

# **TENDER DOCUMENT**

**Design, Supply, Installation, Testing & Commissioning of civil Mechanical, Electrical and Instrumentation work for Construction of STP with MBBR cum Aerobic Treatment with Nitrification, Denitrification, Tertiary Treatment for Phosphorous reduction technology (Preparation of Civil, Architectural, structural, Shop Drawings etc. all complete for 800 KLD treatment plant and Execution of civil works for 800 KLD including epoxy painting from inside the tank for water proofing and all other ancillary work with minimum M-30 grade concrete, construction of plant room to accommodate 2 modules & Electro Mechanical cum instrumentation work for 400 KLD, Module-1) as per latest CPCB/HSPCB/NGT guidelines for reuse/disposal of treated waste water including DLP and O&M for 5 years at “The Willows” Unitech Grande, Sector 96, 97 & 98 at Noida, U.P.**

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## **SECTION-1**

### **Notice Inviting Tender**

**1. Notice Inviting Tender (NIT)**

M/s Unitech Limited (hereinafter referred to as the Employer), invites tenders from experienced and eligible agencies for Design, Supply, Installation, Testing & Commissioning of civil Mechanical, Electrical and Instrumentation work for Construction of STP with MBBR cum Aerobic Treatment with Nitrification, Denitrification, Tertiary Treatment for Phosphorous reduction technology (Preparation of Civil, Architectural, structural, Shop Drawings etc. all complete for 800 KLD treatment plant and Execution of civil works for 800 KLD including epoxy painting from inside the tank for water proofing and all other ancillary work with minimum M-30 grade concrete, construction of plant room to accommodate 2 modules & Electro Mechanical cum instrumentation work for 400 KLD, Module-1) as per latest CPCB/HSPCB/NGT guidelines for reuse/disposal of treated waste water including DLP and O&M for 5 years at "The Willows" Unitech Grande, Sector 96, 97 & 98 at Noida, U.P.

Sr. No.	Subject	Description
(i)	Tender Document No.	UL/KY/NOD/Willows/2023/231
(ii)	Bidding Process	<b>Two envelope bidding System</b> (i) To be uploaded/ filled as per the instructions given in <b>e-Tendering Procedure at Annexure - III.</b> (ii) A separate hard copy submission in Two sealed envelopes marked as Technical Bid and Financial Bid. Both the sealed envelopes to be put in one single sealed envelope and submitted to the Employer on the date of the submission of bid on or before 1600 Hrs.
(iii)	Name of the Work	Design, Supply, Installation, Testing & Commissioning of civil Mechanical, Electrical and Instrumentation work for Construction of STP with MBBR cum Aerobic Treatment with Nitrification, Denitrification, Tertiary Treatment for Phosphorous reduction technology (Preparation of Civil, Architectural, structural, Shop Drawings etc. all complete for 800 KLD treatment plant and Execution of civil works for 800 KLD including epoxy painting from inside the tank for water proofing and all other ancillary work with minimum M-30 grade concrete, construction of plant room to accommodate 2 modules & Electro Mechanical cum instrumentation work for 400 KLD, Module-1) as per latest CPCB/HSPCB/NGT guidelines for reuse/disposal of treated waste water including DLP and O&M for 5 years at "The Willows" Unitech Grande, Sector 96, 97 & 98 at Noida, U.P.

Sr. No.	Subject	Description
(iv)	Brief Scope of Work	<p>The contractor shall design the STP of total capacity of 800 KLD in 2 modules of 400 KLD each. The work of supply, installation, testing &amp; commissioning of 400 KLD including O&amp;M of 400 KLD plant for 5 years shall be executed under this contract. The scope of work under this contract also includes design, procurement and construction (civil works) of plant room to accommodate 800 KLD STP.</p> <p>The scope of work also includes development of drainage systems, earth filling, footpaths around STP area.</p>
(v)	Estimated Cost	Rs. 4.52 Cr.
(vi)	Period of Completion	24 Months
(vii)	Earnest Money Deposit	<p>Rs. 1.00 Lacs (In Words) One Lacs.</p> <p><b>Bank Details of the Employer for Preparation of bank Guarantee only</b></p> <p>Name of Beneficiary:- Unitech Limited Bank:- ICICI Bank Limited Current A/c No 245105001682 IFSC Code:- ICICI0002451 CIF ID:- 587747798</p>
(viii)	Non-refundable cost of Tender document	Rs. 10,000/- + GST@ 18% through e- payment gateway
(ix)	Non-refundable e-Tender processing fee	Rs. 5,000/- + GST@ 18% through e- payment gateway
(x)	Site Visit with PMC/ Employer	On 15-11-2023 at 11:00 Hrs (IST)
(xi)	Site Visit – Contact	Bidder may contact Mr. Shiv Charan Contact No. 8800396076 for conducting site visit.
(xii)	Last date of receipt of Bidder's Queries in consolidated form	15-11-2023 on Email id :- Ky@unitechgroup.com
(xiii)	Pre-Tender Meeting (Time & Venue)	16-11-2023 at by 15.00 Hrs (IST)
(xiv)	Last date & time of submission of Online Tender	Up to 08-12-2023 by 16.00 Hrs (IST)
(xv)	Date & Time of Opening of Technical Bids	On 11-12-2023 at 11:00 Hrs (IST)
(xvi)	Intimation of technically	To be notified Later



Sr. No.	Subject	Description
	qualified bids.	
(xvii)	Date & time of opening of Financial Bids of technically qualified bidders.	To be notified Later
(xviii)	Validity of offer	180 days from the date of opening of Financial Bid.

1.1 The tender document can be downloaded from the website [www.unitechgroup.com](http://www.unitechgroup.com)

1.2 **Corrigendum, if any, would appear only on the website and not to be published in any Newspaper.**

## 2.0 Eligibility Criteria:

The interested bidders should meet the following qualifying criteria:

### 2.1 Work Experience:

- (i) Experience of having successfully completed similar works during the last 07 (seven) years ending previous day of last date of submission of tenders.
  - (a) Three similar works each costing not less than 40% of the estimated cost put to tender, OR
  - (b) Two similar works each costing not less than 60% of the estimated cost put to tender, OR
  - (c) One similar work costing not less than 80% of the estimated cost put to tender.

**“Similar works” shall mean “ Design, Supply, installation, testing & Commissioning with tertiary treatment of Sewerage Treatment Plant for Commercial/ Institutional/ Multi-storeyed residential buildings or plotted development”.**

### **Notes: -**

- (i) The past experience in similar nature of work should be supported by certificates i.e. copies of Letter of Award & Completion Certificate issued by the respective Employer's organizations. In case, the work experience is of Private sector, the said certificates shall be supported with copies of Corresponding TDS Certificates. Value of work will be computed from the amount reflected in the TDS Certificates in conjunction with the completion certificate.
- (ii) The value of executed works shall be brought to the current level by

enhancing the actual value of work done at a simple rate of 7% per annum, calculated from the date of completion to the date of submission of tenders including extension(s) given, if any.

- (iii) The values of completed work shall be exclusive of Service Tax/GST. Bidder shall produce documentary evidence against the Taxes & Duties applicable against the concerned job(s). In case the value of job submitted by the bidder does not have clarity with regard to inclusion/exclusion of Service tax/GST, the amount appearing in the Completion Certificate, the bidder shall provide statutory auditors certificates clearly stating the service tax/GST in the computation to arrive at the completed work value in conjunction with the completion certificate. In case where such certification is not provided or the completion certificate does not have clarity, the value of completed work shall be considered inclusive of applicable GST @18% tax and shall be evaluated accordingly.
- (iv) **Joint venture/ consortium of firms/ companies shall not be allowed, and the bidders should meet the above criteria himself.**
- (v) **Certificates of Subsidiary/ Group Companies:**
  - (a) Any company/ firm while submitting the bid can use the work experience of its subsidiary company to the extent of its ownership in the subsidiary company.
  - (b) In case, the companies/ firms, which intend to get qualified on the basis of experience of the parent company/Group Company, the same shall not be considered. For the purpose of clarification, the parent company by itself only can submit the bid.
  - (c) In case, the companies/ firms, which intend to get qualified on the basis of experience of their own works/in-house works, the same shall not be considered.
  - (d) In case of a Company/ firm, formed after merger and/ or acquisition of other companies/ firms, past experience and other antecedents of the merged/ acquired companies/ firms will be considered for qualification of such Company/ firm provided such Company/ firm continues to own the requisite assets and resources of the merged/ acquired companies/ firms relevant to the claimed experience.
- (vi) **Foreign Certificate:**
  - (a) In case the work experience is for the work executed outside India, the bidders must submit the completion/ experience certificate issued by the owner duly signed & stamped and a self-attested undertaking towards the correctness of the completion/ experience certificates. The contractor shall also get the completion/ experience

certificates attested by the Indian Embassy/ Consulate/ High Commission in the respective country.

- (b) In the event of submission of completion/ experience certificate by the Bidder in a language other than English, the English translation of the same shall be duly authenticated by Chamber of Commerce of the respective country and attested by the Indian Embassy/ Consulate/ High Commission of the respective country.
- (c) For the purpose of evaluation of bidders, the conversion rate of such currency into INR shall be arrived at by the daily representative exchange rate published by the IMF as of 7 (Seven) days prior to last date of Submission of bid including extension(s) given, if any.

## 2.2 Financial Strength:

- (i) The average annual financial turnover for the three best out of last five financial years, ending 31st of the March of the previous financial year, shall be at least 35% of the estimated cost put to tender. The requisite Turnover shall be duly certified by a Chartered Accountant/ Statutory Auditor with his Seal/ signatures and registration number. In case of Companies/ Firms less than 3 years old, the Average annual financial turnover shall be worked as relevant to the available period only.
- (ii) Net Worth of the company/ firm as on the last day of preceding Financial Year should be positive.

Net worth means paid-up share capital, Share Application Money pending allotment\* and reserves # less accumulated losses and deferred expenditure to the extent not written off. Net worth has been calculated using the following formula.

*# Reserves to be considered for the purpose of Net worth shall be all reserves created out of the profits and securities premium account but shall not include reserves created out of revaluation of assets, write back of depreciation and amalgamation.*

*\* Share Application Money pending allotment will be considered only in respect of share to be allotted.*

Paid up share capital	
Add: Share Application Money pending allotment	
Add: Reserves (As defined Above)	
Less: accumulated losses	
Less: Deferred Revenue Expenditure to the extent not written off	
<b>Net Worth</b>	

**Notes:-**

- (a) Self-certified copy of Bank Solvency Certificate issued from Nationalized or any Schedule Bank should be at least 40% of Estimated Cost of the Project put to tender. The certificate should have been issued within 6 months from the last date of the submission of the tender including extension(s) given if any.

Bank Solvency Certificate is not required if estimated cost put to tender is less than or equal to INR 25 Crore.

- (b) The bidders are required to upload and submit one page of summarized Balance Sheet (Audited) and also one page of summarized Profit & Loss Account (Audited) for the last three years.

**3.0** The intending bidder must read the terms and conditions of this document carefully including the checklist at **Annexure-IV**. He should submit his tender only if he considers himself eligible and he is in possession of all the documents required. Information and Instructions/addendums for bidders posted on Website(s) shall form part of the Tender Document.

**4.0** The Tender Document, as uploaded, can be viewed and downloaded free of cost by the intending tenderer. However, the tender can be submitted only after payment of (a) Non-refundable cost of tender document (b) Non-refundable Tender Processing Fee and (c) EMD through e-payment gateway & all other documents shall be as per Notice Inviting e-tender.

**5.0** Set of Contract/ Tender Documents:

The following documents will constitute set of tender documents:

- (i) Notice Inviting e-Tender
- (ii) Summary of price
- (iii) Instructions to Tenderers & General Conditions of Contract
- (iv) Technical Specifications
- (v) Bill of Quantities
- (vi) List of approved makes of materials
- (vii) Tender Drawings
- (viii) GENERAL DETAILS Annexure-I
- (ix) Acceptance of Tender Conditions
- (x) Integrity Pact at Annexure-II (To be signed and stamped by the contractors and scanned copy to be uploaded with the bid)
- (xi) Addendum/ Corrigendum, if any, - Duly signed by the authorized person
- (xii) Special Conditions of Contract

(xiii) Pre Tender clarifications, if any

- 6.0** The bidders are required to quote strictly as per terms and conditions, specifications, standards given in the tender documents and is not allowed to stipulate any deviations/ conditions.

The bidders are advised to submit complete details with their bids as Technical Bid Evaluation will be done on the basis of documents uploaded on the website by the bidders with the bids. The procedure for e-Tendering, including the maximum allowable file size for the upload, is described at **Annexure-III** and must be complied by the tenderer for successful bid submission. The information should be submitted in the prescribed Performa and only in PDF format as per the sequence defined in the checklist at **Annexure IV**. All pages of all submittals are to be duly signed/attested by the authorised signatory of the bidder along with the company seal.

Bids with Incomplete / Ambiguous information will be rejected.

The Bank Guarantee for EMD submitted by the bidders shall be strictly in the format prescribed in the General Conditions of Contract GCC. In case, EMD is not found verbatim in the prescribed format, the bid will be liable for rejection.

- 7.0** The bidders are advised in their own interest to submit their bid documents well in advance from last date/ time of submission of bids so as to avoid problems which the bidders may face in submission at the last moment/during rush hours for the purpose of uploading the bids.
- 8.0** On the opening date, the tenderer can login and see the tender opening process.
- 9.0** Notwithstanding anything stated above, the Employer reserves the right to assess the capabilities and capacity of the tenderer to perform the contract in the overall interest of work. In case, bidder's capabilities and capacities are not found satisfactory, the Employer reserves the right to reject the tender and the bidder will have no objection to it.

**10.0 Certificate of Financial Turn Over:**

The submission at Clause 2.2 part (ii) (b) above of the audited balance sheet and P&L account, the bidder shall upload the certificate duly attested by the Chartered Accountant/statutory auditor mentioning the Financial Turnover of last 3 years, however, the entire voluminous balance sheets or P&L accounts are not to be uploaded. Only one page of summarized balance sheet (Audited) and one page of summarized Profit & Loss Account (Audited) copy for last 03 years shall be uploaded and the same shall also be submitted in hard copy.

- 11.0** The bidder must ensure to quote separate rates of percentage for Schedule-A and Schedule-B items. The Rate shall be quoted up to two decimal places. The rate of percentage (above, at par or below) quoted by the bidder for Schedule-A items will be applicable to all items covered under Schedule-A and

the rate of percentage (above, at par or below) quoted by the bidder for Schedule-B items will be applicable to all items covered under Schedule-B. The evaluation of Lowest (L1) bid shall be done based on the SUM of the value quoted by the bidder towards combined Schedule-A and Schedule-B items.

- a) In case bidder has quoted percentage increase or decrease and the total amount in the summary of prices, but there is discrepancy in total amount, quoted and the amount arrived at after calculating the percentage increase/ decrease quoted by the bidder over Estimated Cost, then the total amount shall be corrected based on the estimated cost and the quoted percentage.
- b) In case bidder has quoted the percentage and the total amount in summary of prices, but increase or decrease (“+” or “-”) has not been indicated by the bidder against the % figure, then the amount quoted by bidder shall be considered and the percentage increase/ decrease shall be calculated based on the total amount quoted by the bidder and Estimate Cost.
- c) In case bidder has quoted the percentage in the summary of prices, but the total amount has not been quoted and increase or decrease (“+” or “-”) has not been indicated against the % figure, then the ‘+’ shall be considered for the % figure.
- d) In case the bidder left the % and amount Blank, % increase/ decrease shall be considered as NIL.

**12.0** The tenderer(s) if required, may submit queries, if any, through E-mail Ky@unitechgroup.com and in writing to the Employer to seek clarifications within 10 days from the date of uploading of Tender on website but latest by 15-11-2023 so as to reach the office. The Employer will respond to only those queries which are essentially required for submission of bids. The Employer may not respond to the queries which are not considered fit, viz. replies of which can be implied/ found in the NIT/ Tender documents or which are not relevant or in contravention to NIT/ Tender Documents and the queries received

The Pre-Bid meeting shall be attended by the intending bidders only and not by vendors/ manufacturers. The intending bidders should depute their authorized person with authorization letter in original to attend the pre-bid meeting.

### **13.0 Integrity Pact**

Integrity Pact at **Annexure-II** duly signed and stamped by the tenderer, shall be submitted. Any tenderer submitting the bid without the integrity Pact shall be liable for rejection.

**14.0** The Bidder shall submit an affidavit disclosing therein that no criminal case against him/ company, in relation to his normal course of business, is pending

at any level including any inquiry by the Central Bureau of Investigation (CBI)/ Enforcement Directorate (ED).

**15.0 List of Documents to be scanned, uploaded and also to be submitted in hard copy within the period of tender submission:**

- (i) If EMD submitted as BG, upload scanned copy of Bank Guarantee
- (ii) GENERAL DETAILS as per Annexure-I.
- (iii) Unconditional Letter of Acceptance of Tender Conditions (in original) on the Letter Head of the Applicant/ Bidder.
- (iv) Integrity pact as per Annexure -II.
- (v) Details of Work Experience Certificates –FORM A.
- (vi) Details of Similar Works – FORM B.
- (vii) Financial Details - FORM C.
- (viii) TDS details for Private Sector Projects – FORM D.
- (ix) Self-certified copy of Bank Solvency Certificate - FORM E.
- (x) Documents regarding Net Worth of the Company/ Firm.
- (xi) General Information – Form F.
- (xii) Work Experience Certificates consisting of details as mentioned in Form G.
- (xiii) Affidavit duly notarized by Notary Public on Non-Judicial Stamp Paper of Rs. 100/- for correctness of Documents /Information – Form H.
- (xiv) Power of Attorney in the name of the person authorized for signing/ submitting the tender.
- (xv) E-payment Transaction details towards cost of e-tender processing fee.
- (xvi) Valid GST registration/ EPF registration/ PAN No.
- (xvii) All pages of the entire Corrigendum (if any) duly signed by the authorized person.
- (xviii) Registration Details of the bidder in the GST Act – Form I.
- (xix) Checklist compliance as per Annexure IV.

**Notes:**

- (i) All the uploaded documents should be in readable, printable and legible form, failing which the bids are liable for rejection. The document submitted in hard copy should be indexed and duly page numbered in the sequence as per the checklist at Annexure IV.
- (ii) In case of foreign bidders participating individually, the bidder is exempted from submission of GST/ EPF/ ESIC registration/ PAN etc. including all other

statutory registrations/ permissions/ approvals for executing work in India during bid submission. However, foreign bidders have to submit undertaking on a pre-approved format stating that they will be complying with such mandatory requirements within 60 days of issue of Letter of award. Such format, for the purposes of approval, should reach the Employer on or before the date of the Pre-bid meeting.

- (iii) The Contract agreement shall be signed with successful Bidder only after meeting out all above requirements. No payment during the execution of work shall be released till the compliance to above requirements. In case of non-fulfilment of any such requirement by the successful bidder within the stipulated time period, the EMD shall be forfeited, and the party will be put under holiday list of the Employer and its parent company M/s Unitech Ltd.
  - (iv) The foreign bidder can provide the credit limit documents in lieu of Solvency Certificate.
- 16.0** No Clarification will be sought in case of non-submission of Cost of tender document, EMD of requisite amount, Letter of Waiver as per Section 4 (Forms and formats) and Affidavit as per Form H of Section 2 of the bidding document. In such cases the bid shall be rejected out rightly without seeking any further clarification/document.
- 17.0** The Employer reserves the right to reject any or all tenders or cancel/withdraw the invitation for bid without assigning any reasons whatsoever thereof. The Employer does not bind itself to accept lowest tender and reserves the right to negotiate post the financial bid opening if it may so deem fit.
- 18.0** Canvassing in connection in the overall tender award process is strictly prohibited, and such canvassed tenders submitted by the bidder will be liable to be rejected and his earnest money shall be forfeited.
- 19.0** In case of any query, please contact Mr. Shiv Charan, Ph. No 8800396076 during Office hours on all working days.

(.....)



**Annexure - I**

**General Details**

Sl. No.	Description	Cl. No. of NIT/ ITT/ GCC	Values/ Description to be Applicable for Relevant Clause(s)
1	Name of Work		Design, Supply, Installation, Testing & Commissioning of civil Mechanical, Electrical and Instrumentation work for Construction of STP with MBBR cum Aerobic Treatment with Nitrification, Denitrification, Tertiary Treatment for Phosphorous reduction technology (Preparation of Civil, Architectural, structural, Shop Drawings etc. all complete for 800 KLD treatment plant and Execution of civil works for 800 KLD including epoxy painting from inside the tank for water proofing and all other ancillary work with minimum M-30 grade concrete, construction of plant room to accommodate 2 modules & Electro Mechanical cum instrumentation work for 400 KLD, Module-1) as per latest CPCB/HSPCB/NGT guidelines for reuse/disposal of treated waste water including DLP and O&M for 5 years at "The Willows" Unitech Grande, Sector 96, 97 & 98 at Noida, U.P.
2	Employer		M/s Unitech Limited
3	Type of Tender		EPC
4	Earnest Money Deposit	NIT	Rs 1.00 Lacs (Rupees One Lacs only)
5	Estimated Cost	NIT	Rs 4.52 Crs (Rupees Four point Fifty-Two Crs only)
6	Time allowed for Completion of Work	NIT	24 Months
7	Mobilization Advance	GCC / 4.0	Up to 5% of contract value excluding O&M cost
8	Rate of interest on Mobilization Advance	GCC /4.0	@ 9% per annum
9	Validity of Tender	ITT /7.0	180 days

<b>Sl. No.</b>	<b>Description</b>	<b>Cl. No. of NIT/ ITT/ GCC</b>	<b>Values/ Description to be Applicable for Relevant Clause(s)</b>
10	Performance Guarantee	GCC / 2.0	3% (Three Per cent Only) of contract value to be submitted within 15 days of issue of Letter of Award
11	Security Deposit/ Retention Money	GCC / 3.0	5% (Five Per cent Only) of the gross value of each running/ final bill.
12	Start date of Contract	ITT/15.0, GCC/1.0	The date of start of contract shall be reckoned from 15 <sup>th</sup> day from the date of issue of letter of Award.
13	Deviation limit beyond which clause of GCC shall apply for all works except foundations.	GCC/ 6.0	Not applicable
14	Deviation limit beyond which clause of GCC shall apply for foundation work.	GCC/ 6.0	Not applicable
15	Escalation	GCC / 7.0	Not applicable
16	Defect Liability Period and Operation & Maintenance of the work executed	GCC/ 42.0	05 (Five) years from the date of Issuance of Completion Certificate for the works by the Employer.

## **SECTION - 2**

### **Instructions to Tenderers**

## Instructions to Tenderers (ITT)

1. Online percentage rate open tenders are invited from eligible agencies for Design, Supply, Installation, Testing & Commissioning of civil Mechanical, Electrical and Instrumentation work for Construction of STP with MBBR cum Aerobic Treatment with Nitrification, Denitrification, Tertiary Treatment for Phosphorous reduction technology (Preparation of Civil, Architectural, structural, Shop Drawings etc. all complete for 800 KLD treatment plant and Execution of civil works for 800 KLD including epoxy painting from inside the tank for water proofing and all other ancillary work with minimum M-30 grade concrete, construction of plant room to accommodate 2 modules & Electro Mechanical cum instrumentation work for 400 KLD, Module-1) as per latest CPCB/HSPCB/NGT guidelines for reuse/disposal of treated waste water including DLP and O&M for 5 years at "The Willows" Unitech Grande, Sector 96, 97 & 98 at Noida, U.P.
2. The estimated to cost of the work is Rs 4.52 Crore
3. The tender document, as uploaded, can be seen on website [www.unitechgroup.com](http://www.unitechgroup.com) and can be downloaded free of cost.
4. **Earnest Money Deposit**
  - (i) Earnest Money Deposit (EMD) i.e. Rs 1.00 Lac to be submitted along with the tender.
  - (ii) The EMD shall be valid for a minimum period of 180 (One Hundred Eighty) days from the last date of submission of Tender. The Bank Guarantee against EMD shall be scanned and uploaded to the e-Tendering website within the period of tender submission and the original EMD shall be deposited in the office of the Employer. The EMD shall be payable to the Employer without any condition(s), recourse or reservations.
  - (iii) Wherever the EMD is not paid in the online mode, it will have to be submitted in Physical Form, failing which the Bid will be rejected by the Employer. Such EMD shall be submitted either by way of DD/Banker's Cheque or in the form of a Bank Guarantee.
  - (iv) The EMD of unsuccessful bidders will be returned within 15 days after the award of work to the successful bidder or within 180 days from the date of opening of the financial bid, whichever is earlier.
  - (v) The EMD of the successful bidder will be discharged after the contractor has furnished the performance guarantee.
  - (vi) No interest shall be paid by the Employer on the EMD.
  - (vii) The EMD shall be forfeited in the following events:
    - (a) If the bidder withdraws the bid after bid opening during the period of validity;

- (b) Any unilateral revision in the offer made by the tenderer during the validity of the offer.
  - (c) Upon non-acceptance of LOI/ LOA by bidder, if and when issued by the Employer.
  - (d) In the case of a successful bidder, if the bidder fails to sign the contract Agreement within 15 days from the date of issue of LOA or furnish the required Performance Guarantee or fail to mobilise within 30 days of the LOA/LOI.
  - (e) If any bidder furnishes any incorrect or false statement/ information/ document.
  - (f) If bidder commits any breach of the Integrity Pact.
5. Interested bidder, who intends to participate in the tender, also has to make following payments in the form of Demand Draft/Pay Order or Banker's Cheque of any Scheduled Bank and to be scanned and uploaded to the e-Tendering website within the period of tender submission:
- (a) Cost of Tender Document (Non-refundable) – Rs.10,000.00 + GST@ 18%
  - (b) Cost of e-Tender Processing Fee (Non- refundable) – Rs. 5,000.00 + GST @ 18%
  - (c) EMD amount as specified in previous section. To be paid online or as BG. In case of BG the scanned copy of BG shall be uploaded on the portal failing which the bid will be rejected.
6. Online technical tender documents only of those tenderers shall be opened, whose Earnest Money Deposit, Cost of Tender Document and e-Tender Processing Fee and other documents submitted are found in order. The Financial Bids of only those tenderers will be opened whose technical bid documents are complete in all respect and meet the qualification criteria.
7. **Validity of Tender**
- The tender for the works shall remain open for acceptance by the bidder for a period of 180 days from the date of opening of financial bid. If any tenderer withdraws his tender before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the Employer, then the Employer shall, without prejudice to any other right or remedy, be at a liberty to forfeit the Earnest Money Deposit of the bidder. Further, the tenderers shall be put under holiday list of the Employer and its parent company M/s Unitech Ltd.
8. The tender submitted shall become invalid if:
- (a) The tenderer is found ineligible on technical evaluation.
  - (b) The tenderer does not upload all the documents as stipulated in the tender

document.

**9. Acceptance of Tender**

The Employer reserves the right to reject any or all the tenders in part or full without assigning any reason whatsoever.

10. The bid shall be submitted strictly in accordance with the conditions of Contract and instructions to tenderer. Tenders with any additional condition(s)/ modifications shall be rejected. Tenders, in which any of the prescribed conditions are not fulfilled or found incomplete in any respect, are liable to be rejected.
11. On acceptance of tender, the name of the authorised representative(s) of the contractor, who would be responsible for taking instructions from the Engineer-in-Charge, shall be intimated by the contractor within 15 days of issue date of Letter of Award by the Employer.
12. The tenderer is not permitted to bid for the works if his family member or a close relative is posted in the project office or concerned Zonal Office of the Employer or its parent company Unitech Limited, unless otherwise permitted. The contractor shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are close relatives to any of the officers of the Employer or its parent company Unitech Limited through the entire duration/ time period of the project. Any breach of this condition by the tenderer would render him liable to the withdrawal of the work awarded to him and forfeiture of Earnest Money Deposit and Security Deposit. This may also debar the contractor from tendering for other/ future works of the Employer or its parent company Unitech Ltd. For the purpose of operation of this clause, a close relative shall mean wife, husband, parents, grandparents, children, grandchildren, brothers, sisters, uncles, aunts, cousins and their corresponding in-laws.
13. The time for completion of the work as contained in contract shall be as per "GENERAL DETAILS - **Annexure-I**".
14. Canvassing, whether directly or indirectly, with Employers/ PMC/ TPIA is strictly prohibited, and the tenders submitted by the bidders, who resort to canvassing, will be liable for rejection.
15. The tender award, execution and completion of work shall be governed by tender documents consisting of (but not limited to) Letter of Award/ Letter of Work Order, Bill of Quantities, General Conditions of Contract, Special Conditions of Contract, Specifications, Drawings. The tenderers shall be deemed to have gone through the various conditions including sub-soil water conditions, topography of the land, drainage and accessibility etc. or any other condition which, in his opinion, will affect his price/ rates before quoting their rates for the work. No claim whatsoever against the foregoing shall be entertained at any stage after the award of works.

16. The drawings issued with the tender documents are indicative. Works shall be carried out as per the “Shop Drawings & technical Specification and other documents prepared by the Contractor and approved by Engineer-in-Charge”.

**17. Addenda/ Corrigenda**

Addenda/Corrigenda to the tender documents may be issued at least three days prior to last date of submission of the tender to clarify or effect modification in specification(s) and/or contract terms included in various sections of the tender document. The tenderer shall suitably take into consideration such Addenda/Corrigenda while submitting his tender. The tenderer shall return such Addenda/ Corrigenda duly signed and stamped as confirmation of its receipt & acceptance and submit along with the tender document as per **Annexure - IV**. All addenda/ Corrigenda shall be signed and stamped on each page by the tenderer and shall become part of the tender and contract documents.

**18. Site Visit and Collecting Local Information**

Before tendering, the tenderers are advised to visit the site of work, the present status of the project/ work, its surroundings to assess and satisfy themselves about the local conditions such as the status of the project, working and other constraints at site, approach roads to the site, availability of water & electrical power supply, application of taxes/ duties/ levies/ Toll/ Octroi as applicable & any other relevant information required by them to execute the complete scope of work. It becomes even more important in the case of brown-field projects where part works have already been executed that the tenderer obtain all necessary information as to the risks, weather conditions, contingencies & other circumstances, which may influence or affect its tender prices. Tenderer shall be deemed to have considered the above site and local conditions whether he has inspected the site or not and to have satisfied himself in all respect before quoting his rates so as not to raise any claims or extra charges whatsoever in this regard during the entire duration of the project execution, upon completion or during the defect liability period. No claims or extra charges whatsoever shall be entertained/ payable by the Employer on a later date after award of work.

**19. Access by Road**

- (i) Contractor, if necessary, shall build temporary access roads to the site of construction for the works at his own cost to make the site accessible. The Contractor shall maintain the same in motorable condition at all the times at his own cost. The contractor shall be required to permit the use of any access roads so constructed by him for vehicles of the Employer or any other agencies/ contractors who may be engaged on the project site without any charges whatsoever.

- (ii) Non-availability of access roads or approach to site, for the use of the contractor shall in no case condone any delay in the execution of work nor be the cause for any claim for Penalty.

## **20. Handing Over & Clearing of Site**

- (i) The Contractor should note that the area for construction may be made available in phases as per availability and in conjunction with pace of actual progress of work at site. The work may require to be carried out in constrained conditions. The work is to be carried out in such a way that the traffic, people movement, if any, is kept operative and nothing extra shall be payable to the contractor due to this phasing/ sequencing of the work. The contractor is required to arrange the resources to complete the entire project within total stipulated completion time of the contract. Traffic diversion, if required, is to be done and maintained as per requirement of local traffic police, by the contractor at his own cost and the contractor shall not be entitled for any extra payment, whatsoever, in this regard.
- (ii) Efforts will be made by the Engineer-in-Charge/ Employer to handover the site to the Contractor free of encumbrances. However, in case of any delay in handing over of the site to the Contractor, the Employer shall only consider suitable extension of time for the execution of the work. It should be clearly understood that the Employer shall not consider any revision in contract price or any other Compensation whatsoever viz. towards any idling of Contractor's labour, equipment etc.
- (iii) Old/ Temporary structures on the site of work, if required, shall be demolished by the contractor properly at his own cost unless and otherwise mentioned elsewhere in the Schedule A & B of the financial bid or as mentioned in SCC. The useful material obtained from demolition of structures & services shall be the property of the Employer and these materials shall be stacked as directed and at the place specified by the Engineer-in-Charge.
- (iv) Necessary arrangement including site maintenance is to be made by the contractor for temporary diversion of flow of existing drain, road etc. The existing drain, road would be demolished, wherever required, with the progress of work under the scope of work. The existing Road and Drain, which are not in the alignment of the said project but are affected and/or need to be demolished during execution for smooth progress of the project, shall be re-constructed/re-habilitated to its original status and condition by the contractor at his own cost. The cost to be incurred by contractor in this regard shall be deemed to be included in the quoted rates and contractor shall not be entitled for any extra payment on this account whatsoever.
- (v) The information about the public utilities (whether over ground or underground) like electrical/ telephone/ water supply lines, OFC Cables, open drain etc. is the



responsibility of contractor to ascertain through the site investigation whether the utilities will affect the works.

- (vi) The contractor shall be responsible for obtaining necessary approvals from the respective statutory authorities for shifting/ re-alignment of existing public utilities. The Employer shall only assist the contractor in obtaining the approvals from the concerned statutory authorities.
- (vii) Any services affected by the works must be temporarily supported by the bidder/ contractor who shall also take all reasonable measures required to protect the services and property of various government/ private bodies during the progress of works. The cost towards the same is deemed to be a part of the contract bid, and no extra payment shall be made to the contractor for the same.

## **21. Scope of Work**

The scope of work is detailed out in Technical Specifications of work.

The drawings for this work, which may be referred for tendering, provide general information about the work to be performed under the scope of this contract.

The work will be executed according to the drawings to be prepared by contractor and approved "GOOD FOR CONSTRUCTION"/Shop Drawings from time to time by the Engineer-in-charge and according to any additions/ modifications/ alterations/ deletions made from time to time, as required by any other drawings that would be issued to the contractor progressively during execution of work. It shall be the responsibility of the contractor to incorporate the changes that may be in this scope of work, envisaged at the time of tendering and as actually required to be executed. The contractor shall bear responsibility for the characteristics of the final effluent and shall make any addition/alterations to the equipment or plant, if the same fails to meet the required standard, without any extra cost.

- 22.1 Work under this contract shall consist of furnishing all labour, materials, equipment and appliances necessary and required together with drawings and required details to construct, erect and commission, a Sewage Treatment Plant, completely in accordance with the specifications and drawings enclosed with this tender generally comprising but not limited to the items mentioned in the following sections.
  - 22.1.1 Detailed engineering and preparation of all working drawings as per design data given in the document and actual site conditions to be determined by the contractor.
  - 22.1.2 Construction of all elements of the plant including Civil works, excavation for pipelines, gravity lines, manholes chambers, approach road as per requirement, within the battery limit.
  - 22.1.3 Interconnecting piping between all units, valves, gates and all other appurtenances and devices as required.
  - 22.1.4 All electro-mechanical equipment's duly protected against corrosion.
  - 22.1.5 All electric drives, motor control centers, power and control cables.

- 22.1.6 All instrumentation, control cabling, panels complete in all respects including online monitoring system.
- 22.1.7 These drawings enclosed are for guidance of the contractor. The contractor shall work out detailed layout and flow scheme with levels. The contractor has to submit total architectural drawings for 800 KLD in 2 modules of 400 KLD each flow scheme, ensuring that the basic design data conforms to as given in the bid document.
- 22.1.8 Getting clearances / certificate from Pollution control board and any other regulatory body as per requirement.
- 22.1.9 The bearing capacity of soil should be ascertained after proper soil investigation for design of different structures, and to know the influent quality of effluent conduct proper tests, as may be required for successful execution and commissioning.
- 22.2 Contractor shall verify/check all levels and other information given in the tender/drawings. No extra payment shall be admissible for any variation in levels or other site data.

**22. Approval of Temporary / Enabling Works**

The setting and nature of all offices, huts, access road to the work and all other temporary works as may be required for proper execution of the works shall be subject to the approval of the Engineer- in-Charge. All the equipment, labour, material including cement, reinforcement and the structural steel required for the enabling/ temporary works associated with the entire Contract shall have to be arranged by the Contractor only and at his own costs and is deemed to be considered in the bid price. Nothing extra shall be paid to the Contractor on this account.

**23. Clarifications after Tender Submission**

Tenderer's attention is drawn to the fact that during the period the tenders are under consideration, the tenderers are advised to refrain from contacting the Employer and/or his employees/ representatives on matters related to the tender under consideration and that, if necessary, Employer/ PMC will obtain clarifications in writing or as may be necessary. The tender evaluation and processing shall be done by the PMC concerned and vetted by the EIL. The recommendations of the PMC & EIL will be put up to the Tender Award Committee constituted by the Employer.

**24. Order of Precedence of Documents**

In case of any difference, contradiction, discrepancy, regarding the conditions of contract, specifications, drawings, Bill of quantities etc. forming part of the contract, the following shall prevail in order of precedence:

- (i) Contract Agreement
- (ii) Letter of Award
- (iii) Bill of Quantities

- (iv) Approved Drawings
- (v) Technical Specifications
- (vi) Special Conditions of Contract
- (vii) Instructions to Tenderers
- (viii) General Conditions of Contract
- (ix) Others

## **Annexure - II**

### **Integrity Pact**

To be executed Between

The Employer and its representatives such as the PMC/TPIA hereinafter referred to as **“The Principal”** (which expression, unless repugnant to the context thereof, shall mean and include its legal representatives, heirs and assigns)

AND

..... hereinafter referred to as **“The Bidder/ Contractor”** (which expression, unless repugnant to the context thereof, shall mean and include its legal representatives, heirs and assigns)

### **Preamble**

1. Unitech Limited, along with its project owning subsidiaries, being the Employer, is in the process of inviting proposals & bids and award of contracts for procurement, works, goods and services, for completion of its various residential and commercial projects in fulfilment of its given mandate.
2. The Employer places a very high value to the overall integrity, probity and honesty, promoting economic use of resources, and ensure fairness/transparency in its relations with its Bidder(s) and/ or Contractor(s). In order to ensure that highest level of integrity, transparency and trustworthiness is maintained throughout the execution and completion of all its projects, the Employer proposes to adopt and follow an ‘Integrity Pact’ with the prospective bidders/ contractors. The Integrity Pact is applicable to all the stakeholders i.e. the Contractors and their personnel, the Project Management Consulting agencies and staff, the Engineers India Limited (EIL) and their staff in its role as the Third Party Monitoring Agency, and above all, the Employer and its staff. It seeks the commitment of all persons engaged on these projects on whosoever’s behalf to perform without compromising on any aspect, or resorting to any unethical or corrupt practices in any aspect/ stage of the contract, or exercise any unwarranted influence or be influenced on any aspect of the contract or transaction. Only those bidders/ contractors, who commit themselves to this Integrity Pact, would be considered eligible to participate in the bidding process.
3. In order to achieve these goals, the Employer, the EIL and the Project Management Consultants (appointed by the Employer) will monitor the tender process and execution of the contract for compliance with the principles mentioned above.

### **Section -1: Commitments of the Employer**

Unitech Group, along with its staff, commit itself to take all measures necessary to prevent any form of corruption and to observe the following principles:-

- (i) No employee of the Employer or the PMC or the Third Party Inspection & Monitoring Agency (appointed by the Employer) personally or through any other persons/ family members, will take a promise or demand or accept for self or third person, any material or other benefit or consideration, which the person is not legally entitled to in connection with the tender, or the execution of a contract.

- (ii) The Employer or its agents (i.e. the PMCs and the TPIA) will treat all Bidder (s) with equity, fairness and transparency during the tender process. It will, in particular, before and during the tender process, provide to all Bidder (s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an unfair advantage in relation to the process or the contract execution.

## **Section -2: Commitments of Bidders (s)/ Contractor(s)**

The Bidder(s)/Contractor(s) shall also commit himself/herself/ themselves to take all measures necessary to prevent all forms of corruption. The Bidder commits himself/herself to observe the following principles during his/her participation in the tender process and thereafter during the contract execution.

- (i) The Bidder(s)/ Contractor(s) shall not, directly or through any other persons or firm, offer, promise or give to any Employee of the Employer or its agents (PMCs and TPIA) involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage during the tender process or during the execution of the contract.
- (ii) The Bidder(s)/ Contractor(s) shall not enter into any undisclosed agreement or understanding, whether formal or informal, whether collusive or otherwise, with other Bidders. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process in any manner.
- (iii) The Bidder(s)/ Contractor(s) shall not commit any offence surrounding the observance of integrity under any law. The Bidder(s)/ Contractors will not indulge in any improper use of any information or document provided by the Employer or its agents in the course of a business relationship, for purposes of competition or personal gain, or pass on to others such information or documents regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- (iv) In case of sub-contracting, Bidder (s)/ Contractor(s) shall also like-wise ensure the adoption and signing of the Integrity Pact by the respective sub-contractors.
- (v) The Bidder(s)/ Contractor(s) shall, when presenting their/ its bid, faithfully disclose any and all payments he/she/it has made or committed or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

## **Section-3: Equal treatment of the Bidders/Contractors/Subcontractors.**

- (i) The bidders(s)/ contractor(s) undertake(s) to obtain a commitment in conformity with this integrity pact from all the sub-contractors.
- (ii) The Employer shall enter into agreements with identical conditions with all bidders and contractors.
- (iii) Employer will disqualify the bidders, who do not sign this Integrity Pact or violate its provisions, from the tender process.

#### **Section-4: Disqualification from tender process and exclusion from future contracts.**

If the Bidder(s)/ Contractor(s), before award or during the project execution, has committed a transgression through a violation of Section-2 above or in any other form such as to put his reliability or credibility in question, the Employer is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process and restrict the Bidder (s)/ Contractor(s) from participating in future tenders of the Employer for a period of two years.

#### **Section-5: Compensation for Damages**

If the Employer has disqualified the Bidder(s) from the tender process prior to the award of the contract in terms of Section 4, the Employer shall be entitled to demand and recover the amount equivalent to Earnest Money Deposit towards compensation for damages.

#### **Section – 6: Integrity Pact Duration**

- (i) This Integrity pact comes into effect as soon as it is signed by both parties. It shall expire for the Contractor(s) 12 months after the Completion of the work, and 03 months for other unsuccessful Bidder(s) after the contract has been awarded.
- (ii) If any complaint is made/ lodged by either Party to the Employer during the periods mentioned in (i) above, the management would be at liberty to take such action as may be deemed appropriate.

#### **Section – 7: Miscellaneous**

- (i) If the Bidder(s)/ Contractor(s) is/are a partnership firm or a consortium or a joint venture, the Integrity Pact shall be signed by all members of the partnership firm or the consortium or the Joint Venture, as the case may be.
- (ii) Any dispute or difference arising between the parties with regard to the terms of this Integrity Pact/Agreement, any action taken by the Employer in accordance with this Integrity Pact/ Agreement or interpretation thereof shall not be subject to arbitration.
- (iii) This agreement shall be governed by the Indian laws for the time being in force. The Courts in Delhi, having the ordinary original civil jurisdiction will have the authority to deal with matters arising from this Pact/ Agreement.

(For and on behalf of the Principal)	(For and on behalf of Bidders/Contractors)
(Official Seal)	(Official Seal)
Witness-1	Witness -2
<Name>	<Name>
<Address>	<Address>

Place: \_\_\_\_\_

Date: \_\_\_\_\_

## **Annexure - III**

### **Procedure for e-Tendering**

Bidders intending to participate in the tenders of Unitech Group have to register first on the e-Tendering portal of Unitech Limited. For this purpose, the authorized representative of the bidder must possess a Class 2 DSC (Digital Signature Certificate). Registration and participation of the bid has to be done at [etenders.unitechgroup.com](http://etenders.unitechgroup.com).

#### **1. Registration / Empanelment**

Registration includes issuance of a unique User ID to each Bidder by the system. The request for the same is made online. The Bidder fills in the basic identification information during the registration process. The approval of registration will be automatic via email verification. Registration and approval are mandatory to be able to operate as a Bidder on the e-tendering processes.

#### **2. File Size**

The documents required to be submitted are given in Annexure-III of Section-2. Six (6) Buckets of different documents have been made in such a manner that each bucket size is within 20 MB, which is the maximum limit for uploading the said bucket. This arrangement must be strictly adhered to in order to overcome any problems qua e-filing of documents.

#### **3. Bidder Information Update**

Bidder information can be updated as and when required by Bidders online by going on to “Edit Profile”. The changes may be subject to Employer approval depending on configuration.

#### **4. Update of Digital Signature Certificate (DSC)**

The Digital Signature Certificate (DSC) is required to be registered by each bidder on the System. Since DSCs are valid for a limited period, the digital certificates need to be updated (re-registered) online from time to time. Bidders can participate in a bid only by using their DSC.

#### **5. Public View of Tenders**

##### **5.1 View of tender notices**

Tender notices, in specific formats, will be made available to the potential Bidders before the issuance of Tender Documents. Bidders can download the Tenders from the portal.

##### **5.2 View of in-process tenders**

The list of tenders, which are in process, will be available to the Bidders. However, details of the participants who have registered their interest for the tender or who have purchased the tender or from whom the bids are received are not made available in order to maintain the confidentiality of identities of

bidders and transparency of the procurement process until the process of tender opening has been initiated. The list shows the status of each tender and allows viewing of the tender notices of these tenders.

### **5.3 View of completed tenders**

Bidders who have been awarded the tender are displayed against each tender.

### **5.4 View of opened bids**

- (i) The participating bidder will be able to view only his opened technical bid.
- (ii) The participating bidder, whose technical bid is qualified, will be able to view all the financial bids on the date of opening of financial bids.

### **5.5 Download of tender documents**

Permission to download the full tender document will be available to registered bidders on payment of tender fees. Alternatively, the basic document itself is freely available for download but a potential bidder needs to purchase the bid forms.

## **6. Bid Preparation**

Bid preparation must be done online.

### **6.1 Filling up the bid forms**

Bid forms are in tabular format. Each bid will be submitted on two envelope format. Bidder has to fill all forms related with these envelopes. Bid form data can be saved only after encryption with the public key of the Bidder's digital certificate. Data can be edited only after decrypting it with the private key of the Bidder's digital certificate. Unencrypted data cannot be saved in the System.

### **6.2 Adding attachments.**

- (i) The attachments, if required, may need to be submitted. Some of these may be mandatory and some not. This is clearly indicated on the form for attachment upload. Extra attachments i.e. the ones not asked for in the tender document can also be loaded at the choice of the Bidder. Employer has the option to disallow uncalled for attachments.
- (ii) The Bidder has an additional feature of 'Briefcase' where he can keep his commonly used documents. While attaching the same to the tender, he can select document either from the briefcase or he can directly upload the same.
- (iii) **Scan copy of Documents to be submitted/uploaded for Prequalification or Technical bid under online PQQ/ Technical Envelope:** The required documents (refer to Tender document) shall be prepared and scanned in different file formats (in PDF /JPEG/MS WORD format such that file size is not exceed more than 25 MB) and uploaded during the on-line submission of PQQ or Technical Envelope.



- (iv) **FINANCIAL or Price Bid PROPOSAL shall be submitted mandatorily online under Commercial Envelope .**
- (v) **Technical and Financial bid to be submitted on portal and not to be submitted manually**

### **6.3 Validating bid data**

Basic validation rules such as item set rules and mandatory field validations are done during validation. Bidder can choose to go back and rework the bid at this stage, if required.

### **6.4 Bid signing**

- (i) Each electronic bid is digitally signed. The server also obtains a digitally signed time stamp for each envelope that can be verified at any later date. Bidders can generate and print proof of hash submission including the hash value, the unique bid number assigned by the System and the Company ID of the Bidder.
- (ii) The System does not allow the process to be carried out before or after the designated time in tender schedule. Bidder can rework on its bid till the last date of bidding. A bidder seeking to withdraw its bid should initiate the “re-submit” button.

### **6.5 EMD and Tender Document fees**

Bids submitted with EMD and tender fees will only be considered for evaluation. The system will not permit submission of Bid without payment of complete fees.

## **7 Bid Opening**

Unitech representative will undertake the bid opening. Bidder will be able to see the status of bid opened. Technical bids will be opened in the first instance. Upon completion of the technical evaluation, the bids will be marked as “qualified” or “not-qualified”. Financial bids of only such bidders, who qualify in the technical bid evaluation, will be opened.

