solely responsible for the stability and safety of all temporary Works and unfinished Works.

#### **5.4. Demolition and clearance**

The Contractor shall be responsible for undertaking the Works, clearance from the Site of all scrub, debris, rubbish, etc. that shall be carted to an area not objected to by any Governmental Authorities. However, no trees shall be removed without the prior permission of the Client and without obtaining prior approvals as may be required under the Applicable Law.

#### **5.5. Storage, cleaning and de-watering**

- (a) The Contractor shall at all the times during performance of the Works keep the Site clean and free from all debris and unwanted Materials as per instructions of the Client/ PM.
- (b) Storage of Materials shall be in organized manner and in proper compartments. Storage on suspended floors shall not be permitted unless specifically approved in writing by the Client for

specific Materials in specific locations. The Client shall be furnished with load details, if requested, before seeking approval for storage.

- (c) Regular cleaning operations shall be undertaken to remove all dust, debris, waste materials, etc. and disposal of the same. A cleaning schedule shall be maintained by the Contractor to the satisfaction of the Client.
- (d) The Contractor shall make its own arrangements for storage of Materials, which cannot be accommodated at the Site. The Contractor shall be fully responsible for safe custody of the same. Materials shall be considered as "Delivered at Site", only after the physical presence of Materials at the Site. Stores elsewhere shall not be eligible for being considered as "Delivered at Site".
- (e) The Contractor understands that the Site is free from pollutants at the time of access to the Site and commencement of Works. The Contractor shall comply with all applicable environmental laws and regulations and shall ensure that the Works are undertaken in compliance with such Applicable Laws.
- (f) The Contractor shall be responsible to keep entire Site free from water due to water coming from any source at any level and shall protect all Materials and Works from being damaged by the water from any source. The Contractor shall make proper arrangements for drainage prior to use of water.

#### 5.6. **Vehicular movements and temporary roads**

- (a) The Contractor shall not make temporary roads until approval from the Client is received in writing. Site access and circulation roads are to be on the lines agreed to with the Client.
- (b) No vehicle other than those specifically allowed by the Client shall be permitted on the Site.
- (c) All the vehicles and Materials coming in to the Site should be checked for explosive materials by using metal detectors and under vehicle scanner.

#### 5.7. **Care and use of existing facilities and services**

- (a) During the completion of the Works, the Contractor shall take all precautions and exercise full care, at its cost, to ensure that no damage is caused to the existing water supply, sewerage, power or telecommunication lines or any other services or works. The Contractor shall provide and erect before undertaking the Works, substantial barricades, guardrails, and warning signs. The Contractor shall furnish, place and maintain adequate warning lights, signals, etc., as required by Client. However, such substantial barricades, guardrails, and warning signs shall not relieve the Contractor of its responsibilities, obligations and liabilities for safety and timely completion of Works.
- (b) If any service lines have to be shifted / diverted, it shall be done so with the explicit permission of the Client.

#### 5.8. **Co-ordination of builders work required for services**

- (a) The Contractor shall co-ordinate the requirements for holes, fixings and builders work, for internal and external services installations in accordance with the requirements of the relevant Drawings, which shall be made available to the Contractor by the Client.
- (b) All holes, chases, etc., shall be left in the building work as it proceeds and cut-out subsequently, except in so far as may be necessary due to subsequent authorized instructions. The Contractor

shall therefore obtain necessary builders work details in such order and in such time so as to enable them to be checked and approved by the Client and/or the Project Manager not less than 2 (two) weeks before the actual works are planned to take place.

**5.9. Contract**

The Contractor shall within [ ] days of the issuance of the Letter of Award enter into and execute the Contract Agreement with the Client, in the form annexed as **Schedule II** with such modification as may be necessary. The cost of stamp duties and similar charges (if any) incurred with respect to entry into the Contract Agreement shall be borne by the Contractor.

**5.10. Inspection of Site**

- (a) The Contractor shall be deemed to have inspected and examined the Site and its surroundings and information available in connection therewith and to have satisfied itself as to the form and nature of the Works. The Contractor shall not rely only on the information provided by the Client.
- (b) The Contractor shall not remove/shift any existing services passing through the Site above or below ground deemed to be a hindrance towards the completion of the Works without the prior written consent of the Client.

**5.11. Works to be to the satisfaction of the Client**

Unless it is legally or physically impossible, the Contractor shall undertake the Works in strict accordance with the Contract to the satisfaction of the Client and shall comply with and adhere strictly to the instructions and directions from the Client and/or the Project Manager.

**5.12. Drawings and Documents**

**(a) General**

The Drawings and Documents prepared for the Project shall be treated as confidential documents and must not be copied or loaned or shared with any other party without the express permission of the Client. In the event of termination of the Contract, the Contractor shall forthwith return to the Client, all Drawings and Documents prepared for the Project and all copies thereof in the possession or under the control of the Contractor. The Contractor agrees that the provisions of the Contract pertaining to confidentiality shall survive termination/completion of the Works under the Contract.

**(b) Drawings**

- (i) The Drawings furnished by the Architect, if any, as part of the Bidding Documents, are for bidding purposes only and are intended as a guide to the Contractor and give general layout of buildings and structures and general positions of utilities, services and equipment only and in measuring from these Drawings and preparing Bid the Contractor must make due and proper allowance for all necessary diversions from the straight line, rises or falls as may be required for the proper execution of the Works.
- (ii) The set of Drawings which are part of the Bidding Documents is only representative of the type and general nature of Works and not the quantum of Works involved. Additional Drawings shall be issued at the relevant stage for actual execution of Works.

- (iii) Detail Drawings in all cases shall be worked in preference to those of a more general nature and figured dimensions where indicated shall be followed in preference to scaled dimensions.

(c) **Good for Construction Drawings**

- (i) The Architect/Client/or the Project Manager shall issue free of charge [3 (three) sets] of STP Drawings, approved for undertaking the Works, to the Contractor. Additional copies as and when required shall be supplied by the Architect or Project Manager and costs shall be reimbursed by the Contractor.
- (ii) The Client and/or Project Manager may from time to time during the course of the Contract issue the Contractor with revised Drawings and the Contractor shall ensure that all superseded Drawings are removed from Site and stored in a lockable cabinet as directed by the Client and/or Project Manager and replaced by revised Drawings.
- (iii) The Contractor shall ensure that a complete up to date register of Drawings is maintained at Site. All Drawings shall be properly filed and indexed for ready reference.
- (iv) The Contractor shall ensure that only the valid up to date Drawings is used for fabrication, setting-out, STP etc.

5.13. **Discrepancies**

The Contractor shall bring to the notice of the Client any discrepancies within or between Drawings and/or the other Documents prior to commencement of Works and shall not proceed with Works until the Client/Architect/PM gives clarifications and instructions to proceed.

5.14. **As-built drawings**

The Contractor shall commence preparation of the 'as-built drawings' from the onset of the Contract, in order that all minor amendments and discrepancies are incorporated. To ensure that this requirement is complied with, the Client shall check the Drawings on its request as the Works proceed. [4 (four)] sets of as-built drawings and one soft copy on a CD shall be submitted by the Contractor to the Client within 2 (two) weeks from date of issue of the Final Acceptance Certificate.

5.15. **Programme**

- (a) The Contractor shall include in its Bid a preliminary contract schedule. Upon issuance of the Letter of Award and before commencement of the Works, the Contractor shall prepare a detailed and comprehensive contract schedule for review and approval by Client/PM.
- (b) The schedule shall show the date on which each part of the Works is to begin and date when such part of the Works is scheduled to be finished along with the relevant milestones under ("**Contract Schedule**"). The Contractor shall ensure that it complies with the Contract Schedule and shall co-ordinate performance of the Works with the Client, Project Manager and the Architect in order to maintain the Contract Schedule.
- (c) The Contractor shall also submit weekly/monthly progress reports indicating progress of Works giving scheduled and actual percentage completion, causes for delays if any etc. as well as other

reasonable reports and photographs as the Client and/or Project Manager may require from time to time.

- (d) The submission to and approval by the Client and/or Project Manager of such schedules or the furnishing of such particulars shall not relieve the Contractor of any of its duties or responsibilities under the Contract.
- (e) The Contractor acknowledges and confirms that the development of the New admin. & Engg. Block is a time bound project. The Contractor shall strictly adhere to the milestones as per the Contract Schedule. Any delay in delivering the Project, completing the Works and meeting the milestones will result in substantial losses to the Client.
- (f) Subject to Clause 10 (Liquidated Damages) for any delays by the Contractor in achieving the any milestone as per the Contract Schedule, the Client will withhold an amount from the Invoice maximum up to 5% (Five percent) of the Contract Price until the Contractor meets the subsequent milestone as per the Contract Schedule. On successfully achieving the subsequent milestone, the withheld amount will be paid to the Contractor in the next Invoice. If the Contractor fails to achieve the subsequent milestone, an additional 5% (five per cent) of Contract Price shall be withheld. The entire withheld amount shall be accounted in the Contract Price.
- (g) The Contractor will submit schedule of Material delivery and shall obtain approval from the Client/PM before delivering any Material to the Site.
- (h) Provision of time will be made by the Contractor for other agencies and contractors to carry out their part of the Works and such lapse of time will be considered by the Contractor in the Contract Schedule. No compensation will be paid to the Contractor for idle labour and Materials due to work of other contractors.

#### 5.16. **Contractor's Representative and Works Manager**

##### **Contractor's Representative**

- (a) The Contractor has appointed [ ], s/o [ ] and r/o [ ], as the Contractor's representative for the purpose of the Contract ("**Contractor's Representative**"). The Contractor shall within [7 (seven) days] from the date of issuance of Letter of Award, notify the Client, of the duties and authorities of the Contractor's Representative.
- (b) The Contractor's Representative shall represent and act for the Contractor, at all times during the term of the Contract and shall provide to the Client all the Contractor's notices, instructions, information and all other communications under the Contract.
- (c) All notices, instructions, information and all other communications provided by the Client to the Contractor under the Contract, shall be provided to the Contractor's Representative or, in its absence, its authorized deputy, except as otherwise provided.
- (d) The Contractor shall not revoke the appointment of the Contractor's Representative without the Client's prior written consent, which shall not be unreasonably withheld. If the Contractor proposes to appoint another person as its representative, then it shall provide a [14 (fourteen) days] notice to the Client requesting it to approve such appointment. In this regard, the Contractor shall submit the curriculum vitae of such representative along with its request. The Contractor shall ensure that the person proposed to act as its representative shall be fluent in the

local language of India and the English language. If the Client does not object to the appointment of such representative within [14 (fourteen) days] of receipt of the request provided by the Client, the representative shall be deemed to have been approved by the Client as the Contractor's Representative. If the Client objects to the appointment of the representative within [14 (fourteen) days] of receipt of the request provided by the Contractor, giving the reason thereof, then the Contractor shall propose a replacement within 14 (fourteen) days of such objection. The provisions of this Clause 5.23(d) shall apply *mutatis mutandis* to such replacement. If the Client consents thereto, the Contractor shall appoint any other person as the Contractor's Representative, pursuant to the procedure set out in this Clause 5.23.(d).

- (e) The Contractor's Representative may, subject to the approval of the Client, which shall not be unreasonably withheld, at any time, delegate to any person any of the powers, functions and authorities vested in it. Any such delegation may be revoked by the Contractor's Representative at any time, but shall be subject to a prior notice to the Client, signed by the Contractor's Representative. Such notice shall specify the powers, functions and authorities thereby revoked. No such delegation or revocation shall take effect unless a copy of written authorization of such delegation or revocation, as the case may be, has been delivered to the Client.
- (f) Any act or exercise by any person of powers, functions and authorities so delegated to such person in accordance with Clause 5.23(e) shall be deemed to be an act or exercise by the Contractor's Representative and the Contractor shall be fully responsible for the same.
- (g) The Contractor's Representative, persons to whom powers, functions and authorities have been delegated pursuant to Clause 5.23(e), and the Works manager shall be fluent in the English language and either proficient in the national language of India.

(h) **Works Manager**

The Contractor's Representative shall, [7 (seven) days] before Site mobilization, appoint a suitable person to manage the execution of the Works, who shall be present at the Site, during normal working hours prescribed under Applicable Law ("**Works Manager**"). Provided that, if at any point of time the Works Manager is not present at the Site, a suitable person shall be appointed by the Contractor's Representative to act as its deputy, who shall then be present at the Site in the absence of the Works Manager.

(i) **Removal of Contractor's Personnel from Site**

The Contractor's Personnel shall be reasonably qualified, skilled and experienced in their respective trades or occupations. The Client may, during the term of the Contract, by notice to the Contractor, object to the retention of any of the Contractor's Personnel and require the Contractor to remove (or cause to be removed) any person comprising the Contractor's Personnel, who,

- (i) has behaved inappropriately;
- (ii) carries out duties incompetently or negligently;
- (iii) persists in any misconduct or lack of care;
- (iv) fails to conform with any of the provisions of the Contract;
- (v) has committed a serious breach of the Site regulations provided by the Client;

- (vi) persists in any conduct which is prejudicial to the safety, health or the protection of the environment; or
- (vii) is otherwise not suitable.

The Client shall provide evidence of the same to the Contractor, whereupon the Contractor shall remove such person from the Site and promptly appoint (or cause to be appointed) a suitable replacement in accordance with Clause 5.23(d).

**5.17. Contractor's Employees**

The Contractor shall provide and employ on the Site in connection with the execution of the Works:

- (a) only such technical assistants as are skilled and experienced in their respective fields and such sub-agents, foremen and leading hands as are competent to give proper supervision to the Works they are required to supervise;
- (b) such skilled, semi-skilled and unskilled labour as is necessary for the proper and timely execution of the Works; and
- (c) professionals for safety for undertaking the Works to the satisfaction of the Client.

**5.18. Watching and Lighting**

The Contractor shall in connection with the Works provide and maintain at its own cost all workplace lighting, guards, fencing and watching when and where necessary for the completion of the Works, or for the safety and convenience of the public or others. The care and the safety of the Materials and Works shall be sole responsibility of the Contractor. The constructed barricade on the Site shall be maintained by the Contractor. If such barricade is damaged, the same shall be replaced/rectified immediately without any additional cost to the Client. Adequate fire protection measures should be in place on site to attend to any mishap on the site. Adequate personnel shall be deployed by the Contractor within the Site to control the movement of Material and personnel.

**5.19. Care of Works**

From the commencement of the Works until the date stated in the Final Acceptance Certificate, the Contractor shall take full responsibility for the care of the Works and the loss or damage thereto.

**5.20. Damage to persons and property**

The Contractor shall indemnify the Client against any and all losses and claims in respect of injuries or damage to any persons or material or physical damage to any property whatsoever which may arise out of or in consequence of the execution of the Works and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect of or in relation thereto.

**5.21. Giving of notices and payment of fees**

The Contractor shall give all notices and pay all taxes, octroi, fees required to be given or paid by any national or state statute, ordinance or other Applicable Law, or any regulation, or bye law or any local or other duly constituted Governmental Authority in relation to the execution and completion of the Works and by the rules and regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the Works.

5.22. **Compliance with statutes, regulations, etc.**

- (a) The Contractor shall conform in all respects with the provisions of Applicable Law which may be applicable to the Works and shall keep the Client indemnified against all penalties and liability of every kind for breach of any such Applicable Law.
- (b) The Contractor shall comply with all rules, regulations, and laws including but not limited to labour laws, laws relating to medical and safety of workmen for labour directly or indirectly engaged by the Contractor, its representative, and Sub-Contractor. The Contractor shall register itself wherever and whomsoever required in this connection at local and state level. The Contractor shall indemnify the Client from every expense incurred by the Client under this Clause. The Client is authorized to call at any point of time to its registered office/offices for inspection or copy of such documents as it considers necessary for ensuring statutory compliances to the above by the Contractor.
- (c) In particular, the Contractor shall ensure strict compliance with the provisions of the Employee State Insurance Act, 1948, Employee Provident Fund and Miscellaneous Provisions Act, 1952, Factories Act, 1948, Workman's Compensation Act, 1948, Payment of Wages Act, 1946, Minimum Wages Act, 1948, Employees Liability Act, 1938, Industrial Dispute Act, 1947, Maternity Benefit Act, 1961, and Contract Labour (Regulation and Abolition) Act, 1970. Copies of the records and registers maintained under the Applicable Laws shall be provided to the Client at the end of each month. The salaries to all workmen shall be paid in the presence of the Client and/or Project Manager. The Contractor shall procure and maintain the necessary licenses under the Contract Labour (Regulation and Abolition) Act, 1970 after assisting the Client in procuring the registration there under. The Contractor shall also obtain various licenses/ permits/ clearance/ approvals/ consents as appropriate from the various Governmental Authorities and other statutory authorities in respect of Works to be undertaken by it.
- (d) The Contractor shall ensure that the workmen operating the Contractor's Equipment for the execution of Works are licensed under Applicable Law, to the satisfaction of the Client.
- (e) The Contractor shall include in its rates all expenses necessary to meet its obligations for making contributions toward employee benefits funds (such as employees state insurance, provident fund, old age pension if any or any other benefits / compensation payable by the Contractor) etc., in compliance with all the statutory regulations and requirements. All records in this connection shall be properly maintained by the Contractor and produced for scrutiny by the concerned authorities and the Client and/or Project Manager whenever called for.
- (f) The Contractor acknowledges and agrees that none of the directors of the Contractor are on the RBI's defaulter list/caution list or the CIBIL's wilful defaulter list or is a defaulter or on non-cooperative list of any of the lenders and that no director of the Contractor is disqualified under Section 164 of the Companies Act, 2013. The Contractor further agrees and acknowledges that no person:
  - (i) who has been named in any list of defaulters circulated by the RBI or CIBIL; or
  - (ii) whose name appears in any caution list of any nature published by the RBI, CIBIL or any similar Governmental Authority; or
  - (iii) who has been named in the caution list/defaulters list/ specific approval list; or
  - (iv) who has been identified as a wilful defaulter/ non-cooperative by any bank or financial institution, as per the parameters determined by RBI, from time to time; or



- (v) who is director in any company which has been identified as a wilful defaulter/defaulters / non-cooperative by the RBI, CIBIL or similar Governmental Authority or any bank or financial institution,

shall become a member of the Board or a KMP of the Contractor. If any such person is already a director on the Board or KMP of the Contractor, the Contractor shall intimate the Client and the Project Manager promptly and take expeditious and effective steps to remove such person from its Board and as KMP, and the Client shall have the right to take action as envisaged under the Applicable Law.

- (g) The Contractor acknowledges and agrees that no investigation by a Governmental Authority or any regulatory authority is pending against the Contractor, its sister concern, its chief executive officer or any of its directors/ managers/ employees, including but not limited to any charge sheet by an agency of the Governmental Authority, initiation of proceedings in the court of law or a conviction by the court of law for an offence committed by the Contractor or its sister concern or any of its directors/ managers/ employees. In case any investigation is pending against the Contractor or its sister concern or against its chief executive officer or any of its directors/ manager/ employees, the following details shall be furnished to the satisfaction of the Client:

- (i) full details of such investigation;
- (ii) name of the investigating agency;
- (iii) charge/ office for which investigation has been launched;
- (iv) name and designation of persons against whom the investigation has been launched;
- (v) other relevant information.

- (h) The Contractor shall keep the Client informed of any and all claims under any Applicable Laws and keep informed the Client of compliance there under.

#### 5.23. **Interference with traffic and adjoining properties**

All operations necessary for the completion of the Works shall, so far as compliance with the requirements of the Contract permits, be carried on so as not to interfere unnecessarily or improperly with the public convenience, or the access to use and occupation of public or private roads and footpaths, or to or of properties whether in the possession of the Client or of any other person. The Contractor shall save harmless and indemnify the Client in respect of all claims, proceedings, damages, cost, charges and expenses whatsoever arising out of, or in relation to, any such matters in so far as the Contractor is responsible therefore.

#### 5.24. **Extraordinary traffic**

The Contractor shall use every reasonable means to prevent any of the highways or bridges communicating with or on the routes to the Site from being damaged or injured by any traffic of the Contractor or any of its Sub-Contractors and, in particular, shall select routes, choose and use vehicles and restrict and distribute loads so that any such extraordinary traffic as will inevitably arise from the moving of material from and to the Site shall be limited, as far as reasonably, and so that no unnecessary damage or injury may be occasioned to such highways and bridges.

#### 5.25. **Opportunities for other contractors**

The Contractor shall, in accordance afford all reasonable opportunities for carrying out the Works to any other contractors engaged by the Client and their workmen and to the workmen of the Client and of any other duly constituted authorities who may be employed in the execution on or near the Site of any Works not included in the Contract or of any contract which the Client may enter into in connection with or ancillary to the Works.

**5.26. Contractor to keep Site clear**

During the progress of the Works, the Contractor shall keep the Site free from unnecessary obstruction and shall store or dispose of any material and clear away and remove from the Site any wreckage, rubbish or Materials no longer required, on a daily basis. Regular cleaning operations on daily basis shall be undertaken by the Contractor to remove all dust, debris, waste materials etc., and disposal of the same to the nearby waste dumping yard. If Client and/or Project Manager notices the Contractor's inability/unwillingness to do the said job, the Client shall have the right to get the same cleaned by an external agency and debit the same to the Contractor's account.

**5.27. Clearance of Site on completion**

On the completion of the Works, the Contractor shall clear away and remove from the Site all surplus Materials, rubbish and debris and Site office and stores etc. of every kind, and leave the whole of the Site and Works clean and in a workmanlike condition to the satisfaction of the Client.

**5.28. Contractor's Personnel**

- (a) The Contractor shall within 7 days from the date of issuance of Letter of Award depute the Contractor's Personnel, at the Site so as to seek clarification with regard to the Works to be executed. Further, subject to details as provided in the Technical Specifications, the Contractor shall, in terms of this Clause 5.36, from the date of Letter of Award till Final Completion, engage sufficient and properly qualified Contractor's Personnel who are proficient in English language and skilled and experienced in their respective callings, to enable the Contractor to efficiently perform its obligations under the Contract. The Contractor shall ensure that the Contractor's Personnel include:
- (i) professional engineers licensed in accordance with the licensing requirements prescribed under Applicable Law to perform the Works pursuant to the Contract;
  - (ii) a team of engineers from various disciplines, adequate number of qualified and competent supervisory staff, craftsmen or other personnel, each of whom shall have extensive experience in executing works of a magnitude similar to the Works, shall have knowledge of the Applicable Laws; and
  - (iii) a team of sufficiently qualified and experienced welders which are required for the execution of the Works.

- (b) The Client shall have the right, but not the obligation, to approve any of the Contractor's Personnel. The Contractor shall, upon the request of the Client, provide the Client with the curriculum vitae of, and arrange interviews by the Client of, any or all of the Contractor's Personnel. The Contractor shall not remove any of the Contractor's Personnel without the prior written consent of the Client, which shall not be unreasonably withheld.
  
- (c) The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Site. The Contractor shall be responsible for the recruitment, transportation, accommodation, catering and other welfare facilities of the Contractor's Personnel, and for all payments in connection therewith. Further, if specified in the Technical Specifications, the Contractor shall also provide all such facilities for the Client's personnel. The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with the relevant Governmental Authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance services are available, at all times, at the Site and at the respective accommodation of the Contractor's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics. The Contractor shall indemnify and hold harmless the Client from and against any claim, liability, assessment, damage, loss, penalty or fine stemming from any breach by the Contractor or any person for whom it is responsible, of this Clause 5.36.(c).
  
- (d) The Contractor shall, within [15 (fifteen) days] from the date of issuance of Letter of Award, appoint suitable and qualified persons, who shall be:
  - (i) responsible to ensure quality of the Works undertaken for construction and development of the New admin. & Engg. Block and shall co-ordinate with the Client and the Project Manager for all matters in relation to the quality of the Works (the "**Quality Engineer**");
  
  - (ii) responsible for all matters in relation to the safety and protection against accidents at the Site and shall, at all times during the term of the Contract, ensure that the safety manual provided to the Contractor by the Client and the safety regulations at the Site provided under **Schedule VII** (Safety Regulations) are strictly adhered to (the "**Safety Officer**"). The Contractor shall, no later than [15 (fifteen) days] from the date of issuance of the Letter of Award, submit to the Client, the job safety analysis of the Safety Officer. The Safety Officer shall have the authority to issue instructions and take protective measures to prevent accidents and during the term of the Contract, the Contractor shall provide whatever is required by the Safety Officer to exercise such responsibility and authority. The Safety Officer shall:
    - (A) ensure that copies of the safety manuals provided by the Client pursuant to **Schedule VII**, are at all times available on the Site, along with Codes and Standards of practice in relation to the same, to be referred to and followed by the Contractor's Personnel;
  
    - (B) submit to the Client, as soon as practicable after the occurrence of an accident or dangerous occurrence, the details of such accident or dangerous occurrence, as the case may be; and
  
    - (C) maintain all records and make reports concerning health, safety and welfare of persons, and damage to property, as may be reasonably required by the Client.

The Contractor shall indemnify and hold harmless the Client from and against any claim, liability, assessment, damage, loss, penalty or fine stemming from any breach by the Contractor or any person for whom it is responsible, of this Clause 5.36.(d).

- (e) The Safety Officer shall be present at the Site, during normal working hours, prescribed under Applicable Law, or a suitable person shall be appointed by the Contractor's Representative to act as its respective deputy, who shall be present at the Site in the absence of the Safety Officer.
- (f) The Contractor shall, at its own expense, provide, as and when required, the means of repatriation to all of the Contractor's Personnel and labour and personnel of the Sub-Contractor's to their respective home countries/states. Further, the Contractor shall also provide suitable temporary maintenance of all such persons, from the period commencing from the cessation of their employment with the Contractor, till the scheduled date of their respective departures. If the Contractor fails to comply with its obligations under this Clause 5.36.(f), the Client may provide the same, at the cost of the Contractor.
- (g) The Contractor shall ascertain the availability of labour (skilled and unskilled), personnel and Sub-contractors in the vicinity in which the Site is located and shall, to the extent possible, engage such labour (skilled and unskilled), personnel and Sub-contractors, as the Contractor's Personnel.
- (h) The Contractor shall ensure that the Contractor's Personnel are entitled to the prescribed number of holidays, as per Applicable Law and unless otherwise provided in the Contract, no Works shall be executed outside normal working hours and on holidays, prescribed under Applicable Law. Provided that, provisions of this Clause 5.36.(h) shall not apply to any Works which are customarily carried out by rotating or double-shifts.
- (i) The Contractor shall, and shall ensure that the Contractor's Personnel, in all dealings with the labor and personnel of its Sub-Contractors, pay due regard to all recognized festivals, official holidays, religious or other customs prevailing in the State of Uttar Pradesh, India and all Applicable Laws in this regard. Further, the Contractor shall ensure that the Contractor's Personnel act in a culturally sensitive manner at all times, giving due regard to the local community and cultures when on Site.
- (j) The Contractor shall at all times, during the term of the Contract, use its reasonable endeavors to prevent any unlawful, riotous or disorderly conduct or behavior by or amongst the Contractor's Personnel, the other Contractors and/or the labour, personnel and employees of the Sub-Contractors and to preserve peace and protection of persons and property on and near the Site and under no event shall the Client be responsible for the same. The Contractor shall promptly provide the Client, a notice in relation to any actual or anticipated labour dispute which may affect the execution of the Works. The said notice shall indicate the steps being taken by the Contractor to mitigate the effects of any actual or contemplated labour disputes.
- (k) The Contractor shall pay rates of wages to the Contractor's Personnel, as per rates prescribed under Applicable Law and observe conditions of labour in accordance with the Applicable Law. The Contractor shall, during the term of the Contract, withhold from wages and salaries of the Contractor's Personnel, sums required to be withheld as per the Applicable Law and pay the same promptly and directly, when due, to the respective Governmental Authority and upon request by the Client, in this regard, provide to the Client evidence of the payment of such withholding taxes as per the Applicable Law. In this regard, the Contractor shall comply with all accounting and reporting requirements under the Applicable Law and bear the cost of such compliance. In the event the Client becomes liable, under Applicable Law, due to any act or omission of the Contractor under this Clause 5.36.(k), the Client may make such payments and shall recover the same from the Contractor or deduct the amounts so paid from the Contract Price.

5.29. **Sanitation and drainage during the Works at the Site and labour camp**

- (a) The Contractor shall provide sanitation and drainage facilities on the Site and labour camp as required and stated under the Contract.
- (b) The Contractor shall strictly control the labour so that the Site is not polluted, made dirty or littered with debris, wastes or the likes.
- (c) Any person found creating mess or litter or pollution or illegally squatting on the Site shall be removed from the Site immediately at Contractor's cost.
- (d) The Contractor shall provide sanitation facilities at convenient locations on Site and labour camp to preserve the cleanliness of the Site. The effluent shall be directed as follows:
  - (i) waste water: Collection and pumping out and disposal off the Site in approved manner: and
  - (ii) septic tank provision - sludge to be collected and disposed of at intervals as directed.
- (e) The Contractor shall clear and deodorize the ground after their removal and meet all statutory requirements.

5.30. **Worker's camp**

The Contractor shall make its own arrangements at its cost to provide accommodation for its staff and labour outside and away from the Site. No extra cost is payable to the Contractor on this account. The Contractor shall provide the following welfare arrangements in the labour camp area within [ ] km of the Site and as further detailed in the Technical Specification:

- (a) the Site activities include setting up a colony for the workers. Well laid out labour camp with all amenities (light, drinking water, cooking area with cooking facilities, wash areas, wash rooms for both male & female workers, crèche & learning area) shall be arranged at a suitable place;
- (b) labour camp shall be located away from Site premises;
- (c) access to the labour camp shall be provided;
- (d) maintain proper hygiene all times;
- (e) a warden to be appointed for labor camp and as single point responsibility;
- (f) drainage of sludge water /rain water shall be provided;
- (g) drinking water, bathing facilities and field washrooms should be provided at suitable places;
- (h) suitable arrangements for labour to purchase weekly provisions shall be made;
- (i) weekly off to the labour shall be ensured for rest;
- (j) food and transport (to & fro from Site to labour camp) facilities should be provided;

- (k) sufficient number of fire extinguishers should be provided;
- (l) an emergency assembly point should be provided;
- (m) security should be provided;
- (n) crèches/learning/play centre should be provided;
- (o) provision of pumps to drain out flood water from site/ labour camp;
- (p) electricity (with power back up) should be provided;
- (q) first aid facility, ambulance & along with doctor shall be provided;
- (r) labour camp monsoon precautions;
- (s) prevent contamination of drinking water;
- (t) collection and disposal of food waste & garbage regularly;
- (u) secure all loose [G. I. Sheets] to prevent from flying off in case of stormy and gusty wind;
- (v) standard earthing to partition with effective functioning of [ELCB's]
- (w) all temporary electric connections must be rooted through 30 mA cut off rating [ELCB];
- (x) all wires / cables are not laid on sharp edges or through a hole within the G. I. Sheet as to prevent damage to insulation. If, possible route through conduit pipes and support wire / cables by suitable hook;
- (y) no wooden material to be used for labor camp construction; and
- (z) all wire / cable joints are water and shock proof to prevent from shock.

**5.31. Alcoholic liquor or drugs**

Use of any alcoholic liquor, drugs, chewing of pan, gutka or smoking etc., is fully prohibited on the site. The Contractor shall not import, sell, give, barter or dispose any alcoholic liquor or drugs or cigarettes / beedies /etc. by its Sub-Contractors, agents or employees.

**5.32. Arms and ammunition**

The Contractor shall not give, barter or otherwise dispose of to any person or persons, any arms or ammunition of any kind or permit or suffer the same as aforesaid.

**5.33. Festivals and religious customs**

The Contractor shall in all dealings with labour in its employment have due regard to all recognized festivals, days of rest and religious or other customs. The Contractor shall intimate [7 (seven) days] in advance to the Client of any festival for any resource/ labour shortfall presumed with proper mitigation plan in place.

5.34. **Epidemics**

In the event of any outbreak of illness of an epidemic nature at Site and/or labour camp for the workmen engaged for the Works (directly or indirectly) the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Governmental Authority, or the local medical or sanitary authorities for the purpose of dealing with and overcoming the same under Applicable Law.

5.35. **Disorderly conduct, etc.**

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by any of its Sub-Contractors, employees or agents and for the preservation of peace and protection of persons and property in the neighborhood of the Works against the same.

5.36. **Safety Standards and Requirements**

The Contractor shall follow the rules and guidelines laid down in safety requirements as listed in **Schedule VII**. The cost so incurred by the Contractor in providing for safety standards and requirements as above shall be deemed to be included in the Contract Price and no extra amounts shall be payable to the Contractor on this account.

5.37. **Reports by the Contractor**

- (a) The Contractor shall file daily category-wise labour returns. The report shall indicate scheduled requirement against actual strength.
- (b) The Contractor shall prepare weekly reports of planned and actual progress of Works and subsequent week's scheduled Works. These will also include Material procurement status. These reports shall be submitted to Client and shall be reviewed in weekly co-ordination meeting.
- (c) The Contractor shall submit monthly report along with monthly bills. The reports shall include photographs taken from pre-determined locations which illustrate progress of the Works.
- (d) Further progress charts and schedules shall be prepared by the Contractor as directed by the Client and/or Project Manager.
- (e) The submission to and approval by the Client of such programmes/ reports or the furnishing of such particulars shall not relieve the Contractor of any of its responsibilities and liabilities under the Contract.

5.38. **Night or Sunday work**

Subject to Applicable Law and the terms of the Contract, the Contractor shall not perform any activity at the Site at night on any day or on Sundays except with the prior written consent of the Client and the Project Manager.

5.39. **Taxation**

The Contractor shall be responsible to pay personal and company taxes of its staff and its organization wherever applicable. The Contractor shall be responsible for deduction of tax at source while releasing payment to their staff, Sub-Contractors, workers, etc.

5.40. **NGT Guidelines**

The Contractor shall comply with all the provisions of National Green Tribunal (NGT) laws, rules, orders, notifications, and amendments made from time to time at his own cost, nothing extra shall be paid on this account. Any penalty, imposed by the NGT for construction of aforesaid building due to non-compliances shall be borne by the contractor itself. The item rates of BOQ are inclusive of all such cost to manage the activities as suggested by NGT If site shutdown/ work held due to NGT/ Govt. orders then, the Contractor shall only be entitled to Extension of time and no claim shall be entertained on account of this by the owner on account of idle labour, staffs tools & plants, machineries etc.

## **6. CLIENT'S OBLIGATIONS**

### **6.1. Rights of Way and Facilities**

- (a) The Client shall provide and bear all costs and charges for special and/or temporary rights of way, which the Contractor may require, including those for access to the Site.
- (b) The Client shall provide clear, unhindered, freely accessible Site to the Contractor for execution of the Works.
- (c) The Client shall, in respect of the Works, provide adequate space for the storing of Contractor's Equipment (including equipment which is being procured by the Client under a separate contract) until the Completion Date.

### **6.2. Access to the Site**

The Contractor and Contractor's Personnel shall be permitted access to the Site for the purposes of carrying out the Works. The Client, may at any time, remove or cause to be removed any of the Contractor's Materials, articles, things, personnel or labour without notice to the Contractor. This shall not, in any manner, prejudice or affect the Contractor's liabilities and obligations in respect of the Works and in particular the liability arising due to any damage to any person or Material at the Site.

## **7. TIME FOR COMMENCEMENT AND COMPLETION**

### **7.1. Commencement of works**

The Contractor shall commence the Works at the Site from the date of issuance of the Letter of Award ("**Commencement Date**"). The Contractor acknowledges that time is the essence of the Contract for commencement and completion of Works by the Completion Date.

### **7.2. Time for completion and extension of time**

- (a) The Contractor agrees and undertakes to complete the Works in accordance with the terms of the Contract and the Bidding Documents within 6 months from the Commencement Date ("**Completion Date**") subject to Clause 7.2.(b) below.
- (b) In the event that the Contractor is delayed in performing the Works under the Contract solely as a result of:
  - (i) an event of Force Majeure; or
  - (ii) on account of Change in Law; or
  - (iii) breach by the Client of its material obligations herein,



then the Contractor shall issue a written notice to the Client and the Project Manager promptly upon occurrence of any of the events specified above indicating the reasons for the delay, the additional time required by the Contractor to complete the Works and the corrective action already undertaken or to be undertaken. The Client upon receipt of notice from the Contractor shall determine the time period for extension and whether such extension shall take place retrospectively or prospectively. Provided that, the Contractor shall be solely responsible for all costs and risks on account of such extension of time.

- (c) The Parties agree that any extension of time shall only be considered when work on the critical path of the program for the Works is affected. It shall be the duty of the Contractor at all times to use all reasonable endeavors to prevent any delay being caused by any of the events or circumstances mentioned in this Clause 7.2, to minimize any such delay as may be caused thereby, and to do all that may be reasonably required, to the satisfaction of the Client, to proceed with the Works.

### **7.3. Notice of Claim**

- (a) Except where otherwise specifically provided in the Contract, the Contractor shall submit to the Client and the Project Manager a notice of a claim for an extension of the Completion Date, together with particulars of the event or circumstance justifying such extension, as soon as reasonably practicable, after the commencement of such event or circumstance. Such notice provided by the Contractor to the Client and Project Manager shall include:
  - (i) the material circumstances of the event including the cause or causes;
  - (ii) the nature and extent of any delay;
  - (iii) the corrective action already undertaken or to be undertaken;
  - (iv) the period of any extension of time required for each component of the Works, so effected (as applicable); and
  - (v) a statement that it is a notice pursuant to this Clause 7.3.
- (b) The Contractor shall ensure that the particulars provided to the Client and Project Manager under this Clause 7.3 are kept up to date and shall continuously submit such further particulars as may be necessary or which may be requested by the Client, from time to time.

### **7.4. Minimize Delay**

The Contractor shall, at all times, use its reasonable endeavor's to minimize any delay in the performance of its obligations under the Contract.

### **7.5. Concurrent Delays**

If there are concurrent causes of delay and both delays would entitle the Contractor to an extension of time under this Clause 7.5., then, to the extent of that concurrency, the Contractor shall only be entitled to claim an extension of time for that cause of delay which would entitle it to the longer period of extension.

### **7.6. Rate of progress**

If for any reason, which does not entitle the Contractor to an extension of time, the rate of progress of the Works is at any time, in the opinion of the Client and/or the Project Manager, too slow to ensure completion of the Works within the time period specified in Clause 7.2., the Client shall notify the Contractor in writing and the Contractor shall promptly take all steps as are necessary and the Client may approve to expedite progress so as to complete the Works or such section by the prescribed time or extended time. The Contractor shall not be entitled to any additional payment for taking such steps.

## **8. MATERIALS AND WORKMANSHIP**

### **8.1. Quality of Materials and workmanship and tests**

All Materials and workmanship shall be as described in the Contract and in accordance with the Client's instructions and shall be subject from time to time to such tests as the Client may direct.

### **8.2. Quality Assurance Programme**

The Contractor before the start of Works shall submit for approval a quality assurance programme to the Client indicating measures that it proposes to implement to ensure that the quality of Works shall be in accordance with requirements laid down in the Contract ("**Quality Assurance Programme**"). The Client and/or Project Manager may add such additional quality assurance measures as it considers appropriate for ensuring quality compliance of the Works. The Contractor shall strictly adhere to this programme and any failure attributable to the Contractor shall attract the penal provisions laid down in the Contract.

### **8.3. Cost of samples/ Mock-ups / Tests**

- (a) All samples/mock-ups shall be supplied by the Contractor at its own cost if the supply thereof is clearly intended by or provided for in the Contract.
- (b) The Contractor shall provide samples for the approval of Client and shall provide alternative samples until the approval of the Client has been obtained. Samples approved by the Client shall be kept at Site under custody of the Contractor until completion of the Project.
- (c) The cost of conducting any test shall be borne by the Contractor if such test is clearly intended by or provided for in the Contract and in the cases only of a test under load or of a test to ascertain whether the design of any finished or partially finished work is appropriate for the purposes which it was intended to fulfill, is particularized in the Contract in sufficient detail to enable the Contractor to price or allow for the same in its tender.
- (d) The Contractor shall provide normal testing facilities at Site at its cost as directed by the Client and/or the Project Manager.

### **8.4. Inspection of Works**

The Client and the Project Manager or any person authorized by them shall at all times have access to the Works and to all workshops and places where Works are being prepared or from where Materials, manufactured articles or machinery are being obtained for the Works and the Contractor shall afford every facility for and every assistance in or in obtaining the right to such access.

### **8.5. List of approved brand and makes**

A list of approved brands and makes for Materials to be incorporated in the Works should be furnished by the bidder along with its tender. The Contractor shall submit samples of processed raw materials and Materials procured in conformity with Prudent Industry Practices for the approval of the Client and/or the

Project Manager. Procurement of the Materials for the Works shall be after the approval of the Client and/or the Project Manager in writing.

**8.6. Basic Prices**

Basic price shall mean the cost of the Material per unit inclusive of all Taxes and duties, cost of transportation, loading, unloading, breakage, incidental charges, etc. All costs and expenses shall be deemed to be included in item rate quoted by the Contractor for that relevant item and shall not be entitled to claim any extra amounts on this basis. Goods and service tax, if applicable, in performance of the Works shall be calculated and shown separately in the Bidding Documents. The Contractor must provide break-up of all the tax components as applicable separately from the basic price.

**8.7. Removal of improper Materials**

The Client shall during the progress of the Works has power to order in writing from time to time:

- (a) the removal from the Site, within such time or times as may be specified in the order, of any Materials, which, in the opinion of the Client, are not in accordance with the Contract or otherwise not fit for use in respect of the Works;
- (b) the substitution of proper and suitable Materials and;
- (c) the proper re-execution of any Works which in respect of Materials or workmanship is not in accordance with the Contract.

**8.8. Default of Contractor in compliance**

In case of default on the part of the Contractor in carrying out such order, the Client shall be entitled to engage and pay other persons to carry out the same and all expenses consequent thereon or incidental thereto shall be recoverable from the Contractor by the Client or may be deducted by the Client from any monies due to or which may become due to the Contractor.

**8.9. Quality Control Tests**

The Contractor shall perform the relevant tests as required under the scope of Works. The cost of all such tests so performed shall be borne by the Contractor and no extra amounts shall be borne by the Client on this account. The details of the quality tests to be carried out shall be as set out in Technical Specifications or notified by the Client and/or Project Manager.

**9. PERFORMANCE PARAMETERS**

**9.1. Tests**

The tests shall be conducted by the Contractor in the presence of the Client and/or the Project Manager in accordance with the testing procedures set out in **Schedule VIII** to the Contract, so as to ensure the operation of the New admin. & Engg. Block as an integrated whole to establish the Performance Parameters.

**9.2. Performance Tests**

The performance tests shall be conducted by the Contractor in the presence of the Client and/or the Project Manager in accordance with the performance testing procedures to the Contract, so as to ensure the operation of the New admin. & Engg. Block as an integrated whole to establish the Performance Parameters.

**9.3. Attainment of Performance Parameters**

The Contractor guarantees that during the performance tests, the New admin. & Engg. Block and all parts thereof, shall attain the Performance Parameters, subject to and upon the conditions specified herein.

**9.4. Consequences of Performance Parameters Not Being Met**

Subject to Clauses 9.1 and 9.2, if pursuant to conducting the tests and performance tests, the Performance Parameters are not met, either in whole or in part, the Contractor shall, at its cost and expense, make such changes, modifications and/or additions to the New admin. & Engg. Block, or any part thereof, as may be necessary to meet the Performance Parameters to the satisfaction of the Client. The Contractor shall notify the Client upon completion of the necessary changes, modifications and/or additions, carried out in accordance with this Clause 9.4, and shall request the Client to facilitate the repetition of the performance tests until the Performance Parameters have been met. If the Performance Parameters are not met, either in the whole or in part, even after 2 (two) such re-tests (after carrying out necessary changes, modifications, and/or additions), and the cap for the liquidated damages as provided in Clause 10.2. has been reached, then the Client may, at its sole discretion, exercise any one of the following options:

- (a) reject the New admin. & Engg. Block, and recover all the payments already made to the Contractor in terms of the Contract;
- (b) terminate the Contract and find a replacement contractor for undertaking the Works at the cost and risk of the Contract; or
- (c) accept the deficient Works and proportionately reduce the Contract Price to reflect the diminished value to the Client, and such reduction shall be determined by the Client. The Client shall deduct from the Contract Price, the amounts payable for the defects in New admin. & Engg. Block and the Contractor shall proceed in accordance with all other obligations under the Contract.

**9.5. Liquidated Damages and Termination**

If the total amount of liquidated damages for shortfall in performance exceeds the amount of liquidated damages specified in Clause 10, the Client shall have the right to either:

- (a) reject the Works and recover all the payment already made to the Contractor in terms of the Contract; or
- (b) terminate the Contract pursuant to Clause 34 of the Contract.

**10. LIQUIDATED DAMAGES**

**10.1. Liquidated Damages for Shortfall in Performance of the Works**

The Contractor shall pay the liquidated damages as set forth in this Clause 10.1, if the New admin. & Engg. Block, or any part thereof, fails to meet:

**10.2. Liquidated Damages for Delay**

- (a) If the Contractor fails to achieve completion of the Works on or before the expiry of the Completion Date, then the Contractor shall pay to the Client [1% (one percent)] of the Contract Price per week subject to maximum of [5% (five per cent)] of the total Contract Price as liquidated damages for every week or part thereof which shall elapse between the Final Completion and the date of issuance of the Final Acceptance Certificate. The Client may, without prejudice to any other method of recovery, deduct the amount of such damages from any monies in its hands, due or which may become due to the Contractor. The payment or deduction of such damages shall not relieve the Contractor from its obligation to complete the Works or from any other of its obligations and liabilities under the Contract.
- (b) The Contractor recognizes and acknowledges that the Client would suffer substantial losses and damage if there is a delay in the completion of the Works.
- (c) The payment of liquidated damages for delay under this Clause is in addition to, and without prejudice to, any other remedies that may be available to the Client under the Contract or Applicable Law.
- (d) Without prejudice to any other rights the Client may have, the Client shall have the right to reject the Works if the quality of the Works does not meet the Technical Specifications set out in **Schedule X** and the Contractor is unable to correct the deficiencies in Works within [5 (five) days] of being asked to by the Client.

### 10.3. **Genuine Pre-estimate**

The Parties acknowledge that the damages, losses and costs incurred by the Client for delay in achieving completion of the Works by the Completion Date and for shortfall in performance are uncertain and difficult to determine with precision at the date of signing the Contract. The sums for liquidated damages for delay and liquidated damages for shortfall in performance as set out in this Clause 10.3 represent a reasonable, genuine and appropriate pre-estimate of the damages, losses and costs likely to be suffered by the Client if the delay or the shortfall in performance described in this Clause 10 occurs and are calculated as a best efforts attempt to quantify the Client's actual losses, costs and damages associated with such delay and shortfall in performance. The amounts due under this Clause 10.3, as liquidated damages, shall be payable by the Contractor, without any requirement of proof of the actual loss or damage caused by such delay and/or breach. The sums set out in this Clause 10 seek to limit the potential liability of the Contractor and constitute liquidated damages and not a penalty.

### 10.4. **Contractor's Obligations**

The payment of liquidated damages by the Contractor in terms of Clause 10.3, does not in any way relieve the Contractor from any of its duties, obligations and responsibilities under the Contract and shall be without prejudice to any other rights available to the Client under the Contract.

### 10.5. **Rights at Law**

If this Clause 10 (or any part hereof) is found for any reason to be void, invalid or otherwise in-operative so as to disentitle the Client from claiming liquidated damages, the Client is entitled to claim, damages in accordance with Applicable Law for the Contractor's delays or shortfall in performance of the Works for the New admin. & Engg. Block.