## Annexure - IV

### Check-list - documents to be submitted along with the bid

(All documents mentioned in the Check-list are to be uploaded as a part of the Technical Bid)

Sr. No.	Description	Reference from Tender	Bucket (Size not exceeding 20MB for each bucket)	Submission Compliance (Yes / No)
<b>Pre-Qualification Documents</b>				
1	If EMD submit as BG, upload scanned copy of Bank Guarantee	As per Form No. VI (Section 4)	Bucket-1	
2	General Details	Annexure-I		
3	Unconditional Letter of Acceptance of Tender Conditions (in original) on the Letter Head of the Applicant/ Bidder.	Section-4		
4	Integrity pact	Annexure-II		
5	Details of Work Experience Certificates	Form-A		
6	Details of Similar Works	Form-B		
7	Financial Details	Form-C		
8	TDS details for Private Sector Projects	Form-D		
9	Documents regarding Net Worth of the Company/ Firm.	2.2(II) & 14(XI) of NIT		
10	Self-certified copy of Bank Solvency Certificate	Form-E		
11	Audited summarised Balance Sheet (Last 3 years)	2.2 (ii) Note B of NIT		
12	Audited summarised Profit & Loss Account (Last 3 years)	2.2 (ii) Note B & Para 10 of NIT		
13	General Information	Form-F		
14	Work Experience Certificates	Form-G		
15	Affidavit duly notarized by Notary Public on Non-Judicial Stamp Paper of Rs. 100/- for correctness of Documents /Information	Form-H	Bucket-2	
16	Power of Attorney in the name of the person authorized for signing/ submitting the tender	14(XV) of NIT		
17	E-payment Transaction details towards cost of e-tender processing fee.	6.5 of Annexure-3/ 14(ii) & (xvi) of NIT		

Sr. No.	Description	Reference from Tender	Bucket (Size not exceeding 20MB for each bucket)	Submission Compliance (Yes / No)
18	Registration Details of the bidder in the GST Act	Form-I		
19	Valid GST registration/ EPF registration/ PAN No.	14 (xvii) of NIT & Note -2 of NIT		
20	All pages of the entire Corrigendum/ Addenda (if any) duly signed and stamped by the authorized representative of the tenderer	14(xviii) of NIT	Bucket-3	
<b>Technical Submissions as Part of Bid</b>				
21	Project Execution Plan	18 of GCC	Bucket-4 (It is not mandatory to submit these documents)	
22	Overall Project Schedule (Resource loaded-Level 3) along with Critical Path	18 of GCC		
23	Progress 'S' Curves	17.2(IV) of GCC		
24	Manpower and Machinery Deployment	33 of GCC		
25	Details of Software's to be used for planning, material control etc.	17.2(iv)		
26	Any other relevant documents the tenderer wishes to submit to support the bid.	-		
27	<b>Forms and Formats</b>			
I	Declaration By the Bidder Regarding Bidding Document	As per Form No. I (Section 4)	Bucket-5	
II	Letter of Waiver	As per Form No. II (Section 4)		
III	Undertaking For Non-Engagement of Child Labour	As per Form No. III (Section 4)		
IV	Affidavit disclosing therein that no criminal case against him/ company, in relation to his normal course of business, is pending at any level including any inquiry by the Central Bureau of Investigation (CBI)/ Enforcement Directorate (ED)			

Signatures of the Bidders

(Name of the Signatory \_\_\_\_\_ )

Place:

Date:

**Form - A**  
**Tender for \_\_\_\_\_**

**Mandatory Information Documents**

**Details of Work Experience Certificates**

Sr. No.		1	2	3	4
1.	Name of Work and its Location				
2.	Name of Employer				
3.	Date & Reference No. of Completion Certificate				
4.	Date of Start				
5.	Date of Planned Completion				
6.	Date of Actual Completion				
7.	Awarded cost of Work (Exc. Tax)				
8.	Cost of Work on Completion (Exc. Tax)				
9.	Value of Tax (as considered in the Completion Certificate)				
10.	Reference and page No. of documentary proof of the detail missing in the Completion Certificate				

1. Certified that the Completion Certificates of above works are enclosed with the Tender Documents;
2. Details mentioned in the above Form are as per Completion Certificates and have not been presumed.

**Note:** If any detail is not mentioned in the Completion Certificate, documentary proof of details like drawings, LoA, BoQ, Completion Certificate/ Occupation Certificate, copy of final bill, etc. is to be submitted and uploaded on e-Tender Website along with the Completion Certificate.

**Signature of the Bidder with Seal.**

**Form - B**  
**Tender for \_\_\_\_\_**

**Mandatory Information Documents**

**Details of Similar Works**

Sr. No.		1	2	3	4
1.	Name of Work for which Experience Certificate has been submitted				
2.	Name of Employer				
3.	Date & Reference No. of Completion Certificate				
4.	Type of Work				
5.	No. of Basements				
6.	No. of Storeys				
7.	Height of Building (From GF level to Terrace Floor level)				
8.	Reference and page No. of documentary proof of the detail missing in the Completion Certificate				
9.	Any Other				

If any detail is not mentioned in the Work Completion Certificate, documentary proof of detail is to be submitted and uploaded on e-Tender Website along with the Completion Certificate.

**Signature of the Bidder with Seal.**

**Form – C**  
Tender for \_\_\_\_\_

**Mandatory Financial Documents**

Sr. No.	Description	1 <sup>st</sup> Year (Rs. in Lakh)	2 <sup>nd</sup> Year (Rs. in Lakh)	3 <sup>rd</sup> Year (Rs. in Lakh)
		(A)	(B)	(C)
(i)	Profit/ Loss			
(ii)	Gross Annual Turnover of previous 3 financial years ending as on the last date of the preceding Financial Year			
(iii)	Average Annual Turnover for previous 3 Financial Years (Rs. in Lakh) = (A+B+C)/3			
(iv)	Net Worth (Paid-up Capital + Reserves) on the last date of the previous Financial Year			
(v)	Bank Solvency amount as mentioned in the bank Solvency Certificate			

**Note: This Form-C is to be submitted in Original**

1. Summarised page of Audited Profit & Loss Account of previous 03 Financial Years duly certified by the Chartered Accountant/ Statutory Auditor, has been submitted.
2. Summarised page of Audited Balance Sheet of last Financial Year (ending on the last day of the preceding Financial Year) duly certified by the Chartered Accountant/ Statutory Auditor, has been submitted.

Signature of Chartered Accountant/ Statutory Auditor with Membership Number and Seal	Signature of the Bidder along with the Seal

**Form – D****TDS details of Private Sector Projects**

Sr. No.	Subject	1	2	3
(i)	Name of Work			
(ii)	Name of Employer			
(iii)	Project Cost (Rs. in Cr.)			
(iv)	No. and date of Completion Certificate			
(v)	Cost of the Work on Completion (Rs. in Cr.)			
(vi)	Payments received as per TDS (Rs. in Cr.)			
(vii)	TDS corresponding to the Payments			
(viii)	Year-wise TDS as per Form 26AS/ Form 16-A relating to the Work			

**Notes:**

1. Value of work done will be considered commensurate with the value of TDS Certificates.
2. In case of multiple contracts undertaken from a Employer, details of TDS/ Form 26AS for each work mentioned above need to be segregated and given separately.
3. This Form needs to be supported with Form -26AS taken in HTML format on Form – 16A

Signature of Chartered Accountant/ Statutory Auditor with Membership Number and Seal	Signature of the Bidder along with the Seal

Form – E (deleted)

Dispatch number of bank/ Date

**Solvency certificate on Letter-head of the Bank**

1. This is to state that to the best of our knowledge and information that M/s \_\_\_\_\_ having/ registered office address ..... is a customer of the bank and has been maintaining his accounts with our branch since \_\_\_\_\_. As per records available with the bank, M/s..... can be treated as solvent up to a limit of Rs.....(Rupees in words).
2. It is clarified that the above information is furnished and this certificate is being issued at the specific request of the customer.

**Name, designation, Signature with seal**



**Form – F****General Information**

1.	Name of Applicant/ Company	
2.	Address for correspondence	
3.	Official e-mail for communication	
4.	Contact Person: Telephone Nos. Fax Nos. Mobile	
5.	Type of Organization: (a) An individual (b) A proprietary firm (c) A firm in partnership (Attach copy of Partnership) (d) A Limited Company (e) (Attach copy of Article of Association) (f) Any other (mention the type)	
6.	Place and Year of Incorporation	
7.	Name(s) of Directors/ Partners in the organization	
8.	Name(s) and Designation of the persons, who is authorized to deal with Employer (Attach copy of power of Attorney)	
9.	Bank Details: Name of Bank, Address of Bank Branch, Account No., RTGS, IFS Code	

**Signature of the Bidder with Seal**

**Form – G****Work Experience Certificate**

Name of Employer with Address, Email &amp; Phone Number

Dispatch No. \_\_\_\_\_

Date: \_\_\_\_\_

Name of Contractor \_\_\_\_\_

Sr. No.	Subject	Description				
1.	Name of work / project & Location					
2.	Name and Address of the Employers					
3.	Agreement Amount					
4.	Cost of work on completion					
5.	Date of start					
6.	Stipulated date of completion					
7.	Actual date of completion					
8.	Amount of Penalty levied for delayed completion (if any).					
9.	Type of Work: Residential/ Non-Residential Building	Not Applicable				
10.	No. of Basements in any Building of this work					
11.	Maximum Height of any Building of this work (From Ground Floor Level to Terrace Floor Level)					
12.	Maximum No. of storeys of any Building of this work					
13.	Performance report	<table border="1"> <tr> <td>Outstanding</td> <td>Very Good</td> <td>Good</td> <td>Poor</td> </tr> </table>	Outstanding	Very Good	Good	Poor
Outstanding	Very Good	Good	Poor			
(a)	Quality of work					
(b)	Resourcefulness					
(c)	Financial soundness					
(d)	Technical proficiency					
(e)	General behaviour					

Name & Designation Signature with  
Seal of issuing Authority

Date: \_\_\_\_\_

**Form - H**

**AFFIDAVIT**

**(To be submitted by bidder on non-judicial stamp paper of Rs.100/ (Rupees Hundred only) duly attested by Notary Public**

Affidavit of Mr. \_\_\_\_\_ S/o.....R/o .....

I, ..... the deponent above named do hereby solemnly affirm and declare as under:

1. That I am the Proprietor/Authorized signatory of M/s ..... having its Head Office/ Regd. Office at .....
2. That the information/ documents/ Experience certificates submitted by M/s..... along with the tender for ..... (*Name of work*) ..... to M/s Unitech Hi-tech Developers Ltd. (*Hereinafter referred to as the Employer*) are genuine and true and nothing has been concealed.
3. I shall have no objection in case the Employer verifies them from issuing authority (ies). I shall also have no objection in providing the original document(s) in case the Employer demands so for verification.
4. I hereby confirm that in case, any document, information &/or certificate submitted by me found to be incorrect/ false/ fabricated, the Employer at its discretion may disqualify / reject / terminate the bid/contract and forfeit the EMD/ All dues.
5. I shall have no objection in case the Employer verifies any or all Bank Guarantee(s) under any of the clause(s) of Contract including those issued towards EMD and Performance Guarantee from the Zonal/ Branch office of issuing Bank and I/We shall have no right or claim on my submitted EMD before the Employer receives said verification.
6. That the Bank Guarantee issued against the EMD issued by (name and address of the Bank) is genuine and if found at any stage to be incorrect / false / fabricated, M/s The Employer shall reject my bid, cancel pre-qualification, and debar me from participating in any future tender.
7. I hereby confirm that our firm /company is not blacklisted/ barred /banned from tendering by M/s The Employer If this information is found incorrect, the Employer at its discretion may disqualify / reject / terminate the bid/contract.
8. The person who has signed the tender documents is our authorized representative. The Company is responsible for all of his acts and omissions in the tender.

I, ....., the Proprietor / Authorized signatory of ..... do hereby confirm that the contents of the above Affidavit are true to my knowledge, and nothing has been concealed there from.....and that no part of it is false.

**DEPONENT**

**Verified at .....this.....day of .....**

**ATTESTED BY (NOTARY PUBLIC)**

**Form - I**

<b>GST Registration Details of Contractor/ Vendor</b>	
Name	
Address (As per registration with GST)	
City	
Postal Code	
Region/ State (Complete State Name)	
Permanent Account Number	
GSTIN ID/ Provisional ID No.: (Copy of Acknowledgement required)	
Type of Business (As per registration with GST)	
Service Accounting Code/HSN Code:	
Contact Person	
Phone Number and Mobile Number	
Email ID	
Compliance Rating (if updated by GSTN)	

**Signature of Bidder with Seal**

## **SECTION-3**

### **General Conditions of Contract**

## 1. Definitions

In the contract, the following expressions shall, unless the context otherwise requires, have the meanings hereby respectively assigned to them:

- (a) **Approval** means approval of the Engineer in Charge/Employer, as the case may be, in writing including subsequent written confirmation of previous verbal approval, if any.
- (b) **Authorized Representative of Employer** means the person designated by the Employer/ TPIA and/ or the PMC and shall include their authorized nominee(s) or agent(s).
- (c) **Bill of Quantities** or **Schedule of Quantities** means the priced complete bill of quantities or schedule of quantities forming part of the complete bill of tender/ tender document.
- (d) **Contract** means the documents forming the tender and acceptance thereof and the formal agreement executed between the Unitech Group Company and the Contractor, together with the documents referred to therein including these conditions, specifications, designs, drawings and instructions issued from time to time by the Engineer-in-Charge and all these documents taken together, shall be deemed to form one contract and shall be complementary to one another.
- (e) **Contractor** means the individual, firm, or company, whether incorporated or not, undertaking the works and shall include the legally authorized personnel and representative of such individual or the persons composing such firm or company, or the successors of such firm or company and the permitted assignees of such individual, firm or company.
- (f) **Contract Value** means the sum for which the tender is accepted as per the letter of Award.
- (g) **Drawings** mean the drawings referred to in the contract document including modifications, if any, and such other drawings as may from time to time be furnished and/ or approved by Engineer-in-charge/PMC.
- (h) **Date of Commencement of Work:** The date of commencement of contract shall be reckoned from the 15<sup>th</sup> day after the date of issue of Letter of Award.
- (i) **Employer** means Unitech Limited, the holding Company or any of its subsidiaries/ JV/ affiliate, with its corporate office at 8/13th Floor, Tower-B, Signature Towers, South City-1, Gurugram-122007, Haryana.
- (j) **Engineer-in-Charge** shall mean the Authorized representative of the Employer.
- (k) **Excepted Risks** are risks due to riots (other than those among

Contractor's employees), war (whether declared or not), invasion, act of foreign enemies, hostilities, civil war, rebellion revolution, insurgency, military or usurped power, any acts of Government, damages from aircraft, acts of God, such as earthquake, lightening and unprecedented floods, pandemic and other causes over which the Contractor has no control and accepted as such by the Employer or causes solely due to use or occupation by Government/ Employer of the part of the works in respect of which a certificate of completion has been issued or a cause solely due to Employer's faulty design of works.

- (l) **Language:** All documents and correspondence in respect of this contract shall be in English Language.
- (m) **Letter of Award (LoA)** shall mean Employer's notification letter conveying its acceptance of the tender along with the conditions stated therein.
- (n) **Market Rate** shall be the rate as decided by the Engineer-in-Charge on the basis of the prevailing cost of materials and labour at the site of work where the work is to be executed plus 15% (Fifteen per cent) to cover all overheads and profits of the Contractor.
- (o) **Month** means English Calendar month, 'Day' means a Calendar Day of 24 Hrs each.
- (p) **PMC** means the Project Management Consultancy agency appointed by the Employer for the works, its Authorized Representatives, Agents, Successors, Beneficiaries, and Legal Heirs.
- (q) **Site** means the land and other places on, under, in or through which the works are to be executed or carried out and any other lands or places provided by the Employer or used for the purpose of the contract.
- (r) **Tender or Bid** means the tender submitted by the bidder for acceptance by the Employer.
- (s) **TPIA** means Third Party Inspection & Monitoring Agency i.e. M/s Engineers India Limited,. appointed by the Employer for Inspection, Monitoring, Audit & Quality Control of the works.
- (t) **Writing** means any manuscript type-written or printed statement under or over signature and/or seal of the concerned, as the case may be.
- (u) **Work or Works** shall, unless there be something in the subject or either context repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent, and whether original, altered, substituted or additional.



**Notes:**

- (i) Headings in the clauses/conditions of tender documents are for convenience only and shall not be used for interpretation of the clause/condition.
- (ii) Words imparting the singular meaning only also include the plurals and vice versa where the context requires. Words imparting persons or parties shall include firms and corporations and organizations having legal capacities.

**2.0 Performance Guarantee**

- (i) Within 15 (Fifteen) days from the date of issue of Letter of Award (LoA), the Contractor shall submit an irrevocable Performance Guarantee (as per Form No. VII, Section 4) of 3% (Three per cent) of the tendered amount in addition to other deposits mentioned elsewhere in the contract for his proper performance of the contract agreement (notwithstanding and/or without prejudice to any other provisions in the contract). The Performance Guarantee shall be initially valid up to the stipulated date of completion of work plus 60 days. In case the time for completion of works gets extended, the Contractor shall get the validity of Performance Guarantee extended up to such extent to cover such extended time for completion of work + 60 days. The performance guarantee shall be returned to the Contractor/ discharged, without any interest thereon, after issue of the Completion Certificate for the work by the Engineer-in-Charge.
- (ii) The Employer reserves the right to ask for Additional Performance Guarantee where the quoted rates are found to be lower by 15% or lower as compared with the estimated cost indicated in the NIT.
- (iii) The Engineer-in-Charge shall make a claim under the performance guarantee except for amounts to which the Engineer-in-Charge is entitled under the contract (not withstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:
  - (a) Failure by the Contractor to extend the validity of the Performance Guarantee as described herein above, in which case the Engineer-in-Charge may claim the full amount of the Performance Guarantee.
  - (b) Failure by the Contractor to pay any amount due, either as agreed by the Contractor or determined under any of the Clauses/ Conditions of the agreement, within 30 days of the service of notice to this effect by the Engineer-in-Charge.
  - (c) In the event of the contract being determined or rescinded under provisions of any of the Clauses/ Conditions of the agreement, the performance guarantee shall stand forfeited in full and shall be absolutely at the disposal of Engineer-in-Charge.

- (iv) On substantial completion of any work, which has been completed to such an extent that the intended purpose of the work is met and ready to use, then a Provisional Completion Certificate shall be recorded by the Engineer-in-Charge. The provisional completion certificate shall have a list of outstanding balance items of work appended thereto that need to be completed in accordance with the provisions of the contract.

### **3.0 Security Deposit/ Retention Money**

- 3.1** At the time of making payment to him towards each running and final bill for the work done under the contract, the Contractor shall permit the Engineer-in-Charge to deduct a sum at the rate of 5% (five per cent) of the gross amount of bill till the sum deducted will amount to security deposit of 5% (five per cent) of the tendered value of the work. Such deductions will be made and held by the Engineer-in-Charge by way of Security Deposit unless the Contractor has deposited the amount of Security at the rate mentioned above in cash or in the form of a Bank Guarantee. At any event, if the Bank Guarantee is to be revoked by Engineer-in-Charge, and the Bank is unable to make payment against the said bank guarantee, the loss caused thereby shall fall on the Contractor and the Contractor shall forthwith, on demand, furnish additional security to the Engineer-in-Charge to make good the deficit.

- 3.2** All Compensation or other sums of money payable by the Contractor under the terms of this contract may be deducted from, or paid by adjustment of a sufficient part of his security deposit or from the interest arising there from, or from any sums which may be due to or may become due to the Contractor by Engineer-in-Charge on any account whatsoever. In the event of his Security Deposit being reduced by reason of any such deductions or adjustment as aforesaid, the Contractor shall within 10 days make good in cash or fixed deposit receipt tendered by the State Bank of India or by any Scheduled Bank or Government Securities (if deposited for more than 12 months) endorsed in favour of the Employer, any sum or sums which may have been deducted from, or raised by adjustment of his security deposit or any part thereof.

### **3.3 Release of Security Deposit**

5% Security Money will be released as per following –

- (a) 25% of the Retention Money/ Security Deposit will be released after 01 year from the date of Completion Certificate subject to the condition that any defects observed during this period are duly rectified/ repaired by the Contractor at his cost to the satisfaction of the Engineer-in-Charge;
- (b) Another 50% of the Retention Money/ Security Deposit will be released after completion of two years from the date of Completion Certificate subject to the condition that any defects observed during this period are duly rectified/ repaired by the Contractor at his cost to the satisfaction of the Engineer-in-Charge;

- (c) The balance 25% of the Retention Money/ Security Deposit will be released after the Defect Liability Period of 5 years from the date of Completion Certificate subject to the condition that any defects observed during this period are duly rectified/ repaired by the Contractor at his cost to the satisfaction of the Engineer-in-Charge;
- (d) If any defect arises within defect liability period, it is the contractor's sole responsibility to rectify the same at his cost once communicated by the Engineer-in-Charge in writing as per Clause 42 & 82 below. In case the contractor fails to rectify the same, then such defect(s) will be got rectified/ repaired by the Employer through any other agency at contractor's risk and cost. The cost will be deducted from the security deposit retained towards such defect liability period or security deposit @5%deducted from payments of O& M charges.
- (e) The Contractor may, if he so wishes, get his Security Deposit/ Retention Money released from the Employer and replace the same with Bank Guarantees, valid for a period of one year +60 days (25% of the Retention Money), 50% after two years +60 days and the balance 25% after five years +60 days respectively.

#### **4.0 Mobilization Advance**

**4.1** Mobilization advance up to 5% of the contract value, bearing a simple interest rate of 9% per annum, shall be paid to the Contractor, if requested by him on submission of irrevocable Bank Guarantee (as per Form VIII of Section 4) of an amount equivalent to 110% of the respective instalment of mobilization advance, valid for the entire contract period from a Scheduled Bank in the enclosed Performa.

**4.2** The mobilization advance, if requested, shall be paid in three instalments as follows:

- (i) First Instalment of Twenty per cent (20%) of the total mobilization advance shall be paid after:
  - (a) Initial mobilisation at the project site;
  - (b) Submission of bank guarantee in approved Performa (annexed under Forms and Formats).

This instalment shall be paid if the request is made by the Contractor within 30 days from date of issue of LOA/LOI.

- (ii) Second instalment of Forty per cent (40%) of total mobilization advance shall be paid after the Contractor has constructed Site Office, storage shed, fabrication yard, site laboratory, etc. and has physically mobilized plant and machinery, scaffolding & shuttering materials etc. at site commenced the work at site.

The above instalment will be released subject to the actions at sub-para (ii) above are performed by the Contractor within 60 days of signing the contract and/or 90 days from the date of issue of LOA/LOI, whichever is earlier.

- (iii) The Balance Forty per cent (40%) of mobilization advance shall be paid to the Contractor on submission of Utilization Certificate (For this contract only) of 60% of the mobilization advance for the already paid to him.

**4.3** The mobilization advance, including the accrued interest, shall be recovered from each running account bill of the Contractor in such a manner that the total Mobilization Advance is recovered when 85% of the contract value gets paid to the contractor.

**4.4** The Contractor can submit a single bank guarantee for the entire mobilisation amount or submit the bank guarantees in parts against the mobilization advances in the proposed numbers of recovery instalments equivalent to the amount of each instalment as per Clause 4.1 and 4.2 above. The bank guarantee submitted by Contractor against mobilization advance shall initially be valid for the entire contract period and shall be kept renewed from time to time to cover the balance amount arrived by deducting the amount already recovered along with the accrued interest till such time.

## **5.0 Secured Advance**

- (i) Interest-free secured advance will be payable to the Contractor up to a maximum of 60% (sixty per cent) in respect of purchase of material required for incorporation in the permanent works and brought to site on production of the Tax Invoice against which the Secured Advance is being sought subject to approval by the Engineer-in-charge. This secured advance will be tenable only for non-perishable material/s brought to site after due verification by the Engineer-in-Charge for quality, quantity requirements on site and value as described above. The advance will be paid only on submission of Indemnity Bond in the prescribed Performa (As per Form XII, Section 4).
- (ii) The Contractor shall construct suitable Go-down/ warehouse at the site of work for safe storage of the materials against any possible damages due to sun, rain, dampness, fire, theft etc. at his own cost. He shall also employ necessary watch & ward establishment for the purpose at his risk and costs. No claims extra charges on account of safe keeping, pilferage or loss for any reason whatsoever will be tenable or entertained by the Employer.
- (iii) Such secured advance shall not be payable on other items of perishable nature, fragile and combustible. No secured advance shall be paid on high-risk materials such as glass, sand, petrol, diesel etc.

## **5.1 Recovery of Secured Advance**

When materials on account of which an advance has been paid under clause 5.0, are incorporated in the work, the amount of such advance shall be recovered from the next payment to be made to the Contractor under any of the clauses of this contract.

If there is any inordinate and inexcusable delay in incorporation of the goods and materials for which the Secured Advance is provided in the permanent work, the Engineer in Charge may levy interest @ 12% on the value of unutilized goods and materials from the date on which such goods and materials were scheduled to be incorporated in the work as per the work completion schedule till the date on which goods and materials are incorporated in the work.

## **6.0 Deviations/ Variations Extent and Pricing**

Deleted

## **7.0 Escalation (Cement, Reinforcement & Structural Steel only)**

Deleted

## **8.0 Penalty for Delay**

- (i) If the Contractor fails (a) to maintain the required progress in terms of clause 17, or (b) to complete the work and clear the site on or before the stipulated date of completion of contract or justified extended date of completion as well as any extension granted under any other clause, he shall, without prejudice to any other right or remedy available under the law to the Employer on account of such breach, pay as Penalty the amount calculated at the rates stipulated in sub para (ii) below.

- (ii) Compensation for delay of work - With maximum rate @ 0.5% (zero point five per cent) per week of delay to be computed on per day basis.

Provided always that the total amount of Penalty for delay to be levied under this condition shall not exceed 10 % (ten per cent) of accepted tendered value.

- (iii) In case, penalty for delay has not been decided/ not communicated to the contractor by the Engineer-in-Charge during the progress of work, it shall not be treated as a deemed waiver of right to levy penalty by Engineer-in-Charge if the work remains incomplete on the actual date of completion or the final justified extended date of completion.

## **9.0 Action in case work is not done as per Specifications**

- (i) All works under or in the course of execution or executed in pursuance of the contract, shall at all times be open and accessible to inspection and supervision of the Engineer-in-charge, his authorized subordinates, and all the superior officers, officer of the Third Party Inspection and Monitoring Agency (TPIA) of the Employer or any organization engaged by the Employer for Monitoring and

Quality Assurance, during the usual working hours and at all other times for which reasonable notice of the visit of such officers will be communicated to the Contractor in writing by the Engineer-in-charge/ Employer/ PMC. Orders given to the Contractor's authorised representative shall be considered to have the same force as if they had been given to the Contractor himself.

- (ii) If it shall appear to the Engineer-in-charge or the PMC and/or his authorized subordinates or to the officer of the TPIA or his subordinate officers that –
  - (a) Any work has been executed with unsound, imperfect, or unskilful workmanship; or
  - (b) With materials or articles provided by him for the execution of work are unsound or of a quality inferior to that contracted; or
  - (c) Otherwise not in accordance with the contract;

the Contractor shall, on demand in writing, which shall be made within twelve months of the completion of the work from the Engineer-in-Charge specifying the work, materials or articles complained of notwithstanding that the same may have been passed, certified and paid for, forthwith rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove the materials or articles so specified and provide other approved proper and suitable materials or articles at his own risk, charge and cost including the cost of suitable barricading around the work front as directed by the engineer in charge.

- (iii) In such case, the Engineer-in-Charge may not accept the item of work at the rates applicable under the contract but may accept such items at reduced rates as the Engineer-in-Charge may consider reasonable during the preparation of on-account bills or final bill if the item is so acceptable without detriment to the safety and utility of the item and the structure or he may reject the work outright without any payment and/or get it and other connected and incidental items rectified, or removed and re-executed at the risk and cost of the Contractor. Decision of the Engineer-in-Charge will be conveyed in writing in respect of the same and will be final and binding on the Contractor.

#### **10.0 Action in case of Bad Work**

- (i) If it shall appear to the Employer/ Engineer-in-Charge or his authorized representative or to any other inspecting agency, that any work has been executed with unsound, imperfect, or unskilful workmanship or with materials of any inferior description, or that any materials or articles provided by him for the execution are unsound or of a quality inferior to that contracted for or of the works are otherwise not in accordance with the contract, the Contractor shall on demand in writing, which shall be made within twelve months of the completion of the work, from the Engineer-in-Charge specifying the work, materials or articles complained of notwithstanding that the same may have been passed, Certified and paid for, forthwith rectify or remove and reconstruct

the work so specified in whole or in part as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own proper charge and cost.

- (ii) In the event of the Contractor failing to do so within a period to be specified by the Engineer-in-Charge in his demand aforesaid, while the Contractor failure to do so shall continue, the Engineer-in-Charge may rectify or remove and re-execute the work or remove and replace with others, the material or articles complained of, as the case may be, at the risk and cost of the Contractor in all respects.

#### **11.0 Non-Waiver:**

Failure of Engineer-in-Charge to insist upon strict performance of any of the terms & conditions hereof, or failure or delay to exercise any rights or remedies provided herein or by law or failure to properly notify the Contractor in the event of breach or the acceptance of or payment for any services hereunder or approval of interim reports, shall not release the Contractor of any of the warranties or obligations of this order and shall not be deemed a waiver of any right of Engineer-in-Charge/ Employer/ PMC/ TPIA to insist upon strict performance hereof or of any of its rights or remedies as to any such services regardless when received or accepted, nor shall any purported oral modification or rescission of this Order by Engineer-in-Charge operate as a waiver of the terms hereof.

#### **12.0 Cancellation/ Determination of Contract in Full or Part**

- 12.1** Subject to other provisions contained in this clause, the Engineer-in-Charge may, without prejudice to his any other rights or remedy against the Contractor in respect of any delay, or not following safety norms, inferior workmanship, any claims for damages and/ or any other provisions of this contract or otherwise, and whether the date of completion has or has not elapsed, by notice in writing, absolutely determine the contract in any of the following cases:

- (i) If the Contractor having been given a notice in writing by the Engineer-in-Charge to rectify, reconstruct or replace any defective work or that the work is being performed in an inefficient or otherwise improper or in a manner of unacceptable and poor workmanship, does not comply with the requirement of such notice for a period of 15 days thereafter; or
- (ii) If the Contractor has, without reasonable cause, suspended the progress of the work or has failed to proceed with the work with due diligence so that in the opinion of the Engineer-in-Charge (which shall be final and binding) he will be unable to secure completion of the work by the scheduled date for completion and continues to do so after a notice in writing of 15 days from the Engineer-in-Charge; or
- (iii) If the Contractor fails to complete the work within the stipulated date or items of work/ achieve the milestones with individual dates of

completion, if any stipulated, on or before the stipulated date; and does not complete them within the period specified in a notice given in writing by the Engineer-in-Charge: or

- (iv) If the Contractor persistently neglects to carry out his obligations under the contract and/ or commits default in complying with any of the terms and conditions of the contract and does not remedy it or take effective steps to remedy it within 15 days after a notice in writing is given to him in that behalf by the Engineer-in-Charge; or
- (v) If the Contractor shall offer or give or agree to give to any person in Employer's/ PMC/ TPIA service or to any other person on his behalf, any gift or consideration or make a promise of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any action in relation to the obtaining or execution of this or any other contract for the Employer/ PMC/ TPIA; or
- (vi) If the Contractor being an individual, or if a firm, any partner thereof shall at any time be adjudged insolvent or have a receiving order or order for administration of his estate made against him or shall take any proceedings for liquidation or composition (other than a voluntary liquidation for the purpose of amalgamation or reconstruction) under any Insolvency law for the time being in force or make any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors or purport to do so, or if any application be made under any Insolvency law for the time being in force for the sequestration of his estate or if a trust deed be executed by him for benefit of his creditors;
- (vii) If the Contractor, being a company, shall pass a resolution or the Court shall make an order that the company shall be wound up or if a receiver or a manager on behalf of a creditor shall be appointed or if circumstances shall arise which entitle the Court or the creditor to appoint a receiver or a manager or which entitle the Court to make a winding up order;
- (viii) If the Contractor assigns (excluding part(s) of work assigned to other agency(s) by the Contractor as per terms of contract), transfers, sublets (engagement of labour on a piece-work basis or of labour with materials not to be incorporated in the work, shall not be deemed to be subletting) or otherwise parts with or attempts to assign, transfer, sublet or otherwise parts with the entire works or any portion thereof without the prior written approval of the Engineer -in-Charge with reference to the General Conditions of Contract.

**12.2** When the contractor has made himself liable for action under any of the cases aforesaid, the Engineer-in-Charge, without prejudice to any other right or remedy which shall have accrued or shall accrue hereafter to the



Employer/ PMC, by a notice in writing to cancel the contract as a whole or only such items of work in default from the contract, shall have the powers to:

- (i) Determine or rescind the contract as aforesaid in full or in part (of which termination or rescission notice in writing to the Contractor under the hand of the Engineer-in-Charge shall be conclusive evidence) and get the same executed at the risk & cost of the Contractor. Upon such determination or rescission, Security Deposit already recovered, Security deposit payable and Performance Guarantee under the contract shall be liable to be forfeited and shall be absolutely at the disposal of Engineer-in-Charge and unused materials, construction plants, implements, temporary buildings, etc. shall be taken over by Engineer-in-Charge and shall be absolutely at the disposal of the Engineer-in-Charge.
- (ii) After giving notice to the contractor to measure up the work of the contractor and to take such whole, or the balance or part thereof as shall be un-executed or delayed with reference to the General Conditions of Contract clause no. 24.0 and/ or relevant clause of Special Conditions of Contract, out of his hands and to give it to another contractor to complete.

**Notes:**

- (i) The Contractor, whose contract is determined as above, shall not be allowed to participate in the tendering process for the balance work including any new items needed to complete the work.
  - (ii) In the event of the Engineer-in-Charge taking recourse to the above, the Contractor shall have no claim to Penalty for any loss sustained by him by reasons of his having purchased or procured any materials or entered into any engagements or made any advances on account of or with a view to the execution of the work or the performance of the contract; and
  - (iii) In case action is taken under any of the provisions aforesaid, the Contractor shall not be entitled to recover or be paid any sum for any work thereof or performed under this contract unless and until the Engineer-in-Charge has certified in writing the performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value so certified.
- 12.3 Any sums in excess of the amounts due to Employer and unsold materials, constructional plant etc. shall be returned to the Contractor, provided always that if the cost or anticipated cost of completion of the works or part of the works by Employer/ PMC/ TPIA is less than the amount which the Contractor would have been paid if he had completed the works or part of the works, such benefit shall not accrue to the Contractor.
- 12.4 In the event of anyone or more of the above courses being adopted by the Engineer-in-Charge, the Contractor shall have no claim towards Penalty for any loss sustained by him by reasons of his having purchased or procured any

materials or entered into any engagements or made any advances on such account or with a view to the execution of the work or the performance of the contract. In case action is taken under any of the aforesaid provisions, the Contractor shall not be entitled to recover or be paid any sum for any work thereof or actually performed under this contract unless and until the Engineer-in-Charge has certified in writing the performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value so certified.

- 12.5 In case, the work cannot be started due to reasons not within the control of the Contractor within 1/8th of the stipulated time or two months for completion of work, whichever is lower, either party may close the contract by giving notice to the other party stating the reasons. In such an eventuality, the Performance Guarantee of the Contractor shall be refunded within following time limits:

(i)	If the Tendered value of work is up to Rs. 1.00 Crore	15 days
(ii)	If the Tendered value of work is more than Rs. 1 Crore and up to Rs. 10 Crore	21 days
(iii)	If the Tendered value of work exceeds Rs. 10 Crore	30 days

Neither party shall claim any compensation for such eventuality. This clause is not applicable for any breach of the contract by either party.

### **13.0 Contractor liable to pay Compensation even if action not taken under clause 12.0**

In a case where any of the powers conferred upon the Engineer-in-Charge shall have become exercisable under the relevant clause of the Contract, and the same are not exercised, the non-exercise thereof shall not constitute an ipso facto waiver of any of the conditions hereof. Such powers shall be exercisable in the event of any future case of default by the Contractor and the liability of the Contractor for Penalty shall remain unaffected. In the event of the Engineer-in-Charge putting in force all or any of the powers vested in him under any clause, he may, if he so decides, after giving a notice in writing to the Contractor, take possession of (or at the sole discretion of the Engineer-in-Charge, which shall be final and binding on the Contractor), use as on hire (the amount of the hire money being also in the final determination of the Engineer-in-Charge) all or any tools, plant, materials and stores, in or upon the works, or the site thereof belonging to the contractor, or procured by the contractor and intended to be used for the execution of the work/ or any part thereof, paying or allowing for the same in account at the contract rates, or in the case of these not being applicable, at current market rates to be certified by the Engineer-in-Charge, whose certificate thereof shall be final and binding on the contractor and/or direct the contractor, clerk of the works, foreman or other authorized agent to remove such tools, plant, materials, or stores from the premises (within a time to be specified in such notice) in

the event of the contractor failing to comply with any such requisition, the Engineer-in-Charge may remove them at the contractor's expense or sell them by auction or private sale on account of the contractor and his risk in all respects and the certificate of the Engineer-in-Charge as to the expenses of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the contractor.

#### **14.0 Carrying out part work at the risk & cost of the Contractor**

##### **14.1 If the Contractor:**

- (i) At any time makes default during currency of work or does not execute any part of the work with due diligence and continues to do so even after receiving a notice in writing of 15 days in this respect from the Engineer-in-charge: or
- (ii) Commits default in complying with any of the terms and conditions of the contract and does not remedy it or takes effective steps to remedy it within 15 days even after a notice in writing is given in that behalf by the Engineer-in-Charge; or
- (iii) Fails to complete the work(s) or items of work with individual dates of completion, on or before the date(s) so determined, and does not complete them within the period specified in the notice given in writing in that behalf by the Engineer-in-Charge;

The Engineer-in-Charge, without invoking action under clause 12.0 of the contract may, without prejudice to any other right or remedy against the Contractor, which have either accrued or accrue thereafter to Employer/PMC, by a notice in writing to take the part work/ part incomplete work of any item(s) out of his hands and shall have the powers to:

- (a) Take possession of the site and any materials, constructional plant, implements, stores, etc. thereon; and/or
- (b) Carry out the part work/ part incomplete work of any item(s) by any means at the risk and cost of the Contractor.

The Engineer-in-Charge shall determine the amount recoverable from the Contractor, if any, for completion of the part work/ part of any incomplete work and execute the same at the risk and cost of the Contractor. The liability of the Contractor on account of loss or damage suffered by the Employer because of action under this clause shall not exceed 10% of the tendered value of the work.

In determining the amount, credit shall be given to the Contractor for the value of work done in all respects in the same manner and at the same rate as if it had been carried out by the Contractor under the terms of his contract, the value of Contractor's materials taken over and incorporated in the work and use of plant and machinery belonging to the Contractor. The certificate of the Engineer-in-Charge as to the value of work done shall be final

and binding on the Contractor provided that action under this clause shall be taken only after giving notice in writing to the Contractor. Provided also that if the expenses incurred by the Employer are less than the amount payable to the Contractor at his agreement rates, the difference shall not be payable to the Contractor.

- 14.2 Any excess expenditure incurred or to be incurred by the Employer in completing the part work/ part incomplete work of any item(s) or the excess loss of damages suffered or may be suffered by the Employer as aforesaid after allowing such credit, shall without prejudice to any other right or remedy available to the Employer in law or as per agreement, be recovered from any money due to the Contractor on any account, and if such money is insufficient, the Contractor shall be called upon in writing and shall be liable to pay the same within 30 days.

If the Contractor fails to pay the required sum within the aforesaid period of 30 days, the Engineer-in-Charge shall have the right to sell any or all of the Contractors' unused materials, constructional plant, implements, temporary building at site etc. and adjust the proceeds of sale thereof towards the dues recoverable from the Contractor under the contract and if thereafter there remains any balance outstanding, it shall be recovered from the Contractor in accordance with the provisions of the contract.

In the event of above course being taken by the Engineer-in-Charge, the Contractor shall have no claim to compensation for any loss suffered by him by reason of his having purchased or procured any materials or entered into any engagements or made any advance on any account or with a view to the execution of the work or the performance of the contract.

## **15.0 Suspension of Works**

- (i) The Contractor shall, on receipt of the order in writing of the Engineer-in-charge (whose decision shall be final and binding on the Contractor), suspend the progress of the works or any part thereof for such time and in such manner as the Engineer-in-charge may consider necessary for any of the following reasons:
  - (a) On account of any default on part of the Contractor, or
  - (b) For proper execution of the works or part thereof for reason other than the default of the Contractor, or
  - (c) For safety of the works or part thereof.
- (ii) The Contractor shall, during such suspension, properly protect and secure the works to the extent necessary and carry out the instructions given in that behalf by the Engineer-in-charge.
- (iii) If the suspension is ordered for reasons (b) and (c) in sub-Para (i) above.

- (a) The Contractor shall be entitled to an extension of time equal to the period of every such suspension PLUS 25%, for completion period. No adjustment in contract price will be allowed for reasons of such suspension.
- (b) In the event of the Contractor treating the suspension as an abandonment of the Contract by Employer, he shall have no claim to payment of any Penalty on account of any profit, loss of profit or advantage, which he may have derived from the execution of the work in full.

#### **16.0 Termination of Contract on Death of the Contractor**

Without prejudice to any of the rights or remedies under this contract, if the Contractor dies, the Engineer-in-Charge shall have the option of terminating the contract without any Penalty to the Contractor.

#### **17.0 Time & Extension for Delay**

**17.1** The time allowed for execution of the Works as specified or the extended time in accordance with the conditions as per this clause shall be the essence of the Contract. The execution of the work shall commence from the 15<sup>th</sup> day of issue of LoA or from the date of handing over of the site, notified by the Engineer-in-Charge, whichever is later. If the Contractor commits default in commencing the execution of the work as aforesaid, the performance guarantee shall be forfeited by the Engineer-in-Charge and shall be absolutely at the disposal of the Engineer-in-Charge without prejudice to any other right or remedy available in law.

**17.2** As soon as possible but within 10 days of award of work:

- (i) The Contractor shall submit a Time and Progress Chart for each milestone as per the format required by the engineer-in-charge. The Engineer-in-Charge may, if required, within 30 (Thirty) days thereafter modify, and communicate the approved program to the Contractor, failing which the program submitted by the Contractor shall be deemed to be approved by the Engineer-in-Charge. The work programme shall include details of drawings and decisions required to complete the contract with specific dates by which these details are required by the Contractor without causing any delay in execution of the work. The Chart shall be prepared in direct relation to the time stated in the Contract documents for completion of items of the works. It shall indicate the forecast of the dates of commencement and completion of various activities of the work and may be amended as necessary by agreement between the Engineer-in-Charge and the Contractor within the overall limitations of time imposed in the Contract documents.
- (ii) In case of non-submission of construction programme by the Contractor, the program approved by the Engineer-in-Charge shall be deemed to be final.
- (iii) The approval by the Engineer-in-Charge of such programme shall not relieve

the Contractor of any of the obligations under the contract.

- (iv) The Contractor shall submit the Time and Progress Chart using the mutually agreed software or in other format decided by Engineer-in-Charge for the work done during the previous month to the engineer in charge on or before the 7<sup>th</sup> day of each month with S curves of the proposed planning vs actual execution progress.

**17.3 If the work(s) be delayed by -**

- (i) force majeure; or
- (ii) abnormally bad weather; or
- (iii) serious loss or damage by fire; or
- (iv) civil commotion, local commotion of workmen, strike or lockout, affecting any of the trades employed on the work; or
- (v) delay on the part of other Contractors or tradesmen engaged by Engineer-in-Charge in executing work not forming part of the Contract; or
- (vi) any other cause like above which, in the reasoned opinion of the Engineer-in-Charge is beyond the Contractor's control;

then upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the Engineer-in-Charge but shall nevertheless constantly use his best endeavours to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-in-Charge to proceed with the works.

The Contractor shall have no claim of damages for extension of time granted or rescheduling of milestone/s for events listed in above sub clauses and he shall update the progress schedule reports submitted at above Clause for all such delays once they are approved by the engineer in charge based on the contractor submittals as defined in Clause below.

- 17.4** In case the work is hindered by the Employer for any reason/event, for which the Employer is responsible, the Engineer-in-Charge shall, if justified, give a fair and reasonable extension of time and reschedule the milestones for completion of work. Such extension of time or rescheduling of milestone/s shall be without prejudice to any other right or remedy of the parties in contract or in law. Provided further that for concurrent delays under this clause and sub clause 17.3 to the extent the delay is covered under sub clause 17.3, the Contractor shall be entitled to only extension of time and no damages and/or claims on this account.

- 17.5** Request for rescheduling of Milestones or extension of time, to be eligible for consideration, shall be made by the Contractor in writing within ten days of the happening of the event causing delay. The Contractor shall indicate in such a request the period by which rescheduling of milestone/s or extension of time is

required.

- 17.6** In case the work is delayed by the Contractor for any reasons, in the opinion of the Engineer-in-Charge, beyond the events mentioned in clause 17.3 or clause 17.4 and beyond the justified extended date, without prejudice to the right to take action, the Engineer-in-Charge may grant extension of time required for completion of work without rescheduling of the milestones. The Contractor shall be liable for levy of Penalty for delay for such extension of time.

**18.0 Time Schedule & Progress**

- 18.0** Time allowed for carrying out all the works as entered in the tender shall be as mentioned in the "GENERAL DETAILS (Annexure-I)" which shall be reckoned from the 15<sup>th</sup> day from the date on which the letter of Award is issued to the Contractor. Time shall be the essence of the contract and contractor shall ensure the completion of the entire work within the stipulated time of completion.
- 18.1** The contractor shall also furnish within 15<sup>th</sup> days of date of issue of letter of Award a CPM network/ PERT chart/ Bar Chart for completion of work within stipulated time. This will be duly got approved from the Engineer-in-Charge. This approved Network/ PERT Chart shall form a part of the agreement. Achievement of milestones as well as total completion has to be within the time period allowed.
- 18.2** Contractor shall mobilize and employ sufficient resources for completion of all the works as indicated in the agreed BAR CHART/PERT Network. No additional payment will be made to the contractor for any multiple shift work or other incentive methods contemplated by him in his work schedule even though the time schedule is approved by the Engineer-in-Charge.
- 18.3** During the currency of the work the contractor is expected to adhere to the time schedule on milestone and total completion and this adherence will be a part of Contractor's performance under the contract. During the execution of the work contractor is expected to participate in the review and updating of the Network/BAR CHART undertaken by the Engineer-in-Charge. These reviews may be undertaken at the discretion of Engineer-in-charge either as a periodical appraisal measure or when the quantum of work order on the contractor is substantially changed through deviation orders or amendments. The review shall be held at site or any of the offices of Employer/PMC at the sole discretion of Engineer-in-Charge. The contractor will adhere to the revised schedule thereafter. The approval to the revised schedule resulting in a completion date beyond the stipulated date of completion shall not automatically amount to a grant of extension of time to the contractor.
- 18.4** Contractor shall submit (as directed by Engineer-in-Charge) progress reports on a computer-based program (program and software to be approved by Engineer-in-Charge) highlighting status of various activities and physical completion of work. The contractor shall send completion report with as built

drawings to the office of Engineer-in-Charge, in writing within a period of 30 days of completion of work.

- 18.5** At least 10 Nos dated photographs of the project taken on last day of every month indicating progress of work (in soft copies) shall be attached along with the physical progress reports to be submitted to Engineer-in-charge
- 18.6** The defined timelines for documents to be submitted post-award, though mentioned at various other places, are summarised as under:

<b>Sr. No.</b>	<b>Document Title</b>	<b>From issue of Letter of Award (On or before)</b>
1	Time & Progress Chart for each mile-stone	10 days
2	Date of Commencement of Work	15 <sup>th</sup> day
3	Details of Contractor's Authorised Representative taking instructions from Engineer-in-charge	15 days
4	<u>Updated</u> Overall Project Schedule	15 days
5	CPM network/ PERT chart/ Bar Chart for completion of work within stipulated time	15 days
6	Submission of Irrevocable Performance Bank Guarantee (5% of tendered amount)	15 days
7	Quality Assurance Programme/ Plan	30 days
8	Detailed contract coordination procedure	30 days
9	Site organizational chart and individual personnel resume, including details of experience of the Project-in-Charge and other staff proposed to be deployed by him	30 days
10	Insurance Policies	30 days

**Notes: Document Review and Submission Cycle**

- (i) Post submission of the document by the Contractor, the Engineer-in-charge/ PMC-TPIA will review and provide comments/approval within fourteen (14) days of the receipt of respective documents.
- (ii) The contractor shall re-submit the documents (incorporating comments) within Five (5) days of receipt of the comments, for review/approval.
- (iii) The Engineer-in-charge/PMC-TPIA will be reviewing the same and providing comment s/approval within seven (7) days of the receipt of revised/updated document. The defined cycle will be followed till all the project requirements are complied with by the contractor and document is approved.