## 11. **COMPLETION AND ACCEPTANCE OF WORKS**

- 11.1. **Completion** The Works shall achieve completion, when each of the following has been completed to the Client's satisfaction ("**Completion**"):

- (i) the New admin. & Engg. Block is functional in accordance with the requirements of the Contract, and the tests have been successfully completed in accordance with Clause 9.1.;
  - (ii) the Contractor has complied with all provisions of the Contract relating to the Works;
  - (iii) the Contractor has performed all its obligations and provided to the Client all Documents, that are due on or prior to the Completion Date, in accordance with the terms of the Contract; and
  - (iv) the Contractor has delivered to Client, the notice of completion: (a) certifying that all the conditions stated in this Clause 11.1 have been fully satisfied; and (b) accompanied by a report of results of the tests and the Works completed with sufficient detail to enable the Client to determine whether Completion has been achieved ("**Notice of Completion**"). Provided, however, that if Client subsequently raises an objection to such Notice of Completion in accordance with Clause 11.1.(c), such notice will not be deemed to be delivered until any such objection is satisfied.
- (a) Upon the Client and Project Manager being satisfied of completion with the Contractor set out in Clause 11.1.(a) above, they shall issue the completion certificate in a form and manner set out in **Schedule XI ("Completion Certificate")**.
  - (b) Within 30 (thirty) days of receipt of the Notice of Completion, the Client shall notify the Contractor, of deficiencies and defects, if any, in relation to satisfying the provisions of Clause 11.1.(a) ("**Defects Notice**"). The Contractor shall, promptly upon receipt of the Defects Notice, perform at the Contractor's sole cost and expense, corrective measures to remove such deficiencies and shall deliver to the Client, a new Notice of Completion when completion of the applicable Works has been completed.
  - (c) Within 30 (thirty) days of receipt of the subsequent Notice of Completion, the Client shall notify the Contractor of additional or remaining deficiencies, if any, that must be corrected by Contractor as a condition to the Completion. Any Disputes regarding the existence or correction of any such alleged deficiencies shall be resolved pursuant to Clause 35 (Dispute Resolution).
  - (d) For the avoidance of any doubt, it is clarified that the issuance of the Completion Certificate by the Client shall in no way relieve the Contractor of its other obligations under the terms and conditions of the Contract or give rise to any liabilities for the Client.

#### 11.2. **Provisional Acceptance**

- (a) The New admin. & Engg. Block shall achieve provisional acceptance, when each of the following has been completed to Client's satisfaction ("**Provisional Acceptance**"):
  - (i) the Contractor has achieved Completion (Clause 11.1);
  - (ii) the Contractor has performed all its obligations under the Contract required to be performed;
  - (iii) the Contractor has successfully completed the tests required to ensure that the Works are reliable;
  - (iv) the Contractor has obtained the Occupancy Certificate for the New admin. & Engg. Block;

- (v) the Contractor has removed from the Site, all scaffolding, rubbish, etc., and has cleaned the Site off all debris;
- (vi) Client has received copies of all permits obtained by the Contractor required for the Works;
- (vii) the Contractor has submitted all Documents (including the as-built plans pursuant to Clause 5.19 and Clause 14, and all other items and deliverables required to be submitted by the Contractor under the Contract;
- (viii) the New admin. & Engg. Block is capable of being operated in accordance with Prudent Industry Practices;
- (ix) the New admin. & Engg. Block is capable of being operated in accordance with Applicable Laws;
- (x) the Client has received copies of all permits obtained by the Contractor pursuant to Clause 5.29.(c);
- (xi) all Works have been completed to the satisfaction of the Client; and
- (xii) no default pursuant to Clause 11.1.(c) exists.

The Contractor shall deliver to the Client, a notice of provisional acceptance, certifying that all the conditions set forth in this Clause 11.2.(a) have been fully satisfied, accompanied by a report of the Works completed with sufficient detail to enable the Client to determine whether Provisional Acceptance Certificate should be issued ("**Notice of Provisional Acceptance**").

- (b) Upon the Client and Project Manager being satisfied of completion with the Contractor set out in Clause 11.2.(a) above, they shall issue the provisional acceptance certificate in a form and manner set out in **Schedule XII ("Provisional Acceptance Certificate")**.
- (c) Within [30 (thirty) days] of receipt of the Notice of Provisional Acceptance, the Client and/or the Project Manager shall notify the Contractor, of deficiencies, if any, in relation to satisfying the provisions of Clause 11.2.(a) ("**Provisional Defects Notice**"). The Contractor shall promptly upon receipt of the Provisional Defects Notice, perform at Contractor's sole cost and expense, corrective measures to remove such deficiency and shall deliver to Client a new Notice of Provisional Acceptance when completion of the applicable Works has been completed. Within [30 (thirty) days] of receipt of the subsequent Notice of Provisional Acceptance, Client and/or Project Manager shall notify Contractor of additional or remaining deficiencies, if any, that must be corrected by Contractor as a condition to the issuance of the Provisional Acceptance Certificate. Any Disputes regarding the existence or correction of any such alleged deficiencies shall be resolved pursuant to Clause 35 (Dispute Resolution).
- (d) In the event the items stated under Clause 11.2(a)(v) have not been removed within [30 (thirty) days] of the issuance of the Provisional Acceptance Certificate, the Client may sell or otherwise dispose of the same. The Client shall be entitled to be paid the costs incurred in connection with, or attributable to, such sale or disposal and restoring the Site. Any balance of monies from the sale shall be paid to the Contractor.

- (e) The issuance of the Provisional Acceptance Certificate by the Client and/or Project Manager shall in no way relieve the Contractor of its other obligations under the terms and conditions of the Contract or give rise to any liabilities for the Client.

### 11.3. Final Acceptance Certificate and Final Completion

- (a) The New admin. & Engg. Block shall achieve final completion, when each of the following has been completed to Client's satisfaction and the Contractor has performed all other obligations under the Contract, which are required to be performed prior to the issuance of the Final Acceptance Certificate ("**Final Completion**"):
  - (i) the Contractor has achieved Provisional Acceptance;
  - (ii) the Contractor has executed Works to the sole satisfaction of the Client;
  - (iii) the Contractor has paid all liquidated damages, indemnity sums and other payments due from the Contractor under the Contract;
  - (iv) the Contractor has assigned to the Client or provided Client with all warranties or guarantees that Contractor has received from Sub-Contractors to the extent Contractor is obligated to do so pursuant to the Contract;
  - (v) all Contractor's Materials and other supplies, equipment, surplus, waste, huts, wreckage, debris, rubbish, and temporary facilities to which Client does not, and is not entitled to hold title, have been removed from the Site, and the Site have been restored in accordance with the terms of the Contract provided that, all activities in relation to clearing and disposal shall be conducted in accordance with all Applicable Laws;
  - (vi) all the Contractor's Personnel and the personnel of the Sub-Contractors and their personnel, have been removed from the Site;
  - (vii) all Sub-Contractors have been paid their dues by the Contractor and Contractor has delivered the final release and waiver of Liens and claims pursuant to the Contract and has delivered such other documents and certificates as Client has reasonably requested to ensure compliance with all Applicable Laws;
  - (viii) all activities required as per Applicable Law on account of the completion of the Works have been completed by the Contractor;
  - (ix) the Contractor has delivered to Client a notice of final completion: (a) certifying that all the conditions set forth in this Clause 11.3.(a) have been fully satisfied; and (b) accompanied by a report of the Works completed with sufficient detail to enable the Client to determine whether Final Completion has been achieved ("**Notice of Final Completion**"). Provided, however, that if the Client subsequently raises an objection to such notice in accordance with Clause 11.3(c), such Notice of Final Completion will not be deemed to be delivered until any such objection is satisfied.
- (b) Upon the Client and Project Manager being satisfied of completion with the Contractor set out in Clause 11.3.(a) above, they shall issue the final acceptance certificate in a form and manner set out in **Schedule XIII ("Final Acceptance Certificate")**.



- (c) Within [30 (thirty) days] after receipt of the Notice of Final Completion, the Client and/or the Project Manager shall notify the Contractor, of deficiencies, if any, in relation to satisfying the provisions of Clause 11.3.(a) ("**Acceptance Defects Notice**"). The Contractor shall promptly upon receipt of the Acceptance Defects Notice perform at Contractor's sole cost and expense, corrective measures to remove such deficiency and shall deliver to Client, a new Notice of Final Completion when completion of the applicable Works has been completed. Within [30 (thirty) days] of receipt of the subsequent Notice of Final Completion, Client and/or the Project Manager shall notify Contractor of additional or remaining deficiencies, if any, that must be corrected by Contractor as a condition to the Final Completion. Any Disputes regarding the existence or correction of any such alleged deficiencies shall be resolved pursuant to Clause 35 (Dispute Resolution).
- (d) Without prejudice to Clause 11.3.(a), additional conditions may be agreed to between the Client and the Contractor, as conditions for issuance of the Final Acceptance Certificate.
- (e) For the avoidance of any doubt, it is clarified that the issuance of the Final Acceptance Certificate by the Client shall in no way relieve the Contractor of its other obligations under the terms and conditions of the Contract or give rise to any liabilities for the Client.

#### 11.4. **Take Over**

- (a) Upon the issuance of the Final Acceptance Certificate, the Contractor shall handover to the Client and the Client shall take possession and control of the New admin. & Engg. Block ("**Take Over**") and shall issue to the Contractor, a take over certificate in a form and manner set out in "**Take Over Certificate**". Upon such Take Over, the Client shall, except as otherwise provided, be responsible for the risk of loss or damage to the New admin. & Engg. Block.
- (b) Prior to the possession and control of the New admin. & Engg. Block being handed to the Client in terms of this Clause 11.4, the Contractor shall be responsible and take care of the New admin. & Engg. Block/ Project in a manner consistent with Applicable Laws, Prudent Industry Practice and the other requirements set forth in the Contract. The transition of such possession and control of the New admin. & Engg. Block from Contractor to Client as set forth in this Clause 11.4 shall be accomplished in accordance with the procedures to be set forth in a transition plan to be submitted by Contractor (in a form acceptable to the Client) to the Client, for its approval, no later than [15 (fifteen) days prior] to the anticipated date of Final Completion.

## 12. **PROJECT MANAGER**

12.1. The Contractor acknowledges and agrees that the Client has appointed the Project Manager for the supervision and management of the Works to be undertaken by the Contractor and ensure completion of Works in the time period specified under Clause 7. The Contractor shall coordinate with the Project Manager while carrying out the Works. The Contractor acknowledges and agrees that any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by the Project Manager shall have the same effect as though the act had been an act of the Client. However:

- (a) it shall not relieve the Contractor from any responsibility it has under the Contract, including responsibility for errors, omissions, discrepancies and non-compliances;

- (b) any failure to disapprove any Works, Contractor's Equipment or Materials shall not constitute approval, and shall therefore not prejudice the right of the Client to reject the Works, Contractor's Equipment or Materials; and
  - (c) if the Contractor questions any determination or instruction of the Project Manager, the Contractor may refer the matter to the Client, who shall promptly confirm, reverse or vary the determination or instruction.
- 12.2. The Project Manager may issue to the Contractor instructions which may be necessary for the Contractor to perform its obligations under the Contract. Each instruction shall be given in writing and shall state the obligations to which it relates and the sub-clause (or other term of the Contract) in which the obligations are specified.
- 12.3. The Contractor shall comply with instructions from the Project Manager, or from the Client, including but not limited to:
- (a) inspect and examine the Works before covering up and generate quality report;
  - (b) certification of bills in the manner satisfactory to the Client; and
  - (c) inspect and approve the mock-ups, quality of Materials and workmanship.

Notwithstanding any of the above, the Project Manager and the Architect shall, without prejudice, perform actions and deeds as also listed elsewhere in the Contract or in the agreement for appointment of the Project Manager by the Client.

- 12.4. The Project Manager shall be at liberty to object to and require the Contractor to remove forthwith from the Site engaged in the undertaking of Works any person provided by the Contractor who, in the opinion of the Project Manager, misconducts himself, or is incompetent or negligent in the proper performance of its duties, or whose presence on Site is otherwise considered by the Project Manager to be undesirable, and such person shall not be again allowed upon the Works without the consent of the Project Manager. Any person so removed from the Site for the performance of the Works shall be replaced as soon as possible.

### 13. **ARCHITECT**

- 13.1. The Client has appointed an architect for the purposes of designing the New admin. & Engg. Block ("**Architect**"). The Contractor shall co-operate and coordinate with the Architect and the Client to ensure that the Works are completed in accordance with the provisions of the design of the Architect as supplied to the Contractor as part of the Technical Specifications.
- 13.2. The Architect may shall depute a representative at the Site for performing the duties and obligations of the Architect specified herein and as set out in the agreement entered into between the Architect and the Client.
- 13.3. The Contractor acknowledges and confirms that the Architect or any representative of the Architect shall be entitled to inter alia the following items:
- (a) give instructions to the Contractor in matters pertaining to the design, Drawings and specifications and completion of the Works; and

- (b) give notice to the Contractor of non-approval of any Works or Materials, and such Works shall be suspended or the use of such materials shall be discontinued until the decision of the Client, but such examination shall not in any way exonerate the Contractor from the obligation to remedy any defects which may be found to exist at any stage of the Works or after the same is completed.
- 13.4. The Contractor shall provide the Architect access to the Site to inspect the Works and provide every facility and assistance for inspecting the Works.

## **14. DOCUMENTS**

### **14.1. Documents Schedule**

The Contractor shall, in accordance with the timelines specified in the Technical Specifications, provide to the Client a complete list of all Documents, which shall be utilized by the Contractor for the purpose of completion of the Works. The said list of Documents shall clearly indicate the Document number in accordance with the codes, title, revision number, and issue number in accordance with Prudent Industry Practice together with the date on which such Document has been issued. Further, Drawings in relation to the layout of the New admin. & Engg. Block shall clearly provide for the north direction and shall depict grid lines at the scale of [ ] meters which lines shall be submitted after a detailed survey carried out by the Contractor. The Contractor shall, if required by the Client, submit a revised schedule of the said Documents, till such time that all Works in relation to the fabrication of the New admin. & Engg. Block are completed by the Contractor. The Contractor shall, at its own cost, supply reduced size prints of all Documents, as and when required by the Client.

### **14.2. Specification and Data Sheets**

The Contractor shall, within the time specified in the Technical Specifications, submit to the Client, an updated list of all specifications and data sheets required for undertaking the Works. The said data sheets shall indicate the account number, title, revision number and date of issuance of such sheets, so that an updated summary of the latest specifications, is at all times available with the Client, for reference. The procedure for the submission of revisions, if any to the said data sheets shall be as per the procedure set out for the revision of Documents pursuant to this Clause 14.2.

### **14.3. As-Built Plans**

- (a) The Contractor shall prepare and maintain an updated and complete set of as-built records of the New admin. & Engg. Block, identifying the precise as built locations, sizes and details of the Works executed. The Contractor shall ensure that all such records are maintained at the Site and shall be exclusively used for the purpose of the Contract.
- (b) The Contractor shall, in accordance with this Clause 14, submit to the Client, for its review and comments, (along with the other Documents), plans of the Works for the New admin. & Engg. Block, depicting all executed Works. If any errors are found in the as-built plans, such errors shall be corrected at the Contractor's cost and expense. Unless otherwise provided, as-built plans of the New admin. & Engg. Block and related documents submitted by the Contractor for review under this Clause 14.3.(b) shall be reviewed within 15 (fifteen) days from the date of submission to the Client. If the Client does not provide any comments on the Documents submitted by the Contractor within such 15 (fifteen) days review period then it would be deemed that the Client has no comments on the said as-built plans.
- (c) The Contractor shall submit 2 (two) copies of the as-built records to the Client. Further, upon completion of the STP phase of the New admin. & Engg. Block, the Contractor shall complete the

related plans in relation to the as-built stage (excluding all vendor drawings) and submit to the Client the following:

- (i) [3 (three)] complete sets of all Documents on compact disc or other acceptable electromagnetic or electronic media, as may be required by the Client;
  - (ii) [5 (five)] complete sets of full size prints of the Documents;
  - (iii) [5 (five)] complete sets of data books specifying all details of the New admin. & Engg. Block in hard binders including certified prints and data for specialty materials to be provided under the Contract. All data books provided by the Contractor under this Clause shall be complete with index for tag numbers associated with the manufacture's data. Data books shall be bound in volumes, limited to a maximum of 3 (three) inches in thickness;
  - (iv) [3 (three)] sets of as-built data filled in computer data entry forms; and
  - (v) [3 (three)] copies of all the Documents information in the form of compact disc or other acceptable electromagnetic or electronic media, as may be required by the Client.
- (d) Provided that, in the event the Contractor designs the soft copies, it shall also provide a copy of that version along with its complete documentation. The Contractor shall, [15 (fifteen)] days prior to the issuance of the Final Acceptance Certificate, submit [5 (five)] sets of hard copy outputs of all the Documents to the Client.

#### 14.4. **Data**

- (a) The Contractor shall, in accordance with the timelines specified in the Technical Specifications provide such other structural drawings, instruction systems descriptions, Documents and Drawing indexes, computer control keys, computer programs, passwords and all other related data for the New admin. & Engg. Block containing the information necessary to enable the Client to use the New admin. & Engg. Block in accordance with Applicable Law.
- (b) The Contractor shall, in accordance with the timelines specified in the Technical Specifications provide the Client with data books, vendor prints, complete Drawing lists, descriptions of the New admin. & Engg. Block and other specific information on the New admin. & Engg. Block.

#### 14.5. **Review of Documents by the Client and/or the Project Manager**

- (a) The Contractor shall provide to the Client, free of cost, all Documents in accordance with the Technical Specifications and Applicable Law. All Documents submitted by the Contractor shall be written in English language. The Contractor shall prepare all the Documents, and shall also prepare any other documents that are necessary so as to instruct the Contractor's personnel with regard to the completion of the Works.
- (b) The review of Documents by the Client shall cover only general conformity of the Documents to the Technical Specifications, interfaces with the specification of the New admin. & Engg. Block provided under the Technical Specifications, external connections and of the dimensions which may affect the layout of the New admin. & Engg. Block.
- (c) This review by the Client may not indicate a thorough review of all dimensions, quantities and details of the New admin. & Engg. Block, any devices or items indicated or the accuracy of the information submitted. This review by the Client shall not be construed by the Contractor, as limiting any of its responsibilities and liabilities for mistakes and deviations from the

requirements, specified under the Technical Specifications and the Contract. Any activity forming part of the Documents not particularly described in the Contract shall also be included in the obligations of the Contractor and the omission from the Documents of such activity necessary and obviously intended shall not relieve the Contractor from performing such activity. For the avoidance of doubt, it is clarified that Contractor shall await the expiry of the period specified in Clause 14.2 during which the Client is required to review the Documents, prior to commencing the related Works, and if the Contractor executes the related Works prior to the expiry of such period of the Documents, the same shall be at the sole risk and cost of the Contractor.

#### 14.6. **Mode of Submission**

- (a) Unless otherwise provided or agreed to by the Client, the Contractor shall, in accordance with the timelines specified in the Contract, submit to the Client, all Documents specified in the Contract, as being required to be submitted for the review by the Client, along with a notice as specified below.
- (b) The Documents to be submitted by the Contractor in accordance with this Clause 14.6 shall be submitted:
  - (i) in 2 (two) sets of soft copy using an internationally recognized web-based document viewing system, acceptable to the Client, linking the Client, the Contractor and the Sub-Contractors and [4 (four)] sets of hard copy;
  - (ii) along with a notice which shall state that the said Document is considered ready for both, (i) review by the Client in accordance with this Clause 14.2, and (ii) for use. The notice to be submitted by the Contractor shall also state that the said Document complies with the provisions of the Contract, or, if applicable, the extent to which it does not comply.
- (c) Without prejudice to the above, any Document, when issued to the Client, shall clearly evidence on such Document itself, the prior approval of the Contractor with respect to such Document. The Client may reject, without further review, any Document submitted by the Contractor, which in the opinion of the Client (i) has not been subjected to the Contractor's quality assurance system submitted pursuant to Clause 9.2; or (ii) contains an unusual amount of errors or (iii) is otherwise sub-standard.
- (d) Notwithstanding review by the Client of the Documents to be submitted by the Contractor pursuant to this Clause 14.2, the Contractor shall continue to be responsible for any errors, omissions or discrepancies therein. The Contractor shall bear any costs as a result of delay in providing such Documents or as a result of errors, omissions or discrepancies therein. The Contractor shall bear the cost of any alterations or remedial work necessary due to such errors, omissions or discrepancies for which the Contractor is responsible and shall modify the Documents accordingly. The performance of its obligations under this Clause 14.2 shall not relieve the Contractor of liability for delay in the completion of the Works under the Contract.
- (e) Unless otherwise provided in the Technical Specifications or the Contract, Documents submitted by the Contractor for review, shall be reviewed within 14 (fourteen) days from the date of submission of the respective Document along with the notice specified in Clause 10.2(b), to the Client. If the Client fails to intimate the Contractor with regard to its decision on a Document, within the 14 (fourteen) day period specified in this Clause 14.2, then, such Document shall be deemed to have been reviewed by the Client. The Contractor shall, within 5 (five) days of intimation from the Client with regard to the review of the Documents, or a deemed review of such Document in accordance with this Clause 14.6., as the case may be, submit 6 (six) hard copies

and 6 (six) soft copies in electronic form (in compact discs). Any Documents submitted by the Contractor, if in electronic form, shall be in a format acceptable to the Client.

**14.7. Correction of Documents**

- (a) Without prejudice to Clause 14.3.(b), the Client may, at any time during the 15 (fifteen) day period specified in Clause 14.3, provide a notice to the Contractor that a Document has failed (to the extent stated) to comply with the provisions of the Contract. Upon receipt of a notice from the Client in terms of this Clause 14.7, the Contractor shall, at its own cost, promptly and in any case no later than 15 (fifteen) days from the receipt such notice, rectify the said Document and resubmit the same for the approval of the Client.
- (b) Unless otherwise provided, if any of the information submitted to the Client, in the Documents is substantially in variance with the Technical Specifications, which in the opinion of the Client is unacceptable, such Documents shall be returned to the Contractor marked "**Rejected**" and the Contractor shall re-submit the said Documents. For the avoidance of doubt, it is clarified that no extension of time shall be granted under this Clause 14.7 due to the Documents not being acceptable to the Client, in the first instance. In addition, the Client shall have the right to request the Contractor to make any change in the Documents that may be necessary to make the New admin. & Engg. Block conform to the Technical Specifications and the Contract, at the cost and expense of the Contractor.

**14.8. Responsibility of Documents**

- (a) The Contractor hereby acknowledges that certain identified Documents forming part of the Technical Specifications have, as at the date hereof, been reviewed by the Client and the Contractor shall not, while executing the Works, depart from such Documents, unless consented to in advance by the Client. The Contractor shall be responsible for the accuracy of the Documents and any discrepancies, errors or omissions in the Documents and other particulars supplied by it, regardless of whether such Documents and particulars have been reviewed by the Client. If a Party becomes aware of an error or defect of a technical nature in a Document which was prepared for use, for the purpose of executing the Works, the Party shall promptly give notice to the other Party of such error or defect. If errors, omissions, ambiguities, inconsistencies, inadequacies or other defects are found in any Document provided by the Contractor, such Document, along with the Works corresponding to such Document, shall be corrected at the Contractor's cost and expense, notwithstanding the review by the Client of such Document. If the Documents have been previously reviewed by the Client, the Contractor shall not, during the completion of the Works, depart from the reviewed Documents, unless consented to in advance by Client. Review by the Client shall in no way relieve the Contractor of its obligations under the terms and conditions of the Contract or give rise to any liabilities for the Client.
- (b) The Contractor's obligation to complete the Works shall not be reduced or affected by review of any Documents or specifications by the Client.
- (c) Unless handed over by the Contractor to the Client, in accordance with the provisions of this Clause 14, the Documents shall, at all times, be in the care and custody of the Contractor.

**14.9. Documents and Specifications for Works**

- (a) The Contractor shall, in accordance with the timelines specified in the Technical Specifications, submit to Client, for its review, in accordance with the procedure set out in Clause 14, details of

the process package, layout Documents, detailed Documents, design specifications, detailed calculations and purchase specifications, etc., and any other information required by Client prior to issuing the same for the purpose of construction and development of the New admin. & Engg. Block. Within 7 (seven) days of the review by the Client of the Documents to be submitted in terms of this Clause 14.9.(a), the Contractor shall submit to the Client, Document lists, indicating the date of availability of the latest copy of such Document with date of review by the Client of each such Document released for STP purposes.

- (b) The Contractor shall ensure that all Documents submitted in terms of this Clause 14.9.(b) are made to a reasonable scale and are made in sufficient detail, as mutually agreed between the Parties, and in the event of any non-compliance with the same, necessary changes shall be made by the Contractor, at its own cost.
- (c) Unless the Contractor requests the Client for a specific deviation from the specifications in relation to the Documents submitted pursuant to this Clause 14.9. and the Client issues a written authority to deviate from the said specifications, the submission and correction, if any, of the Documents submitted pursuant to this Clause 14.9.(c), shall not relieve the Contractor of its responsibility to comply with the specifications specified in the Contract.
- (d) The Contractor shall ensure that all Documents to be submitted by it pursuant to this Clause 14 are submitted in accordance with the time lines specified in the Technical Specifications. For the avoidance of doubt, it is clarified that at no given point of time, will the Contractor rely on preliminary drawings for the purpose of construction and development of the New admin. & Engg. Block.
- (e) The Parties shall follow the following procedure in relation to the submission and subsequent review of the Documents submitted under this Clause 14:
  - (i) The Contractor shall submit to the Client, no later than the time specified in the Technical Specifications, copies of all preliminary Drawings and specifications in accordance with the requirements of the Technical Specifications;
  - (ii) The Client shall review the preliminary Drawings submitted in terms of Clause 14 and notify the Contractor, of any comments or suggestions by returning a marked-up print or copy of the said Drawings to the Contractor.
  - (iii) If the Client returns to the Contractor, marked-up Drawings or if the comments on Drawings and specifications are returned pursuant to Clause 14, the Contractor shall, promptly and in any event no later than 7 (seven) days from the receipt of the same, carry out the requisite corrections and obtain the Client's approval in relation to the said corrections, before issuing the same for the purpose of construction and development of the New admin. & Engg. Block.
  - (iv) The Contractor shall not modify any Documents submitted pursuant to this Clause 14 after the same have been reviewed by the Client. Provided that, if the Contractor is desirous of modifying any item issued for the purpose of construction and development of the New admin. & Engg. Block, as depicted on the Documents which have been submitted and reviewed in terms of this Clause 14, it shall submit to the Client the revised Documents and modified prints in relation to the same and follow the procedure set forth in this Clause.

- (f) The procedure stated in this Clause 14 shall apply *mutatis mutandis* to all applicable Documents submitted by the Contractor, during the construction and development of the New admin. & Engg. Block.

## **15. CONTRACTOR TO INFORM ITSELF FULLY**

### **15.1. Information**

- (a) The Contractor shall be responsible for obtaining all information required for the performance of its obligations under the Contract.
- (b) The Contractor has clarified and carefully examined all the Documents, design criteria, calculations, (if any) data, Technical Specifications and such other matters as may be necessary or desirable for performing its obligations under the Contract, to its entire satisfaction. The Contractor shall not, except as expressly provided in the Contract, be entitled to any extension of time or to any adjustment of the Contract Price, on grounds of misinterpretation or misunderstanding of any such matter.
- (c) The Client shall not be responsible for any error, inaccuracy or omission of any kind in the Technical Specifications as originally included in the Contract and shall not be deemed to have given any representation of accuracy or completeness of any data or information. Any data or information received by the Contractor, from the Client or otherwise, shall not relieve the Contractor from its responsibility of completion of the Works.
- (d) The Contractor has, prior to the execution of the Contract Agreement obtained all information and taken into consideration the restrictions imposed by the necessity to coordinate its activities for the New admin. & Engg. Block to be constructed and developed with the mutually agreed times.

### **15.2. Local Conditions**

The Contractor represents that it is fully informed of all general and local conditions near the Site and other factors that may have an effect on the compliance of its obligations under the Contract. The Contractor cannot claim a Change under Clause 22 (Change in Contract Elements), an extension of time or an increase in the Contract Price as a result of such local conditions or factors.

### **15.3. Site and the New admin. & Engg. Block**

- (a) The Contractor represents and confirms that it has entered into the Contract Agreement on the basis of its proper examination of the Site by its checking or carrying out its own investigations as may be required, including the suitability and availability of the access routes thereto and that it is aware about the conditions of the Site and its surroundings and has satisfied itself as to all technical, commercial, social and general conditions of and all circumstances affecting the Site, including the nature of the ground and sub-soil, Site surroundings, environmental aspects, the form and nature of the Site and the exact location and condition, as may be required. In this regard, the Contractor has obtained for itself all information, as may be necessary or desirable for the compliance of its obligations under the Contract, including all necessary information as to the risks, contingencies, climatic, hydrological, natural conditions and all other circumstances which may influence or affect the Contract Price and/or its obligations under the Contract. Further, the Contractor agrees that if during the term of the Contract, any portion of the Site is rendered unsafe, on account of any reason whatsoever (including unfavourable weather), the



Contractor shall restrict the completion of the Works, to such portion of the Site which is safe and not affected by the said contingency. The Contractor represents and confirms that by signing the Contract Agreement, the Contractor accepts total responsibility for having foreseen all difficulties and costs of successfully completing the Works and that the effect of all contingencies have been considered by the Contractor prior to entering into the Contract Agreement and that the Contractor shall not be entitled to extension of time or an increase in the Contract Price on account of the same.

- (b) The Contractor represents and confirms that it has entered into the Contract on the basis of a proper examination of the data relating to the New admin. & Engg. Block on the basis of information that the Contractor could have obtained from a visual inspection of the Site and of other data readily available to it relating to the New admin. & Engg. Block. The Contractor acknowledges that any failure to verify and interpret any data and information in relation to the Site and/or the New admin. & Engg. Block shall not relieve it of its responsibility for properly estimating the difficulty or cost of successfully performing its obligations under the Contract.

## **16. SUB-CONTRACTORS**

### **16.1. Experience**

The Contractor represents that each Sub-Contractor has the requisite skill, expertise, experience, capacity, capability and has successfully executed works similar to the Works, in the immediately preceding [3 (three) years] from the Commencement Date.

### **16.2. List of Sub-Contractors**

A list of all major items and the approved Sub-Contractors for each of such major items has been provided by the Contractor and incorporated in the Technical Specifications. The Client and the Contractor have agreed on a list of approved Sub-Contractors, from the list provided in the Technical Specifications, and the same is set out in **Schedule XV** (Approved List of Sub-Contractors) ("**Approved List**"). The Client, after due consultation and agreement with the Contractor, shall have the right to add or delete from the Approved List, from time to time, and approve any successor or replacement of any person listed on the Approved List.

### **16.3. Sub-Contracting**

With regard to major items, as specified in the Technical Specifications, the Contractor shall, subject to Clause 16.2, only contract with the Sub-Contractors provided in the Approved List. Further, any sub-contracting in terms of this Clause 16.3, shall not relieve or discharge the Contractor from any of its liabilities or obligations under the Contract and the Contractor shall be responsible for the acts, defaults and neglects of all Sub-Contractors and its agents, servants or workmen, or any of them, as fully, as if they were the acts, defaults or neglects of the Contractor under the terms of the Contract and the Client shall not be liable on account of the same. No acts or omissions on the part of any of the Sub-Contractors will allow the Contractor to claim an extension of time, an increase in the Contract Price, or any other dispensation pursuant to the Contract.

### **16.4. Other Sub-Contractors**

If the Contractor intends on contracting with Sub-Contractors, other than those specified in the Approved List, the Contractor shall provide the Client with details in relation to the same. The Client shall, no later

than 10 (ten) days from such additional details being provided by the Contractor, approve or disapprove the same. In the event the Client approves the additional Sub-Contractors in terms of this Clause 16.4, such additional Sub-Contractors shall be deemed to be included in the Approved List. The Client shall also have the right to propose a Sub-Contractor other than those specified in the Approved List and upon mutual agreement with the Contractor in this regard, require the Contractor to contract with such Sub-Contractor. In the event of such mutual agreement, the sub-contractor proposed by the Client shall be deemed to be included in the Approved List. Provided that, any agreement between the Parties in terms of this Clause 13.4 shall not relieve or discharge the Contractor from any of its liabilities or obligations under the Contract and the Contractor shall be responsible for the acts, defaults and neglects of all such Sub-Contractors and its agents, servants or workmen, or any of them, as fully, as if they were the acts, defaults or neglects of the Contractor under the terms of the Contract.

**16.5. Client's Consent**

The Contractor shall not sub-contract the whole of its obligations under the Contract. Notwithstanding the Client's consent to any Sub-Contractor, the Contractor shall at all times remain fully responsible to the Client for the proper performance of its obligations under the Contract. The Client shall, at no given point of time, be considered to have any duties or obligations towards any Sub-Contractor as a result of the Contract or by virtue of providing its consent to the Contractor with respect to a Sub-Contractor. The Contractor shall not be relieved of any obligation or responsibility under the Contract by subcontracting of any portion of the Works to a Sub-Contractor.

**16.6. Copies of Sub-Contracts**

The Contractor shall, upon request, provide to the Client copies of technical ordering specifications and principal commercial terms (un-priced) of the sub-contracts with regard to the major items as identified in the Technical Specifications, to be executed with the Sub-Contractors.

**16.7. Form of Sub-Contracts**

- (a) The Contractor shall ensure that all contracts with its Sub-Contractors are made in writing. The Contractor shall also ensure that each Sub-Contractor includes provisions which will entitle the Contractor to discharge its obligations and liabilities to the Client in terms of the Contract. The Contractor shall further ensure that all contracts with the sub-contractors shall require each Sub-Contractor, to the extent of the Works to be performed by the Sub-Contractor, to be bound by the terms of the Contract and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by the Contract, assumes toward the Client. Each contract with a Sub-Contractor shall preserve and protect the rights of the Client under the Contract with respect to the Works being performed by the Sub-Contractor so that such sub-contracting does not prejudice the rights of the Client.
- (b) Each instrument evidencing any contract with its Sub-Contractors shall provide that, pursuant to its terms, in form and substance satisfactory to the Client, the rights of the Contractor under such contract with its Sub-Contractors (including all warranties provided by the sub-contractor) are assignable to the Client. The Contractor shall assign to the Client, its successors and assigns, any such contract with its Sub-Contractors as may be required by the Client in its sole discretion, prior to the issuance of the Final Acceptance Certificate or following termination of the Contract, as the case may be.

**16.8. Client's Rights**

The Contractor warrants that no arrangement, agreement or understanding with any sub-contractor shall directly or indirectly interfere with, restrict or impede the Client in the exercise of any right or remedy under the Contract.

**16.9. Evidence of Payment**

- (a) The Contractor shall promptly pay all amounts due to any Sub-Contractor. The Contractor shall, by an appropriate agreement with each Sub-Contractor, require each Sub-Contractor to make payments to its sub-contractors, if any, in a timely manner. The Client shall have no obligation to pay or to verify the payment of any monies to any sub-contractor. However, the Client may, at its discretion, verify the payments made by the Contractor to the Sub-Contractors.
- (b) The Contractor shall provide to the Client documentary evidence that the Contractor has made or caused to be made all payments due to its Sub-Contractors and when final payment has been made to the Contractor under the Contract, that the Contractor has made final payment to its Sub-Contractors.

**17. TRANSFER OF OWNERSHIP**

**17.1. Ownership**

The ownership of the New admin. & Engg. Block shall, at all times vest with the Client. Without prejudice to this Clause 17.1, the Contractor shall, until the issuance of the Take Over Certificate, be responsible for the care of the New admin. & Engg. Block, together with the risk of damage thereto. After the issuance of the Take Over Certificate, the Client shall be responsible for the care of the New admin. & Engg. Block, provided that any damage to the New admin. & Engg. Block on account of reasons attributable to the Contractor, shall at all times during the term of the Contract and the expiry of the Defect Liability Period, be to the Contractor's account.

**17.2. Warranty as to Title**

The Contractor warrants that the Contractor's equipment and material shall remain free from defects in title including liens of any kind. The Contractor shall defend the title to the same against any third party and shall indemnify, defend and hold the Client harmless from and against any and all losses arising out of or otherwise resulting from any failure to comply with this Clause 17.2.

**17.3. Ownership of the Contractor's equipment & materials**

The ownership of the Contractor's Equipment, used by the Contractor or its Sub-Contractors, shall at all times remain with the Contractor.

**17.4. Excess Material**

The ownership of any Materials, in excess of the requirements for the New admin. & Engg. Block, as may be determined by the Client and Contractor, shall vest with the Contractor.

**18. REPRESENTATIONS AND WARRANTIES**

**18.1. Contractor's Representations and Warranties**

The Contractor makes the following representations and warranties to the Client, each of which is true and correct as on the date of issuance of Letter of Award which representations and warranties shall continue to be true and correct throughout the term of the Contract:

- (a) it has been incorporated as a company under the Companies Act, [1956/2013], is validly existing and has the power and authority to carry on its business in India;
- (b) it has the power to enter into the Contract and comply with its obligations under it;
- (c) it has in full force and effect the authorizations necessary for it to enter into the Contract and the transactions contemplated under it;
- (d) it has satisfied itself as to the correctness and sufficiency of the Contract Price, which shall, except as otherwise provided for in the Contract, cover all its obligations under the Contract; and
- (e) it and its Sub-Contractors have the requisite knowledge, skill, experience, expertise, capacity and capability to execute the Works in a timely manner and to satisfy and fulfill all their respective obligations and responsibilities under the Contract.

#### 18.2. **Client's Representations and Warranties**

The Client makes the following representations and warranties to the Contractor, each of which is true and correct as on the date of issuance of Letter of Award which representations and warranties shall continue to be true and correct throughout the term of the Contract:

- (a) it has been incorporated as a company under the Companies Act, 2013, is validly existing and has the power and authority to carry on its business in India;
- (b) it has the power to enter into the Contract and comply with its obligations under it;
- (c) it has in full force and effect the authorizations necessary for it to enter into the Contract and the transactions contemplated under it; and
- (d) it shall, with the necessary assistance of the Contractor, as and when required, acquire permits, approvals and/or licenses specified in the Technical Specifications.

### 19. **WARRANTIES**

#### 19.1. **Contractor's Warranties**

The Contractor hereby warrants to the Client that the New admin. & Engg. Block has been and shall have been engineered, designed, tested and the Works shall be executed in a manner consistent with the terms of the Contract, in accordance with Prudent Industry Practices and Applicable Law,

- (a) using the skill, care and diligence to be expected of appropriately qualified and experienced professionals with experience in STP works of a type, nature and complexity similar to the STP in the industry;
- (b) in accordance with good modern engineering principles and of appropriate grade compatible with the intended purpose;
- (c) using only Materials and goods for incorporation into the New admin. & Engg. Block which are new, and do not contain any refurbished components, are free of lien and encumbrances, are unused and the standards of all workmanship, manufacture and fabrication have conformed in all respects to the Technical Specifications, and shall be of such quality as is intended for the purpose for which it is intended;

- (d) using the standards of all workmanship and fabrication which conform in all respects to the Codes and Standards and being of such quality as is intended for the purpose for which it is intended;
- (e) conforming to the Technical Specifications and being free of defects and deficiencies. The engineering and design shall be such that the Works shall meet all safety and applicable criteria as specified in the Contract;
- (f) being suitable for the use in accordance with the requirements necessary to meet the Performance Parameters;
- (g) using means, methods and techniques required for the completion of the Works which are appropriate for the conditions and materials involved and in accordance with the current state of the art; and
- (h) ensuring that the Works when completed will conform in all respects with the requirements of, and will be suitable for, the purpose of the Contract.

#### 19.2. **Other Warranties**

The New admin. & Engg. Block shall:

- (a) upon Final Completion, be in accordance with all requirements of the Contract unless otherwise agreed by the Client, or altered in accordance with a Change in accordance with Clause 22 (Change in Contract Elements) instructed by the Client;
- (b) be capable of being operated in accordance with the requirements of the Contract and Prudent Industry Practices; and
- (c) comply with Applicable Law in effect on the Final Completion Date.

### 20. **INSURANCE**

#### 20.1. **Insurance Policies**

- (a) All insurance policies, whether required to be obtained under this Clause 20 or otherwise, wherever possible shall be taken out in the joint names of the Client, the Contractor and Sub-Contractor, wherever applicable.
- (b) All the insurance shall be arranged by Contractor from a reputable insurance company which can deal with all matters pertaining to the subject and is acceptable to the Client. The Client has reserved its right to nominate the insurance company or take the insurance policies under which the claims will be lodged by the Contractor.
- (c) The Contractor must ensure that the policy amounts cover the Contract Price and adequately cover the maximum possible liability that may arise on the occurrence of the risks covered.
- (d) The Contractor shall deposit the original insurance policy and the premium paid receipts with the Client on the date of issuance of the Letter of Award. If the Contractor fails to procure such policy or deposit the same and the premium receipts in original with the Client, the Client shall be entitled, but not obligated to procure such policy and recover the payments thereon from the Contractor either by withholding the amounts payable to the Contractor or otherwise. Any

deviation from the same shall be subject to the prior written approval of the Client. The Client shall be entitled to prosecute and/ or compromise or settle the claims under such policies in such manner as may be deemed fit without reference to the Contractor. The Contractor shall provide necessary assistance to the Client in this regard.

- (e) The Client, however reserves the right to take all or some of the insurance policies on its own and thereafter the Contractor shall be required to process the claims if any for settlement under the policies so taken by the Client. The Client further reserves its right to nominate an insurance company with whom the Contractor will be required to obtain the policies, insurance of Works, etc.
- (f) Without limiting its obligations and responsibilities, the Contractor shall insure in the joint names of the Client and the Contractor against all loss or damage from whatever cause arising, for which it is responsible under the terms of the Contract and in such manner that the Client and Contractor are covered for the period stipulated in hereof, and are also covered during the Defects Liability Period.
- (g) Such insurance shall be effected with an insurer and in terms approved by the Client which approval shall not be unreasonably withheld, and the Contractor shall, whenever required produce to the Client or its representative the policy or policies of insurance and the receipts for payment of the current premiums.
- (h) The Contractor shall take out a Contractor's all risk insurance policy for the full amount of the Contract Price valid till the expiry of the Defects Liability Period, within 10 (ten) days of the date of issuance of the Letter of Award jointly in the name of the Client and the Contractor and the original policy shall be deposited with the Client.
- (i) The Contractor shall similarly indemnify the Client against all claims, which may be made upon the Client, whether under the Workman's Compensation Act, 1923 or any Applicable Law in force during the currency of the Contract or at common law in respect of any employee of the Contractor or any Sub-Contractor and shall at its own expense effect and maintain up to the Defect Liability Period, with an approved office, a policy of insurance in the joint names of the Client and the Contractor against such risks and deposit such policy or policies with the Client from time to time during the currency of the Contract.

#### 20.2. **Third Party Insurance**

- (a) Before commencing the Works, the Contractor shall insure against loss for any material or physical damage, loss or injury which may occur to any property, including that of the Client, or to any person, including any employee of the Client, the Project Manager, other contractors/ Sub-Contractor(s) or their respective employees, agents, representatives and visitors, by or arising out of the completion of the Works or in the carrying out of the Contract.
- (b) The Contractor shall, whenever required, produce to the Client or its representative the policy or policies of insurance and the receipts for payment of the current premiums.
- (c) The term of such insurance shall be up to the end/ expiry of the Defect Liability Period and shall include for any damage to the properties and/ or injury including death to the persons of the general/ public/ architects and anyone else deemed to be third party.

#### 20.3. **Provisions to indemnify Client**

The terms of such insurance shall include a provision whereby, in the event of any claim in respect of which the Contractor would be entitled to receive and indemnify under the policy being bought or made against the Client, the insurer will indemnify the Client against such claims and any cost, charges and expenses in respect thereof and the Contractor to indemnify the Client for any shortfall in the realization of the claims. The Client shall be entitled to set off any such amounts from the amounts due and payable by it to the Contractor under the terms of the Contract.

**20.4. Accident or Injury to workmen**

The Contractor shall be responsible and liable for or in respect of any damages or compensation payable at law in respect or in consequence of any accident or injury to any workman or other person in the employment of the Contractor or any Sub-Contractor. The Client shall not be liable for or in respect of any damages or compensation payable by law in respect or in consequence of any accident or injury to any workman or other person in the employment of the Contractor or any person working under/with the Contractor. The Contractor shall fully indemnify and keep indemnified the Client against all such damages and compensation, against all claims, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

**20.5. Insurance against accident, etc., to workmen**

- (a) The Contractor shall insure against such liability with an insurer approved by the Client, which approval shall not be unreasonably withheld, and shall continue such insurance during the whole of the time that any persons are employed by it on the Works and shall, when required, produce to the Client or its representative such policy of insurance and the receipt for payment of the current premium. Provided always that, in respect of any persons employed by any Sub-Contractor, the Contractor's obligation to insure as aforesaid under this sub-Clause shall be satisfied if the Sub-Contractor shall have issued against the liability in respect of such persons in such manner that the Client is indemnified under the policy, but the Contractor shall require such Sub-Contractor to produce to the Client or its representative, when required, such policy of insurance and the receipt for the payment of the current premium.
- (b) Notwithstanding the requirements mentioned in the above, the Contractor shall at the minimum provide for Contractor's all risk insurance policy to cover the following:
  - (i) entire Contract Price for the period of completion including Defect Liability Period;
  - (ii) third party insurance to cover for any damages to third party. This shall be up to the end of the Defect Liability Period and shall include for any damage to the properties and/ or injury including death to the persons of the general/ public/ architects and anyone else deemed to be third party;
  - (iii) policy to cover Contractor's liability under Employee's Compensation Act 1923, Minimum Wages Act 1948, Contract Labour (Regulation and Abolition) Act 1970 and other Applicable Laws. This shall be for the period up to issue of the Final Acceptance Certificate, including the Defect Liability Period;
  - (iv) insurance cover against damage, theft or any other loss of all Materials and Contractor's Equipment brought to the Site; and
  - (v) the Contractor shall insure against all such liabilities and shall continue such insurance during the term of the Contract including Defect Liability Period. Premium for all

insurance policies shall be paid and borne by the Contractor and shall not be reimbursable.

- (c) These insurance certificates shall be executed and shall state that the policies cannot be surrendered for 10 (ten) days after written notice of the Client having consented to such surrender.
- (d) The Contractor shall obtain written confirmation of similar certificates from all Sub-Contractors and thereby assume responsibility for any claims or losses to the Client resulting from failure of any of the Sub-Contractors to obtain adequate insurance protection in connection with the Works.
- (e) If the Contractor fails to effect and keep in force the insurances referred to in Clause 20, or any other insurance which it may be required to effect under the terms of the Contract, then and in any such case the Client may effect and keep in force any such insurance and pay such premiums as may be necessary for that purpose and from time to time deduct the amount so paid by the Client as aforesaid from any monies due or which may become due to the Contractor, or recover the same as a debt due from the Contractor.

#### **20.6. Insurance for Contractor's Equipment**

- (a) The Contractor shall insure the Contractor's Equipment against all loss or damage. This insurance shall cover loss or damage from any cause in so far as such insurance is readily obtainable. Such insurance shall be for a limit of not less than the full replacement value (including delivery to the Site). Such insurance shall be in such a manner that each item of Contractor's Equipment is insured while it is being transported to and from the Site or the right of way and throughout the period it is on or near the Site or the right of way.
- (b) The Client shall have no liability for the loss/ damage to the Contractor's Equipment unless such loss or damage are due to reasons attributable to the Client.
- (c) Client shall deduct from any amount due to the Contractor under the Contract entire insurance premium and other costs that the Client shall have paid to the insurer or incurred or may otherwise recover such amount as a debt due from the Contractor.

#### **20.7. Insurance for Contractor's Personnel**

The Contractor shall effect and maintain insurance against liability for claims, Contractor's Personnel damages, losses and expenses (including legal fees and expenses) arising from the death, injury, sickness or disease to any person employed by the Contractor or any Sub-Contractor of all types. The Client and the Client's representatives shall also be indemnified under the policy of insurance, except that this insurance may exclude losses and claims to the extent that they arise from any act or neglect of the Client or of the Client's representative's personnel. For a Sub-Contractor's employees, such insurance may be effected by the Sub-Contractor, but the Contractor shall be responsible for compliance with this Clause.

#### **20.8. General Requirements for Insurance**



- (a) The Contractor shall comply with the conditions stipulated in each of the insurance policies. The Contractor shall not make any adverse material alteration to the terms of any insurance without the prior approval of the Client.
- (b) If the Contractor fails to effect and keep in force any of the insurance required wherever applicable under the Contract, or fails to provide satisfactory evidence policies and receipts in accordance with this sub-Clause, the Client may, without prejudice to any other right or remedy, effect insurance for the coverage relevant to such default, and pay the premiums due. Such payments shall be recoverable from the Party whose obligation it was to effect the insurance.
- (c) Nothing in this Clause limits the obligations, liabilities or responsibilities of the Contractor, under the other terms of the Contract or otherwise. Any amounts not insured or not recovered from the insurers shall be borne by the Contractor in accordance with the Contract.

## 21. DEFECT LIABILITY PERIOD

21.1. **General** During the Defect Liability Period, the Contractor shall remain liable for any technical or other defects in the Works.

- (a) The Defect Liability Period shall be [12 (twelve months)] from the issuance of the Take Over Certificate ("**Defect Liability Period**"). If the Contractor re-performs any of the Works or otherwise makes good the Works (as the Client shall, at its discretion, determine) a defect in terms of this Clause 21.2, then the Defect Liability Period with respect to any such re-performed Works, or Works which have been otherwise made good, shall be a period of [12 (twelve) months] from the date of re-performance of such Works, or the date when such Works, have otherwise been made good, as the case may be. Provided that, the Defect Liability Period pursuant to this Clause 21.2 shall be subject to a maximum period of [30 (thirty) months] from the issuance of the Take Over Certificate. Provided further that, if the Contract is terminated prior to the issuance of the Take Over Certificate, then, the provisions of this Clause 21.2 with respect to the Defect Liability Period for repair, replacement, or otherwise making good shall apply *mutatis mutandis*, and in such an event the Defect Liability Period shall be [12 (twelve) months] from the date of termination.
- (b) If during the Defect Liability Period, any defect is found in the design, construction, or engineering being part of the Works, of the New admin. & Engg. Block, the Contractor shall promptly and in any event no later than [3 (three) days] from the receipt of the notice from the Client in terms of Clause 21.2, commence the correction of any errors, omissions, defects or deficiencies in the Works, re-perform any part of the Works, or repair, replace or otherwise make good (as the Client shall, at its discretion, determine) such defect, in addition to any damage to the New admin. & Engg. Block caused by such deficiency in Works, at the sole risk and expense of the Contractor. Provided that, the Contractor shall not be responsible for the repair, replacement or making good of any defect or of any damage to the New admin. & Engg. Block arising out of or resulting from normal wear and tear.
- (c) The Contractor shall perform all remedial action and re-perform any part of the Works required in such a manner and at such time, and shall co-ordinate its activities in connection therewith as notified by the Client in this regard.
- (d) The Contractor shall in re-performing the Works or undertaking any repair/ replacement under this Clause 21, which could affect the safe and effective use of the New admin. & Engg. Block or any part

thereof, observe all requirement of the Client and the Project Manager with regard to safe and effective use or operation thereof.

- (e) During the Defect Liability Period, any re-design, repair or replacement of any part of the New admin. & Engg. Block requiring the New admin. & Engg. Block to be shut-down, shall be undertaken in coordination with Client so as to minimize disruption of the ongoing operations of the New admin. & Engg. Block. Such re-design, repair or replacement may, at Client's option, require Works to be carried out at the Site by the Contractor's personnel, beyond the normal working hours, including weekends and public holidays. All costs required for the performance of such re-design, repair or replacement shall be to the account of the Contractor.
- (f) During the performance of the re-design, repair or replacement of any part of the New admin. & Engg. Block as provided in Clause 21.6, the Contractor shall procure that the Contractor's personnel act in compliance with Applicable Law, the Site regulations, work rules, workmen's compensation requirements as well as safety procedures.

#### 21.2. **Notice of Defect**

The Client shall provide the Contractor a notice stating the nature of any defect in the New admin. & Engg. Block and/or Works, together with all available evidence, promptly following the discovery of such defect. The Client shall afford all reasonable opportunity to the Contractor to inspect any such defect. The Contractor shall, within 3 (three) days of the notice from the Client in this regard, submit to the Client details of the proposed re-performance of the Works and/or the repairs or replacements, which it proposes to make, the estimated duration of the repairs or the duration required to effect the replacement Works, details or parts of the New admin. & Engg. Block considered necessary to shut down and the proposed dates for such re-performance, repairs or replacements. All Works and repairs and replacements shall be carried out at a time and for periods agreed with the Client pursuant to Clause 21.

#### 21.3. **Access**

With regard to repairs or re-performance of Works needed, the Client shall afford the Contractor, subject to its reasonable security restrictions, the necessary access to the New admin. & Engg. Block and the Site to enable the Contractor to perform its obligations under this Clause 21.

#### 21.4. **Tests**

- (a) The Contractor shall carry out the tests, in relation to the repaired part of the New admin. & Engg. Block and shall endeavor not to disrupt the New admin. & Engg. Block as a whole, to demonstrate that such defect has been removed and that the repaired part of the New admin. & Engg. Block is functioning in the manner in which it is required to function under the Contract. Such tests shall be conducted, solely at its cost and expenses and the Contractor shall provide all materials, manpower, tools and tackles etc., which are required for carrying out the said tests.
- (b) In addition to the tests conducted under Clause 21.10(a), if the repair or making good is of such a nature that it may affect the efficiency of the New admin. & Engg. Block or any part thereof, the Client shall provide the Contractor a notice of [28 (twenty eight) days] requiring additional tests to be conducted on the defective part of the New admin. & Engg. Block and the Contractor shall promptly, at its own risk and cost, carry out any such additional tests.
- (c) If any part of the New admin. & Engg. Block fails the tests as set forth in Clause 21.10.(a), the Contractor shall carry out further repair, replacement or making good, as the case may be, until that part of the New admin. & Engg. Block passes such tests. The tests, in character, in no event shall be inferior to what has been agreed upon by the Client and the Contractor.

#### 21.5. **Failure to Remedy Defects**

- (a) If the Contractor fails to commence repair of the defect or any damage to the New admin. & Engg. Block caused by such defect, within the time frame stipulated in Clause 21.3, following the notice from the Client in this regard, the Client may, by notice to the Contractor, proceed to repair such defect.
- (b) In addition to the Client's rights pursuant to Clause 21, if, in the reasonable opinion of the Client, a defect in the New admin. & Engg. Block or part thereof, is expected to cause serious loss or damage which can be prevented by immediate action, such defect may be corrected by the Client or a third party designated by the Client. Upon intimation by the Client in this regard, the Contractor shall assist wherever possible in undertaking any necessary corrections. Notwithstanding anything to the contrary stated in the Contract, any action undertaken by the Client pursuant to this Clause 21.11.(b), shall not in any way relieve the Contractor of its responsibilities under the Contract and the warranties set forth in Clause 18 and Clause 19 (Warranties) shall not be reduced or affected on account of the Client undertaking such action.
- (c) All costs incurred by the Client in terms of this Clause 21.11.(a), shall be paid to the Client by the Contractor and/or may be deducted by the Client from any monies due to the Contractor and/or claimed by invoking the Performance Bank Guarantee. For the avoidance of doubt, it is clarified that any action undertaken by the Client in terms of this Clause 21.11 shall not extinguish the Contractor's liabilities arising pursuant to the terms and conditions of the Contract.
- (d) If the Contractor fails to remedy the defect or damage under Clause 21.11, the Client shall have the right to:
  - (i) terminate the Contract pursuant to Clause 34 as a whole or in respect to such major part which cannot be put to the intended use and without prejudice to any other rights, under the Contract or otherwise, the Client shall then be entitled to recover all sums paid for the Works or for such part (as the case may be), the cost of dismantling the same and clearing the Site; or
  - (ii) accept the deficient New admin. & Engg. Block and proportionately reduce the Contract Price to reflect the diminished value to the Client and such reduction shall be determined by the Client at its discretion.

#### 21.6. **Latent Defect**

- (a) If, any defect appearing in any part of the Works, is of a kind that would not have been apparent to the eye prior to the expiry of the Defect Liability Period (a "**Latent Defect**") and arises within a period of [5 (five) years] from the Completion Date, the same shall be made good by the Contractor by repair or replacement. The Client shall, upon discovery of Latent Defect, notify the Contractor. The Contractor shall commence repair on such Latent Defect no later than [3 (three) days], or such other mutually agreed time period, from the receipt of a notice from the Client in this regard.

- (b) The Contractor shall have the right to investigate the cause of any problem or abnormality in the New admin. & Engg. Block, which the Client reasonably believes is due to a Latent Defect.
- (c) If the Contractor fails to commence repair of any Latent Defect within the time specified in Clause 21.12(a), following receipt of a notice from the Client, the Client may cause such repairs to be affected at the Contractor's expense.

**21.7. Serial Defect**

- (a) If, during the Defect Liability Period, more than [15% (fifteen percent)] of the Works contains the same defect ("**Serial Defect**"), then a Serial Defect shall be deemed to exist in all such parts of the Works.
- (b) If a Serial Defect exists, then it shall be deemed to be a defect for the purposes of this Clause 21.13 and all provisions with regard to the rectification of defects as set out in this Clause 21.13 shall apply *mutatis mutandis* to the rectification of the Serial Defect.
- (c) Without prejudice and in addition to Clause 21.13(b), if a Serial Defect exists, the Contractor shall:
  - (i) promptly perform a thorough investigation to ascertain the cause of the Serial Defect and provide a report to the Client detailing the cause and effect of the Serial Defect;
  - (ii) subject to Clause 21.6, remedy all Works which are deemed to be effected by the Serial Defect including carrying out any necessary alterations, additions, modifications, design modifications, repairs or replacements regardless of whether a defect has made itself apparent in such parts of the Works at the time that the threshold stated under Clause 21.13(a) is exceeded.

**21.8. Costs, Taxes and Duties**

The Contractor shall be responsible for payment of all costs, taxes (including all indirect taxes except excise duty, entry tax and octroi and duties incurred in the course of performance of its obligations under this Clause 21.

**22. VARIATIONS AND CHANGE IN CONTRACT ELEMENTS**

**22.1. Introducing a Change**

The Client shall have the right to propose and subsequently require the Contractor, from time to time, till the issuance of the Take Over Certificate, to make a Change in accordance with the procedure set out in Clause 22.3 ("**Change**"). The Contractor shall execute and be bound by a Change proposed by the Client, unless the Contractor promptly provides a notice to the Client (along with supporting documents) that, the Change:

- (a) will have an adverse impact on the achievement of the Performance Parameters; or
- (b) comprises the omission of any Works which are to be carried out by a third party.

**22.2. No Change for Default**

No variation made on account of any default of the Contractor in the performance of its obligations under the Contract shall be deemed to be a Change, and such variation shall not result in any adjustment of the Contract Price or the postponement of the Completion Date.

### 22.3. Changes Originating from Client

- (a) If the Client proposes a Change pursuant to Clause 22.1, it shall send to the Contractor, a notice ("**Request for Change Proposal**") requiring the Contractor to prepare and provide to the Project Manager within [15 (fifteen) days] of the Request for Change Proposal, a proposal ("**Change Proposal**") which shall include the following:
- (i) brief description of the Change, including a description of the proposed corrective activities and/or Works to be executed or modified, and a programme for its execution, together with supporting calculations containing a break down for the actual cost of supplies for any items required/Works to be executed to give effect to the Change;
  - (ii) effect on the Completion Date and the necessary modifications;
  - (iii) the effects of implementation of the Change, taking into account the omission of execution of a portion of the Works, if any;
  - (iv) the cumulative impact of effects resulting from the stated Change on all prior Works and any changes in the Works to be executed as scheduled; and
  - (v) estimated cost of the Change;
  - (vi) effect of the Change on the safety of the New admin. & Engg. Block, if any; and
  - (vii) effect on any other provisions of the Contract.
- (b) In addition to the information specified in this Clause 22.3(b), the Change Proposal shall include such other information as the Client may reasonably request in connection with each Change, and shall include copies of all price quotations and other documents as may enable the Client to verify the Contractor's proposed costs or savings in respect of the Change. For the avoidance of doubt, it is clarified that Contractor shall bear all costs and expenses in relation to the Change Proposal, whether or not such proposal is ultimately implemented.
- (c) The pricing of a Change shall, as far as practicable, be calculated in accordance with the rates and prices included in the Contract as set out in Bidding Documents. If the rates and prices of any Change are not available in the Contract, the Parties shall agree on specific rates for the valuation of the Change. If the Contractor is instructed to proceed with a Change, prior to the determination of its value, the Contractor shall keep contemporary records of all labour hours, cost of Materials and Contractor's Equipment and any other cost related to undertaking the Change. Such records shall be provided to the Client upon request.
- (d) If before or during the preparation of the Change Proposal, it becomes apparent that the aggregate effect of compliance with the Change and with previously issued Change Orders, would have the effect of increasing or decreasing the Contract Price as originally set forth by more than [15% (fifteen percent)], the Contractor shall provide a notice of objection prior to providing the Change Proposal. If the Client accepts the Contractor's objection, the Client and the Contractor shall agree on specific rates for the valuation of the Change and the Contractor shall submit the Change Proposal accordingly. If the Client does not accept the Contractor's objection, then the Client may cancel or vary the Request for Change Proposal, in which case, the Contractor shall

submit the Change Proposal in accordance with the Client's revised Request for Change Proposal. However, in case of any Dispute in this regard, the matter may be resolved in terms of Clause 35 (Dispute Resolution).

- (e) Upon receipt of the Change Proposal, the Client and the Contractor shall mutually agree upon all matters in the Change Proposal, including agreement on rates if such rates are not available in the Contract or if the limit of [15% (fifteen percent)] has been exceeded. Within 15 (fifteen) days of such agreement, the Client shall, if it intends to proceed with the Change, issue to the Contractor an order ("**Change Order**") whereby:
  - (i) the Client shall grant an extension of time, if necessary;
  - (ii) the agreed adjustments, if any, shall be made to the Contract Price and the Completion Date; and
  - (iii) such other changes may be ordered as may be required to give effect to the Change.
- (f) The Client shall only instruct a Change under this Clause 22.3(f), upon mutual agreement with the Contractor on the quotation and the terms and conditions of the implementation of the Change.
- (g) If the Client is unable to reach a decision within 15 (fifteen) days of the receipt of the Change Proposal, it shall notify the Contractor with details of the expected time by when the Contractor can expect a decision. For the avoidance of doubt, it is clarified that the Contractor shall continue to perform its obligations under the Contract, whilst awaiting a response from the Client in relation to the Change Proposal.
- (h) If the Client decides not to proceed with the Change, for any reason whatsoever, it shall, within 30 (thirty) days from the receipt of the Change Proposal, or such later date indicated to the Contractor, notify the Contractor accordingly.
- (i) If the Client and the Contractor cannot reach an agreement on:
  - (i) the price for the Change;
  - (ii) an equitable adjustment to the Completion Date; or
  - (iii) any other matters identified in the Change Proposal,then, the Client has the right to instruct the Contractor to proceed with the Change by issuing an instruction in this regard ("**Pending Agreement Change Order**").
- (j) Upon receipt of a Pending Agreement Change Order, the Contractor shall immediately proceed with effecting the Change under the Pending Agreement Change Order. The Parties shall thereafter attempt to reach an agreement on the outstanding issues under the Change Proposal. If the Parties cannot reach an agreement within 60 (sixty) days from the date of issuance of the Pending Agreement Change Order, then the matter may be resolved in terms of Clause 35 (Dispute Resolution).

#### 22.4. **Changes Originating from Contractor**

- (a) The Contractor shall have a right to propose a Change only, when in the Contractor's opinion, if adopted, such change would:

- (i) accelerate Completion;
- (ii) reduce the cost to the Client of constructing and developing the New admin. & Engg. Block;
- (iii) improve the efficiency or value to the Client of the completed Works;
- (iv) improve the quality, efficiency or safety of the New admin. & Engg. Block or any part thereof; or
- (v) otherwise be of benefit to the Client,

in each instance, by submitting to the Client a written application in this regard, at its own cost and expense, giving reasons for the proposed Change and including the information stated in Clause 22.4 ("**Application for Change Proposal**").

- (b) Without prejudice to the above, the Contractor shall, during the term of the Contract, have a continuing obligation to suggest to the Client for its consideration, Changes known to the Contractor, as may be necessary to incorporate significant new developments in technology which are applicable or appropriate for the New admin. & Engg. Block or any part thereof. If the Contractor proposes such a Change, it shall submit to the Client an Application for Change Proposal, *inter-alia*, identifying the benefits of such Change.
- (c) Upon receipt of the Application for Change Proposal under this Clause 22.4., the provisions of Clauses 22.3(c) to 22.3(j) shall apply *mutatis mutandis*.

#### 22.5. **Improvements**

The Client or the Contractor may propose changes in the Technical Specifications in respect of the New admin. & Engg. Block or quality thereof, which enhances the performance of the New admin. & Engg. Block. If the Parties agree upon any such changes, the same shall be given effect to in accordance with the procedure specified in this Clause 22.

#### 22.6. **Exclusions**

- (a) Notwithstanding anything to the contrary, no Change Order shall be granted if:
  - (i) the Contractor seeks any Change or variation in its obligations which is due to any fault in the Documents supplied by it or due to any misrepresentation relating to any warranties provided by the Contractor;
  - (ii) the Change is necessary in order for the Contractor to satisfy its responsibility to complete the Works and ensure that the New admin. & Engg. Block is capable of performing as contemplated under the Contract and as specified in the Technical Specifications; or
  - (iii) the Change relates to the re-performance of any of the Works due to the Contractor's failure to comply with the Technical Specifications.
- (b) Notwithstanding any other provision of the Contract, none of the following shall:
  - (i) be considered under any circumstances as a Change;

- (ii) be taken into account when calculating the effect upon the Contract Price; or
- (iii) by itself, be considered the basis for any adjustment of the Contract Price:
  - (A) any escalation in the cost of materials or labour; or
  - (B) any normal design improvements effected by the Contractor.

## **23. CONTRACT PRICE AND INVOICING**

### **23.1. Payment of Contract Price**

- (a) The Contract Price is exclusive of service tax and works contract tax and the applicable taxes and duties shall be payable in accordance with the provisions of Clause 21.14 (Taxes and Duties).

### **23.2. Mobilization Advance**

- (a) 10% of Contract Value against an irrevocable bank guarantee as prescribed in the tender form for equivalent value and recoverable 12.5% basis from 2nd RA bills however 100% mobilization will be recovered once the value of work done reached of 80% of contract value.

### **23.3. Escalation/Contract Price Variation**

Subject to the provisions of Clause 22 (Variation and Change in Contract Elements) and Contract Price, the Contract Price shall be firm till the completion of the obligations of the Contractor under the Contract and there shall be no escalation whatsoever of the Contract Price.

### **23.4. Full and Complete Payment**

- a) The Contract Price shall be the full and complete payment for satisfactory discharge of the Contractor's performance of its obligations under the Contract and all things necessary for the proper execution and completion of the Works and the remedying of any defects and except as otherwise provided, includes all costs necessary for the completion of the Works and compliance with the terms and provisions of the Contract.
- b) For the avoidance of doubt, it is clarified that the Contract Price includes all Direct Taxes, direct, indirect and ancillary charges, cess, costs and expenses of whatsoever nature, including for the Contractor's Equipment & Materials, license, royalty and fees, accessories, Intellectual Property licenses and Documents to be provided under the Contract. The applicable indirect taxes shall be paid in accordance with Taxation.

## **24. TERMS OF PAYMENT**



**24.1. General**

The Contract Price shall be paid in accordance with this Clause 24.

**24.2. Effect of Payment**

No payment of the Contract Price made by the Client, shall be deemed to constitute acceptance by the Client of the Works or any part(s) thereof and shall not relieve the Contractor of any of its obligations under the Contract.

**24.3. Currency of Contract Price**

All payments of the Contract Price shall be made by the Client to the Contractor in INR (Indian Rupees).

**24.4. Terms and Procedure of Payments of the Contract Price**

(a) The Contractor shall submit an invoice to the Client [in triplicate] by the 1<sup>st</sup> week of each month providing details of the achievement, in the immediately preceding month. The Invoices shall be accompanied with relevant supporting documents (including work completion reports to be submitted by the Contractor) and any relevant documents required by the Client in this regard. The Contractor shall submit to the Client, for its approval, a copy of each Invoice to be submitted by the Contractor pursuant to this Clause 24. The approval of the Client shall be made within 30 (Thirty) Days, (10 days to the PMC + 20 days to the Client) from the submission of such Invoice in a manner satisfactory to the Client. The proforma of the Invoice and the documents and details to accompany it shall be mutually discussed and agreed to by the Parties, provided that, the Contractor shall at all times ensure that Invoices are raised in accordance with the relevant provisions of Applicable Law, so as to enable the Client to avail credit of the taxes indicated in the said Invoice.

For the avoidance of doubt, it is clarified that if an Invoice is not accompanied by the supporting documents, then such amounts of the Invoice shall not be due and payable by the Client, until the supporting documents have been provided by the Contractor. Further, the withholding of any amounts by the Client pursuant to this Clause 24, shall not constitute an event of default for non-payment, on the part of the Client.

(b) If an amount under an Invoice is disputed for any reason by the Client in terms of Clause 24, or if the Invoice is not raised in accordance with the relevant provisions of Applicable Law, then such amounts of the Invoice shall not be due and payable by the Client and the Client shall be entitled to withhold payment of the amounts under such Invoice, which shall only be released upon the resolution of the Dispute in terms of Clause 35, or upon receipt of a revised Invoice raised in accordance with the relevant provisions of Applicable Law, from the Contractor, as the case may be. Further, the withholding of any amounts by the Client pursuant to this Clause 24 shall not constitute an event of default for non-payment, on the part of the Client. The Contractor shall provide details concerning the description of the Works executed and any further substantiation as Client may reasonably require, including any other information or documentation relating to the performance of the obligations of the Contractor under the Contract, that the Client might reasonably need to present, from time to time, to a Government Instrumentality.

(c) The Client shall, subject to Clause 24.4.(b), make payments of undisputed amounts under an Invoice, within 30 (Thirty Days) days following the approval by the Client of the Invoice pursuant to Clause 24. The Client shall pay amounts under each Invoice directly to such bank account(s) of the Contractor, as may be instructed by the Contractor to the Client.

- (d) 5% (five percent) retention of the value of Works certified by the Project Manager, shall be made in every Invoice by the Client.
- (e) It is expressly clarified that the value of the Retention Money shall not exceed 5% (five percent) of the Contract Price in aggregate and shall be retained by the Client till the expiry of the Defect Liability Period.
- (f) The Retention Money shall be released by the Client, subject to the following conditions being satisfied:
  - (i) the Contractor has achieved Final Completion;
  - (ii) the New admin. & Engg. Block has been handed over to the Client in terms of Clause 11.4;
  - (iii) the Contractor has executed all the Works to the sole satisfaction of the Client;
  - (iv) the Defect Liability Period has expired, and the Contractor has rectified all defects in terms of Clause 21;
  - (v) the Contractor has paid all liquidated damages, indemnity sums and other payments due from the Contractor under this Agreement.
  - (vi) the Contractor has assigned to the Client or provided Client with all warranties or guarantees that Contractor has received from Sub-Contractors to the extent Contractor is obligated to do so pursuant to this Agreement.
  - (vii) all Contractor's Materials and other supplies, equipment, surplus, waste, huts, wreckage, debris, rubbish, and temporary facilities to which Client does not, and is not entitled to hold title, have been removed from the Site, and the Site have been restored in accordance with the terms of this Agreement provided that, all activities in relation to clearing and disposal shall be conducted in accordance with all Applicable Laws;
  - (viii) all the Contractor's Personnel and the personnel of the Sub-Contractors and their personnel, have been removed from the Site;
  - (ix) all Sub-Contractors have been paid their dues by the Contractor and Contractor has delivered the final release and waiver of Liens and claims pursuant to this Agreement and has delivered such other documents and certificates as Client has reasonably requested to ensure compliance with all Applicable Laws; and
  - (x) all activities required as per Applicable Law on account of the completion of the Works have been completed by the Contractor.

Provided that the Retention Money may be released upon submission an unconditional and irrevocable bank guarantee from a reputable bank acceptable to the Client for an amount equivalent to the Retention Money. The Retention Money Bank Guarantee shall be valid up to the expiry of the Defect Liability Period and shall have a claim period of 3 (three) months from the date of its expiry. If requested by the Client, the Contractor undertakes to extend the validity period of the Retention Money Bank Guarantee.

- (g) The Client shall withhold from payments to be made to the Contractor and pay to the Governmental Authority, any and all taxes required to be withheld pursuant to Applicable Law.

The Client shall provide to the Contractor the tax deduction certificates, for such withheld amounts.

- (h) All Invoices shall be endorsed with the contract number and title.
- (i) Payments made by the Client against any Invoice shall not preclude the right of the Client to thereafter dispute any items invoiced and paid for.
- (j) Except as provided in Clause 24, if any other amounts are due and payable from one Party to the other, including payments pursuant to Clause 10 (Liquidated Damages) and Clause 28 (Indemnity), then the Party to whom such amounts are owed shall provide to the other Party an invoice accompanied by/along with the calculations and with the relevant documentary proof showing the basis for the calculations substantiating the claimed payments. The Party liable to make payment under a Miscellaneous Invoice shall make payment against the same within 30 (thirty) days from the date of receipt of such Miscellaneous Invoice.
- (k) Notwithstanding the provisions of this Clause 24, the Parties shall have the right to dispute, in good faith, any invoiced item. Where any amount, under an Invoice or a Miscellaneous Invoice, as the case may be, is disputed by a Party, then such Party shall, within 21 (twenty one) days of receipt of the Invoice or Miscellaneous Invoice, as the case may be, notify the other Party of such Dispute and the Parties shall seek to resolve the Dispute by mutual consultation. If the Parties fail to resolve the Dispute by mutual consultation within 15 (fifteen) days of the date of such notice then the disputing Party shall withhold payment of such disputed amount till the resolution of such Dispute pursuant to Clause 35 (Dispute Resolution). Provided that, the disputing Party shall duly make payment of the undisputed amount in accordance with this Clause 24 (Terms of Payment).
- (l) The Client shall withhold sums equivalent to taxes at applicable rates on the amount payable to the Contractor by way of consideration under the Contract in accordance with the provisions of the Income Tax Act, 1961, as amended or modified and applicable. The Client shall not make such withholdings in the event that the Contractor produces a certificate from the appropriate authority constituted under the Indian Income Tax laws to the effect that no withholding taxes would be required on the payments received by the Contractor from the Client.
- (m) The Contractor shall adhere to the directions of the Client, Project Manager and/or the Architect, as the case may be in terms of the provisions laid down in the Contract.

#### 24.5. **Client's Claims**

- (a) If the Client considers itself to be entitled to any payment under any Clause of the Contract or otherwise in connection with the Contract, and/or to any extension of the Defect Liability Period in accordance with Clause 21, it shall, as soon as practicable after becoming aware of its claim or circumstances giving rise to such claim, provide the Contractor with notice and particulars of such claim. A notice relating to any extension of the Defect Liability Period shall be given before the expiry of such period.
- (b) The notice for claim shall specify the provisions of the Contract which the Client relies upon or other basis of the claim, and shall include substantiation of the amount and/or extension to which the Client considers itself to be entitled in connection with the Contract. The Client shall then proceed to agree or determine (i) the amount (if any) which the Client is entitled to be paid by the Contractor, and/or (ii) the extension (if any) of the Defect Liability Period in accordance with Clause 21.

- (c) The Client may deduct the amount due to it pursuant to such a claim from the Contractor, from any monies due, or that become due, to the Contractor or may issue a Miscellaneous Invoice with regard to such amounts.

## **25. SITE OFFICES, SECURITY AND FACILITIES**

- 25.1. The Contractor shall supply and erect a well-lit, temporary Site office for use by it at its own cost, if required. The layout of the Site office, Drawing shall be as approved by the Client in consultation with the Project Manager. The Site office shall contain wash rooms, seating arrangement with furniture and good ventilation.
- 25.2. A fully furnished Site office to be provided to the Client and the Project Manager for total 10 (TEN) members crew for a period of 90 days beyond actual project completion date. The Site office to contain workstations, meeting/conference room, manager cabin, air conditioning, grid ceiling, chairs, flooring, washrooms, maintenance of wash rooms/office, tea and drinking water facility, projector, projector screen, walky talky, fridge, dining area, safety PPE (safety helmet, google, shoes (with steel toes), reflective vest, public address system, for the Client and Project Manager and their visitors.
- 25.3. No photos/CCTV shall be installed by the Contractor without prior written permission from the Client.
- 25.4. The Contractor shall deploy Site security team for material storage as well as for manpower movement at Site till the Take Over Certificate is issued by the Client. The Contractor security team should work closely with the Client and the Project Manager for maintaining the Site logistics.

## **26. SAFETY REQUIREMENTS**

- 26.1. The Contractor shall comply with the safety precautions, protective measures, housekeeping requirements, etc. as set out in **Section 10**. The Client shall have the right to stop the work at Site, if in its opinion, proceeding with the Works will lead to an unsafe and dangerous condition. The Contractor shall get the unsafe condition removed or provide protective equipment. The Contractor shall ensure that all workmen are aware about the nature of risk involved in their work and have adequate knowledge for carrying out their work safely.
- 26.2. The instructions issued by the Client and/or the Project Manager pursuant to the Contract are indicative and not exhaustive. Therefore, the Contractor shall be responsible to ensure that adequate safety measures are adopted in the course of execution of the Works in accordance with the Contract in accordance with safety standards / statutory regulations, as applicable.
- 26.3. In case of any non-compliance by the Contractor of any of the provisions of this Clause 26 above would, without prejudice to any other remedy that the Client may be entitled to under Applicable Law or in the Contract or otherwise, the Client shall be entitled to impose an amount as compensation in its sole discretion.

## **27. LIMITATION OF LIABILITY**

- 27.1. The total liability of the Contractor to the Client under or in connection with the Contract, shall not exceed the Contract Price, provided that, this limitation shall not apply to any obligation of the Contractor to:
  - (a) pay liquidated damages to the Client in accordance with Clause 10;

- (b) indemnify the Client in accordance with the provisions of the Contract;
- (c) pay the indemnity amount that may be payable under Clause 28.2; or
- (d) pay for losses caused due to the Contractor's gross negligence, fraud or willful misconduct.

**27.2. No Consequential Loss**

Notwithstanding anything to the contrary, except in cases of payment to be made pursuant to Clause 27.1., neither the Contractor nor the Client shall be liable to the other, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that, this exclusion shall not apply to any obligation of the Contractor to pay liquidated damages to the Client.

**28. INDEMNITY**

**28.1. General:** The Contractor shall protect, defend, indemnify and hold the Client, and their directors, key managerial personnel, employees, agents and representatives harmless from and against:

- (a) any and all losses, damages, costs, expenses (collectively "**Losses**") incurred by reason of the acts or omissions of the Contractor, its officers, directors, employees, in the performance of the Contract or execution of Works, including without limitation any and all Losses, arising directly or indirectly from or incurred by reason of any failure of the Contractor or any Sub-Contractor (i) to pay any taxes, duties, cesses etc. required to be paid by such person, (ii) to make any payments in respect of taxes, duties, cesses which are to be paid by such person in connection with the performance of its obligations relating to the Contract, (iii) any such Losses arising from injury to or death of third parties or damage to or loss of property of third parties;
- (b) any and all Losses, incurred by reason of or arising from claims or sanctions or penalties imposed by any Governmental Authorities or others for any actual or asserted failure by the Contractor, Sub-Contractor(s) or any of their respective officers, directors, employees to comply with any Applicable Laws;
- (c) any and all Losses, arising directly or indirectly from or incurred by reason of the Works being undertaken at the Site post Completion Date;
- (d) any damage caused by the Contractor to the Site;
- (e) all Contractor and/or Sub-Contractor employee claims, failure of Contractor or its Sub Contractors to comply with Applicable Law and Prudent Industry Practices and liability for any hazardous substances claims; and
- (f) any and all Losses, arising directly or indirectly as a result of any violation of any patents, design rights, trademark or copyright, confidentiality and other protected rights arising in connection with the Contractor's Equipment or in the course of the completion of the Works; and
- (g) any and all Losses, damages, costs, expenses, claims, demands, proceedings, or liability however arising against or incurred by the Client relating to the Project due to or arising from or contributed to by any act, omission or default on the part of the Contractor.

**28.2. Zero Fatality Rate at Site**

- (a) The Contractor acknowledges that having a zero fatality rate at the Site is important for the Client and a material requirement of the Safety Requirement. If the Contractor does not take all safety precautions and/or fails to comply with the Safety requirement or the Applicable Laws for the safety at the Site while performing its obligations under the Contract, then without prejudice to the provisions of Clause 28.1 or any other obligation of the Contractor under the Contract, the Contractor shall pay to the Client:
- (i) a sum of [INR 10,00,000 (Rupees ten lakh only)] in case of death of any workman/employee at the Site; and
  - (ii) a sum of [INR 2,50,000 (Rupees two lakh fifty thousand only)] in case of permanent disability of any workman/employee at the Site,
- in each case occurring during the course of the Contract.
- (b) The Contractor shall pay such amounts to the Client, immediately upon a demand being made for the same, but in no event later than the time period prescribed in Clause 24.4.(g) for payment of a Miscellaneous Invoice. The Parties agree that such amounts received by the Client from the Contractor shall be paid by the Client to the family of such deceased workman/employee or such disabled workman/employee. The compensation mentioned in this Clause 28.2. is in addition to the compensation payable to the workman under the relevant provisions of the Employee's Compensation Act, 1923 and rules framed there under or any other Applicable Law.

### 28.3. **Proceedings**

On receipt of any notice of any claim from any third Party, which would entitle any Party ("**Indemnified Party**") to claim indemnification from the other Party ("**Indemnifying Party**"), the Indemnified Party shall within a reasonable time provide a written notice of the same to the Indemnifying Party along with all the documents available with it in respect of the said claim specifying in detail the claim, the amount claimed by the third Party, the date on which the claim arose and the nature of the default to which such item is related (including a reference to the applicable provision of the Contract). The Indemnifying Party shall be entitled to but not obliged to participate in and control the defense of any such suit, action or proceeding at its own expense or direct the Indemnified Party to defend such claim, at the cost of the Indemnifying Party. If the Indemnifying Party elects to control the defense of any such suit, action or proceeding, the Indemnified Party shall render all necessary assistance including grant of access to premises and personnel and to relevant documents and records that it possesses or controls to the extent required by the relevant adjudicatory authorities or is necessary for the purposes of investigating the matter and enabling the Indemnifying Party to take the action referred to in this clause. The Indemnifying Party may also request the Indemnified Party, at the cost of the Indemnifying Party to dispute, resist, appeal, compromise, defend, remedy or mitigate the matter or enforce against the Third Party the Indemnifying Party's rights in relation to the matter and in connection with proceedings related to the matter or use reputable advisers and lawyers chosen by the Indemnifying Party. The Indemnified Party shall not settle any such suit, action or proceeding without the prior written consent of the Indemnifying Party.

### 28.4. **Payment of Indemnities**

Where a Party is entitled to payment from the other Party pursuant to this Clause 28, such Party shall promptly notify the other Party of the same and issue a Miscellaneous Invoice. The other Party shall make payment of such Miscellaneous Invoice in accordance with Clause 24.4.(g).

## 29. **CONFIDENTIAL INFORMATION**

- 29.1. Each Party shall treat as confidential, the other Party's information consisting of specifications, designs, plans, drawings, software, data, prototypes, or other business and/or technical information, methodologies, know-how, processes, quotations, which such party discloses to the other party ("**Information**").
- 29.2. Each Party agrees that for a confidentiality period beginning on the date of execution of the Contract and ending 2 (two) years from the termination of the Contract, the receiving Party shall use information only for the purpose of the Contract ("**Purpose**"), shall hold information in confidence using the same degree of care as it normally exercises to protect its own proprietary information, but not less than reasonable care, taking into account the nature of the information, and shall grant access to Information only to its employees who have a need to know, shall reproduce Information only to the extent essential to fulfilling the purpose, and shall prevent disclosure of information to third parties. The receiving Party may, however, disclose the Information to its consultants and contractors with a need to know; provided that by doing so, the receiving Party agrees to bind those consultants and contractors to terms at least as restrictive as those stated herein, advise them of their obligations, and indemnify the disclosing party for any breach of those obligations.
- 29.3. Upon the disclosing Party's request, the receiving Party shall either return to the disclosing Party all Information or shall certify to the disclosing Party that all media containing Information have been destroyed.
- 29.4. The foregoing restrictions on each Party's use or disclosure of Information shall not apply to information that the receiving Party can demonstrate:
- (a) was independently developed by or for the receiving Party without reference to the information, or was received without restrictions; or
  - (b) has become generally available to the public without breach of confidentiality obligations of the receiving Party; or
  - (c) was in the receiving Party's possession without restriction or was known by the receiving party without restriction at the time of disclosure; or
  - (d) is required to be disclosed pursuant to legal or administrative requirement for disclosure; provided that the receiving Party has given the disclosing Party prompt notice of such demand for disclosure and the receiving Party reasonably cooperates with the disclosing Party's efforts to secure an appropriate protective order.

### **30. INTELLECTUAL PROPERTY RIGHTS**

- 30.1. All designs, Drawings, specifications, data, Documents, reports, studies, manuals, programs, analyses and all other items produced by the Contractor or the Sub-Contractors or the suppliers in the performance of the Works (herein collectively referred to as the "**Work Product**"), shall become and remain the property of the Client, and the Contractor shall deliver the same (properly sorted and indexed) to the Client in accordance with the provisions of the Contract and in any event upon termination of the Contract. For the avoidance of doubt, the Parties acknowledge and agree that the Drawings and plans, and all STP and construction plans and Drawings relating to the Project, are the Client's property.
- 30.2. The Contractor hereby irrevocably assigns to the Client any rights it may have or acquire in (and waives and will require each supplier, vendor and Sub-Contractor to waive all "moral rights" it may have with respect to) any and all such Work Product.

30.3. The Contractor shall save harmless and indemnify the Client from and against all claims and proceedings for or on account of infringement of any intellectual property rights including patent rights, designed trademark or name or other protected rights in respect of any constructional plant, technology, design, machine work, or Material used for or in connection with the Works or any of them and from and against all claims, proceedings, damages, cost, charges and expenses whatsoever in respect thereof or in relation thereto. Except where otherwise specified, the Contractor shall pay all tonnage and other royalties, rent and other payments or compensation, if any, for any document/materials required for the Works.

30.4. **Ownership of Documents**

All Documents and other documents prepared by the Contractor and used in the performance of the Works shall be the property (including all intellectual property rights vested in the documents prepared by the Contractor for the purposes of the development of the New admin. & Engg. Block) of the Client. The Contractor shall supply to the Client all such Documents and other documents, as well as any drawings, specifications, calculations, memoranda, data, notes and other materials at the earlier of Final Acceptance or termination of the Contract. The Client shall have the right to copy, use, transfer and communicate the documents for the purposes of completing, operating, maintaining, altering, adjusting, or repairing the New admin. & Engg. Block.

30.5. **Use of Drawings by Contractor**

The Contractor shall be entitled to retain a reproducible set of all Drawings and Documents and other documents delivered to the Client by the Contractor in accordance with the Contract. Provided that the Contractor shall not at any given point of time use the information provided in such documents or such documents for any purpose other than the completion of the Works.

30.6. **Royalties and License Fees**

The Contractor shall pay all required royalties and license fees with respect to proprietary rights, intellectual property licenses and agreements and shall procure (at its cost), as required, the appropriate proprietary rights, intellectual property licenses and agreements for materials, methods, processes and systems in accordance with the provisions of the Contract. The Contractor shall not incorporate any materials, methods, processes or systems that involve the use of any Confidential Information, intellectual property or proprietary rights that the Client does not have the right to use or that may result in claims or suits against the Client or the Contractor arising out of claims of infringement of any domestic or foreign patent rights, copyrights or other proprietary rights, or applications for any such rights, or use of Confidential Information.

31. **FORCE MAJEURE**

31.1. Except as otherwise specifically provided in the Contract, neither Party shall be liable to the other Party or be deemed to be in breach of the Contract by reason of any delay in performing or observing, or any failure to perform or observe, any of its obligations under the Contract, if the delay or failure was due to any event or circumstance which is not within the reasonable control, of the Party, and with the exercise of due diligence, was not reasonably foreseeable and could not reasonably be prevented, avoided or removed by such party ("**Affected Party**") through the exercise of reasonable skill or care, and does not result from the Affected Party's negligence or the negligence of its agents, employees or Sub-Contractors, which causes the Affected Party to be delayed, in whole or in part, or unable to partially or wholly perform its obligations under the Contract ("**Force Majeure Event**"). Force Majeure Event shall include:

- (a) acts of God, fire, flood, lightning, storm, typhoon, hurricane, tornado, earthquake, epidemics, or other natural disaster;



- (b) act of Government Authority which makes the performance of obligations under the Contract to be impossible for either Party;
- (c) event of war (whether declared or not), invasion, act of foreign enemy, hostilities, revolution, rebellion, terrorism, insurrection, military, usurped power, mutiny or civil war.

For the avoidance of doubt, it is clarified that insufficiency of finances or funds or any obligation for the payment of money or the Contract becoming onerous to perform shall not be a Force Majeure Event.

- 31.2. The Affected Party shall give notice to the other Parties of any Force Majeure Event as soon as practicable, but not later than 7 (seven) days after the date on which such Party becomes aware of the occurrence of the Force Majeure Event or should reasonably have known of the commencement of the Force Majeure Event. If an event of Force Majeure results in a breakdown of communications rendering it unreasonable to give notice within the applicable time limit specified herein, then the Affected Party shall give such notice as soon as reasonably practicable after reinstatement of communications, but not later than 1 (one) day after such reinstatement.
- 31.3. The notice of occurrence of a Force Majeure Event shall be a pre-condition to the Affected Party's entitlement to claim relief under the Contract. Such notice shall include full particulars of the event of Force Majeure, its effects on the Party claiming relief and the remedial measures proposed. The Affected Party shall give the other Party regular reports on the progress of those remedial measures and such other information as the other Party may reasonably request about the Force Majeure Event.
- 31.4. The Affected Party shall give notice to the other Parties of:
  - (a) the cessation of the relevant Force Majeure Event; or
  - (b) the cessation of the effects of such Force Majeure Event, on the performance of its obligations under the Contract.
- 31.5. To the extent not prevented by a Force Majeure Event pursuant to Clause 31, the Affected Party shall continue to perform its obligations under the Contract. The Affected Party shall use its reasonable efforts to mitigate the effect of any Force Majeure Event as soon as practicable.
- 31.6. Subject to Clause 31.3, the Affected Party shall not be responsible or liable for failure to perform its obligations under the Contract, if such failure is due to a continuing Force Majeure Event, provided that a Force Majeure Event shall not release the Affected Party of its obligations to perform the other obligations, which are unaffected by such Force Majeure Event.
- 31.7. For avoidance of doubt, no Party's obligation to make payments of money due or payable prior to occurrence of the Force Majeure Events under the Contract shall be suspended or excused due to the occurrence of a Force Majeure Event in respect of such Party.

## **32. CHANGE IN LAW**

- 32.1. For the purpose of the Contract, the term "**Change in Law**" shall mean the occurrence of any of the following events after the Execution Date, resulting into any increase or decrease in the Contract Price:
  - (a) the enactment, coming into effect, adoption, promulgation, amendment, modification or repeal (without re-enactment or consolidation) in India, of any Applicable Law, including rules and regulations framed pursuant to such Applicable Law;

- (b) a change in the interpretation of any Applicable Law by any Government Authority having the legal power to interpret or apply such Applicable Law;
- (c) the imposition of a requirement, for obtaining any applicable approvals/licenses/ permits which were not required earlier;
- (d) a change in the terms and conditions prescribed for obtaining any approvals/licenses/ permits required by a Party for the performance of its obligations under the Contract or the inclusion of any new terms or conditions for obtaining such approvals/licenses/ permits;
- (e) any change in tax or introduction of any tax made applicable for performance of the Works as per the terms of the Contract.

For the avoidance of doubt, it is clarified that any revision to the Contract Price or the Completion Date would be restricted to direct transactions between the Parties.

32.2. If the Contractor is affected by an incident of Change in Law and considers itself eligible for relief for such Change in Law, then, it shall give notice to the Client and the Project Manager of such Change in Law, along with the documentary evidence, if any, establishing the impact of such Change in Law. The notice served pursuant to this Clause 32 shall provide, amongst other things, precise details of:

- (a) the Change in Law;
- (b) effect on the Contractor;
- (c) adjustment required in the Contract Price.

32.3. If after the date of issuance of the Letter of Award, there is a Change in Law, due to which the Completion Date needs to be changed, the same shall be revised reasonably in accordance with Clause 7.2, to the extent that Contractor has thereby been affected in the performance of any of its obligations under the Contract.

32.4. If the Parties fail to agree upon a revision to the Contract Price, the matter shall be referred to an internationally recognized firm of auditors, mutually acceptable to the Parties. If the Parties cannot agree on a firm of auditors, then the Client shall appoint an internationally recognized firm of auditors. The said firm of auditors, shall within 10 (ten) days of such appointment, make a determination as to such proposed revision, which determination shall be binding on the Parties.

### **33. SUSPENSION**

#### **33.1. Suspension of works:**

The Contractor confirms and acknowledges that the Client shall have the right to, by giving a 1 (one) day prior written notice to the Contractor, with the previous approval of the Client, direct the Contractor to suspend the progress of the Works or any part thereof for such time and in such manner as the Client may consider necessary and shall during such suspension require the Contractor to properly protect and secure the Works, so far as is necessary in the opinion of the Client. The extra cost incurred by the Contractor in giving effect to the instructions of the Client under this Clause shall be borne by the Client unless such suspension is:

- (a) otherwise provided for in the Contract, or
- (b) necessary by reason of some default on the part of the Contractor, or

- (c) necessary by reason of climatic conditions on Site, or
- (d) necessary for the proper completion of the Works or for the safety of the Works or any part thereof in so far as such necessity does not arise from any act or default by the Project Manager or the Client.

Provided that the Contractor shall not be entitled to recover any such extra cost unless it gives written notice of its intention to claim such costs to the Client and the Project Manager within 15 (fifteen) days of the order of the Client. The Client shall settle and determine any extra payment and/or extension of time under to be made to the Contractor in respect of such claim in accordance with the provisions of the Contract.

### **33.2. Suspension of Work**

The Contractor shall, on the instructions of the Client and/or the Project Manager, suspend the progress of the Works or any part thereof for such time and in such manner as the Client and/or the Project Manager may consider necessary and shall, during such suspension, properly protect and secure the Works or such part thereof so far as is necessary in the opinion of the Client and/or the Project Manager.

- 33.3. The Project Manager shall after due consultation with the Client and the Contractor, determine any extension of time to which the Contractor is entitled on account of such suspension.

## **34. TERMINATION**

- 34.1. The Contract may be terminated by the Client by issuing a written notice of 7 (seven) days to the other Parties upon occurrence of the any of the following events:

- (a) any breach of the terms of the Contract and/or Applicable Law which breach has not been rectified by the Contractor within 7 (seven) days of issuance of notice by the Client; or
- (b) if the Contractor fails to complete the Works by the Completion Date.

- 34.2. The Client shall have the right to terminate the Contract forthwith if the Contractor becomes insolvent or an order is made or a resolution passed for the liquidation, administration, winding-up, bankruptcy or dissolution of the other Party (otherwise than for the purposes of a solvent amalgamation or reconstruction) or an administrative or other receiver, manager, trustee, liquidator, administrator, insolvency resolution professional or similar officer is appointed over all or any substantial part of the assets of the Contractor or the Contractor enters into or proposes any composition or arrangement with its creditors generally or anything analogous to the foregoing occurs in any applicable jurisdiction.

- 34.3. Expiry or termination of the Contract shall not relieve the Parties of their obligations due up to the time of such expiry or termination, nor shall such expiry or termination prejudice any claim of either Party that has already accrued prior to such expiry or termination.