## **19.0 Taxes and Duties**

**19.1** The contract price is inclusive of all taxes, duties, cesses, fees, charges, interest/ late fees, incidental expenses, and statutory levies payable under any law (as applicable on the date of submission of bid) by the Contractor in connection with execution of the contract) but excluding the GST as applicable. The contract price shall be adjusted for any increase/ decrease in the rate of GST on works contract as notified by Government of India, from time to time..

**19.2** Notwithstanding anything contained in clause 19.1, the Contractor shall ensure payment of applicable taxes on the supplies made under the contract. The Contractor shall take registration under the applicable enactment levying tax on supply of goods or services under the contract and issue invoices having all the particulars prescribed under the applicable provisions of law, including description of goods/services, rate and amount of tax paid or payable on the supplies made under the contract, so that the Employer can avail credit of such tax, wherever applicable. The Contractor shall comply with all applicable provisions of Goods and Service Tax (GST) levied by Union Government and State Governments/ Union Territories (CGST, UTGST, SGST and IGST). The Contractor shall get himself registered and discharge his obligations for payment of taxes, filing of returns on time etc. under the appropriate provisions of law in respect of all the taxes, duties, levies, cess, etc. The Employer would have the right to seek necessary evidence that the Contractor is registered under the law and duly discharging its obligations under the tax laws, enabling the Employer to avail input tax credit, wherever admissible.

Whenever any GST, interest, penalty, late fees etc. is payable by the Employer on reversal of Input Tax Credit (ITC) or through cash payment under GST Act or rules due to default on Contractor's part, such as, non-filing/ late filing of GST returns, non-payment/ late payment of GST liabilities, delay in issue of invoices or non-appearance of GST invoice on the GST portal within the prescribed period, then in such an eventuality, the amount of GST, interest, penalty, late fees, if any, liable to be paid by the Employer under the said contract shall be borne by the Contractor and shall be recoverable from him.

**19.3** In case the Contractor does not deposit the tax payable on execution of the contract, or has not provided the tax invoice to the Employer showing the amount of tax, or has not uploaded the document in computerized tax network as per prevailing law, leading to non-availability of inputs credit of the tax to Employer, the amount equivalent to such tax shall be retained or withheld from the subsequent RA Bill or payment to be made to the contractor on any account by the Employer till such time that the contractor ensures availability of input credit of the tax to the Employer.

**19.4** The Contractor will be under obligation for charging correct rate of tax as prescribed under the respective tax laws from time to time during the entire duration of the contract. Further, the contractor shall avail and pass on benefits

of all exemptions/concessions available under the tax laws to the Employer.

- 19.5** The Contractor will ensure its registration with the respective tax authorities and submit self-attested copy of such registration certificates to the Employer within 30 days of the award of LOA. The Contractor will be responsible for procurement of material on its own registration (GSTIN) and also to issue/ arrange its own Road Permit/ E-way Bill, if applicable, and comply with the statutory laws of the concerned state.
- 19.6** Any error of interpretation of applicability of taxes/ duties by the Contractor shall be to the Contractor's account. The classification of Goods & Services as per GST Act and charging of correct rate of tax as prescribed under the respective tax laws should be correctly done by the Contractor to ensure that input credit benefit is not lost to the Employer on account of any error on the part of the Contractor or its sub-contractor/vendor. The contractor must ensure that Employer is not subjected to any additional liability towards payment of applicable taxes & duties as a result of wrong classification, valuation, assessment/ interpretation of applicable taxes & duties by the Contractor and the contractor will reimburse all losses on this account to the Employer (if any).
- 19.7** GST shall be applicable on all advance payments as per GST Act, Rules and relevant notifications thereunder.
- 19.8** Stamp duty and registration charges, if any, under Income Tax/ GST Act, payable towards the execution of any and all contract documents/agreements, shall be borne by the Contractor.
- 19.9** Tax deduction at source (TDS), if any, under Income Tax/ GST Act, shall be made by the Employer as per law applicable from time to time, from the amount payable to the Contractor.
- 19.10** Statutory variations on IGST/ CGST/ SGST/ UTGST (included in quoted prices) in case of imported materials from outside India in Contractor's name (i.e. for Indian Bidders) shall be to the Contractor's account.

**19.11 New Taxes & Duties**

All new taxes, duties, cess, levies notified or imposed after the due date of submission of last/ final price bid before the contractual date of completion of work (including extended contractual completion period for the reasons attributable to the Employer or due to Force Majeure condition), shall be to the Employer's account. These shall be reimbursed against documentary evidence. In case of reduction/elimination of taxes, the necessary credit shall be given to the Employer. However, in case of delays attributable to the Contractor, any new or additional taxes and duties imposed after the Scheduled Completion Date, as above, shall be to the Contractor's account.

**19.12 Any Other Taxes Duties and Levies**

- (i) Except as hereinabove specified, the Contractor shall be liable for and shall pay

all fees, cesses, taxes, duties and levies assessable against the Contractor in respect of or pursuant to the Contract. If any legal/ departmental proceedings are initiated against the Contractor for short levy or non-levy of taxes, he shall be fully responsible to defend the same at his own.

- (ii) In addition, the Contractor shall be responsible for payment of all duties, levies, and taxes assessable against the Contractor or Contractor's employees or Sub-Contractor's whether corporate or personal as applicable in respect of property.
- (iii) The Contractor shall accept sole liability for the payment of any and all taxes, duties, cesses and levies, as are payable to any government, local or statutory authority in any country other than India as are now in force or as are hereinafter imposed, increased or modified and as are payable by the Contractor, his agents, Sub-Contractors and Suppliers and its/their respective employees for or in relation to the performance of this Contract. The Contractor shall be deemed to have been fully informed with respect to all such liabilities and shall be deemed to have considered and included the same in his bid. The quoted Price shall not be varied in any manner on this account.

## **20.0 Tax Deduction at Source**

### **20.1 Income Tax Deduction (TDS)**

Income tax deductions shall be made from all payments made to the Contractor including advances, in respect of the work/ project undertaken by the Contractor, in accordance with the provisions of the Income Tax Act and Rules made thereunder prevailing and in force from time to time.

### **20.2 TDS under GST**

TDS under GST, if applicable, shall be deducted from Contractor's bill at applicable rate and a certificate as per rules for tax so deducted shall be provided to the Contractor.

The Contractor shall be solely responsible and liable to deduct TDS, if applicable, from the sub-Contractors/ sub-vendors and remit the same to the Government within the due date, as per applicable laws.

### **20.3 Income Tax & Corporate Tax**

- (i) The Contractor shall be solely responsible and liable to pay all Direct Taxes including income tax, profession tax and wealth tax on any payments arising out of the Contract, whether payable in India or in any other jurisdiction.
- (ii) The Contractor shall be responsible for ensuring compliance with all provisions of the Direct Tax laws of India including, but not limited to, the filing of appropriate Returns and shall promptly provide all information required by the Employer for discharging any of its responsibilities under such laws in relation to or arising out of the Contract.

- (iii) The Contractor shall indemnify the Employer against any and all liabilities or claims arising out of this contract for such taxes including interest and penalty which any tax authority may assess or levy on the Employer or its representatives.
- (iv) Tax shall be deducted at source by the Employer from all sums due to an Indian tax resident Contractor in accordance with the provisions of Indian Income Tax Act/ Rules as in force at the relevant point of time.
- (v) Corporate Tax Liability pertaining to contractor's work, if any, shall be to the Contractor's account.

**20.4** Employer shall issue a Tax Deduction Certificate to the Contractor evidencing the Tax deducted or withheld and deposited by the Employer on payments made to the Contractor to enable the Contractor to claim the credit of the Tax deducted by the Employer.

## **20.5 Construction Workers' Cess / Labour Cess**

- (i) The Contractor shall comply with the Building and Other Construction Workers' Welfare Cess Act, 1996, the Building and Other Construction Workers' (Regulation of Employment and Condition of Service) Central Rules, 1998 and the Building and Other Construction Workers' Welfare Cess Rules, 1998.
- (ii) Prices quoted by the bidder shall be deemed to be inclusive of construction workers cess/ labour cess.
- (iii) Cess as per the prevailing rate, shall be deducted at source from the bills of the Contractor and remitted to the "Secretary, Building and Other Construction Workers Welfare Board" of the concerned State by the Employer as per regulations. The Contractor shall be responsible to submit final assessment return of the cess amount to the assessing officer after adjusting the cess deducted at source.

## **21.0 Royalty and other costs on Materials**

The cost of procurement of materials required for construction, including the Royalty, Cess, Toll, Octroi, if applicable for procurement/ supply of materials such as bajri, stone, kankar, sand, ordinary earth and other materials etc. shall be deemed to be included in the quoted rates and nothing additional would be payable on this account.

## **22.0 Insurance of Works etc.**

**22.1** Contractor is required to take 'Contractor's All Risk Policy' or 'Erection All Risk Policy', as the case may be, before start of work from an approved insurance company in the joint name with first name of Employer and bear all costs towards the same for the full period of execution of works for the full amount of

contract against all loss of damage from whatever cause arising other than excepted risks for which he is responsible under the terms of the contract and in such manner that the Employer and his authorized representatives and the Contractor are covered during the period of construction of works for loss or damage in respect of:

- (i) The work and the temporary works to the full value of such works.
- (ii) The materials, constructional plant, centring, shuttering and scaffolding materials and other things brought to the site for their full value.

The Contractor is required to submit the original policy document and the receipt for payment of the current premium to the Employer.

## **22.2 Insurance under Workmen Compensation Act**

- (i) Contractor is required to take insurance cover under the Workman Compensation Act, 1923 amended from time to time from an approved insurance company and pay premium charges thereof.
- (ii) The Contractor is required to submit the original policy document and the receipt for payment of the current premium to Employer.

## **22.3 Third Party Insurance**

- (i) Contractor is required to take third party insurance cover for an amount of 5% (five per cent) of contract value from an approved insurance company for insurance against any damage, injury or loss which may occur to any person or property including that of Employer, arising out of the execution of works or temporary works.
- (ii) The Contractor is required to submit the original policy document and the receipt for payment of the current premium to Employer.
- (iii) Engineer-in-charge to ensure that Insurance policies are submitted by the Contractor within 30 days from the date of issue of LOA. In case of failure of the Contractor to obtain Contractors All Risk Policy, insurance under Workman Compensation Act and third-party insurance as described above, Employer reserves the right of forfeiture of the Performance Bank Guarantee.
- (iv) If the Contractor could not effect a comprehensive insurance cover against risks which he may be required to effect under the terms of the contract, then he shall give his attention and even in case to get the best insurance cover available of effecting a wider insurance cover than the one which the subsidiary of the General Insurance Company could offer, such an insurance is ought to be done after the Employer's approval, by or through the subsidiary of the General Insurance Company.

## **22.4 The Contractor shall at all times indemnify the Employer against all claims,**

damages or compensation under the provision of Payment of Wages Act 1936, Minimum Wages Act 1948, Employer's Liability Act 1938, the Workmen's Compensation Act 1947, Industrial Disputes Act 1947 and Maternity Benefit Act 1961 or any modifications thereof or any other law in force or as a consequence of any accident or injury to any workman or other persons in or about the works, whether in the employment of the Contractor or not, against all costs, charges and expenses of any suit, action or proceedings arising out of such incident or injury and against all sum or sums which may, with the consent of the Contractor, be paid to compromise or compound any such claim. Without limiting his obligations and liabilities as above provided, the Contractor shall insure against all claims, damages or compensation payable under the Workmen's Compensation Act 1923 or any modification thereof or any other law relating thereto.

### **23.0 Payments**

**23.1** All running payments shall be regarded as payments by way of advance against the final payment only and not as payments for work actually done and completed and/or accepted by Engineer-in-Charge and shall not preclude the recovery for bad, unsound and imperfect or unskilled work to be removed and reconstructed or re-erected. The final bill shall be submitted by the Contractor within three months of the completion of work otherwise Engineer-in-Charge's certificate of the total measurement shall be binding on the Contractor.

- (i) Intermittent progress Photographs, as and when required, shall also be provided by the Contractor at his own cost as per the direction of Engineer-in-Charge. No payment of running account bill shall be released unless it is accompanied by photographs, Monthly Progress Report and tax invoices as stated above.
- (ii) It may be noted that GST shall be recoverable as extra on all applicable recoveries e.g. Workmen recovery, compensation etc. made from the bills of Contractor.
- (iii) The Running Bills will be submitted by the Contractor (in 4 copies), complete in all respects, on a monthly basis. The Engineer-in-Charge shall process and verify the same within 15 days of submission of the bill, complete in all respects, who shall then forward the same with his certification to the Employer. The Employer will make every effort to process the payment thereof within 15 days of receipt of the certified bill from the Engineer-in-Charge.
- (iv) All payments shall be released by way of e-transfer through RTGS in India directly to their Bank account by the Employer.
- (v) No Running Account Bill shall be paid for the work till the labour licenses, registration with EPFO, ESIC and BOCW Welfare Board, whatever applicable, is submitted by the Contractor to the Engineer-in-

Charge/Employer.

### **23.2 Payment of Final Bill**

- (i) The final bill shall be submitted by the Contractor in the same manner as specified in the interim bills/ running bills within three months of physical completion of the work or within one month of the date of the final certificate of completion furnished by the Engineer-in-Charge, whichever is earlier.
- (ii) No further claims shall be made by the Contractor after submission of the final bill and these shall be deemed to have been waived and extinguished. Payments of those items of the bill in respect of which there is no dispute for quantities and rates, as approved by Engineer-in-Charge, will, as far as possible be made within 3 months of submission of final bill. As regards the disputed items, the payment to the extent of amount considered reasonable/ acceptable to the Engineer-in-Charge shall be made along with the payment of undisputed items. However, the payment in respect of the remaining claim shall be resolved and paid as per the provisions in Clause.83

### **23.3 Opening of Designated Bank Account for the Project**

- (i) The Contractor shall maintain a separate bank account with a Scheduled Bank for the purpose of receiving all payments under the Contract and for utilization of payments received from the Employer for disbursement to sub-Contractors, sub-vendors, PRW's, suppliers etc. for this contract. The Contractor shall maintain separate Books of Account for all payments under this contract and the Engineer-in-Charge shall have access to it at all times.

### **24.0 Measurements of Works**

- (i) Engineer-in-charge shall, except as otherwise provided, ascertain and determine by measurement, the value of work done in accordance with the contract. Except where any general or detailed description of the work expressly shows to the contrary, measurement shall be taken in accordance with the procedure set forth in the CPWD Specifications. In the case of items, which are not covered by specifications, mode of measurement as specified in the Technical Specifications of the contract, and if for any item no such technical specification is available, then a relevant standard method of measurement issued by the Bureau of Indian Standard shall be followed.
- (ii) Provided further that, in case of Cancellation/ Determination of Contract in Full or in Part in accordance with clause 12.0 (and its sub-clauses), following methodology shall be adopted in respect of measurements in addition to what has been mentioned in foregoing:
  - (a) All measurements and levels shall be taken jointly by the Engineer-

in- Charge or his authorized representative and by the Contractor or his authorized representative from time to time during the progress of the work and such measurements shall be signed and dated by the Engineer-in-Charge and the Contractor or their representatives as token of their acceptance. If the Contractor objects to any of the measurements recorded, a note shall be made to that effect with reason and signed by Engineer-in-Charge & the Contractor.

- (b) If for any reason, the Contractor or his authorized representative is not available and the work of recording measurements is suspended by the Engineer-in-Charge or his representative, the Engineer-in-Charge shall not entertain any claim from Contractor for any loss or damages on this account. If the Contractor or his authorized representative does not remain present at the time of such measurements after the Contractor or his authorized representative has been given a notice in writing three (3) days in advance or fails to countersign or to record objection within a week from the date of the measurement, then such measurements recorded in his absence by the Engineer-in-Charge or his representative shall be deemed to be accepted by the Contractor.
- (c) The Contractor shall, without any extra charge, provide all assistance with every appliance, equipment, scaffolding, labour and any other things necessary for recording the measurements.

## **25.0 Computerised Measurement Books**

- (i) Engineer-in-Charge shall, except as otherwise provided, ascertain and determine by measurement the value of work done in accordance with the contract. All measurements of all items having financial value shall be entered by the Contractor and compiled in the shape of the Computerized Measurement Book as per the format provided by Engineer-in-Charge so that a complete record is obtained of all the items of works performed under the contract. All such measurements and levels recorded by the Contractor or his authorized representative from time to time, during the progress of the work, shall be got checked by the Contractor from the Engineer-in-Charge or his authorized representative as per interval or program fixed in consultation with Engineer-in-Charge or his authorized representative.
- (ii) After the necessary corrections made by the Engineer-in-Charge, the measurement sheets shall be returned to the Contractor for incorporating the corrections, and for resubmission to the Engineer-in-charge for the dated signatures by the Engineer-in-Charge and the Contractor or their representatives in token of their acceptance.
- (iii) Whenever a Running Account bill is due for payment, the Contractor would initially submit draft computerized measurement sheets and these measurements would be got checked/ test- checked from the Engineer-in-



Charge and/or his authorized representative. The Contractor will, thereafter, incorporate such changes as may be done during these checks/ test checks in his draft computerized measurements, and submit it to Engineer-In-Charge in both Soft and Hard copies.

- (iv) All the required documents viz. measurement sheets, summary of quality test reports, ESIC/EPF challans, Tax invoice, theoretical v/s actual consumption of material (as required by Engineer-in-Charge) etc. shall also be submitted along with the RA bill in both soft and hard copies.
- (v) The Contractor shall give not less than seven days' notice to the Engineer-in-Charge or his authorized representative before covering up or otherwise placing beyond the reach of checking and/or test checking the measurement of any work. The Contractor shall not cover up and place beyond reach of measurement any work without consent of the Engineer-in-Charge or his authorized representative in writing in order to ensure the proper checking and measurement thereof. The Engineer-in-Charge or his authorized representative shall within the aforesaid period of seven days inspect the work, and if any work is found to be covered up or placed beyond the reach of checking and/or test checking measurements without such notice having been given or the Engineer-in-Charge's consent being obtained in writing, the same shall be uncovered at the Contractor's expense, or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.
- (vi) It is also a term of this contract that checking and/or test checking the measurements of any item(s) of work in the Measurement Book and/or its payment in the interim, on account of final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates nor shall it relieve the Contractor from liabilities from any over measurement or defects noticed till the final completion of the work and certification thereof.

## **26.0 Withholding & Lien In Respect of Sums Due From Contractor**

- (i) Whenever any claim or claims for payment of a sum of money arises out of or under the contract or against the Contractor, Employer shall be entitled to withhold and also have a lien to retain such sum or sums in whole or in part from the Security Deposit by the Contractor and for the purpose aforesaid, Employer shall be entitled to withhold the security deposit, if any, furnished as the case may be and also have a lien over the same pending finalization or adjudication of any such claim. In the event of the security being insufficient to cover the claimed amount or amounts or if no security has been taken from the Contractor, Employer shall be entitled to withhold and have a lien to retain to the extent of such claimed amount or amounts referred to above, from any sum or sums found payable or which may at any time thereafter become payable to the Contractor under the same contract or any other contract pending

finalization of adjudication of any such claim.

- (ii) It is an agreed term of the contract that the sum of money or moneys so withheld or retained under the lien referred to above by the Engineer-in-Charge or Employer will be kept withheld or retained till the claim arising out of or under the contract is determined by the competent authority and that the Contractor will have no claim for interest or damages whatsoever on any account in respect of such withholding or retention under the lien referred to above and duly notified as such to the Contractor. For the purpose of this clause, where the Contractor is a partnership firm or a limited company, the Engineer-in-Charge or the Employer shall be entitled to withhold and also have a lien to retain towards such claimed amount or amounts in whole or in part from any sum found payable to any partner/ limited company, be whether in his individual capacity or otherwise, as the case may be. Employer shall have the right to cause an audit and technical examination of the works and the final bills of the Contractor including all supporting vouchers, abstract etc. to be made after payment of the final bill and if as a result of such audit and technical examination any sum is found to have been overpaid in respect of any work done by the Contractor under the contract or any work claimed to have been done by him under the contract and found not to have been executed, the Contractor shall be liable to refund the amount of over-payment and it shall be lawful for Employer to recover the same from him in any other manner legally permissible. If it is found that the Contractor was paid less than what was due to him under the contract in respect of any work executed by him under it, the amount of such under payment shall be duly paid by Employer to the Contractor, without any interest thereon whatsoever.

#### **Lien In Respect of Claims in Other Contracts**

Any sum of money due and payable to the Contractor (including the security deposit returnable to him) under the contract may be withheld or retained by way of lien by the Engineer-in-Charge or by Employer against any claim of Engineer-in-Charge or Employer in respect of payment of a sum of money arising out of or under any other contract made by the Contractor with the Engineer-in-Charge or the Employer. It is an agreed term of the contract that the sum of money so withheld or retained under this clause by the Engineer-in-Charge or the Employer will be kept withheld or retained till his claim arising out of the same contract or any other contract is either mutually settled or determined by the Competent Authority, as the case may be, and that the Contractor shall have no claim for interest or damages whatsoever on this account or on any other ground in respect of any sum of money withheld or retained under this clause and duly notified as such to the Contractor.

## **27.0 Work to be executed in accordance with Specifications, Drawings and Orders etc.**

- (i) All items of work in the bill of quantities/ schedule of quantities shall be carried out as per the technical specification approved shop drawings and instructions of the Engineer-in-Charge and the rates shall include design, procurement and supply of required materials including proper storage, consumables, skilled & unskilled labour, supervision and tools, plant & machinery complete as called for in the detailed specifications and conditions of the contract.
- (ii) The Contractor shall execute the whole of the work in the most substantial and workman like manner for materials and otherwise in all other aspects in strict accordance with the specifications. The Contractor shall also conform exactly, fully and faithfully to the design, drawings and instructions in writing in respect of the work assigned by the Engineer-in-Charge.
- (iii) The Contractor shall comply with the provisions of the contract and execute the works with due care and diligence and maintain the works and provide all labour and materials, tools and plants, including for measurements and supervision, of all works, structural plans and other things of temporary or permanent nature required for such execution and maintenance in so far as the necessity for providing these, is specified or is reasonably inferred from the contract. The Contractor shall take full responsibility for adequacy, suitability, and safety of all the works and methods of construction.

## **28.0 Materials to be provided by the Contractor**

- (i) The Contractor shall, at his own expense, provide all materials required for the works. The Contractor at his own expense and without delay provide to the Engineer-in-Charge samples of materials to be used on the work and shall get the same approved in advance. In some cases, the contractor would be instructed by the engineer in charge to create mood boards with a set of samples being available at the same place and time to justify the design aspects for getting Employer's approvals. All such materials to be provided by the Contractor shall be in conformity with the specifications laid down or referred to in the contract. The Contractor shall, if requested by the Engineer-in-Charge, furnish proof to the satisfaction of the Engineer-in-Charge regarding the material being conforming to the specifications. The Contractor shall submit the samples of materials to be tested or analysed and bear all charges and cost of testing unless specifically provided for otherwise elsewhere in the contract or specifications.
- (ii) The Engineer-in-Charge or his authorized representative/ Employer/

PMC/ TPIA shall at all times have access to the works and to all workshops and places where work is being prepared or from where materials, manufactured articles, equipment's or machinery are being obtained for the works and the Contractor shall offer every assistance in obtaining the right to visit and ensure physical visit to such works as directed by engineer-in-charge. The cost for travelling and accommodation to these works of the engineer in charge or his authorized representatives will be borne by the Employer/ PMC/ TPIA apart from those specifically written in the Special conditions of contract. However, the costs towards the contractor or his representatives towards the costs of such visits will be borne by the contractor. The Engineer-in-Charge shall have full powers to instruct the contractor for acceptance, rejection, improvement or substitution prior to delivery on site of any such material that he might have undertaken to inspect the materials at the works.

- (iii) The Engineer-in-Charge shall have full powers to instruct the contractor for removal of all materials from the site/premises, which in his opinion are not in accordance with the specifications. In case of default, the Engineer-in-Charge shall be at liberty to employ at the expense of the Contractor, other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials. The Engineer-in-Charge shall also have full power to require other proper materials to be substituted thereof and in case of default, the Engineer-in-Charge may cause the same to be supplied by others at the risk and cost of the contractor. All such costs for removal and substitution shall be borne by the Contractor.
- (iv) The Contractor shall ensure that the materials are brought to the site in original sealed containers (except where the packing, bearing manufacturer's markings and brands, and quantity required is a fraction of the smallest packing). Materials not complying with this requirement shall be rejected. The empty containers of such materials shall not be destroyed/disposed-off without the permission of Engineer-in-Charge or his authorized representative.
- (v) The Contractor shall produce receipt vouchers showing quantity of materials to satisfy the Engineer-in-Charge that the materials comply with the contract stipulations. These vouchers shall be endorsed, dated and signed by the Contractor. A certified copy of each such voucher signed both by the Engineer-in-Charge and the Contractor shall be kept on record.

## **29.0 Materials, Samples and Testing**

- (i) The materials/products used on the works shall be one of the approved makes/ brands out of the list of approved manufacturers/ brands/ makes given in the tender document. The Contractor shall submit samples/specimens out of approved makes to the Engineer-in-Charge for prior approval.
- (ii) In case single brand/ make are mentioned, other equivalent makes/ brands may be considered by the Engineer-in-Charge on the request of the Contractor. In case of variance in CPWD/IS/BIS specifications from approved products/makes specification, the specification of approved product/ make shall prevail for which nothing shall be paid extra to the Contractor. In case no make or brand of any materials, articles, fittings and accessories etc. is specified, the same shall comply with the relevant Indian Standard Specifications and shall bear the ISI/BIS mark and meet the contractual specifications. The Engineer-in-charge shall have the discretion to check quality of materials and equipment to be incorporated in the work, at source of supply or site of work and even after incorporation in the work. The Contractor shall provide the necessary facilities and assistance for this purpose.
- (iii) The above provisions shall not absolve the Contractor from the quality of final product and in getting the material and workmanship quality checked and approved from the Engineer-in-Charge/Employer.
- (iv) The Contractor shall well in advance, produce samples of all materials, articles, fittings, accessories etc. that he proposes to use and get them approved in writing by the Engineer-in-Charge. The materials, articles etc. as approved shall be labelled as such and shall be signed by Engineer-in-Charge and the Contractor's representative.
- (v) The approved samples shall be kept in the custody of the Engineer-in-Charge till completion of the work. Thereafter the samples, except those destroyed during testing, shall be returned to the Contractor. No payment will be made to the Contractor for the samples or samples destroyed in testing.
- (vi) The Contractor shall set up and maintain at his cost, a field-testing laboratory for all day-to-day tests at his own cost to the satisfaction of the Engineer-in-Charge. This field-testing laboratory shall be provided with equipment and facilities to carry out all mandatory field tests as per CPWD specifications. The Field-testing laboratory shall be constructed and installed with appropriate facilities. Temperature and humidity controls shall be available, wherever necessary, during the testing of sample(s). All equipment shall be provided by the Contractor so as to be

compatible with the specified testing requirements.

- (vii) The Contractor shall maintain all the equipment in good working condition for the duration of the contract. The Contractor shall provide/ deploy approved qualified personnel to run the laboratory for the duration of the Contract. The number of staff and equipment available must be sufficient to keep pace with the sampling and testing programme as required by the Engineer-in-charge. The Contractor shall fully service the site laboratory and shall supply everything necessary for its proper functioning, including all transport needed to move equipment and samples to and from sampling points on the site, etc. All measuring devices/equipment shall be calibrated, and Contractor shall keep the records of valid calibration certificates of devices/ equipment at the field laboratory for inspection by Engineer-in-Charge at all times. All field tests shall be carried out in the presence of Engineer-in-Charge or his representative.
- (viii) All costs towards samples, materials, collection, transport, manpower, testing etc. shall be borne by the Contractor and are deemed to be included in the rates quoted by him in the bill of quantities.
- (ix) In the case of certain materials pertaining to mechanical, electrical, and plumbing (MEP) works, the Contractor shall be responsible for getting the items tested from Employer/ PMC approved laboratories at his own cost as per the tests written in the Special conditions of contract (SCC) or as deemed fit by engineer in charge, when it is not found feasible to establish a testing facility at site in respect of such items.

### **30.0 Makes of Materials**

The materials required to be supplied by the Contractor under this contract shall be procured from the list of approved manufacturers/ brands/ makes enclosed in the contract document. Where the makes of materials are not indicated in the Bidding document, Contractor shall furnish the details of makes/ brands and shall obtain prior approval of Engineer-in-Charge before placing order.

### **31.0 Materials Procured with the Assistance of Engineer-in-Charge**

Deleted

### **32.0 Contractor to Supply Tools & Plants**

The Contractor shall provide at his own cost all materials, machinery, tools & plants as required for execution of the work. In addition to this, appliances, implements, other plants, ladders, cordage, tackle, scaffolding and temporary works required for the proper execution of the work, whether original, altered or substituted and whether included in the specifications or other documents forming part of the contract or referred to in these conditions or not, or which may be necessary for the purpose of completion of the work. The Contractor

shall also supply without any charge the requisite number of persons with the means and materials, necessary for the purpose of setting out works, and counting, weighing and assisting in the measurement or examination at any time and from time to time of the work or materials. In the event of his failure to do so, the same may be provided by the Engineer-in-Charge at the expense of the Contractor and the expenses thereon shall be recovered from any money due to the Contractor under this contract or otherwise and/ or from his security deposit.

### **33.0 Mobilization of Men, Materials and Machinery**

- (i) All expenses towards mobilization at site and de-mobilization including bringing in equipment, work force, materials, dismantling the equipment, clearing the site etc. shall be deemed to be included in prices quoted and no separate payment on account of such expenses shall be entertained.
- (ii) It shall be solely the Contractor's responsibility to provide, operate and maintain all necessary construction equipment, scaffoldings and safety, gadget, lifting tackles, tools and appliances to perform the work in a workman-like and efficient manner and complete all jobs as per the specifications and within the scheduled time of completion of work. Contractor shall also be responsible for obtaining temporary electric and water connections for all purposes. The Contractor shall also make standby arrangements for un-interrupted supply of water & electricity.
- (iii) The procurement and supply in sequence and at the appropriate time of all materials and consumables shall be solely the Contractor's responsibility and his rates for execution of work shall be inclusive of supply of all these items.
- (iv) It is mandatory for the Contractor to provide safety equipment and gadgets to all his workers, supervisory and technical staff engaged in the execution of the work while working. The minimum requirement (but not limited to) shall be gumboots, safety helmets, Rubber hand- gloves, face- masks, safety- nets, safety-belts, goggles, hand sanitizers etc. as per work requirements. The Contractor shall keep a few spare sets of such gadgets for use by the Employer or the Engineer-in-Charge and /or his representative or any other inspecting teams. No staff/ worker shall be allowed to enter the site without these equipment/ gadgets.
- (v) The cost of the above equipment/ gadgets is deemed to be included in the rates quoted by the Contractor and the Contractor shall not be entitled for any extra payment in this regard. The Contractor shall abide by the regulations pertaining to Health, Safety and Environment as per the HSE policy attached elsewhere as a part of this contract.
- (vi) All designs, drawings, bill of quantities etc., except Bar Bending Schedule, Shop & Fabrication drawings, for all works shall be supplied

to the Contractor for his scope of work by the Engineer-in-charge in a phased manner, as the works progresses. However, it shall be the duty and responsibility of the Contractor to bring to the notice of the Engineer-in-charge as to any variation, discrepancy or any other changes required and to obtain revised drawings and designs and/ or approval of the Engineer-in-Charge in writing for the same.

- (vii) One copy of contract documents, including drawings furnished to the Contractor, shall be kept at the site and the same shall at all reasonable times be available for inspection of Engineer-in-charge and his authorised representatives.
- (viii) All materials, construction plants and equipment etc. (including scrap of brought in material) once brought by the Contractor within the project area will not be allowed to be removed from the premises without the written permission of the Engineer-in-charge. Similarly, all enabling works built by the Contractor for the main construction undertaken by him, shall not be dismantled, and removed without written permission of the Engineer-in-charge.
- (ix) The Contractor shall need to furnish list of equipment/ machinery/ plants available with the Contractor along with the details/ capacities and manufacturing year of each equipment/ machinery/ plant.
- (x) Contractor shall prepare the Bar Bending Schedule, shop and fabrication drawings free of cost, if required for any of the items of work as directed by the engineer in charge. Five copies of these drawings and documents will be submitted to the Engineer-in-charge/Employer for approval, at least 30 days prior to execution of the works related to these documents and drawings.
- (xi) All Contractor's plant, machinery and equipment shall be kept in perfect working condition during currency of the contract.

#### **34.0 Health, Safety and Environment (HSE) Management**

- (i) The Contractor, during entire duration of the Contract, shall adhere to HSE requirement as enclosed in the Bidding Document as Annexure-VIII to SCC.
- (ii) The contractor shall also barricade the site with minimum 3 mtr high sheets or as per the requirement of Green Tribunal/ State Pollution Control Board/ Environment Department or any directions by the local administration during the entire duration of the contract wherever required. Nothing extra shall be paid on this account.
- (iii) Safety Regulations

The Contractor shall abide by all safety regulations and ensure that safety equipment for specific jobs, as stipulated in the factory act/ safety



handbook, is issued to workers during execution of work, failing which all the works at site shall be suspended.

(iv) Security

The Contractor shall make proper security arrangements at his own cost for the materials at site & the works till handing over of the works to the Employer/ Engineer-in-Charge.

### **35.0 Quality Assurance Programme**

- (i) To ensure that the services under the scope of this contract are in accordance with the specifications, the Contractor shall adopt Quality Assurance Programme to control such activities at the necessary points. The Contractor shall prepare and finalize such Quality Assurance Programme within 30 days from date of issue Letter of Award. Engineer-in-charge shall also carry out quality audit and quality surveillance of systems and procedures of Contractor's quality control activities. A Quality Assurance Programme of Contractor shall generally cover the following:
  - (a) His organization structure for the management and implementation of the proposed Quality Assurance Program;
  - (b) Documentation control system;
  - (c) The procedure for materials and source inspection;
  - (d) System for site controls including process controls;
  - (e) Control of non-conforming items and systems for corrective actions;
  - (f) Inspection and test procedure for site activities;
  - (g) System for indication and appraisal of inspection status;
  - (h) System for maintenance of records;
  - (i) System for handling, storage, and delivery; and
  - (j) A quality plan detailing out quality practices and procedures, relevant acceptance levels for all types of work under the scope of this contract.
- (ii) The Contractor shall maintain all the quality reports. Checklists & Registers as per CPWD norms in this regard shall be submitted to the Engineer-in-Charge for approval and the same shall be adopted. If any item is not covered by the Check-list/ Register, the Format for the same may be developed and submitted to the Engineer-in-Charge for approval and the same shall be adopted. These filled-in reports shall be duly signed by representatives of the Contractor and the Engineer-in-charge. All the costs associated with Printing of Formats and testing of materials

required as per technical specifications or as per instructions of Engineer-in-Charge shall be included in the Contractor's quoted rates in the Schedule/ Bill of quantities. Nothing extra shall be paid to the Contractor on this account.

### **36.0 Contract Coordination Procedures, Coordination Meetings and Progress Reporting**

The Contractor shall prepare and finalize a detailed contract coordination procedure within 30 days from the date of issue of Letter of Award in consultation with the Engineer-in-charge for the purpose of execution of the Contract. The Contractor shall have to attend all the meetings at any place in India at his own cost with the representatives of the Employer, the PMC, the TPIA and their representatives during the currency of the Contract, as and when required and fully co-operate with such personnel and agencies involved during these discussions. The Contractor would be advised to deal with the Employer/ PMC only through the Engineer-in-Charge and any dealing/correspondence, if required, at any time with the Employers/ PMC/ TPIA shall be done through Engineer-in-Charge only.

### **37.0 Protection of Existing Facilities**

- (i) Contractor shall obtain full details of all existing and planned underground services from concerned agencies and shall always follow these closely during the performance of work. Contractor shall be responsible for location and protection of all underground lines, structures, power cables, OFC cables etc. at his own cost.
- (ii) Despite all precautions, should any damage to any structure/ utility etc. occur, the Contractor shall immediately inform the Engineer-in-Charge and the Contractor shall forthwith carry out repair at his expense under the direction and to the satisfaction of Engineer-in-Charge. If the same is not attended by the Contractor within the said time period, it will be got done at the risk and cost of the contractor through other agencies.
- (iii) Contractor shall take all precautions to ensure that no damage is caused to the existing pipelines, cables etc. during services.

### **38.0 Completion Plans and Completion Certificate**

- (i) Within ten days of completion of the work, the Contractor shall give notice of such completion to the Engineer-in-Charge. On the receipt of such notice, the Engineer-in-Charge shall within thirty days inspect the work and if there is no defect in the work, he shall furnish the Contractor with a final certificate of completion.
- (ii) In case of any shortcomings/ defects, a provisional certificate of physical completion indicating the defects (a) to be rectified by the Contractor, and/or (b) for which payment will be made at reduced rates, shall be

issued.

- (iii) However, no final certificate of completion shall be issued, nor shall the work be considered to be complete until the Contractor shall have removed from the premises on which the work is executed, all scaffolding, surplus materials, rubbish and all huts and sanitary arrangements required for his/their work, people on the site in connection with the execution of the works and cleaned off the dirt from all wood work, doors, windows, walls, floor or other parts of the building, in, upon, or about which the work is to be executed or of which he may have had possession for the purpose of the execution. Similarly, no completion Certificate shall be issued until the work shall have been measured by the Engineer-in-Charge.
- (iv) If the Contractor shall fail to comply with the requirements of this clause as regards removal of scaffolding, surplus materials and rubbish and all huts and sanitary arrangements as aforesaid and cleaning off dirt on or before the date fixed for the completion of work, the Engineer-in-Charge may remove such scaffolding, surplus materials and rubbish etc. at the expense of the Contractor and dispose of the same as he deems fit and clean off such dirt as aforesaid, and the Contractor shall have no claim in respect of scaffolding or surplus materials as aforesaid except for any sum actually realized by the sale thereof less actual cost incurred on removal of materials/ debris / malba etc.
- (v) The Contractor shall be responsible for handing over of the completed works including signing of inventories by the Engineer-in-charge on a pre-approved format.
- (vi) The Contractor shall, during the course of execution, prepare and keep updated a complete set of 'As Built' drawings to show each and every change from the contract drawings, changes recorded shall be counter-signed by the Engineer-in-Charge and the Contractor.

No payment of final bill shall be released to the Contractor until final work completion certificate is obtained from Employer.

### **39.0 Completion Documents**

The following documents shall be submitted in soft copy and hard-binders by the Contractor in 05 (Five) sets as a part of completion documents:

- (i) Test Certificates, Warranty/ Guarantee certificates and copies of Purchase Orders (Required for Warranty/ Guarantee).
- (ii) All other documents as specified in the respective specifications.
- (iii) Complete set of "As-built" drawings showing therein corrections and modifications (if any) made during the course of execution of the Works, signed by the Engineer-in-Charge;

- (iv) Declaration by the Contractor that it has duly cleared any and all of the dues payable by it to its labourer, employees, piece-rate workers (PRWs), and other personnel, sub-Contractors, suppliers, vendors, GST, income Tax, entry tax, excise, customs duty, provident fund, employees state insurance (ESI) and royalties, or other amounts payable under any Applicable Law (if any) and Certificate towards 'No claim' other than the claim in the Final bill.

#### **40.0 Prohibition of Unauthorised Construction & Occupation**

- (i) No unauthorized buildings, construction of structures should be put up by the Contractor anywhere on the project site, neither any building built by him shall be occupied in un-authorized manner by him or his staff.
- (ii) It shall be the responsibility of the Contractor to see that the building under construction is not occupied by anybody in un-authorized manner during construction and is handed over to the Engineer-in-Charge with vacant possession of complete building. If such building, though completed, is occupied unauthorisedly/ illegally, then the Engineer-in-Charge shall have the option to refuse to accept the said building/ buildings in that position. Any delay in acceptance on this account will be treated as delay in completion and, levy of Penalty may be imposed in line with Clause 8.0 of GCC for such delay.

#### **41.0 Foreclosure of Contract**

- (i) If at any time after acceptance of the tender or during the progress of work, the purpose or object for which the work is being done changes due to any unforeseen and compelling reasons and as a result of which the work has to be abandoned or reduced in scope, the Engineer-in-Charge shall give notice in writing to that effect to the Contractor stating the decision as well as the cause for such decision and the Contractor shall act accordingly in the matter. The Contractor shall have no claim of any compensation or otherwise, whatsoever, on account of any profit, loss of profit or advantage which he might have derived from the execution of the works in full but which he did not derive in consequence of the foreclosure of the whole or part of the works.
- (ii) The Contractor shall be paid for the works executed at site at contract rates.
- (iii) The Contractor shall, if required by the Engineer-in-Charge, furnish to him, books of account, wage books, time sheets and other relevant documents and evidence as may be necessary to enable him to certify the reasonable amount payable under this condition.
- (iv) In the event of action being taken under Clause 14.0 to reduce the scope of work, the Contractor may furnish fresh Performance Guarantee on the same conditions, in the same manner and at the same rate for the

balance tendered amount and initially valid up to the extended date of completion or stipulated date of completion if no extension has been granted plus minimum 60 days beyond that. Wherever such a fresh Performance Guarantee is furnished by the Contractor, the Engineer-in-Charge/Employer may return the previous Performance Guarantee.

#### **42. Defects Liability Period**

- (i) The Contractor shall be responsible for rectification of defects in the works for a period 5 (Five) years from the date of Completion Certified by the Engineer-in-Charge. Any defects, except normal wear & tear, discovered and brought to the notice of the Contractor forthwith shall be attended to and rectified by him at his own cost and expense. In case the Contractor fails to carry out these rectifications, the same may, without prejudice to any other right or remedy available, be got rectified by Engineer-in-Charge at the risk and cost of the Contractor.

Provided that the Contractor shall not be liable for any such structural/ architectural defect as may be induced by the allottee(s), by means of carrying out structural or architectural changes from the original specification designs.

- (ii) A part of the security deposit will be retained towards defect liability as per Clause 3.0 of the GCC above. The final amount towards defect liability would be released after 5 years from the actual date of completion or the final justified extended date of completion.

#### **43. Sub-Letting / Sub-Contracting**

Deleted

#### **44. Execution of Electrical Works**

The Contractor shall engage an approved electrical agency for execution of electrical works, holding valid electrical Contractor licence. In case the Contractor himself executes electrical works, then he shall arrange valid electrical Contractor licence before start of electrical works at site.

#### **45. Force Majeure**

- (i) Any delay in or failure to perform on the part of either party, shall not constitute default so as to give rise to any claim for damages, to the extent such delay or failure to perform is caused by an act of God, due to Pandemic, or by fire, explosion, flood or other natural catastrophe, governmental legislation, orders or regulation etc. Failure of the Employer to hand over the entire site and/ or release of funds for the project shall also constitute force majeure. The time for performance of the respective obligations by the parties shall be deemed to be extended for a period equal to the duration of the force majeure event. Both parties shall make their best efforts to minimize the delay caused by the force

majeure event. If the failure/ delay of the Employer in handing over the entire site and/ or in releasing the funds continues even on the expiry of the stipulated date of completion, Engineer-in-charge, may, at the request of the Contractor, foreclose the contract without any liability to either party. In the event of such foreclosure, the Contractor shall not be entitled to any compensation whatsoever. If prior to such foreclosure, the Contractor has brought any material at site and which remain unused, the Engineer-in-Charge shall always have the option of taking over of all such materials at their purchase price or at the local current /DSR rates, whichever is lower.

- (ii) The Contractor shall have no claim of damages for extension of time granted or rescheduling of milestone/s for events listed in this clause.

#### **46. No Compensation**

The Contractor shall have no claim, whatsoever, for compensation or idling charges against the Employer or his authorized representative on any ground or for any reason, whatsoever.

#### **47. Directions for Works**

- (i) All works under the contract shall be executed under the direction and subject to approval in all respects of the Engineer-in-Charge.
- (ii) The Engineer-in-Charge and his authorized representative shall communicate or confirm their instructions to the Contractor in respect of execution of work during their site inspection in a 'Works Site Order Book' maintained at the site office of Engineer-in-Charge. The Contractor or his authorized representative shall confirm receipt of such instructions by signing against the relevant orders in of the Site Order Book. A soft copy of this "works site order book" shall be mailed to the contractor and Employer/PMC/TPIA monthly.

#### **48. Work in Monsoon Season and Rains**

The execution of the work may entail working in the monsoon season also. The Contractor must maintain labour force as may be required for the work and plan and execute the construction and erection according to the prescribed schedule. No special/ extra rate will be considered for such work during the monsoon season. The stipulated period for completion of project includes the monsoon period, holidays & festivals and the contractor shall make provisions of the same in the contract scheduling submitted to the engineer in charge/Employer. Further;

- (i) During monsoon season and other periods, it shall be the responsibility of the Contractor to keep the construction work site free from any water accumulation at his own cost by making suitable arrangements/ deploying de-watering pumps.

- (ii) Contractor must take due cognizance of the presence of monsoon/ rainy season/ days in his scheduled completion period and accordingly, take all necessary measures to protect, reorganize and maintain progress on the work without any interruptions.
- (iii) No extension of time due to interruption/suspension of work, waterlogging, reduced/ slowing down of progress, non-availability of manpower etc., whatsoever may be the reason, shall be tenable on account of monsoons/ rains and further no claim for stand-by of manpower and equipment, other resources etc. shall be paid for subject to provisions under Clause 17 of the General conditions of contract.
- (iv) Contractor shall procure and stock sufficient quantities of materials viz. coarse and fine aggregates, bricks etc. adequate for the planned volume of the work during the monsoons, well in advance of the onset of same so that progress of work is not affected on this account.
- (v) All electrical installations, equipment shall be placed on plinths above ground under proper rain sheds to avoid any inundation, short circuit and hazards of electrocution.
- (vi) Price shall be inclusive of all costs and expenses including supply of materials required for monsoon protection like tarpaulins, shed, structural, GI sheet etc. for the above provisions and no separate payment shall be made on this account.

#### **49. Work on Sundays, Holidays and During Night**

For carrying out work on Sundays and Holidays or during night, the Contractor shall make necessary arrangements to carry out the works at no extra cost to the Employer, under intimation to the Engineer-in-Charge.

#### **50. Water and Electricity**

The Contractor shall make his own arrangements for Water, fit for construction, use & Electrical Power for construction including all necessary materials and equipment's for its distribution and utilisation for construction activities and other purposes at his own cost. The Contractor shall also make standby arrangements for water & electricity to ensure un-interrupted supply of water and electricity for smooth progress of works as per relevant clauses in the special conditions of contract (SCC).

#### **51. Land for Labour Huts/ Site Office and Storage Accommodation**

- (i) The Contractor may construct temporary office, storage, accommodation, and labour huts within the site premises with prior approval of the Engineer-in-Charge. In case, where surplus land is not available within the site and/or not permitted by the Employer, the

Contractor shall arrange the land for temporary office, storage, accommodation and labour huts at his own cost and shall be responsible for taking the clearance of local authorities, if required, for setting up/construction of labour camp and the same is deemed to be included in the rates quoted by the Contractor for the works. The Contractor shall check the availability of land before tendering and no claim whatsoever shall be entertained in this regard.

- (ii) The Contractor shall ensure that the labour huts are kept clean and in hygienic conditions. The land for the above purposes shall be so placed that it does not hinder the progress of work or access to the worksite. Vacant possession of the land used for the purpose shall be given back by the Contractor to Employer/ authority after completion of the work.
- (iii) The security deposit of the Contractor shall be released only after the Contractor demolishes all temporary structures and clears the site to the satisfaction of Engineer-in-Charge. In the event the Contractor has to shift his labour camps at any time during execution of the work on the instructions of local authorities or as per the requirement of the work progress or as may be required by the Engineer-in-Charge, he shall comply with such instructions at his risk and cost and no claim whatsoever shall be entertained on this account.

#### **52. Watch & Ward and Lighting of Work Place**

- (i) The Contractor shall at his own cost take all precautions to ensure safety of life and property by providing necessary barriers, obstructions, lights, watchmen etc. during the progress of work as directed by Engineer-in-Charge.
- (ii) The Contractor shall provide uninterrupted lighting of the work-place and surrounding areas during the night hours with a minimum lux level of 10-15 lux. No additional payment shall be made on this account and the cost in this regard is deemed to be included in the quoted rates.