- 34.4. If the Client elects to terminate the Contract pursuant to Clause 34, the Client shall be entitled (but not obliged) to complete the remaining Works either by itself or by any other contractor on account of and at the risk and cost of the Contractor. If the Client decides to complete the remaining Works, it shall be entitled to recover the cost and other charges associated with such completion from the Contractor. In all cases, and irrespective of whether the Client decides to complete the remaining Works, the Client shall be entitled to recover all costs, expenses or losses flowing from the termination from the Contractor.

- 34.5. The Contractor shall, at Client's request and at Contractor's cost and expense, perform the following services in relation to the Works so affected:
- (a) cease all further Works which is the subject of the termination, except such Works as Client may specify in the termination notice for the sole purpose of protecting that part of the Works already executed;
  - (b) assist the Client in preparing an inventory of all equipment in use or in storage at the Site;
  - (c) assign to the Client or to any replacement contractor designated by Client, without any right to compensation, title to all Works not already owned by Client, together with all subcontracts and other contractual arrangements (including warranties) as may be designated by Client, all of which subcontracts and contractual arrangement shall be so assignable and assign to Client;
  - (d) remove from the Site all such Contractor's equipment and materials and waste material as the Client may request; and
  - (e) deliver to Client all design and other information in the possession of the Contractor as may be requested by Client for the completion of the Works.
- 34.6. The Parties agree that in the event of termination of the Contract, the Client shall pay to the Contractor the Contract Price proportionate to the Works completed by the Contractor to the Client's satisfaction by the date of termination.

## **35. GOVERNING LAW AND DISPUTE RESOLUTION**

- 35.1. The Contract including all questions concerning the construction, validity and interpretation of the Contract will be governed by the laws of India. Subject to Clause 35.2 below, the courts at Gautam Buddh Nagar, Uttar Pradesh, India shall have exclusive jurisdiction on any matter arising under the Contract.
- 35.2. The Parties shall amicably resolve by mutual discussions any and all controversy, claim, differences or disputes arising out of or in connection with the Contract including any question regarding its existence, validity, invalidity, breach or termination ("**Dispute**"), failing which the Disputes shall be settled by arbitration in accordance with provisions of the Indian Arbitration and Conciliation Act, 1996. The arbitral tribunal shall consist of 1 (one) arbitrator. The seat for arbitration shall be Gautam Buddh Nagar, Uttar Pradesh, India and the language for arbitration shall be English. Any arbitral award shall be final and binding on the Parties.
- 35.3. The Contract and the rights and obligations of the Parties contained in the Contract shall remain in full force and effect pending issuance of the award in such arbitration proceedings, which award, if appropriate, shall determine whether and when any termination shall become effective.

## **36. MISCELLANEOUS**

### **36.1. Notices**

Any notice and other communications provided for in the Contract shall be in writing and shall be transmitted by e-mail or registered post or courier service in the manner as elected by the Party giving such notice to the following addresses:

In the case of notices to the Client:

Attn: [ ]

Add: [ ]

Email: [ ]

In the case of notices to the Project Manager:

Attn: [ ]

Add: [ ]

Email: [ ]

In the case of notices to the Contractor:

Attn: [ ]

Add: [ ]

Email: [ ]

Any Party may, from time to time, change its address or representative for receipt of notices provided for in the Contract by giving to the other prior written notice.

### 36.2. **Waiver**

Waiver by a Party of any default by the other Party(ies) in the observance and performance of any provision of or obligations under the Contract:

- (a) shall not operate or be construed as a waiver of any other or subsequent default hereof or of other provisions or obligations under the Contract;
- (b) shall not be effective unless it is in writing and executed by a duly authorised representative of such Party;
- (c) shall not affect the validity or enforceability of the Contract in any manner.

Neither the failure by a Party to insist on any occasion upon the performance of the terms, conditions and provisions of the Contractor any obligation hereunder nor time or other indulgence granted by a Party to the other Party shall be treated or deemed as waiver/breach of any terms, conditions or provisions of the Contract.

### 36.3. **Survival**

Termination of the Contract (a) shall not relieve the Parties of any obligations already incurred hereunder which expressly or by implication survives termination hereof, and (b) shall not relieve a Party of any obligations or liabilities for loss or damage to the other Party(ies) arising out of or caused by acts or omissions of such Party prior to the effectiveness of such termination or arising out of such termination.

### 36.4. **Partial Invalidity**

If any provision of the Contract is held to be invalid or unenforceable to any extent, the remainder of the Contract shall not be affected thereby, and each provision of the Contract shall be valid and enforceable to the fullest extent permitted by applicable law. Any invalid or unenforceable provision of the Contract shall be replaced with a provision which is valid and enforceable and most nearly reflects the original intent of the unenforceable provision.

### 36.5. **Amendments**

Subject to the terms of the Contract, no modification or amendment to the Contract shall be valid or binding unless made in writing and duly executed by all the Parties.

36.6. **Cost**

Except as otherwise provided in the Contract, each Party will bear its own costs and expenses incurred in connection with the preparation and execution of the Contract and for performance of transactions contemplated hereunder including any accounting, tax, legal and other advisors' expenses and expenses.

36.7. **Further Assurances**

Each Party will, at its own respective cost and expense, execute and do (or procure to be executed and done by any other necessary party) all such deeds, documents, acts and things as may be required from time to time or as may be necessary to give full effect to the Contract or for performance of its obligations under the Contract or for compliance with the provisions of Applicable Law.

36.8. **No Partnerships**

Nothing contained or implied in the Contract shall constitute or be deemed to constitute a partnership or agency between the Parties and none of the Parties hereto will have any authority to bind, commit or make any representations on behalf of the other Party(ies).

36.9. **Anti-Corruption**

- (a) The Parties shall not, and shall ensure that their respective Affiliates, officers, agents, directors and representatives shall not, in the course of conduct of performance of their obligations under the Contract: (i) the (Indian) Prevention of Corruption Act, 1988, or any other applicable anti-bribery or anti-corruption laws under any Applicable Law; or (ii) offer, pay, promise to pay, or authorize the payment of any money, or offer, give, promise to give, or authorize the giving of anything of value, to anyone, including Public Officials, either directly or indirectly, to improperly influence official action or obtain an improper advantage. This includes acting through a third party under circumstances where the Parties (or their respective Affiliates, officers, agents, directors and representatives) know, or are aware of circumstance that may cause a significant risk, that all or a portion of such money or thing of value would be offered, given or promised to anyone, including a Public Official, for the purpose of:
- (i) improperly influencing any act or decision of such Public Official in his official capacity;
  - (ii) inducing such Public Official to do or omit to do any act in relation to his lawful duty;
  - (iii) securing any improper advantage; or
  - (iv) inducing such Public Official to influence or affect any act or decision of any Government Authority;
  - (v) (any such payment, a "**Prohibited Payment**"), provided that Clause 36.9 shall not apply to any payment that is permitted by Applicable Law.
- (b) For the purposes of this Clause 36, the term "**Public Official**" means any officer or employee of a government, public entity or public international organization (including any department, or agency thereof or any government-owned or controlled entity including state-owned enterprises), or any person acting in an official capacity for or on behalf of a government or public international organization.

Each of the Parties shall, and shall procure that each of their respective Affiliates, officers, agents, directors and representatives shall, promptly report to the other Party any Prohibited Payment of which they obtain knowledge, become aware of, or which they have reasonable grounds to believe has occurred during the term of the Contract.

**37. Priority of Documents**

The documents forming the contract are to be taken as mutually explanatory of one another, for the purpose of interpretation, the priority of the documents shall be in accordance with the following sequence:

- a. The contract Agreement
- b. The Letter of Intent
- c. The Letter of Tender
- d. GCC
- e. Schedule of quantities and rates
- f. The specifications
- g. The Drawings
- h. The schedules and any other documents forming part of the Contract.

## **SECTION: 5**

### **FISCAL ASPECTS**

#### **SCHEDULE OF FISCAL ASPECTS**

| <b>Description</b>           | <b>Schedule of Fiscal Aspects.</b>  |
|------------------------------|---|
| Location Of work             | Engineering & Admin Block Project at Galgotias University, Yamuna Expressway, Greater Noida, Uttar Pradesh  |
| Scope of Work                | Main Scope: The detailed Scope for execution shall conform to the BOQ, Technical specification and drawings for the STP works. This Contract is re measurable Item rate contract and all the scope as per the drawings/tender/attached annexure shall be included. The quoted rates hold firm for the entire work plus the period up to the settlement of final bill. No escalation will be entertained towards labor, materials, petrol, diesel and or any such account.   |
| Type of Contract             | Item rate & Re-measurable type of contract.   |
| Escalation                   | This is a fixed price contract with all rates being firm till completion of project and no escalation is admissible on any item, for any reason.  |
| Date of Commencement         | Immediate from the date of issuance of LOI/Work Order.  |
| Contract Construction Period | Commencement of work: Immediate from the date of issuance of LOI.<br>Total time for the completion of all works under the scope of this contract and handover shall be 10 (Ten) Calendar months form the date of issuance of LOI including final handing over and de-snagging. Contractor shall submit a detailed Construction programme in the form of bar-chart for major milestones along with resource loading.   |
| Mobilization Advance         | 10% of Contract Value against an irrevocable bank guarantee as prescribed in the tender form for equivalent value and recoverable 12.5% basis from 2nd RA bills however 100% mobilization will be recovered once the value of work done reached of 80% of contract value.   |
| Payment cycle                | The owner, after submission of bill from Contractor and recommendation from the Project Manager, shall pay 100% of the bill amount to the Contractor. This payment shall be released within 30 (Thirty) working days (10 days for PMC + 20 Days for client) from the date of application for payment from Contractor; if the Project Manager disputes any items shown on the application for payment or the Owner disputes on the certificate for payment, the Project Manager shall bring the disputed items to the attention of the |



|                             |   |
|-----------------------------|---|
|                             | Contractor, and within said time period, the Owner shall pay the amount of such application for payment that is not in dispute.   |
| Payment terms               | The Terms of payment shall be as follows: -<br>10% against submission of shop drawings on Pro-rata basis<br>50% against supply on Pro-rata basis<br>15% against installation on pro-rata basis<br>15% against testing and commissioning at site on pro-rata basis<br>10% after handing over the work.   |
| Amount of Liquidated Damage | Time is the essence of the contract. If the works are not completed within 10 months' time, liquidated damages of 1% of the Contract Value per week will be deducted, subject to a maximum of 5% of the contract value, after which the contract can be terminated at the option of M/s. Galgotias University, Plot No 2, Sector 17A, Yamuna Expressway, Opp Budha International Circuit, Greater Noida, Uttar Pradesh – 203201.  |
| Defects Liability Period    | 12 months from the date of issuance of Final Completion Certificate.  |
| Performance Guarantee       | 5% of the Accepted Contract Amount, within 7 days of issue of Agreement, and shall be released upon successful completion of Defect Liability Period.   |
| Performance Bonus           | If works completed within 10 (Ten) calendar months from the date of issuance of LOI, bonus of 1% of the contract value will give to the contractor  |
| Percentage of retention     | 5% from each certified or an unconditional, irrevocable and divisible bank guarantee from any nationalized bank of the equal amount.<br>50% retention money shall be released upon the issuance of final completion certificate against unconditional, irrevocable and divisible bank guarantee from any nationalized bank of the same amount and balance 50% shall be released at the end of Defect Liability Period.  |
| Bank Guarantees             | The bank guarantees required to be submitted by the successful contractor shall be as per the forms and formats provided by Client. Only bank guarantees drawn from nationalized banks shall be accepted  |
| Insurance                   | The contractor will take Contractors All Risk Insurance (CAR) Policy in our joint name for the full contract value together with the value of material supplied by M/s. Galgotias University, Plot No 2, Sector 17A, Yamuna Expressway, Opp. Budha International Circuit, Greater Noida, Uttar Pradesh – 203201<br>In addition to the above you should also take <ul style="list-style-type: none"> <li>• Workmen Compensation Insurance for your direct workmen and your subcontractor's Labour.</li> <li>• Group Personnel Accident Insurance to your staff.</li> <li>• Third party liability insurance.</li> </ul> |

|  |   |
|--|---|
|  | Personal Injury: You will take insurance policy for a value as may be required subject to an individual limit of Rs.1.00 lakh per person per incident   |
| Price for Extra Items  | The accepted rates in the schedule of quantities will apply for the entire project. Any item of work which is not covered in the schedule of quantities shall be paid as per the actual cost of materials, Labour, 2% (will be towards tools, cartage, power, and water) and 15% (towards all overheads and profits), provided the same cannot be derived from quoted rates from similar comparable items. It is to be clearly understood that claims for extras of any nature will not be entertained unless such extras are duly authorized by project manager in advance |
| Taxes & Duties   | The rate shall include all customs duties and Excise Duties, taxes, like sales tax any other direct or indirect taxes (if applicable) works contract tax, GST, entry tax etc. There shall be no extras on any account whatsoever, excluding the statutory variations after award of contract.   |
| ESI and PF   | The accepted rates are inclusive of ESI and PF as applicable  |
| Statutory Compliance of State & Central Government and Local Municipal Authorities | Following Statutory compliance obligations shall be performed during the entire Contract period without any failure.<br>I. Labour License<br>II. Provident Fund & ESI<br>III.GST<br>VI. Other compliances changes from time to time as per State and Central Government.  |
| Construction Related Statutory Compliances   | Shall be arranged by the Contractor at no additional cost to the Client.  |
| Construction Water   | Construction Water will be provided by the client free of cost at one point, the contractor must make his own arrangements for distribution at the site at his own cost.  |
| Construction Electricity   | There will be a charge for electricity provided by the client, and the contractor will install a sub-meter to measure the amount of electricity consumed. The contractor is responsible for making his own arrangements for the supply and distribution of electricity as part of the work that he is undertaking. The Contractor shall be responsible for ensuring that uninterrupted power supply is provided for their works by installing silent DG sets at their own expense as required.  |
| Safety, Health, and Environment  | Contractor shall adhere to all Health and Safety standards as issued by the Bureau of Indian Standards, National Building Code, 1983 as required by Project Management Consultant / Owner regulations of local Authorities.   |
| Labour   | Adequate number of persons to the satisfaction of the Project Manger shall be provided.   |

|  |  |
|--|--|
|  | <p>Statutory requirements of EPF, ESIC and all other applicable Labour legislations to be complied with; and monthly certification to that effect to be submitted.</p> <p>Duty allocation and Roaster control shall be contractor's responsibility</p>   |
| Sanitary   | The Contractor shall make all arrangements till completion of Project for sanitary and storm sewer arrangements as required and shall make all necessary payments directly to appropriate departments. The Contractor shall arrange to provide the Contractor's subcontractor, these facilities at no additional cost to the owner.  |
| Contractors Conditions                               | Apart from those stated in the above provisions, no other conditions of the Contractors shall be acceptable  |
| Storage, Safe Custody & Protection of Finished items | Rent free space will be provided at the site. The cost of construction of store, security etc. will have to be arranged by the contractor  |
| RA Bills   | <p>The RA bill in triplicate shall be submitted by 1st week of every month to the Project Manager along with all supporting documents. Only one bill per 30 days shall be admitted. Bill/Invoice submitted by the contractor shall be strictly as per the format prescribed by the Project Manager.</p> <p>Bills will not be accepted/ received by the Project Managers if bills are not in the correct format as prescribed by the Project Managers or are not presented along with material invoices/ delivery challans, measurement sheets, rate analysis etc.</p> <p>The final bill shall be accompanied with all necessary and relevant handover/closure documents.</p> |
| Final Bill   | Within 45 days of Final completion of works and submission of handing over documents duly signed by the Architect/Project Manager/Client.  |
| Correctness of Measurement.                          | In case measurements submitted with bills are found to contain incorrect information, the bill would be returned and would be admissible only with the next bill after correction of all measurements. The correct information shall be as per defined norms of measurement or generally accepted practices; any queries shall be discussed and clarified during project pre-Commencement meeting.   |
| Weekly meetings/Monthly Meeting                      | The Project Manager will hold and preside over weekly progress meetings at the site. The scheduling of such meetings will be arranged by the Project Manager in advance or set up on a regular basis at a set time. Senior Management of Contractor shall be part of Monthly meeting arranged by Project Manager.  |
| Billing Address/Shipping Address                     | <p>M/s. Galgotias University,<br/> Plot No 2, Sector 17A, Yamuna Expressway,<br/> Opp Budha International Circuit,<br/> Greater Noida, Uttar Pradesh – 203201</p>  |

**SECTION: 6**

**SPECIAL CONDITIONS OF CONTRACT**

## **SPECIAL CONDITIONS**

### **1. SCOPE OF WORK**

The general character and the scope of work to be carried out under this contract is illustrated in Drawings, Specifications and Schedule of Quantities. The Contractor shall carry out and complete the said work under this contract in every respect in conformity with the contract documents and with the direction of and to the satisfaction of the Client's site representative. The contractor shall furnish all labour, materials and equipment (except those to be supplied by the Client) as listed under Schedule of Quantities and specified otherwise, transportation and incidental necessary for supply, installation, testing and commissioning of the complete Sewage Treatment Plant as described in the Specifications and as shown on the drawings. This also includes any material, equipment, appliances and incidental work not specifically mentioned herein or noted on the Drawings / Documents as being furnished or installed, but which are necessary and customary to be performed under this contract. The Sewage Treatment Plant shall comprise of following:

- a. Screen chambers with SS Screen
- b. Equalization Tank
- c. Anoxic Tanks.
- d. Moving Bed Bio Reactor Tanks
- e. Sludge holding Tank
- f. Clear Water Tank
- g. UF Treatment
- h. Flushing & Irrigation Water tank
- i. Soft Water tank
- j. Tertiary Treatment
- k. Filter Press & Centrifuge
- l. Primary & Secondary Settling Tanks
- n. Electrical Panel, Cabling (Power & Control), Earthing
- o. Other Miscellaneous Items.
- p. Approval from Local Authorities
- q. Cutting holes, chases & like through all types of walls /floors and finishing for all services crossings, including sealing, cover plates, making good structure and finishes to an approved standard.
- r. Balancing, testing & commissioning of the entire STP.
- s. Every day's Test reports (During commissioning and for 3 month after commissioning), list of recommended spares, as-installed drawings, operation & maintenance manual for the entire STP contract.

- t. Training of Client's staff.

## 2. ASSOCIATED CIVIL WORKS

Following civil works associated with Sewage Treatment Plant are excluded from the scope of this contract. These shall be executed by other agencies in accordance with approved shop drawings of and under direct supervision of the Sewage Treatment Plant contractor.

- a. Water proofing of floors.
- b. Civil works for construction of various compartments of STP.

## 3. ASSOCIATED SERVICES WORKS

- 3.1 All associated **ELECTRICAL WORKS** listed below are excluded from the scope of this contract. These shall be installed by other agencies in accordance with approved shop drawings of and under direct supervision of the Sewage Treatment Plant tenderer.

Providing power supply with earthing at the incoming of control panel in plant room.

- 3.2 **BUILDING AUTOMATION SYSTEM**  
***(No additional cost shall be paid for providing the interfacing).***

The scope of Sewage Treatment Plant Tenderer shall include the following for the interface to Building Automation System.

- a. Sockets /Nipples including shut-off valve for mounting sensors/transmitters on pipe lines.
- b. It is to be clearly understood that the final responsibility for the sufficiency, adequacy and conformity to the contract requirements, of the Sewage Treatment Plant system, lies solely with the tenderer.

## 4. PROJECT EXECUTION AND MANAGEMENT

The Contractor shall ensure that senior planning and erection personnel from his organization are assigned exclusively for this project. They shall have minimum 10 years' experience in this type of installation.

The Contractor shall arrange to have mechanized & modern facilities of transporting material to place of installation for speedy execution of work.

## 5. BYE-LAWS AND REGULATIONS

The installation shall be in conformity with the Bye-laws, Regulations and Standards of the local authorities concerned, in so far as these become applicable to the installation. But if these Specifications and Drawings call for a higher standard of materials and / or workmanship than those required by any of the above regulations and standards, then these Specifications and Drawings shall take precedence over the said regulations and standards. However, if the Drawings and specifications require something which violates the Bye-laws and Regulations, then the Bye-laws and Regulations shall govern the requirement of this installation.

## 6. PERMITS

The contractor shall obtain all permits/ licenses required for the inspection, approval and commissioning of their installation.

## **7. DRAWINGS**

The Sewage Treatment Plant Drawings, which may be issued with tenders, are diagrammatic only and indicate arrangement of various systems and the extent of work covered in the contract. These Drawings indicate the points of supply and of termination of services and broadly suggest the routes to be followed. Under no circumstances shall dimensions be scaled from these Drawings. The Architectural /interiors drawings and details shall be examined for exact location of drainage piping etc.

The contractor shall follow the tender drawings in preparation of his shop drawings, and for subsequent installation work. He shall check the drawings of other trades to verify spaces in which his work will be installed.

Maximum headroom shall be maintained at all points. Where headroom appears inadequate, the contractor shall notify the Construction Manager / Architect/Consultant/Client's site representative before proceeding with the installation. In case installation is carried out without notifying, the work shall be rejected and contractor shall rectify the same at his own cost.

The contractor shall examine all architectural, landscape, structural, plumbing, electrical and other services drawings and check the as-built works before starting the work, report to the Client's site representative any discrepancies and obtain clarification. Any changes found essential to coordinate installation of his work with other services and trades, shall be made with prior approval of the Construction Manager / Architect /Consultant/Client's site representative without additional cost to the Client. The data given in the Drawings and Specifications is as exact as could be procured, but its accuracy is not guaranteed.

## **8. TECHNICAL DATA**

Each tenderer shall submit along with his tender, the technical data for all items listed in Appendix-IV in the indicated format. Failure to furnish complete technical data with tenders may result in summary rejection of the tender.

## **9. SHOP DRAWINGS**

All the shop drawings shall be prepared on computer through AutoCAD System based on Architectural Drawings, site measurements. Within One week of the award of the contract, contractor shall furnish, for the approval of the Construction Manager / Architect /Consultant, five sets of detailed shop drawings of all equipment and materials including layouts for Sewage Treatment Plant, Typical drawings showing exact location of supports, flanges, bends, tee connections, reducers, detailed piping drawings showing exact location and type of supports, valves, fittings etc; electrical panels inside/outside views, power and control wiring schematics, cable trays, supports and terminations. This shop drawing should contain the relevant IS annexure.

- 9.1 These shop drawings shall contain all information required to complete the Project as per specifications and as required by the Construction Manager / Architect /Consultant/Client's site representative. These Drawings shall contain details of construction, size, arrangement, operating clearances, performance characteristics and capacity of all items of equipment, also the details of all related items of work by other contractors. Each shop drawing shall contain tabulation of all measurable items of equipment/materials/works and progressive cumulative totals from other related drawings to arrive at a variation-in-quantity statement at the completion of all shop drawings.

Each item of equipment/material proposed shall be a standard catalogue product of an established manufacturer strictly from the manufacturers listed in Appendix-III and quoted by the tenderer in technical data.

When the Construction Manager / Architect /Consultant makes any amendments in the above drawings, the contractor shall supply two fresh sets of drawings with the amendments duly incorporated alongwith check prints, for approval. The contractor shall submit further ten sets of shop drawings to the Client's site representative for the exclusive use by the Client's site representative and all other agencies. No material or equipment may be delivered or installed at the job site until the contractor has in his possession, the approved shop drawing for the particular material/equipment/installation.

- 9.2 Shop drawings shall be submitted for approval four weeks in advance of planned delivery and installation of any material to allow Construction Manager / Architect /Consultant ample time for scrutiny. No claims for extension of time shall be entertained because of any delay in the work due to his failure to produce shop drawings at the right time, in accordance with the approved program.
- 9.3 Manufacturers drawings, catalogues, pamphlets and other documents submitted for approval shall be in four sets. Each item in each set shall be properly labeled, indicating the specific services for which material or equipment is to be used, giving reference to the governing section and clause number and clearly identifying in ink the items and the operating characteristics. Data of general nature shall not be accepted.
- 9.4 Samples of all materials like valves, pipes, control wires etc shall be submitted to the Client's site representative prior to procurement. These will be submitted in two sets for approval and retention by Client's site representative and shall be kept in their site office for reference and verification till the completion of the Project. Wherever directed a mockup or sample installation shall be carried out for approval before proceeding for further installation.
- 9.5 Approval of shop drawings shall not be considered as a guarantee of measurements or of building dimensions. Where drawings are approved, said approval does not mean that the drawings supersede the contract requirements, nor does it in any way relieve the contractor of the responsibility or requirement to furnish material and perform work as required by the contract.
- 9.6 Where the contractor proposes to use an item of equipment, other than that specified or detailed on the drawings, which requires any redesign of the structure, partitions, foundation, piping, wiring or any other part of the mechanical, electrical or architectural layouts; all such re-design, and all new drawings and detailing required therefore, shall be prepared by the contractor at his own expense and gotten approved by the Construction Manager / Architect /Consultant/ Client's site representative. Any delay on such account shall be at the cost of and consequence of the Contractor.
- 9.7 Where the work of the contractor has to be installed in close proximity to, or will interfere with work of other trades, he shall assist in working out space conditions to make a satisfactory adjustment. If so directed by the Client's site representative, the contractor shall prepare composite working drawings and sections at a suitable scale, not less than 1:50, clearly showing how his work is to be installed in relation to the work of other trades. If the Contractor installs his work before coordinating with other trades, or so as to cause any interference with work of other trades, he shall make all the necessary changes without extra cost to the Client.
- 9.8 Within one week of approval of all the relevant shop drawings, the contractor shall submit four copies of a comprehensive variation in quantity statement, and itemized price list of recommended (by manufacturers) imported and local spare parts and tools, covering all equipment and materials in this contract. The Construction Manager shall make recommendation to Client for acceptance



of anticipated variation in contract amounts and also advise Client to initiate action for procurement of spare parts and tools at the completion of project.

**10. QUIET OPERATION AND VIBRATION ISOLATION**

The installation shall operate under all conditions of load without any sound or vibration which is objectionable in the opinion of the Client's site representative. In case of rotating machinery sound or vibration noticeable outside the room in which it is installed, or annoyingly noticeable inside its own room, shall be considered objectionable. Such conditions shall be corrected by the Contractor at his own expense. The contractor shall guarantee that the equipment installed shall maintain the specified Noise Control levels.

## **11. ACCESSIBILITY**

The Contractor shall verify the sufficiency of the size of the shaft openings, clearances in cavity walls and suspended ceilings for proper installation of his piping and other ancillaries. His failure to communicate insufficiency of any of the above, shall constitute his acceptance of sufficiency of the same. The Contractor shall locate all equipment which must be serviced, operated or maintained in fully accessible positions. The exact location and size of all access panels, required for each concealed, valve or other devices requiring attendance, shall be finalized and communicated in sufficient time, to be provided in the normal course of work. Failing this, the Contractor shall make all the necessary repairs and changes at his own expense. Access panel shall be standardized for each piece of equipment / device / accessory and shall be clearly nomenclature / marked.

## **12. MATERIALS AND EQUIPMENT**

### **12.1 Quality**

All materials and equipment used in work shall be new and of best available quality conforming to the relevant Indian Standard Specifications and to these specifications. Makes shall be strictly in conformity with list of approved manufacturers as per Appendix - III. Owners reserve the right to reject any item which in their assessment is second hand.

### **12.2 Manufacturers Instruction**

Where manufacturers have furnished specific instructions, relating to the materials used in this job, covering points not specifically mentioned in these documents, manufacturers' instructions shall be brought to the notice of the Owners/Architects for further instructions in the matter.

## **13. COMPLETION CERTIFICATE**

On completion of the Electrical installation for STP works, a certificate shall be furnished by the contractor, counter signed 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.

The contractor shall be responsible for getting the entire electrical installation for Sewage Treatment Plant duly approved by the local authorities concerned, and shall bear expenses if any, in connection with the same.

## **14. BALANCING, TESTING AND COMMISSIONING**

Balancing of all water systems and all tests as called for the Specifications shall be carried out by the contractor through a specialist group, in accordance with the Specifications and Manual on Sewage & Sewage Treatment – Published by CPHEEO Guide lines and Standards. Performance test shall consist of seven days of 10 hour each operation of system for each season. All the chemicals, sludge/cow dung etc required for balancing period will be arranged by the contractor at their own cost. MSDS for the chemicals will be provided by the contractor before usages of chemical.

The installation shall be tested again after removal of defects and shall be commissioned only after approval by the Client's site representative. All tests shall be carried out in the presence of the representatives of the Construction Manager / Architect /Consultant and Client's site representative. After commissioning, the results shall be submitted for scrutiny in quadruplicate.

## **15. COMPLETION DRAWINGS**

Contractor shall periodically submit completion drawings as and when work in all respects is completed in a particular area. These drawings shall be submitted in the form of two sets of CD's and four portfolios (300 x 450 mm) each containing complete set of drawings on approved scale indicating the work as - installed. These drawings shall clearly indicate the following:

- 15.1 Complete plant room layouts, piping layouts, location of all concealed piping, valves.
- 15.2 Complete wiring diagram, control diagram, as installed and scheduled showing all connections in the complete electrical system in the location.
- 15.3 Single line diagram, power schematic, control schematic with detailed bill of materials, showing makes, types and description of all components and accessories.
- 15.4 Sequencing of automatic controls and other services.

Each portfolio shall also contain technical literature on all controls. The contractor shall frame under glass, in the plant room, one set of these consolidated control and P & I diagrams.

## **16. OPERATING INSTRUCTION & MAINTENANCE MANUAL**

Upon completion and commissioning of part Sewage Treatment Plant the contractor shall submit a draft copy of comprehensive operating instructions, maintenance schedule and log sheets for all systems and equipment included in this contract. This shall be supplementary to manufacturer's operating and maintenance manuals. Upon approval of the draft, the contractor shall submit four (4) complete bound sets of typewritten operating instructions and maintenance manuals; one each for retention by Consultant and Client's site representative and two for Clients Operating Personnel. These manuals shall also include basis of design, detailed technical data for each piece of equipment as installed, spare parts manual and recommended spares for 4 year period of maintenance of each equipment. These manuals shall include:

- a. Description of the work carried out / installed.
- 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.

Details of all the bought out item should be part of this maintenance manual.

## **17. ON SITE TRAINING**

Upon completion of all work and all tests, the Contractor shall furnish necessary operators, labor and helpers for operating the entire installation for such periods so as to enable the Client's staff to get acquainted with the operation of the system. During this period, the contractor shall train the Client's personnel in the operation, adjustment and maintenance of all equipment installed.



## **18. MAINTENANCE DURING DEFECTS LIABILITY PERIOD**

### **18.1 Complaints**

The Contractor shall receive calls for any and all problems experienced in the operation of the system under this contract, attend to these within 10 hours of receiving the complaints and shall take steps to immediately correct any deficiencies that may exist.

### **18.2 Repairs**

All equipment that requires repairing shall be immediately serviced and repaired. Since the period of Mechanical Maintenance runs concurrently with the defects liability period, all replacement parts and labour shall be supplied promptly free-of-charge to the Client.

## **19. UPTIME GUARANTEE**

The contractor shall guarantee for the installed system an uptime of 98%. In case of shortfall in any month during the defects liability period, the Defects Liability period shall get extended by a month for every month having shortfall and no reimbursement shall be made for the extended period.

## **20. PARTIAL ORDERING**

Client through the Construction Manager / Architect /Consultant/ Client's site representative reserves the right to order equipment and material from any and all alternates, and /or to order high side and /or low side equipment and materials or parts thereof from one or more tenderers.

## **21. Green Building Compliance**

Actions required by Contractor:

- a. Contractor will provide full support in complying to Green Building requirements for the desired level of Green Building Rating in the project.
- b. Contractor shall implement the recommendations provided by Green Building Consultant and provide support during the site inspections.
- c. Contractor shall provide respective documentation including but not limited to specification sheets, manufacturer cutsheets, Test Certificates, Brochures, purchase records, manufacturer declarations, calculations, site photographs, commissioning reports.
- d. Contractor is encouraged to designate an individual in their existing team who will be responsible for regular coordination with respective site people to ensure implementation of required green building measures and ultimately provide the required documentation for aspired Green Building Rating.
- e. In case of any deviations in implementing recommended green building measures and/or using specified material/equipment/system, contractor will have to inform Owners/ Services Consultant/ Green Building Consultant/ Architect as applicable for their formal approval.
- f. In case of any additional requirement to comply with Green Building rating as identified during construction/installation/commissioning based on the actual site conditions/ construction activities, Contractor shall implement the same.

**APPENDIX - I**

**LIST OF DRAWINGS**

| <b><u>S. NO.</u></b> | <b><u>DRAWING NO.</u></b> | <b><u>DRAWING TITLE</u></b> |
|----------------------|---------------------------|-----------------------------|
| 1.                   | SNC-COE-STP-2-01          | STP Flow Diagram            |

**A P P E N D I X – II**

**GUARANTEE PROFORMA**

**GUARANTEE FOR SEWAGE TREATMENT SYSTEM INSTALLATION**

We hereby guarantee the year round Sewage Treatment Plant System Which We Have Installed In The Complex Described Below :

Building : **Galgotias University**

Location : **Greater Noida**

For a period of 12 months from the date of acceptance of the total installation, WE AGREE TO repair or replace to the satisfaction of the Owner, any or all such work that may prove defective in workmanship, equipment or materials within that period, ordinary wear and tear and unusual abuse or neglect excluded, together with any other work, which may be damaged or displaced in so doing. In the event of our failure to comply with the above mentioned conditions within a reasonable time, after being notified in writing, we collectively and separately, do hereby authorize the Owner to proceed to have the defects repaired and made good at our expense, and we shall pay the cost and charges thereof, immediately upon demand.

WE ALSO HEREBY UNDERTAKE to test the entire installation in first year on following the completion of the installation, to check and do everything necessary to ensure that the specified design conditions and functional requirement are met, that all water, sewage, air pollution control systems are properly balanced, that all controls are calibrated accurately, and that all units are functioning satisfactorily.

***SIGNATURE OF CONTRACTOR***  
*for SEWAGE TREATMENT PLANT INSTALLATION*

**DATE:**

**SEAL**

## APPENDIX – III

### LIST OF BUREAU OF INDIAN STANDARDS CODES

All equipment, supply, erection, testing and commissioning shall comply with the requirements of Indian Standards and code of practices given below as amended upto date. All equipment and material being supplied by the contractor shall meet the requirements of IS, Pollution Control Board, electrical inspectorate and Indian Electricity rules and other Codes / Publications as given below:

#### 1. General

|                                     |  |
|-------------------------------------|--|
| Manual on Sewage & Sewage Treatment | CPH EEO; Govt. of India.   |
| SP : 6 (1)                          | Structural Steel Sections  |
| IS : 325                            | Three Phase Induction Motors   |
| IS : 554                            | Dimensions for pipe threads where pressure tight joints are required on the threads.   |
| IS : 694                            | PVC insulated cables for working voltages upto & including 1100 V.                     |
| IS : 779                            | Specification for water meters (domestic type).  |
| IS : 782                            | Specification for caulking load.   |
| IS : 800                            | Code of practice for general construction in steel                                     |
| IS : 1726                           | Specification for cast iron manhole covers and frames.                                 |
| IS : 2379                           | Color code for identification of pipe lines.   |
| IS : 2629                           | Recommended practice for hot dip galvanizing on iron and Steel.                        |
| IS : 3114                           | Code of practice for laying of cast iron pipes   |
| IS : 4111 (Part 1)                  | Code of practice for ancillary structures in sewerage system: Part 1 manholes.         |
| IS : 5329                           | Code of practice for sanitary pipe work above ground for buildings.                    |
| IS : 5455                           | Cast iron steps for manholes.  |
| IS : 6159                           | Recommended practice for design and fabrication of material, prior to galvanizing.     |
| IS : 8321                           | Glossary of terms applicable to plumbing work.   |
| IS : 8419 (Part 1)                  | Requirements for water filtration equipment: Part 1 Filtration medium sand and gravel. |
| IS : 8419 (Part 2)                  | Requirements for water filtration equipment: Part 2 under drainage system.             |



|            |  |
|------------|--|
| IS : 10221 | Code of practice for coating and wrapping of underground mild steel pipelines. |
| IS : 10446 | Glossary of terms relating to water supply and sanitation.                     |
| IS : 11149 | Rubber Gaskets   |

## 2. Pipes and Fittings

|                    |  |
|--------------------|--|
| IS : 1239 (Part 1) | Mild steel, tubes, tubulars and other wrought steel fittings: Part 1 Mild Steel tubes.   |
| IS : 1239 (Part 2) | Mild Steel tubes, tubulars and other wrought steel fittings: Part 2 Mild Steel tubulars and other wrought steel pipe fittings. |
| IS : 1536          | Centrifugally cast (spun) iron pressure pipes for water, gas and Sewage.   |
| IS : 1537          | Vertically cast iron pressure pipes for water, gas and Sewage.   |
| IS : 1538          | Cast Iron fittings for pressure pipes for water, gas and Sewage.   |
| IS : 1729          | Sand Cast iron spigot and socket soil, waste and ventilating pipes, fittings and accessories.                                  |
| IS : 1879          | Malleable cast iron pipe fittings.   |
| IS : 2643 (Part 1) | Dimensions for pipe threads for fastening purposes: Part 1 Basic profile and dimensions.                                       |
| IS : 2643 (Part 2) | Dimensions for pipe threads for fastening purposes: Part 2 Tolerances.   |
| IS : 2643 (Part 3) | Dimensions for pipe threads for fastening purposes: Part 3 Limits of sizes.  |
| IS : 3468          | Pipe nuts.   |
| IS : 3589          | Seamless or electrically welded steel pipes for water, gas and Sewage (168.3 mm to 2032 mm outside diameter).                  |
| IS : 3989          | Centrifugally cast (sun) iron spigot and socket soil, waste and ventilating pipes, fittings and accessories.                   |
| IS : 4346          | Specifications for washers for use with fittings for water services.   |
| IS : 4711          | Methods for sampling steel pipes, tubes and fittings.  |
| IS : 6392          | Steel pipe flanges   |
| IS : 6418          | Cast iron and malleable cast iron flanges for general engineering purposes.  |
| IS : 7181          | Specification for horizontally cast iron double flanged pipe for water, gas and Sewage.  |

## 3. Valves

|                     |  |
|---------------------|--|
| IS : 778            | Specification for copper alloy gage, globe and check valves for water works purposes.        |
| IS : 780            | Specification for sluice valves for water works purposes (50 mm to 300 mm size).             |
| IS : 1703           | Specification copper alloy float valves (horizontal plunger type) for water supply fittings. |
| IS : 2906           | Specification for sluice valves for water works purposes (350 mm to 1200 mm size)            |
| IS : 3950           | Specification for surface boxes for sluice valves.   |
| IS : 5312 (Part 1)  | Specification for swing check type reflux (non return) valves: part 2 Multi door pattern.    |
| IS : 5312 (Part 2)  | Specification for swing check type reflux (non return) valves: part 2 Multi door pattern.    |
| IS : 12992 (Part 1) | Safety relief valves, spring loaded : Design   |
| IS : 13095          | Butterfly valves for general purposes.   |

## APPENDIX – IV

### SCHEDULE OF TECHNICAL DATA

|    |  |  |
|----|--|--|
| 1. | <b><u>SEWAGE PUMP &amp; CLEAR WATER PUMP</u></b> | (Submit separate technical data sheet) |
|    | Pump   | :                                      |
|    | Make   | :                                      |
|    | Type & Model                                     | :                                      |
|    | Discharge in LPS/ GPM                            | :                                      |
|    | Head (Meters of WC)                              | :                                      |
|    | Shut off head (Meters of WC)                     | :                                      |
|    | Efficiency (%)                                   | :                                      |
|    | No. of stages                                    | :                                      |
|    | Suction end I.D.                                 | :                                      |
|    | Delivery end I.D.                                | :                                      |
|    | Details of N.P.S.H.                              | :                                      |
|    | Solid Handling size.                             | :                                      |
|    | Vibration Isolation Detail                       | :                                      |
|    | Skid Details                                     | :                                      |
|    | Operating Weight                                 | :                                      |
|    | Overall Dimension                                | :                                      |
|    | Mechanical Seal Detail                           | :                                      |
|    | MATERIAL   | :                                      |
|    | Body   | :                                      |
|    | Impeller   | :                                      |
|    | Shaft  | :                                      |
|    | Type of Impeller                                 | :                                      |
|    | Is it suitable for direct coupling               | :                                      |
|    | MOTOR  | :                                      |

Make :  
Model :  
Power Requirement (HP/KW) :  
R.P.M. :  
Rating :  
Over Load Capacity :  
Class of Insulation :  
Details of additional protection in winding :  
Motor efficiency :  
If it suitable for direct coupling to pump ? :  
Type of rotary movement :  
Method of starting :  
Size and type of cable for connections :

|            |                                    |   |
|------------|------------------------------------|---|
| <b>2.</b>  | <b><u>TERTIARY TREATMENT</u></b>   | : |
| <b>2.1</b> | <b>FILTER FEED PUMPS</b>           | : |
|            | Pump                               | : |
|            | Make                               | : |
|            | Type & Model                       | : |
|            | Discharge in LPS/ GPM              | : |
|            | Head (Meters of WC)                | : |
|            | Shut off head (Meters of WC)       | : |
|            | Efficiency (%)                     | : |
|            | No. of stages                      | : |
|            | Suction end I.D.                   | : |
|            | Delivery end I.D.                  | : |
|            | Details of N.P.S.H.                | : |
|            | Vibration Isolation Detail         | : |
|            | Skid Details                       | : |
|            | Operating Weight                   | : |
|            | Overall Dimension                  | : |
|            | Mechanical Seal Detail             | : |
|            | <b>MATERIAL</b>                    |   |
|            | Body                               | : |
|            | Impeller                           | : |
|            | Shaft                              | : |
|            | Type of Impeller                   | : |
|            | Is it suitable for direct coupling | : |
|            | <b>MOTOR</b>                       | : |
|            | Make                               | : |
|            | Model                              | : |
|            | Power Requirement (HP/KW)          | : |

R.P.M. :

Rating :

Over Load Capacity :  
Class of Insulation :  
Details of additional protection in winding :  
Motor efficiency :  
If it suitable for direct coupling to pump? :  
Type of rotary movement :  
Method of starting :  
Size and type of cable for connections :

**3. FILTER (Submit separate data sheet for various types of filters)**

Material of Construction :  
Diameter :  
Height on straight :  
Filtering media :  
Shell thickness :  
Dish end thickness :  
Service flow rate :  
Design pressure :  
Back wash duration :  
Back wash flow rate :  
Pressure drop across the filter :  
Maximum inlet turbidity (NTU) :  
Turbidity in filtered water :

**4. CHLORINATION SYSTEM**

**PUMP:**

Pump model :  
Pump Type :  
Make :  
Material of construction :

Flow rate :

**TANK:**

Capacity :

Material of Construction :

**5. AIR BLOWER**

Blower type :

Service :

Blower model :

Flow Direction :

Qty. :

Operation :

Capacity (fad) :

Inlet Pressure :

Differential Pressure :

Blower Speed :

Power consumption :

Motor rating :

Inlet temperature :

Outlet temperature :

Power transmission :

Specific gravity :

Inlet & outlet size :

Material of construction :

Casing & End Cover :

Rotors with integral shaft :

Timing gears :

Side plats, covers & pulley :



Sealing

:

**6. HYDRAULIC TYPE FILTER PRESS**

Name of the Equipment :  
Type of Element :  
Mechanism :  
Drainage Surface :  
Type of Plate shifting :  
Size :  
No. of Plates :  
No. of Chambers :  
Wet Cake Holding Cap. :  
Operation Pressure (Bar) :  
Max. Operating Temp. :  
Bare Weight :  
Required Floor area :

**7. FINE BUBBLE DIFFUSER**

Model :  
Shape of Aerator :  
Size of Bubble :  
Type of Bubble :  
Bubble Size :  
MOC of Membrane :  
Detail of Fittings per Aerator :  
MOC of Membrane Support :  
MOC of Clamp :  
MOC of End connector :  
Size of End connector :  
Temperature Tolerance :  
Effective Surface area of membrane per aerator :

Air flow through rate :

**8. COARSE BUBBLE DIFFUSER**

Model :

Shape of Aerator :

Size of Bubble :

Type of Bubble :

Bubble Size :

MOC of Membrane :

Detail of Fittings per Aerator :

MOC of Membrane Support :

MOC of Clamp :

MOC of End connector :

Size of End connector :

Temperature Tolerance :

Effective Surface area of membrane per aerator :

Air flow through rate :

**9. U.V. STERLIZATION**

System Make :

Model :

Type :

Capacity :

Qty. of U.V. Lamps :

**10. pH CORRECTION SYSTEM**

**Pump**

Pump model :

Pump Type :

Make :

Material of construction :

Flow rate :

**Tank**

Capacity :

Material of Construction :

**11. UF Membrane**

Manufacturer :

Model :

Feed water pumps :

Power Rating (KW) :

UF Skid Size and MOC :

Backwash pump capacity :

UF Membrane hollow fibre pore size :

Chemical dosing :

Flow meter :

PH / Turbidity / ORP meter :

PH / BOD / COD / TSS outlet parameters :

**Skid Dimensions**

i) Length (mm) :

ii) Width (mm) :

iii) Height (mm) :

Weight (Kg.) :

**12. ELECTRICAL ACCESSORIES**

**Make of the following:**

- a. Motor Control Centre (Electrical Panel) :
- b. MCCB :
- c. Motor :
- d. MPCB :
- e. MCB :
- f. Rotary switch :
- g. Soft Starter :
- h. Timer :
- i. Automatic Star Delta Starter :
- j. Direct on line Starter :
- k. Contactor :
- l. Current Transformer (cast resin type) :
- m. Single phase preventor :
- n. Push Button :
- o. Change over switch :
- p. Ammeter & Voltmeter KWH meter :
- q. Relay :
- r. Indication lamp :
- s. Cables :
- t. Wires :

**SECTION: 7**

**TECHNICAL CONDITIONS OF CONTRACT**

## TECHNICAL SPECIFICATIONS

### SECTION-1: BASIS OF DESIGN

1. The capacity/ rating of pumps and equipment etc. shall hold good for the capacity as defined in the Schedule of Quantities and shall be good for meeting the treated parameters requirement as follows:
  - a. Permissible limit as prescribed in IS:2490 (Part-I) - 1974 and environment (Protection) Rules 1986.
  - b. Water (Prevention and Control of Pollution) Act, 1977 & 1978.
  - c. Environment (Protection) Act, 1986.
  - d. Environment (Protection) Rules, 1986.
  - e. Hazardous Wastes (Management & Handling) Rules, 1989.
  - f. Manufacturer, Storage and Import of Hazardous Chemicals Rules, 1989.
  - g. Manufacturer, use import and storage and hazardous Micro-Organizers, Genetically Engineered organizations or Cell Rules, 1989.
  - h. Manual on Sewage & Sewage treatment - CPHEEO
  - i. The Public Liability Insurance Act, 1991.
  - j. All standards as laid down by Central Pollution Control Board and any other relevant statutory authority.
  - k. 100% recycle of waste water and removal of sludge in cake form, no water to be discharged outside the premises.



## **SECTION-2 : SEWAGE TREATMENT PLANT (MBBR BASED)**

### **1. GENERAL**

The Sewage Treatment Plant shall be compact, odor free and shall consume low power.

Plant shall be installed below ground level or at any desirable depth and shall generate minimum amount of excess sludge. Waste water after treatment below shall be suitable for irrigation and flushing water requirement.

Parameters for design of Sewage Treatment Plant:

Daily Average Flow 125 Cum/day

| <b><u>Nature of Effluent</u></b> | <b><u>Domestic Sewage</u></b> |
|----------------------------------|-------------------------------|
| pH                               | 6.5 - 8.5                     |
| BOD5                             | 450 – 550 Mg / L.             |
| Suspended Solids                 | 450 – 550 Mg / L              |
| COD                              | 600 – 900 Mg / L              |
| Oil & Grease                     | 50 Mg / L                     |
| Total Nitrogen                   | 60 Mg / L                     |

Standards of the Effluent Discharge after treatment shall be as follows:

| <b><u>Parameters</u></b> | <b><u>Value</u></b> |
|--------------------------|---------------------|
| pH                       | 6.0 – 8.5           |
| BOD5                     | Less than 5 Mg /L   |
| Suspended Solids         | Less than 5 Mg / L  |
| COD                      | Less than 30 Mg / L |
| Oil & Grease             | Nil                 |
| Total Nitrogen           | Less than 10 Mg /   |

### **2. EQUIPMENT**

The following give the minimum requirements of the different components of the system. The figures indicated are for contractor's references. It shall be the Contractor's responsibility to select equipment for the plant proposed by them so that the capacities and performance of the Sewage Treatment Plant meet with the criteria set out in this specification.