#### **53. Installation of Sign Boards**

The Contractor shall fix/ install Construction/safety sign boards of suitable sizes and in adequate numbers as per the instructions of Engineer-in-Charge before/during the execution of work. No additional payment shall be made to the Contractor on this account.

#### **54. Cement and Cement Godown**

- (i) Cement shall be procured by Contractor in line with the technical specifications and requirement of the contract.
- (ii) The cement shall be procured directly from the reputed manufacturers/



stockists as per list of approved makes. Relevant vouchers and test certificates will be produced as and when required by the Engineer-in-charge. It shall be stored by the Contractor in suitable covered and lockable stores, well protected from climate and atmospheric effects. The cement go-down shall be constructed by the Contractor as per the CPWD specifications at his own cost. Cement bags shall be used on "first-in -first-out" basis. Cement stored beyond 90 days will not be used in structural works. However, this cement can be used in other works after getting the cement tested and found suitable as per relevant IS codes at Contractor's cost and accepted by Engineer-in-charge, before use in works.

**55. Steel & Steel Stockyard**

Steel conforming to contract specifications/ BIS specifications (latest edition) shall be procured by the Contractor directly from reputed manufacturers/ producers as per list of approved makes. Relevant vouchers & test certificates will be produced by the Contractor. Reinforcement steel, structural steel shall be stored and stacked in such manner so as to facilitate easy identification, removal etc. The Contractor shall take proper care to prevent direct contact between the steel and the ground/water for which he shall provide necessary arrangement at his own cost including ensuring proper drainage of area to prevent water logging as per directions of the Engineer-in-Charge. Steel shall also be protected by applying a coat of neat cement slurry or any other protective treatment over the TMT bars in order to save it from any rusting, for which no extra payment shall be made. Test certificates for each consignment of steel shall be furnished and tests will be got carried out from the authorized NABL accredited laboratory, as per the directions of the Engineer-in-Charge, before incorporating the materials in the work.

**56. Schedule of Quantities/ Bill of Quantities**

The quantities shown against the various items of work are approximate quantities, which may vary as per the actual requirement of work. Any variation in quantities, if occurs during the execution of the works, will be dealt as per the provisions of the contract.

**57. Water - proof Treatment**

**57.1** The water-proof treatment shall be of type and specifications as given in the schedule of quantities.

**57.2** The water-proofing of basement, roofs, water retaining areas shall be and remain fully effective for a period of not less than 10 (Ten) years to be reckoned from the date of Completion Certificate, prescribed in the contract. If any defect or any evidence of re-infestation, dampness, leakage in any part of buildings or structure is found in the said treatment at any time during the said guarantee period and the Contractor is notified of the same, the Contractor shall be liable

to rectify the defect or give re-treatment. The Contractor shall commence the work or such rectification or re-treatment within seven days from the date of issue of such letter to him. If the Contractor fails to commence such work within the stipulated period, the Employer may get the same done by deploying another agency at the Contractor's risk & cost.

**57.3** Water- proofing shall be got done through approved/ specialized agencies only with prior approval of Engineer-in-Charge.

**57.4** During the execution of work, if any damage occurs to the treatment already done, either due to rain or any other circumstances, the same shall be rectified and made good to the entire satisfaction of Engineer-in-Charge by the Contractor at his cost and risk.

**57.5** The Contractor shall make his own arrangement for all equipment required for the execution of the job. The Contractor shall execute a Guarantee Bond in the prescribed form as appended for guaranteeing the water-proofing treatment.

## **58. Indian Standards**

Wherever any reference is made to any BIS in any particular specifications, drawings or bill of quantities, it means the Indian Standards editions with up-to-date amendments issued till the last date of receipt of tender documents.

## **59. Centring & Shuttering**

Plywood/steel/Aluminium plates or any material fit for the use as mentioned elsewhere in the tender document or as approved by Engineer-in-Charge shall be used for formwork. The shuttering plates shall be cleaned and oiled before every repetition and shall be used only after obtaining approval of the Engineer-in-charge. The number of repetitions allowed for plywood/ steel shuttering/ aluminium shall be at the discretion of Engineer-in-Charge depending upon the condition of shuttering surface after each use and the decision of Engineer-in-Charge in this regard shall be final and binding on the Contractor. No claim, whatsoever, on this account shall be admissible.

## **60. Records of Consumption of Cement, Steel & Other Materials**

- (i) For the purpose of keeping a record of cement and steel received at site and consumed in works, the Contractor shall maintain a register in the format approved by the Engineer-in-Charge, showing columns like quantity received and used in work and balance in hand etc. This register shall be signed daily by the Contractor's representative and the representative of the Engineer-in-Charge.
- (ii) The register of cement, steel & other materials (if required) shall be kept at site in the safe custody of Engineer-in-charge during progress of the work. This provision will not, however, absolve the Contractor from the quality of the final product.

**61. Borrow Areas**

Deleted

**62. Care of Works**

From the commencement to the completion of works and handing over, the Contractor shall take full responsibility for care of all the works and in case of any damage/ loss to the works or to any part thereof or to any temporary works due to lack of precautions or due to negligence on the part of Contractor, the same shall be made good by the Contractor at no extra cost to Employer.

**63. Coordination with Other Agencies**

- (i) Work shall be carried out in such a manner that the work of other agencies operating at the site is not hampered due to any action of the Contractor. Proper coordination with other agencies will be Contractor's responsibility. In case of any dispute, the decision of Engineer-in-charge shall be final and binding on the Contractor.
- (ii) If and when required for the coordination of works with other agencies involved at site, the Contractor shall within the scope of work, re-route and/or prepare approaches and working areas as may be necessary.

**64. Setting Out of the Works**

The Contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions and alignment of all parts of the works. If any error appears or arises in the position, levels, dimensions or alignment of any part of the works at any time during the progress of works, the Contractor shall rectify such error to the satisfaction of Engineer-in-charge at his own expenses. The checking of any setting out or of any line or level by the Engineer-in-charge shall not in any way relieve the Contractor of his responsibility for the correctness thereof.

**65. Site Clearance**

- (i) The Contractor shall ensure that the working site is kept clean and free of obstructions for easy access to job site and also from safety point of view. Before handing over the completed work to the Engineer-in-charge, the Contractor shall remove all temporary structures like the site offices, cement go-down, stores, labour hutments, scaffolding, rubbish, debris, left-over materials, tools and plants, equipment etc. and clean the site to the entire satisfaction of the Engineer-in-charge. If this is not done, the same may be got done by the Engineer-in-charge at the risk and cost of Contractor.
- (ii) The Contractor shall clean all floors, remove cement/ lime/ paint drops and deposits, clean joinery, glass panes etc., touching all painter's works

and carry out all other necessary items of works to make the premises clean and tidy before handing over the completed works, and the rates quoted by the Contractor shall be deemed to have included for the same.

- (iii) If the work involves dismantling of any existing structure in whole or part, any RCC foundation and/ or paved area, care shall be taken to limit the dismantling up to the exact point and/ or lines as directed by the Engineer-in-Charge and any damage caused to the existing structure beyond the said line or point shall be repaired and restored to the original condition at the cost and risk of Contractor to the satisfaction of the Engineer-in-Charge, whose decision shall be final and binding upon the Contractor.
- (iv) The Contractor shall not dispose of the ordinary earth excavated from within the boundary limits to any place outside such limits as the same may be required as per the discretion of the engineer in charge.
- (v) Disposal of Debris/ Surplus Earth (including contaminated earth) shall be done by the Contractor at the designated disposal area(s) within the boundary limits as directed by engineer in charge. In case the Employer is not in a position to provide disposal area within the boundary limits due to space constraints, the Contractor has to dispose the same outside the boundary limits as per the provisions of the contract. While disposing the Debris/ Surplus Earth (including contaminated Earth) outside the boundary limit, the Contractor has to ensure that the same are disposed off safely and fulfilling the local statutory regulations including but not limited to the guidelines/ stipulations of State Pollution Control Board.

#### **66. General Guidelines during and before Erection**

- (i) The Contractor shall be responsible for organizing the lifting of the equipment in the proper sequence for orderly progress of the work and to ensure that access routes for erecting the other equipment are kept open. The installation of machines at different floor levels/ terrace and at basement shall be carried out by the Contractor with due care so as to guard against any damage to the existing finishes of the building and shall augment if required, necessary machineries/ lifting crane for installation purpose within the quoted prices.
- (ii) Orientation of all foundations, elevations, lengths and disposition of anchor bolts and diameter of holes in the supports and saddles shall be checked by the Contractor well in advance of the installation. Rectifications, including chipping of foundations, shall be carried out only where necessary in consultation with the Engineer-in-Charge. If a structural member needs to be dismantled to facilitate the equipment erection, this shall be done by the Contractor after ensuring proper stability of the main structure in consultation with the Engineer-in-

Charge. All such dismantled members shall be put back in position to the satisfaction of Engineer-in-Charge after the completion of the equipment erection.

- (iii) During the performance of the work the Contractor shall at his own cost keep structures, materials and equipment adequately braced by guys, struts or other approved means which shall be supplied and installed by the Contractor as required till the installation work is satisfactorily completed. Such guys, shoring, bracing, strutting, planking supports etc. shall not interfere with the work of other agencies and shall not damage or cause distortion to other works executed by the Contractor or other agencies.
- (iv) The Contractor shall duly comply with manufacturer(s) recommendations and detailed specifications for the installation of the various equipment and machines. Various tolerances required as marked on the drawings and/or in accordance with the specifications and/or instructions of the Engineer-in-charge shall be maintained. Verticality shall be verified with the Total-station and shall be maintained.

#### **67. Security and Security Arrangements**

- (i) The Contractor shall provide adequate number of watch and ward personnel on round the clock basis with limited/restricted access to the site through gates manned by the Security personnel. The responsibility for safe custody of materials, works in progress, office of Employer/ Engineer-in-charge, building and all services etc. lies with the Contractor till handing over of the works to the Employer.
- (ii) The Contractor shall ensure adequate illumination of the worksite(s) on a continuous basis to ensure safe working and to avoid pilferage/theft of materials lying at the work site. The rates quoted shall be deemed to be inclusive of this scope and the Contractor is not entitled for any additional payment in this regard. This is to be implemented from start of work till handing over of the works to the Employer.
- (iii) The project site during execution shall be properly barricaded with Pre-coated sheets/ GI/ MS sheets of at least 3.0 meters and maximum 7.0 meters height, as directed by the engineer in charge, with proper supports/ foundations in order to isolate the site from surroundings to avoid any disturbance and to avoid the entry of unauthorized personnel. Expenditure towards this activity is considered to be included in the quoted rates.
- (iv) The Contractor shall make adequate security arrangement for protection of the work site and to prevent unauthorized entry to protect their materials and equipment in its own interest at no extra cost to the Employer.

- (v) If at any place/site, entry is restricted by the Employer, the Contractor shall then arrange to obtain through the Engineer-in-Charge, well in advance, all necessary entry permits/ gate passes for his staff and labourer and entry and exit of his men and materials shall be subject to vigorous checking by the security staff. The Contractor shall not be eligible for any claim or extension of time whatsoever on this account.
- (vi) The Contractor shall, at their own cost, construct their centralized store for safe keeping of the materials/equipment and for proper accounting of the material/ equipment being used in this project.

**68. Works to remain Open to Inspection**

- (i) All works executed or under the course of execution in pursuance of this contract shall at all times be open to inspection of the Engineer-in-charge.
- (ii) The work during its progress or after its completion may be inspected by the third party appointed by the Employer. The compliance of observations/ improvements suggested by the inspecting officers shall be obligatory on the part of the Contractor at his cost.

**69. Set-Off of Contractor's Liabilities**

The Engineer-in-charge shall have the right to deduct or set off the expenses incurred or likely to be incurred by it in rectifying the defects and/or any claim under this agreement against the Contractor from any or against any amount payable to the Contractor under this agreement including security deposit, defect liability and proceeds of performance guarantee.

**70. Possession Prior to Completion**

The Engineer-in-charge shall have the right to take temporary possession of any completed or use partially completed work or part of the work. Such possession or use shall not be deemed to be any acceptance of any work not completed in accordance with the contract agreement. If such prior possession or use by Engineer-in-charge delays the progress of work, an equitable adjustment in the time of completion will be made and the contract agreement shall be deemed to be modified accordingly. The decision of Engineer-in-charge in such case shall be final binding and conclusive on the Contractor.

**71. Employment of Personnel**

- (i) The Contractor shall employ his representatives and workmen after verifying their antecedents and loyalty. He shall ensure that no personnel of doubtful antecedents is associated with the works in any manner.
- (ii) In case the Engineer-in-charge observes misconduct, negligence or incompetence etc. on the part of any representative, agent and workmen

or employees etc. of the Contractor, the Engineer-in-charge shall be competent to instruct the Contractor to remove such engineer/ staff/ worker from the site without giving any reason to the Contractor and ask to provide suitable replacements. The decision of the Engineer-in-charge shall be final and binding on the Contractor. The Contractor shall not be allowed any compensation on this account.

**72. Technical Staff for Work**

- (i) The Contractor shall employ adequate number of technical staff at his cost during the execution of this work depending upon the requirement of work. For this purpose, the numbers to be deployed, their qualification and experience, as decided by Engineer-in-charge, shall be final and binding on Contractor. The Contractor shall not be entitled for any extra payment in this regard.
- (ii) The technical staff should be available at site to take instructions from the Engineer-in-Charge.
- (iii) The Contractor shall submit a site organizational chart and Resume, including details of experience of the Project-in-Charge and other staff proposed to be deployed by him. The technical team shall be deputed by the Contractor on the Project after getting approval from the Engineer-in-Charge.
- (iv) In case the Contractor fails to employ the staff as aforesaid, he shall be liable to pay a reasonable amount as defined in Special conditions of contract for each month of default in the case of each person. The decision of the Engineer-in-charge as to number of Technical Staff to be adequate for the project and the period for which the desired strength of technical staff was not employed by the Contractor and as to the reasonableness of the amount to be deducted on this account shall be final and binding on the Contractor.

**73. Valuable Articles Found at Site**

All gold, silver and other minerals of any description and all precious stones, coins, treasure, relics, antiques and all other similar things which shall be found in, under or upon the site shall be the property of the Employer.

**74. Labour Laws - to be Complied with by the Contractor**

- (i) The Contractor shall obtain a valid license under the Contract Labour (Regulation & Abolition) Act, 1970 and the Contract Labour Act (Regulation & Abolition) Central Rules 1971, as amended from time to time, and continue to have a valid license until the completion of the work including the defect liability period.
- (ii) The Contractor shall also comply with the provisions of the building and other Construction Workers (Regulation of Employment & Conditions of

Service) Act, 1996 and the Building and other Construction Workers Welfare Cess Act, 1996 and its amendments, if any.

- (iii) The Contractor shall also comply with the provisions of the Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979.
- (iv) The Contractor shall not engage any labour below the age of 18 years under any circumstances. The provisions under Child Labour (Prohibition and Regulation) Amendment Act, 2016 shall be strictly adhered to. In case of any non-compliance with the requirements of Labour laws, the Contractor shall be liable for all consequences or any penalty imposed in this regard.

#### **74.1 Payment of Wages:**

- (i) The Contractor shall pay to the labour employed by him either directly or through sub-Contractors, wages not less than fair wages as defined in the Contractor's Labour Regulations or as per the provisions of the Contract Labour (Regulation and Abolition) Act, 1970 and the Contract Labour (Regulation and Abolition) Central Rules, 1971, wherever applicable.
- (ii) The Contractor shall, notwithstanding the provisions of any contract to the contrary, cause to be paid fair wages to labour indirectly engaged on the work, including any labour engaged by his sub-Contractors in connection with the said work, as if the labour had been employed by him.
- (iii) The Contractor shall transfer/ credit the wages/ salary of all labourer/ workers preferably in their bank accounts. He shall be responsible for opening of bank accounts of all labourers/workers employed by the Contractor at the work site in this regard.
- (iv) In respect of all labour, directly or indirectly employed in the works for performance of the Contractor's part of this contract, the Contractor shall comply with Labour Regulations in regard to payment of wages, wage period, maintenance of wage books or wage slips, publication of scale of wages and other terms of employment, inspection and submission of periodical returns and all other matters of the like nature or as per the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, and the Contract Labour (Regulation and Abolition) Central Rules, 1971, wherever applicable..
- (v) Under the provision of labour rules, the Contractor is bound to allow one-day rest for 6 days' continuous work and pay wages at the same rate as for duty to the labour directly or indirectly employed in the works. In the event of default, the Engineer-in-Charge shall have the right to deduct the sum or sums not paid on account of wages for weekly holidays to



any labourer/ worker and pay the same to the persons entitled thereto from any money due to the Contractor.

- (vi) The Contractor shall comply with the provisions of the Payment of Wages Act, 1936, Minimum Wages Act, 1948, Employees Liability Act, 1938, Workmen's Compensation Act, 1923, Industrial Disputes Act, 1947, Maternity Benefits Act, 1961, and the Contractor's Labour (Regulation and Abolition) Act 1970, or the modifications thereof or any other laws relating thereto and the rules made there under from time to time.
- (vii) The Contractor shall indemnify and keep the Employer indemnified against payments to be made under and for the observance of the laws aforesaid and the Labour Regulations without prejudice to his right to claim indemnity from his sub-Contractors.
- (viii) The laws aforesaid shall be deemed to be a part of this contract and any breach thereof shall be deemed to be a breach of this contract.

#### **74.2 Labour Safety Provisions**

- (i) The Contractor shall be fully responsible to observe the labour safety provisions. The Contractor shall at his own cost take all precautions to ensure safety of life and property by providing necessary barriers, lights, watchmen etc. during the progress of work.
- (ii) In case of all labour, directly or indirectly employed in work for the performance on the Contractor's part of this contract, the Contractor shall comply with all rules framed by Government from time to time for the protection of health and sanitary arrangements for workers.

#### **74.3 Observance of Labour Laws**

- (i) The Contractor shall be fully responsible for observance of all labour laws, including the local laws and other laws, applicable in this matter and shall indemnify and keep the Employer indemnified against any adverse effect or non-observance of any such laws. The Contractor shall be liable to make payment to all its employees, workers and sub-Contractors and make compliance with labour laws. If the Employer or his authorized representative is held liable as "Principal Employer" to pay contributions etc. under legislation of Government or Court decision in respect of the employees of the Contractor, then the Contractor would be liable to reimburse the amount of such payments, contribution etc. to the Employer and/ or the same shall be deducted from the payments, security deposit etc. of the Contractor.
- (ii) The Contractor shall submit proof of having a valid EPF registration certificate. He shall within 7 days of the close of every month, submit a statement to the Employer showing the recoveries of contributions in

respect of each employee employed by or through him and shall furnish to Employer such information as the Employer is required to furnish under the provisions of para 36B of the EPF Scheme 1952 to the EPF authorities and other information required by the EPFO authorities from time to time. He shall also submit a copy of challan every month in token of proof of having deposited the subscription and contribution of workers engaged on the project, if demanded by the Engineer-in-Charge.

- (iii) The Contractor shall also ensure the compliance of EPF Act, 1952 by the sub-Contractors, if any, engaged by the Contractor for the above said work.
- (iv) The Contractor shall indemnify and keep the Employer harmless from and against all actions, suits, proceedings, losses, costs, damages, charges, claims and demands of every nature and description brought or recovered against the Employer by reasons of any act or omission of the Contractor, his agents or employees in connection with complying the provisions of the Employees Provident Fund & Miscellaneous Provisions Act, 1952 as amended from time to time. All sums payable by way of compensation/ damages/ interest on the outstanding amounts payable by the Contractor shall be considered as reasonable and be payable by the Contractor to the Employer immediately and if the Contractor does not pay the amount immediately the same will be deducted from the security deposit or earnest money or any other amount available with the Employer or any money payable to the Contractor by the Employer.

#### **74.4 Minimum Wages Act**

The Contractor shall comply with all provisions of the Minimum Wages Act, 1948, Contract Labour Act (Regulation & Abolition) 1970, and rules framed thereunder and other labour laws/ local laws affecting the contract labour that may be brought into force from time to time.

#### **74.5 Labour Records**

- (i) The Contractor shall submit a true statement of the following data by the 4th & 19th of every month to the Engineer-in-Charge, showing in respect of the second half of the preceding month and the first half of the current month respectively:

(a)	The number of the labourer employed by him (category-wise)	
(b)	Their working hours	
(c)	The wages paid to them	

(d)	The accidents that occurred during the said fortnight showing the circumstances under which they happened and the extent of damage and injury caused.	
(e)	The number of female workers who have been allowed Maternity Benefits and the amount paid to them.	
(f)	Any other information required by Engineer-in-Charge	

- (ii) In the event of the Contractor(s) committing a default or breach of any of the provisions of the Labour Regulations and Model Rules for the protection of health and sanitary arrangements for the workers as amended from time to time or furnishing any information or submitting or filing any statement under the provisions of the above Regulations and Rules which is materially incorrect, the compensation imposed, if any, by the concerned Department will be recoverable from his dues.
- (iii) Should it appear to the Engineer-in-Charge that the Contractor is not properly observing and complying with the provisions of the Contractor's Labour Regulations and Model Rules and the provisions of the Contract Labour (Regulation and Abolition) Act 1970, and the Contract Labour (R&A) Central Rules 1971, for the protection of health and sanitary arrangements for workers employed by the Contractor(s) (hereinafter referred as "the said Rules") the Engineer-in-Charge shall be competent to give a notice in writing to the Contractor requiring that the said Rules be complied with the amenities prescribed therein and shall be provided to the workers within a reasonable time to be specified in the notice.
- (iv) If the Contractor(s) fails to comply with the notice and observe the said rules within the period specified to provide the amenities to the workers as aforesaid, the Engineer-in-Charge shall have the power to provide the amenities hereinbefore mentioned at the cost of the Contractor(s). The Contractor(s) shall erect, make and maintain at his/their own expense and in accordance with the approved standards all necessary huts and sanitary arrangements required for his/their work-people on the site in connection with the execution of the works, and if the same shall not have been erected or constructed, according to approved standards, the Engineer-in-Charge shall have the power to give notice in writing to the Contractor(s) requiring that the said huts and sanitary arrangements be remodelled and/or reconstructed according to approved standards. If the Contractor(s) fail to remodel or reconstruct such huts and sanitary arrangements according to approved standards within the period specified in the notice, the Engineer-in-Charge shall have the power to remodel or reconstruct such huts and sanitary arrangements according to approved standards at the cost of the Contractor(s).
- (v) The Contractor shall provide his labourers with a sufficient number of huts (hereinafter referred to as the camp) at his own cost of the following

specifications on a suitable plot of land:

- (a) The minimum height of each hut at the eave's level shall be 2.10 m. (7 ft.) and the floor area to be provided will be at the rate of 2.70 sqm (30 Sqft.) for each member of the worker's family staying with the labourer.
  - (b) The Contractor shall in addition construct suitable cooking places having a minimum area of 1.80m x 1.50m (6'x5') adjacent to the hut for each family.
  - (c) The Contractor shall also construct temporary latrines and urinals, and bathing & washing places for the use of labour/ workers, which shall be at the rate one such facility for each 25 users (men and women to be counted separately), and separate latrines and urinals to be provided for women. These facilities shall be suitably screened.
- (vi) All the huts shall have walls of sun-dried or burnt-bricks laid in mud mortar or other suitable local materials as may be approved by the Engineer-in-Charge. In case of sun-dried bricks, the walls should be plastered with mud gobi on both sides. The floor may be kutcha but plastered with mud gobi and shall be at least 15 cm (6") above the surrounding ground. The roofs shall be laid with thatch, or any other materials as may be approved by the Engineer-in-Charge and the Contractor shall ensure that throughout the period of their occupation, the roofs remain water-tight.
- (vii) The Contractor(s) shall provide each hut with proper ventilation.
- (viii) All doors, windows, and ventilators shall be provided with suitable leaves for security purposes.
- (ix) There shall be kept an open space of at least 7.2 m. between the rows of huts, which may be reduced to 6 m. according to the availability of site with the approval of the Engineer-in-Charge. Back-to-back construction will be allowed.
- (x) Water Supply - The Contractor(s) shall provide adequate supply of water for the use of labourer. The provisions shall not be less than two gallons of pure and wholesome water per head per day for drinking purposes and three gallons of clean water per head per day for bathing and washing purposes. Where piped water supply is available, supply shall be at stand posts and where the supply is from wells or river, tanks which may be of metal or masonry, shall be provided. The Contractor(s) shall also at his/ their own cost make arrangements for laying pipelines for water supply to his/ their labour camp from the existing mains wherever available, and shall pay all fees and charges thereof.

- (xi) Disposal of Excreta- The Contractor shall make necessary arrangements for the disposal of excreta from the latrines by trenching or incineration which shall be according to the requirements laid down by the Local Health Authorities. If trenching or incineration is not allowed, the Contractor shall make arrangements for the removal of the excreta through the Municipal Committee/authority and inform it about the number of labourers employed so that arrangements may be made by such Committee/authority for the removal of the excreta. All charges on this account shall be borne by the Contractor and paid directly by him to the Municipality/authority. The Contractor shall provide one sweeper for every eight seats in case of dry system.
- (xii) Drainage - The Contractor shall provide efficient arrangements to drain away sullage water so as to keep the camp neat and tidy.
- (xiii) The Contractor shall make necessary arrangements for keeping the camp area sufficiently lighted to avoid accidents to the workers.
- (xiv) Sanitation - The Contractor shall make arrangements for conservancy and sanitation in the labour camps according to the Public Health and Medical Authorities.

#### **75. Recovery of Compensation Paid to Workmen**

In every case in which by virtue of the provisions of the Workmen's Compensation Act, 1923, Employer is obliged to pay Compensation to a workman employed by the Contractor, in execution of the works, Engineer-in-Charge/Employer will recover from the Contractor, the amount of the Compensation so paid from any sum due to the Contractor whether under this contract or otherwise.

#### **76. Ensuring Payment and Amenities to Workers if Contractor Fails**

In every case in which by virtue of the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, and of the Contract Labour (Regulation & Abolition) Central Rules 1971, Employer is obliged to pay any amount of wages to workman employed by the Contractor in execution of the works, or to incur any expenditure in providing welfare and health amenities required to be provided under the above said Act or under the Labour Regulations, or under the Rules framed by Government from time to time for the protection of health and sanitary arrangements for workers employed by Contractors, Employer will recover from the Contractor, the amount of wages so paid or the amount of expenditure so incurred from any sum due by Employer to the Contractor whether under this contract or otherwise.

#### **77. Change in Firm's Constitution to be Intimated**

Where the Contractor is a partnership firm, the prior approval in writing of the Engineer-in-Charge shall be obtained before any change is made in the

constitution of the firm. Where the Contractor is an individual or a Hindu Undivided Family business concern such approval as aforesaid shall likewise be obtained before the Contractor enters into any partnership under agreement where the partnership firm would have the right to carry out the works hereby undertaken by the Contractor.

**78. Indemnity Against Patent Rights**

The Contractor shall fully indemnify the Employer and his authorized representatives from and against all claims and proceedings for or on account of any infringement of any patent rights, design, trademark or name or other protected rights in respect of any construction plant, machine, work or material used for in connection with the works or temporary works.

**79. Law Covering the Contract**

This contract shall be governed by the Indian laws for the time being in force.

**80. Laws, Bye-Laws Relating to the Work**

The Contractor shall strictly adhere by the provisions of law for the time being in force relating to works or any regulations and bylaws made by any local authority or any water & lighting agencies or any undertakings within the limits of the jurisdiction of which the work is proposed to be executed. The Contractor shall be bound to give to the authorities concerned such notices and take all approvals as may be provided in the law, regulations or bylaws as aforesaid, and to pay all fees and taxes payable to such authorities in respect thereof.

**81. Jurisdiction**

The agreement shall be executed at Gurugram on non-judicial stamp paper purchased in Gurugram and the courts at Gurugram alone will have jurisdiction to deal with matters arising there from, to the exclusion of all other courts.

**82. Contractor Liable for Damages, Defects During Defect Liability Period**

If the Contractor or his working people or servants shall break, deface, injure, or destroy any part of the building in which they may be working, or any building, road, road kerb, fence, enclosure, water pipe, cables, drains, electric or telephone post or wires, trees, grass or grassland, or cultivated ground contiguous to the premises on which the work or any part is being executed, or if any damage shall happen to the work while in progress, from any cause whatever or if any defect, shrinkage or other faults appear in the work, he shall, upon receipt of a notice in writing from Engineer-in-Charge on that behalf, make the same good at his own expense or in default, the Engineer-in-Charge shall cause the same to be made good by other workmen and deduct the expense from any sums that may be due or at any time thereafter may become due to the Contractor, or from his security deposit or the proceeds of sale thereof or of

a sufficient portion thereof.

### **83. Resolution and Settlement of Disputes & Arbitration**

Except where otherwise provided in the contract, all questions and disputes relating to the meaning of the specifications, design, drawings and instructions here-in before mentioned and as to the quality of workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or these conditions or otherwise concerning the works or the execution or failure to execute the same, whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter:

- (i) If the Contractor considers any work demanded of him to be outside the requirements of the contract, or disputes any drawings, record or decision given in writing by the Engineer-in-Charge or if the Engineer-in-Charge considers any act or decision of the Contractor on any matter in connection with or arising out of the contract or carrying out of the work, to be unacceptable and is disputed, such party shall promptly within 15 days of the arising of the disputes, request as under.
  - (a) Dispute to be put up before the Employer for resolution.
  - (b) If the resolution fails, the matter be put up before the Conciliation Committee to be appointed by the Employer.
  - (c) If the conciliation also fails, the Contractor may request for the appointment of arbitrator under intimation to the other party.
  - (d) On receipt of such request, the Employer may appoint a sole arbitrator for adjudication of the dispute(s).
- (ii) It is a term of this contract that the party invoking arbitration shall give a list of disputes with amounts claimed, if any, in respect of each such dispute along with the notice for appointment of arbitrator.
- (iii) The parties shall share the Arbitration fees equally. In case there is no finalization of place of arbitration, the Arbitral Tribunal shall determine the place of arbitration. The venue of the arbitration shall be such place as may be fixed by the Arbitral Tribunal in consultation with both the parties. Failing any such agreement, the Arbitral Tribunal shall decide the venue.

### **84. Action where no Specifications are prescribed**

In the case of any class of work for which there is no such specifications, such work shall be carried out in accordance with the latest CPWD, Bureau of Indian Standards Specifications. In case there are no such specifications mentioned in the CPWD/ Bureau of Indian Standards, the work shall be carried out as per

manufacturers' specifications, if not available then as per State/ District Specifications. In case there are no such specifications as required above, the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-Charge.



## **SECTION - 4**

### **Forms and Formats**

## Format-I

### Declaration by the bidder regarding bidding document

1. I/ We \_\_\_\_\_ (Name of the Bidder) hereby represent that we have gone through and understood the Bidding Documents (including but not limited to) the Commercial & Technical Requirements/ Specifications and that our Bid has been prepared accordingly in compliance with the requirements stipulated in the said documents.
2. I/ We are submitting the **Table of Contents of Bidding Documents and amendments, if any**, as part of our Bid duly signed and stamped on each page in token of our acceptance. We are not submitting the total Bidding Document as part of our Bid but undertake that said Bidding Document shall be deemed to form part of our Bid and in the event of award of work to us, all parts shall be considered for constitution of the Contract Agreement. Further, I/ We shall sign and stamp each page of these documents as a token of Acceptance and as a part of the Contract in the event of award of Contract to us.

<b>Signed for and on behalf of</b>
<b>&lt;bidder's name&gt;</b>
<b>&lt;Name of the Signatory&gt;</b>
<b>Authorised Representative of the Bidder</b>

Place: \_\_\_\_\_

Date: \_\_\_\_\_

## Format-II

### Letter of Waiver (on Letter-head of the Bidder)

1. I/ We \_\_\_\_\_<Bidder's Name> \_\_\_\_\_ hereby agree to fully comply with, abide by and accept without variation, deviation or reservation, all technical, commercial and other conditions whatsoever of the Bidding Document including Addenda (if any).
2. I/ We further hereby waive, withdraw and abandon any and all deviations, variations, objections or reservations whatsoever thereto here to-before set out, given or indicated in our offer, clarifications, correspondence, communications, or otherwise, with a view that the price bid submitted shall be treated to conform in all respects with the terms and conditions of the said Bidding Documents including all Addenda.
3. I/ We further hereby confirm that the prices quoted in the price bid are as per the provisions of the Bidding Document and there is no deviation in the price bid.

<b>Signed for and on behalf of</b>
<b>&lt;bidder's name&gt;</b>
<b>&lt;Name of the Signatory&gt;</b>
<b>Authorised Representative of the Bidder</b>

**Place:** \_\_\_\_\_

**Date:** \_\_\_\_\_

### **Format-III**

#### **Undertaking for Non-engagement of Child Labour**

I/ We hereby declare that:

- (i) We are committed to elimination of child labour in all its forms.
- (ii) Neither we nor any of our nominated sub-contractor(s) are engaging Child Labour in any of our work(s) in terms of the provisions of The Child Labour (Prohibition and Regulation) Act, 1986 and other applicable laws.
- (iii) We, as well as our nominated sub-contractor(s), undertake to fully comply with provisions of The Child Labour (Prohibition and Regulation) Act, 1986 and other applicable labour laws in case the work is awarded to us.
- (iv) It is understood that if I/We, either before award or during execution of Contract, commit a transgression through a violation of (ii) and (iii) above or in any other form, such as to put my/our reliability or credibility in question, the Employer is entitled to disqualify us from the Tender process or terminate the Contract, if already executed or exclude me/us from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression as determined by the Employer. Such exclusion may be for a period of 1 year to 3 years as per the procedure prescribed in the guidelines for holiday listing of the Employer.
- (v) I/ We accept and undertake to respect and uphold the Employer's absolute right to resort to and impose such exclusion.

<b>Signed for and on behalf of</b>
<b>&lt;bidder's name&gt;</b>
<b>&lt;Name of the Signatory&gt;</b>
<b>Authorised Representative of the Bidder</b>

**Place:** \_\_\_\_\_

**Date:** \_\_\_\_\_

### Format - IV

### Form for submission of Pre-bid queries by the bidders

[illegible]

**(Name & Signature of the Bidder  
or his authorised representative)**

**Place:**

**Dated:**

**Format-V****Application for Extension of Time**

(To be submitted by the Contractor)

1.	Name of the Contractor											
2.	Name of the work as given in the Agreement											
3.	Agreement No.											
4.	Estimated amount put to tender											
5.	Date of commencement of work as per agreement											
6.	Period allowed for completion of work as per agreement											
7.	Date of completion stipulated as per agreement											
8.	Period for which extension of time has been given previously: <b>Extension Granted earlier:</b> <table border="1"> <tr> <td>a)</td> <td>First extension vide Engineer-in-charge letter No... ..date</td> <td>Months</td> <td>Days</td> </tr> <tr> <td>b)</td> <td>2nd extension vide Engineer-in-charge letter No..... date</td> <td>Months</td> <td>Days</td> </tr> </table>			a)	First extension vide Engineer-in-charge letter No... ..date	Months	Days	b)	2nd extension vide Engineer-in-charge letter No..... date	Months	Days	
a)	First extension vide Engineer-in-charge letter No... ..date	Months	Days									
b)	2nd extension vide Engineer-in-charge letter No..... date	Months	Days									
9.	Reasons for which extension have been previously given (copies of the previous application should be attached)											
10.	Period for which extension is applied for:											
11.	Hindrances on account of which extension is applied for with dates on which hindrances occurred, and the period for which these are likely to last - a) Serial No. b) Nature of hindrance c) Date of Occurrence d) Period for which it is likely to last e) Period for which extension required for this particular hindrance. f) Overlapping period, if any, with reference to item g) Net extension applied for h) Remarks, if any											
12.	Total period for which extension is now applied for on account of hindrances mentioned above			Month/ days								
13.	Extension of time required for extra work.											

14.	Details of extra work and on the amount involved: a) Total value of extra work b) Proportionate period of extension of time based on estimated amount put to tender on account of extra work.	
15.	Total extension of time required for 11 & 12	

Submitted in the office of the Engineer-in-Charge.

**Signed for and on behalf of**  
**<bidder's name>**

**<Name of the Signatory>**

**Authorised Representative of the Bidder**

**Place:** \_\_\_\_\_

**Date:** \_\_\_\_\_

## Format - VI

### Performa of Bank Guarantee in lieu of EMD

(Judicial Stamp paper of appropriate value as per stamp Act of respective state)

Employer/PMC,

1. In consideration of the Employer/PMC, having its Registered Office at \_\_\_\_\_ (hereinafter called "Employer/ PMC" which expression shall, unless repugnant to the subject or context, include its successors and assigns) having issued Notice Inviting Tender No. \_\_\_\_\_ and M/s. \_\_\_\_\_ having its Registered Office at \_\_\_\_\_ (hereinafter called the "Tenderer") is to participate in the said tender for \_\_\_\_\_.
2. Whereas the Employer/PMC, as a special case, has agreed to accept an irrevocable and unconditional Tender Bond Guarantee for an amount of Rs. \_\_\_\_\_, valid up to \_\_\_\_\_ from the tenderer in lieu of Cash Deposit of Rs. \_\_\_\_\_ required to be made by the tenderer, as a condition precedent for participation in the said tender.
3. We the (hereinafter called the "BANK") having its Registered Office at \_\_\_\_\_ and branch office at \_\_\_\_\_, do hereby unconditionally and irrevocably undertake to pay to the Employer/PMC immediately on demand in writing, without any demur/ protest, any amount but not exceeding Rs. \_\_\_\_\_ and any such demand made by the Employer/PMC shall be conclusive and binding on us irrespective of any dispute or differences that may be raised by the tenderer. Any change in the constitution of the tenderer or the Bank shall not discharge our liability under this Guarantee.
4. We, the \_\_\_\_\_ Bank, lastly undertake not to revoke this guarantee during its currency without the prior consent of the Employer/PMC in writing and this guarantee shall remain valid up to \_\_\_\_\_ upon expiry of which, we shall be relieved of our liability under this guarantee thereafter.

**For and on behalf of the Bank**

**Place:**

**Dated:**

**Witness.**

- 1.
- 2.



## Format-VII

### Performa of Bank Guarantee (Performance)

(Judicial Stamp paper of appropriate value as per stamp Act of respective state)

Employer/PMC,

1. Whereas the Employer/ PMC, having its Registered Office at \_\_\_\_\_ (hereinafter called "Employer/PMC", which expression shall include its successors and assigns) having awarded a work order/contract / supply order No. dated \_\_\_\_\_ (hereinafter called the contract) to M/s \_\_\_\_\_ (hereinafter called the contractor/ supplier) at a total price of Rs. \_\_\_\_\_ subject to the terms and conditions contained in the contract.
2. Whereas, the terms and conditions of the contract require the contractor to furnish a bank guarantee for Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_) being \_\_\_\_\_ % of the total value of the contract for proper execution and due fulfilment of the terms and conditions contained in the contract.
3. We, the Bank, (hereinafter called the "Bank") do hereby unconditionally and irrevocably undertake to pay to the Employer/PMC immediately on demand in writing and without protest/or demur all moneys payable by the contractor/ supplier to the Employer/PMC in connection with the execution/ supply of and performance of the works/ equipment, inclusive of any loss, damages, charges, expenses and costs caused to or suffered by or which would be caused to or suffered by Employer/PMC by reason of any breach by the contractor/ supplier of any of the terms and conditions contained in the contract as specified in the notice of demand made by Employer/PMC to the bank. Any such demand made by Employer/PMC on the bank shall be conclusive evidence of the amount due and payable.
4. This guarantee shall be a continuing guarantee and irrevocable for all claims of the Employer/PMC as specified above and shall be valid during the period specified for the performance of the contract.
5. We, the said bank, further agree with the Employer/PMC that the Employer/PMC shall have the fullest liberty, without our consent and without affecting in any manner our obligations and liabilities hereunder, to vary any of the terms and conditions of the said contract or to extend time for performance of the contract by the contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by Employer/PMC against the contractor/supplier under the contract and forbear or enforce any of the terms and conditions relating to the said contract and we shall not be relieved from our liability by reason of any such variations or extension being granted to the contractor or for any forbearance, act or omission on the part of Employer/PMC or any indulgence by Employer/PMC to the contractor or by any such matter or thing, whatsoever, which under the law relating to the sureties would, but for this provision, have effect of so relieving us.
6. This guarantee/undertaking shall be in addition to any other guarantee or

security whatsoever Employer/PMC may now or at any time have in relation to the performance of the works/ equipment and the Employer shall have full recourse to or enforce this security in performance to any other security or guarantee which the Employer/PMC may have or obtained and there shall be no forbearance on the part of the Contractor in enforcing or requiring enforcement of any other security which shall have the effect of releasing the Bank from its full liability. It shall not be necessary for Employer/PMC to proceed against the said contractor/supplier before proceeding against the Bank.

7. This guarantee/ undertaking shall not be determined or affected by the liquidation or winding up, dissolution or change of constitution or insolvency of the supplier/ contractor, but shall in all respects and for all purposes be binding and operative until payment of all moneys payable to Employer/PMC are paid by the Bank in terms thereof.
8. The Bank hereby waives all rights at any time inconsistent with the terms of this Guarantee and the obligations of the bank in terms hereof shall not be otherwise effected or suspended by reasons of any dispute or disputes having been raised by the supplier/ contractor (whether or not pending before any Arbitrator, Tribunal or Court) or any denial of liability by the supplier/ contractor stopping or preventing or purporting to stop or prevent any payment by the Bank to Employer/PMC in terms hereof.
9. We, the said Bank, lastly undertake not to revoke this guarantee during its currency except with the previous consent of Employer/PMC in writing, upon expiry of which we shall be relieved from all liabilities under this guarantee thereafter.
10. Signed this \_\_\_\_\_ day of \_\_\_\_\_ at \_\_\_\_\_.

**For and on behalf of the Bank**

(Signature, name and Designation of the Signatory  
along with the Bank Seal)

WITNESS.

1.

2.

## **Format - VIII**

### **Performa of Bank Guarantee**

(For mobilization advance)

(Judicial Stamp paper of appropriate value as per stamp Act of the respective state)

Employer/PMC,

1. In consideration of the Employer/PMC, having its Registered Office at \_\_\_\_\_ (hereinafter called "Employer/PMC", which expression shall unless repugnant to the subject or context include its successor and assigns) having agreed under the terms and conditions of Contract No. \_\_\_\_\_ dated \_\_\_\_\_ made between \_\_\_\_\_ and the Employer/PMC in connection with \_\_\_\_\_ (hereinafter called "the said contract") to make at the request of the Contractor a Mobilization Advance of Rs. \_\_\_\_\_ for utilizing it for the purpose of the Contract on his furnishing a guarantee acceptable to Employer/PMC, we the \_\_\_\_\_ Bank Ltd. (hereinafter referred to the "the said Bank") and having our registered office at \_\_\_\_\_ do hereby guarantee the due recovery by Employer/PMC of the said advance as provided according to the terms and conditions of the Contract.
2. We, the said Bank, do hereby undertake to pay the amount due and payable under this Guarantee without any demur, merely on a demand from the Employer/PMC stating that the amount claimed is due to the Employer/PMC under the said Agreement. Any such demand made on the \_\_\_\_\_ shall be conclusive as regards the amount due and payable by the \_\_\_\_\_ under this guarantee and \_\_\_\_\_ agree that the liability of the \_\_\_\_\_ to pay the amount so demanded to the Employer/PMC, shall be absolute and unconditional notwithstanding any dispute or disputes raised by the Contractor and notwithstanding any legal proceeding(s) pending in any Court or Tribunal relating thereto. However, our liability under this Guarantee shall be restricted to an amount not exceeding Rs. \_\_\_\_\_, which shall be valid up to \_\_\_\_\_.
3. We, \_\_\_\_\_ Bank further agree that Employer/PMC shall be the sole judge of and as to whether the amount claimed has fallen due to the Employer/PMC under the said agreement or whether the said Contractor has not utilized the said advance or any part thereof for the purpose of the Contract and the extent of loss or damage caused to or suffered by Employer/PMC on account of the said advance together with interest not being recovered in full and the decision of Employer/PMC that the amount has fallen due from contractor or the said Contractor has not utilized the said advance or any part thereto for the purpose of the contract and as to the amount or amounts of loss or damage caused to or suffered by Employer/PMC shall be final and binding on us.

4. We, the said Bank, further agree that the Guarantee herein contained shall remain in full force and effect till the said advance has been fully recovered and its claims satisfied or discharged and till the Employer/PMC certify that the said advance has been fully recovered from the said contractor and, accordingly, discharges this Guarantee subject, however, that Employer/PMC shall have no claims under this Guarantee after the said advance has been fully recovered, unless a notice of the claims under this Guarantee has been served on the bank before the expiry of the said Bank Guarantee in which case the same shall be enforceable against the Bank.
5. The Employer/PMC shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee or indemnity from time to time to vary any of the terms and conditions of the said Contract or the advance or to extend time of performance by the said Contractor or to postpone for any time and from time to time of the powers exercisable by it against the said Contractor and either to enforce or forbear from enforcing any of terms and conditions governing the said Contract or the advance or securities available to the Employer/PMC and the said Bank shall not be released from its liability under these presents by any exercise by Employer/PMC of the liberty with reference to the matters aforesaid or by reasons of time being given to the said Contractor or any other forbearance, act or omission on the part of Employer/PMC or any indulgence by Employer/PMC to the said Contractor or of any other matter or thing whatsoever which under sureties the law relating to would but for this provision have the effect of so releasing the bank from its such liability.
6. It shall not be necessary for Employer/PMC to proceed against the Contractor before proceeding against the Bank and the Guarantee herein contained shall be enforceable against the Bank notwithstanding any security which Employer/PMC may have obtained or obtain from the Contractor or shall at the time when proceedings are taken against the Bank hereunder be outstanding or unrealized.
7. We, the said Bank, lastly undertake not to revoke this Guarantee during its currency except with the previous consent of Employer/PMC in writing and agree that any change in the constitution of the said Contractor or the said Bank shall not discharge our liability hereunder.
8. Signed this \_\_\_\_ day of \_\_\_\_\_ at \_\_\_\_\_.

**For and on behalf of the Bank**

(Signature, name and Designation of the Signatory  
along with the Bank Seal)

WITNESS.

1. \_\_\_\_\_ 2. \_\_\_\_\_

## Format – IX

### Performa for Bank Guarantee

(In lieu of Security Deposit)

(Judicial Stamp paper of appropriate value as per Stamp Act of respective state)

Employer/PMC,

- A. In consideration of the Employer/PMC, having its Registered Office at \_\_\_\_\_ (hereinafter called "Employer/PMC"), which expression shall include its successors and assigns, having awarded to M/s \_\_\_\_\_ (hereinafter called "the Supplier/ Contractor"), which expression shall wherever the subject or context so permits includes its successors and assigns, a Contract in terms inter-alia of Employer/PMC's letter No. \_\_\_\_\_ dated \_\_\_\_\_ and the Contract/ Purchase Conditions of the Employer/ PMC with the condition of the Contractor/ Supplier furnishing a Bank Guarantee to secure the performance of Contractor's/ Supplier's obligations and /or discharge of the contractor's/ supplier's liability under and/or in connection with the said supply/ contract up to a sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only).
- B. We, \_\_\_\_\_, ((hereinafter called "the Bank"), which expression shall include its successors and assigns, hereby undertake and guarantee payment to Employer/ PMC forthwith on the same day on demand in writing and without any protest or demur of any and all moneys payable by the supplier/contractor to the Employer/PMC under, in respect or in connection with the said contract inclusive of all the losses, damages, costs, charges and expenses and other moneys payable in respect of the above as specified in any notice of demand made by Employer/PMC to the Bank with reference to this guarantee up to and aggregate limit of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only) and the Bank hereby agree with Employer/PMC that:
1. This Guarantee shall be a continuing guarantee and shall remain valid and irrevocable for all claims of the Employer/PMC and liabilities of Supplier/ Contractor arising up to and until midnight of \_\_\_\_\_ ;
  2. This Guarantee shall be in addition to any other Guarantee or Security whatsoever that Employer/PMC now or at any time have in relation to the Supplier's/ Contractor's obligations/ liabilities under and/or in connection with the said supply/contract, and the Employer/PMC shall have full authority to take recourse or to enforce this Security in preference to any other Guarantee or Security which the Employer/PMC may have or obtain and no forbearance on the part of Employer/PMC in enforcing or requiring enforcement of any other Security shall have the effect of releasing the Bank from its liability hereunder;

3. The Employer/PMC shall be at liberty without reference to the Bank and without affecting the full liability of the Bank hereunder to take any other security in respect of the Supplier's/Contractor's obligations and/ or liabilities under or in connection with the said supply/contract or to grant time and / or indulgence to the supplier/ contractor or to increase or otherwise vary the prices or the total contract value or to release or to forbear from enforcement of all or any of the conditions under the said supply/ contract and/or the remedies of the Employer/PMC under any other security/securities now or hereafter held by Employer/PMC and no such dealings, increase(s) or other indulgence(s) or arrangement(s) with the supplier/ contractor or releasing or forbearance whatsoever shall have the effect of releasing the Bank from its full liability to Employer/PMC hereunder or prejudicing rights of Employer/ PMC against the Bank;
4. This Guarantee shall not be determined or affected by the liquidation or winding up, dissolution or change of constitution or insolvency of the supplier/ contractor but shall in all respects and for all purposes be binding and operative until payment of all moneys payable to the Employer/PMC in terms thereof;
5. The Bank hereby waives all rights at any time inconsistent with the terms of this Guarantee and the obligations of the Bank in terms hereof shall not be otherwise affected or suspended by reason of any dispute or disputes having been raised by the supplier/ contractor (whether or not pending before any Arbitrator, Tribunal or Court) or any denial or liability by the supplier/ contractor stopping/ preventing or purporting to stop or prevent any payment by the Bank to Employer/PMC in terms thereof;
6. The amount stated in any notice of demand addressed by Employer/PMC to the Guarantor as liable to be paid to the Employer/PMC by the supplier/contractor or as suffered or incurred by Employer/PMC on account of any losses or damages, costs, charges and/or expenses shall as between the Bank and Employer/PMC be conclusive of the amount so liable to be paid to the Employer/PMC or suffered or incurred by Employer/PMC as the case may be and payable by the Guarantor to the Employer/PMC in terms hereof subject to a maximum of Rs \_\_\_\_\_ (Rupees \_\_\_\_\_ only);
7. Unless demand or claim under this Guarantee is made on the Guarantor in writing within three months from the date of expiry of the Guarantee i.e. up to the Guarantor shall be discharged from all liabilities under this Guarantee there under;
8. Notwithstanding anything contained hereinbefore, our liability under this guarantee is restricted to Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only). This guarantee will expire on \_\_\_\_\_

\_\_\_\_\_. Any claim under this Guarantee must be received by us within three months from the date of expiry.

9. Signed this \_\_\_\_\_ day of \_\_\_\_\_ at \_\_\_\_\_.

**For and on behalf of the Bank**

(Signature, name and Designation of the Signatory along with the Bank Seal)

WITNESS.

1.

2.

**Format - X**

**Form for Guarantee Bond for anti-termite Treatment**

**Deleted**



## Format - XI

### **Draft for Guarantee to be executed by the Contractor for removal of defects after completion in respect of Water-proofing works**

This agreement made on this \_\_\_\_\_ day of \_\_\_\_\_, Two thousand Twenty Two between \_\_\_\_\_ (hereinafter called Guarantor of the one Part) and the Employer/ PMC (hereinafter called the Execution Agency of the other Part).

- A. WHEREAS this agreement is supplementary to a contract (hereinafter called the Contract) dated \_\_\_\_\_ made between the GUARANTOR of the ONE Part and the Employer/ PMC of the Other Part, whereby the Contractor, inter-alia, undertook to render the buildings and structures in the said contract recited completely water and leak proof.
- B. AND WHEREAS the Guarantor agreed to give a guarantee to the effect that the said structures will remain water and leak proof for a period of Ten years from the date of issue of Completion Certificate by the Employer.

NOW, THE GUARANTOR hereby guarantees that the water-proofing treatment given by him will render the structures completely leak-proof and the minimum life of such water-proofing treatment shall be Ten years to be reckoned from the date of issue of Completion Certificate of the building/ project by the Employer/PMC as prescribed in the contract.

Provided that the Guarantor will not be responsible for leakage caused by earthquake or structural defects or misuse of roof or alteration and for such purpose.

- (a) Misuse of roof shall mean any operation, which will damage water-proofing treatment, like chopping of fire wood and things of the same nature which might cause damage to the roof.
- (b) Alternation shall mean construction of an additional storey or a part of the roof or construction adjoining to existing roof whereby proofing treatment is removed in parts.
- (c) The decision of the Engineer-in-Charge with regard to cause of leakage shall be final.

That this Agreement, inter alia, provides for the following:

1. During this period of guarantee, the Guarantor shall make good all defects, in case of any defect being found, and render the building completely water-proof to the satisfaction of the Engineer-in-Charge at his cost. The Guarantor shall commence the work for such rectification within seven days from the date of issue of notice by the Engineer-in-Charge calling upon him to rectify the defects, failing which the work shall be got done by the Employer/ PMC from some other

Contractor at the guarantor's cost and risk. The decision of Engineer- in-Charge as to the cost, payable by the Guarantor, shall be final and binding.

2. That if the Guarantor fails to execute the waterproofing or commits any breach thereunder, then the Guarantor will indemnify the principal and his successors against all laws, damage, cost, expense or otherwise which may be incurred by him by reason of any default on the part of the GUARANTOR in performance and observance of this supplementary agreement. As to the amount of loss and/or damage and/or cost incurred by the Employer/PMC, the decision of the Engineer-in-Charge will be final and binding on the parties.
3. IN WITNESS WHEREOF these presents have been executed by the Obligator \_\_\_\_\_ and by \_\_\_\_\_ and for and on behalf of the Employer/PMC on the day, month and year first above written.

<b>For and on Behalf of the Guarantor</b>	<b>For and on behalf of the Employer/ PMC</b>
<Signature>	<Signature>
<Name and Address of the Authorised Signatory>	<Name and Address of the Authorised Signatory>
<b>Witnesses</b>	<b>Witnesses</b>
1.	1.
2.	2.

## **Format-XII**

### **Performa for Indenture for Secured Advance or Credit**

THIS INDENTURE made this \_\_\_\_\_ day of \_\_\_\_\_

Between

The Contractor, which expression shall where the Context as admits or implies be deemed to include his executor/ administrators and assigns of the one part;

And

The Employer/PMC, having its Registered Office at \_\_\_\_\_ (represented trough the Engineer-in-Charge), which expression shall where the context so admits or implies be deemed to include its successors and assign of the other part;

Whereas by an agreement dated (hereinafter called the said agreement), the Contractor has agreed to construct \_\_\_\_\_ ;

And whereas the Contractor has applied to the Engineer-in-Charge that he may be or be given credit for materials brought by him to the site of the work subject to the said agreement for use in construction of the work.

NOW. THIS INDENTURE Witnessed that in pursuance of the said agreement and in consideration of the sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only) paid to the contractor by the Engineer-in-Charge, the receipt whereof the Contractor hereby acknowledges and of such advance or credit (if any) as may be made to him as aforesaid, the Contractor hereby covenants and agrees with the Engineer-in-Charge and declares as follows:

1. That all sums given as advance or credit by the Engineer-in-Charge to the Contractor as aforesaid shall be employed by the Constructor in or toward the execution of the said works and for no other purpose whatsoever.
2. That the material for which the advance or credit is given are offered to and accepted by the Engineer-in-Charge as security and are absolutely the Contractor's own property and free from encumbrances of any kind. The Contractor will not make any application for or receive further advance or credit on the security or material which are not absolutely his own property and free from encumbrances of any kind and the Contractor shall indemnify the Engineer-in-Charge against any claims to any material in respect of which advance or credit has been made to him as aforesaid.
3. That the said material and all other material on the security of which any further advance or advances or credit may be given as aforesaid (hereinafter called the said materials) shall be used by the Contractor solely in the execution of the said works in accordance with the directions of the Engineer-in-Charge and in terms of said agreement.

4. That the Contractor shall make all necessary and adequate arrangements for the proper safe custody and protection at his own cost against all risks qua the said material and, that until used in the construction as aforesaid, the material shall remain at the site of the said works in the Contractor's custody and on his responsibility and shall at all times be open to inspection by the Engineer-in-Charge. In the event of the materials or any part thereof being stolen, destroyed or damaged or getting deteriorated, the Contractor will replace the same with other materials of like quality or repair and make good the same as required by the Engineer-in-Charge.
5. That said material shall not on any account be removed from the site of work except with the written permission of the Engineer-in-Charge.
6. That the advance shall be repayable in full when or before the Contractor receives payment from the Engineer-in-Charge of the price payable to him for the said work under the terms and provisions of the said agreement. Provided that if any intermediate payments are made to the Contractor on account of work done then on the occasion of each payment, the Engineer-in-Charge will be at liberty to make a recovery from the Contractor's bill from such payments by deducting therefrom the value of the said materials than actually used in the construction and in respect of which recovery has not been made previously. The value of this purpose being determined in respect of each description of materials at the rates at which the amounts of the advance as made under these presents was calculated.
7. That if the Contractor shall at any time make any default in the performance or observance in respect of any of the terms and provisions of the said agreement or of that provisions the total amount of the advance or advances that may still be owing to the Engineer-in-Charge, shall immediately on the happening of such default be repayable by the Contractor to the Engineer-in-Charge together with interest thereon at 12% p.a. from the date of respective date to such advance or advances to the date of payment and with all costs. Damages and expenses incurred by the Engineer-in-Charge in or for recovery hereof or the Contractor hereby covenants and agrees with The Engineer to repay and pay the same respective to him accordingly.
8. That the Contractor hereby charges all the said materials with the repayment to The Engineer of all sums advances or credit as aforesaid and all costs. Charges, damages and expenses payable under these presents PROVIDED ALWAYS it is hereby agreed and declared that notwithstanding anything in the said agreement and without prejudice to the powers contained therein if and wherever the covenant for payment and repayment herein before contained shall become enforceable and the money owing shall not be paid in accordance therewith. The Engineer may at any time thereafter adopt all or any of the following courses he may deem best:

- (i) Seize the utilize the said material or any part thereof in the completion of the said works in accordance with the provision in that behalf contained in the said agreement debating the Contractor with the actual cost of effecting such completion and the amount due in respect of advance or credit under these presents and crediting the Contractor with value of work done as if he has carried it out in accordance with the said agreement and the rates thereby provided if the balance is against the Contractor is to pay the same to the engineer on demand.
  - (ii) Remove and sell by public action the seized materials or any part thereof and out of the money arising from the sale repay the engineer under these presents and pay over the surplus (if any) to the Contractor.
  - (iii) Deduct all or any part of the moneys owing from any sums due to the contractor under said agreement.
9. Expect in the event of such default on the part of contractor as aforesaid, interest or the said advance shall not be payable.
10. That in the event of conflict between the provisions of these presents and the said agreements, the provision of these presents shall prevail and in the event of any dispute or difference arising over the construction or effect of these presents, the settlement of which has not been hereinbefore expressly provided for the same shall so far as is lawful be subject to jurisdiction of Delhi courts only.

IN WITNESS whereof the said the engineer and the contractor hereunto set their respective hands and seals the day year first above written.

Signed Sealed and delivered by Contractor

### Format - XIII

#### **Undertaking by the Contractor regarding Compliance with the provisions of Contract Labour (Regulation & Abolition) Act & Rules, EPF and ESI Obligations**

(To be submitted along with each RA/Final Bill)

I, S/o Sh. \_\_\_\_\_, authorised representative of M/s \_\_\_\_\_ <the Contractor> \_\_\_\_\_ do hereby declare and undertake as under:

- (i) That in the capacity of independent Contractor for M/s \_\_\_\_\_ <Employer/PMC> \_\_\_\_\_ at \_\_\_\_\_, I and the sub-contractor engaged by me for the above said work, if any, have complied with the provisions of Contract Labour (Regulation & Abolition) Act, 1970 by holding a valid license under the Act and Rules thereto. I have paid the wages **for the month of** \_\_\_\_\_.
- (ii) These wages are not less than the minimum rates applicable to all the employees and no other dues are payable to any employee.
- (iii) That I and the sub-contractor engaged by me for the above said work, if any, have covered all the eligible employees under the Employees Provident Funds and Miscellaneous Provisions Act, 1952 and the Employees State Insurance Act, 1948 and deposited the Contributions for the months up to \_\_\_\_\_ and, as such, no amount towards EPF/ESI contributions, whatsoever is payable, is pending.
- (iv) I further declare and undertake that in case any liability pertaining to my employees or towards employees of the sub-contractor engaged by me for the above said work, if any, arises in future, I shall be fully responsible for all consequences. In case any liability is discharged by Employer/PMC due to my/ my sub-contractor's lapse, I undertake to reimburse the same or the Employer/PMC is authorised to deduct the same from my dues at this Project or at any other Project.

#### **Authorised Signatory**

**(Name & Seal of Company)**

**Date:-** \_\_\_\_\_

Witness

1. –

2. –

**Format - XIV**  
**Approval of Sub-Contractor**

**Deleted**

## **SECTION - 5**

### **Special Conditions of Contract**



## 1. General

The documents forming the Contract are to be taken as mutually explanatory of one another. If there is an ambiguity or discrepancy in the documents, the Employer shall issue necessary clarifications or instructions to the Contractor, and the order of precedence of the documents shall be as follows:

- I. Contract Agreement
- II. Letter of Award
- III. Bill of Quantities
- IV. Approved Drawings
- V. Technical Specifications
- VI. Special Conditions of Contract
- VII. Instructions to Tenderers
- VIII. General Conditions of Contract
- IX. Other

## 2. Scope of Work

The scope of work covered in this contract will be as described in **Annexure - I to SCC**.

## 3. Scope of Supply

The scope of supply covered in this contract will be as described in **Annexure -II to SCC**.

## 4. Time Schedule

- 4.1. The work shall be executed strictly as per the Time Schedule mentioned in **Annexure - III to SCC**. The period of completion given includes the time required for mobilization & demobilization as well as testing, commissioning, rectifications, if any, re-testing, and completion in all respects as per the directions of the Engineer-in-Charge.

## 5. Statutory Approvals

- 5.1. Obtaining statutory approvals (for both temporary and permanent works) during construction and upon completion, as required, and as defined in Contractor's Scope of Work in **Annexure-I to SCC**, shall be the responsibility of the Contractor. Contractor shall arrange the inspection of the works by the authorities and necessary co-ordination and liaison work in this respect.

The statutory approvals/ permissions (but not limited to the following) are required to be arranged by the contractor for the execution of works. In case the permissions/ approvals are arranged by the contractor in the name of employer, the fees paid for obtaining such statutory approvals shall be

reimbursed as per actuals by the employer on production of documentary evidence .

## **6. Site Organization and Construction Equipment**

### **6.1. Site Organisation:**

- (i) The contractor stands liable and responsible to provide adequately qualified, skilled, semi-skilled, and unskilled personnel on the work. The contractor shall deploy the minimum key Construction Personnel as specified in **Annexure-IV to SCC** and augment the same from time to time as decided by the Engineer-in-Charge depending upon the site requirements & the exigencies of work so as to complete all works within the contracted time schedule and the same shall be done without any additional cost to the Employer. In case the contractor fails to deploy the minimum required key personal, the recovery shall be effected as per details in **Annexure –IV**.

### **6.2. Construction Equipment**

To complete the work as per specifications and within the time schedule, the Contractor shall progressively deploy **Equipment & Machinery** as specified in **Annexure-V to SCC** as and when required and augment the same as decided and directed by the Engineer-in-Charge depending on the exigencies of the work so as to complete all works within the contracted time schedule and without any additional cost to the Employer. The Employer shall not supply any equipment, except those mentioned in Clause 8 below.

## **7. Health Safety and Environment (HSE) Management**

In continuation with Clause 34 of the GCC, the HSE management at site shall be carried out in strict compliance to **Annexure - VIII to SCC**.

## **8. Maintenance of the Works**

- (i) Contractor shall prepare and submit all Operation & Maintenance manuals as per “Good Engineering Practices” after completion of work, which shall be got approved from the Engineer- in-charge.

## **9. Additional Special conditions of contract (Annexure-IX)**

Additional special project specific conditions are given in the **Annexure-IX**.

## **Annexure - I (Special Conditions of Contract)**

### **Scope of Work**

1. As per scope of work as defined in Technical specification of the work. .
2. Obtaining statutory clearances before taking of the works at site, during the execution of works at site and after completion of works from concerned statutory authority(ies).

## **Annexure - II**

### **(Special Condition of Contract)**

#### **Scope of Supply**

1. Scope of Supply shall be as specified in the technical section of the bidding document.
2. All material, equipment, consumables etc. required for successful completion of the works are to be supplied by the contractor.
3. All materials, equipment, labour & consumables required for successful completion of work shall be supplied by the Contractor and the cost of such supply shall be deemed to be included in the quoted rates without any additional liability on the Employer except for the material (if any) specifically covered under Employer's Scope of Supply.
4. The Equipment tools and tackles to facilitate construction and after final commissioning, Performance Guarantee, Test run shall be in Contractor's scope. No additional payment shall be made for mobilization and/or demobilization of such equipment, tools & tackles etc.

0-0-0-0-0-0

## Annexure- III (Special Condition Of Contract)

### Time Schedule

Sr. No.	Description	Time of Completion
1	Design, Supply, Installation, Testing & Commissioning of civil Mechanical, Electrical and Instrumentation work for Construction of STP with MBBR cum Aerobic Treatment with Nitrification, Denitrification, Tertiary Treatment for Phosphorous reduction technology (Preparation of Civil, Architectural, structural, Shop Drawings etc. all complete for 800 KLD treatment plant and Execution of civil works for 800 KLD including epoxy painting from inside the tank for water proofing and all other ancillary work with minimum M-30 grade concrete, construction of plant room to accommodate 2 modules & Electro Mechanical cum instrumentation work for 400 KLD, Module-1) as per latest CPCB/HSPCB/NGT guidelines for reuse/disposal of treated waste water including DLP and O&M for 5 years at "The Willows" Unitech Grande, Sector 96, 97 & 98 at Noida, U.P.	24 Months

## **Annexure- IV**

### **(Special Conditions of Contract)**

#### **Qualifications & Experience of Key Construction Personnel**

1. Well qualified and experienced persons be deployed for the completion of the project

Sr No	Designation	Nos	Qualification
1	Project Manager	1	B.Tech/B.E
2	Supervisor	1	10 <sup>th</sup> / 12 <sup>th</sup> /with at least 5 yrs experience in construction work
3	Civil Engineer	1	Degree with 10 yrs Experience or Diploma with 5 yrs In Engineering
4	Electrical Engineer	1	Degree with 10 yrs Experience or Diploma with 5 yrs In Engineering
5	Mechanical Engineer	1	Degree with 10 yrs Experience or Diploma with 5 yrs In Engineering

## **Annexure - V**

### **(Special Conditions of Contract)**

#### **Indicative List of Equipment & Machinery to be deployed by the Contractor**

The Equipment/ Machinery required to be mobilized by the contractor during Construction to Complete the work within schedule time as per requirement. Contractor is required to augment the additional numbers/categories as required and/or as directed by Engineer-In-Charge to carry out the works within the completion schedule.

**Annexure - VI**  
**(Special Conditions of Contract)**

**Material lying at site to be supplied by the Employer**

**Nil**



**Annexure - VII**  
**(Special Conditions of Contract)**

**List of Plant & Equipment in possession of Employer, lying at Site along with rates to be recovered from the Contractor.**

Sr. No.	Description of Machinery /equipment	Unit	Rate per day to be charged including GST
1			
2	-----Nil-----		
3			
4			

**Annexure - VIII**  
**(Special Conditions of Contract)**

**Health, Safety & Environment Management Plan**

## **HEALTH, SAFETY & ENVIRONMENT MANAGEMENT PLAN**

### **1. Scope**

This specification establishes the Health, Safety and Environment (HSE) management requirement to be complied by Contractors/Vendors including their sub-contractors/sub vendors during construction.

This specification is not intended to replace the necessary professional judgment needed to design & implement an effective HSE system for construction activities and the contractor is expected to fulfil HSE requirements in this specification as a minimum. It is expected that contractor shall implement best HSE practices beyond whatever are mentioned in this specification.

Requirements stipulated in this specification shall supplement the requirements of HSE Management given in relevant Act(s)/ Legislations, General Conditions of Contract (GCC), Special Conditions of Contract (SCC) and Technical Specifications. Where different documents stipulate different requirements, the most stringent shall apply.

### **2 References**

The document should be read in conjunction with following:

- General Conditions of Contract (GCC)
- Special Conditions of Contract (SCC)
- Building and other construction workers Act,
- Indian Factories Act
- Technical specifications
- Relevant State & National Statutory requirements.
- Operating Manuals Recommendation of Manufacturer of various construction Machineries

### **3. Requirements of Health, Safety & Environmental (HSE) Management System to be complied by contractors**

#### **3.1 Management Responsibility**

##### **3.1.1 HSE Policy & Objectives**

The Contractor should have a documented and duly approved HSE policy & objectives to demonstrate commitment of their organization to ensure health, safety and environmental aspects in their line of operations.

##### **3.1.2 Management System**

The HSE management system of the Contractor shall cover the HSE requirements & commitments to fulfil them, including but not limited to what have been specified under clauses 1.0 and 2.0 above. The Contractor shall obtain the approval of its site specific HSE Plan from Engineer in charge prior to commencement of any site works. Corporate as well as Site management of the Contractor shall ensure compliance of their HSE Plan at work sites in its

entirety in true spirit.

### **3.1.3 Indemnification**

Contractor shall indemnify & hold harmless, Employer & their representatives, free from any and all liabilities arising out of non-fulfilment of HSE requirements or its consequences.

### **3.1.4 Deployment & Qualifications of Safety Personnel**

The Contractor shall designate / deploy various categories of HSE personnel at site as indicated below in sufficient number. The Safety supervisors, Safety stewards/Observer etc. would facilitate the HSE tasks at grass root level for construction sites and shall assist Safety Officer/Engineers. Contractor shall appoint safety personnel as given below;

3.1.4.1 Safety Observer/Steward: Contractor shall depute one Safety Observer/Steward.

3.1.4.2 Safety Supervisor: In addition to above, contractor shall depute one Safety Supervisor for every 250 workers and additionally thereon.

3.1.4.3 Safety Engineer: In addition to above (i & ii), one safety engineer/ officer for every 1000 workers and additionally thereon.

a) Safety Steward/Observer

As a minimum, he shall possess class XII pass certificate and should have minimum two year of practical experience in construction work environment and should have adequate knowledge of the local language spoken by majority of the workers at the construction site.

b) Safety Supervisor

As a minimum, he shall possess a recognized graduation Degree or a Diploma in Engg. with minimum Two years of practical experience in construction work environment and should possess requisite skills to deal with construction safety related day-to-day issues.

c) Safety Officer / Safety Engineer

Safety Officer/Engineer should possess following qualification & experience:

- (i) Recognized degree in any branch of Engg. or Tech. or Architecture with practical experience of working in a building or other construction work in supervisory capacity for a period of not less than two years, **or** possessing recognized diploma in any branch of Engg. or Tech with practical experience of working in a building or other construction work in supervisory capacity for a period of not less than five years.

- (ii) Recognized degree or one year diploma in Industrial safety (from any reputed Indian Institutes).
- (iii) Preferably have adequate knowledge of the language spoken by majority of the workers at the construction site.

Alternately

- (i) Person possessing Graduation Degree in Science with Physics & Chemistry and degree or one year diploma in Industrial Safety (from any reputed Indian institutes) with practical experience of working in a building, plant or other construction works (as Safety Officer) for a period of not less than five years, may be considered as Safety Officer.

The Contractor shall verify & authenticate credentials of such safety personnel and furnish Bio-Data/Resume/Curriculum Vitae of the safety personnel as above for approval of Engineer in charge.

Imposition/ Realization of penalty shall not absolve the Contractor from his/her responsibility of deploying competent safety officer at site.

Adequate planning and deployment of safety personnel shall be ensured by the Contractor, so that field activities do not get affected because of non-deployment of competent & qualified safety personnel in appropriate numbers.

### **3.1.5 Implementation, Inspection/Monitoring**

- a) The Contractor shall be fully responsible for planning, reporting, implementing and monitoring all HSE requirements and compliance of all laws & statutory requirements.
- b) The Contractor shall also ensure that the HSE requirements are clearly understood & implemented conscientiously by their site personnel at all levels at site.
- c) The Contractor shall ensure physical presence of their field engineers / supervisors, during the continuation of their contract works / site activities including all material transportation activities. Physical absence of experienced field engineers / supervisors of Contractor at critical work spot during the course of work may invite halting / stoppage of work.
- d) The Contractor shall regularly review inspection report internally and implement all practical steps / actions for improving the status continuously.
- e) Contractor skilled workmen like riggers, scaffold erectors, welders, crane operators etc. should have sufficient past experience and skill on the relevant job.
- f) The Contractor shall ensure important safety checks right from beginning of works at every work site locations. and to this effect format No. HSE-

10 "Daily Safety Check List" shall be prepared by field engineer & duly checked by safety personnel for conformance.

- g) The Contractor shall carry out inspection to identify various unsafe conditions of work sites/machinery/equipments as well as unsafe acts on the part of workmen/supervisor/engineer while carrying out different project related works.
- h) Adequate records for all inspections shall be maintained by the Contractor and the same shall be furnished to Engineer in charge, whenever sought.
- i) As a general practice lifting tools/tackles, machinery, accessories etc. shall be inspected, tested and examined by competent person (approved by concerned State authorities) before being used at site and also at periodical interval (e.g. during replacement, extension, modification, elongation/reduction of machine/parts, etc.) as per relevant statutes. Hydra, cranes, lifting machinery, mobile equipments/ machinery/ vehicles, etc. shall be inspected regularly by only competent / experienced personnel at site and requisite records for such inspections shall be maintained by contractor. Contractor shall also maintain records of maintenance of all other site machinery (e.g. generators, rectifiers, compressors, cutters, etc.) & portable tools/equipments being used at project related works (e.g. drills, abrasive wheels, punches, chisels, spanners, etc.).
- j) Site facilities /temporary. installations, e.g. batching plant, cement go down, DG-room, temporary electrical panels/distribution boards, fabrication yards, etc. and site welfare facilities, like labour colonies, canteen/pantry, rest-shelters, motor cycle/bicycle-shed, First-aid centers, urinals/toilets, etc. should be periodically inspected by Contractor.

### **3.1.6 Awareness and Motivation**

- a) The Contractor shall promote and develop awareness on Health, Safety and Environmental protection among all personnel working for the Contractor.
- b) The contractor shall display safety statistics board at all prominent location .Also shall provide dedicated notice board for displaying of safety alerts or any other safety related notices for awareness site workforces.
- c) Regular awareness programs and fabrication shop/work site meetings at least on monthly basis shall be arranged on HSE activities to cover hazards/risks involved in various operations during construction.

- d) Contractor to motivate & encourage the workmen & supervisory staff by issuing/ awarding them with tokens/ gifts/ mementos/ monetary incentives/ certificates etc. The motivational program shall be organized on regular basis.

### **3.1.7 Fire Prevention & First-Aid**

- a) The Contractor shall arrange suitable First-aid measures such as First Aid Box  
  
(Refer Appendix-B for details), stand-by Emergency Vehicle .Additionally separate\_ambulance. At least one fire extinguisher shall be placed at each location of DG Set, Hot works, electrical booth etc.
- b) The Contractor shall arrange installation of fire protection measures such as adequate number of steel buckets with sand & water and adequate number of appropriate portable fire extinguishers (Refer Appendix-C for details) to the satisfaction of Engineer in Charge..
- c) The Contractor shall arrange EMERGENCY MOCK DRILL like fire, bomb threat, gas leakage, earth quake, etc. at each site at least once in three months, involving site workmen and site supervisory personnel & engineers.
- d) The contractor shall require to tie-up with the hospitals located in the neighbourhood for attending medical emergency.

### **3.1.8 Documentation**

The Contractor shall evolve a comprehensive, planned and documented system covering the following as a minimum for implementation and monitoring of the HSE requirements and the same shall be submitted for approval by Engineer in Charge & EIL.

- HSE Organogram
- Site specific HSE Plan
- Safety Procedures, forms and Checklist. Indicative list of HSE procedures is attached as Appendix :H
- Inspections and Test Plan

### **3.1.9 Audit**

The Contractor shall submit an Audit Plan to Engineer in charge indicating the type of audits covering following as minimum:

- a) Internal HSE audits regularly on six monthly basis by engaging internal qualified auditors However, minimum two internal HSE audit will have to be conducted irrespective of time period of the contract.

All HSE shortfalls/ non-conformances on HSE matters brought out during review/audit, shall be resolved forthwith (generally within a week) by Contractor& compliance report shall be submitted to Engineer in charge.

In addition to above audits by contractor, the contractor's work shall be subjected to HSE audit by Engineer in charge at any point of time during the pendency of contract. The Contractor shall take all actions required to comply with the findings of the Audit Report and issue regular Compliance Reports for the same to Engineer in charge till all the findings of the Audit Report are fully complied. Failure to carry-out HSE Audits & its compliance by Contractor, shall invite penalization.

### **3.1.10 Meetings**

- i. The Contractor shall ensure participation of his top most executive at site (viz. Resident Construction Manager / Resident Engineer/ Project Manager / Site-in-Charge) in Safety Committee/HSE Committee meetings arranged by Engineer in charge usually on monthly basis or as and when called for. In case Contractor's top most executive at site is not in a position to attend such meeting, he shall inform Engineer in charge in writing before the commencement of such meeting indicating reasons of his absence and nominate his representative – failure to do so may invite very stringent penalization against the specific Contractor, as deemed fit as per Contract. The obligation of compliance of any observations during the meeting shall be always time bound. The Contractor shall always assist Engineer in charge to achieve the targets set by them on HSE management during the project implementation.
- ii. In addition, the Contractor shall also arrange internal HSE meetings chaired by his top most executive at site on fortnightly basis and maintain records. Such internal HSE meetings shall essentially be attended by field engineers / supervisors including safety personnel of the Contractor and its associates. Records of such internal HSE meetings shall be maintained by the Contractor for review by Engineer in charge or for any HSE Audits.
- iii. Agenda of internal HSE meeting should broadly cover: -
  - a) Confirmation of record notes /minutes of previous meeting
  - b) Discussion on outstanding subjects of previous points / subjects, if any
  - c) Incidents / Accidents (of all types) at project site, if any
  - d) Current topics related to site activities / subjects of discussion
  - e) House keeping
  - f) Information / views / deliberations of members / site sub-contractors
  - g) Report from Owner / Client
  - h) Status of Safety awareness, Induction programs & Training programs. The time frame for such HSE meeting shall be religiously maintained by one and all.



### **3.1.11 Intoxicating drinks & drugs and smoking**

- a) The Contractor shall ensure that his staff members & workers (permanent as well casual) shall not be in a state of intoxication during working hours and shall abide by any law relating to consumption & possession of intoxicating drinks or drugs in force.
- b) The Contractor shall not allow any workman to commence any work at any locations of project activity who is/are influenced / effected with the intake of alcohol, drugs or any other intoxicating items being consumed prior to start of work or working day.
- c) Awareness about local laws on this issue shall form part of the Induction Training and compulsory work-site discipline.
- d) The Contractor shall ensure that all personnel working for him comply with “No-Smoking” requirements of the Owner as notified from time to time. Cigarettes, lighters, auto ignition tools or appliances as well as intoxicating drugs, dry tobacco powder, etc. shall not be allowed inside the project / plant complex.
- e) Smoking shall be permitted only inside smoking booths, if any, exclusively designated & authorized by the Engineer in charge.

### **3.1.12 Penalty**

The Contractor shall adhere consistently to all provisions of HSE requirements. In case of non- compliances and also for repeated failure in implementation of any of the HSE provisions, Engineer in charge may impose stoppage of work without any cost & time implication to the Owner and/or impose a suitable penalty.

The amount of penalty to be levied against defaulted Contractor shall be up to a cumulative limit of 2.0% (Two percent) of the contract value.

This penalty shall be in addition to all other penalties specified elsewhere in the contract. The decision of imposing stop-work-instruction and imposition of penalty shall rest with Engineer in charge. The same shall be binding on the Contractor. Imposition of penalty does not make the Contractor eligible to continue the work in unsafe manner.

The amount of penalty applicable for the Contractor on different types of HSE violations is specified below:

Sl. No.	Violation of HSE Norms	Penalty Amount
1.	For not using personal protective equipment like Helmet, Safety Shoes, and other safety gadgets as applicable as per nature of work.	Rs.500/- per day/Item / Person
2.	Execution of work without deployment of requisite field engineer / supervisor at work spot	Rs.5,000/- per violation per day
3.	Unsafe electrical practices (not installing ELCB, using poor joints of cables, using naked wire without top plug into socket, laying wire/cables on the roads, electrical jobs by incompetent person, etc.)	Rs.5,000/- per item per day
4.	Working at height without full body harness, using non-standard/ rejected scaffolding and not arranging fall protection arrangement as required, like handrails, life-lines, Safety Nets etc.	Rs.10,000/- per case per day
5.	No fencing/barricading of excavated areas / trenches.	Rs.5,000/- per occasion
6.	Absence of Contractor's RCM/SIC or his nominated representative (prior approval must be taken for each meeting for nomination) from site HSE meetings whenever called by Engineer in Charge & failure to nominate his immediate deputy for such HSE meetings.	Rs.10,000/- per meeting
7.	Poor House Keeping	Rs.5,000 /- per occasion per subject
8.	Failure to report & follow-up accident (including Near Miss) reporting system within specific timeframe.	Rs.20,000/- per occasion
9.	Failure to deploy adequately qualified and competent Safety Officer	Rs.10,000/- Per day
10.	Any violation not covered above	To be decided by Engineer in charge

**Note:** Penalty amount deducted from the contractor shall be utilized by Engineer in charge for the promotion of the safety during the currency of the project.

The Contractor shall make his field engineers/supervisors fully aware of the fact that they keep track with the site workmen for their behavior and compliance of various HSE requirements. Safety lapses / defects of project construction site shall be attributable to the concerned job supervisor / engineer of the Contractor, (who remains directly responsible for safely executing field works). For repeated HSE violations, concerned job supervisor / engineer shall be reprimanded or appropriate action, as deemed fit, shall be initiated (with information to Engineer in charge) by the concerned Contractor.

Contractor shall initiate verbal warning shall be given to the worker/employee during his first HSE violation. A written warning shall be issued on second violation and specific training shall be arranged / provided by the Contractor to enhance HSE awareness/skill including feedback on the mistakes/ flaws. Any further violation of HSE stipulations by the erring individuals shall call for his forthright debar from the specific construction site. A record of warnings for each worker/employee shall be maintained by the Contractor, like by punching their cards / Gate passes or by displaying their names at the Project entry gate. Warnings, penalizations, appreciations etc. shall be discussed in HSE Committee meetings by site Head of the Contractor.

### **3.1.13 Accident/ Incident investigation**

All accidents/incidents shall be informed to Engineer in charge at least telephonically by Contractor immediately and in writing within 24 hours on Format No. HSE-2 as applicable, by Contractor. Thereafter, a Supplementary Accident/Incident investigation Report on Format No.

HSE-3 shall be submitted to Engineer in Charge within 72 hours. Near Miss incident(s), Dangerous accidents/incident shall also be reported on Format No. HSE-4 within 24 hours. The accident/ incident shall be investigated by a team of Contractor's senior Site personnel (involving Site-in- Charge or at least by his deputy) for establishing root-cause and recommending corrective & preventive actions. Findings shall be documented and suitable actions taken to avoid recurrences shall be communicated to Engineer in charge. Engineer in charge shall have the liberty to independently investigate such occurrences and the Contractor shall extend all necessary help and cooperation in this regard. Engineer in charge shall have the right to share the content of this report with the outside world.

## **3.2 House Keeping**

The Contractor shall ensure that a high degree of housekeeping is maintained and shall ensure inter-alia; the followings:

- a) All surplus earth and debris are removed/disposed-off from the working areas to designated location(s).
- b) Unused/surplus cables, steel items and steel scrap lying scattered at different places within the working areas are removed to identify

location(s).

- c) All wooden scrap, empty wooden cable drums and other combustible packing materials, shall be removed from work place to identified location(s).
- d) Roads shall be kept clear and materials like pipes, steel, sand, boulders, concrete, chips and bricks etc. shall not be allowed on the roads to obstruct free movement of men & machineries.
- e) Fabricated steel structural, pipes & piping materials shall be stacked properly.
- f) Water logging on roads shall not be allowed.
- g) No parking of trucks/trolleys, cranes and trailers etc. shall be allowed on roads, which may obstruct the traffic movement.
- h) Utmost care shall be taken to ensure over all cleanliness and proper upkeep of the working areas.
- i) Protective measures to be ensured with projected rebar by suitable means.
- j) Trucks carrying sand, earth and pulverized materials etc. shall be covered while moving within the plant area/ or these materials shall be transported with top surface wet.
- k) The contractor shall ensure that the atmosphere in plant area and on roads is free from particulate matter like dust, sand, etc. by keeping the top surface wet for ease in breathing.
- l) At least two exits for any unit area shall be assured at all times – same arrangement is preferable for digging pits/ trench excavation/ elevated work platforms/ confined spaces etc.
- m) Welding cables and the power cable must be segregated and properly stored and used. The same shall be laid away from the area of movement and shall be free from obstruction.
- n) Schedule for upkeep /cleaning of site to be firmed up and implemented on regular basis.

The Contractor shall carry-out regular checks (minimum one per fortnight) as per format No. HSE-11 for maintaining high standard of housekeeping and maintain records for the same. The Contractor shall provide supervisor for housekeeping exclusively for management of day-to-day housekeeping activities.

### **3.3 HSE Measures**

#### **3.3.1 Construction Hazards**

The Contractor shall ensure identification of all Occupational Health, Safety & Environmental hazards in the type of work he is going to undertake and enlist mitigation measures specially towards following activities;

- a) Working at height (+2.0 Mts height)
- b) Work in confined space,
- c) Deep excavations & trench cutting (depth > 2.0 mts.)
- d) Operation & Maintenance of Batching Plant.
- e) Shuttering / concreting (in single or multiple pour) for columns, parapets & roofs.
- f) Erection & maintenance of Tower Crane.
- g) Erection of structural steel members / roof-trusses / pipes at height more than 2.0 Mts. with or without crane.
- h) All lifts using 100T Crane plus mechanical pulling.
- i) Any lift exceeding 80% capacity of the lifting equipments (hydra, crane etc.).
- j) Laying of pipes (isolated or fabricated) in deep narrow trenches – manually or mechanically.
- k) Maintenance of crane / extension or reduction of crane-boom on roads or in yards.
- l) Erection of any item at >2.0 Mts. height using 100T crane or of higher capacity
- m) Work in Live Electrical installations / circuits
- n) Demolishing/ dismantling activities
- o) Welding/ gas cutting jobs at height (+2.0 Mts.)
- p) Lifting/placing roof-girders at height (+2.0 Mts.)
- q) Working in “Charged/Live” elect. Panels
- r) Erection/dismantling of scaffolding

The necessary HSE measures devised shall be put in place, prior to start of an activity & also shall be maintained during the course of works, by the Contractor.

#### **3.3.2 Accessibility**

- a) The Contractor shall provide safe means of access(in sufficient numbers) & efficient exit to any working place including provisions of suitable and sufficient scaffolding at various stages during all operations of the work for the safety of his workmen and Engineer in Charge or his representative.
- b) The Contractor shall implement use of all measures including use of “life line”, “fall- arresters”, “retractable fall arresters”, “safety nets” etc. during the course of using all safe accesses & exits, so that in no case any individual remains at risk of slip & fall during their travel.

- c) A ladder or step- ladder must have a level and firm footing, in case of use of fixed ladders, sufficient foot hold and hand hold to be provided.
- d) The access to operating plant / project complex shall be strictly regulated. Any person or vehicle entering such complex shall undergo identification check, as per the procedures in force / requirement of Engineer in charge.
- e) Accessibility to 'confined space' shall be governed by specific system / regulation, as established at project site.

### **3.3.3 Personal Protective Equipment (PPEs)**

- a) The Contractor workmen shall be permitted entry inside the project premises only with proper PPEs.
- b) The Contractor shall ensure that all their staff, workers and visitors including their sub- contractor(s) have been issued (records to be kept) & wear appropriate PPEs like nape strap type safety helmets preferably with head & sweat band with  $\frac{3}{4}$ " cotton chin strap, High ankle safety shoes with steel toe cap and antiskid sole, full body harness, protective goggles, gloves, ear muffs, respiratory protective devices, etc. All these gadgets shall conform to applicable IS Specifications. The Contractor shall implement a regular regime of inspecting physical conditions of the PPEs being issued / used by the workmen of their own & also its sub-agencies and the damaged / unserviceable PPEs shall be replaced forthwith.
- c) Engineer in charge may issue a comprehensive color scheme for helmets to be used by various agencies. The Contractor shall follow the scheme issued by the Engineer in charge and shall choose colour other than blue (for Owner and their representatives). All HSE personnel shall preferably wear dark green band on their helmet or green color safety helmet so that workmen can approach them for guidance during emergencies. HSE personnel shall preferably wear such dresses with fluorescent stripes, which are noticeable during night, when light falls on them.
- d) Florescent jackets with respective company logo to be worn by the contractor workmen with different color coding for categories like supervisor and workmen.
- e) An indicative list of HSE standards/codes is given under **Appendix-A**.
- f) Contractor shall ensure procurement & usage of following safety equipments/ accessories (conforming to applicable IS mark) by their staff, workmen & visitors including their subcontractors all through the span of project construction.

- i. PPEs (Helmet with company name/logo, Safety Goggles, Coverall, Ear-muff, Face Shield, Hand Gloves, High Ankle Safety Shoes, Gum Boot etc.)
- ii. Barricading tape / warning signs
- iii. Rechargeable Safety torch (flame-proof)
- iv. Safety nets (with tie-chords)
- v. Fall arresters
- vi. Portable ladders (varying lengths)
- vii. Life-lines (steel wire-rope, dia. not less than 8.0 mm)
- viii. Full body double lanyard Safety harness with Rebar/ladder hook or scaffolding hook.
- ix. Retractable fall arresters (various length)
- x. Portable fire extinguishers of adequate capacity
- xi. Portable Multi Gas detector

#### **3.3.4 Working at height**

- a) The Contractor shall issue permit for working (PFW) at height after verifying and certifying the checkpoints as specified in the attached permit (Format No. HSE-6). He shall also undertake to ensure compliance to the conditions of the permit during the currency of the permit including adherence of personal protective equipments. Contractor's Safety Officer shall verify compliance status of the items of permit document after implementation of action is completed by Contractor's execution / field engineers at work site.
- b) Such PFW shall be initially issued for one single shift or expected duration of normal work and extended further for balance duration, if required.
- c) Contractors are expected to maintain a register for issuance of permit and extensions thereof including preserving the used permits for verification during audits etc.
- d) The Contractor shall ensure that Full body harnesses with double lanyards conforming IS Specifications is used by all personnel while working at height. The life lines should have enough tensile strength to take the load of the worker in case of a fall. The harness should be capable of keeping the workman vertical in case of a fall, enabling him to rescue himself.
- e) The Contractor shall ensure that a proper Safety Net System is used wherever the hazard of fall from height is present. The safety net, preferably a knotted one with mesh ropes conforming to relevant IS specifications shall have a border rope & tie cord of minimum 12mm dia. The Safety Net shall be located not more than 6.0 meters below the working surface extending on either side upto sufficient margin to arrest

fall of persons working at different heights.

- f) In case of accidental fall of person on such Safety Net, the bottom most portion of Safety Net should not touch any structure, object or ground.
- g) Beam Clamps may be used for construction of localized temporary working platforms sheds for welding booths etc. at height in all types of steel structure due to faster installation and requirement of less scaffolding materials.
- h) Hanging Platform, manufactured by Standard HSE equipment vendors must be encouraged for painting of Buildings etc.
- i) All the tools used at height (like spanner, screw driver etc.) shall be provided with securing arrangement like back-pack/waist pouch to prevent accidental slippage from worker hand.
- j) The Contractor shall install temporary lightening arrester in tall structures during construction to save human life and to avoid damage to equipments & machineries. During the possibility of a thunderstorm, all the work at height where a person can be exposed to lightning shall be stopped.

### **3.3.5 Scaffoldings& Barricading**

- a) Suitable steel scaffoldings only shall be provided to workmen for all works that cannot be safely done from the ground or from solid construction except such short period work that can be safely done using ladders or man-basket. When a ladder is used, an extra workman shall always be engaged for holding the ladder. The ladder shall be inspected before use for cracked or split stiles, missing, broken, loose or damaged rungs & splinters. The ladder shall be of adequate length to enable it to extend to at least 1.0m above the landing place or working point. Metallic ladders shall be only used as access.
- b) The Contractor shall ensure that the scaffolds used during construction activities shall be strong enough to take the designed load. Only metallic scaffold boards shall be allowed to use. Steel tubes shall be free from cracks, splits, Surface flaws & other defects. All couplers & fittings shall be properly oiled and maintained.
- c) All scaffolds shall be inspected by a safety officer. He shall paste a GREEN tag on each scaffold found safe and a RED tag on each scaffold found unsafe. Scaffolds with GREEN tag only shall be permitted to be used and Scaffolds with RED ones shall immediately be made inaccessible.
- d) The Contractor shall ensure positive barricading (indicative as well as protective) of the excavated, radiography, heavy lift, high pressure hydrostatic & pneumatic testing and other such areas. Sufficient warning



signs shall be displayed along the barricading areas.

- e) Scaffolding shall be constructed using foot seals or base plates only. Base plates shall be used below each standard on surface. Sole plate of timber shall be used beneath the base plate to achieve greater load distribution.

### **3.3.6 Electrical installations**

- a) All electrical installations/ connections shall be carried out as per the provisions of latest Indian codes/standard.
- b) All temporary electrical installations / facilities shall be regularly checked by the licensed/competent electricians of the Contractor.

The Contractor shall meet the following requirements:

- a. Ensure that electrical systems and equipment including tools & tackles used during construction phase are properly selected, installed, used and maintained as per provisions of the latest revision of the Indian Electrical/ applicable international regulations.
- b. Shall deploy qualified & licensed electricians.
- c. All switchboards / welding machines shall be kept in well-ventilated & covered shed/ with rain shed protection. The shed shall be elevated from the existing ground level to avoid water logging inside the shed. Installation of electrical switch board must be done taking care of the prevention of shock and safety of machine.
- d. No flammable materials shall be used for constructing the shed. Also flammable materials shall not be stored in and around electrical equipment / switchboard. Adequate clearances and operational space shall be provided around the equipment.
- e. Fire extinguishers and insulating mats shall be provided in all power distribution centers.
- f. Temporary electrical equipment shall not be employed in hazardous area without obtaining safety permit.
- g. Proper housekeeping shall be done around the electrical installations.
- h. All temporary installations shall be tested before energizing, to ensure proper earthing, bonding, suitability of protection system, adequacy of feeders/cables etc.
- i. All welders shall use hand gloves irrespective of holder voltage.
- j. Multilingual (Hindi, English and local language) caution boards, shock treatment charts and instruction plate containing location of isolation point for incoming supply, name & telephone No. of contact person in emergency shall be provided in substations and near all distribution

boards / local panels.

- k. ELCB tester /test meter shall be used for testing the ELCBs operation. ELCBs testing shall be carried out by using ELCB tester on monthly basis but in specific cases like heavy rain as decided by owner/EIC. Record of the testing shall be maintained.
- l. Regular inspection of all installations at least once in a month.

The following features shall also be ensured for all electrical installations during construction phase by the contractor:

- a). Each installation shall have a main switch with a protective device, installed in an enclosure adjacent to the metering point. The operating height of the main switch shall not exceed 1.5 M. The main switch shall be connected to the point of supply by means of armoured cable.
- b). The outgoing feeders shall be double or triple pole switches with fuses / MCBs. Loads in a three phase circuit shall be balanced as far as possible and load on neutral should not exceed 20% of load in the phase.
- c). The installation shall be adequately protected against overload, short circuit and earth leakage by the use of suitable protective devices. Fuses wherever used shall be HRC type. Use of rewirable fuses shall be strictly prohibited. ELCB/RCCB (Residual Current Circuit Breaker) must be fitted with all Electrical installation. The earth leakage device shall have an operating current not exceeding 30 mA.
- d). All connections to the hand tools / welding receptacles shall be taken through proper switches, sockets and plugs.
- e). All single phase sockets shall be minimum 3 pin type only. All unused sockets shall be provided with socket caps.
- f). Only 3 core (P+N+E) overall sheathed flexible cables with minimum conductor size of 1.5 mm<sup>2</sup> copper shall be used for all single phase hand tools.
- g). Only metallic distribution boxes with double earthing shall be used at site. No wooden boxes shall be used.
- h). All power cables shall be terminated with compression type cable glands. Tinned copper lugs shall be used for multi-strand wires / cables.
- i). Cables shall be free from any insulation damage.
- j). Minimum depth of cable trench shall be 750 mm for MV & control cables and 900 mm for HV cables. These cables shall be laid over a sand layer and covered with sand, brick & soil for ensuring mechanical protection. Cables shall not be laid in waterlogged area as far as practicable. Cable route markers shall be provided at every 25 M of buried trench route.