All equipment and components of the system shall be of top quality construction and shall be corrosion resistant.

#### **2.1 Coarse Screening Equipment**

Bar screen shall be of 304 stainless steel construction. Drip trays shall be provided for holding and drainage of the screenings. A manual by-pass screen of 30mm opening with stainless steel drip tray shall be provided. An isolation valve shall be provided to divert the flow to the by- pass screen when the screen requires service.

#### **2.2 Air Blowers**

Air blowers shall be provided in duplicate (i.e. one duty and one standby). Blowers shall be either of positive displacement or centrifugal with pressure vessel type complete with motor, base-plate, inlet filter, intake silencer and off-load starting system outlet silencer, anti-vibration damper,

flexible coupling, filter restriction indicator, non-return valve, pressure relief valve, V-belt system or direct drive coupling. The casing rotor shall be of cast iron construction. Bearings and gears shall be grease lubricated. Motor speed shall be 1500 rpm.

The size and performance of the air blower shall be so selected that it can provide a minimum air flow rate 0.5 l /sec / diffuser to 1l/sec/diffuser maximum, and to maintain a minimum of 2.0mg/ℓ dissolved oxygen in the aeration tanks in operation.

### **2.3 Air Diffusers**

Air diffusers shall be made to provide a uniform distribution of fine bubble air release performance in the system. The air diffuser shall be either made of elastomeric rubber membrane or composed of crystalline fused aluminum oxide with a suitable ceramic bonding material.

Membrane endurance shall be more than 180,000 expansion/contraction cycles.

Diffuser shall be of self-cleaning, non-clog disc or dome-shaped type. Oxygen transfer efficiency shall not be less than 20% at 3.5m submergence in clear water. Alternatives may be offered for consideration.

Diffuser hold down assemblies shall consist of a retainer bolt, a matching washer and gasket. Sealing gasket shall be composed of solid neoprene rubber and shall be conform to ASTM D-2000 and shall be suitable for withstanding the effects of wastewater high temperature up to 120°C.

The Contractor shall submit calculation to justify the diffuser selection and air requirement during the detailed design.

### **2.4 Sewage Pumps**

Working and standby Sewage pumps shall be provided.

Each shall be of submersible type c/w guide base to facilitate ease of removal, lift chain and automatic discharge connection. Pump casing and impeller shall be of cast iron material. Shaft shall be of stainless steel material.

### **2.5 Sludge Pumps**

Two numbers of sludge transfer and disposal pumps (one duty and one standby) shall be provided.

Each shall be screw type and automatic discharge connection. The material construction shall be the same as the sewage pumps and feed to filter press for final disposal.

### **2.6 UV Treatment**

UV unit shall be complete with reactor, cabinet housing, cabinet cooling, treatment chamber, electrical panel, temperature safety control, lamp out alert, UV radiometer along with UV monitoring system and UV monitoring readout panel. The UV Dosage should be > 60,000 uW – Sec / sq.cm. The lamps should be selected based upon the flow requirement of respective unit. The treated water after the secondary settling tank shall be passed through UV unit for disinfection purpose.

## 2.7 Tertiary Treatment

This tertiary treatment shall be provided for the sewage used for irrigation. HVAC and flushing system.

The tertiary treatment plant shall comprise of the pressure sand filters and activated carbon filters and UF system as well. This shall be sized to accommodate 100% of the sewage discharge flow rate and shall achieve the performance as outlined and described in Design Criteria.

Details of the equipment layout proposal shall be submitted for review by the Construction Manager with tender documents.

## 2.8 Electrical Control

The operation of the treatment process shall be fully automatic.

A completely assembled and pre-wired control panel with mimic diagram consisting of weatherproof cabinet shall be furnished. The control panel shall contain all metering and status indicators, motor starters, program timers, on-off-auto change-over switches and duty selectors for equipment.

Proper control sequence shall be designed according to system requirement and manufacturer standards,

## 2.9 Other Equipment

Any other necessary accessories, such as buffer, riser, scum removal devices, partition, control panel, collection devices, etc. for all the tanks and pumps (where necessary) shall be provided in order to provide a fully working systems.

## 2.10 Piping Materials

|             |   |   |
|-------------|---|---|
| uPVC Sch 40 | - | Submerged air piping  |
| MS epoxy    | - | Air piping and pumped effluent riser (Non submerged)              |
| PVC piping  | - | Pumped effluent (submerged) & tank overflow pipe line.            |
| GI (Heavy)  | - | Interconnecting pipe line after delivery header of pump / filter. |

Nut bolts should be of SS for all the equipments.

## 2.11 Valves

The Contractor shall supply and install all isolating valves and control valves as indicated on the drawings and as required for the proper and efficient operation and maintenance of the entire systems.

All valves supplied shall be suitable for the working pressure and test pressure of the system as specified elsewhere in this specification.

Regulating valves shall be of similar materials as that specified for cast iron gate valves. All regulating valves shall be lock shield type.

All valves shall be full line size.

Each valve shall have a purpose made reference number plate for label engraved or stamped indicating the manufacturer's catalogue number, pressure and temperature ratings. Valves shall be arranged so that clockwise rotation of the spindle will close the valve.

Furnish all valves and accessory materials necessary in the piping whether or not shown on drawings as flows.

All valves shall be packed with an approved packing and threads shall be coated with oil and graphite. Packing should be replaced when found deteriorated on site.

Where possible locate all valves at convenient positions of operation from the floor with valve stems upright.

Valves that are flanged shall have flanges to the table specified for the pipe work.

Plastic or metal plates (rustless) shall be provided to indicate the open / close status as well as the use of each valve in the pump and tank rooms.

## **2.12 UF Process**

The hollow fiber membrane filtration process is automatic and has three basic modes of operation as mentioned below:

- Filtration
- Backwash
- Chemically Enhanced Backwash (CEB)

### **I) Filtration**

A common pumping station feeds a common pre-filter station where the feed water is screened to 200 microns. From the common pre-filter station the feed water flows to a header system that divides the water over the available membrane units.

Each membrane unit has to be equipped with flow distribution valves to allow for even flow distribution over the available membrane units. As water flows through the membranes, a fouling layer will develop on the membrane surface and will gradually become more resistant to flow, hence a feed flow pumping system equipped with variable frequency drive and a pump which automatically increases the feed pressure is to be used to maintain a constant trans membrane pressure which ensures feed flow is controlled to maintain a constant filtrate output. Typically filtration time is 30 minutes to 60 minutes.

### **II) Backwash**

Based on a pre-programmed parameter the filtration flow to one of the membrane unit will be stopped. This parameter can be either filter run time, filter volume processed or increase in resistance over the membrane or operator intervention.

Once the filter flow through the membrane unit is stopped a backwash pump will start and reverse the flow which will clean the membrane unit. This process is called a backwash.

The membranes have to be designed to allow for backwashing with UF permeate. Backwash cycle for one membrane unit is 1 minute. Minimum backwash flux rate is 250 l/m<sup>2</sup>h (liter per hour per square meter of membrane surface).

### **III) Chemically Enhanced Backwash**

Periodically, the system will require a more thorough cleaning than backwashing can provide. Typically this will be required when fouling start adhering to the membrane surface, e.g. biological foulants that absorb on the membrane or insoluble salts that precipitate on the membrane.

The membrane system is designed with a fully automatic cleaning system that on regular time intervals adds chemicals to a backwash flow in order to remove the adhered fouling. Composition and concentration of the cleaning chemicals to be freely selectable depending on type of fouling: acid, caustic, sodium hypochlorite.

Cleaning chemicals will be added to the backwash flow of the membrane unit. The membrane unit will be soaked as required to regenerate the modules.

Typically chemically enhanced backwash will be carried out after 25 to 35 cycles of filtration depending on feed conditions which will be almost one in a day for just 25 minutes.

Periodic Chemically enhanced back washing ensures the trans membrane pressure is always kept low, which ensures less breakage of membranes and reduces power consumption because of low operating pressure.

Chemically enhanced backwashing eliminates

- Rigorous membrane cleaning and
- Long shut down ,
- Solution preparation tanks
- Pumps
- Manual intervention.

### **3. PIPE SUPPORTS**

#### **3.1 General Support**

Tender drawings indicate schematically the size and location of pipes. The Contractor, on the award of the work, shall prepare detailed working drawings, showing the cross-sections, longitudinal sections, details of fittings, locations of isolating and control valves, drain and air valves, and all pipe supports. He must keep in view the specific openings in buildings and other structure through which pipes are designed to pass.

Piping shall be properly supported on, or suspended from, on stands, clamps, hangers as specified and as required. The Contractor shall adequately design all the brackets, saddles, anchor, clamps and hangers, and be responsible for their structural stability.

Pipe work and fittings shall be supported by hangers or brackets so as to permit free expansion and contraction. Risers shall be supported at each floor with Galvanised steel clamps. To permit free movement of common piping support shall be from a common hanger bar fabricated from Galvanised steel sections.

Piping shall be supported from the building structure, which shall support the sum of the load of a water-filled pipe and a minimum of 120 kg applied at the point of hanging.

All piping brackets shall be constructed as shown on the standard detail drawings.

Vertical pipe work shall be supported at intervals of at least one per floor level.

Horizontal pipe work shall also be supported by adjustable flat iron or clevis type hangers hung by hot rolled steel rods of the following diameters and spacing subject to the Construction Manager / Architect's approval:

| <u>Nominal Pipe Size</u> | <u>Distance between Supports</u> | <u>Diameter of Rod</u> |
|--------------------------|----------------------------------|------------------------|
| 25 mm                    | 1.8 m                            | 10                     |
| 32 mm                    | 2.4 m                            | 10                     |
| 40 mm                    | 2.7 m                            | 10                     |
| 50 mm                    | 2.7 mm                           | 10                     |
| 65-80 mm                 | 3.0 m                            | 12                     |
| 100 mm                   | 3.0 m                            | 16                     |
| 150-200 mm               | 3.6 m                            | 18                     |

The end of the steel rods shall be threaded and not welded to threaded bolt.

Hangers shall be supported by means of approved fasteners. Wood plugs shall not be used. Unless allowed by the structural engineer, power fixings may be used for pipe work of diameter less than 50 mm. Expansion fasteners may be used for vertical pipe work under 100 mm diameter.

All pipe work shall be carried out in a proper workman like manner, causing minimum disturbance to the existing services, buildings, roads and structure. The entire piping work shall be organized in consultation with other agencies work, so that area can be carried out in one stretch.

Requirement of Cut-outs in the structural slab or wall for installing the various pipes shall be clearly identified in the detailed shop drawing to be prepared by the STP contractor.

Pipe sleeves, larger diameter than pipes, shall be provided wherever pipes pass through walls and slab and annular space filled with fibreglass and finished with retainer rings.

The contractor shall make sure that the clamps, brackets, saddles and hangers provided for pipe supports are adequate or as specified / approved by Consultants. Piping layout shall take due care for expansion and contraction in pipes and include expansion joints where required.

All pipes shall be accurately cut to the required sizes in accordance with relevant BIS codes and burrs removed before laying. Open ends of the piping shall be closed as the pipe is installed to avoid entrance of foreign matter. Where reducers are to be made in horizontal runs, eccentric reduces shall be used for the piping to drain freely. In other locations, concentric reduces may be used.

Automatic air valves shall be provided at all high points in the piping system for venting. All valves shall be of 15mm pipe size and shall be associated with an equal size gate valves.

Discharge from the air valves shall be piped through a pipe to the nearest drain or sump. All pipes shall be pitched towards drain points.

Pressure gauges shall be provided as shown on the approved drawings. Care shall be taken to protect pressure gauges during pressure testing.

#### **4. INSTALLATION**

The Contractor shall check the associated civil work prior to the installation of any item of machinery and advise the Construction Manager, in writing, of any deviation of such work from the specified details.

The machinery shall be accurately installed to correct dimensions, alignments, levels, etc., all as indicated on the final drawings.

The machinery shall be mounted on flat steel packing pieces of thickness suitable to take up variations in level of the concrete foundations. Suitable packing pieces shall be located adjacent to each holding down bolt and shall be properly bedded by grinding the concrete surface to a smooth, level finish. The machinery shall be aligned and leveled and the nuts of the holding down bolts tightened with a spanner of normal length. The base plates shall be packed with grout after the machinery has been run and checked by the Construction Manager for stability and vibration.

Installation shall include the provision and fixing of all necessary holding down bolts, washers, nuts etc.

The length of all bolts shall be such that when fitted with a nut and tightened the threaded portion of the bolts shall protrude from the top face of the nut by a distance not exceeding half the bolt diameter. Exposed bolt heads and nuts shall be hexagonal.

All equipment and materials of the same type shall be products of the same manufacturer. Locally made equipment will not be accepted unless otherwise specified.

All similar items of plant and their component part shall be completely interchangeable. Spare parts shall be manufactured from materials similar to the originals and shall fit all similar items of plant. Where machining may be needed before fitting renewable parts, the machining fits with their tolerance shall be shown on the drawings accompanying the instruction manuals.

All motors and/or revolving parts shall be truly balanced both statically and dynamically so that when running at normal speeds and any load up to the maximum there shall be no significant vibration due to lack of balance. All parts which can be worn or damaged by dust shall be totally enclosed in dust-proof housings.

## **5. MAINTENANCE FACILITIES**

Permanent work platform and catwalk shall be designed by the Contractor and provided by the Contractor for access to elevated equipment. The catwalk and platform for access shall allow a minimum width of 750 mm.

Catwalk to maintenance platform shall be provided with railings and guards designed for safe movement of personnel in a restricted space including provision for gaining access and to accommodate maintenance personnel.

Hand railing and guards shall be designed by the Contractor and provided by the Contractor for all concrete tanks to allow safe movement of personnel.

Permanent I-beams, lifting eyes, etc. shall be provided by the Contractor over major equipment which requires lifting for overhaul and maintenance.

Waterproof power sockets required for servicing shall be provided by the Contractor. The number and locations shall be proposed by the Contractor and approved by the Construction Manager / Engineer. Power supply to these sockets shall be taken from control panel of the sewage treatment system.

The design of all permanent work platforms, hand rails, etc. shall be submitted to the Construction Manager / Client's representative for approval. The loading and fixing method of lifting facilitate shall also be submitted to the Construction Manager / Engineer for approval and checking within 4 weeks on award of Contract or receipt of letter of intent.

## **6. TESTING**

The performance of the system shall be demonstrated by taking hourly samples of the raw sewage and final sewage over a twelve hour period. The sample shall be taken at periods approximately the flow rates specified by the plant. The sample shall be combined and a 5-day BOD shall be run, the results of which must verify the capacity of the treatment plant prior to acceptance.

## **7. TRAINING**

Provided training facilities courses to ensure that the employer's staff associated with the project may acquire full knowledge and appreciation of all aspects of the design, day-to-day operation, breakdown and routine maintenance, and fault diagnosis of all plant, equipment and systems.

Training to the employer's staff shall be held as appropriate at the Contractor's or manufacturer's premises and on site. A detailed syllabus for each of the training courses specified or proposed and the timing of the courses shall be submitted for approval. The Contractor shall recommend the desirable qualifications and experience of the trainees to optimally benefit from the courses.

The Contractor shall be deemed to have included in his tender price the cost of providing training facilities as specified.

In addition to the above, the Contractor shall submit to the Construction Manager a list describing such other spares and special tools, their number, price and where appropriate the anticipated frequency of replacement as soon as is practicable.



## **SECTION-3: ELECTRICAL INSTALLATION**

### **1. SCOPE**

The scope of this section comprises of fabrication, supply, erection, testing and commissioning of Motor Control Centre (MCC), wiring and earthing of all Sewage Treatment Plant equipment, components and accessories.

### **2. GENERAL**

Work shall be carried out in accordance with the accompanying specifications and shall comply with the latest relevant Indian Standards and Electricity Rules and Regulations.

All motor control centres shall be CPRI approved and shall be suitable for operation on 3 phase / single phase 415/230 volts, 50 cycles power supply system.

### **3. CONSTRUCTIONAL FEATURES**

The Motor Control Centre (MCC) electrical panels shall be sheet steel cabinet for indoor installation, dead front, floor mounting/wall mounting type. The control panel shall be totally enclosed, completely dust and vermin proof and shall be with hinged doors with Neoprene gasket. Control panel shall be suitable for the climatic conditions as specified in Specifications. Steel sheets used in the construction of Control panel shall be 2 mm thick and shall be folded and braced as necessary to provide a rigid support for all components. Joints of any kind in sheet metal shall be seam welded, all welding, slag shall be rounded off and welding pits wiped smooth with plumber metal. The general construction shall conform to relevant BIS Codes. Each panel should have padlocking facility to be available for each feeders/isolators. All PCC's and MCC's should conform to 3b construction.

All panels and covers shall be properly fitted and square with the frame, and holes in the panel correctly positioned. Fixing screws shall enter into holes tapped into an adequate thickness of metal or provided with wing nuts. Self-threading screws shall not be used in the construction of Control panels. A base channel of 75 mm x 40 mm x 5 mm thick shall be provided at the bottom for floor mounted panels. Minimum clearance of 275 mm shall be provided between the floor of control panel and the lowest unit.

The control panel shall be of adequate size with a provision of 25% spare space to accommodate possible future breakers. Breakers shall be arranged in multi-tier. Knockout holes of appropriate size and number shall be provided in the Motor Control Centre in conformity with the location of cable/conduit connections. Removable sheet steel plates shall be provided at the top to make holes for additional cable entry at site if required.

Every cabinet shall be provided with Trifoliate or engraved metal name plates. All panels shall be provided with circuit diagram mounted on inside of door shutter protected with Hylam sheet. All live accessible connections shall be shrouded and shall be finger touch proof and minimum clearance between phase and earth shall be 20 mm and phase to phase shall be 25 mm.

### **4. WIRING SYSTEM**

All power cabling between MCC and motors shall be carried out with 1100 volts grade PVC insulated, overall PVC sheathed aluminum/Copper conductor armored cables, Cables shall be sized by applying proper derating factor. All control wiring shall be carried out by using PVC insulated copper conductor wires in conduits. Minimum size of control wiring shall be 2.5 sq mm. Minimum size of conductor for power wiring shall be 4 sq. mm 1100 volts grade PVC insulated copper conductor wires in conduit.

## **5. CIRCUIT COMPARTMENT**

Each circuit breaker, contactor and relay shall be housed in a separate compartment and shall have steel sheets on top and bottom of compartment. Sheet steel hinged lockable door shall be duly interlocked with the breaker in the "ON" position. Safety interlocks shall be provided to prevent the breaker from being drawn-out when the breaker is in 'ON' position. The door shall not form an integral part of the draw-out portion of the panel. Sheet steel barriers shall be provided between the tiers in a vertical section.

## **6. INSTRUMENT ACCOMMODATION**

Adequate space shall be provided for accommodating instruments, indicating lamps, control contactors and control MCBs. These shall be accessible for testing and maintenance without any danger of accidental contact with live parts of the circuit breaker and bus bar 'ON' lamps shall be provided on all outgoing feeders.

## **7. BUS BAR CONNECTIONS**

Bus bar and interconnections shall be of high conductivity electrolytic aluminum complying with requirement of grade 91E of IS:5082-1981 and shall be of rectangular cross section suitable for carrying the rated full load current and short circuit current without overheating of phase and neutral bus bar and shall be extendable on either side. Bus bar and interconnections shall be insulated with heat shrinkable sleeve and shall be colour coded and shall be supported on glass fiber reinforced thermo setting plastic insulated supports at regular intervals to withstand the force arising from in case of short circuit in the system. All bus bar shall be provided in a separate chamber and all connections shall be done by bolting. Additional cross sectional area shall be added to the bus bar to compensate for the holes. All connections between bus bar and breaker shall be through solid aluminium strips of proper size to carry full rated current as per approved for construction shop drawing and insulated with insulating sleeves. Bus bar shall be rated for current density of 1.0 amps/mm<sup>2</sup> cross section area.

## **8. TEMPERATURE - RISE LIMIT**

Unless otherwise specified, in the case of external surface of enclosures of bus bar trunking system which shall be accessible but do not need to be touched during normal operation, an increase in the temperature rise limits of 25° C above ambient temperature shall be permissible for metal surface and of 15° C above ambient temperature for insulating surfaces as per relevant Codes.

## **9. CABLE COMPARTMENTS**

Cable compartment of adequate size shall be provided in the control panel for easy clamping of all incoming and outgoing cables entering from the top/bottom. Adequate supports shall be provided in cable compartment to support cables as per approved for construction shop drawing.

## **10. MOULDED CASE CIRCUIT BREAKER (MCCB)**

All MCCB's shall be motor duty and Current Limiting type, and comprise of Quick Make - break switching mechanism, preferably Double Break Contact system, arc extinguishing device and the tripping unit shall be contained in a compact, high strength, heat resistant, flame retardant, insulating moulded case with high withstand capability against thermal and mechanical stresses. All MCCB's shall be capable of defined Variable overload adjustment. All MCCB's rated 200 Amps and above shall have adjustable Magnetic short circuit pick up.

The trip command shall override all other commands. MCCB shall employ maintenance free double break contact system to minimise the let thru' energies and capable of achieving

discrimination upto full short circuit capacity of downstream MCCB. The manufacturer shall provide both discrimination tables and let thru energy curves. The breaking capacity of MCCB's shall be asked for in the schedule of quantities. The breaking capacities specified will be as per relevant codes.

The MCCB's shall be provided with rotary handle operating mechanism. The handle position shall give positive indication of 'ON', 'OFF' or 'Tripped' thus qualifying to Disconnection as per the IS/IEC indicating the true position of all the contacts. In case of 4 pole MCCB the neutral shall be defined and capable of offering protection.

#### **11. MINIATURE CIRCUIT BREAKER (MCB)**

Miniature Circuit Breaker shall comply with relevant IS Codes and shall be quick make and break type for 230/415 VAC 50 Hz application with magnetic thermal release for over current and short circuit protection. The breaking capacity shall not be less than 10 KA at 415 VAC. MCBs shall be DIN mounted. The MCB shall be Current Limiting type (Class-3). MCBs shall be classified (B,C,D ref IS standard) as per their Tripping Characteristic curves defined by the manufacturer. The MCB shall have the minimum power loss (Watts) per pole defined as per the IS/IEC and the manufacturer shall publish the values.

The housing shall be heat resistant and having a high impact strength. The terminals shall be protected against finger contact to IP20 Degree of protection. All DP, TP and TPN miniature circuit breakers shall have a common trip bar independent to the external operating handle.

#### **12. PAINTING**

All sheet steel work shall undergo a process of degreasing, pickling in acid, cold rinsing, phosphating, passivating (seven tank processing) and then painted with electrostatic paint (Powder coating). The shade of colour of panel inside/outside shall be as per relevant BIS code.

#### **13. LABELS**

Engraved PVC labels shall be provided on all incoming and outgoing feeder. Circuit diagram showing the arrangements of the circuit inside the control panel shall be pasted on inside of the panel door and covered with transparent plastic sheet.

#### **14. METERS**

- i. All voltmeters and indicating lamps shall be through MCB's.
- ii. Meters and indicating instruments shall be flush type.
- iii. All CT's connection for meters shall be through Test Terminal Block (TTB).
- iv. CT ratio and burdens shall be as per IS code and equipment rating for individual feeder wherever applicable as per standards.

#### **15. CURRENT TRANSFORMERS**

Current transformers shall be provided for Control panels carrying current in excess of 60 amps. All phase shall be provided with current transformers of suitable VA burden with 5 amps secondaries for operation of associated metering.

The CTs shall conform to relevant Indian Standards. The design and construction shall be dry type, epoxy resin cast robust to withstand thermal and dynamic stresses during short circuits.

Secondary terminals of CTs shall be brought out suitable to a terminal block which shall be easily accessible for testing and terminal connections.

**16. SELECTOR SWITCH**

Where called for, selector switches of rated capacity shall be provided in control panels, to give the choice of operating equipment in selective mode.

**17. STARTERS**

Each motor shall be provided with a starter of suitable rating. Starters shall be in accordance with relevant IS Codes. All Star Delta and DOL starters shall be fully automatic.

**18. CONTACTOR**

Contactors shall be built into a high strength thermoplastic body and shall be provided with an arc shield for quick arc extinguishing. Silver alloy tips shall be provided to ensure a high degree of reliability and endurance under continuous operation. The magnet system shall consist of laminated yoke and armature to ensure clean operation without hum or chatter.

Contactors shall have 3 main and 2 Nos. NO / NC auxiliary contacts and shall be air break type suitable for making and breaking contact at minimum power factor of 0.35. For design consideration of contactors the starting current of connected motor shall be assumed to be 6 times the full load current of the motor in case of direct-on-line starters and 3 times the full load current of the motor in case of Star Delta Starters. The insulation for contactor coils shall be of Class "E".

Coil shall be tape wound vacuum impregnated and shall be housed in a thermostatic bobbin, suitable for tropical conditions and shall withstand voltage fluctuations. Coil shall be suitable for 220/415±10% volts AC, 50 cycles AC supply.

**19. THERMAL OVERLOAD RELAY**

Thermal over load relay shall have built in phase failure sensitive tripping mechanism to prevent against single phasing as well as on overloading. The relay shall operate on the differential system of protection to safeguard against three phase overload, single phasing and unbalanced voltage conditions.

Auto-manual conversion facility shall be provided to convert from auto-reset mode to manual-reset mode and vice-versa at site. Ambient temperature compensation shall be provided for variation in ambient temperature from -5° C to +55°C.

All overload relays shall be of three element, positive acting ambient temperature compensated time lagged thermal over load relays with adjustable setting. Relays shall be directly connected for motors upto 35 HP capacity. C.T. operated relays shall be provided for motors above 35 HP capacity.

**20. TIME DELAY RELAYS**

Time delay relays shall be adjustable type with time delay adjustment from 0-180 seconds and shall have one set of auxiliary contacts for indicating lamp connection.

**21. INDICATING LAMP AND METERING**

The meters shall be flush mounted type. The indicating lamp shall be of low wattage. Each MCC and control panel shall be provided with voltmeter 0-500 volts with three way and off selector switch, CT operated ammeter of suitable range with three nos. CTS of suitable ratio with three

way and off selector switch, phase indicating lamps, and other indicating lamps as called for. Each phase indicating lamp shall be backed up with MCB.

**22. TOGGLE SWITCH**

Toggle switches, where called for in Schedule of Quantities, shall be in conformity with relevant IS Codes and shall be of 5 amps rating.

**23. PUSH BUTTON STATIONS**

Push button stations shall be provided for manual starting and stopping of motors / equipment. Green and Red colour push buttons shall be provided for 'Starting' and 'Stopping' operations. 'Start' or 'Stop' indicating flaps shall be provided for push buttons. Push Buttons shall be suitable for panel mounting and accessible from front without opening door, Lock lever shall be provided for 'Stop' push buttons. The push button contacts shall be suitable for 6 amps current capacity.

**24. CONDUITS**

Conduits and Accessories shall conform to relevant Indian Standards. Wall thickness shall be 16 gauge upto 32 mm dia and 14 gauge above 32 mm dia conduit. Screwed GI conduits shall be used. Joints between conduits and accessories shall be securely made, to ensure earth continuity. All conduit accessories shall be threaded type only. All raw metal shall be painted with bitumastic paint.

Only approved make of conduits and accessories shall be used.

Conduits shall be delivered to the site of construction in original bundles and each length of conduit shall bear the label of the manufacturer.

Maximum permissible number of 650/1100 volt grade PVC insulated wires that may be drawn into rigid non metallic or GI Conduits are given below:

| Size of wires Nominal Cross Section Area (Sq. mm.) | Maximum number of wires within conduit size(mm) |    |    |    |    |
|--|---|----|----|----|----|
|  | 20  | 25 | 32 | 40 | 50 |
| 1.5  | 5   | 10 | 14 | -- | -- |
| 2.5  | 5   | 8  | 12 | -- | -- |
| 4  | 3   | 7  | 10 | -- | -- |
| 6  | 2   | 5  | 8  | -- | -- |
| 10   | --  | 3  | 5  | 6  | -- |
| 16   | --  | 2  | 3  | -- | 6  |
| 25   | --  | -- | 2  | 4  | 6  |
| 35   | --  | -- | -- | 3  | 5  |

**25. CABLES**

MV Cables shall be PVC insulated aluminium/ copper conductor and armoured cables conforming to IS Codes. Cables shall be armoured and suitable for laying in trenches, ducts, and on cable trays as required. M.V. Cables shall be termite resistant. Cable glands shall be double compression glands with earthing facility. Control cables and indicating panel cables shall be multi core PVC insulated copper conductor and armoured cables.

Power cabling shall be of the following sizes:

- i. Upto 5 HP motors 3 x 4 sq. mm copper conductor cable.
- ii. From 6 HP to 10 HP motors 3 x 6 sq. mm copper conductor cable.

- iii. From 12.5 HP to 15 HP wires 2 No. 3 x 6 sq. mm copper conductor cable.
- iv. From 20 HP to 25 HP motors 2 No. 3 x 10 sq. mm copper conductor cable.

The minimum size of control wiring shall be 1.5 sq. mm PVC insulated stranded soft drawn copper conductor wires drawn through conduit to be provided for connecting equipment and control panels.

All the switches, contactors, push button stations, indicating lamps shall be distinctly marked with a small description of the service installed. The following capacity contactors and overload relays shall be provided for different capacity motors or as per manufacturer's recommendation.

|                | <b>TYPE OF STARTER</b> | <b>CONTACTOR CURRENT CAPACITY</b> | <b>OVERLOAD RELAY RANGE</b> |
|----------------|------------------------|-----------------------------------|-----------------------------|
| 5 HP Motors    | D O L                  | 16 amps                           | 6-10 amps                   |
| 7.5 HP motors  | Star Delta             | 16 amps                           | 9-15 amps                   |
| 10 HP Motors   | Star Delta             | 25 amps                           | 9-15 amps                   |
| 12.5 HP Motors | Star Delta             | 16 amps                           | 9-15 amps                   |
| 15 HP Motors   | Star Delta             | 25 amps                           | 9-15 amps                   |
| 20 HP Motors   | Star Delta             | 32 amps                           | 14-23 amps                  |
| 25 HP Motors   | Star Delta             | 32 amps                           | 14-23 amps                  |

Two speed motors when specified, shall be provided with DOL starter irrespective of its rating.

## 26. CABLE LAYING

Cable shall be laid in accordance with IS code of Practice. Cables shall be laid on 14 gage factory fabricated perforated galvanized sheet steel cable trays, and cable drops / risers shall be fixed to ladder type cable trays factory fabricated out of galvanized steel angle. Access to all cables shall be provided to allow cable withdrawal / replacement in the future. Where more than one cable is running on a cable tray, one dia spacing shall be provided between cables to minimize the loss in current carrying capacity. Cables shall be suitably supported with Galvanized saddles when run on walls / trays. When buried, they shall be laid in 350 mm wide and 750 mm deep trench and shall be covered with 250 mm thick layer of soft sifted sand & protected with bricks/tiles. Special care shall be taken to ensure that the cables are not damaged at bends. The radius of bend of the cables when installed shall not be less than 12 times the diameter of cable.

Allowable specification of cable tray:

Width: 150mm, 300mm, 450mm, 600mm. Height: 100mm. Length: 2500mm.

## 27. EARTHING

Earthing shall be provided in accordance with relevant BIS Codes and shall be copper strips / wires. The main panel shall be connected to main earthing system of the power supply. All single phase metal clad switches and control panels be earthed with minimum 3 mm diameter copper

conductor wire. All 3 phase motors and equipment shall be earthed with 2 numbers distinct and independent copper wires / tapes as follows:

- i. Motor upto and including 10 HP rating. 2 Nos. 3 mm dia copperwires.
- ii. Motor 12.5 HP to 40 HP capacity 2 Nos. 4 mm dia copper wires

All switches shall be earthed with two numbers distinct and independent copper wires' tapes as follows:

- i. 3 phase switches and control panels upto 60 amps rating. 2 nos. 3 mm dia copper wires.
- ii. 3 phase switches, and control panels 63 amps to 100 amps rating. 2 Nos. 4 mm dia copper wires.
- iii. 3 phase switches and control panels 125 amps to 200 amps rating. 2 Nos. 6 mm dia copper wires.

The earthing connections shall be tapped off from the main earthing of electrical installation. The overlapping in earthing strips at joints where required shall be minimum 75mm. These straight joints shall be riveted with brass rivets & brazed in approved manner. Suitable lugs of adequate capacity and size shall be used for all termination of wires. Lugs shall be bolted to the equipment body to be earthed after the metal body is cleaned of paint and other oily substance, and properly tinned. Earthing should not be connected to base bolts of motor or terminal block covers. Door earthing should be provided in control panel.

## **28. TESTING**

Before commissioning of the equipment, the entire electrical installation shall be tested in accordance with relevant BIS codes and test report furnished by a qualified and authorized person. The entire electrical installation shall be gotten approved by Electrical Inspector and a certificate from Electrical Inspector shall be submitted. All tests shall be carried out in the presence of Construction Manager.

## **29. MEASUREMENT OF ELECTRICAL CONTROL PANELS**

Panels shall be counted as number of units. Quoted rates shall include as lumpsum (NOT measurable lengths) for all internal wiring, power wiring and earthing connections from the control panel to the starter and to the motor, control wiring for interlocking, power and control wiring for automatic and safety controls, and control wiring for remote start/stop as well as indication as per the specifications. The quoted rate of panel shall also include all accessories, switchgear, contactors, indicating meters and lights as per the Specifications and Schedule of Quantities.

## **30. RUBBER MAT**

1100 Volt grade and IS approved rubber mat shall be provided in front to cover the full length of all panels. Where back space is provided for working from the rear of the panel, rubber mat shall also be provided to cover the full length of panel.

## **SECTION-4: TESTING, COMMISSIONING AND HAND OVER**

### **1. GENERAL**

The entire works included in this Contract shall be fully tested in stages as the work proceeds and on completion of work as applicable.

The Contractor shall provide during normal working hours, all necessary labours, instruments, equipment, materials, fuel, power and manufacturer's representatives, to carry out such tests as may be necessary to satisfy the Construction Manager / Architect that the installation meets the requirement and intent of the Specification as well as such tests required by Local Authorities.

All tests shall be made in the presence of the Construction Manager / Consultant/ Client's representative or any inspecting authority. At least seven working days notice in writing shall be given to the inspecting parties before performing any test.

Three copies of all test results shall be submitted to the Construction Manager in A4 size sheet paper within two weeks after completion of the tests.

Tests described hereinafter and including all tests prescribed by the Authority having jurisdiction shall be carried out. Any tests proved unsatisfactory shall be repeated to the satisfaction of the inspecting parties.

The Contractor shall provide skilled technicians/engineer to commission the plant and associated controls to the satisfaction of the Construction Manager / Consultant/ Client's representative. The technicians/ engineers will be required to demonstrate the correct procedures in starting and stopping the plant, running the various items of equipment under automatic and manual control and the correct maintenance of the plant.

Water flow rates of all equipment shall be adjusted to design conditions. Complete results of adjustments shall be recorded and submitted.

### **2. FACTORY TESTS**

#### **Main Switchboard**

The following tests shall be performed in the presence of the Construction Manager / Consultant/ Client's representative:

- Inspection of switchboard including wiring, electrical and mechanical connections;
- Mechanical tests;
- Primary and secondary injection tests to commission and calibrate all measuring, protection and control circuits and associated components;
- Continuity and dielectric tests;
- Power frequency and pressure test;
- Functional check of all control wiring.



## **Valves, Cocks and Fittings**

Type-Test' and approval certificate for pressure test and compliance with the regulations laid down by the local Water Authority / Construction Manager / Consultant / Client's representative.

### **3. ON-SITE TESTING AND COMMISSIONING**

Two months prior to completion of the Contract Works, the Contractor shall liaise with the Main Contractor and the Electrical Contractors and submit for the Construction Manager / Consultant/ Client's representative approval a detailed programme for conducting on-site acceptance tests and commissioning.

The Contractor shall start up, operate, test and adjust the systems in accordance with the agreed programme. The setting shall be supervised by the manufacturer's representative, who shall remain on site until the equipment is operating satisfactorily and accepted by the Construction Manager / Architect. The Contractor shall advise and co-ordinate with the manufacturer's representatives so that all testing is carried out according to the agreed programme.

The whole installation shall be given the following tests to bring the systems into running order. The Construction Manager / Consultant/ Client's representative shall be given reasonable notice together with a copy of recorded test results, generally not less than seven (7) days, regarding the nature of tests, the time and location. Acceptance tests will only be witnessed by the Construction Manager / Consultant/ Client's representative when the submitted tests results are found satisfactorily.

All instruments, tools, material and labour required to perform these tests shall be provided by this Contractor.

Before the tests are carried out, the Contractor shall remove connected equipment and components which are liable to damage under test, and shall provide and fix all the necessary gauges, blanking flanges, etc.

Prior to the system start-up, the following inspection, tests and pre-commissioning treatment shall be carried out by the Contractor:

a. Tanks and Level Switches

Check sides and edges of sectional tanks for distortion. The tanks shall be thoroughly cleaned with water and drained before sewage supply will feed in.

Also before sewage supply will feed in, the level switch shall be simulated for the various cut-in and cut-out settings.

b. Pressure Switches

The testing equipment arrangement for pressure switches and pressure gauges shall be as shown on the drawings or of an approved equivalent.

The pressure gauges to be tested shall be connected as shown on the drawing in lieu of the pressure switch. The gauges to be tested shall be regarded acceptable when the pressure readings of all three gauges are the same throughout the jacking pressure range varied by applying the hand pump.

c. Hydrostatic Tests

All parts of the water circuit shall be filled with water before hydrostatic pressure testing, and pump running tests for verification of pressure and flow rate, are conducted.

The hand jacking pump shall be applied to increase the system pressure to 2 times the working pressure or 1.5 times the working pressure plus 3.5 bar whichever is the lower but in any case not less than 7 bar. The pressure shall be maintained for a period not less than 24 hours.

Where any section of pipe work or equipment is found to be unable to withstand the maximum pipe work test pressure, it shall be isolated during the pipe work test then that section of pipe work or equipment shall be made good and re-tested at the appropriate test pressure.

The working pressure for various systems shall be as shown on the drawings.

- d. House drains shall be hydrostatically tested to a water head of 1.2 m at the high end and not more than 2.4 at the low end and shall show no appreciable loss of water after elapse of two hours.

In every test, water used shall be left in the pipes until they are covered with earth or other trench filling material to a depth of at least 1 m over the top of pipes and until permission is given by the Construction Manager / Consultant/ Client's representative for the water to be released. If after the Construction Manager / Consultant/ Client's representative has approved the sewer or pipeline and has given permission for the trenches to be refilled the pipes become damaged and loses water from any cause and/or admit subsoil water, the Contractor shall uncover the pipes and make good the defect made good and the pipes retested as before and all at the Contractor's expense.

- e. Cleaning, Flushing and Pre-Treatment

Prior to start-up and hydraulic testing, the Contractor shall clean the entire installation including all fittings and pipework and the like after installation and keep them in a new condition. All pumping systems shall be flushed and drained at least once through to get rid of contaminating materials. All pipes shall be rodded to ensure clearance of debris, cleaning and flushing shall be carried out in sections as the installation becomes completed. All strainers shall be inspected and cleaned out or replaced.

When the entire systems are reasonably clean, a pre-treatment chemical shall be introduced and circulated for at least 8 hours. Warning signs shall be provided at all outlets during pre-treatment. The pre-treatment chemical shall:

- Remove oil, grease and foreign residue from the pipework and fittings;
- Pre-condition the metal surfaces to resist reaction with water or air;
- Establish an initial protective film;
- After pre-treatment, the system shall be drained and refilled with fresh water and left until the system is put into operation.
- Details and procedures of the pre-treatment shall be submitted to the Construction Manager / Consultant/ Client's representative for approval.

- f. Electrical Tests

Electrical tests shall comply with the current edition of IEEE regulations and requirements enforced by Local Authorities.

Electrical insulation tests shall apply to busbars, isolators and other equipment and wiring where applicable. A 500V DC instrument shall be used to check the insulation resistance. The reading shall not be less than 50 mega-ohm in all instances. Function simulation tests shall be performed to ensure that the systems have been installed to the control requirements as described in the Specification therein.

g. Pump Driver

The direct coupling of the pump drives shall be dismantled before the pump motor control panel is energized.

The Contractor shall demonstrate to the Construction Manager/ Consultant/ Client's representative of acceptable clearances of the coupling alignment for ensuring satisfactory power transmission.

The coupling shall not be re-mated again till the correct motor rotation has been demonstrated with power drawn from the energized pump motor control panel.

h. Pump Operating Test

The Contractor shall ensure to the satisfaction of the Construction Manager / Consultant/ Client's representative that the installation or portion thereof which has been set to work complies with all requirements including the following:

That the plant and apparatus shall be of robust construction and of capacity for the duty specified.

That all valves, switches, controls and the like are properly regulated and capable of proper operation and in the case of valves are capable of being shut-off.

That all apparatus shall be silent.

That all instruments are correctly calibrated and read accurately.

That all services are tested in accordance with the details of the relevant clauses of this Specification.

#### 4. STATUTORY AUTHORITIES' TESTS AND INSPECTIONS

As and when notified in writing or instructed by the Construction Manager / Consultant/ Client's representative, the Contractor shall submit shop drawing and attend all tests and inspections carried out by Local Pollution Control Board Authorities, Water Authority and other Statutory Authorities, and shall forthwith execute free of charge any rectification work ordered by the Construction Manager / Consultant/ Client's representative as a result of such tests and inspections where these indicate non-compliance with Statutory Regulations. Some of these tests may take place after the issue of Practical Completion of the Main Contract and the Contractor shall make all allowances in this respect.

The Contractor shall be responsible for the submission of all necessary forms and shop drawings to the Statutory Authorities which shall conform in layout to the latest architectural plans submitted to and kept by these Authorities.

The submission shall comply with the requirements set forth in the current Codes of Practice and circular letters of the Statutory Authorities. The shop drawings to be submitted shall be forwarded

to the Construction Manager / Consultant/ Client's representative for checking before submission. The Contractor shall allow for at least two submissions of complete sets of shop drawings to the Authorities, one to be made within four months after the award of the Contract but not less than six weeks before the inspection. The Construction Manager / Consultant/ Client's representative may at his discretion instruct the Contractor for additional submissions to the Local Authorities whenever necessary.

The Contractor shall notify the Construction Manager / Consultant/ Client's representative at least seven days in advance of his application for local Authority tests and inspections. On receipt of a confirmed date for test and inspection the Contractor shall inform the Construction Manager / Consultant/ Client's representative without delay.

## **5. PRELIMINARY COMMISSIONING CHECKS**

Ensure that all equipment is thoroughly cleaned, lubricated and checked for serviceability before setting to work. Particular attention is drawn to the removal of building debris from the pipe work systems.

Special attention is drawn to the need for thoroughly flushing out all pipe work systems to ensure that all foreign matter is removed.

All automatic controls and safety devices shall be inspected and checked for service ability before the working fluid or electricity is applied to the system.

## **6. COMMISSIONING**

When the various installations have been completed and the preliminary commissioning checks carried out, the Contractor shall set to work, regulate and calibrate all system in the entire installation. Special attention shall be paid to the following items:

That all valves, switches, controls, etc. are regulated and capable of proper operation and in the case of isolation valves that they are capable of tight shut off.

That all apparatus is silent in accordance with the requirements of this Specification.

That all instruments are correctly calibrated and read accurately.

That all services are tested in accordance with the details in the relevant clauses of this Specification.

Operate pumps, pressure reducing sets, etc. to ensure that all control systems are functioning correctly and are properly set, sequenced or interlocked.

## **7. FINAL ACCEPTANCE TESTS**

Following commissioning and inspection of the entire installation, and prior to issue of the Completion Certificate, the Contractor shall carry out final acceptance tests in accordance with a programme to be agreed with the Construction Manager / Consultant / Client's representative.

Should the results of the acceptance tests show that plant, systems and/or equipment fail to perform to the efficiencies or other performance figures as given in this Specification, the Contractor shall adjust, modify and if necessary replace the equipment without further payment in order that the required performance is obtained.

Where acceptance tests are required by the relevant Authorities having jurisdiction, these tests shall be carried out by the Contractor prior to the issue of Completion Certificate to the acceptance of the Authorities.

## **8. REJECTION OF PLANT**

Any item of plant or system or component which fails to comply with the requirements of this Specification in any respect whatsoever at any stage of manufacture, test, erection or on completion at site may be rejected by the Construction Manager / Consultant / Client's representative either in whole or in part as he considers necessary/appropriate. Adjustment and/or modification work as required by the Construction Manager / Consultant / Client's representative so as to comply with the Authority's requirements and the intent of the Specification shall be carried out by the Contractor at his own expense and to the satisfaction of the Authority / Construction Manager / Consultant/ Client's representative.

After works have been accepted, the Contractor may be required to carry out assist in carrying out additional performance tests as reasonably required by the Construction Manager / Client's representative / Consultant.

## **9. HANDING OVER OF DOCUMENTS**

All testing and commissioning shall be done by the Contractor to the entire satisfaction of the Construction Manager and all testing and commissioning documents shall be handed over to the Construction Manager.

The Contractor shall also hand over all maintenance and operation manuals, all certificates and all other documentation as per the terms of the contract to the Construction Manager.