When laid above ground, cables shall be properly cleated or supported on rigid poles of at least 2.1 M high. Minimum head clearance of 6 meters shall be provided at road crossings.

- k). Underground road crossings for cables shall be avoided to the extent feasible. In any case no underground power cable shall be allowed to cross the roads without pipe sleeve.
- l). All cable joints shall be done with proper jointing kit. No taped/temporary joints shall be used.
- m). An independent earthing facility should preferably be established within the temporary installation premises. All appliances and equipment shall be adequately earthed. In case of armored cables, the armour shall be bonded to the earthing system. IS: 3043 Code for earthing practices shall be followed at project site.
- n). All cables (green colour) and wire rope used for earth connections shall be terminated through tinned copper lugs.
- o). In case of local earthing, earth electrodes shall be buried near the supply point and earth continuity wire shall be connected to local earth plate for further distribution to various appliances. All insulated wires for earth connection shall have insulation of green colour.
- p). Separate core shall be provided for neutral. Earth / Structures shall not be used as a neutral in any case.
- q). ON/OFF position of all switches shall be clearly designated / painted for easy isolation in emergency.

### **3.3.7 Ergonomics and tools & tackles**

- a) The Contractor shall assign to his workmen, tasks commensurate with their qualification, experience and state of health.
- b) All lifting tools, tackles, equipment, trailers, trucks/dumpers, accessories including cranes shall be tested periodically by competent authority for their condition and load carrying capacity. Valid test & fitness certificates from the applicable authority shall be submitted to Engineer in charge for their review/acceptance before the lifting tools, tackles, equipment, trailers, trucks/dumpers, accessories and cranes are used. Third party inspection certificate is mandatory for all lifting tools & tackles before put into use.
- c) Load testing of Cranes by competent person must be made mandatory after each modification/alteration of crane configuration/change in boom length. All heavy equipments including cranes must be maintained in good condition & record of such maintenance shall be maintained.
- d) The contractor shall not be allowed to use defective equipment or tools

not adhering to safety norms.

- i. Tower Crane, Crane, Hydra mobile Crane (F-15 or equivalent), Hydraulic Rig & Boom  
Lift shall be inspected on fortnightly basis as per Format No. HSE-20, HSE-21, HSE- 22, HSE-23 & HSE-24.
- ii. The Contractor shall deploy experienced operator & may arrange training program for operators of hydra mobile crane, crane, excavator, mobile machinery, Tower Crane, etc. at site by utilizing services from renowned manufacturers.
- iii. Hydra mobile crane (F-15 or equivalent) having steering control mechanism shall be permitted at construction site only for the purpose of loading/unloading. However, continuous rigger availability during marching of hydraulic crane at site shall be ensured by contractor.

### **3.3.8 Occupational Health**

- a) The contractor shall identify all operations that can adversely affect the health of its workers and issue & implement mitigation measures.
- b) The Contractor shall arrange Medical Camps at regular intervals at work sites and labor colonies to assess health condition of workers.
- c) The Contractor shall ensure vaccination of all the workers including their families if residing at site, during the course of entire project span.

### **3.3.9 Hazardous substances**

- a) Hazardous, inflammable and/or toxic materials such as solvent coating, thinners, anti- termite solutions, water proofing materials shall be stored in appropriate containers preferably with lids having spillage catchment trays and shall be stored in a good ventilated area. These containers shall be labeled with the name of the materials highlighting the hazards associated with its use and necessary precautions to be taken.
- b) The work place shall be checked prior to start of activities to identify the location, type and condition of any asbestos materials which could be disturbed during the work. In case asbestos material is detected, usage of appropriate PPEs by all personnel shall be ensured.

### **3.3.10 Slips, trips & falls**

- a) The contractor shall establish a regular cleaning and basic housekeeping programme that covers all aspects of the workplace to help minimize the risk of slips, trips & falls. The contractor shall take positive measures like keeping the work area tidy, storing waste in suitable containers & harmful items separately, keeping passages, stairways, entrances & exits especially emergency ones clear, cleaning

up spillages immediately and replacing damaged carpet/ floor tiles, mats & rugs at once to avoid slips, trips & falls.

### **3.3.11 Demolition/ Dismantling**

- a) The contractor shall adhere to safe demolishing/ dismantling practices at all stages of work to guard against unsafe working practices.
- b) Before carrying out any demolition/dismantling work, the contractor shall take prior approval of Engineer in charge and generate the Format No.HSE-9.

### **3.3.12 Road Safety**

- a) The Contractor shall ensure adequately planned road transport safety management system.
- b) The vehicles shall be fitted with reverse warning alarms & flashing lights / fog-lights and usage of seat belts shall be ensured.
- c) The Contractor shall also ensure a separate pedestrian route for safety of the workers and comply with all traffic rules & regulations, including maintaining speed limit of 20 KMPH or indicated by owner for all types of vehicles / mobile machinery. The maximum allowable speed shall be adhered to.
- d) In case of an alert or emergency, the Contractor must arrange clearance of all the routes, roads, access.
- e) Dumpers, Tippers, etc. shall not be allowed to carry workers within the site and also to & from the labour colony to & from project sites.
- f) The Contractor shall not deploy any such mobile machinery / Equipments, which do not have competent operator and / or experienced banks-man/signal-man. Such machinery/equipments shall have effective limit-switches, reverse-alarm, front & rear-end lights etc. and shall be maintained in good working order.
- g) The Contractor shall not carry-out maintenance of vehicles / mobile machinery occupying space on project / plant roads and shall always arrange close supervision for such works.
- h) Contractor's shall arrange /install visible road signs, diversion boards, caution boards, etc. on project roads for safe movement of men and machinery.

### **3.3.13 Welfare measures**

Contractor shall, at the minimum, ensure the following facilities at work sites:

- a) A crèche at site where 10 or more female workers are having children below the age of 6 years.
- b) Adequately ventilated / illuminated rooms at labour camps & its hygienic

up-keeping.

- c) Reasonable canteen facilities at site and in labour camps at appropriate location depending upon site conditions. Contractor shall make use of “industrial” variety of LPG cylinder & satisfactory illumination at the canteens. Necessary arrangement for efficient disposal of wastes from canteens & urinals /toilets shall also be made and regular review shall be made to maintain the ambience satisfactorily hygienic & shall also comply with all applicable statutory requirements.
- d) Adequately lighted & ventilated Rest rooms at site (separate for male workers and female workers).
- e) Provision for suitable mobile toilets to be made available by Contractor for remote/scattered job locations.
- f) Urinals, Toilets, drinking water, washing facilities, adequate lighting at site and labour camps.
- g) The contractor at periodic interval shall arrange to prevent mosquito breeding by fumigation/spraying of insecticides at workplace/ fabrication yard.

#### **3.3.14 Environment Protection**

Contractor shall ensure proper storage and utilization methodology of materials that are detrimental to the environment. Where required, Contractor shall ensure that only the environment friendly materials are selected and emphasize on recycling of waste materials, such as metals, plastics, glass, paper, oil & solvents. The waste that cannot be minimized, reused or recovered shall be stored and disposed of safely. In no way, toxic spills shall be allowed to percolate into the ground. The contractor shall not use the empty areas for dumping the wastes.

The contractor shall strive to conserve energy and water wherever feasible.

The contractor shall ensure dust free environment at workplace by sprinkling water on the ground at frequent intervals. The air quality parameters for poisonous gases, toxic releases, harmful radiations, etc. shall be checked by the contractor on daily basis and whenever need arises. The contractor shall not be allowed to discharge chemicals, oil, silt, sewage, sullage and other waste materials directly into the controlled waters like surface drains, streams, rivers, ponds. A discharge plan shall be submitted to Engineer in charge for approval.

#### **3.3.15 Rules & Regulations**

All persons deployed at site shall be knowledgeable of and comply with the environmental laws, rules & regulations relating to the hazardous materials, substances and wastes. Contractor shall not dump, release or otherwise

discharge or disposes off any such materials without the express authorization of Engineer in charge. An indicative list of Statutory Acts & Rules relating to HSE is given under Appendix-D.

### **3.3.16 Weather Protection**

Contractor shall take appropriate measures to protect workers from severe storms, rain, solar radiations, poisonous gases, dust, etc. by ensuring proper usage of PPEs like Sun glasses, Sun screen lotions, respirators, dust masks, etc. and rearranging/ planning the construction activities to suit the weather conditions. Effective arrangement (without creating inconvenience to project facilities & permanent installations) for protecting workmen from hailstorm, drizzle in the form of temporary shelter shall be made at site.

### **3.3.17 Communication**

All persons deployed at the work site shall have access to effective means of communication so that any untoward incident can be reported immediately and assistance sought by them.

All health & safety information shall be communicated in a simple & clear language easily understood by the local workforce.

For information to all, typical subjects that should be communicated are: -  
Inside the company (Top to down)

- a. Quality Policy
- b. HSE Policy contents
- c. Environment Policy
- d. HSE Objectives
- e. Safety Cardinal Rules
- f. HSE Target – reached or missed
- g. Praises & Warnings to personnel for HSE Management
- h. Safety Walk Through Reports and safety defects / shortfalls (by management)
- i. HSE Audit results
- j. Revised Statutory Health & Safety provisions, if any
- k. H & S publicity
- l. Suggestions

Inside the Company (Bottom to up)

- a. Complaints
- b. Compliances on safety defects / shortfalls

- c. Suggestions
- d. Proposals for changes & improvements
- e. HSE Reports (including near-miss reports)

### **3.3.18 Confined Space Entry**

The contractor shall generate a work permit (Format No. HSE -7) before entering a confined space. People, who are permitted to enter into confined space, must be medically examined. All necessary precautions mentioned therein shall be adhered to. An attendant shall be positioned outside a confined space for extending help during an emergency. Effective communication shall be maintained between personnel in confined space and outside by combination of visual/voice or portable radio. Compressed gas cylinders shall not be taken into confined space.

Entry Register for confined space to be maintained with the name and time of entry/exit.

### **3.3.19 Excavation**

The Contractor shall obtain permission from competent authorities prior to excavation wherever required.

The Contractor shall locate the position of buried utilities (water line, cable route, etc.) by referring to project in consultation with Engineer in charge. The Contractor shall start digging manually to locate the exact position of buried utilities & thereafter use mechanical means.

The Contractor shall keep soil heaps at least 1.5 M away from edge or a distance equal to depth of pit (whichever is more)

All excavated pits greater than 10 Sq.M plan area and depth more than 1.5M shall have at least two access routes for ingress and egress. Also, additional access routes shall be provided such that distance between any two access routes shall not be more than 20M.

The Contractor shall maintain sufficient “angle of repose” during excavation – shall also provide slope or suitable bench as decided by Engineer in Charge.

The Contractor shall arrange “battering” or “benching” wherever required for preventing collapse of edge of excavations.

The Contractor shall identify & arrange de-watering pump or well-point system to prevent earth collapse due to heavy rain / influx of underground water.

The Contractor shall arrange protective fencing/ hard barricading with warning signal around excavated pits, trenches, etc. along with minimum 2 (two) entries, exits / escape ladders.

The Contractor must avoid “underpinning” / under-cutting to prevent collapse of chunk of earth during excavation



The Contractor shall use “stoppers” to prevent over-run of vehicle wheels at the edge of excavated pits / trenches.

The Contractor shall arrange strengthening of “shoring” & “strutting” proactively to avoid collapse of earth / edges due to vehicular movement in close proximity of excavated areas / pits/ trenches, etc.

### **3.4 Tool Box Talks (TBT)**

Contractor shall conduct daily TBT with workers prior to start of work and shall maintain proper record of the meeting. A record shall be maintained in a format suggested by Engineer in charge.

The Contractor shall conduct TBT before start of every morning or evening shift or night shift activities, for alerting the workers on specific hazards and their appropriate dos & don'ts. The Contractor shall provide sufficient rests to the site workmen and their foremen to avert fatigue & thereby endangering their lives during the course of site works.

### **3.5 Training & Induction Programme**

- a) Initial induction of workers into Construction oriented activities and appraising them about the methodology of works and how to carry-out safely and the same should not be inter mixed with Tool Box Talks or HSE Training. In this regard careful action should be made & maintained for imparting HSE induction to every individual, irrespective of his task/designation/level of employment, whereas, HSE Training should be imparted to specific person/group of people who are to carry-out that specific task more than once – for example, Riggers must be trained for working at heights, welders must be trained for work in confined space, fitters/carpenters, mesons must be trained for work at heights, etc.
- b) Contractor shall conduct Safety induction programme on HSE for all his workers and maintain records. The Gate Pass shall be issued only to those workers who successfully qualify the Safety induction programme.
- c) The Contractor shall brief the visitors about the HSE precautions which are required to be taken before their proceeding to site and make necessary arrangements to issue appropriate PPEs like Aprons, hard hats, ear-plugs, goggles & safety shoes etc., to his visitors. The Contractor shall always maintain relevant acknowledgement from visitor on providing him brief information on HSE actions.
- d) Contractor shall ensure that all his personnel possess appropriate training to carry out the assigned job safely. The training should be imparted in a language understood by them and should specifically be trained about
  - Potential hazards to which they may be exposed at their workplace

- Measures available for prevention and elimination of these hazards The topics during training shall cover, at the minimum:
  - Why safety should be considered during work - explanation
  - Education about hazards and precautions required
  - Employees' duties & responsibilities
  - Emergency and evacuation plan
  - HSE requirements during project activities
  - Fire fighting and First-Aid
  - Use of PPEs
  - Occupational health issues – dos & don'ts
  - Local laws on intoxicating drinks, drugs, smoking in force
  - Common environmental subjects – lighting, ventilation, vibration, smoke/fumes etc.
- e) Records of the training shall be kept and submitted to Engineer in charge.

## **DETAILS OF HSE MANAGEMENT SYSTEM BY CONTRACTOR**

### **On Award of Contract**

The Contractor shall submit a comprehensive Health, Safety and Environmental Plan or programme for approval by Engineer in charge prior to start of work. The Contractor shall participate in the pre-start meeting with Engineer in charge to finalize HSE Plans which shall including the following:

- HSE policy & Objectives
- Job procedure to be followed by the Contractor for construction activities including handling of equipments, scaffolding, electric installations, etc. describing the risks involved, actions to be taken and methodology for monitoring each activity. Indicative list of procedures is enclosed as Annexure-H
- Engineer in Charge' review/audit requirement.
- Organization structure along with responsibility and authority, on HSE activities.
- Administrative & disciplinary steps involving implementation of HSE requirements
- Emergency evacuation plan/ procedures for site and labour camps
- Procedures for reporting & investigation of accidents and near misses.
- HSE Inspection
- HSE Training programme at project site
- HSE Awareness programme at project site
- Reference to Rules, Regulations and statutory requirements.
- HSE documentation viz reporting, analysis & record keeping.

**A. IS CODES ON HSE**

**APPENDIX-A**

**(Sheet 1 of 2)**

SP: 53	Safety code for the use, Care and protection of hand operated tools.
IS: 838	Code of practice for safety & health requirements in electric and gas welding and cutting operations
IS: 1179	Eye & Face precautions during welding, equipment etc
IS: 1860	Safety requirements for use, care and protection of abrasive grinding wheels.
IS: 1989	(Pt -II) Leather safety boots and shoes
IS: 2925	Industrial Safety Helmets
IS: 3016	Code of practice for fire safety precautions in welding & cutting operation.
IS: 3043	Code of practice for earthing
IS: 3764	Code of safety for excavation work
IS: 3786	Methods for computation of frequency and severity rates for industrial injuries and classification of industrial accidents
IS: 3696	Safety Code of scaffolds and ladders
IS: 4083	Recommendations on stacking and storage of construction materials and components at site
IS: 4770	Rubber gloves for electrical purposes
IS: 5121	Safety code for piling and other deep foundations
IS: 5216	Recommendations on Safety procedures and practices in electrical works
IS: 5557	Industrial and Safety rubber lined boots
IS: 5983	Eye protectors
IS: 6519	Selection, care and repair of Safety footwear
IS: 6994	(Pt-I) Industrial Safety Gloves (Leather & Cotton Gloves)
IS: 7293	Safety Code for working with construction Machinery
IS: 8519	Guide for selection of industrial safety equipment for body protection
IS: 9167	Ear protectors
IS: 11006	Flash back arrestor (Flame arrestor)
IS: 11016	General and safety requirements for machine tools and their

	operation
IS: 11057	Specification for Industrial safety nets
IS: 11226	Leather safety footwear having direct moulded rubber sole
IS: 11972	Code of practice for safety precaution to be taken when entering a sewerage system
IS: 13367	Code of practice-safe use of cranes
IS: 13416	Recommendations for preventive measures against hazards at working place

**B. INTERNATIONAL STANDARDS ON HSE**

**APPENDIX-A**

**(Sheet 2 of 2)**

Safety Glasses	ANSI Z 87.1, ANSI ZZ 87.1, AS 1337, BS 2092, BS 1542, BS 679, DIN 4646/ 58311
Safety Shoes	ANSI Z 41.1, AS 2210, EN 345
Hand Gloves	BS 1651
Ear Muffs	BS 6344, ANSI S 31.9
Hard Hat	ANSI Z 89.1/89.2, AS 1808, BS 5240, DIN 4840
Goggles	ANSI Z 87.1
Face Shield	ANSI Z 89.1
Breathing Apparatus	BS 4667, NIOSH
Welding & Cutting	ANSI Z49.1
Safe handling of compressed	P-1 (Compressed Gas Association Gases in cylinders 1235 Jefferson Davis Highway, Arlington VA 22202 - USA)
Full body harness	EN-361
Lanyard	EN-354
Karabiner	EN-362 and EN-12275

**APPENDIX-B**

	<b>DETAILS OF FIRST AID BOX</b>	
<b>SL. NO.</b>	<b>DESCRIPTION</b>	<b>QUANTITY</b>
1.	Small size Roller Bandages, 1 Inch Wide (Finger Dressing small)	6 Pcs.
2.	Medium size Roller Bandages, 2 Inches Wide (Hand & Foot Dressing)	6 Pcs.
3.	Large size Roller Bandages, 4 Inches Wide(Body Dressing Large)	6 Pcs.
4.	Large size Burn Dressing(Burn Dressing Large)	4 Pkts.
5.	Cotton Wool(20 gms packing)	4 Pkts.
6.	Antiseptic Solution Dettol (100 ml.) or Savlon	1 Bottle
7.	Mercurochrome Solution (100 ml.) 2% in water	1 Bottle
8.	Ammonia Solution (20 ml.)	1 Bottle
9.	A Pair of Scissors	1 Piece
10.	Adhesive Plaster (1.25 cm X 5 m)	1 Spool
11.	Eye pads in Separate Sealed Pkt.	4 pcs.
12.	Tourniquet	1 No.
13.	Safety Pins	1 Dozen
14.	Tinc. Iodine/ Betadine (100 ml.)	1 Bottle
15.	Polythene Wash cup for washing eyes	1 No.
16.	Potassium Permanganate (20 gms.)	1 Pkt.
17.	Tinc. Benzoine (100 ml.)	1 Bottle
18.	Triangular Bandages	2 Nos.
19.	Band Aid Dressing	5 Pcs.
20.	Iodex/ Moov (25 gms.)	1 Bottle
21.	Tongue Depressor	1 No.
22.	Boric Acid Powder (20 gms.)	2 Pkt.
23.	Sodium Bicarbonate (20 gms.)	1 Pkt.

	DETAILS OF FIRST AID BOX	
SL. NO.	DESCRIPTION	QUANTITY
24.	Dressing Powder (Nebasulf) (10 gms.)	1 Bottle
25.	Medicinal Glass	1 No.
26.	Duster	1 No.
27.	Booklet (English& Local Language)	1 No. each
28.	Soap	1 No.
29.	Toothache Solution	1 No.
30.	Vicks (22 gms.)	1 Bottle
31.	Forceps	1 No.
32.	Snake –Bite Lancet	1No.
33.	Note Book	1 No.
34.	Splints	4 Nos.
35.	Lock	1 Piece
36.	Life Saving/Emergency/Over-the counter Drugs	As decided at site

Box size: Suitable size first aid box to be used for first aid items

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Note : The medicines prescribed above are only indicative. Equivalent medicines can also be used. A prescription, in this regard, shall be required from a qualified Physician.



## APPENDIX-C

### TYPE OF FIRES VIS-À-VIS FIRE EXTINGUISHERS

Fire Extinguisher Fire ↓	→ Water	Foam	CO <sub>2</sub>	Dry Powder	Multi purpose (ABC)
Originated from paper, clothes, wood	?	?	can control minor surface fires	can control minor surface fires	?
Inflammable liquids like alcohol, diesel, petrol, edible oils, bitumen	x	?	?	?	?
Originated from gases like LPG, CNG, H <sub>2</sub>	x	X	?	?	?
Electrical fires	x	X	?	?	?

LEGEND : ? : CAN BE USED

x : NOT TO BE USED

**Note:** Fire extinguishing equipment must be checked at least once a year and after every use by an authorized person. The equipment must have an inspection label on which the next inspection date is given. Type of extinguisher shall clearly be marked on it.

## **APPENDIX-D**

### **List of Statutory Acts & Rules Relating to HSE**

- The Indian Explosives Act and Rules
- The Motor Vehicle Act and Central Motor Vehicle Rules
- The Factories Act and concerned Factory Rules
- The Petroleum Act and Petroleum Rules
- The Workmen Compensation Act
- The Gas Cylinder Rules and the Static & Mobile Pressure Vessels Rules
- The Indian Electricity Act and Rules
- The Indian Boiler Act and Regulations
- The Water (Prevention & Control & Pollution) Act
- The Water (Prevention & Control of Pollution) Cess Act
- The Mines & Minerals (Regulation & Development) Act
- The Air (Prevention & Control of Pollution) Act
- The Atomic Energy Act
- The Radiation Protection Rules
- The Indian Fisheries Act
- The Indian Forest Act
- The Wild Life (Protection) Act
- The Environment (Protection) Act and Rules
- The Hazardous Wastes (Management & Handling) Rules
- The Manufacturing, Storage & import of Hazardous Chemicals Rules
- The Public Liability Act
- The Building and Other Construction Workers (Regulation of Employment and Condition of Service) Act
- Other statutory acts Like EPF, ESIS, and Minimum Wages Act.

## **APPENDIX-E**

### **LIST OF PROCEDURES (MINIMUM) TO BE FORMING PART OF HSE PLAN:-**

- A. HSE Management Procedures:
  - HSE Objectives & Performance
  - HSE Training and Competence (including Induction)
  - HSE Motivation & Award Scheme
  - HSE Audits
  - HSE Emergency Management
  - HSE Incidents Reporting and Management
  - First Aid & Management
  - Roles, Responsibility, accountabilities and Authorities
- B. Job procedures/Safe Operating procedures
  - Setting Up Site & Signages
  - Working at Height
  - Confined Space Entry
  - Permit to Work Housekeeping
  - Transportation of materials including Manual Handling
  - Earthmoving Operations & excavation
  - Scaffolding
  - Fire Prevention/Protection
  - Hazardous Substance handling & Storage
  - Personal Protective Equipment

**FORMAT NO.:HSE-2 REV 0****ACCIDENT / INCIDENT REPORT**

(To be submitted by Contractor after every Incident / Accident within 24 hours to Engineer in Charge)

**Report No.:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Project site:** \_\_\_\_\_ **Name of work:** \_\_\_\_\_

Contractor's name: \_\_\_\_\_ Contractor's Job Engineer (name) \_\_\_\_\_

<b>Non-disabling injury (Non-LTA)</b>	Hospitalized but resumed duty before end of 48 hrs
<b>Disabling injury (other LTA)</b>	Hospitalized & failed to resume duty within next 48 hrs
<b>Fatal (LTA):</b>	Death / Expiry
<b>First Aid case (non LTA)</b>	Resume duty after first aid

Name of the injured: \_\_\_\_\_

Father's name of victim: \_\_\_\_\_

Sub Contractor's Name: \_\_\_\_\_

Gate Pass No.: ..... Age: \_\_\_\_\_ Yrs.

Victim's medical fitness exam. (Pre-empl.) date: - \_\_\_\_\_

**Date & time of Accident / Incident:** \_\_\_\_\_

Names of Witnesses: (1) \_\_\_\_\_ (2) \_\_\_\_\_ (3) \_\_\_\_\_

**Profession of victim:**

Bar bender		Carpenter		Meson	
Fitter		Helper		Gas cutter	
Grinder		Welder		Electrician	
Driver		Rigger		M/c. operator	
Engineer		Manager		Other/specify	

**Qualification**

No formal education		Non-Matriculate		Matriculate	
Graduate		Post- grad		Other/specify	

### Job Experience

NIL		Less than 2 yrs		2-5 yrs	
5-10 yrs		11-15 yrs		15 years and above	

**Location where the incident happened:**

**Activity / Works that were continuing during incident / accident: -**

Excavation		Demolition		Concrete carrying	
Concrete pouring		Transportation of materials (manually)		Transportation of materials (mechanically)	
Work on or adjacent to water		Work at height (+2.0 mts)		Scaffold preparation	
Scaffold dismantling		Piling works		Welding	
Grinding		Gas-cutting		Pipe fit-ups & fabrication	
Structural fabrications		Machine works		Hydro-testing works	
Electrical works		Erection activities		Other/specify	

**What exactly the victim was doing just before the incident / accident?**

.....  
 .....

**Nature of injury:**

Bruise or Contusion		Abrasion (superficial wound)		Sprains or strains	
Cut or Laceration		Puncture or Open wound		Burn	
Inhalation of toxic or Poisonous fumes or gases		Absorption		Amputation	
Fracture		Other/specify			

**Parts of body involved in incident / accident**

Head		Face		Eyes	
Throat		Arm (above wrist)		Hand (including wrist)	
Fingers		Trunk (Abdomen / Back / Chest / Shoulder)		Throat	

Leg (above ankle)		Foot (incl. ankle)		Toes	
Multiple				Other/specify	

**Accident type:**

Struck against		Struck by		Fall from Elevation	
Fall on same level		caught in		caught under	
caught in between		Rubbed or abraded		Contact with (Electricity)	
Contact with (Temp./ extremes)		Contact with chemicals or oils		Vehicle accident	
Other/specify					

**Medical Aid provided:-** (indicate specific aids / treatment etc.)-

.....  
 .....

**Actionstaken to prevent recurrence of similar incident / accident:**

.....  
 .....  
 .....  
 .....  
 .....  
 .....  
 .....

**Intimation to local authorities** (Dist. Collector / Local Police Station / ESI authority): Yes / No / NA. If yes, to whom

.....

Safety Officer

Site Head / Resident Construction  
 Manager

(Signature and Name)

(Signature and Name)  
 Stamp of Contractor

FORMAT NO. : HSE-3 REV 0

**SUPPLEMENTARY INCIDENT / ACCIDENT INVESTIGATION REPORT**

**TICK THE APPROPRIATE ONE AS APPLICABLE (furnish within 72 hours)**

Supplementary to Incident / Accident Report No: \_\_\_\_\_ (Copy enclosed)

**Report No.:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Project site:** \_\_\_\_\_ **Name of work:** \_\_\_\_\_

Contractor's name: \_\_\_\_\_ Contractor's Job Engineer (name) \_\_\_\_\_

<b>Non-disabling injury (Non- LTA)</b>	Hospitalized but resumed duty before end of 48 hrs.
<b>Disabling injury (other LTA)</b>	Hospitalized & failed to resume duty within next 48 hrs.
<b>Fatal (LTA):</b>	Death / Expiry
<b>First Aid case (non LTA)</b>	Resume duty after first aid

Name of the injured: \_\_\_\_\_

Father's name of victim: \_\_\_\_\_

Sub Contractor's Name: \_\_\_\_\_

Gate Pass No.: ..... Age: \_\_\_\_\_ Yrs.

Victim's medical fitness exam. (Pre-empl.) date: - \_\_\_\_\_

**Date & time of Accident / Incident:** \_\_\_\_\_

Names of Witnesses: (1) \_\_\_\_\_ (2) \_\_\_\_\_ (3) \_\_\_\_\_

**Profession of victim:**

Bar bender		Carpenter		Meson	
Fitter		Helper		Gas cutter	
Grinder		Welder		Electrician	
Driver		Rigger		M/c. operator	
Engineer		Manager		Other/specify	

**Qualification**

No formal education		Non-Matriculate		Matriculate	
Graduate		Post- grad		Other/specify	

**Job Experience**

NIL		Less than 2 yrs.		2-5 yrs.	
5-10 yrs.		11-15 yrs.		15 years and above	

**Location where the incident happened:**

**Activity / Works that were continuing during incident / accident: -**

Excavation		Demolition		Concrete carrying	
Concrete pouring		Transportation of materials (manually)		Transportation of materials (mechanically)	
Work on or adjacent to water		Work at height (+2.0 mts)		Scaffold preparation	
Scaffold dismantling		Piling works		Welding	
Grinding		Gas-cutting		Pipe fit-ups & fabrication	
Structural fabrications		Machine works		Hydro-testing works	
Electrical works		Erection activities		Other/specify	

**What exactly the victim was doing just before the incident / accident?**

.....  
 .....  
 .....  
 .....

**Particular of tools & tackles being used and condition of the same after incident/accident:**

.....

**Description of Incident/Accident (How the incident was caused):**

.....

**Nature of injury:**

Bruise or Contusion		Abrasion (superficial wound)		Sprains or strains	
Cut or Laceration		Puncture or Open wound		Burn	
Inhalation of toxic or Poisonous fumes or gases		Absorption		Amputation	
Fracture		Other/specify			



### Parts of body involved in incident / accident

Head		Face		Eyes	
Throat		Arm (above wrist)		Hand (including wrist)	
Fingers		Trunk (Abdomen / Back / Chest / Shoulder)		Throat	
Leg (above ankle)		Foot (incl. ankle)		Toes	
Multiple				Other/specify	

### Accident type

Struck against		Struck by		Fall from Elevation	
Fall on same level		caught in		caught under	
caught in between		Rubbed or abraded		Contact with (Electricity)	
Contact with (Temp./ extremes)		Contact with chemicals or oils		Vehicle accident	
Other/specify					

Name & Designation of person who provided First-Aid to the victim:

---

Name & Telephone number of Hospital where the victim was treated

---

Mode of transport used for transporting victim – Ambulance / Private car / Tempo/ Truck / Others How much time taken to shift the injured person to Hospital

In case of FATAL incident, indicate clearly the BOCW Registration No. \_\_\_\_ of the victim/ Company.....Comments of Medical Practitioner, who treated/attended the victim/injured (attached / described here).

What actions are taken for investigation of the incident, please indicate clearly – (Video film / Photography / Measurements taken etc)

**Immediate cause** (Please tick the right applicable) –

Hazardous methods or procedures inadequately guarded		Poor housekeeping		Inadequate or improper PPE	
Environmental hazards (excess noise/ space constraint/ inadequate Ventilation		improper illumination/ Moving on oval surface		Working on dangerous equipment	

Failure to secure		Horse-play		Failure to use PPE	
Inattention to surroundings		Improper use of hands & body-parts		By-passing safety devices	
Unsafe mixing or placement of tools & tackles		Bypassing standard procedures		Failure in communication	
Operating without authority		Improper use of equipment or tools & tackles		drug or alcoholic influence	
excessive haste		Others(specify)			

### Basic cause

Over confidence		Impulsiveness		over-exertion	
Faulty judgement or poor understanding		Failing to keep attention constantly		Nervousness & Fear	
Fatigue		Defective vision		Ill health or sickness	
Slow reaction		Others (specify)			

### Root cause

Inadequate Engg		Improper Design		Inadequate Planning & organization	
Inadequate knowledge		Inadequate skill		Inadequate training	
Inadequate supervision		Improper work procedure		Inadequate compliance with standard	
Substandard performance		Inadequate maintenance		Improper inspection	
Others (specify)					

Loss of man days and impact on site works, (if any) –

### Remarks from Contractor's Safety Officer/ Engineer –

Was the victim performing relevant tasks for which he was engaged /employed? Yes / No  
 Was the Supervisor present on work-site during the incident? Yes /No

Have the causes of incident rightly identified?

Yes / No

Cause of Accident was \_\_\_\_\_

Remedial measures recommended by **Safety Officer of Contractor** for  
avoiding similar incident in future: .....

**Intimation to local authorities** (Dist. Collector / Local Police Station  
/ ESI authority): Yes / No / NA. If yes, to whom .....

Safety Officer

Site Head / Resident Construction  
Manager

(Signature and Name)

(Signature and Name)  
Stamp of Contractor

**FORMAT NO. : HSE-4 REV0**

**NEAR MISS INCIDENT/ DANGEROUS OCCURRENCE SUGGESTED  
PROFORMA**

(to be submitted within 24 hours)

- Near Miss : **Human injury escaped & no damage to property, equipment or interruption to work.**
- **Dangerous Occurrence:** Damage to property, equipment or interruption of work, but not resulting in personal injury/ illness, e.g. Fire incident, collapse of structure, crane failure, etc.

Report No.: \_\_\_\_\_

Name of Site: \_\_\_\_\_

Date: \_\_\_\_\_

Name of work: \_\_\_\_\_

Contractor: \_\_\_\_\_

Incident reported by :

Date & Time of Incident :

Location :

---

Brief description of incident

---

Probable cause of incident

---

Suggested corrective action

---

Steps taken to avoid recurrence Yes ☐

No ☐

Safety Officer  
Manager

Site Head / Resident Construction

(Signature and Name)

(Signature and Name)

Stamp of Contractor

**FORMAT NO. : HSE-5 REV:-0**  
**MONTHLY HEALTH, SAFETY & ENVIRONMENTAL (HSE)**  
**REPORT**

(To be submitted by each Contractor)

Actual work start Date: \_\_\_\_\_ Project: \_\_\_\_\_ Name of the Contractor:  
 \_\_\_\_\_ Name of Work : \_\_\_\_\_ For the Month of:  
 \_\_\_\_\_ Report No: \_\_\_\_\_

Status as on : \_\_\_\_\_ Job No : \_\_\_\_\_

(Contractor in consultation with Engineer in Charge shall generate here reports through web based package only.

Sr No	ITEM		UPTO PREVIOUS MONTH	THIS MONTH	CUMULATIVE
1	Average number of Staff & Workmen (average daily headcount, not man days)				
2	Total Man-hours worked				
3	Number of Induction programmes conducted				
4	Number of HSE meetings organized at site				
5	Number of HSE awareness programmes conducted at site				
6	Number of Tool Box Talks conducted				
7	Number of Lost Time Accidents (LTA)	Fatal			
		Other LTA			
8	Number of Loss Time Injuries (LTI)	Fatalities			
		Other LTI			
9	Number of Non-Loss Time Accidents				
10	Number of First Aid Cases				
11	Number of Near Miss Incidents				
12	No. of unsafe acts/ practices detected				
13	No. of disciplinary actions taken against staff/ workmen				
14	Man-days lost due to accidents				
15	LTA Free man-hours i.e. LTA free man-				

Sr No	ITEM	UPTO PREVIOUS MONTH	THIS MONTH	CUMULATIVE
	hours counted from the Last LTA (enter date:)			
16	Frequency Rate (No. of LTA per 2 lacs man-hours worked)			
17	Severity Rate (No. of man days lost per 2 lacs man-hours worked)			
18	Loss Time Injury Frequency (No. of LTI per 2 lacs man-hours worked)			
19	No. of activities for which HIRAC completed			
20	No. of incentives/ awards given			
21	No. of occasions on which penalty imposed by Engineer in Charge			
22	No. of Audits conducted			
23	No. of pending NCs in above Audits			
24	Compensation cases raised with Insurance			
25	Compensation cases resolved and paid to workmen			
26	No of Vehicular Accident cases			
27	No of fire/Explosion cases			
28	Whether workmen compensation policy taken		Yes	No
29	Whether workmen compensation policy is valid		Yes	No
30	Whether workmen registered under ESI Act, as applicable		Yes	No
31	Whether HIRAC Register prepared and updated		Yes	No
32	Whether Environment Aspect Impact Register prepared and updated		Yes	No
33	Whether Legal Register prepared and updated		Yes	No
	Remarks, if any			

Date:\_\_\_\_\_

Prepared by Safety Officer

Approved by Site Head /  
Resident                      Construction  
Manager

(Signature and Name)

(Signature and Name)

**FORMAT NO.: HSE-6 REV 0****PERMIT FOR WORKING AT HEIGHTS (ABOVE 2.0 METER)**

Permit No. .... Name of Main Contractor .....Name of  
 work executing agency / sub agency / vendor:  
 .....Date .....Exact Location of work  
 .....

Nature of work .....Duration of work (from)  
 ..... (to)

Number of workers covered within this permit .....

*(List enclosed with name & gate pass numbers.)*

Sl. No.	Items / Subjects	Status of compliance (Yes / No)	
1	Work areas / Equipments inspected		
2	Work area cordoned off		
3	Adequate lighting is provided		
4	Precautions against public traffic taken		
5	Concerned persons in & around have been alerted & cautioned		
6	Hazards / risks involved in routine / non-routine task assessed and control measures have been implemented at specific task		
7	ELCB provided for electrical connection & found working		
8	Ladder safely attached / fixed		
9	Scaffoldings are checked and TAGs are found used correctly		
10	Working platforms are provided and are found sound /safe for use		
11	Safe access & egress arrangements (e.g. ladders, fall arresters, life-lines etc.) are satisfactorily incorporated		
12	a. Openings on platform / floors are effectively cordoned / covered		
	b. Safety Nets are provided wherever required		



Sl. No.	Items / Subjects	Status of compliance (Yes / No)	
13	Use of following safety gadgets by people working at area under this permit, is checked and found satisfactory - Safety helmet Safety harness (full body) with double lanyard Safety Shoes Safety gloves Safety goggles		
14	Housekeeping of work area found satisfactorily tidy / clean & clear		
15	Adequate measures have been taken for works being continued at the ground level, when simultaneous works are permitted overhead at that very location.		
16	Materials are not thrown from heights on to ground		
17	Medical examination of workers are made & found satisfactory		
18	Responsible job engineer / supervisor found physically present at work spot for overall administration of work as well as safety of people.		

Above items have been checked & compliance has been found in place. Hence work is permitted to start / continue at the above-mentioned location. Work shall not start till identified lapses are rectified.

Additional Precautions, if any .....

Work Permit issued by

Verification By

Contractor Engineer/RCM  
Officer

Contractor                  Safety

#### **AT THE END OF THE DAY/WORK:**

All works at height are completed & workmen have returned safely from work location at (time)..... (date) .....

(Sig. Contractor Engineer)

**FORMAT NO.: HSE-7 REV 0**

**CONFINED SPACE ENTRY PERMIT**

Project site \_\_\_\_\_ Name of the work \_\_\_\_\_  
 Name of Contractor \_\_\_\_\_ Exact location of work \_\_\_\_\_  
 Sr. No. \_\_\_\_\_ Date \_\_\_\_\_ Nature of work \_\_\_\_\_

<b>Safety Requirements POSITIVE ISOLATION OF THE VESSEL IS MANDATORY</b>								
<b>(A) Has the equipment been ?</b>								
Y	NR		Y	NR		Y	NR	
<input type="checkbox"/>	<input type="checkbox"/>	Isolated from power/steam/air	<input type="checkbox"/>	<input type="checkbox"/>	water flushed &/or steamed	<input type="checkbox"/>	<input type="checkbox"/>	radiation sources removed
<input type="checkbox"/>	<input type="checkbox"/>	isolated from liquid or gases	<input type="checkbox"/>	<input type="checkbox"/>	Man ways open & ventilated	<input type="checkbox"/>	<input type="checkbox"/>	proper lighting provided
<input type="checkbox"/>	<input type="checkbox"/>	depressurized &/or drained	<input type="checkbox"/>	<input type="checkbox"/>	cont. inert gas flow arranged			
<input type="checkbox"/>	<input type="checkbox"/>	blanked/ blinded/ disconnected	<input type="checkbox"/>	<input type="checkbox"/>	adequately cooled			
<b>(B) Expected Residual Hazards</b>								
<input type="checkbox"/>	<input type="checkbox"/>	lack of O <sub>2</sub> corrosive chemicals heat/ steam / frost	<input type="checkbox"/>	<input type="checkbox"/>	combustible gas/ liquid pyrophoric iron / scales high humidity	<input type="checkbox"/>	<input type="checkbox"/>	H <sub>2</sub> S / toxic gases electricity / static ionizing radiation
<b>(C) Protection Measures</b>								
<input type="checkbox"/>	<input type="checkbox"/>	gloves	<input type="checkbox"/>	<input type="checkbox"/>	ear plug / muff	<input type="checkbox"/>	<input type="checkbox"/>	goggles / face shield
<input type="checkbox"/>	<input type="checkbox"/>	protective clothing	<input type="checkbox"/>	<input type="checkbox"/>	dust / gas / air line	<input type="checkbox"/>	<input type="checkbox"/>	personal
<input type="checkbox"/>	<input type="checkbox"/>	grounded air	<input type="checkbox"/>	<input type="checkbox"/>	mask attendant with	<input type="checkbox"/>	<input type="checkbox"/>	gas alarm
<input type="checkbox"/>	<input type="checkbox"/>	duct/blower /AC	<input type="checkbox"/>	<input type="checkbox"/>	SCBA/air mask	<input type="checkbox"/>	<input type="checkbox"/>	rescue
<input type="checkbox"/>	<input type="checkbox"/>	Fire fighting arrangements	<input type="checkbox"/>	<input type="checkbox"/>	safety harness & lifeline	<input type="checkbox"/>	<input type="checkbox"/>	equipment/team communication equipment
<b>Authorization / Renewal (It is safe to enter the confined space)</b>								
	No. of persons allowed	Name of persons allowed	Signature		Time		Signature	
			Contractor's Supervisor	Contractor's Safety Officer	From	To		Workman

**Permit Closure :**

(A) Entry    ☐ was closed    ☐ stopped    ☐ will continue on ...

(B)    ☐ Site left in a safe condition    ☐ Housekeeping done

(C)    ☐ Multilock    ☐ removed    ☐ key transferred

☐ Ensured all men have come out    ☐ Man-ways barricaded

Remarks, if any:

**FORMAT NO.: HSE-9 REV 0****DEMOLISHING/DISMANTLING WORK PERMIT**

Project :

Sr. No. :

Name of the work :

Date :

Name of contractor :

Job No. :

Name of sub-contractor :  
engaged:

No. of workers to be

*(List enclosed with name & gate pass numbers.)*

Line No./ Equipment No./ Structure to be dismantled

:

Location details of dismantling/ demolition with sketch : (clearly indicate the area)

S. No.

The following items have been checked &amp; compliance shall be ensured during currency of the permit:

---

**Item description****Done  
Not  
Applicable**

Services like power, gas supply, water, etc. disconnected.

☐☐

Dismantling/ Demolishing method reviewed &amp; approved Usage of appropriate PPEs ensured.

☐☐

Precautions taken for neighboring structures

☐☐

First-Aid arrangements made

Fire fighting arrangements ensured

☐☐

Precautions taken for blasting

(Contractor's Supervisor)

(Contractor's

Safety Officer)

Permission is granted.

(Permit issuing authority-Client)

Name : Date :

Completion report:

Dismantling/ Demolishing is completed on \_\_\_\_\_ Date at \_\_\_\_\_ Hrs.

Materials/ debris transported to identified location ☐ Tagging completed (as ☐  
applicable)

Services like power, gas supply, ☐

water, etc. restored (Permit

issuing authority-Client)

CONTRACTOR's NAME

**FORMAT NO. : HSE-10 REV 0**

**HOUSEKEEPING ASSESSMENT& COMPLIANCE**

**(Sheet 1 of 2)**

Project	:	Sr. No. :
Name of the work	:	Date :
Name of contractor	:	Job No. :
Name of contractor	:	Fortnightly

Sl.No	Subjects of Review	Satisfactory/ Yes	Non-satisfactory/ No	Remarks	Action
1.	Cleanliness at the Main entry / access of site				
2.	Ground condition / floor areas free from water- logging / oil spillage				
3.	Ground & elevated floors free from rubbish / wastes / accumulated debris / scraps.				
4.	Manholes / openings are covered / fenced				
5.	Trenches are barricaded / walkways are in place				
6.	Drains are cleaned / not choked / not occupied by dumped materials				
7.	Sufficient CAUTION boards / instructions displayed				
8.	Construction machinery are maintained & parked in orderly manner.				
9.	Movement of site people are not obstructed because of dumping / storing of construction materials				

Sl.No	Subjects of Review	Satisfactory/ Yes	Non-satisfactory/ No	Remarks	Action
10.	Access / egress to Electrical Distribution Boards / Panels clear from wires / cables / earth-strips etc.				
11.	Electrical panel rooms / sheds / MCC / Control rooms / Substations etc. are clean & tidy and not used for storing dress / clothes, tiffin-box or bicycles.				
12.	Passage behind Elec. panels are free for access				
13.	Fire extinguishers / fire-buckets are accessible without any difficulty.				
14.	Stair-steps, platforms & landings are clear & tidy				
15.	Sheds / rooms & work areas have got sufficient illumination as well as ventilation				
16.	Cables / Wires / welding leads are routed / hanged appropriately & are not creating unsafe condition.				
17.	Stacking / storing of insulation materials or their packing.				
18.	Removal or cleanliness of left-over sand, concrete, brick-bats, insulation-materials, excess earth, wastes etc.				
19.	Storing / stacking of sand, metal chips, re-bars, steel pipes, valves, fittings etc.				
20.	One escape route at ground & minimum two escape routes at elevation available,				

Sl.No	Subjects of Review	Satisfactory/ Yes	Non-satisfactory/ No	Remarks	Action
21.	Captions / Posters / Slogans on various safety instructions are displayed legibly in local language				
22.	Cable trenches are water-free or regular arrangement for taking out accumulated water exists.				
23.	Windows of rooms / offices are regularly cleaned				
24.	Facilities for cycle sheds, drinking water, washing, rest-rooms etc. are maintained in tidy manner.				
25.	Toilet, Urinals, Canteen / kitchen / pantry etc. are maintained & free from obnoxious smell.				
26.	Construction tools / tackles are stored systematically - the items are tagged / tested / certified by competent third party.				
27.	Sufficient numbers of Dust-bins / Waste-bins found at site and are regularly emptied.				

Additional remarks, if any -

.....  
.....  
.....  
.....

Inspected by  
Contractor Engineer

Verification By  
Contractor Safety Officer



**FORMAT NO. : HSE-13 REV 0**

**INSPECTION FOR SCAFFOLDING**

Project :  
Name of the work :  
Name of contractor :

Sr. No. :  
Date :  
Job No. :

**(Sheet 1 of 2)**

Sr No	Description	Yes	No	N.A.	Actions taken
1	Whether work permit is obtained to take up work at height above 1.5 Mts?				
2	Whether atmospheric condition is “stormy” or “raining” and works at heights have been permitted?				
3	Whether steel pipes scaffoldings are used for units /off-site areas?				
4	Whether scaffolding has been erected on rigid/firm/leveled surfaces / ground? Whether “foot-seals” or “base-plates” are used beneath the up-rights (vertical steel pipes)				
5	Whether scaffold construction is as per IS specification with toe-board and hand-rails (top-rail as well as mid-rail)?				
6	Whether distance between two successive up-rights are less than 2.5 Mts (height of scaffold & load carrying capacity governs the distance between two uprights)				
7	Whether all uprights are extended at least 900 mm above the top most working platform (to enable fitting of handrails)?				
8	Whether vertical distance of two successive ledgers is satisfactory? ( <i>varying between 1.3 Mts. To 2.1 Mts</i> )				
9	Whether the peripheral areas of working at height are cordoned-off? (for avoiding accident to people arising out of dropped / deflected materials)				
10	Whether platform is provided? Is it safely approachable?				
11	Whether end of scaffold platform / board are				

Sr No	Description	Yes	No	N.A.	Actions taken
	extended beyond transoms? (125mm to 150 mm)				
12	Whether CE / IS approved quality and worthy conditioned full-body safety harness (with double lanyard & karabiners) are used while working at heights?				
13	Whether life-line of safety harness is anchored to an independent secured support capable of withstanding load of a falling person?				
14	Whether the area around the scaffold is cordoned off to prohibit the entry of unauthorized person / vehicle?				
15	Whether clamps used are of good condition, of adequate strength and free from defects?				
16	Whether ladder is placed at secured and leveled surface?				
17	Whether water-pass and oil-spills are avoided around the scaffold structure?				
18	Whether ladder is extended 1.5mts. above the landing point at height?				
19	Whether more than one access/egress provided to the scaffold?				
20	Whether ladder used are of adequate length and overlapping of short ladders avoided?				
21	Whether metallic ladders are placed much away from near-by electrical transmission line?				
22	Whether rungs of ladder are inspected and found in good order?				
23	Whether fall-arresters provided on both the access/egress routes?				
24	Whether diagonal (cross) bracings are provided at regular interval on the scaffold?				
25	Whether working platform on the scaffold has been made free from "jolt" or "gap"?				
26	Whether tools or materials are removed after completion of the day's job at heights?				
27	Whether a valid Permit for Work (PFW) is obtained before taking up work over asbestos or fragile roof?				
28	Whether sufficient precaution is taken while working on fragile roof?				