**SECTION: 8**  
**List of Approved Makes**

**LIST OF APPROVED MAKES FOR EQUIPMENT & MATERIALS**

**A. STP SYSTEM**

| <b>S.NO.</b> | <b>DESCRIPTION</b>  | <b>:</b> | <b>LIST OF APPROVED MAKES</b>        |
|--------------|---|----------|--------------------------------------|
| 1            | GI/MS Pipes (IS: 1239 and IS: 3589)                                 | :        | Tata/Jindal Hissar                   |
| 2            | GI pipes fittings   | :        | Unik/Zoloto M                        |
| 3            | GI pipe sealant   | :        | Henkel Loctite 55                    |
| 4            | UPVC Pipe and Fittings (IS: 13592, IS: 4985)                        | :        | Astral/Supreme/ Truflow/Birla HIL    |
| 5            | cPVC Pipes and Fittings   | :        | Astral/Supreme/ Truflow/Birla HIL    |
| 6            | Butterfly Valve   | :        | SKS/Advance/Zoloto/Audco             |
| 7            | Check Valve – Wafer Type  | :        | SKS/Advance/Zoloto/Audco             |
| 8            | Check Valve – Dual Plate  | :        | SKS/Advance/Zoloto/Audco             |
| 9            | Y Strainer  | :        | SKS/Lehry/VTM/CIM/Emerald/NVR        |
| 10           | GM / Forged Brass Ball Valves                                       | :        | SKS/Advance/Zoloto/Audco             |
| 11           | Pressure Reducing Valve   | :        | SKS/Lehry/NVR/Honeywell              |
| 12           | Air Vent  | :        | SKS/Lehry/NVR                        |
| 13           | Isolation Gate Valve  | :        | SKS/Lehry/NVR                        |
| 14           | Motorised Butterfly Valve   | :        | SKS/Danfoss/Lehry/NVR                |
| 15           | Ball Float Valve  | :        | SKS/Lehry/Zoloto/NVR                 |
| 16           | Pressure Guage  | :        | H.Guru/FIEBIG                        |
| 17           | Temperature Gauge   | :        | H.Guru/FIEBIG                        |
| 18           | Water Meter (Mechanical Type)                                       | :        | Lehry/Khrone Marshall/Rockwin        |
| 19           | Electronic/Electromagnetic Flow Meter                               | :        | Lehry/Khrone Marshall/Rockwin        |
| 20           | Water Level Sensors/controllers                                     | :        | Techtrol/Technika                    |
| 21           | Pump and Tank Automation System                                     | :        | Lehry/Advance Automation             |
| 22           | MH Water Tank Plastic Foot Steps                                    | :        | KGM/Patel/Pranali Industries         |
| 23           | Welding Rods  | :        | Esab/ADOR/Victor                     |
| 24           | Fire Sealant  | :        | Hilti/3M                             |
| 25           | Fasteners, Nuts, Bolts etc. (ETA Approved)                          | :        | Mupro/Caddy/Walraven/Hilti           |
| 26           | Pipe Supports, Clamps, Hangers, Channels etc. (ETA Approved)        | :        | Mupro/Caddy/Walraven/Hilti           |
| 27           | Pipe Coat Material  | :        | Pypkote/Coaltek                      |
| 28           | Epoxy Paint   | :        | Asian Paints/Berger/Nerolac          |
| 29           | Anti Corrossive Paints  | :        | Asian Paints/Berger/Nerolac          |
| 30           | Filter  | :        | Ion Exchange/Pentair/Equip / Wastech |
| 31           | Softner   | :        | Ion Exchange/Pentair/Equip / Wastech |
| 32           | Anti Vibration Mounting & Flexible Connections                      | :        | Resistoflex/Kanwal                   |
| 32           | Hydropneumatic Pump Sets  | :        | Grundfos/Ebara/Armstrong             |
| 33           | Horizontal End Suction, Verticle Inline, Split Case, Monobloc Pumps | :        | Grundfos/Ebara/Armstrong             |



|    |                                    |   |   |
|----|------------------------------------|---|---|
| 34 | Submersible Drainage, Sewage Pumps | : | Grundfos/Ebara/Armstrong                  |
| 35 | Dosing Pumps                       | : | Ebara/Grundfos/Toschon                    |
| 36 | Mechanical Seal                    | : | Burgmann/Sealol                           |
| 37 | Couplings                          | : | Lovejoy/Dunlop                            |
| 38 | Motor                              | : | Bharat Bijlee/ABB/Siemens/Crompton        |
| 39 | Screw Pumps                        | : | Roto/Rotomac/UT                           |
| 40 | Sludge Recirculation Pumps         | : | Lubi/Kirloskar/Ebara                      |
| 41 | UV                                 | : | Alfa/Sukrut/Creative                      |
| 42 | Ozonator                           | : | Alfa/Sukrut/Creative                      |
| 43 | Air Blower                         | : | Atlas Copco/Denver/Robochi/Ingersoll Rand |
| 44 | Air Compressor                     | : | Elgi/Ingersoll Rand                       |
| 45 | Filter Press                       | : | Sachin/Pharmatech                         |
| 46 | Centrifuge                         | : | Enquip /Humboldth/Penwalt/Alfa Level      |
| 47 | PVC Media                          | : | Rehau/Cool Deck/MM Aqua                   |
| 48 | UF Membrane                        | : | Hydranautics/Dow/GE Suez/Toray            |
| 49 | MBR Module                         | : | Hydranautics/Dow/GE Suez/Toray            |
| 50 | Fine Bubble Diffusers              | : | Sulzer/Rehau/OTT / YD – Japan             |
| 51 | Coarse Bubble Diffusers            | : | Sulzer/Proflex/Micro Transmission         |
| 52 | Oil Skimmer                        | : | Premier oil skim                          |
| 53 | Submersible Mixer                  | : | Sulzer/Grundfos/Ebara                     |
| 54 | Gear Motorized Agitator            | : | Shanti/Remi                               |
| 55 | Mechanical Screen                  | : | Wastech/Jash/Jagtap                       |
| 56 | Online Monitoring System           | : | Forbes Marshall/Hemera/E&H                |

## ELECTRICAL MAKES

| Sl. No. | EQUIPMENT/MATERIAL   | APPROVED MANUFACTURER   |
|---------|--|---|
| 1       | MCCB's   | : a. Schneider<br>b. Siemens<br>c. Mitsubishi<br>d. L&T         |
| 2       | ACB's  | : a. Schneider<br>b. Siemens<br>c. Mitsubishi<br>d. L&T         |
| 3       | MPCB's :   | : a. Schneider Electric<br>b. Mitsubishi Electric<br>c. Legrand |
| 4       | MCB's, ELCB's, RCBO's & RCCB's                                       | : a. Legrand<br>b. Schneider<br>c. Honeywell MK<br>d. L&T       |
| 5       | MCB DB's   | : a. Legrand<br>b. Schneider<br>c. Honeywell MK<br>d. L&T       |
| 6       | HRC Fuses & Fues Switch Units  | : a. ABB<br>b. Schneider<br>c. L & T                            |
| 7       | a. Moulded Socket outlets / Weatherproof / Metal Clad Socket Outlets | : a. Clipsal<br>b. Neptune - Bals<br>c. MK India                |
|         | b. Weatherproof Enclosure  | : a. Hensel<br>b. Tribox  |
| 8       | Manual On load, 4P Change Over Switchs                               | : a. HPL Socomec<br>b. L&T                                      |
| 9       | Contactors & O/L relays within built SPP                             | : a. Schneider<br>b. Siemens<br>c. Mitsubishi                   |
| 10      | SPP  | : a. Minilec<br>L&T   |

- 11 Indication Lamps : a. Schneider Electric  
b. L&T -Esbee  
c. Siemens  
d. Vaishno
- 12 Push Buttons : a. Schneider Electric  
b. L&T -Esbee  
c. Siemens  
d. Vaishno
- 13 Selector Switches : a. L & T - Salzer  
b. Kaycee  
c. Siemens
- 14 Electrical Terminals : a. Elmax  
b. Connectwell
- 15 Multifunction Meter – Digital / Multifunction / VAF / VA / V /A/ Hz / kWh meters (BMS / Non BMS compatible) : a. Schneider-Conzerv  
b. Ducati  
c. Secure
- 16 Dual source kWh meters with Cut-off / Pre-paid type : a. Conzerv  
b. Ducati
- 17 Meters-Analogue : a. Rishab-L&T  
b. AE  
c. Conzerv
- 18 Timers : a. Schneider Electric  
b. L&T  
c. Siemens
- 19 (a) Relays (Numeric Type) : a. L&T  
b. Alstom  
c. ABB  
d. Schneider
- (b) Relays (Electromagnetic Type) : a. Areva  
b. Easun Reyrolle
- 20 Capacitors : Heavy duty type (MPPH type) / Inert gas type : a. Schneider  
b. Epcos  
c. Neptune -Ducati
- 21 APFCR (Automatic power factor correction relay) Micro Processor Based (BMS / Non BMS Compatible) 3 Phase type : a. Schneider  
b. Epcos

|    |  |   |  |
|----|--|---|--|
|    |  |   | c. Beluck<br>c. Neptune -Ducati                |
| 22 | Detuned Filters  | : | a. Epcos<br>b. Schneider<br>c. Neptune -Ducati |
| 23 | Cast Resin Current Transformers in LT Panels / Panels for metering & protection  | : | a. AE<br>b. Gilberts & Maxwell                 |
| 24 | Cast Resin PT's for metering in LT Panels / Panels   | : | a. AE<br>b. Gilberts & Maxwell                 |
| 25 | Control Transformers for Contactor coils & indications in LT Panels  | : | a. AE<br>b. Gilberts & Maxwell                 |
| 26 | Softstarter  | : | a. Schneider Electric<br>b. L&T                |
| 27 | PLC  | : | a. Alan Bradley<br>b. Siemens<br>c. Schneider  |
| 28 | VFD (Variable Frequency Drives)  | : | a. ABB<br>b. Danfoss<br>c. Schneider           |
| 29 | ATS (Automatic Transfer Switch)  | : | a. ASCO (Imported)                             |
| 30 | FRLS PVC Conduits & Accessories  | : | a. BEC<br>b. Polypack<br>c. AKG                |
| 31 | MS / GI Conduits & Accessories   | : | a. BEC<br>b. AKG<br>c.. Polypack               |
| 32 | 1100 V grade ZHLS<br>(Zero Halogen low smoke)<br>ZHLS Polymer insulated, unsheathed,<br>flexible, copper conductor wires | : | a. Havells<br>b. RR Kabel<br>c. Polycab        |
| 33 | 1100 V grade FRLS<br>(Fire Retardant low smoke)<br>HR FRLS PVC insulated unsheathed,<br>flexible, copper conductor wires | : | a. Havells<br>b. RR Kabel<br>c. Polycab        |
| 34 | 1.1kV grade LT XLPE insulated, HR PVC sheathed, stranded Al. / Cu. conductor,  | : | a. RR Kabel<br>b. Ravin Cables                 |

|      |   |   |  |
|------|---|---|--|
|      | Armoured/ Unarmoured cables as per IS:7098 Part-I   |   | c. Havells<br>d. KEI   |
| 35   | 1.1kV grade LT PVC insulated, PVC sheathed, stranded Al. / Cu. conductor, Armoured/ Unarmoured cables as per IS:1554        | : | a. RR Kabel<br>b. Ravin Cables<br>c. Havells<br>d. Polycab     |
| 36   | 1.1kV grade Single core LT PVC insulated, unsheathed, multi strand, flexible Copper conductor Un. Ar. Cables as per IS:694. | : | a. Polycab<br>b. RR Kabel<br>c. Havells                        |
| 37   | Fire Survival Cables  | : | a. AFW<br>b. Polycab<br>c. INDIA IMPEX (FrTek)<br>d. Havells   |
| 38   | Cable lugs & thimbles   | : | a. Dowell  |
| 39   | Cable glands  | : | a. HMI<br>b. Lotus<br>c. Commet                                |
| 40a  | GI / MS Cable trays   | : | a. KM Enterprises, Faridabad<br>b. MK<br>c. Slotco<br>d. OBO   |
| 40b  | GI / MS Raceways  | : | a. KM Enterprises, Faridabad<br>b. BEC<br>c. Slotco            |
| 40c  | Modular Hanging / Supporting system for cable trays, rising mains & bus ducting (Channel, Threaded Roads & Clamps)          | : | a. MUPRO<br>b. UBB<br>c. GRIPPLE                               |
| 41   | Wire Mesh Cable Trays   | : | a. Cablofil<br>b. OBO  |
| 42   | LT Panels and Sub Panels  | : | a. Ambit Switchgear<br>b. Neptune<br>c. Shivalic Power Control |
| 42a. | <u>Panel Construction materials :</u><br>Electrolytic grade Aluminium bus bars  | : | a. Hindalco<br>b. Century<br>c. Jindal                         |

- 42b. Electrolytic grade Copper bus bars : a. Leebo Metal  
b. Century
- 42c. Heat Shrinkable Sleeves : a. Pla Tech
- Hardware
- 42d. High Tensile Alloy Hardware for Panels / Distribution boards / earthing tapes (Zinc coated) (Grade 8.8 & Grade 5.6) : a. Unbreako  
b. TVS  
c. GSK  
d. Pooja Forging
- 42e. Stainless Steel Hardware for Panels, boards & earthing tapes (SS-304, SS-316) : a. Duplex Fastners (Ramesh Steel Corporation, Gujarat)  
b. Red Earth Steels, Mumbai
- 42f. Moulded Bus Bar Supports SMC/Nylon 6.6 : a. Power Mat  
b. Ramanuj
- 42g. Panel Cooling Ventilation Fans : a. High Cool  
b. Rexnord
- 42h. Thermostat/Humidistat for Panel : a. Honeywell
- 42i. Panel Space Heater : a. Telelec
- 43a. GI Earth Tapes Exothermic Welding (UL Listed Only) : a. Erico-CADWELD  
b. Dehn  
c. KLK
- 43b. GI & Copper Earth Tapes Cross & Straight Connectors (GI, Copper & SS connectors) : a. Dehn  
b. OBO
- 43c. High Tensile Alloy Hardware for Panels / Distribution boards / earthing tapes (Zinc coated) (Grade 8.8 & Grade 5.6) : a. Unbreako  
b. TVS  
c. GSK  
d. Pooja Forging
- 43d. Stainless Steel Hardware for Panels, boards & earthing tapes (SS-304, SS-316) : a. Duplex Fastners (Ramesh Steel Corporation, Gujarat)  
b. Red Earth Steels, Mumbai

## **Section - 9**

### **COMPLIANCE UNDER EIA**

### COMPLIANCE UNDER EIA

Contractor to comply with the provisions under EIA, but not limited to following provisions:

1. Contractor would not be permitted to store/dump construction material or debris on metalled road.
2. Beyond the metalled road the area where such the construction material or debris can be stored shall be physically demarcated by the Contractor ensuring that it would not cause any obstruction to the free flow of traffic/inconvenience to the pedestrians. It should be ensured that no accidents occur on account of such permissible storage.
3. Contractor shall ensure that the construction material is covered by tarpaulin and all other precaution should be taken to ensure that no dust particles are permitted to pollute air quality as a result of such storage.  
It shall also be ensured that appropriate protection measures are taken by raising wind breakers of appropriate height on all sides of the plot/area using plastic and for other similar material to ensure that no construction material dust fly outside the plot area and it will be the builder/contractor responsibility to ensure that their activity does not cause any air pollution during course of construction and/or storage of material or construction activity. This condition shall be strictly adhered to by every builder, contractor, person or authority. In the event of default they shall be liable to be prosecuted under the law in force, as well as for causing environmental pollution and will be liable to pay compensation which would be determined by Tribunal in accordance with law.
4. All the trucks or vehicles of any kind which are used for construction purposes/or are carrying construction material like cement, sand and other allied material should be fully covered. The vehicles should be properly cleaned, should be dust free and every necessary precautions is to be taken to ensure that enroute their destination, the dust, sand or any other particles are not permitted to be released in air/contaminate air. Any truck not complying with the above directions would not be permitted to enter the area.

And whereas Hon'ble National Green Tribunal in order dated 10.04.2015 interalia directed as follows:

- a. Contractor shall put tarpaulin on scaffolding around the area of construction and the building. No person including builder, owner can be permitted to store any construction material, particularly sand on any part of the street, roads in any colony.
- b. The construction material of any kind that is stored in the site will be fully covered in all respects so that it does not disperse in the Air in any form.
- c. All the construction material and debris shall be carried in the trucks or other vehicles which are fully covered and protected so as to ensure that the construction debris or the construction material does not get dispersed into the air or atmosphere, in any form whatsoever.
- d. The dust emissions from the construction site should be completely controlled and all precautions taken in that behalf.
- e. The vehicles carrying construction material and construction debris of any kind should be cleaned before it is permitted to ply on the road after unloading of such material.
- f. Every worker working on the construction site and involved in loading, unloading and carriage of construction material and construction debris shall be provided with mask to prevent inhalation of dust particles.
- g. Every owner and or builder shall be under obligation to provide all medical help, investigation and treatment to the workers involved in the construction of building and carry of construction material and debris relating to dust emission.
- h. It shall be the responsibility of every builder to transport construction material and debris waste to construction site, dumping site or any other place in accordance with rules and in terms of this order.
- i. All to take appropriate measures and to ensure that the terms and conditions of the earlier order and these orders should strictly comply with by fixing sprinklers, creations of green air barriers.
- j. Compulsory use of wet jet in grinding and stone cutting.



- k. Wind breaking walls around construction site.
- l. All the builders who are building commercial, residential complexes which are covered under the EIA Notification of 2006 shall provide green belt around the building that they construct. All Authorities shall ensure that such green belts are in existence prior to issuance of occupancy certificate.
- m. All builders shall ensure that C&D waste is transported in terms of this order to the C & D Waste site only and due record in that behalf shall be maintained by the builders, transporters and NCR of Delhi.
- n. Even if constructions have been started after seeking Environmental Clearance under the EIA notification 2006 and after taking other travel but is being carried out without taking the preventive and protective environmental steps as stated in this order and MoEF guidelines, 2010, the State Government, SPCB and any officer of any department as afore stated shall be entitled to direct stoppage of work.

And whereas, Environmental Impact Assessment Guidance Manual for Building, Construction, Township and area Development Projects of February, 2010 is available on the website of MoEF &CC envisaging the following guidelines for mitigation measures in respect of dust control from Building, Construction projects:

*"Adopting techniques like, air extraction equipment, and covering scaffolding, hosing down road surfaces and cleaning of vehicles can reduce dust and vapour emissions. Measures include appropriate containment around bulk storage tanks and materials stores to prevent spillages entering watercourses.*

*The other measures to reduce the air pollution on site are:*

- *Sprinkling of water and fine spray from nozzles to suppress the dust.*
- *On-Road- Inspection should be done for black smoke generating machinery.*
- *Promotion of use of cleaner fuel should be done.*
- *All DG sets should comply emission norms notified by MoEF.*
- *Vehicles having pollution under control certificate may be allowed to ply.*
- *Use of covering sheet to prevent dust dispersion at buildings and infrastructure sites, which are being constructed.*
- *Use of covering sheets should be done for trucks to prevent dust dispersion from the trucks, implemented by district offices.*
- *Paving is a more permanent solution to dust control, suitable for longer duration projects. High cost is the major drawback to paving.*
- *Reducing the speed of a vehicle to 20 kmph can reduce emissions by a large extent.*

*Speed bumps are commonly used to ensure speed reduction. In cases where speed reduction can't effectively reduce fugitive dust, it may be necessary to divert traffic to nearby paved area.*

***Material storages – care should be taken to keep all material storages adequately covered contained so that they are not exposed to situation where winds on site could lead to dust / particulate emissions. Fabric and plastics for covering piles of soil and debris is an effective means to reduce fugitive dust.***

## **SECTION: 10**

### **HSE GUIDELINES**

## **GU SAFETY**

This document sets out **GU** expectations from contractors on Environment, Health and Safety aspect of the construction workers deployed at the project site. It provides general EHS procedures for most, but not all, construction activities to prevent accidents and to monitor/correct violations of procedures through regular Safety meetings. However, a key requirement for EHS success is serious commitment from senior management and strong safety leadership at the project site with well-defined roles and responsibilities of the assigned individuals. Towards that, it is imperative that the selected Managing Contractor employs a well-qualified (relevant qualifications) and experienced Safety Officer responsible for implementing and continuously communicating and driving the procedures throughout the labour force. Being one of the key critical to quality (CTQ's) parameters, the contractors shall be required to submit with their tenders their organization safety policy, risk assessment along with brief summary of the safety performance on projects that they have managed in the last three years (i.e. number of man-hours, number of fatalities, accidents, near misses, type and cause of accidents, etc).

### **Scope of procedures and relationship with GU:**

The Contractor's Safety & Health Procedures applies to all contractor and its subcontractor employees and to all construction and maintenance activities on the job site. A close relationship and continuous interaction must be maintained with **GU** Project team by the construction manager of the contractor. **GU** does have specific safety and health requirements as per the **GU**'s EHS policy to be observed and cooperation with its representative, Architects, consultant various audit teams and other contractors at site, throughout the contract period is essential.

### **Selection of sub-contractor:**

The main contractor shall select sub or works contractors, using the same criteria of practical safety policy. Again, it must be ensured that the terms of contract include adequate provision for safe working practices & for specified safety and health items.

### **Standards**

The prime contractor and all subcontractors are to comply with the Client specific rules and procedures, the national legislation and codes and in particular the following standards;

IS: 3696 (Part I) -1966 Safety code for scaffolds and ladders: Part I Scaffolds IS:

3696 (Part II)-1966 Safety code for scaffolds and ladders: Part II Ladders IS: 3764-

1966 Safety code for excavation work

IS: 4082-1977 Recommendations on stacking and storage of construction materials at site (first revision)IS:

4130-1976 Safety code for demolition of building (first revision)

IS: 4912-1978 Safety requirements for floor and wall openings, railings and toe boards (first revision)IS:

5121-1969 Safety code for piling and other deep foundations

IS: 5916-1970 Safety code constructions involving use of hot bituminous materialsIS:

7205-1974 Safety code for erection of structural steel work

IS: 7969-1975 Safety code for handling and storage of building materialsIS:

8989-1978 Safety code for erection of concrete framed structures

IS: 7293-1974 Safety code for working with construction machineryIS:

10291-1982 Code of dress in Civil Engineering works, safety

IS: 875-1964 Code of practice for structural safety of buildings and loading standardsIS:

1905-1980 Code of practice for structural safety of buildings, masonry walls

IS: 10386-1983 General aspects Part 1 – 1983, Part 2 – 1982, Part 6 – 1983, Part 10 – 1983 Amenities, protective clothing and equipment, construction, storage, handling, detection and safety measures for gases, chemicals and flammable liquids IS:

2925-1984 Safety helmet tests

IS: 5983-1980 Testing for Eye protectorsIS:

7524 (Part I)-1979 Safety goggles

IS: 1179-1967 Welding helmetsIS:

5914-1970 Safety shoes

IS: 4770-1991 Safety gloves

IS: 12254-1993 Rubber/ PVC knee boots/ gum boots

Client specific requirements for compliance with OSHA standards

## **SECTION 2: ELEMENTS OF CONSTRUCTION SAFETY**

### **Planning:**

Detailed planning should take the following matters in to account;

- Obtaining work specific permits like;
  - Permit for work at Height
  - Hot work permit
  - Disposal permit
  - Excavation permit
  - Night work permit
  - Permit for working in restricted areas
  - Confined space Entry permit
  - Shaft work permit
- 
- Know the hazardous operations eg. Use of cranes and site transport, structural erection, excavation and false work, scaffolding, roof work, demolition etc.
  - Requirement for plant and equipment to ensure safe working or ease of handling
  - Sequence of work and its phasing between contractors to minimize the possibility of one contractor placing another contractor's men at risk, where appropriate the segregation of contractors should be considered
  - Need to provide information, instruction and appropriate training, both on general site safety and hazardous specific in the site. The latter could range from restricted zones, Permit-to-work systems, lifting operation to the wearing of Personal protective equipment
  - Need for fire precautions and emergency procedures
  - Need for environmental monitoring and health surveillance
  - Site security and foreseeable risks to the public, including the need for directional and warning signs
  - Safe access across the site for persons, vehicles and equipment. Thought should be given to arrangements for keeping the site tidy, accommodation for site staff, safety welfare, first aid and other facilities
  - Provision of safe places of work at different stages of the job including the provision of scaffolding, ladders for a number of sub-contractors.

#### **Control:**

Sub and works contractors shall be briefed about the safety policy and site including site specific safety procedures of the prime contractor at the pre-bid meeting itself and further reiterated during the kick-off meeting. Responsibilities of all parties shall be clearly defined before contractors start work at site. Such matters should include:

- Appropriate precautions and methods for identified hazards or hazardous work
- Necessary plant, equipment and arrangements for its provision, maintenance use and inspection
- Question of trade union or other workforce safety representation and the need for a joint safety committee
- A formal joint safety committee must be appointed to review results and to initiate further actions (should be done either during kick-off meeting or subsequently)
- Arrangement for initiation of introduction training for new states on site
- Arrangements for any specialized training
- Arrangements for promulgating safety and health information e.g. On-site notice boards

It is important that such safety and health arrangements are reviewed at the Kick-off meeting as well as first project and first Safety meeting, where the site management can set the tone for the conduct of work by resolving at an early stage the difficulties which may arise at a later date. It is expected that each subcontractor will provide employees adequately licensed (if required for specific works), trained and capable of doing the specialty work.

#### **Coordination:**

The Site In-charge appointed by the prime contractor shall be totally responsible for compliance with this health and safety code. The contractor must appoint a Chief Safety Officer and form a "contractor safety committee" along with safety representatives from its sub-contractors. This committee will be chaired by the Site In-charge and meet at least once a week to review status on EHS issues. It is expected that each contractor and sub-contractor will participate in Daily "Tool Box Talks" and other safety meeting to co-ordinate project work for the day across trades. The site in-charge must make suitable arrangements to ensure the effective coordination of the work of all its sub-contractors on site. Clear lines of communication should be set up between each sub-contractor's Safety Officer and Safety officer of the prime Contractor. Effective co-ordination will be enhanced by ensuring that 'Safety and Health' figures prominently on the agenda of regular project meetings, as well as Safety meetings. For better coordination on project related EHS issues, the safety meeting participants shall include Project Manager, Project Manager's Safety representative, all contractor's safety representatives along with 's safety rep. Project Manager's Safety officer shall convene this meeting and participants from all contractors safety representatives will be mandatory. Minutes of this meeting shall be circulated to all concerned.

#### **Monitoring:**

Arrangements must be made for safety and health monitoring of the site on a regular basis. This will include, not only ensuring the safety issues associated with working at heights, excavations, working with energy sources, etc. but also environmental matters such as hazardous dust, fumes, noise etc. In all cases, the contractor's Site- In-charge shall ensure that daily site inspections are carried out by the contractor's Safety Officer, more in depth inspection being done periodically

by visiting safety advisor. It may be necessary for arrangements to be made for specialist occupational health and hygiene advice. The checklist for daily inspection is provided which must be included in the Behaviour Observation Process (BOP).

#### **Records:**

The prime contractor should ensure that all statutory notification, examinations and inspections are carried out. Except for equipment used exclusively by individual contractors, all records should be kept & updated by the contractor's Site In-charge. This individual shall also keep track of all Safety statistics and send report to **GU** Project team on periodic basis, as determined by **GU** Project Manager.

**Non-Compliance with Safety and Health Provisions:**

The compliance with Environmental Health and Safety provisions is of utmost importance to the. The contractors must note that the will take a serious view of any Safety non-compliance notices. The has a right to order stoppage of work till rectification is carried out to the satisfaction of the safety committee or safe arrangements are made for the execution of work and all stoppages on this account will be at the entire risk, costs and consequences of the contractor.

**Disciplinary action:**

Noncompliance of the Safety and Health Provisions will result in disciplinary action as per the procedure below:1st time violation: Written warning

2nd time violation: Imposition of penalty as deemed fit by **GU** Project Manager3rd

time violation: Removal from site

In the event of the offender bringing itself or others in direct life-threatening situation or where he/she creates a large material damage, will result in immediate removal from site. Repeated violations by a contracting company shall lead to termination of contract and removal of contracting firm from the job site. Any losses incurred by the contracting company, whatsoever, shall be the responsibility of contracting company.

**Imposition of penalties for non-compliance with EHS guidelines:**

The contractor will be required to comply with all the requirements laid down in these EHS guidelines, Special safety conditions, General conditions of contract and any other safety requirements as a matter of general prudence. Upon failure to comply with any of these, Project Manager is authorized to impose penalty on the contractor as per the details below:

| <b>Schedule of Charges to Contractors who are in breach of the employer's Site Safety, Site Safety Cycle and Environmental Rules and Regulations:</b> |  |   |
|---|--|---|
| <b>S No.</b>  | <b>Nature of Offence</b>   | <b>Amount of Safety or Environmental Charge to be levied against the Sub Contractor for each breach of the employer's Rules &amp; Regulations (Indian Rs)</b> |
| 1   | Smoking in an unauthorized area and/or consumption of alcohol and/or use of illegal substances.  | Rs 1000.00  |
| 2   | Burning of waste or smoldering of combustible materials on site other than for heat treatment processes required for the execution of the Sub Contract works.  | Rs 3000.00  |
| 3   | Failure to wear personal protective equipment (P.P.E.) e.g. Safety helmets, safety boots, goggles etc. respirator, ear plugs, safety belts which shall include failure to anchor belt to a secure structure. | 1) Rs.1000.00 per worker when lack of enforcement of the usage of P.P.E. by the Contractor/ Sub-contractor is observed by the employer.                       |
|   | Where any site operation requires the use of PPE then all workmen must use the required PPE eg. grinding, welding, burning, unloading hazardous materials etc.   | 2) Rs. 2,000.00 where issuance of the required P.P.E. by the Sub Contractor equipment is not carried out.   |
| 4   | Failure to attend general safety induction course conducted by the employer / the employer.  | 1) Rs.5000.00 per worker for not attending the course; and  |
|   |  | 2) Workers to attend course within 2 working days or be dismissed.  |

|    |   |  |
|----|---|--|
| 5  | Failure to attend a notified site safety meeting.   | Rs 5,000.00  |
| 6  | Failure to submit, within the specified time to the employer, safety supervisor reports which shall include other relevant statutory reports made under the F&IUO Cap. 59, tool box briefing records, weekly Labour return, issuance of personal protective equipment records, safety data sheets of toxic and harmful materials and others related certificates. | Rs 5,000.00  |
| 7  | Failure to submit a written report for an accident and/or other dangerous occurrence, to the employer within 24 hours of its occurrence.  | Rs 5,000.00  |
| 8  | Failure to carry out within the specified time the necessary improvement action against any notified safety violation.  | Rs 8,000.00  |
| 9  | Damaged to or misuse of the employer's property.  | 1) Rs. 5,000.00; and<br>2) in addition the Sub Contractor to pay for the cost of items damaged.                        |
| 10 | Failure to maintain work area, facility storage and preparation yard, office premises and workers changing and rest area in a clean and orderly state and free from health and fire hazards.  | 1) Rs 3,000.00; And<br>2) in addition the Sub Contractor shall clean up the disorderly and untidy areas within 3 days. |
| 11 | Obstruction of passageways, entrance, door, way's, stairs, access to firefighting equipment etc. and /or the erection unsafe access and crossing's  | Rs 5,000.00<br>In addition sub-contractor shall clean up the disorderly and untidy areas within 1 day.                 |
| 12 | Use of equipment that has not been examined by an approved person as required under the factories and industries undertaking ordinance and its related regulations.   | Rs 7,000.00  |
| 13 | Use of defective or uncertified sling's for lifting operations  | Rs. 8,000.00;  |
| 14 | Executing unsafe hoisting of materials and include unsafe use of lifting appliance.   | Rs 10,000.00   |
| 15 | Erecting and / or using unsafe or unstable scaffolding, working platforms and temporary structures.   | Rs 7,000.00  |
| 16 | Failure to provide and use proper working platforms and safe means of access to the work place, where work is required to be carried out beyond person's normal reach.  | Rs 10,000.00   |
| 17 | Allowing workers to occupy or work on unguarded elevated platforms, floor edges and without adopting adequate safety measures against the risk of person falling from height.   | Rs. 7,000.00;  |

|    |   |   |
|----|---|---|
| 18 | Not providing safety barricades / barriers to hazardous floor edge, openings, gaps and shafts.  | Rs.7,000.00;  |
| 19 | Rendering scaffold or working platform unsafe by tampering / alternation.   | Rs.10,000.00;   |
| 20 | Placing of heavy items unsafely on scaffold or working platforms.   | Rs 5,000.00   |
| 21 | Throwing or allowing objects to drop from heights.  | Rs.10,000.00  |
| 22 | Stacking or leaving materials include work in progress articles and tools in unstable condition and or along flooredges such they are likely to endanger workers.   | Rs 8,000.00;  |
| 23 | Failure to effectively cordon off guard and warn other workers from entering into the danger areas when they are likely to be affected by falling materials from the sub-contractor work.   | Rs 8,000.00   |
| 24 | Violating the permit to work system   | Rs 10,000.00  |
| 25 | Dismantling and rendering any safety guards or protective features of any part of a machine or any part of building structure to extend that such guards and protective features are not operational or are incapable of providing the necessary protection for its design and purpose. | Rs. 10,000.00   |
|    |   |   |
| 26 | Adopting unsafe tapping, connections and termination of electrical lines and including the use of defective electrical fittings, power cables and electrical tools. Allowing cables / equipment to be merged into water.  | Rs 5000.00;   |
| 27 | Using any defective or unsafe equipment.  | Rs 5,000.00   |
| 28 | Unauthorized use of fire equipment provided for emergency purposes.   | Rs.5,000.00   |
|    |   |   |
| 29 | Failure to comply with an order issued by the employer's construction manager, safety officer in regard to safety/environment matters.  | Rs.8,000.00   |
| 30 | Threatening safety personal, misbehavior, fighting or intentional causing hurt to others.   | Rs.10,000.00  |
|    |   | Person to be banned from the site and report will be made to the police.                                  |
| 31 | Failure to wear safety harness and anchor to a secure structure, while working at height.   | Rs 5,000.00 if there is 2nd time violation by the same person or group attract penalty Rs. 10,000 or more |
| 32 | Failure to provide valid certificates for lifting appliances and accessories including any lifting appliance / accessories on vehicles delivering goods to the site.  | Rs.8,000.00   |
| 33 | Failure to provide voltage reducing device on welding machine.  | Rs 4,000.00;  |



|    |  |                |
|----|--|----------------|
| 34 | Failure to attend site safety walk   | Rs 5,000.00    |
| 35 | Deploying under age or over age worker worker or staff                             | Rs. 10, 000.00 |
| 36 | Pregnant women to be not engaged at the construction site                          | Rs. 10, 000.00 |
| 37 | Failure to provide site safety officer as per the requirement of latest ordinance. | Rs 10,000.00   |

Note:-

Procedure of Debit:-

- A debit Note will be issued to vendors with the backup records of Non-Conformity and the Penalty amount will be debited from the Running Bill.
- Prior to the above a 'non conformity notice' shall be issued to give last opportunity to the vendor to comply therequirements.
- Please ensure that all OHSE NON –Conformities with debits are in the notice of client with acceptance before taking forward to the contactors.

### **SECTION 3: SAFETY AUDITS**

- 1) It is essential to conduct formal periodic safety audits to prevent deviations from safety standards.
- 2) The audit should take the form of a full survey covering all aspects of safety throughout the project site. Reports should be submitted to the Safety Committee. Copies of the results of a survey should be sent to the persons in charge of the respective areas so that corrective measures can be taken. A copy of the Audit report should also be sent to the Project Head.
- 3) Audit team should cover the following aspects:
  - Organization
  - Accident control
  - Hygiene facilities
  - Electrical systems
  - Fire prevention
  - Demarcated areas
  - Mechanical equipment
  - Safe work practices
  - Storage areas
  - Material stacking
  - Housekeeping
  - Safety statistics
  - Display of emergency numbers
  - MSDS sheets
  - Personal Protective Equipment
  - Safety training
  - Safety meetings
  - First aid facilities

- Traffic control, Signage, etc.

- 4) Findings of the safety audits shall be sent to Safety committee and also be discussed in the Safety committee meetings.
- 5) Work place audits should also be carried out at job site frequently (at least every week) conducted by representatives of respective contractors to make sure that all Safety provisions are getting complied with. These should primarily focus on Safe working systems, Housekeeping, Machine guarding and use of PPE. Results of these audits shall be reported to the Safety committee.

#### **SECTION 4: ACCIDENT PREVENTION, REPORTING AND INVESTIGATION**

##### **Definition:**

An accident is commonly defined as: “An unplanned event which may or may not result in injury or damage”. As is clear from the definition, an accident need not necessarily involve either injury or damage to person or property. A “near miss” is by definition an accident and should be regarded as a warning that a problem exists and that some action is required to avoid a possible accident/ incident in future.

##### **Causes of Accidents:**

88% of all accidents are caused by human error, 10% are caused by mechanical failures and the other 2% are considered outside human control eg. Earthquake etc. The likely causes of accidents should be identified in advance and the appropriate action taken to ensure that the accident never actually takes place. The most important and effective accident prevention technique is training the actions and attitudes of all personnel.

##### **Accident Recording and Investigation**

It is essential to have an effective management system for recording accidents. All accidents should be thoroughly investigated. A near miss or incident should be investigated as though an accident had occurred. The prime objective of all investigations of this type is to identify the causes in order to eliminate the risk. Such aspects as systems training and guarding should all be considered in addition to what actually happened and why. The accidents record should include accidents to employees and non employees on company premises i.e. Contractors, construction workers, maintenance workers, visitors etc. and to those using company vehicles. Supervisory staff and, when possible, department personnel should be involved in any investigation relating to their area of control and should be delegated in writing to conduct a detailed analysis of the causes. They should determine how best to prevent a recurrence and this should be taken into account in the report. The depth of the investigation and the effectiveness of the follow up action should be monitored. Records of all accidents must be kept to enable statistics to be analyzed and root causes determined.

##### **Incident Control System**

Unsafe acts & conditions and “near misses”, if they are not dealt with appropriately, can turn into accidents. It is essential that companies operate an incident control system to ensure that these potential hazards are reported and eliminated. The system should;

- Ensure that whenever possible safety representatives and other employees are involved
- Encourage any person to register an unsafe action or conditions
- Ensure that reports are recorded and acted upon
- Identify the responsibility for investigation and for carrying out corrective action
- Specify the time within which the corrective action should be completed or progress reported
- Ensure that a report is made to management and to the originator when
- corrective action has been completed

##### **Levels of Accident Investigation:**

The type or level of accident investigation depends on the nature and seriousness of the incident. In most cases, an “Accident and Incident investigation panel will be formed which will determine the appropriate level of investigation.

##### **Types of Investigation:**

- A full investigation which requires a panel including a Project Manager, Safety Officer and Contractor’s Safety

- representative and GU Corporation Pvt Ltd project team representative or a panel as determined by Project Manager.
- A departmental investigation involving the departmental manager(s) the safety officers and the appropriate supervisor
- An investigation by the supervisor involving, where appropriate, the employees concerned

**Lost Time Accidents (LTA):**

This refers to the total number of accidents of all types which result in lost man hours. Lost man hours occur if the person involved is unable to return to normal duties immediately after any treatment.

**Reportable Accidents:**

When an employee, as a result of a lost time accident, is absent from work for more than two days (48 hour), then this will be recorded not only as a lost time accident but also a reportable accident. Brief details of each reportable accident and the steps taken to avoid repetition should be given in the Project Mangers monthly Report.

**Serious Accident:**

This is an accident which causes death or serious injury e.g. a broken limb, amputation serious burns etc., or hospitalization for one or more nights. In addition any escape of gases/toxics substances, which affect the environment and the surrounding area / community even if it does not cause injury to people, is considered a serious accident. This definition applies to employees and non employees, the yardstick that defines whether it is a serious accident in site terms is whether the victim was on company premises on company business, or using company equipment or transport. Thus if an operating company is in any way involved in a serious accident then it must be fully investigated and reported to company management.

**Incident / Near Miss:**

This can be described as an undesired event which, under slightly different circumstances, could have resulted in an accident.

**Reporting Accidents/ Incidents/ Near Misses:**

All Accidents/ Near misses must be reported to Project managers of the company immediately, with brief details. A preliminary report will then be submitted by the Project Manager to the Zonal Associate Director and Executive Director, as per the procedure outlined in Project Management firm's Standard Operating Procedures. A full and final report will subsequently need to be prepared and submitted. The contractor shall submit the report in the standardized format attached with these EHS guidelines.

**Reporting Accident Statistics:**

Accident statistics reported to company should be based on employees at job site. Accidents to non-employees (vendors or sub-vendors) should be reported as separate statistics.

**Statistical formulae:**

*Lost time Accidents:* This is the total number of accidents including all reportable and serious accidents

*Reportable Accident:* This is the number of accidents where an employee is absent from work for more than 48 hours consecutively (excluding the day of accident).

*Percentage man hours lost:* This is the total number of hours lost expressed as a percentage of total man hours worked. Total man hours lost X 100%

-----

Total man hours worked

The lost time accidents, reportable accidents and percentage man hours lost should be reported on a monthly basis as part of the Project Manager's review. The figures given in each category should be for the month under review, the year to date and the previous year to date.

**Accident Frequency rate:**

This is the total number of lost time accidents per 1 million man hours worked by permanent and temporary employees Total number of lost time accidents X 1,000,000

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Total number of man hours worked

**Accident incident rate:**

This is the total number of any accidents per 1000 employees. Total number of lost time accident X 1000

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Average number of persons employed

For this calculation the total number of employees should be averaged out over the year. Part time employees should be included in proportion to the time worked. The accident frequency rate and accident incidence rate should be calculated annually and reported in the year end results. In addition to the statistics referred to above, all data pertaining to incidents must also be kept at site.

**SECTION 5: MANAGEMENT RESPONSIBILITY FOR SAFETY**

Management has the responsibility to ensure that a well developed Safety program is in place. The contractors are obligated to provide;

- Safe place of work, which includes safe means of access and exit during normal daily work routine as well as in emergencies
- Safe plant and equipment including the maintenance of it
- Safe systems of work. This includes safe working practices and work instructions for all jobs taking particular account of hazardous situations
- Safe working environment and proper arrangements for employee welfare. This responsibility includes proper lighting, ventilation, fume and dust extraction, noise control, housekeeping, seating, drinking water, sanitary facilities and a wide range of other factors
- Safe methods for storing, handling and transporting goods and substances
- Such information instruction, training and supervision as are necessary to ensure efficient and safe working practices, which comply with national legislation and company rules.
- Basic and job related safety training for all its and as well its Sub contractor's
- Temporary and permanent employees.
- Consultation with employee with a view to making and maintaining adequate and effective arrangements for health safety and welfare
- A written statement with respect to the health, safety and welfare of the employees containing details of procedures which will put the policy into effect and define individual responsibilities for safety
- Where accommodation provided in the GU CORPORATION PVT LTD premises, this must conform to the same safety and hygiene standards as other company premises, in respect of the premises itself and the working of any staff.
- Safe and correct work procedures must be followed for carrying out any construction activity.

**SECTION 6: SAFETY ORGANISATION**

The contractor/ contracting company shall appoint in writing a person to direct and co-ordinate job site safety program. This person should be a full time, technically qualified safety officer and must have received formal training in Health and Safety. In addition, the contracting company shall also appoint required number of safety stewards, as per prevailing Laws and regulations, but in any event, a Safety steward shall be on the job site at all times when work is ongoing. The duties and responsibilities of contractor's safety manager should be clearly defined at the outset, which will include managing the company health and safety program in order to achieve an accident free environment.

**Duties of contractor's Safety Manager**

The precise duties of the manager responsible for health and safety will be determined by the contractor/ contracting company concerned and the following should only be taken as a minimum guideline. In general the duties shall include:

- To manage the company Health and Safety program

- To make recommendations on matters concerning health and safety to the Director responsible for the company health and safety program in order to achieve the company's health and safety objectives To inspect all or part of the premises daily to ensure the program is being complied with To carry out full inspection at least once every week for potential hazards To prepare Pre task plans and make necessary modifications till they are accepted by Project Manager's Safety representative
- To recommend any necessary health and safety rules including changes where appropriate
- To arrange adequate materials and publicity for the Health and Safety Program
- To arrange, attend and supply relevant material for Safety Committee Meetings and weekly safety meetings
- To conduct appropriate job related health and safety training for all new and existing staff whether temporary or permanent. Any job change should be accompanied by relevant retraining.
- To carry out specific health and safety training for managers, supervisors and safety representatives.
- To properly investigate all accidents, damage to property and near miss incidents and make sure that any corrective action is implemented
- To maintain accident records and make a weekly inspection of first aid records and implement any necessary subsequent action
- To prepare weekly summaries of injury/damage and inspection reports for senior management
- To ensure that all fire equipment is regularly inspected and serviced.
- To ensure the provision of safe tools, equipments and protective clothing where appropriate, and their safe use.

#### **SECTION 7: SAFETY COMMITTEE**

Formation of a site specific safety committee is one of the best methods of obtaining employee involvement in safety. The committee should have formal status and its members shall include;

- Project Manager's Safety representative
- GU's Safety representative
- Contractor's safety representative
- Subcontractor's safety representatives
- Head – Site security
- Fire officer
- Any other members the management may decide to include

#### **Objectives of Safety Committees:**

The prime objective of a safety committee is to promote co-operation between employers and employees in order to investigate, develop and carry out measures designed to ensure the health and safety at work of the company's employees, non employees and other project participants on job site.

#### **Functions of Safety Committees:**

The key functions of Safety Committee shall include;

- To study the accident statistics and trends within their area
- To report on unsafe or unhealthy conditions together with recommendations which can then be made to management and the safety group
- Examining safety audits relating to their area
- Considering reports comments and suggestions of safety representatives
- Giving assistance in the development of safety rules/ systems of work
- Commenting on the effectiveness of the safety content of staff training program
- Commenting on the adequacy of health and safety
- Communications in the workplace including on-the-job safety meetings
- Co-operating with management in carrying out regular safety inspection of departmental areas and reporting the results of these inspections to the main safety committee.
- Organize safety training and demonstrations etc to make to make everyone aware about the safety procedures.
- Organize safety competitions for motivating people at site

The safety committees can only assist Management in taking decisions; they cannot substitute for Management. Management must still take overall responsibility for executive action with a view to ensuring that health and safety arrangements are checked regularly and that the health and safety policy as a whole is being implemented properly.

**SECTION 8: CONTACTOR'S SAFETY INSPECTION CHECK LIST**

Contractor Contract No. /Purchase order no -----

Project-----

Location-----

Type of Work-----

Date Checked By-----

| S | ITEM   | STATUS | REMARKS |
|---|--|--------|---------|
|   | <b>Accident prevention Organization</b><br>Trained First Aid person First Aid Kit Safety Material Posted Emergency Phone # Posted  |        |         |
|   | <b>Housekeeping &amp; Sanitation</b><br>General neatness of working areas Daily disposal of waste and trash Passageways and walkways clear Adequate lighting Projecting nails removed Oil and grease removed Waste containers provided & used Sanitary facilities adequate and clean Drinking water tested and approved<br>Adequate supply of water Drinking cups, Clean Dispensers Exit sign posted             |        |         |
|   | <b>Fire Prevention</b><br>Fire extinguishers identified, checked, charged Hydrants clear access to public thoroughfare<br>Open Good Housekeeping   |        |         |
|   | <b>NO SMOKING</b> posted and enforced where needed   |        |         |
|   | <b>Personal Protection</b><br>Hard-hats Noise Level Exposure / Ear protection Eye Protection Safety Lines & harnesses<br>Life Jackets (If necessary) Safety shoes / Gum Boots Gloves   |        |         |
|   | <b>Electrical Installation</b><br>Adequate well insulated wiring Fuses & GFI provided Fire hazards checked<br>Electrical dangers posted Open wires without adaptors not used Lock out / Tag out procedures used for maintenance of Electrical system, Temporary wiring not used as permanent installation.<br>Personal protective equipment and clothing provided.   |        |         |
|   | <b>Gas Cutting</b><br>Flash back arrester in all the gas cutting nozzles. Use of DA or industrial LPG only no domestic cylinders. Availability of fire extinguishers / water close by  |        |         |
|   | <b>Hand &amp; Power Tools</b><br>Tools and cords in good condition Proper grounding All mechanical safeguards in use Tools neatly stored when not in use<br>Right tool being used for the job at hand<br>Wiring properly installed Enough men used to handle material Use of GFCI for tools used outdoors  |        |         |
|   | <b>Ladders</b><br>Stock ladders in good condition Stock ladders not spliced Properly secured, top and bottom Side rails on fixed ladders extend above top landing Built-up ladders constructed of sound materials Rungs not over 12 inches on center Stepladders fully open when in use Metal ladders not used around electrical hazards Proper maintenance and storage  |        |         |
|   | <b>Hoists, Cranes &amp; Derricks</b><br>Inspect cables and sheaves Check slings and chains, hooks and eyes Equipment firmly supported Outriggers used if needed Power lines inactivated, removed, or at safe distance<br>Proper Loading for capacity at lifting radius All equipment properly lubricated and maintained<br>Signalmen where needed Hoisting plan. Test certificate of all the lifting equipments. |        |         |

|          |  |               |                |
|----------|--|---------------|----------------|
|          | All equipments should display the last inspection date and the next due date   |               |                |
|          | <b>Motor Vehicles</b><br>Brakes, lights, warning devices or barricaded Weight limits and load sizes controlled Personnel carried in safe manner. Seat belts provided and used. Reverse horn in working condition, PUC certificate available  |               |                |
|          | <b>Barricades</b><br>Floor opening planked over or barricaded<br>Roadways and sidewalks effectively protected Adequate lighting provided<br>Traffic controlled   |               |                |
|          | <b>Handling &amp; Storage of Materials</b><br>Neat storage area, clear passageway Stacks on firm footings, not too high Men picking up   |               |                |
| <b>S</b> | <b>ITEM</b>  | <b>STATUS</b> | <b>REMARKS</b> |
|          | loads, correctly Materials protected from heat and moisture Protection against falling intohoppers and bins Dust protection observed   |               |                |
|          | <b>Excavation &amp; Shoring</b><br>Shoring of adjacent structures Shoring and sheathing as needed for soil and Depth Public roads and sidewalks supported and protected Materials not too close to the edge of excavation Lighting at night Water controlled Equipment at safe distance from edge  |               |                |
|          | <b>Concrete Construction</b><br>Forms properly installed and braced Adequate shoring, plumbed and cross braced Shoring remains in place until strength is attained Proper curing period and procedures Check heating devices Adequate runways Protection from cement dust Hard-hats, safety shoes, shirts covering skin Nails and stripped form material removed from area   |               |                |
|          | <b>Masonry</b><br>Proper scaffolding Masonry saws properly equipped, dust protection provided Safe hoistingequipment   |               |                |
|          | <b>Hoists, Cranes &amp; Derricks</b><br>Inspect cables and sheaves Check slings and chains, hooks and eyes Equipment firmly supported Outriggers used if needed Power lines inactivated, removed, or at safe distance Proper Loading for capacity at lifting radius All equipment properly lubricated and maintained Signalmen where needed Hoisting plan. Test certificate of all the lifting equipments.<br>All equipments should display the last inspection date and the next due date |               |                |
|          | <b>Motor Vehicles</b><br>Brakes, lights, warning devices or barricaded Weight limits and load sizes controlled Personnel carried in safe manner. Seat belts provided and used. Reverse horn in working condition, PUC certificate available  |               |                |
|          | <b>Barricades</b><br>Floor opening planked over or barricaded<br>Roadways and sidewalks effectively protected Adequate lighting provided<br>Traffic controlled   |               |                |
|          | <b>Handling &amp; Storage of Materials</b><br>Neat storage area, clear passageway Stacks on firm footings, not too high Men picking up<br>loads, correctly Materials protected from heat and moisture Protection against falling intohoppers and bins Dust protection observed   |               |                |



|  |  |  |  |
|--|--|--|--|
|  | <b>Excavation &amp; Shoring</b><br>Shoring of adjacent structures Shoring and sheathing as needed for soil and Depth Public roads and sidewalks supported and protected Materials not too close to the edge of excavation Lighting at night Water controlled Equipment at safe distance from edge  |  |  |
|  | <b>Concrete Construction</b><br>Forms properly installed and braced Adequate shoring, plumbed and cross braced Shoring remains in place until strength is attained Proper curing period and procedures Check heating devices Adequate runways Protection from cement dust Hard-hats, safety shoes, shirts covering skin Nails and stripped form material removed from area |  |  |
|  | <b>Masonry</b><br>Proper scaffolding Masonry saws properly equipped, dust protection provided Safe hoisting equipment  |  |  |

### SECTION 9: FIRST AID AND EMERGENCIES

#### **Trained First Aid Person**

A contractor shall provide, or ensure that required number of suitable persons as adequate and appropriate are provided in the circumstances for rendering first aid to people deployed at site if they are injured or become ill at work. The trained first aid person should have undergone:

- a) Such training and has qualifications as the Health and Safety Executive may approve for the time being in respect of that case or the class of case, and
- b) Such additional training, if any, as may be appropriate in the circumstances of that case. In practice, (a) refers to a trained first aider and (b) to an occupational first aider. In addition, a person who holds a current first aid certificate issued by registered medical association or Indian Red Cross Society will be classed as a "Suitable Person" for the purposes of regulation. The contractors shall ensure that sufficient first aides are appointed to provide adequate coverage for each shift. Provisions for medical care must be made available by the contractor for every employee covered by the regulations. In the absence of dispensaries, clinics, or hospitals in proximity to the work site, properly trained and certified first aid personnel must be available, and first aid supplies must be provided by the contractor. Appropriate equipment for transportation of injured personnel to a physician or hospital must be provided for. An emergency plan, medical care, firefighting and evacuation plan must be developed by the main contractor.

#### First Aid Kit:

Regardless of the number of people there must be at least one first-aid box on site. Every first aide and occupational first aider should have easy access to first-aid equipment, and provision should be made for every person to have reasonably rapid access to first aid. Each box should be placed in a clearly identified and readily accessible location, and contain a sufficient quantity of suitable first-aid materials and nothing else. Boxes and kits should be checked frequently to ensure they are fully stocked and all items are in a usable condition. Sufficient quantities of each item should always be available in every first aid box or cabinet.

| S.No | Item                                 | Numbers of People working at Site |      |       |     |     |
|------|--------------------------------------|-----------------------------------|------|-------|-----|-----|
|      |                                      | 1-5                               | 6-10 | 11-50 | 100 | 150 |
| 1    | Guidance card individually wrapped   | 1                                 | 1    | 1     | 1   | 1   |
| 2    | Sterile adhesive dressings           | 10                                | 20   | 40    | 40  | 40  |
| 3    | Sterile eye pads with attachment     | 1                                 | 2    | 4     | 6   | 8   |
| 4    | Triangular bandages                  | 1                                 | 2    | 4     | 5   | 8   |
| 5    | Sterile coverings for serious wounds | 1                                 | 2    | 4     | 5   | 8   |
| 6    | Safety pins                          | 6                                 | 6    | 12    | 12  | 12  |
| 7    | Medium sized sterile un-medicated    | 3                                 | 6    | 8     | 10  | 12  |
| 8    | large sterile un-medicated dressings | 1                                 | 2    | 4     | 6   | 8   |

|    |  |   |   |   |   |   |
|----|--|---|---|---|---|---|
| 9  | X-large sterile un-medicated dressing                                      | 1 | 2 | 4 | 6 | 8 |
| 10 | Sterile water in 300 ml disposable containers, where tap water unavailable | 1 | 1 | 3 | 6 | 6 |

The first-aid box or cupboard should protect the content from dampness and dust and be clearly marked with a white cross on green background

**First Aid Rooms:**

Where there are 250 or more persons at work on site, a suitably staffed and equipped first-aid room should be provided. In addition, where there is a large (over 150) number of employees divided into several dispersed working groups, or the location of the site makes access to places of treatment outside difficult, the contractor should consider whether a centralized first-aid room may be needed. A First aid room should:

- Be under the charge of an occupational first aider in most circumstances: names and locations of all first aiders should be displayed
- Be readily available and used only for the rendering of first aid
- Be clearly identified and of sufficient size to allow access for a stretcher, wheelchair, etc. And hold a couch withspace for people to work around it
- Contain in addition to the previously mentioned first aid materials: a sink with hot and cold running water, drinking water, paper towels, impermeable work surfaces, clean garments for use by first aiders and occupational first aider’s clinical thermometer a couch with pillow and blankets frequently cleaned
- Be heated, lighted, ventilated and cleaned regularly
- Be designed so that immediate contact can be made with the person on call, e.g radio, siren, and a telephone linkif feasible. It should be stressed that a sufficient number of first-aid boxes must be provided for any work area,which is not within easy reach of the first aid room.

**Emergency Phone # Posted**

Project name-----

Project No. -----

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The following are the business telephone numbers where project key personnel can be reached at all times. In addition, the emergency telephone numbers of other vital agencies are listed:

**BUSINESS RESIDENCE**

- Project Manager
- GU Project Manager
- Contractor Safety Officer
- Fire/ Security officer

**OTHER EMERGENCY TELEPHONE NUMBERS**

- Fire :
- Ambulance :
- Doctor :
- Hospital :
- Police :
- Gas Company :
- Electric Company :

Water Company :

Telephone Company :

Insurance Carrier :

#### **SECTION 10: HOUSEKEEPING AND SANITATION**

At the work site, an adequate supply of potable water must be provided, as well as clean drinking water dispensers. Potable water for clean up must be provided. Where non potable water is used for industrial or fire fighting purpose it must be identified by appropriate signs.

Apart from the above, the contractor has to adhere to general neatness of working areas, daily disposal of waste and trash, maintenance of clear passageways and walkways, providing adequate temporary lighting and ventilation (both natural as well as artificial) to perform the project related works, removal of projecting nails, removal of oil and grease, removal of loose unused construction material, provision for waste containers, and maintaining adequate sanitary facilities for the work force. The contractor and in turn its sub-contractors shall be responsible for cleaning behind them on daily basis. The accumulation of construction materials/ debris shall not be permitted at any location.

#### **SECTION 11: FIRE PREVENTION**

An emerging plan for firefighting and evacuation must be made. A training plan must be developed. Electrical wiring equipment for heating, light or power purposes must be installed in compliance with the statutory requirements. Internal combustion engine-powered equipment must be located with exhausts well away from combustible materials. Smoking is to be prohibited in the vicinity of fire hazards, and such areas must be conspicuously posted. Care shall be taken properly to ground nozzles, hoses or steam lines used in hazardous tanks or vessels. In location of temporary buildings and yard storage, appropriate care shall be taken for proper separation to allow an accumulation of fire potential. The contractor is responsible for maintaining the entire construction area, but particularly storage areas, free from accumulation of unnecessary combustible materials. Sufficient fire extinguishers must be installed in all temporary buildings and storerooms. The contractor must identify and maintain proper escape routes at the project site in the event of a fire emergency. The escape routes should be sufficient in number and free from any encumbrances. All the workers as well as others working at job site should be made aware of them through training, mock drills and posting of exit signs. The contractor, consultation with the Project Manager must identify a "Mustering point" where all the workers would be required to gather in the event of fire. The contractor must generate an "Evacuation Procedure" in the event of fire and post it at multiple locations on the project site. The assembly area should be clearly defined and marked out. The procedure should include what should be done to the ongoing activity when such a situation arises, which escape routes to follow, safe location to gather, who to call (with telephone numbers), how to inform the site security, etc.

#### **Site Fire Check List**

- Are safe ashtrays provided where smoking is permitted? And are fire extinguishers installed?
- Are heaters properly guarded?
- Are wet clothes kept clear of heaters?
- Are portable heaters secure from being knocked over?
- Is all temporary wiring well supported and protected?
- Are any circuits overloaded?
- Are all flammable liquids, gas cylinders and flammable materials separately and properly stored?
- Are all gas appliances fitted with control taps?
- No burning of rubbish is permitted outside
- Is all flame cutting and welding taking place with proper precautions?
- Are all blow lamps and blow torches being used correctly and all the hoses protected?

- Do all night watchmen and security patrols know the fire routines?

**Preventing the spread of fire:**

- Is waste accumulating in hoist shafts, under belts, in odd corners?
- Are separate metal waste containers supplied for each of the following : oily rags, paint rags, paint scrapings,waste flammable liquids, wood shavings and offcuts?
- Is all waste regularly cleared?
- Are all huts safely located?

**Means of escape:**

- Are all gangways, stair and platforms free from obstruction?
- Does everyone know what to do in an emergency?
- Is fire drill practiced, and is there a system to ensure that all persons have evacuated the area?

**Fire Fighting:**

- Have all extinguishers been checked and / or recharged?
- Are they clearly identified and easily accessible?
- Are operatives trained in their use?

**SECTION 12: PERSONNEL PROTECTION**

The required personnel protective equipment (PPE) should be worn at all times. The contractor is encouraged to supply comfortable personnel protective equipment to the site workers. All necessary personnel safety equipment as considered adequate by the Engineer-in-charge shall be available for use of persons employed on the site and maintained in a condition suitable for immediate use, and the contractor shall take adequate steps to ensure proper use of equipment by those concerned. Irrespective of the type of work being performed, contractor will have 100% compliance with Safety hard hats, safety glasses and safety shoes. In addition for specific works described below though not limited to these only, additional safety precautions as stated will be taken by the contractor. Workers employed on mixing asphalt materials, cement and lime mortars/ concrete shall be provided with protective footwear and protective gloves. Those engaged in handling any material which is injurious to eyes shall be provided with protective goggles. Special protective goggles must be used by graining,sawing and drilling. Those engaged in welding works shall be provided with welder's protective eye-shields. Stone workers are employed in sewer and manholes, which are in use, the contractor shall ensure that manholes are ventilated at least foran hour before workers are allowed to get into them. Manholes so opened shall be cordoned off with suitable railing andprovided with warning signals or boards to prevent accident to public

During these activities in sewers and manholes, regular monitoring of oxygen levels and the presence of explosive mixtures and toxic gases are to be controlled. Suitable face masks shall be supplied for use by workers during painting work. Overalls shall be supplied by the contractor to workmen and adequate facilities shall be provided to enable working painters to wash during and on cessation of work. Special care should be taken with regards to the hygiene of the temporary facilities.

**SECTION 13: ELECTRICAL INSTALLATION**

The National Indian electric codes and regulations shall apply to all permanent and temporary electrical installations. A temporary power distribution system shall be installed in accordance with the national codes All other temporary connections and sub distribution systems shall be connected to this main system. All temporary power systems shall be properly grounded. Circuit breakers (incl. fuses) shall be used in all temporary power connections for system and cable protection. All

wires shall be colour coded in accordance with the national codes. All electrical cables shall consist of solid copper conductors (stranded wires shall not be used). Only certified electricians will be allowed to enter high tension station, transformer and low voltage areas. All electrical installation work and all connections to the main power distribution system shall be done by qualified electricians from certified contractors. Usage of 30Ma ELCB as per IE guidelines (or as stated in its subsequent revisions)

#### **SECTION 14: LADDERS**

Work activities situated above 2.5m from ground floor level. Precautions shall be made to avoid workers from falling down. For work above 2.5m from ground level, proper scaffolds need to be erected. No metal ladders to be used around electrical hazards. Special attention shall be paid to the material of the ladder for the type of work to be performed i.e. whether the ladder shall be metal or wooden.

#### **Use of ladders and folding step ladders**

This regulation applies to all ladders and pairs of steps but not roof ladders and crawling boards. Ladders must:

- Be fixed near the top if practicable, or near the bottom if not: if suspended they must be secure.
- Be placed (except when suspended) on a firm level base; they must not stand on loose packing (eg. Bricks)
- Be intermediately secured, where necessary, to prevent swaying and sagging
- Be supported, or suspended, equally on each stile.
- When working on a ladder above 2.5m, fall protection must be used.
- Extend at least 1.05m above any landing place beyond the highest rung from which a person may be working or have a nearby handhold of equivalent height.
- Be placed so that there is space behind each rung for proper foothold (eg. No rung should coincide with a scaffold tube)

#### **SECTION 15: SCAFFOLDING**

##### **Work activities above 2.5m from the ground level:**

Precautions shall be made to avoid workers from falling down. For work **above 2.5m above a floor** level proper scaffolds need to be erected. Ladders properly secured can be used, but only for light work which can be done with one hand.

##### **Supervision of work and inspection of material:**

Scaffolds must be erected, altered or dismantled only under competent supervision and as far as possible, by experienced persons. All scaffolding materials must be inspected before use to check that they are up to standard. All inspected scaffolds must bear a sign "ready for use".

##### **Construction and material:**

Sufficient sound material must be provided for a scaffold to be strong and stable enough for the job. Wherever timber is used for any kind of scaffolding purpose, it must be of the right type for the job and must not be painted so that any defects are hidden. Scaffold tubes and fittings must not be bent, distorted or unduly rusty.

##### **Defective material:**

Scaffold tubes, couples or fittings that are bent unduly rusty or distorted should be rejected. Timber with dangerous splits and knots should always be rejected. Ropes and lashings showing signs of chafing through wear, or of being corroded, should be rejected. All scaffold components must be properly stored when not in use and kept separately from all other building materials

##### **Maintenance of scaffolds:**

Scaffolding must be kept in good order and every effort made to prevent the accidental displacement of any part.

#### **Partly erected or dismantled scaffolds:**

If any scaffold is either partly erected (or partly dismantled), but nevertheless is still capable of being used to some extent, it must have a bold warning notice fixed, or all access blocked off or barred, at the point beyond which it cannot be safely used.

#### **Standards or Uprights, Ledgers and Putlogs:**

Scaffold standards should be vertical and spaced closely enough for the intended use of the scaffold. Base plates must be used. Timber sole plates should also be used to distribute the

load from the standard over a wide area, as well as to offset possible local subsidence. Ledgers must be level and fixed to standards with right-angle couplers. Putlogs and transoms must be firmly fixed to ledgers or standards. The flattened end of the putlog must be pushed right into the wall to provide maximum support. Putlogs and transoms should be spaced according to the expected load and the thickness of the boards to be used in the platform. In normal use, putlogs and transoms should be spaced so that the spans of scaffold boards should not be greater than :

32mm boards: 1m 38mm

boards: 1.50 m 50mm

boards: 4.60 m

#### **Ladders used in Scaffolds:**

Ladders used as uprights must be:

- Strong enough to carry the load of both the work and the workers.
- Equally supported on each side.
- Secured to prevent slipping.

Ladders to be placed under an angle of 70 ° with the vertical and shall extend 1m above the railing. Ladders are only to be used to support a scaffold platform when the work is light, e.g., painting.

#### **Stability of Scaffolds:**

All scaffolds must be:

- On a solid, even base ; or suspended from a sound structure
- Braced to prevent failure, and
- Tied to the building or structure unless specially designed to be completely independent.
- Any building or structure which supports a scaffold must be strong enough to carry the scaffold and its load  
A scaffold only used as a working platform for workers when a scaffold also used to store material etc, a calculation is needed to check if that scaffold is safe to carry the total load. Mobile scaffolds must:
  - Be stable, weighted at the base if necessary
  - Be used only on a flat, level surface.
  - Have the wheels locked to prevent movement whilst being used for work,
  - Be pushed, or pulled only at the base when being moved. Scaffolds must not be built on loose bricks, drain pipes, chimney pots, etc. Bricks or blocks can be used to support a platform no higher than 600mm from the ground or floor.

#### **Slung Scaffolds**

- Be strong enough
- Be properly secured to be overhead anchor-ages and to be platform frame,
- Be spaced so as to keep the platform stable,
- Be vertical, and
- Be kept straight
- No rope other than wire rope may be used for suspension
- Packing must be used to prevent damage to suspension ropes or chains at any point where sharp or rough-edged protrusions could cause chafing.
- The platform must be secured to prevent swaying whilst in use.

**Cantilever, Jib figure and Bracket scaffolds:**

Cantilever or jib scaffolds must be anchored to a structure which is strong enough to carry the total load. Outriggers must be long enough and strong enough and the scaffold must be braced to ensure stability. Figure or bracket scaffolds supported by dogs or spikes must not be used if there is any danger of these pulling out of the brickwork or stone-work.

**Support for Scaffolds:**

No part of the building may be used to support scaffolding unless it is strong enough to do so. Unless gutters have been designed as walkways and are strong enough to bear the weight, they must not be used to support scaffolding or ladders.

**Suspended Scaffolds (Not Power Operated)**

The ropes, winches, block and tackle must be strong enough and correctly rigged. A safe anchorage for the suspension must be provided.

**Winches or similar lifting devices must:**

- a. have brakes which apply when the operating lever is released, and
- b. be protected from the weather, falling dirt, etc.

**Outriggers must:**

- a. be long enough and strong enough,
- b. be horizontal (light cradles are excepted)
- c. have stops at their outer ends (light cradles excepted)
- d. be tied down or properly counter-weighted at the tail, and
- e. be close enough together to support the rails and scaffolds properly .

**Counterweight Must**

- a. be bolted or securely attached to the outriggers, and

**Runways must:**

be strong enough and in good condition, have stops at each, and be bolted or tied securely to their supports

**Platforms of suspended scaffolds must:** be closely boarded be at least 430mm wide on light weight cradles and be atleast 600mm wide on all other types, if used only for workmen, or be at least 800mm wide, if used for workmen and materials Never be used to carry higher platform

Platforms should be as close as possible to the face of the building but where persons sit on the edge of the platform to carry out their work then the distance between platform and building can be upto 300mm

**Winches must:**

Have at least two full turns of rope on the drum when the platform is in its lowest position and

Be marked with the length of rope on the drum. Suspended scaffolds and associated equipment must be maintained in good conditions. Platforms must be prevented from tipping or swaying whilst in use. Steel wire rope must be used for the suspension for all platforms other than light weight cradles. Light cradles may be suspended by fibre ropes and pulley blocks

which should not be more than 3.20m apart. (Only ropes recommended by manufacturers for this purpose should be used)

**Boatswain's Chair's Cages, Skips etc. (Not Power Operated)**

Hand-operated boatswain's chairs, skip etc. must:

- Be well constructed, strong enough, and properly maintained
- Have outriggers strong enough and firmly anchored,
- Have chains, ropes and lifting gear firmly secured to the outriggers above and to the chair, skip etc. The construction (lifting operations) regulations apply to the lifting gear,
- Be designed so that the occupant cannot fall out
- Carry no loose materials which could interfere with the safety of occupant
- Have means of preventing spinning and tipping (a swivel connection at the suspension points is strongly advised)
- In the case of skips, be at least 910 mm deep
- Be under the supervision of a competent person during installation and use, and
- A boatswain's chair may only be used as a workplace when the work would not take long enough to make the use of a suspended (or standard) scaffold reasonably practicable.
- Persons working in these must wear fall protection harnesses connected to a rope or chain separate from the chair or skip suspension rope or chain.

**SECTION 16: HOISTS, CRANES AND DERRICKS**

**Safety of Hoist ways, Platform and Cage:**

Hoist ways must be enclosed wherever access is provided or wherever persons could be struck by the platform or other moving parts. Gates must be fitted in the enclosure at all landing places and must normally be at least 2m high, but gates 910 mm high are acceptable where persons are not at the risk of falling down the hoist ways or coming into contact with moving parts. Gates must be kept closed except for the movement of men and materials; it is the duty of all persons to ensure it is done. Hoists platforms and cages must be fitted with a device capable of supporting them, fully loaded, should hoists, ropes or driving gear fail. Hoists must be fitted with verrun stops at the top.

**Operation of Hoists**

- a) Hoists must only be capable of being operated from one position at a time, whether by rope, lever or switch. Hoists must not be operated from the cage.
- b) Where the hoist driver cannot see the platform or cage during its movement, a signaling system, which covers all landing places, must be used.
- c) All hoists, prior to their use, have to be inspected by a competent person

**Safe Working Load and Marking of Hoists**

- a) The platform of materials or goods hoists must carry a notice stating
  - (i) the safe working load and
  - (ii) that the passenger must not ride on platform

The safe working load must not be exceeded except for test purposes.

- b) Cages for passengers hoists must carry a notice stating
  - (i) the safe working load and
  - (ii) the number of passengers permitted.

No greater number of passengers may be carried and safe working load must not be exceeded except for the test purposes.



#### **SECTION 17: MOTOR VEHICLES**

A site traffic plan must be developed at the beginning of the project to control all traffic on site and movement of materials, parking etc. Motor equipment left unattended at night near areas where work is in progress must have appropriate lights, reflectors or barricades to identify the locations of the equipment. A safety tie rack, cage, or equivalent protection must be used when a worker is inflating, mounting, tires installed on split rims or rims equipped with locking rings. Heavy machinery that is suspended or held aloft by the use of slings, hoists, or jacks must be blocked or cribbed to prevent falling or shifting before employees are permitted to work under them. Bulldozer and scraper blades and similar equipment shall be either fully lowered or blocked when being repaired or when not in use. All controls must be in the neutral position and the motor stopped and brakes set, unless work being performed requires otherwise. Parked equipment must be checked and parking brakes set. All cab glass shall be safety glass. All vehicles must have a service brake system, an emergency brake system, and a parking brake system. Vehicles that require additional light shall have at least two headlights, as well as brake lights. The vehicles must also be equipped with back horn which automatically sets off as and when the vehicle is in reverse gear. Other standard vehicles equipment such as seat belts, rear-view mirrors and safety latches on operating levers shall be in accordance with standard vehicle codes, and state-inspected where appropriate. The authorized individuals with valid driving license only shall be allowed to drive.

#### **SECTION 18: BARRICADES**

- (i) Contractor shall erect and maintain barricades required in connection with its operation to guard or protect,
  - a) Hoisting areas.
  - b) Areas adjudged hazardous by contractor's safety management and/ or Project Manager's Inspectors
  - c) 's existing property subject to damage by the contractor's operations
- (ii) Contractor's employees and those of his subcontractors shall become acquainted with Project Managers barricading practice and shall respect the provisions thereof.

#### **Guarding of floor opening and floor holes:**

Every temporary floor opening shall have railings, or shall be constantly attended by Supervisors appointed by Contractor's safety officer / Manager. Every floor hole into which persons can accidentally fall shall be guarded by either:

- a) A railing with toe board on all exposed sides, or
- b) A floor hole cover of adequate strength and it should be hinged in place. When the cover is not in place, the place the floor hole shall be constantly attended by some one or shall be protected by a removable railing. Barricades must be strong enough to carry the weight of people. Every stairway floor opening shall be guarded by a railing on all exposed sides, except at entrance to stairway. Every ladder way floor opening or platform shall be guarded by a guard railing with toe board on all exposed sides (except at entrance to opening) with the passage through the railing either provided with a swinging gate or so offset that a person can not directly into the opening.

#### **Guarding if open-side floors and platform**

Every open-sided floor or platform 120cm or more above adjacent floor or ground level shall be guarded by a railing (or the equivalent) or all open sides except where there is entrance to ramp, stairway or fixed ladder. The railing shall be provided with a toe board beneath the open sides wherever,

- (a) Persons may pass,
- (b) there is moving machinery and
- (c) there is equipment with which failing materials could create a hazard

#### **SECTION 19: HANDLING AND STORAGE OF MATERIALS**

**Cement:**

Storage and stacking: Cement shall be stored at the work site in a building or a shed which is dry, leak proof and moisture proof. The building or shed for storage should have minimum number of windows and close fitting doors and these should be kept closed. Cement received in bags shall be kept in such a way that the bags are kept free from the possibility of any dampness or moisture coming in contact with them. Cement bags shall be stacked off the floor on wooden planks in such a way as to keep them 150 to 200mm clear from the floor and space of 450mm minimum shall be left all round between the exterior walls and in the stacks. In the stacks the cement shall be kept close together to reduce circulation of air as much as possible. Owing to pressure on bottom layer of bags sometimes 'warehouse pack' is developed in these bags. This can be removed easily by rolling the bags when cement is taken out for use. The height of stack shall not be more than 15 bags to prevent the possibility of lumping up under pressure. The width of the stack shall be not more than four bags length or 3m. In stacks more than eight bags high, the cement bags shall be

arranged alternately lengthwise and crosswise so as to tie the stacks together and

minimize the danger of toppling over. For extra safety during monsoon or when it is expected to store for an unusually long period, the stack shall be completely enclosed by a water proofing membrane such as polyethylene, which shall close on the top of the stack. Care shall be taken to see that the waterproofing membrane is not damaged any time during the use. Drums or other heavy containers of cement shall not be stacked more than two

layers high. The manner of storage shall facilitate the requirement that lots of cement received are removed and used more or less in the order in which they are received.

Handling – Hooks shall not be used for handling cement bags unless specifically permitted by the engineer-in-charge.

**Polyethylene pipes****(a) Storage & stacking:**

Black polyethylene pipes may, be stored either under cover or in the open. Natural polyethylene pipes however, should be stored under cover and protected from direct sunlight. Coils may be stored either on edge or stacked flat one on top of the other, but in either case they should not be allowed to come into contact with hot water or steam pipes and should be kept away from hot surface. Straight lengths should be stored on horizontal racks giving continuous support to prevent the pipe taking on a permanent set. Storage of pipes in heated areas exceeding 270 C should be avoided.

(b) Handling: Removal of pipe from a pile shall be accomplished by working from the ends of the pipe.

**Pipes of conducting materials:**

(a) Storage and stacking: Pipes shall be stacked on solid level sills and contained in a manner to prevent spreading or rolling of the pipe. Where quantity storage is necessary suitable packing shall be placed between succeeding layers to reduce the pressure and resulting spreading of the pile. In stacking and handing of pipes and other conducting materials the following minimum safety distances shall be ensured from the overhead power line:

11KV and below 40m

Above 11and below 33KV 60m Above

33 and below 132KV 70m Above 132

and below 275KV 70mAbove 275and

below 400KV 50m

(b) Handling: Removal of pipes from a pile shall be accomplished by working from the ends of the pipe. During transportation, the pipes shall be so secured as to ensure against displacement.

**Paints, Varnishes and Thinners:**

(a) Storage and stacking: Paints, varnishes lacquers, thinners and other flammable materials shall be kept in properly sealed or

closed containers. The containers shall be kept in a well ventilated location, free from excessive heat, smoke, sparks or flame. The floor of the paint stores shall be made up of 10cm thick loose sand and stored in a collection drip pan to prevent leakage's to the ground and/or the soil.

Paint materials in quantities other than required for daily use shall be kept stocked under regular storage place. Where the paint is likely to deteriorate with age the manner of storage shall facilitate removal and use if lots in the same order in which they are received. Temporary electrical wiring / fittings shall not be installed in the paint store. When electric lights, switches or electrical equipment are necessary, they shall be of explosion proof design.

- (b) Handling: Ventilation shall be adequate to prevent the accumulation of flammable vapors to hazardous levels of concentration shall be provided in all areas where painting is done.

When painting is done in confined spaces where flammable or explosive vapors may develop any necessary heat shall be provided through duct work remote from the source of flame. Sources of ignition such as open flame and exposed heating elements shall not be permitted in area or rooms where spray painting is done nor shall smoking be allowed there. Care should be taken not to use any naked flame inside the paint store. Buckets containing sand shall be kept ready for use in case of fire. Fire extinguisher when required shall be of foam type conforming to accepted standards.

#### **Bitumen, Road Tar, Asphalt etc.:**

- (a) Storage and stacking: Drums or containers containing all types of bitumen, road tar, asphalt etc. shall be stacked vertically on their bottoms in upto 3 tiers. Leaky drums shall be segregated and either their contents shall be emptied into intact drums or contained in larger containers. All spillages or leakages onto natural soil shall be immediately cleaned up and placed in a contained area. Empty drums shall be stored in pyramidal stacks neatly in rows.
- (b) Handling: Bitumen / Tar – Bitumen / tar shall not be heated beyond the temperature recommended by the manufacturer of the product. While discharging heated binder from the boiler, workers shall not stand opposite to the jet so as to avoid the possibility of hot binder falling on them. The container shall be handled only after closing the control valve. While handling hot bitumen / tar, workers shall exercise scrupulous care to prevent accidental spillage thereof. The buckets and cans in which the hot material is carried from boiler shall be checked before use to ensure that they are intact and safe. Mops and other applicators contaminated with bituminous materials shall not be stored inside buildings

#### **Bituminous roofing felts:**

- (a) Storage and stacking: Bituminous roofing felts shall be stored away from other combustible, flammable materials. For long storage it shall be kept under shade.
- (b) Handling: Bituminous roofing felts should be handled in a manner to prevent cracking and other damages

#### **Flammable materials:**

- (a) Storage and stacking: In addition the following provisions shall also apply: Outdoor storage of drums required some care to avoid contamination because moisture and dirt in hydraulic brake and transmission fluid, gasoline or lubricants may cause malfunction of failure or equipment with possible danger to personnel. The storage area should be free of accumulations of spilled products, debris and other hazards and Compressed gases and petroleum products shall not be stored in the same building or close to each other.
- (b) Handling: Petroleum products delivered to the job site and stored there in drums shall be protected during handling to prevent loss of identification through damage to drum markings, tag, etc. Unidentifiable petroleum products may result in improper use with possible fire hazard damage to equipment or operating failure. Workmen shall be required to guard carefully against any part their clothing becoming contaminated with flammable fluids. They shall not be allowed to continue work when their clothing becomes so contaminated. All flammable and toxic liquids shall be stored in suitable collecting drip pans to avoid spill contamination into the ground/soil. All workers shall be provided training as part of the induction as to how to correctly handle and lift materials and the maximum load they can lift or handle at any point.

## **SECTION 20: EXCAVATION AND SHORING**

Excavation and Trenching: All trenches, 1.5m or more in depth, shall at all times be supplied with at least one ladder for each 30m in length or fraction thereof. Ladder shall be extended from bottom of trench to at least 1meter above surface of the ground. Sides of a trench which is 1.5m or more in depth shall be stepped back to give suitable slope or securely held by timber bracing so as to avoid the danger of sides collapsing. Excavated material shall not be placed within 1.5m of edge of trench of half of depth of trench, whichever is more cutting undermining or undercutting be done. Safety procedures for the operation of the excavation and grading equipment (such as the safe distance from excavations) should be developed.

## **SECTION 21: CONCRETE CONSTRUCTION**

### **Handling of plant**

Mixers: All gears, chains and rollers of mixers shall be properly guarded. If the mixer has a charging skip the operator shall ensure that the workmen are out of danger before the skip is lowered. Railings shall be provided on the ground to prevent anyone walking under the skip while it is being lowered. All cables, clamps, hooks, wire ropes, gears and clutches etc. of the mixer, shall be checked and cleaned, oiled and greased and service once a week. A trial run of the mixer shall be made and defects shall be removed before operating a mixer. When workmen are cleaning the inside of the drums and operating power of the mixer shall be locked in the off position and all fuses shall be removed and a suitable notice hung at the place.

### **Trucks:**

When trucks are being used on the site, traffic problems shall be taken care of. A reasonably smooth traffic surface shall be provided. If practicable, a loop road shall be provided to permit continuous operation of vehicles and to eliminate their backing. If a continuous loop is not possible a turnout shall be provided. Backing operations shall be controlled by a signalman positioned so as to have a clear view of the area behind the truck and to be clearly visible to the truck driver. Movement of workmen and plant shall be routed to avoid crossing as much as possible the truck lanes.

### **Formwork:**

Formwork shall be designed after taking into considering spans, setting temperature of concrete, dead load and working load to be supported and safety factor for the material used for formwork. All timber formwork shall be carefully inspected before use and members having cracks and excessive knots shall be discarded The vertical supports shall be adequately braced or otherwise secured in position that these do not fall when the load gets released or the supports are accidentally hit. Tubular steel centering shall be used in accordance with the manufacturer's instructions. When tubular steel and timber centering isto be used in combination necessary precautions shall be taken to avoid any unequal settlement under load.

### **All centering shall be finally inspected to ensure that:**

- a) Footings or sills under every post of the centering are sound
- b) All tower adjustment screws or wedges are snug against the legs of the panels.
- c) All upper adjustment screws or heads of jacks are in full contact with the formwork.
- d) Panels are plumb in both directions.
- e) All cross braces are in place and locking devices are in closed and secure position.
- f) In case of chajjas and balconies the props shall be adequate to transfer the load to the supporting point.

### **Ramps and gangways:**

Ramps and gangways shall be of adequate strength and evenly supported. They shall either have a sufficiently flat slope or shall have cleats fixed to the surface to prevent slipping of workmen. Ramps and gangways shall be kept free from grease, mud, snow or other slipping hazards or other obstructions leading to tripping and accidental fall of workman. Ramps and gangways

meant for transporting materials shall have even surface and be of sufficient width and provided with skirt boardson open sides.

**Pre-stressed concrete:**

In pre-stressing operations, operating, maintenance and replacement instructions of the supplier of the equipment shall be strictly adhered to. Necessary shields should be put up immediately behind the pre-stressing jacks during stressing operations. Wedges and other temporary anchoring devices shall be inspected before use. The pre-stressing jacks shall be periodically examined for wear and tear. A spreader beam shall be used wherever possible so that the cable can be as perpendicular to the members being lifted as practical. The angle between the cable and the members to be lifted shall not be less than 60°. Methods of assembly and erection specified by the designer, shall be strictly adhered to at site. Immediately on erecting any unit in position, temporary connections or supports as specified shall be provided before releasing the lifting equipment. The permanent structural connections shall be established at the earliest opportunity.

**Heated concrete:**

When heaters are being used to heat aggregates and other materials and to maintain proper curing temperatures, the heaters shall be frequently checked for functioning and precautions shall be taken to avoid hazards in using coal, liquid, gas or any fuel.

**SECTION 22: MASONRY WORK**

**Walls**

General: Depending on the type of wall to be constructed the height of construction per day shall be restricted to ensure that the newly constructed wall does not come down due to lack of strength in the lower layers. Similarly, in long walls adequate expansion / crumple joints shall be provided to ensure safety.

Opening in walls: Whenever making of an opening in the existing walls is contemplated, adequate supports against the collapse or cracking of the wall portion above or roof or adjoining walls shall be provided. Guarding of wall openings and Holes: Wall opening barriers and screens shall be of such construction and mounting that they are capable of withstanding the intended loads safely. For detailed information reference may be made to good practice. Every wall opening from which there is a drop of more than 120mm shall be one of the following: Rail, roller, picket fence, half door or equivalent barrier: The guard may be removable but should be preferable be hinged or otherwise mounted so as to be conveniently replaceable. Where there is danger to persons working or passing below on account of the falling materials, a removable toe board or the equivalent shall also be provided. When the opening is not in use for handling materials the guards shall be kept in position regardless of a door in the opening. In addition a grab handle shall be provided on each side of the opening. The opening should have a sill that projects above the floor level at least 2.5cm. Extension platform into which materials may be hoisted for handling, shall be of full length of the opening shall be of full length of the opening and shall have side rails or equivalent guards. Every chute wall opening from which there is a drop of more than 120mm shall be guarded by one or more of the barriers specified in 16.2.1 or as required by the conditions.

## SECTION 23: HEALTH & HYGIENE STANDARDS

### **Drinking water:**

- a) In every work place, there shall be provided and maintained at suitable places, easily accessible to labour, a sufficient supply of cold water fit for drinking.
- b) Where drinking water is obtained from an intermittent public water supply, each work place shall be provided with storage where such drinking water shall be stored.
- c) Every water supply or storage shall be at a distance of not less than 50 feet from any latrine drain or any other source of pollution.

### **Washing facilities:**

- a) In every work place adequate and suitable facilities for washing shall be provided and maintained for the use of contractlabour employee therein
- b) Separate and adequate cleaning facilities shall be provided for the use of male and female workers
- c) Such facilities shall be conveniently accessible and shall be kept in clean and hygienic condition.

### **Latrines and Urinals**

- a. (a). Latrines shall be provided in every work place on the following scale namely:
  - (i) Where females are employed there shall be at least one latrine for every 25 females.
  - (ii) Where males are employed there shall be at least one latrine for every 25 males.
- b. Provided that where the number of males or females exceeds 100, it shall be sufficient if there is one latrine for 25males or females as the case may be upto first 100 and one for every 50 thereafter.
- c. Every latrine shall be under cover and so partitioned off as to secure privacy and shall have proper door and fastenings.
- d. Construction of latrines: The inside walls shall be constructed of masonry or some suitable heat-resisting non-absorbent materials and shall be cement washed inside and outside at least once a year, latrines shall not be of standard lower than borehole system.
- (i) Where workers of both sexes are employed, there shall be displayed out side each block of latrine and urinal a notice in the language understood by the majority of the workers "for men only" or for" women only" as the case may be.
- (ii) The notice shall also bear the figure of man or woman as the case may be.
- e. There shall be at least one urinal for male workers upto 50 and for female workers upto 50 employed at a time, provided that where the number of male or female workers as the case may exceed 500 it shall be sufficient if there is one urinal for every 50 males or females upto the first 500 and one for every 100 or part thereafter.
  - (i) The latrines and urinals shall be adequately lighted and shall be maintained in a clean and sanitary condition at all times
  - (ii) Latrines and urinals other than those connected with flush sewage system shall comply with the requirements of Public Health Authorities.
- f. Water shall be provided by means of tap or otherwise so as to conveniently accessible in or near the latrines and urinals.
- g. Disposal of excreta: Unless otherwise arranged by the local sanitary authority, arrangements for proper disposal of excreta by incineration at the work place shall be made by means of a suitable incinerator. Alternately excreta may be disposed of by putting a layer of night soil at the bottom of pucca tank prepared for the purpose and covering it with 15cm layer of waste or refuse and then covering it with a layer of earth for a fortnight (then it will turn to manure)
- (i) The contractor shall at his own expense, carry out all instructions issued to him by the Engineer-in-charge to effect proper disposal of night soil and other conservancy work in respect of the contractor's workmen or employees of the site. The contractor shall be responsible for payment of any charges which may be levied by the municipal or cantonment authority for execution of such on behalf.

**Provision of shelter during rest:**

At every place there shall be provided free of cost, for suitable sheds two for meals and other two for rest separately for the use of men and women labour. The height of each shelter shall not be less than 3m from the floor level to the lowest part of the of the shed roof. These shall be kept clean and the space provided shall be on the basis of 0.6sqm per head. Provided that the engineer-in-charge may permit subject to its satisfaction, a portion of building under construction or other alternative accommodation to be used for the purpose.

**Café/Eating place:**

- a. In every work place where the work regarding the employment of contract labour is likely to continue for six months and where in contract labour numbering 100 or more are ordinarily employed an adequate place shall be provided by the contractor for the use of such labour.
- b. The café shall be maintained by the contractor in an efficient manner.
- c. The café shall consist of at least a dining hall, cafe, storeroom, pantry and washing places separately for workers and utensils.
- d. The floor shall be made of smooth and impervious materials and inside walls shall be lime washed or colour washed at least once a year. Provided that the inside walls of the cafe shall be lime washed every four months.
- e. The premises of the cafe shall be maintained in a clean and sanitary condition
- f. Suitable arrangements shall be made for the collection of disposal of garbage.
- g. Waste water shall be carried away in suitable covered drains and shall not be allowed to accumulate so as to cause nuisance.
- h. The dining hall shall accommodate at a time 30% of the contract labour working at a time.
- i. The floor area of the dining hall, excluding the area occupied by the service counter and any furniture except tables and chairs shall not to be less than 1sqm per diner to be accommodated as prescribed in sub-rule (i)
- j. There shall be provided and maintained sufficient utensils crockery, furniture and any other equipment necessary for efficient running of cafe
- k. The furniture, utensils and other equipment shall be maintained in clean and hygienic condition.
- l. Suitable clean clothes for the employees serving in the café shall be provided and maintained.
- m. A service counter, if provided shall have top of smooth and impervious material.
- n. Suitable facilities including an adequate supply of hot water shall be provided for the cleaning of utensils and equipment.
- o. A portion of the dining hall and service counter shall be partitioned off and reserved for women workers in proportion to their number.
- p. Sufficient tables stools or benches shall be available for the number of diners to be accommodated as prescribed in sub rule (i)
- q. The food stuff and other items to be served in the cafe shall be in conformity with the normal habits of the contract labour.
- r. The charges of food stuffs, beverages and other items served in the cafe shall be based on 'No profit no loss' and shall be conspicuously displayed in the cafe.
- s. In arriving at the price of the foodstuffs and other article served in the cafe, the following items shall not be taken in to consideration as expenditure namely:
  - t. The rent of land and building
  - u. The depreciation and maintenance charges for the building and equipment provided for the cafe.
  - v. The purchase, repairs and replacement of equipment including furniture, crockery, cutlery and utensils.

- w. The water charges and other charges incurred for lighting and ventilation
- x. The interest and amount spend on the provision and maintenance of equipment provided for the cafe.
- y. The accounts pertaining to the cafe shall be audited once every 12months
- z. by registered accountants and auditors.

**Anti-malarial precautions:**

The contractor shall at its own expense, conform to all anti-malarial instructions given to him by Engineer-in-charge including the filing up of any borrow pits which may have been dug by him.

**SECTION 24: RESPONSIBILITIES**

**S&H –coordinators:**

In connection with (Indian Regulations and standards) the tasks and responsibilities of the S&H coordinator(s) as well as the design- as the construction phase, are as follows:

**Design phase:**

- ☒Co-ordination of the general aspects with respect to Safety, Health and Welfare.
- ☒Taking care of the set-up of a S&H-plan 'in draft'.
- ☒Putting together the S&H-file.
- ☒Keep up and actualize the S&H-plan 'in draft' -and file.
- ☒Hand-over the S&H-plan 'in draft' -and file to the S&H-coordinator(s) for the construction phase.

**Construction phase:**

- ☒Organizing and coordinating the cooperation between employers.
- ☒Coordinating the Safety, Health and Welfare measures by the employers.
- ☒Coordinating supervision to meet the joint facilities.
- ☒Give indications to the .
- ☒Coordinating the information to the employees.
- ☒Take measures to assure that only persons which are entitled to can come in at the works.
- ☒Keep up and actualize the S&H-plan 'in draft' -and file.
- ☒Handover the S&H-file to the principal.

**SECTION 25: COMMUNICATION**

**Kick-off meeting**

The kick-off meeting should be seen as a start up meeting, preliminary to the general or project oriented activities. In the kick-off meeting, besides technical relevant information, pay attention to the aspects of safety and health in general sense. The Contractor will be required to provide their job site safety program either at kickoff meeting or within a time period as determined by Project Manager after the kickoff meeting along with other pre-start documentation.



#### **Pre-job meeting**

The Pre-job meeting is meant for consultation before the activities may start. A part of this meeting is reserved to make detail appointments for specific Plant or Location directed safety- and health matters and 'actual' deviations of the normal situation. This meeting is meant as a supplement to the general information which already has been handed over during the kick-off meeting. At this meeting the **Pre-job Checklist** should be handled and worked out with all persons involved.

#### **Progress Meeting:**

The progress meeting is meant to get an update from contractors on project progress and resolve any construction/ coordination issues. It is normally held on weekly basis. This meeting will have EHS component and following items shall be discussed under this head.

Major safety issues at site Actions being taken to resolve them

#### **Toolbox meeting:**

Toolbox meetings are company (contractor) internal matters. With this kind of meeting, employees supposed to execute the job are informed about the most actual state of the activities. This information can be appointments, instructions which are the result of above mentioned meetings. A toolbox meeting is a medium to inform 'executing employees'. Copies of these toolbox meetings (incl. registration forms) should be attached to this chapter.

#### **Safety Meeting:**

Safety meetings shall be held on weekly basis to be attended by Project Manager's Safety representative and safety officer from all contractors as well as their subcontractors. The meeting shall be chaired by Project Manager's safety representative and Project Manager may also like to attend the meetings randomly. The topics to be covered shall broadly include:

- a. Safety issues at job site
- b. Review pre task plans
- c. Discuss safety statistics
- d. Review safety committee reports/ recommendations
- e. Discuss safety training initiatives
- f. Review overall job site safety

### **SECTION 26: INFORMATION**

#### **General S&H-instructions**

Everyone, who is doing activities at the Client site, should be registered at the job site. After registration, everyone get a Contractor Safety Instruction (video presentation). This presentation shows an explanation on the S&H policy, the most important emergency measures (Fire and Gas alarms) and shows general behavior rules and procedures.

#### **Site Specific S&H-instructions**

These instructions can be given when the common interest is served (equal for all facilities and departments) and the necessity exists. Examples are: LoTo, shutdown, etc. Site specific, S&H instructions, needed for this project to follow are as under;

\_\_\_\_\_.

### **SECTION 27: PRE TASK PLANS (PTP)/ JOB TASK HAZARD ANALYSIS (JTHA)**

PTP/ JTHA is the process of systematic investigation of a task and its subtasks, ascertaining the risks associated with carrying out activities associated with those tasks, listing preventive measures to avoid potential hazards associated with executing that activity and developing contingency plan in case of emergencies. The Standard Operating Procedure of the Project

Manager will serve as reference guidelines for the tasks which require development of PTP/ JTHA. However, the list is not all inclusive and if the Project Manager/ Project Manager's safety representative/ 's safety representative determine that the PTP/ JTHA is

required for some other tasks too, the contractor will be obligated to provide that as per the procedure and in the format as indicated by Project Manager (copy of format attached with these guidelines. Subsequent to the kick-off meeting, within the specified time period, the contractor will also provide the list of tasks against which PTP/ JTHA shall be submitted along with the expected time, when it would be submitted. This listing shall be done on the format shown below;

|  |                       |
|--|-----------------------|
| <b>LIST OF PRE-TASK PLANS TO BE SUBMITTED ON THE <i>Project Name</i></b> | <b>Trade Package:</b> |
|--|-----------------------|

| TASK | TIME OF EXECUTION | TARGET PTP SUBMISSION DATE |
|------|-------------------|----------------------------|
|      |                   |                            |
|      |                   |                            |

**SECTION 28: ENVIRONMENT**

**Waste Disposal**

Waste originated from activities at the project site should be dumped at the designated location in the designated manner as indicated by / PM. Chemical waste (air-sprays, oil, paint etc.) should be collected separately and, if property of client, shall be offered to the facility / department. This in conjunction with the waste-coordinator of the department concerned, or the In & out Clean department. In case the waste coordinator does not require the chemical waste for re-usage, the contractor will dispose it off at its own expense at the designated location in the designated manner as directed by Project Manager and in accordance with all Indian Environmental Laws. Chemical waste which originates from Contractor's works should be collected and carried away by Contractor according to the legal regulations. The In & Out Clean department should be informed before carrying away the waste.