Sr No	Description	Yes	No	N.A.	Actions taken
29	Whether provision is made to arrange duck ladder, crawling board for working on fragile roof?				
30	Whether scaffold has been inspected by qualified civil engineers prior to their use?				
31	Whether the scaffolding has been designed for the load to be borne by the same?				
32	Whether the erection and dismantling of the scaffolding is being done by trained persons and under adequate supervision?				
33	Whether safety net with proper working arrangement and life-line has been provided?				
34	Whether TAGS (Green for acceptable and Red for incomplete/unsafe scaffolds) are used on scaffolds?				

Inspected by  
Contractor Engineer

Verification By  
Contractor Safety Officer

**FORMAT NO. : HSE-14 REV 0**

**(sheet 1 of 2)**

**PERMIT FOR ERECTION / MODIFICATION & DISMANTLING OF SCAFFOLDING**

Project :

Sr. No. :

Name of the work :

Date :

Name of contractor :

Job No. :

Nature of activities :

Duration:

From.....To.....

SL. No.	SUBJECTS / ITEMS	DONE	NOT DONE	REMARKS
1	Specific task of Erection / Modification / Dismantling of scaffolds, identified & TAGGED accordingly (before as well as after carrying-out jobs).			
2	People engaged in doing the job are identified & are certified by Job Engineer of Main Contractor as experienced / trained.			
3	Concerned persons are alerted by the Job Engineer of Main Contractor in connection with possible hazards & what the workmen MUST do / MUST not do.			
4	Verification by Job Engineer of Main Contractor made for confirming that all persons permitted to carry-out the jobs are making use of Helmet, Safety Shoes, Goggles, Gloves & Double lanyard safety harness and other relevant PPEs.			
5	Area of work is effectively cordoned-off / barricaded / illuminated.			
6	For taking-up / lowering down Scaffolding members / clamps / couplings etc. appropriate ropes / pulleys/ chains etc. have been arranged for use (not to throw any item) & the same have been verified as "fit for purpose".			
7	Items / members of scaffold, being lowered are removed from the area & stacked correctly.			

SL. No.	SUBJECTS / ITEMS	DONE	NOT DONE	REMARKS
8	Ropes, chains, pulley blocks etc. being used for lifting or lowering scaffold items, are inspected by the Job Engineer & their certifications as well as physical conditions have been found O.K, before signing this PERMIT.			
9	Safety Net / Life-line / Fall Arresters etc. are arranged in position and Job Engineer has found working conditions favourable for activities to start.			
10	Scaffold erection or dismantling tasks are being supervised by Experienced Engineer / Competent person.			
11	Only competent & experienced people have been selected / engaged in Scaffolding erection, modification or dismantling tasks.			
12	Adequate & effective actions for traffic and movement of people around the cordoned-off area taken to avoid inadvertent incident			
13	Working platforms are protected with handrails & toe-boards.			
14	Access & Exit (for reach & escape) are safe for use by people.			
15	Tools, tackles to be used for above jobs are verified by job Engineers of Main contractor as genuinely good and tied-up at height (to prevent their fall).			
16	Site important Telephone Nos. are made known to everyone			
17	SOP (Safe Operating Procedure) for the specific task is made & followed too.			
18	Emergency vehicle has been arranged at work locations.			

- This permit for work shall be available at specific work location all the time.
- After completion of work, permit shall be returned to safety cell of main contractor, without fail.
- This Permit shall be issued maximum upto (Monday to Sunday).
- Additional Precautions, if any

.....  
 .....

- **ACCORD OF PERMISSION** (to be ticked) - **YES** ( ) / **NO** ( )

Inspected by  
Contractor Engineer

Verification By  
Contractor Safety Officer]

**FORMAT NO. : HSE-14 REV 0**  
**(sheet 2 of 2)**

Everyday Site working conditions & performance of workmen shall be assessed / checked by Contractor Site Engr. and Safety Officer shall verify the same.

	Name / Sign.	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Site Engr.								
Safety Off.								

**FORMAT NO. : HSE-17 REV 1**

**PERMIT FOR EXCAVATION** (depth 2m and above)

Project :	Sr. No. :
Name of the work :	Date :
Name of contractor :	Job No. :
Job Description :	Location:
Size of excavation :	

**(Sheet 1 of 2)**

SL. NO.	Description of Item	COMPLIANCE STATUS			Remarks
		Yes	No	Not applicable	
1)	Suitable and sufficient risk assessments and method statements has been carried to ensure that the work shall be undertaken in accordance with specification and standard.				
2)	Are plans/details of underground services available and the same has been reviewed?				
3)	Has survey done to locate the services/obstacles etc.				
4)	Has the live services (electrical, water line, air line, telephone line, etc.) has been disabled for carrying out the job.				
5)	Is adequate barriers/fences to protect the excavation are in place?				
6)	Is Adequate warning signs are in place?				
7)	Is Assessment of ground conditions done and remedial action (if any) taken?				
8)	Safe access / egress (e.g. ramp / steps / ladders etc.) provided for site workmen & supervisors.				
9)	Is the excavation work being undertaken in proximity of structure, etc.? If Yes, its effect is considered?				
10)	Availability of competent person for supervising the excavation work?				
11)	Adequate safe arrangement to prevent collapse of edges (e.g. shoring / strutting / benching / sloping etc.) made at site.				

SL. NO.	Description of Item	COMPLIANCE STATUS			Remarks
		Yes	No	Not applicable	
12)	Hard barricades (at least 1.0M away from edge & for excavation near site access roads) with warning signs/caution boards are provided				
13)	Accumulation / passage-ways of water at periphery of excavation / trench stopped/restricted.				
14)	Is the equipment being used for excavation has been checked for adequacy and is in good working condition having all the safety features?				
15)	Age & fitness of workmen ensured by medical test before engagement in job ?				
16)	Arrangement of Monitoring of possible oxygen deficiency or obnoxious gases done & action taken?				

**PERMIT GRANTED -** Yes / No  
*(List enclosed with name & gate pass numbers.)*

Name & Signature of Site Engr.  
charge/RCM of Contractor (Initiator)  
Verification by

Name & Signature of Area – In  
Contractor (Issuing authority)

Contractor Safety Officer

**NOTES: -**

1. Slopes or benches for excavation beyond 2.0M depth shall be designed & approved by Contractor's site head.
2. Excavated earth to be kept at least 1.5M away from edges
3. Safety helmets, Safety shoes or gum-boots, gloves, goggles, Face shield, Safety Harness shall be essential PPEs.
4. Permit shall be made in **duplicate** and original shall be available at site of work.
5. Permit shall be issued for maximum **one week** only (Monday to Sunday)
6. After completion of works, permit shall be closed & preserved for record purpose



## GRANT OF PERMIT AND EXTENSIONS

Sl. No.	Validity period From _____ To _____	Working Time From _____ To _____	Initiator (site Engr. of Main Contractor)	Issuing authority (Area In charge/ RCM of Main Contractor)	Review by Engineer in Charge/EIL (Remarks with date)
1.					
2.					
3.					
4.					
5.					
6.					
7.					

Additional safety instructions if any: -

- 1.
- 2.
- 3.

**FORMAT NO.:**

**HSE-20 REV 0**

**Inspection of Tower Crane**

**Name of Contractor:**

**Project:**

**Name of Work:**

**Job No:**

**Vehicle Identification/Registration No:**

**Date:**

<b>Sr. No.</b>	<b>Description</b>	<b>Observation</b>	<b>Remarks &amp; Suggestions</b>
1	Serial number plate & SWL marking		
2	Valid TPI Certificate		
3	Valid Insurance		
4	Safe access and egress are provided to the crane operator.		
5	Front glass of Operator cabin		
6	Operator crane cabin is provided with a locking mechanism so as to prevent unauthorised entry.		
7	A safety bar is fitted across the operator's cabin window where there is likelihood of the operator falling through it.		
8	Manufacturer Operating Manual and Maintenance Manual are made available.		
9	An updated Operation and Maintenance log book is available in the operator cabin.		
10	All mounting bolts are in good condition.		
11	Load chart provided		
12	SLI available		
13	Crane hooks have got smooth surface and no dent		
14	Hook-latch / Dog-clamp in hook is effective		
15	Over hoist limit switch		
16	Double body earthing of Tower Crane		
17	Jib angle indicator is provided (For Luffing Jib Tower Crane).		
18	Emergency stop button, which will terminate the operation of the crane engine, is installed in the operator cabin and correctly identified.		
19	Effective braking mechanisms for Hoisting, Derricking, Slewing, Trolley Travelling maintained:		

<b>Sr. No.</b>	<b>Description</b>	<b>Observation</b>	<b>Remarks &amp; Suggestions</b>
20	Trolley Travelling limiter to prevent over-travelling of trolley is functional.		
21	Limit switches to prevent over-derricking and over-lowering of jib (For Luffing Jib Tower Crane) is functional.		
22	Slewing limiter to restrict slewing of crane is functional.		
23	Over load Limiter to prevent overloading of crane is functional.		
24	Load Moment Limiter to prevent over-turning moment is functional.		
25	Anti-collision devices are tested to stop the tower crane's operation such that the crane-to-crane interference must be maintained at not less than 3 m.		
26	Condition of boom		
27	Counter weight placement and pins		
28	Winches, pulleys and wire ropes are in good working condition.		
29	Colour coding		
30	Leakage in hydraulic cylinder		
31	Fire Extinguisher		
32	Tower crane is adequately grounded or protected against lightning.		
33	Wind anemometer is installed and is in good working condition.		
34	Aviation lamp is functional (Reqd. for 30mt and above)		
35	Pre Medical Check-up& Periodic Medical check-up (every 6 months) including vision test for Operator		
36	Safety Induction for Operator		
37	Others		

**Signature & Name of Operator:**

**Signature and name of Job Engineer**

**Signature & Name of Contractor's  
Safety Officer**

**FORMAT NO. : HSE-21 REV 0**

**Crane Inspection Checklist**

**Name of Contractor:**

**Project:**

**Name of Work:**

**Job No:**

**Vehicle Identification/Registration No:**

**Date:**

<b>Sr. No.</b>	<b>Description</b>	<b>Observation</b>	<b>Remarks &amp; Suggestions</b>
1	Crane hooks have got smooth surface and no dent		
2	Hook-latch / Dog-clamp in hook is effective		
3	Over hoist limit switch		
4	Over Load Indicator		
5	Over Boom limit switch		
6	Boom angle indicator		
7	Colour coding		
8	Condition of boom		
9	Condition of wire rope		
10	Rope drum / sheaves are in good working condition		
11	Swing break & lock		
12	Swing Alarm		
13	Over hoist break & lock		
14	Boom break & lock (For Telescopic Boom)		
15	Leakage in hydraulic cylinder		
16	Condition of Outrigger (For Tyre Mounted Crane)		
17	Outrigger fully extended Marking (For Tyre Mounted Crane)		
18	Condition of Tyre (For Tyre Mounted Crane)		
19	Wheel chokes are present and are used whenever required (For Tyre mounted)		
20	Battery & lamps		
21	Moving & rotating parts guarded		

Sr. No.	Description	Observation	Remarks & Suggestions
22	Load chart provided		
23	Reverse horn (For Tyre Mounted Crane)		
24	Body Condition of crane		
25	Front glass of Operator cabin		
26	Both side Mirror		
27	Number Plate (For Tyre Mounted Crane)		
28	Fire Extinguisher		
29	Horn		
30	Windshield and wipers		
31	Working of light & Indicator		
32	SLI		
33	Spark Arrestor( For Running Refinery/ Petrochemical/Chemical Plant)		
34	Foot-steps and hand-holds are in good working condition for exit /enter in to cabin		
35	TPI Certificate		
36	RC Document (For Tyre Mounted Crane)		
37	Fitness Certificate of Vehicle by authority		
38	Insurance		
39	PUC		
40	HMV License for Operator		
41	Pre Medical Check-up& Periodic Medical check- up (every 6 months) including vision test for Operator		
42	Safety Induction for Operator		
43	Others		

**Signature & Name of Operator:**

**Signature & Name of Contractor's Concern Engineer**

**Signature & Name of Contractor's Safety Officer**

**FORMAT NO. : HSE-22 REV 0**

**Hydra Crane Inspection Checklist**

**Name of Contractor:**

**Project:**

**Name of Work:**

**Job No:**

**Vehicle Identification/Registration No:**

**Date:**

<b>Sr. No.</b>	<b>Description</b>	<b>Observation</b>	<b>Remarks &amp; Suggestions</b>
1	Identification number of Hydra crane boldly scribed in front and rear end of machine		
2	Hydra Operator has got adequate document in support of his competency (i.e. HMT driving license, knowledge & training)		
3	Marking of SWL on hook position is clearly visible		
4	Test & examination of Hydra crane by statutory / competent authority is carried out & document is valid		
5	Colour Coding		
6	RC Document		
7	Fitness Certificate of Vehicle by authority		
8	Valid Insurance		
9	Valid PUC		
10	Pre Medical Check-up & Periodic Medical check-up (every 6 months) including vision test for Operator		
11	Safety Induction for Operator		
12	Crane hooks have got smooth surface and no dent		
13	Hook-latch / Dog-clamp in hook is effective		
14	Over hoist limit switch		
15	Over Load Indicator		
16	SLI		
17	Condition of boom		
18	Condition of wire rope		

Sr. No.	Description	Observation	Remarks & Suggestions
19	Rope drum / sheaves are in good working condition		
20	Leakage in hydraulic cylinder		
21	Tyre condition		
22	Battery		
23	Moving & rotating parts guarded		
24	Break		
25	Parking Break		
26	Front horn		
27	Reverse horn		
28	Hydra cabin body and frame of machine is in good order		
29	Both side Mirror		
30	Fire Extinguisher		
31	Front glass pane of the Hydra operator's cabin is clean & clear (i.e. not cracked / damaged / broken)		
32	Windshield and wipers condition		
33	Working of front & back lights, turn Indicators, parking lights & fog lamps		
34	Spark Arrestor (For Running Refinery/ Petrochemical/ Chemical Plant)		
35	Wheel chokes are present and are used whenever required		
36	Foot-steps and hand-holds are in good working condition for exit /enter in to cabin		
37	Others		

**Signature & Name of Operator:**

**Signature & Name of Contractor's Concern Engineer**

**Signature & Name of Contractor's Safety Officer**

**FORMAT NO. : HSE-23 REV 0**

**Hydraulic Rig  
Inspection Checklist**

**Name of Contractor:**

**Project:**

**Name of Work:**

**Job No:**

**Vehicle Identification/Registration No:**

**Date:**

<b>Sr. No.</b>	<b>Description</b>	<b>Observation</b>	<b>Remarks &amp; Suggestions</b>
1	Control panel is clean & all buttons/switches are clearly visible (no paint over spray, etc.)		
2	All switch & mechanical guards are in good condition and properly installed		
3	All Safety Indicator lights work		
4	Drive controls function properly & accurately labelled (up, down, right, left, forward, back)		
5	Motion alarms are functional		
6	Safety decals are in place and readable		
7	Any defects such as cracked welds, fuel leaks, hydraulic leaks, damaged control cables or wire harness, etc.		
8	Braking devices are operating properly		
9	Winches, pulleys and wire ropes are in good working condition.		
10	Function of interlocks and limit switch		
11	The manufacturer's operations manual (in all languages of the operators)		
12	Oil level, Hydraulic Oil Level, Fuel Level, Coolant Level		
13	Battery Charge		
14	Outriggers in place or functioning. Associated alarms working		
15	Moving & rotating parts guarded		
16	Load chart provided		



<b>Sr. No.</b>	<b>Description</b>	<b>Observation</b>	<b>Remarks &amp; Suggestions</b>
17	Fire Extinguisher		
18	Spark Arrestor, if operated by using fuel ( For Running Refinery/ Petrochemical/ Chemical Plant)		
19	Serial number plate		
20	SLI		
21	TPI Certificate		
22	Colour Coding		
23	Insurance		
24	Pre Medical Check-up & Periodic Medical check-up (every 6 months) including vision test for Operator		
25	Safety Induction for Operator		
26	Others		

**Signature & Name of Operator:**

**Signature & Name of Contractor's Concern Engineer**

**Signature & Name of Contractor's Safety Officer**

**FORMAT NO.: HSE-24 REV 0**

**Boom Lift Inspection Checklist**

**Name of Contractor:**

**Project:**

**Name of Work:**

**Job No:**

**Vehicle Identification/Registration No:**

**Date:**

<b>Sr. No.</b>	<b>Description</b>	<b>Observation</b>	<b>Remarks &amp; Suggestions</b>
1	Operating and emergency controls are in proper working condition, EMO button or Emergency Stop Device		
2	Functional upper drive control interlock (i.e. foot pedal, spring lock, or two hand controls)		
3	Emergency Lowering function operates properly		
4	Lower operating controls successfully override the upper controls		
5	Both upper and lower controls are adequately protected from inadvertent operation.		
6	Control panel is clean & all buttons/switches are clearly visible (no paint over spray, etc.)		
7	All switch & mechanical guards are in good condition and properly installed		
8	All Safety Indicator lights work		
9	Drive controls function properly & accurately labelled (up, down, right, left, forward, back)		
10	Motion alarms are functional		
11	Safety decals are in place and readable		
12	Guardrails and anchor points are in place, and in good condition		
13	Work platform & extension slides are clean, dry, & clear of debris		
14	Work platform extension slides in and out freely with safety locking pins in place to lock setting on models with extension platforms.		
15	Any defects such as cracked welds, fuel leaks, hydraulic leaks, damaged control		

Sr. No.	Description	Observation	Remarks & Suggestions
	cables or wire harness, etc.		
16	Braking devices are operating properly		
17	The manufacturer's operations manual is stored on AWP (in all languages of the operators)		
18	Oil level, Hydraulic Oil Level, Fuel Level, Coolant Level		
19	Battery Charge		
20	Outriggers in place or functioning. Associated alarms working		
21	Tyres and wheels are in good condition, with adequate air pressure if pneumatic		
22	Wheel chokes are present and are used whenever required		
23	Moving & rotating parts guarded		
24	Load chart provided		
25	Fire Extinguisher		
26	Spark Arrestor, if operated by using fuel (For Running Refinery/ Petrochemical/ Chemical Plant)		
27	Serial number plate with Load capacity		
28	TPI Certificate		
29	Colour Coding		
30	Insurance		
31	Pre Medical Check-up& Periodic Medical check-up (every 6 months) including vision test for Operator		
32	Safety Induction for Operator		
33	Others		

**Signature & Name of Operator:**

**Signature & Name of Contractor's Concern Engineer**

**Signature & Name of Contractor's Safety Officer**

## **Annexure- IX (Special Conditions of Contract)**

### **Additional Special Conditions of Contract**

- (i) The guidelines of NGT, Environment department and local administration or any governmental authority issued from time to time will be strictly followed by contractor.
- (ii) The contractor will make connections of all electro mechanical works, plumbing, HVAC work with the existing system laid and will ensure functionality.

### **(iii) Terms of Payment**

The payment during execution of the work, DLP and O&M period shall be made as per following terms,

<b>Sr No</b>	<b>Description</b>
<b>A</b>	<b>Supply, installation, testing &amp; commissioning of STP</b>
1	2.5% On approval of design & shop drawings by the Engineer-in-Charge
2	35.0% On completion of civil works involved as per scope of the work
3	20.0% On delivery of materials pertaining to Electro mechanical works on pro-rata basis at site and acceptance thereof by Engineer in Charge
4	7.5% On installation of materials pertaining to Electro mechanical works on pro-rata basis at site and acceptance thereof by Engineer in Charge
5	5.0% On supply and installation of equipment and devices for online monitoring of the system as defined in scope of work.
6	2.5% On testing and Commissioning of plant and acceptance thereof by Engineer in Charge
7	2.5% On conducting the tests of treated water from approved laboratory and acceptance of test results by Engineer in charge in line with the parameters of treated water for the intended use defined by concerned statutory authority(ies)
8	5.0% On successful completion of 1 <sup>st</sup> year of Defect Liability Period
9	5.0% On successful completion of 2 <sup>nd</sup> year of Defect Liability Period
10	5.0% On successful completion of 3 <sup>rd</sup> year of Defect Liability Period
11	5.0% On successful completion of 4 <sup>th</sup> year of Defect Liability Period
12	5.0% On successful completion of 5 <sup>th</sup> year of Defect Liability Period
<b>B</b>	<b>Operation &amp; Maintenance</b>
1	15.0% On Completion of 1 year of O&M period to the satisfaction of Employer
2	18.0% On Completion of 2 years of O&M period to the satisfaction of Employer
3	20.0% On Completion of 3 years of O&M period to the satisfaction of Employer
4	22.0% On Completion of 4 years of O&M period to the satisfaction of Employer
5	25.0% On Completion of 5 years of O&M period to the satisfaction of Employer

## **SECTION 6**

### **TECHNICAL SPECIFICATIONS:**

## 1. Scope of work

Scope of work would generally but not limited to the following,

- ii) Preparation of Architectural design & drawings including plant room for the total 800 m<sup>3</sup>/day capacity STP on MBBR technology with tertiary treatment in 2 modules
- iii) Preparation and submission of detailed structural design & drawings for construction of 800 kld(2 modules) plant including plant room with RCC framed structure on MBBR technology with tertiary treatment to Engineer in Charge for approval.
- iv) Preparation and submission of Mechanical and Electrical layout, design & drawings for 800 KLD including plant room (2 Modules of 400 KLD each) on MBBR technology with tertiary treatment to Engineer in Charge for approval.
- v) Preparation and submission of detailed design and drawings of drainage system, footpaths, earth filling around total STP area to Engineer in Charge for approval and execution of the same after approval by Engineer in Charge.
- vi) The construction/erection of all civil & structural components & supervision of 800 KLD (for both the modules of 400 m<sup>3</sup>/day each) with tertiary treatment.
- vii) Supply, Installation, Testing commissioning of the mechanical, electrical, Instrumentation, Automation works, pipes, fittings & online monitoring system other accessories for module one of 400 m<sup>3</sup>/day.
- v) Setting up of the testing laboratory as per requirement for conducting field test, if any pertaining to civil works.
- vi) Getting of successful test results & obtaining approval from authorized Lab / Agency of the Pollution Control Board and relevant Authorities.
- viii) Maintenance of the entire system of 800 m<sup>3</sup>/day civil works, O&M of Electro Mechanical work of 1 module of 400 kld including consumables for the specified period of 5 yrs. Operation & Maintenance for the work executed shall be done strictly as per the client' guidelines and requirements. The electricity charges shall be paid/reimbursed during O&M period.
- ix) Due to space constraints, if any, the STP will need to be constructed in multiple levels (as proposed in the tentative plan), for which no extra payment shall be made to the contractor. Proper ventilation and lighting arrangements shall have to be provided accordingly.
- x) Carrying out tests of treated water from the laboratory approved by employer.
- xi) Obtaining Statutory approval/ NOC / Environment clearance from Environmental Authorities, concerned statutory authorities.

The plant room including STP of 800 KLD capacity shall be constructed partly underground. The civil works shall be executed for 800 KLD i.e. both the

modules while electro mechanical, automation and piping works for one module of 400 KLD.

Provision for the complete and proper ventilation & lighting of the STP has to be planned for 800 KLD and executed, for which the Executing Agency has to specify their detailed requirements and coordinate with all other concerned agencies.

It is proposed to utilize the entire treated waste water for Flushing & horticulture Purposes. Therefore, the system components have to be provided accordingly

For sludge handling centrifuge shall be provided, and the disposal to the final destination as per the approval of the State Pollution Control Board Authorities or other concerned statutory authority.

### **Treatment Objective**

Considering the raw influent quality and the required treated effluent quality, the bidder shall furnish a process train to achieve the following objectives: -

- i. To achieve guaranteed treated effluent quality or even better.
- ii. To ensure that the process is cost effective from both capital and running costs consideration.
- iii. To ensure that the sludge produced is dewatered and is transferable by open body truck, able consistency so that it can be easily disposed of.
- iv. The toxicity test report for sludge from any government recognized laboratory shall be obtained at cost of bidders before disposal.
- v. Power/ Chemicals etc. to be used shall be defined by bidder in the price bid only.
- vi. The final treated effluent is to be disinfected through chlorination before its disposal/ reuse.
- vii. The treated effluent will be used for horticulture/ irrigation . Metallic coagulation, pH correction may be provided.
- viii. Compliance to CPHEEO manual regarding removal of E- coliforms, Fecal coliforms & Helminths coagulation, filtration is must.

## **2 DESIGN DATA**

(The data as provided below is only for guideline purposes and are to be verified by the contractor)

### **2.1 Air Temperatures**

- |                      |   |                  |
|----------------------|---|------------------|
| (a) Annual mean Max. | : | 43.4 °C (June)   |
| (b) Annual mean Min. | : | 3.8 °C (January) |

### **2.2 Rainfall**

Normally rains occur between June to September every year.

- |                               |   |                   |
|-------------------------------|---|-------------------|
| (a) No. of rainy days         | : | 39.1 days(Approx) |
| (b) Average Annual rainfall   | : | 797.3 mm          |
| (c) Average relative humidity | : | 62% (8.30 Hrs)    |

42% (17.30 Hrs)

2.3 **Wind**

Data to be arranged by contractor at his own cost.

2.4 **Ground Water**

To be verified from the site.

2.5 **Accessibility of Site**

The site is located in the basement of the commercial building

2.7 **Influent Characteristics**

2.8 **Type of Waste Water:** The influent is the product of the wastewaters from different activities such as:

1. Domestic sewage from the toilets & bathrooms.
  2. Oil, Grease and food waste from kitchens, pantries etc.
- The influent characteristics indicated below are tentative only for guideline purpose :

<u>The STP shall be designed based on the following parameters:</u>		
Total Daily average flow	:	<b>800 Cum. /day.</b>
PH	:	6.5 - 8.5
BODs	:	200 -350 mg/l
S. Solids	:	400 Mg/l
COD	:	400 mg/L
Oil & Grease	:	10-50 mg/L
TKN	:	39 mg/L
Phosphorous	:	9 mg/L
<u>After tertiary treatment :-</u>		
PH	:	6.5 - 7.5
BODs	:	< 5 mg/l
S. Solids	:	< 10 mg/l
COD	:	< 20 mg/l
Oil & Grease	:	Absent



TKN	:	10 mg/L
Phosphorous	:	1 mg/L

### **Space Availability & Proposed Height**

The following provisions are presently proposed for the construction of the Sewage Treatment Plant. However, the details are subject to change as per the final planning, architectural approval and coordination, and at present should only be considered for guidance purpose. At the time of detailing, the contractor shall get approved the exact space and location from all concerned. The STP shall have to be accommodated in designated area of the layout plan.

Total Area available = As per Plan attached

### **2.9. Proposed Location of STP**

The proposed location of the plant has been shown in the layout drawing.

### **Influent Levels**

Influent levels given on the tender drawings are approximate. The influent will be received from the gravity outfall from the plant. For the purpose of preparation and submission of tender, the level of incoming effluent may be taken as 4.2 meter below the average ground level of STP. The contractor may however be permitted to revise levels of his plants to suit the new levels without any change in quoted price.

### ***Note:-***

- 1. The influent characteristics indicated above are only for guidance purpose. The contractor shall be responsible for getting the effluent tested at his cost for all the parameters as per the Latest requirement for HSPCB/CPCB.***
- 2. It must be clearly understood and noted that if the designed parameters not achieved on any day, the employer will levy a penalty of Rs. 5,000/- per day.***

-O-O-O-

### **3.0 TECHNICAL SPECIFICATIONS**

#### **3.1 GENERAL DESIGN INSTRUCTIONS**

- 3.1.1 The contractor shall bear responsibility for the characteristics of the final effluent and shall make any addition/alterations to the equipment or plant, if the same fails to meet the required standard, without any extra cost to employer.
- 3.1.2 Work under this contract shall consist of furnishing all labour, materials, equipment and appliances necessary and required together with shop drawings and required details to construct, erect and commission, a Sewage Treatment Plant, completely in accordance with the specifications and drawings enclosed with this tender generally comprising but not limited to the items mentioned in the following sections.
- 3.1.3 Detailed engineering and preparation of all working drawings as per design data given in the document and actual site conditions to be determined by the contractor.
- 3.1.4 Construction of all elements of the plant including modification of Civil works.
- 3.1.5 Interconnecting piping between all units, valves, gates and all other appurtenances and devices as required.
- 3.1.6 All electro-mechanical equipment's and piping duly protected against corrosion
- 3.1.7 All electric drives, motor control centers, power and control cables.
- 3.1.8 All instrumentation, control cabling, panels complete in all respects including online monitoring system.
- 3.1.9 All units are shown on the Tender drawings. These drawings are enclosed for guidance of the contractor. The contractor shall work out detailed layout and flow scheme. ensuring that the basic design data conforms to as given Tender document.
- 3.1.10 Getting clearance/certificate from pollution control board and any other regulatory body as per requirement.
- 3.1.11 Provision be made for adding ultrafiltration unit at a later date
- 3.1.2 **Defects Liability and O&M**
  - 3.1.2.1 **Defects Liability:** The defects liability period for this contract shall be 60 (sixty) months from the date of successful commissioning of the STP.
  - 3.1.2.2 The contractor shall also be fully responsible for O&M of plant including civil work of the second module and achieving the desired results after the tertiary treatment. The comprehensive operation and maintenance period shall commence from the date of successful commissioning of the STP. During this maintenance period, the contractor shall provide all lubricants, consumables & chemicals as required for successful O&M of STP. The contractor shall provide round-the-clock, all supervisory/unskilled staff. The personnel for maintenance like foreman, operator,

sewer-man and helper etc. shall be provided by tenderer at his own cost. The contractor shall also train any operational personnel as deputed by the client, about the method of operation and maintenance of the plant, its functioning, control and internal laboratory testing operations if required.

- 3.1.2.3 The contractor shall submit the Operation and Maintenance Manual for the plant with complete set of drawings and normal operation instructions at the time of commissioning of the plant. As built drawing shall be submitted by the contractor after completion of work

Without restricting to the generality of the foregoing, the work shall consist of:-

### 3.2 **Design & construction of all civil works:-**

It shall be ensured by the contractor that the entire structure is water tight. The contractor shall carry out the water proofing work as per attached specification through approved agency and submit a separate performance guarantee as per clients format for the same.

The tentative list of all proposed civil structures is as under which shall be utilized and modified if required.

### 3.3 **Design, supply, erection, commissioning and testing of all Mechanical Equipment & piping work**

#### 3.3.1 **Mechanical fine Screen**

Two fine mechanical screens (1W+1SB) shall be provided for removal of predetermined floating material, debris etc. in the existing screen chamber.. The material of construction for screen shall be SS – 316 flats. The screening shall have 6 mm clear spacing & width of strips shall not be less than 2 mm designed at self-scouring velocity not less than 0.8 M to remove suspended or floating matters in sewage is to be provided. SS- 316 Chutes for screening disposal up to tractor trolley level is to be provided. There shall be one number Aluminum sluice gate at each inlet of the screen chamber with manually operated gear for control of raw sewage in this Screen Chamber.

The screen shall be inclined 45° to the horizontal and shall be grouted in place after installation. The screen shall be front/ back clearing with rakes entering the bar rack, from the upstream side of rack. The screening shall be discharged at top of the channel.

#### 3.3.2 **Mechanical Bar Screen (Chain/ Cable Operated); -**

The bar screen shall include cleaning rakes, rake wipers, sprockets, shaft bearings, chains, drive unit complete with motor reducer, side channel / guides, bar rack, dead plate, discharge chute etc. A clearance of approximately 5 mm shall be maintained between the cleaning rake teeth and the dead plate so that the debris picked up by the cleaning rakes cannot by-pass back into the channel. The debris from the screen shall be collected by contractor for disposal, as per instructions of Engineer- in – Charge.

A locally mounted start / stop panel with motor starter shall be located on the screen. The panel shall be provided with an over load current detector with instantaneous element for overload protection of the motor.

#### 3.3.2.1 Material and construction

Material of Construction	
• Roller chain for power transmission	Standard Steel

• Screen Chain	SS-316
• Sprockets for power transmission.	Cast Steel (Hardened)
• Head Shaft & Foot shaft sprockets.	SS-316

- Frame Work.
- Bar Rack.
- Dead Plate.
- Cleaning Rake.
- Guide Blocks.
- Lower Channel Guides.
- Upper Channel Guides.
- Discharge Chute.
- Hoist Drum & Shaft Assembly.
- Drive Unit with Motor.
- Local Electrical Panel.

➤ **Frame Work: -**

The frame work of the screen shall be of robust construction and shall consist of welded angles / channels. The frame work shall support the drive machinery platform.

➤ **Bar Rack / Screen Bars**

Screen bar assembly shall be fitted across the screen chamber. The bar rack shall consist of a series of vertically oriented steel bars spanning the width of channel and formed straight and true and accurately spaced to provide required openings between adjacent bars. Bars shall extend from the bottom of the channel to about 300 mm above the maximum water level. The bars shall be of rectangular cross-section of size and spacing as indicated in data sheet.

➤ **Dead Plate**

The dead plate shall extend from the top of bar rack to the screenings discharge point in the head section. The dead plate shall be made of 6 mm thick SS- 304 plate and supported at both ends throughout the height..

➤ **Cleaning Rake Carriage**

The cleaning rake shall be fabricated from structural steel shapes and plates. The rake tines shall mesh with the bar screen openings. A clearance of 229 mm x 229 mm x 5 mm shall be maintained between the cleaning rake teeth and the dead plate so that the debris picked-up by the cleaning rake does not fall back into the channel. The rake carriage shall always come to rest in a parked position with the rake above the sewage level.

The rake accurately enmeshes with the screen bars at the bottom of the channel during its upward travel. The line profile and rake motion are to be designed to elevate the screenings to the discharge chute at deck level without debris falling back or being forced through the screen. The screenings are discharged from the rake by a wiper

mechanism to a discharge chute leading to a belt conveyor / container as the case may be. The rake tines are then retracted for the lowering cycle.

➤ **Guide Blocks & Channel Guides**

The movement of rake assembly shall be guided by cast iron sliding blocks which shall slide in channel guides embedded in concrete side walls.

➤ **Discharge Chute**

The discharge chute shall be attached to the top of the dead plate and consist of a pivoted section and fixed section. The section of discharge chute, which is pivoted, shall be designed to prevent screenings from returning to the upstream side of channel when the rake discharges screenings from the cleaning rake. The fixed section of the discharge chute shall direct the screenings to the belt conveyor / container.

➤ **Drum Shaft Assembly**

The drum shaft shall be solid cold rolled steel of sufficient size to transmit the power required. The drum shaft shall turn in grease lubricated, pillow block roller bearings and shall support two sets of two grooved rope / hoist drums with one drum of each set keyed to the shaft while the other is free from limited rotation controlled by the fixed drum. The two inside drum shall be provided with friction band brakes to assist in opening of rake carriage.

Cables shall be provided for raising and lowering the rake assembly.

➤ **Driving Mechanism**

The drive unit for each screen shall be of the motorized type securely mounted on the machinery platform. The drive unit shall consist of an electric motor with in-built AC/ DC brakes and of crane (S-4 duty) coupled to a gear reducer. The gear reducer shall be further coupled to the hoist shaft by means of pinion and spur gear.

➤ **Local Electrical Panel**

A local electrical panel with motor starter and ON-OFF push buttons for manual operation shall be provided. The panel shall be provided with control schematics with interlocks with the limit switches provided for safe and smooth operation of the screen.

The screen shall be operated manually and shall run continuously until stopped manually.

The panel shall be located on / near the screen for operating of the screen.

**Instrumentation**

- Rotary Limit Switch for limiting Upper & Lower Travel
- Slack Cable Limit Switch
- Upper Over-travel Cut-off Limit Switch which shuts off the motor and sounds an alarm if the rotary limit switch fails to operate.
- Power to open motor brakes to prevent the rake carriage from free falling into the screen channel when power is cut-off to the motor.

**3.3.4 Painting**

- The mild steel parts if used shall be provided with epoxy primer and paint to a total DFT shall be not less than 120 microns.

#### 4. **Equalization cum anoxic sump: -**

An equalization cum Anoxic tank to be constructed. Suitably sized & designed submersible mechanical mixer with SS – 316 MOC in order to break  $\text{NO}_2$  in to  $\text{N}_2$  &  $\text{O}_2$  be provided.

Minimum Anoxic SRT : 12 days

Mixing Power Requirement : Min 15 Watts/ $\text{m}^3$

Total equalization cum anoxic chamber shall be suitable for:  $3 \times Q_{\text{avg}} + 3 \times Q_{\text{avg}}$  for denitrification + 1 to 1.5  $Q_{\text{Avg}}$  for return activated sludge + Excess activated sludge volume. However, the size shall be verified by the bidder.

Internal recirculation: 2 to 3 times of average or as calculated after conversion of  $\text{NO}_3$  into  $\text{NO}_2$ . The internal recirculation shall be taken pumping from aeration tank with ultrasonic level sensor in order to control levels in equalization tank & aeration tank and overflow as per level marked on weir from the aerobic sump into Inclined tube settler by gravity for average flow + Return Activated Sludge plus Excess Sludge flow.

#### 5. **Submersible pumps**

A set (1W + 1SB) of non-clog submersible pumps shall be provided each suitable for  $Q_{\text{Avg}} + \text{IR} + \text{RAS}$  for pumping equalized & denitrified sewage into existing first unit of sewage treatment plant being converted into moving bio film reactor.

#### 6. Upgrade sewage treatment plant based on Moving Bed Biological Reactor technology that is Aerobic Attached Growth Biological Reactor and aerobic reactor thereafter for nitrification & internal recirculation at the rate of 2 to 3 times of average flow.

The proposed upgraded STP shall be suitable for achieving the targeted treated effluent parameter which requires the conversion of existing two number SAFF (Sub merged Aerobic Fixed Film) reactors into two reactors R2 & R3 and shall comprise the following equipments:

- Tri/ Twin acoustic enclosure Blowers for the air requirement.
- Aeration grids for MBBR Reactors 1 & 2, piping to blowers shall be PP/ PVC.
- Media sieves of SS- 316 in Reactor R1 to R2.
- 500  $\text{M}^2$  surface area Bio media in reactor R1.

Mixing in Reactor No: 1: - Coarse Bubble Aeration Grid, Construction in PP/ PVC.

Media Retention Sieves: - Suitable nos. of Perforated Cylindrical Horizontal Sieves, design hydraulic capacity  $Q_{\text{Avg}} + \text{IR} + \text{RAS} + \text{EAS}$  Construction SS 316.

Mixing in Reactor No: 2, Reactor -Fine Bubble Aeration Grid, Construction in EPDM. The MLSS in aerobic reactors shall not be more than 4000 ppm.

There is one number square reactor (MBBR) shall be made operational for 100%

capacity & other reactor shall be as biological reactor without media.

The air quality required shall be sufficient for maintaining minimum necessary dissolved Oxygen at 25<sup>0</sup> C liquid temperatures & mixing conditions at 3000 to 4000 mg/ L MLSS whichever is more. **The air shall be supplied using positive placement rotary type air blower minimum 2 numbers (1W + 1SB) each of 100% capacity with additional load as per calculations taking into account extra oxygen requirement @ 4.56 Kgs/ Kg s Nitrogen removal shall be considered taking in account TKN as 13% of existing BOD5.**

The diffusers used shall be suitable for coarse bubble air diffusion. The air agitation or diffusion is to be applied continuously to circulate the media & keep in suspension. The RPM of blowers & motors shall not be more than 1500 RPM.

At the reactor of MBBR a DO meter shall be provided to enable blowers to maintain DO level not less than 2 PPM using VFD (Variable Frequency Drive) controlled blowers. The entire piping for distribution of air in reactor shall be of PP/ PVC material with coarse diffusers in R1 & Fine diffusers in R2 reactor. The approach velocity for consumption of sieves area shall range between 0.006 to 0.009 MPS & accordingly length & number of cylindrical sieves shall be calculated. The aeration system with diffusers shall be so arranged to provide a mixing pattern that causes the media to be thoroughly mixed through the whole depth, width & length of Oxidation volume & shall prevent media from floating at the tank surface or at the corners of the basins. This shall be achieved by spacing the diffusers with gaps between groups of diffusers in order to create rolling action.

Provision to maintain bio film carrier in reactor by providing media retention cylindrical sieves of SS 316 suitable designed at average flow plus internal recirculation plus return activated sludge plus excess activated sludge through sieves. These sieves shall be wedge wire type of suitable sized mesh with supporting structures. The configuration to be used shall be horizontally cylindrical sieves inserted in reactor walls at 25 to 35% submergence under the water depth from reactor 1 to biological reactor 2 & from biological reactor 2. The internal recirculation shall be carried out using 2 (1W+1SB) submerged non clog pumps into equalization cum anoxic tank. The remaining average flow + Return Activated Sludge Plus Excess sludge from aerobic sump shall overflow over suitably sized weir into inclined tube settling tank. The return activated sludge plus excess sludge shall be drained into existing sludge holding tank. The Return Activated Sludge shall be pumped back into equalization cum anoxic tank using 2 (1W+1SB) non clog submersible pumps overflow from weir shall be fixed & locked to allow only Average flow + RAS + Excess Sludge only into inclined tube settling tank & the overflow in troughs of tube settler shall be controlled fixed & locked to allow only RAS + Excess Sludge only into existing sludge holding tank.

## **7. Inclined tube/ Plate settlers.**

Civil structures for one number Inclined tube tank designed as per the following parameters is already existing however the same shall be checked by the bidder:

-

Type.	: Rectangular with hopper bottom.
Quantity.	: 1 Unit.
Design flow to the secondary clarifier.	: Average design flow + return sludge flow- MLSS wasted
Solid Load for secondary load, KGs/ Day	: Tentative calculation attached.
Surface loading, M <sup>3</sup> / M <sup>2</sup> / Day	
At average flow, M <sup>3</sup> / M <sup>2</sup> / Day	: 8 to 15
Solids loading Kg s/ M <sup>2</sup> / Day	: ≤ 120 at peak flow.
Maximum Velocity, MPS	: <1.0
Weir Design.	: 184 at peak flow.
	: V notches fabricated from 3 mm Stainless Steel with adjustable clamps shall be provided
Slope.	: 1 in 1 towards center existing.
Sludge withdrawal	: ≥ 40 mm Ø CI pipe with telescopic bleed arrangement & 25 mm NB water injecting point for flushing.
Material of Construction	
Inclined tubes	: Hexagonal 1.1 mm thick Verigin PVC
Angle of inclination	: 55°
Straight length, L	: 800 mm for hexagonal tubes
Edge to edge distance, e	: 40 for hexagonal tubes.

**8. Treated Sewage water Tank:**

The treated liquid tank already constructed and treated effluent from inclined tube shall flow by gravity into this tank. A Set of (1W+1SB) pumps suitable for 400 KLD pumping in 20 hours for lifting treated effluent into pressure filters shall be provided.

**9. Chemical Dossing: -**

This shall include FeCl<sub>3</sub>, Lime solution preparation tanks in PVC.

**Dosing plant capacity**



Medium	Max dose PPM	Solution	Storage	No. of Sol. Tanks
Ferric Chloride	5	@5%	30 days	Not less than 2
Lime	3	@5%	30 days	Not less than 2

- 9.1. **Solution Dosing:** - The dosing shall be made by pumping. The solution tanks and dosing devices have to be installed at a level to be in a position to feed by positive suction into the flash mixer. The diameter of the pipes in the chemical plant and to the injection points shall be 20 mm OD HDPE/ PVC pipe.

## 9.2. Tanks and agitators

The Solution tanks shall be minimum 2 nos. each chemical of pVC/ MS RL to resist corrosion by the chemical solutions. The filling of the tank is made through sprinkler pipes above the strainers. The freeboard shall be 30 cm. Each solution-mixing tank shall be provided with electrical agitators of turbine type. The driving motor of suitable capacity including reduction gear and other accessories shall be provided for rotating the agitator at a speed between 30 to 50 rpm. The fan cooled driving motor and reduction gear shall be totally enclosed but easily accessible for maintenance. The shaft shall be freely suspended from the driving gear mounted on top of the tank. No thrust or guide bearing shall be located below the liquid level. The shaft of the agitator and the paddles shall be of SS 316 grade.

Each solution tank shall be provided with a SS 316 grade floats operated level indicator with wooden scale to indicate the level through an arrangement of pulleys and nylon cords.

### Pipes and valves in the dosing plant: -

The pipes, fittings and valves shall be such that any of the alum tanks can be used individually. The tanks shall be filled from the process water pipe system. Each tank shall have an outlet with strainer to the dosing unit, an outlet for complete drainage and an overflow. The service outlet shall be at least 20 cm above the bottom level of the tank. The entire piping and the fittings shall be in HDPE pipe 10 kg/ cm<sup>2</sup> rating of 20 mm OD. All valves for solution delivery up to the injection point and for waste water from the tank shall be rubber lined diaphragm valves.

The solution pipe between the solution tank and the dosing pump as well as the pipe from the dosing pump to the injection point shall be of HDPE pipe 10kg/cm<sup>2</sup> rating. They shall be connected to the process water circuit so that a rinsing of the pipes between the solution tank and the dosing pump and downstream the dosing unit is possible after each stop of the plant. The valves in the solution pipes shall be installed accordingly. The overflow and outlet pipe shall be connected to the general drainage system leading to the wastewater tank / common pit.

### Solution pipes to the injection point: -

The solution pipes to the injection point in the inlet chamber shall be of HDPE pipe 10kg/cm<sup>2</sup> rating. They shall be laid on pipe racks or trays to be fixed to walls of tanks or in covered pipe channels so that they are always accessible. They shall not be exposed to direct sunlight. The chemical pipes shall be fixed and jointed in such way those individual runs can be changed without dismantling adjacent pipes. No individual pipe run shall be longer than 5 m. There shall be no bends provided in the solutions

feeding pipes and wherever required 4 way crosses with plugs shall be provided to facilitate toddling.

**Chemical solution feeder: -**

There shall be suitable metering pumps feeder for the chemical solution feeding as per the table below. The control of the flow (Outlet) shall be regulated manually within the range 0 to maximum range as per requirement. The outlet to the dosing line shall be controlled by needle valve. There shall be a set (1W +1SB) of dosing pumps. Each chemical dosing with the lined diaphragm valve & dismantling/ connectors shall be of SS 316 grade material.

**Handling of the chemicals: -**

There will be a handling system to bring the chemicals from the ground floor to the strainer troughs in the solution tanks. Manually operated monorail hoist with trolley, with loading platform/ bucket, traveling from above a hole in the floor (1.2 x 1.2 m with 1.0 railing) to the strainer trays in the solution tanks, a curved beam shall be provided if required, capacity of the hoist is 250 Kg. 5 trolleys (one number each chemical) for the transportation of the chemicals to the loading platform of the hoist at the chemicals store at the ground floor; capacity 250 Kg. to be provided.

One platform-weighing machine for the alum bricks capacity 500 kg. Be provided.

Medium	Type	Quantity	Point of application
Ferric Chloride	Metering Pump	A Set (1W+1SB)	Online before filters.
Lime	Metering Pumps	A Set (1W+1SB)	Online before filters.

**10. Deep Bed Pressure Sand Filters: -**

Minimum two deep bed dual media pressure Filters fabricated from MS plates conforming to IS:2062 & designed as per IS:2825 for non-fired pressure vessels with 4.5 mm thick internal surface rubber lining & epoxy coating on outer surface shall be provided for a total capacity of 400 KLD for average flow.

Filtration shall be downwards through a bed of filtering media supported on a layer of suitably graded filter gravel. The filtering media shall consist of silica sand over hard durable grains of silica. All grains of media shall preferably be water worn. The filter gravel shall consist of hard, preferably rounded stones with an average specific gravity not less than 2.5, shall be free from clay, sand, loam and organic impurities of any kind and shall be such as to ensure adequate and uniform distribution of wash water and air after leaving the orifices with the minimum risk of mixing sand with the gravel of the supporting media.

All filter media shall be supplied in polythene bags. Suitable care should be taken to protect the media from spillage or contamination. Storage on site shall only be in an approved area, well drained and free of mud and silt. The filter media shall be carefully placed in the filter beds and shall not be dropped or

dumped or machine handled so as to be detrimental to the floor media, nozzles or sealant. Etc.

The under-drain system shall be a pipe grid type consisting a central pipe/channel with lateral system of PVC Class 10 pipes having nozzles. The holes drilled in the pipes shall be properly bushed. The under-drain system shall be designed to provide uniform draw-off of filtered water and uniform distribution of wash water and air over the whole area of the filter. Particular provisions have to be made for the handling of the high air velocities at the inlet zone of the manifold.

Before filling the supporting layers and the dual media of the filter beds the whole under drain system shall be thoroughly cleaned and tested for equal distribution of water. The Contractor shall take all necessary measures to ensure that false floor if used containing nozzles and the water conveying system of pipes or channels connected to the floor are free from any debris, concrete, sand or other material which could otherwise block or partially block nozzles.

Such requirements shall also apply in the case of piped laterals with nozzles or orifices. It shall be the responsibility of the Contractor to remove any such debris. Each filter shall have a central and lateral wash water trough, which shall be connected with adequate slope to the wash water outlet to prevent deposits of silt. They shall allow an equal withdrawal of the wash water during backwashing the filter. A float switch with alarm shall be provided at the maximum admissible levels of each filter to indicate the need for backwashing.

Parameters:

Filters	
Filtration rate at average flow	9 m <sup>3</sup> / m <sup>2</sup> / h
Head loss	Min 4.0 m
Free board	50%
Airflow for air scouring	750 LPM/ m <sup>2</sup>
Backwash water flow for backwashing.	400 LPM/ m <sup>2</sup>
Filter media	
Depth of fine sand.	: 900 mm
Specific gravity	: 2.65
Effective size of fine sand particles	0.6 – 0.8 mm
Specific gravity	: 2.65
Uniformity coefficient of sand	1.3 – 1.7

Depth of gravel layer	500 mm
Maximum Permissible velocities, MPS	
Filter Inlet	: 2.4
Filter Out Let.	: 2.4
Backwash Inlet.	: 2.4
Backwash Outlet.	: 2.4
Air	: 20.

#### 11. Activated Carbon Filters: -

Minimum two Activated carbon pressure Filters fabricated from MS plates to IS-2062 & designed as per IS:2825 code for non-fired pressure vessels with 4.5 mm thick internal surface rubber lining & epoxy coating on outer surface shall be provided for a total capacity of 400 KLD for average flow.

Filtration shall be downwards through a bed of activated carbon supported on a layer of suitably graded filter gravel. The activated carbon media shall consist of coarse activated carbon with minimum 800 Iodine value. All grains of media shall preferably be water worn. The filter gravel shall consist of hard, preferably rounded stones with an average specific gravity not less than 2.5, shall be free from clay, sand, loam and organic impurities of any kind and shall be such as to ensure adequate and uniform distribution of wash water and air after leaving the orifices with the minimum risk of mixing sand with the gravel of the supporting media

All type of media shall be supplied in polythene bags. Suitable care should be taken to protect the media from spillage or contamination.

The under-drain system shall be a pipe grid type consisting a central pipe with lateral system of PVC Class 10 pipes having nozzles. The holes drilled in the pipes shall be properly bushed. The under-drain system shall be designed to provide uniform draw-off of filtered water and uniform distribution of wash water and air over the whole area of the filter. Particular provisions have to be made for the handling of the high air velocities at the inlet zone of the manifold.

Before filling the supporting layers and the dual media of the filter beds the whole under drain system shall be thoroughly cleaned and tested for equal distribution of water.

The Contractor shall take all necessary measures to ensure that false floor if used containing nozzles and the water conveying system of pipes or channels connected to the floor are free from any debris, concrete, sand or other material which could otherwise block or partially block nozzles.

Such requirements shall also apply in the case of piped laterals with nozzles or orifices. It shall be the responsibility of the Contractor to remove any such debris.

Each filter shall have a central and lateral wash water trough, which shall be connected with adequate slope to the wash water outlet to prevent deposits of silt. They shall allow an equal withdrawal of the wash water during backwashing the filter.

A float switch with alarm shall be provided at the maximum admissible levels of each filter to indicate the need for backwashing.

Parameters:

Filters	
Filtration rate at average flow	9 m <sup>3</sup> / m <sup>2</sup> / h
Free board	50%
Backwash water flow.	400 LPM/ m <sup>2</sup>
Filter media	
Depth of Activate Carbon	: 1200 mm
Size, mm.	0.8 – 1.2.
Specific gravity	: 0.5 to 0.8
Maximum Permissible velocities, MPS	
Filter Inlet	: 2.4
Filter Out Let.	: 2.4
Backwash Inlet.	: 2.4
Backwash Outlet.	: 2.4

## 12. Chlorination: -

The chlorination shall be carried out by using Sodium Hypo Chloride dosing using a set (1W+1SB) of metering pumps. Vacuum type chlorinators designed at 5PPM for 0.15 MLD & reducible to desired residual chlorine automatically using sensor shall be installed.

## 13. Chlorine Contact Tank:

The treated water tank/ chlorine contact tank is already constructed. Treated effluent from activated carbon filter/ pressure filter shall be collected in this tank. There shall minimum a set(1W+1SB) of pumps suitable for pumping 400 KLD treated effluent for disposal or reuse shall be installed.

## 14. Screw press: -

The sludge from the sludge holding tank shall be pumped to a set (1W+1SB) of screw press. The polyelectrolyte dosing shall be made by pumping. The solution tanks and dosing devices have to be installed at a level to be in a position to feed by positive suction into the screw press. The diameter of the pipes in the

chemical plant and to the injection points shall be minimum 20 mm OD HDPE pipe class 10.

Dosing plant capacity

Medium	Max dose PPM	Solution	Storage	No. of Sol. Tanks
Polyelectrolyte	2 Kgs/ MT	@0.2% w/v	30 Days	Not less than 2

#### 15. Main Control Panel: -

- \* Power control center (PCC)
- \* Power Distribution Board (PDB)
- \* Power supply up to main bus will be provided by the purchaser.
- \* The switchboard panel shall be made out of steel sheet in compartmentalized design and shall be suitable for bottom cable entry on rear side. The horizontal bus bar chamber shall be on the top whereas vertical bus bars shall be provided in bus alley at the front. The minimum clearance on the back and sides of each switchboard panel shall be 600 mm and on the front side the same shall be 1500 mm.

At least 4 spare bays of 63 A will be kept in the panel for additional circuits in future. Indoor ACB'S shall be provided on the in-comer of each transformer in the panel. All lighting loads shall be taken from bay(s) in LV panel to distribution board(s). The incoming breaker from auxiliary transformer shall be ACB'S housed in respective panels. Additional set of NO - NC contacts shall be provided than the required numbers.

I	Sheet Steel thickness.	
	Enclosure & Doors.	: 2.5 mm.
	Partitions & covers.	: 1.6 mm.
	Gland plates.	: 3.0 mm.
	Base frame.	: Minimum 3.0 mm HR Steel.
2	Degree of protection.	: IP52.
3.	Surface finish.	: Powder coating.
4.	Shade (Interior & Exterior).	: Light Grey, Shade: 631 (IS 5).
5.	PVC Heat shrink sleeve	: Black sleeve with colored tape for R/ Y/ B
6.	Control Connections.	:
	For PT & other connections.	: 1.5 mm <sup>2</sup> standard Copper Wire.
	For CT Circuit.	: 2.5 mm <sup>2</sup> Standard Copper Wire.
7.	Gasket for Doors.	: Neoprene Gasket shall be provided to make Panel dust & vermin proof, confirming to degree of protection IP 52.
8.	Earth bus & Earthing	: Earth bus of minimum 50 X 6 mm GI or suitable for fault level of panel & shall project

	conductor.	throughout the length of panel at bottom & horizontal bus bar shall project outside the panel & shall have at least two holes for earth connections.
9.	Door closing arrangement.	: All power switches shall be door inter locked.
10.	Space Heater.	: Panel space heater shall be provided in each vertical panel with thermostat control.
11.	Cable lugs.	: Cu cable lugs for copper cables shall be provided.
12.	Cable glands.	: Double compression brass cable glands shall be provided.
13.	Cubical illumination.	: Shall be provided for all cable alleys.
14.	Operating Height.	: Operating switches, push buttons & handles shall not be placed below 300 mm & above 2000 mm.
15.	Live Connections.	: Live connections from bus bar up to switches shall be shrouded in order to avoid accidental touch.

**Technical parameters: -**

a)	TP bus bar Material	: High Conductivity Aluminum grade E91E fot TPN, size shall be suitable for continuous current rating as per design.
b)	Min. clearance	: Phase to Phase 25 mm & Phase to Earth 20 mm
d)	Short circuit current	: 25kA (RMS) for 1 second
e)	Power freq. withstand- V	: 2.5 kV RMS, 50 Hz for one minute
f)	Short time Rating	: 13.12kA (RMS) for 1 second
g)	Max. Temp. of bus bar	: 70°C
h)	CT details	: Cast resin, bar primary type, 5 A CT ratio, burden and class shall be as per the maximum current expected at the point of installation in the circuit, indicative CT ratio & burden shown in respective SLD.
i)	MCB Details.	: Rating shall be as per the maximum current

		expected on the circuit. MCB will be with static release, U/ V & current limiting feature for incomer & with static release for each outgoing MCB.
j)	Current Details.	: Rating shall be as per the requirement of the motors duty shall be as per application.
k)	Relays	: Releases: All the releases for breakers should be of static release Type. : Over load Relay (OLR): It shall be of thermal type with hand reset PB on module door with single phasing preventions.
l)	Motor Control Supply.	: 415/ 213 V, AC
m)	Selector switch details	: AS for Ammeter with R,Y,B,OFF positions and VS for Voltmeter with RY,YB,BR,OFF positions
n)	Indicating Meter details	: Moving iron type, 90 deg scale, for AM & VM, Suppressed scale in case of AM for motors AM dial range to suit CT primary current. : VM dial range 0 to 600 V Size 96 mm <sup>2</sup> for Accuracy Class 1.0.
o)	Multi-Function Meter	: Shall have built in ammeter, voltmeter, kW meter, KVA meter, PF meter, KWH meter, KVAH meter.
p)	Push button details	: Momentary type, 2 NO & 2 NC contacts of 10A at 240 VAC.
q)	Indicating lamp details	: LED type with series resistance,
r)	Control fuse details	: HRC cartridge type with base & carrier. Contactor to select rating.
s)	Change over switch.	: 2 Position, on load type.
t)	Miscellaneous details	: Control terminal shall be 10 A, 1100 V Grade, clip on type with din rail mounting. CT terminals shall be provided with shorting link and Earthing facility. Control wiring - marked with ferrule nos. at both ends.



t)	General	: Bus bars shall be designed for taking future loads also
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## **16. EXECUTION OF WORK**

- 16.1 The work shall be carried out in conformity with the contract drawings.
- 16.2 The Contractor shall co-operate with all trades and agencies working on the site.
- 16.3 On award of the work, contractor shall submit a schedule of construction in the form of a CPM chart or BAR chart for approval of the Engineer-in-Charge. All dates and time schedule agreed upon shall be strictly adhered to.

## **17. GENERAL**

- 17.1. All electrical motors and other equipment shall be suitable for 415 volts, 3 phase, 50 cycles or 220 volts, single phase, 50 cycles, A.C., Supply motor 1 H.P. or below shall be single phase. All motors installed in open area must have space heaters and the circuits should have provision for automated operation.
- 17.2. All motors shall be rated 10.5% above the required HP.
- 17.3. Each motor shall be provided with weatherproof terminal box and motors in exposed conditions shall be provided with suitable removable PVC covers.
- 17.4. Connections to all motors shall be made with flexible connections with suitable bushes and terminal lugs.
- 17.5. All electrical equipment shall conform to relevant Indian/ other relevant standards wherever applicable and of reputed makes. All items shall be inspected and tested at manufacturer's works and certified copies of such reports shall be submitted to Engineer in Charge
- 17.6. All electrical equipment e.g. motors, switchgears, cables etc. shall be of reputed make only.
- 17.7. Electrical work shall be executed by authorized and qualified persons competent to undertake such works under the rules and regulations of the local electric supply authority.

## **18. MOTORS**

- 18.1 Electric motors shall be totally enclosed fan cooled induction type squirrel cage motors conforming to IS:325.
- 18.2 Each motor shall be provided with a starter and stop push button switch suitably mounted near each motor. This shall be in addition to the main switchgear provided in the switchboard cubicle. (Not required for sludge/effluent pump).

## **19. MOTOR CONTROL CENTRE**

Motor Control Center shall be in sheet steel clad cubicle pattern, free floor standing, totally enclosed, compartmentalized design having multi-tier arrangement of the incomers and outgoing feeders. All panels shall conform to the requirements as per IS 2947(Part-1 to 5): 1993 and shall be suitable for 415 V, 3 phase, 50 Hz, AC supply.

## **CONSTRUCTIONAL FEATURES**

The Switch Boards shall be totally enclosed, sheet steel cubicle pattern, extensible on either side, dead front, floor mounting type/wall mounting if asked for and shall have a bus bar chamber at the top and the cable entry from the bottom. The cable terminations should be in side the feeder compartment only.

The Switch Boards shall be completely dust and vermin proof. Synthetic rubber gaskets between all adjacent units and beneath all covers shall be provided to render the joints dust and vermin proof to provide a degree of ingress protection of IP 42. All doors and covers shall also be fully gasketed with synthetic rubber. All the live parts shall be properly shrouded with FRP sheets.

The Switch Board shall be fabricated with CRCA Sheet Steel of thickness not less than 2.0mm and shall be folded and braced as necessary to provide a rigid support for all components. The doors and covers shall be constructed from CRCA sheet steel of thickness not less than 1.6 mm.

#### **SWITCHBOARD DIMENSION:**

A base channel 75 mm x 5 mm thick shall be provided at the bottom. The overall height of the Switch Board shall be limited to 2200 mm from finished floor level FFL. However, maximum height of the operating handle, push buttons etc. shall be restricted between 300 mm and 1800 mm from FFL.

#### **BUS BARS**

The bus bars shall be suitable for 4 wire, 415 volts, 50 Hz, system. The main bus bar shall be made of high conductivity electrolytic grade AL 91E Aluminium. The bus bars shall have uniform cross section throughout the panel.

#### **XLPE Power and Control Cables**

##### **MATERIAL**

The MV power cable of 660/1100 V. grade shall be XLPE insulated Aluminium conductor armoured cable as per IS:7098 Part-II. The cables shall be provided with inner sheath of extruded black PVC compound type ST-1 and HRPVC outer sheath. The outer sheath shall be resistant to flanges, rodent & termite attack & shall have fire resistant properties.

##### **Earthing:**

The Earthing of the installation shall be as per IS:3043 1983.

##### **PLATE ELECTRODE EARTHING**

Earthing electrode shall consist of a **G.I.** plate of dimensions 600 mm x 600 mm x 6.3 mm thick or Copper plate of 600 mm X 600 mm X 3 mm as called for in the Bill of Quantity. The plate electrode shall be buried as far as practicable below permanent moisture level but in any case not less than 3 meters below ground level. Wherever possible, earth electrode shall be located as near the water tap, water drain or a down take pipe as possible. Earth electrode shall be kept clear of the building foundations and in no case shall it be nearer than 2 meters from the outer surface of the wall.

The earth plate shall be set vertically and surrounded with 150 mm thick layer of charcoal dust and salt mixture. A 20 mm dia GI pipe shall run from the top edge of the plate to the ground level. The top of the pipe shall be provided with a funnel and a mesh for watering the earth through the pipe. The funnel over the GI pipe shall be housed in a masonry chamber approximately 300 mm x 300 mm x 300 mm deep. The masonry chamber shall be provided with a cast iron cover resting over a CI frame. Test facility shall be provided with test links for the earthing station.

## **20. APPROVAL**

20.1 Contractor shall comply to the provisions of Govt, regulations and by-laws of local authorities and any other Statutory authority..

## **21. SPECIFICATION FOR INSTRUMENTATION & LABORATORY EQUIPMENT**

21.1 Work under this section shall consist of providing detailed design, materials, labor and equipment for all Instrumentation and testing apparatus for laboratory.

21.2 Without restricting to the generality of the foregoing the instrumentation & testing apparatus shall consist of:-

1. pH Testing Kit
2. Conductivity Meter
3. SS / Hardness Testing Apparatus
4. Bulk Flow-meters
5. Energy Meters
6. Pressure Gauges
7. Level Gauges
8. DO Meter
9. BOD Measurement

## **22. GUARANTEES**

22.1 All equipment supplied and installed by the contractor under this contract (whether manufactured by him or not) shall be guaranteed for a defect liability period of Sixty months from the date of commissioning of the plant against defective workmanship, installation and materials.

22.2 The guarantee shall cover replacement of defective parts with new ones. Replaced parts shall also be covered by a similar guarantee.

22.3 The replaced parts shall be of genuine make and approved by the Project Employer.

## **23. ON LINE WATER QUALITY MONITORING AT SEWAGE TREATMENT PLANT (STP): -**

List of treated effluent parameter monitoring at each process stages at STP

a) At Raw sewerage Inlet, at outlet of Filters: -

- pH sensor.
- Ultrasonic level sensor for internal recycling or internal recirculation, return activated sludge pumps throttling to equalization cum Anoxic tank.
- Nitrate

- Phosphate
  - BOD/ COD/ TOC
  - Total Suspended Solids (TSS) with self-cleaning
  - Universal Multi Controller
  - Wireless Remote Data Logger for Transmitting Data Using GSM / GPRS
- b) Filtered Water Outlet after chlorination.
- BOD
  - Total Suspended Solids (TSS) with self-cleaning
  - Nitrate
  - Phosphate
  - Residual Chlorine
  - Wireless Remote Data Logger for Transmitting Data Using GSM / GPRS
  - Multi-Channel Controller

Multi-Channel Controller shall be microprocessor based capable to handle the Waste Water quality sensors. Connections between the sensors and the controller shall be “plug and play.” The controller shall consist of a portable display module connected to one or more probe modules.

The Multi-Channel controller shall have up to four potential free relays Output, four analog outputs and four analog inputs per probe module for local control of the whole process purpose.

The Multi-Channel controller should have internal memory for data storage. Logged data shall be downloading on a SD card in XML Format.

The Multi-Channel controller shall have the option for MODBUS (RS485).

The Multi-Channel controller shall have an Ethernet service port for direct connection to a personal computer for transfer of data and software updates.

The Multi-Channel controller shall be housed in an IP65 enclosure.

The AC power supply shall be housed in the interface unit and automatically accept input in the range of 100 to 230 VAC, 50/60 Hz. An internal 24 VDC power supply shall be available as an option.

The interface unit shall allow operators to control sensor and interface functions with menu-driven software.

The Multi-Channel Controller shall have capability to handle the third party field device like level/pressure/flow transmitter etc.

Wireless Remote Data Logger for Transmitting Data Using GSM / GPRS:

These GPRS / GSM wireless remote data loggers will be used for continuous real time online data acquisition and monitoring. The system should be micro-processor based, Plug & Play type and should have inbuilt modem.

### **Technical Specifications**

4 x Analog Inputs (0 - 5 Volts or 4 - 20 mA)

4 x Digital Inputs (Pulse/Frequency)

4 x Auxiliary Relay Outputs

Hi/Low SMS Alerts

Web based monitoring

Data Monitoring @ 60 sec interval

### **Specifications for pH**

PH-metering system shall comprise electrode assembly, pre-amplifier (if appropriate) and analyzer Controller & based on Differential Electrode Measurement Technique

### **Engineering Specifications:**

Stainless Steel pH Sensor

The pH sensor shall be of differential electrode technique design using two measuring electrodes to compare the process value to a stable internal reference standard buffer solution. The standard electrode shall have non-flowing and fouling-resistant characteristics.

The sensor shall be capable of chain mounting for immersion applications, and shall be constructed of SS- 316 stainless steel.

The built-in electronics of the sensor shall be completely encapsulated for protection from moisture and humidity.

The sensor shall have a built-in preamplifier to enable the signal to be transmitted up to 500 m with standard cabling and up to 2000 m with a termination box.

The sensor signal shall have an integral temperature sensor to automatically compensate measured values for changes in process temperature.

The sensor shall include a titanium ground electrode (standard) to eliminate ground loop currents in the measuring electrodes.

The Probe / Sensor should be of detachable type and able to work with any digital controllers.

The pH sensor signal shall have an integral temperature sensor to automatically compensate measured values for changes in process temperature.

The built-in electronics of the pH sensor shall be completely encapsulated for protection from moisture and humidity.

The sensor shall communicate via MODBUS & RS-485 with digital controller.

The overall accuracy of the pH meter shall be better than +/-0.1pH and the

repeatability shall be better than  $\pm 0.05\text{pH}$ .

Controls shall be provided on the front of the controller or at the side of the panel-mounted pull-out module for: -

automatic/manual temperature compensation;

Calibration adjustment.

The controller shall have an integral indicator and shall produce an isolated 4-20mA output which is linear to pH.

### **Technical Specifications**

Measuring Range: -2 to 14 pH

Sensitivity:  $\pm 0.01$  pH

Stability: 0.03 pH per 24 hours, non-cumulative

Operating Temp: Digital Sensor: -5 to 70°C (23 to 158°F)

Flow Rate: 3 m (10 ft.) per second, maximum

Sensor Pressure/Temperature Limits: Digital: 6.9 bar at 70°C (100 psi at 158°F)

Analog: 6.9 bar at 105°C (100 psi at 221°F)

### **Ultrasonic flow meter**

- Permanent A/C powered flow meter (controller only)
- Highly accurate flow measurement using ultrasonic sensor technology
- Simple menu-driven system.
- Provides reliable and cost effective flow monitoring.
- Flow measurements can be viewed directly on the display, or output to a chart recorder, data logger.

### **Specification**

Display: Graphic dot matrix LCD, 128 x 64 pixels with LED backlighting; 1/2 inch (13 mm) main character height; 1/8 inch (3mm) auxiliary information character height; menu screens contain up to six text lines.

### **Environmental**

Operation: -4 to +140°F (-20 to +60°C); 0 to 95% relative humidity, non-condensing

Storage: -22 to +158°F (-30 to +70°C); 0 to 95% relative humidity, non-condensing

Relays (four): Types/Outputs: Electromechanical relays; SPDT (Form C) contacts; U.L. rated 5A 115/230 VAC, 5A @ 30 VDC resistive

Operational Mode: Each relay (A, B, C, and D) can be set to be driven by the

measured flow, depth or volume (resettable)

### **Model U53 Sensor**

Alarm: Settings for low alarm pt., low alarm pt. dead band, high alarm pt., high alarm pt. dead band, off delay, and on delay

Control: Settings for high/low phasing, set point, dead band, off delay, and on delay

Penstock: Settings for high/low phasing, off delay, and on delay

Flow Pulse: Relay provides a fixed 0.5 second contact closure pulse output each time a user-set volume is reached

Status: Not configurable; relay only activates when a diagnostic WARNING condition exists (sensor or analyzer failure, line power interruption, and other abnormal operating conditions)

Indicators: Relay annunciations (A, B, C, and D) indicate respective relay on/off status

Temperature Compensation: Automatic from -40 to +176°F (-40 to +80°C)

Sensor-to-Analyzer Distance: 328 ft. (100 m) maximum Power Requirements: 90-130 VAC, 50/60 Hz. (20 VA max.) or 180-260 VAC, 50/60 Hz. (20 VAmx.)

Analog Outputs (two): Isolated 0/4-20 mA outputs; each with 0.004 mA (12-bit) resolution and capability to drive up to 600 ohm loads; each output can be assigned to represent the measured flow, depth, or volume (resettable)

Communication: RS-232: Enables configuration and retrieval of measured data for one analyzer using IBM-compatible PC and GLI optional software tool kit

Memory Backup (non-volatile): All user settings are retained indefinitely in memory (EEPROM).

### **Analyzer Performance (Electrical, Analog Outputs)**

Accuracy: 0.5% of span

Sensitivity: 0.1% of span

Repeatability: 0.1% of span

Response Time: Less than 180 seconds to 90% of value upon step change

### **Mechanical**

Enclosure: NEMA 4X; polycarbonate face panel, epoxy-coated high-quality cast aluminum door and case with four 1/2 inch (13 mm) conduit holes, nylon mounting bracket, and stainless steel hardware

Mounting Configurations: Panel, surface, and pipe (horizontal and vertical) mounting

### **Indicative BOD: -**

The sensor should be user friendly, sturdy, un-breakable and should perform without consumables. Two systems required separately for BOD & COD. The sensor should have the below features: Continuous UV 254 Absorbance/Transmittance measurements can be used to protect plant treatment processes from high organic loads. Analysis range of 5mm probe is 0.1-600 m-1.

#### **Applications: -**

Protection of treatment plants from industrial dischargers, Monitoring shock loads from internal plant processes, Control of activated sludge processes, Control methanol feed in BNR based on organic loading, Final effluent monitoring, Monitoring efficiency of UV disinfection processes.

#### **Technical Specifications**

Measuring Technique: UV absorption measurement (2-beam technique), reagent-free

Measuring Method: SAC 254 in accordance with DIN 38404 C3.

Measuring Path: Choice of 1 mm (0.04 in), 2mm (0.08 in), 5mm (0.20 in), and 50 mm (1.97 in) path lengths.

Measuring Range: 6945300 (50 mm path): 0.01-60 m-1  
(25.0-100% T per cm)

6945200 (5 mm path): 0.1-600 m-1

6945100 (2 mm path): 0-1500 m-1

6945000 (1 mm path): 2-3000 m-1

Compensation: 550 nm

Measuring Interval (= min): > 1 min

Cable length: 10 m (32.8 ft) to 120 m (393.7 ft)

Control function: PID, time control, 2-point controller (with sc100)

#### **Total Suspended Solids (TSS) for TSS & MLSS: -**

The suspended solids sensor shall consist of a digital sensor designed to connect to a universal controller, shall use dual infrared light beam technique design utilizing an LED light source in the sensor to transmit an infrared/scattered dual beam into the sample stream at an angle of 45 degrees to the sensor face.

The sensor shall analyze the dual-beam data and provides a color independent measurement.

The sensor shall have a self-cleaning device to prevent erroneous values and maintenance problems caused by biological activity, scum build-up, and gas



bubbles.

The sensor shall have an operating range of 0.001 to 50 g/L or 0.001 to 150 g/L suspended solids

The sensor shall be capable of immersion in a tank or insertion into a pipe.

The self-cleaning device shall ensure that measurements are accurate, continuous, and completely color independent.

The initial response time shall be 1 second and user-adjustable up to 300 seconds.

The accuracy shall be less than 5% of reading for suspended solids

The sensor shall communicate via MODBUS® RS-485 with digital controller.

The sensor should have two analog 0/4-20 mA output via Controller.

### **Dissolved Oxygen (DO)**

The dissolved oxygen probe shall be a continuous-reading probe that utilizes luminescent sensor technology. The DO sensor should be membrane free and shall be capable to connect with digital controller via plug & Play operation.

The sensor material shall be polybutyl methacrylate.

The measurement range shall be 0.00 to 100.00 mg/L dissolved oxygen.

The probe shall provide electrolyte-free operation without the requirements of sample conditioning.

The probe shall be furnished with choice of pole or ball float mount kit.

The sensor cap shall be warranted for one full year against defects in material and workmanship.

The probe shall be warranted for three full years against defects in material and workmanship.

The sensor shall be unaffected by pH swings, hydrogen sulphide, wastewater chemicals, heavy metals, or organic build-up on the sensor. Warm-up time is unnecessary so the analyzer can start measuring within 30 seconds of when it's turned on.

The DO probe shall have only one inexpensive Replacement part—the sensor cap that is simple to replace. The Sensor cap is warranted for one year. Factory calibration and , verification points, and alarm history for up to 6 months.

Flow rate should not be required for DO Probe.

Sensor should be Polybutyl methacrylate material.

### **Technical Specification**

Measuring Range: 0 to 100.0 ppm, 0 to 100.0 mg/L, 0 to 200% saturation

Sensitivity:  $\pm 0.5\%$  of span

Accuracy:

Measurement: Below 1 ppm:  $\pm 0.1$  ppm

Above 1 ppm:  $\pm 0.2$  ppm

Temperature:  $\pm 0.2^\circ\text{C}$

Repeatability:  $\pm 0.5\%$  of span

Response Time at  $20^\circ\text{C}$ : To 90% in less than 40 seconds

To 95% in less than 60 seconds

Resolution: Below 10 ppm:  $\pm 0.01$  ppm or

mg/L,  $\pm 0.1\%$  saturation

Above 10 ppm:  $\pm 0.1$  ppm or

mg/L,  $\pm 0.1\%$  saturation

Operating Temperature:  $0$  to  $50^\circ\text{C}$  ( $32$  to  $122^\circ\text{F}$ )

Flow Rate: None required

Probe Immersion Depth and Pressure Limits: 107 m (350 ft.),

1050 kPa (150 psi), maximum

Transmission Distance: 100 m (328 ft.) maximum

1000 m (3280 ft.) maximum when used with a termination box

Sensor Cable (integral): 10 m (33 ft.) terminated with quick disconnect plug

Wetted Materials: Probe: Foamed Noryl® and 316 stainless steel

Sensor: Polybutyl methoacrylate

#### **Nitrate Sensor: -**

The nitrate sensor shall be a continuous-reading sensor that utilizes a 2-beam ultra-violet absorption technology with a 1, 2, or 5 mm path length.

The measurement range shall be 0.1 to 100 mg/L  $\text{NO}_2\text{-N} + \text{NO}_3\text{-N}$ , depending on model.

The measurement interval shall be user-selectable from 1 to 30 minutes (unit dependent) with the ability to average up to 12 signals depending upon unit selected.

The sensor shall compensate for the interference effects of turbidity and organic contamination.

The sensor shall provide reagent-free operation without the requirements of sample conditioning.

The sensor shall be self-cleaning via a wiper and retain a life-long factory calibration.

A built-in data logger shall collect measurement data, calibration, verification points, and alarm history. DW = drinking water

The sensor shall be warranted for one full year against defects in material and workmanship.

The accuracy of the nitrate sensor should be  $\pm 3\%$  of reading or  $\pm 0.5$  mg/L,  $\pm 5\%$  of reading or  $\pm 1.0$  mg/L,  $\pm 5\%$  of reading or  $\pm 0.5$  mg/L, whichever is greater whichever is greater whichever is greater

Measuring Gap/Path Length 1, 2, and 5 mm 1 mm 5 mm

Measuring Range 0.1 to 100.0 mg/L NO<sub>2</sub>+3-N (1 mm) 1.0 to 20.0 mg/L, NO<sub>2</sub>+3-N (1 mm) 0.5 to 20.0 mg/L NO<sub>2</sub>+3-N (5 mm), 0.1 to 50.0 mg/L NO<sub>2</sub>+3-N (2 mm), 0.1 to 25.0 mg/L NO<sub>2</sub>+3-N (5 mm)

Detection Limits 0.1 to 100 mg/L NO<sub>3</sub>-N 1.0 to 20 mg/L NO<sub>3</sub>-N 0.5 to 20 mg/L NO<sub>3</sub>-N

Accuracy  $\pm 3\%$  of reading or  $\pm 0.5$  mg/L,  $\pm 5\%$  of reading or  $\pm 1.0$  mg/L,  $\pm 5\%$  of reading or  $\pm 0.5$  mg/L, whichever is greater whichever is greater whichever is greater

Resolution 0.1 mg/L 0.5 mg/L 0.1 mg/L

Sludge Compensation Yes

Measurement Interval 1 minute 5 minutes 5 minutes

Response Time (T100) 1 minute 15 minutes 5 minutes

Available with Bypass Yes No Yes

Sensor Construction Enclosure Stainless Steel 1.4571 Stainless Steel 1.4581  
Wiper Axle Stainless Steel 1.4104 Stainless Steel 1.4571 Wiper Silicon  
Measuring Window Quartz Glass

Service Intervals 6 months or as experience dictates

Operating Temperature 2 to 40°C (36 to 104°F)

Operating Pressure 0.5 bar (7.2 psi), maximum

Cable Length 10 m (32.8 ft.)

#### **Phosphate Analyzer: -**

The Phosphate Analyzer should determine phosphate concentration using the molybdovanadate yellow colorimetric method using very little reagent. The analyzer should measure PO<sub>4</sub>-P concentrations as low as 0.05 mg/L. The response time of the analyzer should be 5 minutes, including sample preparation and selection of the measurement interval. The enclosure housing should be

weatherproof and lockable.

**Features:**

ASA UV-resistant, lockable housing, rated to IP55

Automatic cleaning and calibration, adjustable

Extensive self-diagnostics

Technical Specifications:

Measurement Range: (PO<sub>4</sub>-P) 0.05 to 15 mg/L

Lower Detection Limit: 0.05 mg/L

Accuracy: 2% ± 0.05 mg/L

Reproducibility: 2% ± 0.05 mg/L

Response Time (T<sub>90</sub>): Less than 5 minutes, including sample preparation

Measurement Interval: 5 to 120 minutes, adjustable

Outputs: Relay, current outputs, and bus interface via Multi-Parameter Universal Controller

Sample Preparation: Filter Probe sc

Operation

In-situ membrane filtration

Filter modules are exchangeable

Continuous self-cleaning with air bubbles

Particles larger than 0.15 µm are separated from the sample stream

Immersion Depth: 3 m (9.8 ft.) maximum

Sample Flow Rate: 3 m/s, maximum

Filtrate Flow Rate: 5 mL/minute, minimum, 4 out of 5 minutes

**Residual Chlorine Analyzer: -**

The chlorine analyzer shall be online type & shall employ a DPD colorimetric method approved by USEPA/EPA Approved for drinking water application. The chlorine analyzer shall be capable of measuring free or total residual chlorine by changing the indicator and buffer solutions. The measured unit shall be preferably in mg/l & ranges up to 0-5 mg/l.

Engineering specification:

A measurement shall be taken every 2.5 minutes and results displayed by a three digit LCD readout in the range of 0 to 5 mg/L.

The analyzer shall be microprocessor-controlled and provide a 4-20 mA recorder

output as well as 2 alarms. Both an alarm for manual chlorine feed control and a 4-20 mA output for automatic control of chlorine feed pumps is available in the Analyzer. When set for manual control, the instrument notifies the operator of out-of-limit chlorine levels for manual intervention in the disinfection process as needed. For automatic control of chlorine feed pumps, the Chlorine Analyzer can use one of two methods:

On-Off Control turns the feed pumps on when chlorine levels fall too low for disinfection and off when levels rise above a pre-set limit.

Proportional Control adjusts the amount of chlorine in proportion to the strength of the output signal.

### **Simple Maintenance: -**

The analyser shall have less maintenance required

The analyser accuracy should not affect due to change in other properties of liquid like pH, temperature, chlorine concentration.

The instrument shall measure a sample blank before each sample measurement to provide automatic zero reference to compensate for sample color and turbidity and changes in light intensity due to voltage fluctuations or light source aging.

The analyser shall be designed for 30-days unattended operation.

Each alarm shall be user-selectable for sample concentration alarms (high or low), analyser system warnings, or analyser system shutdown alarms.

The chlorine analyzer shall be housed in an IP-62 rated, ABS plastic enclosure designed for wall mounting.

The enclosure shall have two clear polycarbonate windows for viewing the measurement readout and reagent levels.

Power requirements shall be 100-115/230 Vac, 50/60 Hz, switch selectable, 95 VA maximum.

The sample concentration alarms shall be fully adjustable through the entire range.

### **Technical Specifications**

Range: 0 to 5mg/L free or total residual chlorine, with automatic color/turbidity compensation

Accuracy:  $\pm 5\%$  or 0.035 mg/L as  $\text{Cl}_2$ , whichever is greater

Precision:  $\pm 5\%$  or 0.005 mg/L as  $\text{Cl}_2$ , whichever is greater

Minimum Detection Limit: 0.035 mg/L

Cycle time: One complete sample analysis every 2-1/2 minutes

Recorder outputs: One 4-20 mA with an output span programmable over the 0

to 5 mg/L range. 130 V isolation from earth ground Alarms: Two alarms selectable for sample concentration, system warning or system shut-down.

Each alarm is equipped with an SPDT relay with contacts rated for 5 A resistive load at 230 Vac Optional external outputs : AquaTrend® Network interface Power : 100-115/230 Vac, 50/60 Hz (switch selectable), 90 VA maximum Compliance/Certification : CE approved. ETL listed to UL 1262 ETL certified to CSA 22.2 No.

142, Enclosure: ABS plastic, IP62 enclosure rating with two clear polycarbonate windows.

#### **24. Operation & Maintenance Service: -**

The contractor shall operate and maintain the 400 KLD STP along with proposed tertiary Treatment Units during the defect's liability period of five years after successful commissioning. The Contractor shall be responsible for : -

- Operating the plant with the design capacity maintaining the output quality.
- Keeping the down time of any equipment as low as possible but at least below the desired level.
- Maintaining all the plant, equipment and tools and making necessary repairs.
- Technical and administrative monitoring of the plant;

The operation, maintenance and repair service shall be made according to the following specification.

##### **a) Maximum down time: -**

The plant shall never be operated at less than 50% of its design capacity due to maintenance and repair reasons. The period of 50% operation shall not exceed more than two consecutive days and not more than three days in a week. The maximum downtime of the whole plant shall not exceed more than 8 continuous hours. The periods for repairs and maintenance have to be communicated to purchaser at least fifteen days in advance.

##### **b) Operation of the plant: -**

The plant shall be operated according to the rules and procedures laid down in the operation manual, as required, according to the required raw sewage input of the campus. The plant must be in a position to work at the design and overload capacity at any time and to produce the design/ overload output.

##### **c) Carefulness and cleaning: -**

The Contractor and his staff have to ensure a maximum of carefulness in the operation and maintenance of the plant. At any time, the plant, its equipment and its surroundings have to be kept clean and proper.

##### **d) Preventive maintenance frequency: -**

The preventive maintenance will be made according to the preventive maintenance schedule of the plant. Short-term specialists of the Contractor for special maintenance tasks may reinforce the regular staff. The operation, maintenance and repairs shall be made with the help of the equipment and tools available at the plant, backed up and completed with the facilities of the Contractor at his HQs or brought to the plant by him temporarily for a special maintenance.

e) **Repairs:** -

Repairs shall be made as and when needed on the spot or at the contractor's workshop has to be defined in co-ordination with the employer and according to the status of the spare parts availability.

f) **Spare parts:** -

The Contractor has to keep a reasonable stock of spare parts so that the down time of equipment can be kept in the limits. The content of the stock has to be approved by employer.

g) **Transportation:** -

All necessary transports shall be arranged and made by the Contractor at his own cost.

h) **Consumables:** -

The contractor shall to provide all chemicals such as FeCl<sub>3</sub> for phosphorous reduction, Polyelectrolyte for sludge, Sodium Hypo Chloride, Lime etc. for operation, consumables, spares, oil & lubricants, chemicals for laboratory testing, consumables for electrical & mechanical plant & machinery. employer shall provide electric power and raw sewage at desired flow & level free of cost.

This scope of work does include painting, white washing, distempering of plant, building & equipments except when required after repairs during the defect liability period & soon before handing over after five years operation & maintenance period.

O & M personnel shall dedicate their 100% time & the contractor will ensure that adequate number of his staff shall be available on duty 24 hours, 7 days per week including all holidays.

O & M personnel to be provided by the contractor shall be suitably qualified & he will get their CV resume duly vetted by the employer before engaging them at work.

In case contractor fails to operate & maintain the treatment plant to the rated capacity & quality employer shall be at liberty to terminate the operation & maintenance contract without assigning any reason & take panel action as per the contract & prevailing law as this is covered under essential services act.

The contractor shall adopt all necessary safety measures for all his staff, plant, building & machinery.

## **25. Electrical Equipment**

Design, Supply, Erection, Commissioning and Testing of all Electrical equipment generally comprising of:

1. Electric motors for all equipments as required.
2. Motor control center completes with all internal wiring and accessories.
3. Electrical cables from M.C.C panel to all electric motors and units.
4. Electric earthing stations as per I.E.E. rules.
5. All internal lighting & exhaust system etc.

## **26. Piping Work**

Laying of all piping work as per detailed designs and generally for:

- For the interconnection of the various equipments, sludge sump, pump house and control room.
- All interconnecting piping between various units & bypass etc.
- Effluent piping within limits as shown on the drawings.

## **27. SPECIFICATION FOR WATERPROOFING BY CHEMICAL INJECTION SYSTEM HORIZONTAL AND VERTICAL SURFACE:**

### **27.1 Injection Grouted**

The SS pipes are placed at 1.0m c/c and at location indicated as per drawing and securely fastened to the reinforcement prior to shuttering and concentrating or alternatively by drilling holes (25mm to 32mm dia.) in the concrete upto a depth as shown in the drawing all over the R.C.C. surface @ 1.0m c/c and as shown in the drawing. Treatment along all construction joints by providing nozzles, as above, shall be executed.

Fixing 25mm dia. threaded nozzles of adequate length in these holes with cement mortar 1:4 mixed with integral water proofing compound.

Injecting cementitious polymer grout of cement and polymer integral based non-shrinkable water proofing compound in these nozzles in proportion as per manufacturer's specification at a pressure of 2.5 to 3.0 kg./sq.m.

After the grout the nozzles are cut and filled with cement mortar 1:3 mixed with integral waterproofing compound in proportion as specified and finished smooth.

### **27.2 Making of CC Gola**

Making of CC gola of size 75mm X 75mm around the junction of vertical and horizontal R.C.C. slabs wall in 1:2:4 (1 cement: 2 coarse sand: 4 coarse aggregate of 10mm nominal size) mixed with integral water proofing compound.

Top of the R.C.C. surface is prepared and first coat acrylic polymer based cementitious slurry is applied in the ratio 1:2 (1 acrylic polymer: 2 cement).

Applying second coat of acrylic polymer based cementitious slurry is applied mixed in the ratio 1:2 (1 acrylic polymer: 2 cement.) and laying 25mm thick cement plaster in 1:4 (1 cement: 4 coarse sand) mixed with integral water proofing compound admixed with 100 % virgin homopolymer polypropylene multifilament confirming to ASTM C 1116 fibre like stealth fibre mesh @ 0.6 kg/cu m as per manufacturer's specification.

27.3 Integral water proofing compound shall satisfy the provision IS 2645.

Note: The proportion of acrylic based polymer compound to be used with ordinary cement shall be as per manufacturers specifications.



## **Section-7**

**Bill of Quantities  
Attached at Annexure-A**

## **Section-8**

**DRAWINGS**  
**Attached in Volume-2**

## **Section-9**

### **Approved Makes List & Material Specifications**



# LIST OF APPROVED MAKES OF MATERIALS (STP)

S.N	Materials	I.S.No	Brand Name
<b>A. MECHANICAL</b>			
1	G.I. pipes	1239 Pt-I	JINDAL STAR SURYA PRAKASH JINDAL HISSAR
2	M.S Pipes	1239 Pt-I ( upto 150mm )/Pt-II 3589 (more than 150mm dia)	JINDAL STAR JINDAL HISSAR SURYA PRAKASH
3	G.I. Fittings	1879 (Part I to X)	'C' KS UNIK "DRP-M"
4	Butt Welded/Forged Welded Fittings		VS FORGE TRUE FORGE B&M
5	UPVC pipes	4985-1981	FINOLEX SUPREME
6	C.I. S/S Class LA Pipes	1536	KESORAM ELECTROSTEEL
7	Ball Valves ( gun metal)		ZOLOTO SANT LEADER
8	Butterfly Valve ( Slim seal PN-1.6)	13095-1991	KSB AUDCO IVC INTER VALVE
9	C.I double flanged Sluice valves & check valves	780	KIRLOSKAR IVC
10	C.I double flanged non return valves (65mm dia and above)	5312	KIRLOSKAR AUDCO IVC Kalpana/Leader/Upadhay
11	Dual /Disk Type Non-return valves designated to A.P.I. 594 & 598		AUDCO KIRLOSKAR KSB INTERVALVE

			IVC
12	HDPE Pipes	4984-1987	HASTI
			Supreme
			Jain HDPE pipes
			ORIPLAST
13	C.I. LA fittings/ Double flanged fittings specials	1538	KARTAR
			NEEL
			NATIONAL
14	Y-Type Section Strainer (Basket Type)		JAYPEE
			DASHMESH
			GRAND PRIT
15	C.I Strainer more than 65mm dia.	4308	JAYPEE
			KARTAR
			DASHMESH
			GRAND PRIT
16	Water Level Indicator / Solenoid Valve		ADVANCE
			S.A.CONTROLS
17	Water Level controller		ADVANCE
			Elegant Control
			S.A.CONTROLS
18	Filter/Softener		THERMAX
			PENTAIR
			ION EXCHANGE
19	Chlorinator / Doser		ALM
			TOSHKON
20	Hydropneumatic Pumps		ITT Industries
			GRUNDFOS
			DP (HOLLAND)
			WILLO/ MATHER & PLATT
21	Clear Water Transfer Pumps (Imported S.S)		GRUNDFOS
			DP (HOLLAND)
			Kirloskar
			ITT Industries

			WILLO/ MATHER & PLATT
			KSB
22	Drainage & Sewage Pump		KSB
			GRUNDFOS
			DP
			ITT Industries
			WILLO/ MATHER & PLATT
23	Pressure Gauge	IS:3624	FIEBIG
			H.GURU
			Manometer India
			Bells control
24	Pressure Switches	TAC	INDFOSS
			SWITZER
			Verma
			GE Alstom
			Everest
			EIGI
25	Air blower		BETA
			Kay/Evrest/Swan
			Bobkay
26	Diffusers		MM Aqua
27	Centrifuge/Filter Press		Humboldt Wedag
28	PLC		A Bradley/Siemens/L&T/ Mitsubishi/ Messong
<b>B. ELECTRICAL</b>			
29	Main Electrical Control panel (Power coated)		TRICOLITE
			Advance Panels & switchgears
			Aar Vee Controls
			Electronic Control & switch board Pvt
			ECE/CSC/Electric Automation
30	Small Electrical Panels		TRICOLITE
			Advance Panels & switchgears, Narela
			Adlec
			Aar Vee Controls
			Vidut Controls Pvt. Ltd.
			TIMKEN

			Jackson Engineers Ltd.
			Milestone
			Sudhir Engg. Co.Ltd.
31	Cables		SKYTONE
			KEI/CCI/Finolex/Siemens
			RPG(ASIAN)
			CABLE COPN. OF INDIA
			UNIVERSAL
			NICCO
32	MCCB/MCB		L & T
			SIEMENS
			SCHNEIDER
			ABB/GE Alstom
33	Protective Relay		GECA/GE Alstom
			ABB
34	HOT /EOT Crans		Greaves Cotton/ACME/HAFA
			/INDEF/ Reva
35	Indication lamps and push buttons(LED Type)		L & T
			TECHNIC
			VAISHNO
			SIEMENS
			SCHNEIDER
36	L.T. Contactors		L & T
			SIEMENS
			LEGRAND
			SCHNEIDER
37	HRC Fuses		SIEMENS
			SCHNEIDER
			L & T
38	415 Volt air circuit breakers		SCHNEIDER
			L & T
			SIEMENS
39	Selector Switches		KAYCEE
			SLAZER
			L & T
40	Electrical Switch Gear & Starters		SIEMENS
			SCHNEIDER
			L&T
			ABB
<b>C. INSTRUMENTATION CONTROL</b>			
41	Level switch		Levson
			Minilac.
			S.B Electro mechanica
			Toshviwal Brothers
			Control Engg.
42	Level gauge		Levson



			Sigma Instrument
43	Recorders		Vads
			Laxons
			BKT
			Bells
			Uptron India
44	Testing Meters		ABB
			SIEMENS
45	Flow Meters		Kent
			ABB
			Ultra Flux
<b>D. IOTHER ITEMS</b>			
46	Clarifier		Canon
			Geo-Miller
			Dorr-olive
47	Agitator		Canon
			Geo-Miller
			Dorr-olive
48	Reduction Gear Box		Radicon
			Elicon
			Shanti
49	Exhaust Fan		Bajaj
			Crompton
			GEC
50	Indicating Meter		AEP
			IMP
			GELA
			MELO
			SIMCO
51	pH Testing Meter		ABS/
			Rose mount
			Siemens
52	Electromagnetic Flow Meter		Endress/Rosemount (emerson)
53	UV Stablized tube settler media		Cooldek/ M.M. Aqua