**Material Safety Data Sheets (MSDS)**

The Contractor is obligated to inform about the risks and dangers associated with handling of chemical and hazardous substances at site. Therefore, the information transfer in the form of Material Safety Data Sheets is necessary. The contractor shall list all materials to be used at project site that require submission of MSDS and submit those. The material shall be brought to the site only after obtaining prior approval from 's representatives on the MSDS.

Contractor is required to provide Material Safety Data sheets (MSDSs) for any chemical brought on site. An index of MSDSs for all products proposed to be used on site must be provided. In so far as possible, "environmentally friendly" products should be used (e.g. detergent or citrus based cleaners rather than solvent based cleaners). Low-Volatile Organic Compound (VOC) products should be used at all times. Chlorinated solvents should not be brought on site except on a pre-approved case-by-case basis. The Client/ reserves the right to reject any chemical proposed to be brought on site. Any regulated wastes generated on site (e.g. hazardous, residual or special waste, including regulated wastewaters, waste oil, waste paint), in must be disposed of by Contractor in strict accordance with federal, provincial and municipal or and local standards. No wastes may be disposed of down the drain or in the Client installed dumpster without prior written consent. Contractor must have appropriate training for the work to be done. Training records must be produced upon demand. Contractors must bring appropriate tools, equipment, safety devices and clothing to the job site. No tools or equipment maybe borrowed from the Client without prior written consent.

|  |
|--|
|  |
|--|

| <b>Material</b> | <b>MSDS sheet to be submitted by</b> |
|-----------------|--------------------------------------|
|                 |                                      |

**SECTION 29: REPORTING**

The contractor will submit the Monthly man-hour & safety report on the format enclosed in EHS guidelines. The report will be submitted by \_ hrs. on \_ day of every month. In addition, should the Project Manager require any interim man-hour reports on weekly basis or any other frequency determined by Project Manager, those will also be submitted by the contractor. Safety reports submitted are in no way linked with the requirement for submission of Daily report on the part of contractor.

|   |
|---|
| <b>CONTRACTOR HEALTH AND SAFETY</b><br><b>Sl. No..... Date.....</b>   |
| <b>General information ( To be Completed by Safety officer )</b>  |
| Contractor Name :<br>Project Name :<br>On site contractor Representative / Supervisor / Safety  |
| Location of Infraction :<br>Description of Infraction:<br>Observed By : Date : Time :   |
| Status of Project : Project Stopped until<br>correctionProject Continuing W/infraction<br>Corrective Actions Required by ( Date/time) |
| <b>CORRECTIVE ACTION ( To be Completed by the Contractor )</b>  |
| Corrective Action :<br>Corrective Action Performed by<br>:Date / time : Name : Signature<br>:   |
| Return to GU  |
| <b>CORRECTIVE ACTION FOLLOW UP ( To be completed by Project Manager )</b>   |
| Received / Certified By : GU Date :<br>Remarks :  |

## EHS DECLARATION

From:

Name of the Contractor

Name of the organization To:

Project Manager

*Location – Pin code*

### Subject: EHS Declaration

I/ we hereby declare to accept the responsibility to carry out the work safely. I/ we have understood the hazards associated with site activity and developed the relevant safety procedures, trained the man power and provided required PPE and equipment. I/ we or the workers working under my/our control will adhere to the site safety rules and EHS

guidelines as stated in this document. The following are the safety practices that will be followed in addition to any other requirements as recommended by Project Manager's EHS Manager/ Site safety officer to work safely at site.

1. Wear safety helmet, safety shoes, eye protection with side shields.
2. Wear safety harness and hooking to the life line rope.
3. Wear appropriate hand gloves like cotton, leather, PVC, rubber or surgical hand gloves.
4. Proper tools will be used and checked for defects and replaced whenever required.
5. Welding torch with ring guard, welding shield, leather hand gloves required.
6. No steel rod will be used as earthing on to the welding machine.
7. Proper working platform with hand rail will be used while working at heights.
8. a) Housekeeping will be done on daily basis and the debris, sand, concrete materials and mortar will be removed and stored at identified place.
9. b) Papers, plastic sheets, rubber materials and wooden pieces have to be put in recycle bin from the work place and this will be sent outside the site.
10. I/ we will be appointing one safety officer, safety stewards and group leader of safety.
11. My/ our workmen and I/ we will not create any problem, quarreling with other agents.
12. I/ we will be providing fire extinguishers, fire buckets with water and sand in work place.
13. First aid facility and hospital facility will be provided to my/ our workman.
14. I/ we will be conducting the safety training programs for my/ our workmen, like first aid, fire fighting and safety.
15. I/ we will obtain work permits to work for hazardous area.
16. As per the contract document, we agree with imposition of penalty on us should we violate
17. any safety norms/ practices at the project site, which can be deducted from our invoices.
18. I/ we will submit all the required insurance policies as per the contract documents.

Signature of the contractor

### PERSONAL PROTECTIVE EQUIPMENTS CHECKLIST

#### **SL.NO PARTICULARS YES / NO**

- 1 Do the Workers Wear Helmet in such a way to protect their head?
- 2 Are they wearing hand gloves, Rubber gloves (IS 4770 for electrical purpose), Leather hand gloves of required quality for the job
- 3 Do the workers using appropriate Footwear?
- 4 Is there any need for Safety harness (IS 3521-1965) use? If so, are they hooked property?
- 5 Is there any need for Ear protection? If so, are they using the device external or internal type?
- 6 Are the workers wearing Safety glasses / Safety screens /Safety goggles for the work being done? If so, are they using appropriate equipment?
- 7 Do the Workers have respirator/ protection from inhalation hazards?8 Are the helpers also using proper PPE or not?
- 9 Have the Workers been briefed about the Hazards associated with the job and the emergency action to be followed whenever there is requirement?

EHS Manager/ Site Safety Officer Contractor's Site In-charge/ Safety In-charge

**PERMIT FOR WORKING AT HEIGHTS**

Permit No.:

Date:

Project Name:

Location:

Contractor:

Sub-contractor:

Job description:

Area/ location:

| A   | SCAFFOLDING & RELATED PROTECTION  | Y | N | N/A |
|-----|---|---|---|-----|
| A.1 | Scaffolding good construction, adequate strength with 50 cm clear walk ways toeboards with wide screens,        |   |   |     |
| A.2 | Scaffold well secured with stair ways, hand rails. Should be wide enough to pass two persons at a time          |   |   |     |
| A.3 | Maintained good Housekeeping at work location / site  |   |   |     |
| B   | <b>OVERHEAD CLEARANCE</b>   |   |   |     |
| B.1 | Required clearance available from all overhead electrical cables  |   |   |     |
| B.2 | <b>LADDERS</b>  |   |   |     |
| B.3 | Strong material, well maintained ladders  |   |   |     |
| B.4 | Ladder not placed against loose boxes materials, sound objects, near electrical installation.                   |   |   |     |
| B.5 | Ladder of sufficient height used, on top tied down and man positioned at the foot at ladder.                    |   |   |     |
| B.6 | Safety Footwear provided  |   |   |     |
| B.7 | Ladder placed at an angle of 70 to 75 degrees   |   |   |     |
| B.8 | Area of work barricaded so no person can walk under the ladder.   |   |   |     |
| C   | <b>PERSONAL PROTECTION EQUIPMENT</b>  |   |   |     |
| C.1 | Safety harness provided and worn  |   |   |     |
| C,2 | Safety helmet, safety shoes and any other PPE required to perform the job at hand is provided and worn properly |   |   |     |

**A. Permission:**

Permission granted from \_\_\_\_\_ to \_\_\_\_\_ hrs. on \_\_\_\_\_

Time \_\_\_\_\_ Date \_\_\_\_\_ Signature of permit issuing authority

**B. Receipt:**

I hereby declare that I accept the responsibility for carrying out the work as detailed on this permit and no attempt will be made by me or men under my control to carry out any other work.

Time \_\_\_\_\_ Date \_\_\_\_\_ Signature of Person Receiving Permit

**C. Clearance certificate:**

Work completed by taking all precautionary steps as approved by permit issuing authority.

Time \_\_\_\_\_ Date \_\_\_\_\_ Signature of Person completing jobs

**D. Cancellation:**

This permit to work is hereby cancelled.

Time \_\_\_\_\_ Date \_\_\_\_\_ Signature of permit issuing authority/Shift in-charge

**HOT WORK PERMIT**

Permit No.: Date:

Name of the Project: Location:

Name of the Contractor: Sub-Contractor:

**A) Person taking permit /permittee to fill up:**

- 1) Exact location where hot work is being planned \_\_\_\_\_
- 2) Approximate duration of work From: Date: \_\_\_\_\_ Start Time \_\_\_\_\_ Finish Time \_\_\_\_\_  
Revalidated To: Date: \_\_\_\_\_ Start Time \_\_\_\_\_ Finish Time \_\_\_\_\_
- 3) Description of work:
- 4) Tools & Tackles used:

Points to be checked

| SL No | Details  | Y | N | N/A |
|-------|--|---|---|-----|
| 1     | Has the area immediately below and adjacent to the work spot been cleared/removed of oil, grease and waste cotton etc? |   |   |     |
| 2     | In case of Gas welding, proper hose pipes and pressure gauges are used?  |   |   |     |
| 3     | Have fire extinguishers been kept handy at site?   |   |   |     |
| 4     | Has tin sheet / wet gunny bag / fire retardant cloth/ sheet been placed to prevent sparks from causing fire?           |   |   |     |
| 5     | Have fire sand buckets been kept handy at site?  |   |   |     |
| 6     | Whether cylinders are kept in upright positions?   |   |   |     |
| 7     | Whether Proper PPE's are available?  |   |   |     |
| 8     | In Electrical Welding whether proper Earthing is provided.   |   |   |     |

The above points have been complied with and conditions rendered safe / hazards innocuous to undertake the hot work.

Name of \_\_\_\_\_ Signature \_\_\_\_\_

Designation \_\_\_\_\_

Permittee (Site engineer)

Name & Signature of Safety Officer \_\_\_\_\_

**B) The person giving permit (Issuing Authority) to fill up:**

After checking all the above precautions the hot work can be carried out in the above area.

1. Date: \_\_\_\_\_ Time: \_\_\_\_\_ Signature of safety Officer \_\_\_\_\_ Permit is revalidated for the Period
2. Date: \_\_\_\_\_ Time: \_\_\_\_\_ Signature of Safety Officer \_\_\_\_\_

**C) Time \_\_\_\_\_ Date: \_\_\_\_\_ at which the permit closed & filed**





**DISPOSAL PERMIT FORM****PERMIT NO.:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

Mr. \_\_\_\_\_ Foreman, is authorized to dispose of the following materials in the manner indicated:

**MATERIAL METHOD LOCATION**

The procedures posted at the burning ground and disposal area must be followed in detail during these operations.

Personnel Authorized \_\_\_\_\_

Time: \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_

(Supervisor)

**EXCAVATION PERMIT**

Permit No: \_\_\_\_\_ Date: \_\_\_\_\_

Project Name: \_\_\_\_\_ Location: \_\_\_\_\_

Contractor: \_\_\_\_\_ Sub-contractor: \_\_\_\_\_

**Excavation details:**

Purpose:

\_\_\_\_\_

Area/ Location: \_\_\_\_\_

Proposed date and time for start of work: \_\_\_\_\_

Proposed date and time for completion of work: \_\_\_\_\_

Tools and equipment involved: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Length \_\_\_\_\_ m Width \_\_\_\_\_ m Depth \_\_\_\_\_ m

**Preparation**

1. Underground cables, pipelines, electrical lines etc checked Yes/No
2. Personnel protective equipments to be used to include;
  - A. Safety Shoe Yes/No
  - B. Safety Helmet Yes/No
  - C. Gloves Yes/No
  - D. Eye Protection Yes/No
  - E. Ear Protection Yes/No
  - F. Nose Mask Yes/No

**Safety Precautions**

1. The proper approach arrangement to be made with required no. of exit points
2. Wear proper PPEs
3. Barricade area and Display Warning boards
4. Ensure good housekeeping before and after the work
5. Ensure the presence of supervisor during the execution of work
6. Use certified machinery
7. Check for possible interference with any underground utilities
8. Check reverse horn for vehicles and driver license
9. Any special safety precautions (specify) \_\_\_\_\_

Checked By:

Contractor's Safety Officer Signature Date

PERMIT ISSUING AUTHORITY (Permit is granted & valid up to)

1. Date: \_\_\_\_\_ Time: \_\_\_\_\_ Signature of Safety Officer \_\_\_\_\_ Permit is revalidated for the Period
2. Date: \_\_\_\_\_ Time: \_\_\_\_\_ Signature of Safety Officer \_\_\_\_\_

**NIGHT WORK PERMIT FORM**

PERMIT NO.: \_\_\_\_\_ DATE: \_\_\_\_\_

Project name: \_\_\_\_\_ Location: \_\_\_\_\_

Contractor name: \_\_\_\_\_ Trade Package: \_\_\_\_\_

Activities scheduled for night work with location:

\_\_\_\_\_

Reason for conducting these activities at night:

\_\_\_\_\_

Name of the Supervisor:

Name of workers and designation:

**S.No NAME DESIGNATION**

Sufficient lighting provided: YES/NO Area  
to be cleaned after work: YES/NO

Emergency vehicle available: YES/NO Vehicle No.:

Any other special precautions:

Signature: \_\_\_\_\_ Signature: \_\_\_\_\_ Signature: \_\_\_\_\_

Supervisor (Contractor) Site In charge (Main Contractor) EHS Manager

Note: CONCERNED AGENCIES ARE RESPONSIBLE FOR ANY UNSAFE ACT/  
CONDITIONS

**PERMIT FOR WORKING IN AHU/ ELECT/ UPS/ SERVER/ BATTERY ROOMS**

**A.**

Date: \_\_\_\_\_ Permit number: \_\_\_\_\_

Project: \_\_\_\_\_ Location: \_\_\_\_\_

Agency requesting permit: \_\_\_\_\_

Location of work: \_\_\_\_\_

Permit to work on (date): \_\_\_\_\_ From: \_\_\_\_\_ To: \_\_\_\_\_

Description of work: \_\_\_\_\_

\_\_\_\_\_

Names of Individuals who will work in the area along with the name of supervisor:

\_\_\_\_\_

\_\_\_\_\_

LOTO required or not? \_\_\_\_\_

Hot work/ Height work permit taken, if required. \_\_\_\_\_

Any other precautions, if required: \_\_\_\_\_

\_\_\_\_\_

Signatures of requestor

**B.**

Permit granted to work on \_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_.

Signatures of authorized representative

**C.**

Area cleared after work: \_\_\_\_\_

Signature of rep of agency which Signatures of representative

Performed work

Copy to: 1. Workers working at site

- 2. representative
- 3. Contractor records

**CONFINED SPACE ENTRY PERMIT**

**A.**

Date: \_\_\_\_\_ Permit no.: \_\_\_\_\_

Project Name and Location: \_\_\_\_\_

Permit Requested by: \_\_\_\_\_

Confined space location: \_\_\_\_\_ Confined space description: \_\_\_\_\_

Purpose of entry and description of work: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Duration of permit: From: \_\_\_\_\_ To: \_\_\_\_\_

Potential hazards (Mark all that apply):

Oxygen deficiency/ Toxic gases Fire/ explosion /Mechanical hazards

**B.**

No. Item Yes Not Required<sup>1</sup>

Proper lighting provided

2 Proper ventilation provided (natural/ artificial)<sup>3</sup>

Full body harness with lifeline provided

4 Proper access for exit provided<sup>5</sup>

Entrance barrier provided

6 Method of isolation/ control, purge, flush, etc.<sup>7</sup>

Lockout provided

8 Respiratory protection provided

9 Rescue team with devices put on stand by

10 Proper PPE provided

11 Tests required (Attach reports):

Oxygen level (19.5% - 23%) Carbon

Monoxide level (<25 ppm)

Name of Entrants Name of Attendants (stand by team)

I have checked the above points and found the conditions compliant to undertake the abovementioned work.

\_\_\_\_\_

Name of permittee Signature of permittee Designation

**C.**

The precautions and safe conditions mentioned above have been verified and the work can be started.

\_\_\_\_\_

Name of Issuing authority Signatures of Issuing authority Designation

**D.**

Time \_\_\_\_\_ Date \_\_\_\_\_ Permit closed and filed.

Signature of safety supervisor: \_\_\_\_\_

**SHAFT WORK PERMIT**

Date: \_\_\_\_\_ Permit no.: \_\_\_\_\_

Project name and Location: \_\_\_\_\_

Name of the agency requesting permit: \_\_\_\_\_

Location of work: Shaft number: \_\_\_\_\_ Floor: \_\_\_\_\_

Task to be performed: \_\_\_\_\_

Start date and time: \_\_\_\_\_ Finish date and time: \_\_\_\_\_

Safety Precautions required:

No. Item Yes Not required

- 1 All personnel are wearing proper PPE
- 2 Workers have been briefed about hazards
- 3 Safe access to shaft available
- 4 Safe working platform erected
- 5 Safety harness with lifeline provided
- 6 Fire extinguisher provided for hot work
- 7 Shaft appropriately barricaded

Names of workmen entering shaft: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

I have ensured that the safety precautions as listed above for the task to be performed have been taken for this shaft work.

\_\_\_\_\_

Name of permittee Signature of permittee Designation

\_\_\_\_\_

Name of Issuing authority Signature of Issuing authority Designation Notes:

- 1. Separate permit required for work in each shaft.
- 2. Work permit is valid for the prescribed date, time and in prescribed location only. Time \_\_\_\_\_ Date \_\_\_\_\_ Permit is closed.

Name and Signature of the Issuing authority: \_\_\_\_\_

**CONTRACTOR INCIDENT/ NEAR MISS REPORTING FORMAT**

Project: \_\_\_\_\_ Location: \_\_\_\_\_  
Name of Contractor: \_\_\_\_\_  
Name of Contractor Employee: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_  
Incident Date: \_\_\_\_\_ Incident Time: \_\_\_\_\_ Incident Location: \_\_\_\_\_  
Injuries: \_\_\_\_\_  
Treated by: \_\_\_\_\_ Treated at: \_\_\_\_\_  
Type of Incident (First aid/ Recordable/ Lost Work day/ Fatal/ Near Miss): \_\_\_\_\_  
Task assigned to person at the time of incident: \_\_\_\_\_

Description of the Incident: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Primary Root cause for the Incident: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Contributory factors: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date when latest safety training was given to employee: \_\_\_\_\_  
Subject of training: \_\_\_\_\_ Given by: \_\_\_\_\_  
Was a Pre task plan required/ submitted for this task: \_\_\_\_\_  
Is there a standard procedure developed to perform this task? \_\_\_\_\_  
If yes, was it reviewed with the worker and when? \_\_\_\_\_  
Preventive measures proposed to avoid recurrence in future: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Contractor Site In-Charge Contractor Safety In-Charge

**PEP TALK REPORT FORM**

*(To be filled by the person conducting pep talk)*

Project: \_\_\_\_\_ Location: \_\_\_\_\_

Name of Contractor: \_\_\_\_\_ Trade: \_\_\_\_\_

Name of Site In-Charge: \_\_\_\_\_

Name of Contractor Safety coordinator: \_\_\_\_\_

Number of Workmen present in Pep talk: \_\_\_\_\_

Date and Time of Pep talk: \_\_\_\_\_

Topics discussed: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Any significant problems/ issues identified: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Remarks (if any): \_\_\_\_\_

\_\_\_\_\_

Contractor Safety Representative Safety Representative



**MONTHLY EHS STATISTICS REPORT – Month, Year**

*(To be filled and submitted by contractor)*

Project: \_\_\_\_\_ Report No: \_\_\_\_\_ Date: \_\_\_\_\_

Name of Contractor: \_\_\_\_\_ Trade: \_\_\_\_\_

**S.No Description Status**

1 No. of Man-hours worked over last month<sup>2</sup>

Cumulative Man-hours worked till date

3 No. of Reportable Accidents on project<sup>4</sup>

No. of Near Misses

5 No. of Lost Work Day (LWD) cases<sup>6</sup>

No. of Safety Pep talks conducted

7 Infraction Notices/ Safety Inspection Reports received<sup>8</sup>

Infraction Notices/ Safety Inspection Reports closed

9 No. of Fire extinguishers available at site (all types)<sup>a</sup>

Foam Type (Last serviced on \_\_\_\_\_)

b CO<sub>2</sub> Type (Last refilled on \_\_\_\_\_)

c Others

10 No. of Training sessions conducted

a Fire fighting training

b First Aid training

c PPE Usage training<sup>d</sup>

Others

11 Safety Permits Issued

12 No. of Safety sign boards displayed at site

13 Housekeeping practices (Excellent/ V Good/ Good/ Average/  
Poor)<sup>14</sup> No. of times Equipment, Machinery and Tools inspected

15 Physical condition of the PPE in usage (Good/ Average/ Poor)<sup>16</sup>

License and vehicle documents available (if applicable)

17 Percentage compliance on the usage of PPE by workers

Submitted by:

Contractor Safety Representative/ Site In-Charge

Safety Representative Comments (if any):

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Reviewed by:

Safety Representative Copy

to: Project Manager

**MONTHLY EHS STATISTICS REPORT – Month, Year**

*(To be prepared by contractor for submission to Client)*

Project: \_\_\_\_\_ Report No: \_\_\_\_\_ Date: \_\_\_\_\_

**Sl# Description Status**

1 No. of Man-hours worked over last month<sup>2</sup>

Cumulative Man-hours worked till date

3 No. of Reportable Accidents on project<sup>4</sup>

No. of Near Misses

5 No. of Lost Work Day (LWD) cases<sup>6</sup> No.

of Safety Inspections conducted<sup>7</sup> No. of

Safety Audits conducted

8 No. of Safety Infraction Notices/ Inspection Reports issued<sup>9</sup>

No. of Fire extinguishers available at site (all types)

a Foam Type (Last serviced on \_\_\_\_\_)

b CO2 Type (Last refilled on \_\_\_\_\_)

c Others

10 No. of Training sessions conducted<sup>a</sup>

Fire fighting training

b First Aid training

c PPE Usage training<sup>d</sup>

Others

11 No. of Safety pep talks conducted

12 Total number of Safety Permits Issued

13 No. of Safety sign boards displayed at site

14 Housekeeping practices (Excellent/ V Good/ Good/ Average/ Poor)

15 Equipment, Machinery & Tools inspection (Satisfactory/ Not)

16 Physical condition of the PPE in usage (Good/ Average/ Poor)<sup>17</sup>

License and vehicle documents available (if applicable)

18 Percentage compliance on the usage of PPE by workers

19 Overall EHS implementation ((Excellent/ V Good/ Good/ Average/ Poor)

Additional Comments (if any):

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Safety Representative

**MONTHLY EHS REPORT – Month, Year**

**A. MAN-HOUR LOG**

| SI# Contractor      | Up to Last report | Man-hoursthis report | CumulativeManhours |
|---------------------|-------------------|----------------------|--------------------|
| 1                   |                   |                      |                    |
| 2                   |                   |                      |                    |
| 3                   |                   |                      |                    |
| 4                   |                   |                      |                    |
| 5                   |                   |                      |                    |
| <b>Grand Total:</b> |                   |                      |                    |

**B. INCIDENT REPORT**

| SI# Description | Up to Last report | This report | Cumulative | Remarks |
|-----------------|-------------------|-------------|------------|---------|
|-----------------|-------------------|-------------|------------|---------|

1 Near Misses

2 Recordable Incidents

3 Lost Work Day cases

| SI# | Safety inspection conducted on | No. of Non conformances | No. of Open Non conformances | Remarks |
|-----|--------------------------------|-------------------------|------------------------------|---------|
|     |                                |                         |                              |         |
|     |                                |                         |                              |         |
|     |                                |                         |                              |         |
|     |                                |                         |                              |         |

| SI# | Safety Audit Conducted on | Safety Rating/ Score |
|-----|---------------------------|----------------------|
|     |                           |                      |
|     |                           |                      |
|     |                           |                      |
|     |                           |                      |

**Average Safety Score:**

**E. OVERALL JOB SITE SAFETY AND COMPLIANCE WITH EHS STANDARDS**

*EHS representative to indicate whether Excellent/ V Good/ Good/ Average/ Poor, as the over job site safety and compliance with EHS Standards and also provide comments (if any).*

Attachments: Monthly EHS statistics report

**PENALTY FOR NON COMPLIANCE WITH EHS GUIDELINES**

**A.**

Project: \_\_\_\_\_ Location: \_\_\_\_\_ Date: \_\_\_\_\_

Penalty notice issued to: \_\_\_\_\_

Contractor Site In-charge: \_\_\_\_\_

Contractor Safety representative: \_\_\_\_\_

Description of Non-compliance: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Location of non-compliance: \_\_\_\_\_

Have there been similar non-compliances in the past? \_\_\_\_\_

Have any Safety Infraction Notices been issued in the past? If yes, provide details

\_\_\_\_\_

| S. No. | Degree of violation | Type of violation | Penalty for violation | No. of violations | Penalty Amount |
|--------|---------------------|-------------------|-----------------------|-------------------|----------------|
|        |                     |                   |                       |                   |                |
|        |                     |                   |                       |                   |                |
|        |                     |                   |                       | Total             | Penalty Amount |

Signature of the Safety Officer/ representative generating this notice

**B.**

Billing department to proceed with deduction of INR \_\_\_\_\_ as penalty amount from contractor's next running bill, for non-compliance with EHS guidelines, duly accepted by contractor as part of tender document as well as through acceptance on EHS Declaration

form.

Signatures of Project Manager CC

to: Client Project Manager

**CHECKLIST FOR BUILDING HOIST/ WINCH**

Project: \_\_\_\_\_ Location: \_\_\_\_\_

Name of Contracting agency: \_\_\_\_\_

**S. No Description OK/ Not OK Remarks**

**A. SUPPORTING STRUCTURE:**

- 1 Condition of steel tubes
- 2 Condition of the Base
- 3 Bracing (diagonal/horizontal)
- 4 Anchorage with structure
- 5 Any obstructions to the movement of rope?

**B. WINCH MACHINE:**

- 1 Condition of brakes and accessories
- 2 Functioning of brake with load
- 3 Oil level and condition
- 4 Gear box and motor
- 5 Coupling bolts and nuts
- 6 Condition of wire rope
- 7 Anchorage of drum and wire rope
- 8 Pawl arrangement for locking
- 9 Condition of diversion pulleys, idlers pulleys and fleet angle
- 10 Limit Switches
- 11 Electrical connection, earthing and insulation

**C. UNLOADING PLATFORM:**

- 1 Area Barricaded
- 2 Stability
- 3 Sagging
- 4 Any Over loading
- 5 Hand railing
- 6 Staging

**D. OTHERS**

- 1 Is the person authorized/experienced to Operate?
- 2 Does the person at unloading point use Safety belt?
- 3 Is the bucket overloaded?
- 4 Is the Signaling Man present?
- 5 Is the work permit Obtained?

Signature of Contractor Site In-charge Signatures of Safety Officer/ Rep.

Print Name: \_\_\_\_\_ Print Name: \_\_\_\_\_

**CHECKLIST FOR SCAFFOLDING**

Project: \_\_\_\_\_ Project number: \_\_\_\_\_

Name of Contractor: \_\_\_\_\_ Trade: \_\_\_\_\_

| <b>S. N.</b> | <b>Description</b>  | <b>Observation</b> | <b>Yes/ NO/ NA</b> | <b>Remarks / Recommendation</b> |
|--------------|---|--------------------|--------------------|---------------------------------|
| 1            | Does the site has a practice of providing suitable and sufficient scaffolds so that the work could be safely done at a height?                |                    |                    |                                 |
| 2            | Is site engaging suitable/ properly trained/ experienced workmen for constructing / dismantling / shifting scaffolding works?                 |                    |                    |                                 |
| 3            | Are scaffold platforms designed / constructed with a minimum safety factor of four?   |                    |                    |                                 |
| 4            | Is there a safe means of access to the working platform?  |                    |                    |                                 |
| 5            | Are scaffold structures on a solid base avoiding pavements & manhole covers?  |                    |                    |                                 |
| 6            | Is the scaffolding structure free from excavation pit / proper distance is maintained?  |                    |                    |                                 |
| 7            | Is verticality of the structure being properly maintained?  |                    |                    |                                 |
| 8            | Are ties for scaffold structure properly maintained (vertical as well as horizontal position)?  |                    |                    |                                 |
| 9            | Is there a provision of toe boards/guard rails and are they secured?  |                    |                    |                                 |
| 10           | Whether planks used for working platforms are wooden / metallic?  |                    |                    |                                 |
| 11           | If wooden plank, whether thickness is maintained as per standard or not, viz.   |                    |                    |                                 |
| 12           | a. For 1.5 M span -1.5" thick   |                    |                    |                                 |
| 13           | b. For 2.6 M span -2.0" thick   |                    |                    |                                 |
| 14           | Is there a system of inspecting scaffolds by a competent person at least once a week and also after every prolonged interruption in the work? |                    |                    |                                 |
| 15           | Is there a system of inspecting materials of scaffolds on each occasion before erection?  |                    |                    |                                 |
| 16           | Is there a system of inspecting scaffolds at every spell of bad weather/ heavy wind condition?  |                    |                    |                                 |
| 17           | Is over hang of the working platform restricted to less than 50 mm/ four times the thickness of the board?                                    |                    |                    |                                 |
| 18           | Is their awareness among workmen on the importance of load distribution on a given working platform?  |                    |                    |                                 |
| 19           | Is there a check for the condition and correct usage of fittings for scaffolds?   |                    |                    |                                 |

|    |  |  |  |  |
|----|--|--|--|--|
| 20 | Is the width of a working platform properly maintained according to usage, viz.  |  |  |  |
| 21 | a) Minimum 600 mm for footing and not for deposit of materials.  |  |  |  |
| 22 | b) Minimum 800 mm for footing and deposit of materials.  |  |  |  |
| 23 | c) Minimum 1050 mm when used for heavier loads or to support higher platforms.   |  |  |  |
| 24 | Are all the materials stored on the platforms properly secured or not?   |  |  |  |
| 25 | Whether planks are tied using proper binding wires?  |  |  |  |
| 26 | Are openings in working platform kept safely covered / fenced?   |  |  |  |
| 27 | Are the scaffolds being erected on firm and level surface?   |  |  |  |
| 28 | Does the height of mobile scaffolds exceed four times the smaller base dimension?  |  |  |  |
| 29 | Are all materials stacked on platform properly secured while in motion?  |  |  |  |
| 30 | Is the safety rule: Not to ride on a scaffold while in motion, violated.   |  |  |  |
| 31 | Is there a system of checking for obstructions before the tower is moved?  |  |  |  |
| 32 | Are suitable / correct lifting tackles (wire rope/ chains/ shackles) selected for suspension & used?   |  |  |  |
| 33 | Are all the suspension gears correctly spaced and connected?   |  |  |  |
| 34 | Is there a system of using manila rope/coir rope for suspension at any place where such rope would be liable to damage by heat/flames/sharp edges etc. |  |  |  |
| 35 | Are all precautionary measures taken to prevent contact between arc welding apparatus and suspension ropes?  |  |  |  |
| 36 | Is there a provision of guardrails and toe boards?   |  |  |  |
| 37 | Is hanging platform secured?   |  |  |  |
| 38 | Is there a provision of anchoring safety belt. Lanyard to be tied to guy ropes?  |  |  |  |

EHS Manager/ Site Safety Officer

Contractor Site Safety In-charge

**SAFETY INSPECTION REPORT**

Project: \_\_\_\_\_ Report No.: \_\_\_\_\_ Date: \_\_\_\_\_

Name of Contractor: \_\_\_\_\_

Number of non-conformities observed (as per details below): \_\_\_\_\_

**Details of Non-Conformities observed:**

The following non-conformances with reference to project EHS guidelines were observed during routine EHS round of the project site;

**Sl. # Description of non-conformity Target date**

- 1
- 2
- 3
- 4

**Note:**

Please take serious note of the above listed non-conformities and initiate corrective action immediately, so as to remove the non-conformity by the Target dates indicated above, failing which shall proceed with imposition of penalty for the observed non-conformities.

Safety Representative

**Contractor's Corrective Action Response (To be filled by contractor):**

All the above listed non-conformities have been rectified. The work is now being executed in compliance with EHS guidelines and applicable Safety Standards. The disposition of the non conformances is listed as under;

**S.No Disposition Description Status**

- 1
- 2
- 3
- 4

Contractor's Site In-Charge Contractor's Safety Representative

Dated: \_\_\_\_\_

Copy to: Project Manager



**PRE TASK PLAN FORMAT**

**PROJECT NAME AND LOCATION:**  
**CONTRACTOR:**                      **TASK:**

**SCHEDULED ON:**

**PTP No.:**  
**SUBMITTED ON:**

| S.N o | Activity Description | Potential Hazard | Preventive Action | Contingency Plan  |
|-------|----------------------|------------------|-------------------|---|
|       |                      |                  |                   | Briefly describe the contingency plan in case the preventive actions associated with potential hazards fail to yield results and Accident/ Incident still happens. Contingency plan must list the immediate contact number of Security, Emergency, and Safety representative. |

To be

resubmitted

Reviewed

Prepared By:

Safety officer (Contractor)

Approved By:

Signature: Safety Officer

## Schedule I

### Performance Bank Guarantee

(On non-judicial paper of appropriate value)

(By any Nationalized Indian Bank or else obtain confirmation from ARG Outlier Media Pvt. Ltd.)

THIS GUARANTEE made on this [ ] day [ ] of [ ] between [ ] ("**Bank**") which expression shall, unless repugnant to the context or contrary to the meaning thereof, include its successors and assigns on the one part and [ ], a Company incorporated in India and having its registered office at [ ] ("**Client**") which expression shall, unless repugnant to the context or contrary to the meaning thereof, include its successors and assigns, of the other part.

WHEREAS Client has entered into a contract agreement ("**Contract**") at a total value of Rs. [ ] with M/s. [ ] (hereinafter called Contractor) which expression shall, unless repugnant to the context or contrary to the meaning thereof, includes its successors and assigns.

AND WHEREAS one of the conditions of Contract entered into, is that the Contractor make a payment of Rs. [ ] being [5% (five percent)] of Contract Price in the form of a bank guarantee from a bank and in a form acceptable to the Client.

AND WHEREAS THE Contractor has requested the Bank to issue a guarantee of Rs. [ ] and the Bank, through its branch at [ ], has agreed to furnish this Guarantee in the manner hereunder.

NOW THIS GUARANTEE WITNESSETH that,

1. In consideration of Client, at the request of the Contractor, advancing a sum of Rs. [ ], to the Contractor as and by way of Performance Guarantee, the Bank hereby unconditionally and irrevocably guarantees to the Client for due performance of the Contractor's obligations under the Contract and indemnifies the Client in respect of the amount of the Rs. [ ] ("**Guarantee Amount**"). The Bank hereby undertakes, without recourse to Contractor and notwithstanding any dispute between the Client and the Contractor under the Contract or any objection by the Contractor, to pay the Client, on its mere demand in the enclosed format a sum upto and not exceeding the Guarantee Amount, being the amount of the 100% (hundred percent) of the payment or such other unadjusted amount of the said Performance Guarantee. If the Client notifies to the Bank that the Contractor has failed to observe, perform and fulfill the terms of the said Contract then the Bank shall immediately pay to the Client, on Client's mere demand in the enclosed format, such sum or sums of money to the extent of Rs. [ ] being 5% (five percent) of the value of the Contract Price (as defined in the Contract) as may be claimed by the Client by reason of non-fulfillment by the Contractor of his obligations under the Contract as aforesaid / and shall also indemnify the Client against all losses and damages which may be suffered by the Client as aforesaid and against all costs, charges, expenses which may be incurred by the Client in connection herewith. The Bank shall pay the said amount without demur or protest or without recourse to the Contractor. Any such demand placed in the enclosed format on the Bank shall be conclusive proof

with respect to the amount due and payable by the Bank under this Guarantee. The decision of Client as to whether the terms and conditions of this Guarantee or Contract have been observed or not shall be final and binding on Bank and the Bank will not have the discretion to withhold payment to the Client if letter in enclosed format is delivered by the Client to the Bank on or before [ ] (“**Claim Period**”).

2. This Guarantee is a continuing Guarantee and not revocable except with the previous written consent of the Client and as aforesaid, it will continue in force until the Contractor has maintained the schedule of delivery of the said work under the Contract and observed and fulfilled the terms and conditions of the Contract. The Client has an irrevocable and unconditional right to claim under the Guarantee in case the Guarantee required to be extended in its opinion is not extended by the Contractor or the Bank within the time frames and for the time frames stipulated by the Client.
3. The Client may, without affecting Bank’s liabilities and obligations hereunder and without reference to the Bank grant time or other indulgence to or compound with the Contractor or enter into any agreement or agree to forbear to enforce any of the terms and conditions of the Contract.
4. This Guarantee shall not be affected by any change in the Constitution of the Bank, Contractor or the Client or by absorption / merger of the Client, Contractor or the Bank with any other body or corporation or otherwise and this Guarantee will be available to or enforceable by such body or corporation.
5. All composition and payments received by the Client from or on behalf of the Contractor shall be regarded as payments in gross and in the event of the Contractor being wound-up, the Client will be entitled to prove against the properties of the Contractor in respect of the whole of the contractor’s indebtedness to the Client without any right on the part of the Bank to stand in the Client’s place in respect of or to claim the benefits of such composition and payment or any security held by the Client until the Client shall have received the full amount of the claims against the Contractor.
6. In order to give effect to this Guarantee, the Client will be entitled to act as if the Bank were the principal debtor and the Bank hereby waives all and any of its rights of surety ship.
7. It shall not be necessary, and the Bank hereby waives any necessity, for the Client to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.
8. The Guarantee herein contained is unconditional and irrevocable during its currency and will remain in full force for a period of [ ] years from the date hereof (“**Expiry Date**”), or if full payment has been made to the Client by BANK, which is earlier. The Bank’s liability under this Guarantee is restricted to the Guarantee Amount, i.e. Rs. [ ] (Rupees [ ]). The Client may claim the full or part of the amount under the Guarantee entirely at its sole discretion and make this claim at one or more times before the expiry of the Claim Period under this Guarantee. The total amount of claims is restricted to the Bank’s liability under the Guarantee. The Bank is required to make a payment immediately on receipt of the claim in the enclosed format.
9. This Guarantee shall continue to be in force notwithstanding the discharge of Contractor by operation of law and shall cease only on payment of the full amount by Bank to Client of the amount hereby secured and on the claim of Client against Contractor in respect of Contract being satisfied.
10. This Guarantee shall be in addition to and not in substitution for any other guarantee or security for the Contractor given or to be given to the Client in respect of the Contract by the Bank whether alone or jointly with others.
11. In the event of force majeure, according to the Contract, the validity of the present guarantee shall be extended for a period to be mutually agreed upon by the Client and the Contractor.
12. Unless demand or claim under this Guarantee is made within the Claim Period of this Guarantee, or unless the Guarantee is renewed, or extended in writing by the Bank, all the rights of the Client hereunder shall be forfeited and the Bank shall be relieved and discharged of all liabilities.

13. Any notice by way of request, demand or otherwise hereunder may be sent by post to the Bank, addressed as aforesaid, and if sent by post, it shall be deemed to have been given at the time when it would be delivered in due course of post, and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate of posting from postal Authorities / Agencies, to the effect that the envelope was so posted shall be conclusive.
14. These presents shall be governed by and construed in accordance with Indian Law as applicable.
15. The Bank hereby declares that it has the power to issue this Guarantee and the undersigned has full power to do so.

Notwithstanding anything contained hereinabove our liability under this guarantee is restricted to the Guarantee Amount i.e. Rs. [ ] (Rupees [ ]). This guarantee is valid upto the Expiry Date i.e. [ ]. Any claim arising out of the guarantee must be lodged with the bank at its office at [ ] on or before the Claim Period i.e. [ ], after which the liability of the bank would be extinguished.

In witness thereof the Bank has executed these present the day and year first above written.

Signed and delivered for and on behalf of the above named.

#### **IMPORTANT NOTE**

Following points shall be taken care of while submitting the Bank Guarantee: -

1. The Bank Guarantee shall be on non-judicial stamp paper having a value of Rs. 200/- or as per requirement stamp paper should be purchased in the name of the Bank, who gives the guarantee and not in the name of the supplier/ sub-contractor.
2. The Bank Guarantee shall be strictly as per the pro-forma.
3. Bank Guarantee should be from any of the Nationalized Banks or its subsidiaries only.
4. Correction made on the Guarantee should be endorsed by the Bank with its official seal.

**NOTE: The BG format shall not be modified or changed**

## Schedule II

# Contract Agreement

*[To be executed on a stamp paper of appropriate value]*

This Contract agreement ("**Agreement**") is entered into on this [ ] day of [ ] month, Year ("**Execution Date**") at Noida, by and among:

- A. **Galgotias University, located at Plot No. 2, Sector 17A, Yamuna Expressway, Gr. Noida, Gautam Buddh Nagar, UP, India running under Smt. Shakuntla Educational & Welfare Society**, a society incorporated under the societies Act, 1860 and having its registered office at 4405/6, Prakash Appt. – 2, 5, Ansari Road, Daryaganj, New Delhi - 110002 (hereinafter referred to as the "**Client**" which expression shall unless repugnant to the meaning or context, be deemed to mean and include, its successors and permitted assignees);
- B. [ ], a company incorporated under the Companies Act, [1956/2013] and having its registered office at [ ] (hereinafter referred to as the "**Contractor**" which expression shall, where the context so admits, include its successors in office and assignees.

The Client and the Contractor are collectively referred to as the "**Parties**" and individually as "**Party**".

### **WHEREAS:**

- A. The Client had invited Bidders (as defined in the Instruction to Bidders ("**ITB**")) with requisite technical capability and sound financial position to bid for Works (as defined in the ITB) required to be undertaken for building the New admin. & Engg. Block (as defined in the ITB) including but not limited to construction activities required to be undertaken for building the New admin. & Engg. Block including but not limited to **STP** activities required for development of the Project (as defined in the ITB).
- B. The Client is desirous of having provided and executed certain Works mentioned, enumerated or referred to in the Bidding Documents (as defined in the ITB).
- C. The Contractor is the successful bidder in respect of the Works to be undertaken pursuant to the Tender issued by the Client.
- D. In accordance with the process agreed in the Bidding Documents, the successful bidder will undertake the Works at the Site in accordance with the terms and conditions set out in this Agreement. Accordingly, the Parties have agreed to enter into this Agreement for undertaking the Works for STP of the New admin. & Engg. Block at the Site.

### **NOW THEREFORE THE PARTIES AGREE AS FOLLOWS:**

- 1. **DEFINITIONS & INTERPRETATIONS**
- 1.1. **Definitions**

All capitalized terms used in this Agreement, but not defined herein shall have the meaning given to it in Clause 1 of the General Conditions of Contract ("**GCC**") which have been attached hereto as **Schedule A**.

The rules of interpretation as set forth in Clause 1 of the GCC shall apply *mutatis- mutandis* to this Agreement.

2. **SCOPE OF WORK**

The Works to be carried out by the Contractor, as part of its scope of work with regard to the STP of the New admin. & Engg. Block shall be as specified in Clause 2 of the GCC, Schedule I (*Scope of Works*) of the GCC (attached separately as detailed BOQ), and the Technical Specifications.

3. **CONTRACTOR PERFORMANCE BANK GUARANTEE**

The Contractor Performance Bank Guarantee to be submitted to the Client by the Contractor shall be as specified in Clause 3 of the GCC.

4. **Construction of NEW ADMIN. & ENGG. BLOCK**

The STP of New admin. & Engg. Block by the Contractor shall be as specified in Clause 4 of the GCC.

5. **CONTRACTOR'S OBLIGATIONS**

The Contractor's Obligations shall be as specified in Clause 5 of the GCC.

6. **CLIENT'S OBLIGATIONS**

The Client's Obligations shall be as specified in Clause 6 of the GCC.

7. **TIME FOR COMMENCEMENT AND COMPLETION**

The time for Commencement and Completion of the Works shall be as specified in Clause 7 of the GCC.

8. **MATERIALS AND WORKMANSHIP**

The Materials and Workmanship to be provided by the Contractor shall be as specified in Clause 8 of the GCC.

9. **PERFORMANCE PARAMETERS**

The Performance Parameters to be conducted by the Contractor in the presence of Client in order to ensure the operation of the New admin. & Engg. Block shall be as specified in Clause 9 of the GCC.

10. **LIQUIDATED DAMAGES**

The Liquidated Damages to be paid by the Contractor shall be as specified in Clause 10 of the GCC.

11. **COMPLETION AND ACCEPTANCE OF WORKS**

The Completion and Acceptance of Works to the satisfaction of the Client shall be as specified in Clause 11 of the GCC.

12. **PROJECT MANAGER**

The obligations of the Project Manager shall be as specified in Clause 12 of the GCC.

13. **ARCHITECT**

The obligations of the Architect shall be as specified in Clause 13 of the GCC.

14. **DOCUMENTS**

The Documents to be provided by the Contractor shall be as specified in Clause 14 of the GCC.

15. **CONTRACTOR TO INFORM ITSELF FULLY**

The obligation of the Contractor to inform itself fully shall be as specified in Clause 15 of the GCC.

16. **SUB-CONTRACTORS**

The engagement of Sub-Contractors shall be as specified in Clause 16 of the GCC.

17. **TRANSFER OF OWNERSHIP**

The transfer of ownership of the New admin. & Engg. Block shall be as specified in Clause 17 of the GCC.

18. **REPRESENTATIONS AND WARRANTIES**

The representations and warranties of the Parties shall be as specified in Clause 18 of the GCC.

19. **CONTRACTOR'S WARRANTIES**

The Contractor's Warranties shall be as specified in Clause 19 of the GCC.

20. **INSURANCE**

The Insurance to be obtained by the Contractor shall be as specified in Clause 20 of the GCC.

21. **DEFECT LIABILITY PERIOD**

The Defect Liability Period shall be as specified in Clause 21 of the GCC.

22. **VARIATION AND CHANGE IN CONTRACT ELEMENTS**

The Variation and Change in Contract Elements shall be as specified in Clause 22 of the GCC.

23. **CONTRACT PRICE AND INVOICING**

The Contract Price and Invoicing shall be as specified in Clause 23 of the GCC.

24. **TERMS OF PAYMENT**

The Terms of Payment shall be as specified in Clause 24 of the GCC.

25. **SITE OFFICE, SECURITY AND FACILITIES**

The obligation of the Contractor with respect to the Site Office, Security and Facilities shall be as specified in Clause 25 of the GCC.

26. **SAFETY REQUIREMENTS**

The Safety Requirements to be adhered to by the Contractor shall be as specified in Clause 26 of the GCC.

27. **LIMITATION OF LIABILITY**

The Limitation of Liability shall be as specified in Clause 27 of the GCC.

28. **INDEMNITY**

The Indemnification and payment of indemnities shall be as specified in Clause 28 of the GCC.

29. **CONFIDENTIAL INFORMATION**

The obligations of the Parties with respect to the Confidential Information shall be as specified in Clause 29 of the GCC.

30. **INTELLECTUAL PROPERTY RIGHTS**

The ownership of the Intellectual Property Rights shall be as specified in Clause 30 of the GCC.

31. **FORCE MAJEURE**

The Force Majeure event shall be as specified in Clause 31 of the GCC.

32. **CHANGE IN LAW**

The occurrence of events comprising Change in Law shall be as specified in Clause 32 of the GCC.

33. **SUSPENSION**

The Suspension of Works shall be as specified in Clause 33 of the GCC.

34. **TERMINATION**

The right of Parties to terminate the Agreement shall be as specified in Clause 34 of the GCC.

35. **GOVERNING LAW AND DISPUTE RESOLUTION**

The Governing Law and Dispute Resolution mechanism shall be as specified in Clause 35 of the GCC.

36. **MISCELLANEOUS**

The miscellaneous provisions of the Agreement shall be as specified in Clause 36 of the GCC.

**[signature page follows]**



**IN WITNESS WHEREOF** the parties have executed this Contract as of the date first recorded above.

**CLIENT**

SHAKUNTALA EDUCATIONAL & WELFARE SOCIETY

\_\_\_\_\_  
Name:  
Title:

**CONTRACTOR**

[ ]

\_\_\_\_\_  
Name:  
Title: