



**KARNATAKA URBAN WATER SUPPLY AND DRAINAGE BOARD
(e-Procurement Tender)**

**TENDER FOR THE WORK OF “UPGRADATION OF EXISTING 1.50MLD
CAPACITY STP AT KOLLUR UNDER DEPOSIT CONTRIBUTION OF SRI
MOOKAMBIKA TEMPLE, KOLLUR (INCLUDING 1 YEAR DLP)
(LUMPSUM TENDER –NO VARIATION)”**

2026

TENDER DOCUMENT

**OFFICE OF THE CHIEF ENGINEER,
KARNATAKA URBAN WATER SUPPLY AND DRAINAGE BOARD
MYSURU**

TENDER FOR THE WORK OF

TENDER FOR THE WORK OF “UPGRADATION OF EXISTING 1.50MLD CAPACITY STP AT KOLLUR UNDER DEPOSIT CONTRIBUTION OF SRI MOOKAMBIKA TEMPLE, KOLLUR (INCLUDING 1 YEAR DLP) (LUMPSUM TENDER –NO VARIATION)”

Tender Reference	:	KUWSDB/2026-27/UGD/WORK_INDENT 508/CALL-2
Date and time for commencement of downloading of tender document from the Karnataka Public Procurement Portal https://kppp.karnataka.gov.in	:	As per Karnataka Public Procurement portal
Last date and time for seeking clarifications if any	:	As per Karnataka Public Procurement Portal
Date, time and venue of pre-bid meeting: Venue	:	As per Karnataka Public Procurement Portal Office of the Chief Engineer, K.U.W.S. and D. Board, Jalabhavan”, # P-4, 10th main, 3rd cross, 3rd floor, Saraswathipuram, Mysuru-570009
Last date and time for downloading of the tender document From the Karnataka Public Procurement Portal https://kppp.karnataka.gov.in	:	As per Karnataka Public Procurement Portal
Last date and time for submission/uploading of tender in the Karnataka Public Procurement Portal https://kppp.karnataka.gov.in	:	As per Karnataka Public Procurement Portal
Date and time for opening of the Technical tenders	:	As per Karnataka Public Procurement Portal
Date and time for opening of the financial tenders	:	As per Karnataka Public Procurement Portal
Place for opening of the tenders and address for communication	:	Office of the Chief Engineer, K.U.W.S. and D. Board, Jalabhavan”, # P-4, 10th main, 3rd cross, 3rd floor, Saraswathipuram, Mysuru-570009

DISCLAIMER

The information contained in this Tender document or subsequently provided to Tenderer(s), whether verbally or in documentary or any other form by or on behalf of the Employer or any of its employees or advisors, is provided to Tenderer(s) on the terms and conditions set out in this tender document and such other terms and conditions subject to which such information is provided.

This Tender document is not an agreement and is neither an offer nor initiation by the Employer to the prospective Tenderers or any other person. The purpose of this Tender document is to provide interested parties with information that may be useful to them in making their financial proposals pursuant to this Tender document. This Tender document includes statements, which reflect various assumptions and assessments arrived by the Employer in relation to the Project. Such assumptions, assessments and statements do not purport to contain all the information that each Tenderer may require. This Tender document may not be appropriate to all persons, and it is not possible for the Employer, its employees or advisors to consider the investment objectives, financial situation and particular needs of each party who reads or uses this Tender document. The assumptions, assessments, statements and information contained in all sections of this Tender document may not be complete, accurate, adequate or correct. Each Tenderer should, therefore, conduct its own investigations and analysis and should check the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments, statements and information contained in this Tender document and obtain independent advice from appropriate sources.

Information provided in this Tender document to the Tenderer(s) is on a wide range of matters, some which may depend upon interpretation of law. The information given is not intended to be an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. The Employer accepts no responsibility for the accuracy or otherwise for an interpretation or opinion on law expressed herein.

The Employer, its employees and advisors make no representation or warranty and shall have no liability to any person, including any Tenderer under the law, statute, rules or regulations or tort, principles of restitution or unjust enrichment or otherwise for any loss, damages, cost or expenses which may arise from or be incurred or suffered on account of anything contained in this Tender document or otherwise, including the accuracy, adequacy, correctness, completeness or reliability of the Tender document and any assessment, assumption, statement or information contained therein or deemed to form part of this Tender document or arising in any way for participation in this Tender Stage.

The Employer also accepts no liability of any nature whether resulting from negligence or otherwise howsoever caused arising from reliance of any Tenderer upon the statements contained in this Tender document. The Employer may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information, assessment or assumptions contained in this Tender document.

The issue of this Tender document does not imply that the Employer is bound to select a Tenderer or to appoint the selected Tenderer, as the case may be, for the Project and the Employer reserves the right to reject all or any of the Tenderers or Tenders without assigning any reason whatsoever.

The Tenderer shall bear all its costs associated with or relating to the preparation and submission of its Tender including but not limited to preparation, copying, postage, delivery, fees, expenses associated with any demonstrations or presentations which may be required by the Employer or any other costs incurred in connection with or relating to its Tender. All such costs and expenses will remain with the Tenderer and the Employer shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a Tenderer in preparation or submission of the Tender, regardless of the conduct or outcome of the Tendering Process.

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SECTION 1: INVITATION FOR TENDERS (IFT)

(Through Karnataka Public Procurement Mode)

IFT No: KUWSDB/2026-27/UGD/WORK_INDENT 508/CALL-2

1. The Chief Engineer, KUWS&D Board, Mysuru, Karnataka invites tenders from eligible Tenderers, **Two Cover Tender procedure as per Rule 28 of the KTPP Act shall be followed. The Tenders are required to submit two separate sealed covers, one containing the Earnest Money Deposit and the details of their capability to undertake the tender (as detailed in ITT Clause 3 and 6), which will be opened first and the second cover containing the price tender which will be opened only if the Tenderer is found to be qualified to execute the tendered works. The Tenderers are advised to note the minimum qualification criteria specified in Clause 3 of the Instructions to Tenderers to qualify for award of the contract.**

i. Technical Proposal

- (a) Containing the Earnest Money Deposit and the details of their capability to undertake the Tender (as detailed in ITT in Clause 10) will be opened first. The Proposal includes Technical Proposal of the tenderer of not lower than the departmental proposal which will be evaluated as part of Technical Scrutiny (see Clause 3.8 for details regarding this).
 - (b) Tenderer should submit the technical proposal (concept) with the general layout of scheme, location of the scheme components and type of land and extent of area. The concept shall indicate the details of items involved, quality and make of core items. The concept will be placed before the Evaluation Committee set up by KUWSDB for evaluation. Only after acceptance of concept of the scheme, Financial Proposal will be opened.
 - (c) The Tenderer shall furnish any clarifications required by the committee within the time as indicated in the communication for seeking such additional clarification. In case of failure by the Tenderer to submit the clarifications on time, the Committee's decision is final and binding.
2. Financial Proposal will be opened only if the Tenderer is found to be technically qualified as per above conditions. The Financial Proposals of Tenderers whose Technical Proposals are rejected/disqualified shall not be opened.
3. The tenders are to be submitted online through the Karnataka Public Procurement portal <https://kppp.karnataka.gov.in> only before the tender submission due date, along with a non-refundable tender processing fee in the form and manner as prescribed by Karnataka Public Procurement Platform. The Chief Engineer, KUWSDB, having office at K.U.W.S. and D. Board, Jalbhavan, Saraswathipuram, Mysuru, will not be held responsible for the technical issues with the said Portal. Tenders submitted in any other manner will not be accepted. Tenderers are required to obtain Level III digital signature from designated firms (available on the Karnataka

Public Procurement portal) and then register with the Government of Karnataka Karnataka Public Procurement platform and submit tenders by using their ID and digital signature. The Tenderer is required to ensure browser compatibility of the computer well in advance to the last date and time for receipt of the Tenders. It is the Tenderer's responsibility to verify the Karnataka Public Procurement portal for the latest information related to the Tender. E-mail address of the helpdesk is Email to: support@eprochelpdesk.com. Karnataka Public Procurement portal helpdesk telephones numbers are +91 80 46010000, +91 80 68948777 who may be contacted during office hours.

4. Tenders must be accompanied by Earnest Money Deposit specified for the work in the Table below. The EMD shall be deposited through Karnataka Public Procurement Portal, <https://kppp.karnataka.gov.in> as mentioned in Instructions to Tenderers and shall have to be valid for 60 days beyond the validity of the Tender.
5. A Pre-tender meeting will be held as notified in the Karnataka Public Procurement portal in the office of The Chief Engineer, Karnataka Urban Water Supply and Drainage Board, Mysuru to clarify the issues if any, and to answer questions on any matter that may be raised at that stage as stated in Clause 8.2 of 'Instructions to Tenderers' of the tender document.
6. Tenders must be correctly and properly uploaded in Karnataka Public Procurement Portal (<https://kppp.karnataka.gov.in>) on or before the date and time specified in Karnataka Public Procurement portal and Technical Proposal of the Tenders will be opened on the specified time and date, in the presence of the Tenderers who wish to attend. If the office happens to be closed on the any specified date of the Tenders, the said action shall be taken on the next working day at the same time and venue.
7. Other details are available in the Tender documents.

Sl. No.	Name of work	Approximate value of work (INR) Excluding GST	EMD (INR) excluding GST	Tender Processing Fee	Contract Period/Period of Completion*
1	2	3	4	5	6
	UPGRADATION OF EXISTING 1.50MLD CAPACITY STP AT KOLLUR UNDER DEPOSIT CONTRIBUTION OF SRI MOOKAMBIKA TEMPLE, KOLLUR (INCLUDING 1 YEAR DLP) (LUMPSUM TENDER-NO	Rs.329.58 Lakhs	Rs.4.94 Lakhs	As per Karnataka Public Procurement portal.	09 (Nine) months including monsoon.

Sl. No.	Name of work	Approximate value of work (INR) Excluding GST	EMD (INR) excluding GST	Tender Processing Fee	Contract Period/Period of Completion*
	VARIATION)” 1. Construction of 5 lakh litres capacity Collection tank near STP. 2. Upgradation of existing 1.50 MLD capacity MBBR type STP at Kollur to MBR type with all associated mechanical, electrical, automation and integration works.				

Sd/-
Chief Engineer,
KUWSDB, Mysuru,

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SECTION 2: INSTRUCTIONS TO TENDERERS (ITT)

A. GENERAL

1. Scope of Tender

- 1.1 The CHIEF ENGINEER, KUWSDB, Mysuru, Karnataka (referred to as Employer in these documents invites Tender following the Two cover Document Tender procedure through Karnataka Public Procurement Portal of e-Governance Department, Government of Karnataka (<https://kppp.karnataka.gov.in>), from eligible Tenderers, for the work (as defined in these documents and referred to as "the Works") detailed in the Table given in the Invitation for Tenderers (IFT).

2. Eligible Tenderers:

- 2.1 Tenderers shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by the Government of Karnataka or Government of India or any another state / central government.
- 2.2 **Tenders from Joint Venture – Not Applicable**
- 2.3 The Tenderers must be eligible as per the Finance Department Government Order No. FD 455 Exp-12 2020 Bengaluru Dated: 25-08-2020., who are coming from countries which are sharing the land border with India and if they are intended to participate in the Government of Karnataka Tenders.

2.3.1 Competent Authority and Procedure for Registration

- A. The Competent Authority for the purpose of registration of bidders under this order has been constituted in the department of Commerce & Industries, Government of Karnataka.
- B. The Registration Committee Shall have the following members:
- Principal Secretary/Secretary to Govt. Department of Commerce and Industries shall be the Chairman.
 - An officer not below the rank of Secretary to Govt., Home Department.
 - An officer not below the rank of Secretary to Govt., of those Departments whose procurements are covered by applications under consideration.
 - Any other officer whose presence is deemed necessary by the Chairman of the Committee.
- C. Department of Commerce and Industries shall lay down the method of applicant, format etc. for such bidders as stated in para (1) of this order.
- D. On receipt of an application seeking registration from a bidder from a country covered by para (1) of this order, the Competent Authority shall first seek political and security clearances from the Ministry of External Affairs and Ministry of Home Affairs, Government of India as per guidelines issued from time to time. Registration shall not be given unless political and security clearance have both been received.
- E. The department of Commerce and Industries in consultation with Home Department may issue guidelines for internal use regarding the procedure for scrutiny of such applications by them.
- F. The decision of the Competent Authority to register such bidder may be for all

kinds of tenders or for a specified type(s) of goods or services, and may be for a specified or unspecified duration of time, as deemed fit. The decision of the Competent Authority shall be final.

- G. Registration granted by the Competent Authority of the Government of Karnataka shall be valid only for procurements by the Procurement Entities as defined in the Section 2(d) of Karnataka Transparency in Public Procurements Act, 1999.
- H. The Competent Authority is empowered to cancel the registration already granted if it determines that there is sufficient cause. Such cancellation by itself, however, will not affect the execution of contracts already awarded. Pending cancellation, it may also suspend the registration of a bidder, and the bidder shall not be eligible to bid in any further tenders during the period of suspension.
- I. In transitional cases failing under para (6) of this Order, where it is felt that it will not be practicable to exclude bidders from a country which shares a land border with India, a reference seeking permission to consider such bidders shall be made by the procuring entity to the Competent Authority giving full information and detailed reasons. The competent Authority shall decide whether such bidders may be considered, and if so, shall follow the procedure laid down in the above paras.
- J. The Competent Authority is required to send a quarterly report to the Cabinet Secretary, Government of India regarding the cases of registration given and denied.

2.3.2 Restrictions of procurement

Any bidder from a country which shares a land with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority.

- A. “Bidder” (including the term ‘tenderer’, ‘consultant’ or ‘service provider’ in certain contexts) means any person or firm or company, including any member of a consortium, every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.
- B. “Bidder from a country which shares a land border with India” for the purpose means:
 - i. An entity incorporated, established or registered in such a country; or
 - ii. A subsidiary of an entity incorporated, established or registered in such a country; or
 - iii. An entity substantially controlled through entities incorporated, established or registered in such a country; or
 - iv. An entity whose beneficial owner is situated in such a country: or
 - v. An Indian (or other) agent of such an entity; or
 - vi. A natural person who is a citizen of such a country; or
- C. The beneficial owner for the purpose of above clause will be as under:

- i. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.
 1. “Controlling ownership interest” means ownership of or entitlement to more than twenty- five percent of shares or capital or profits of the company;
 2. “Control” shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;
 - ii. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;
 - iii. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;
 - iv. Where no natural person is identified under A, B & C above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
 - v. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.
- D. An agent is a person employed to do any act for another, or to represent another in dealings with third person.
- E. A certificate for having read the above clauses is required to be submitted / uploaded by the tenderer separately in the following format:
- “I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered. (Where applicable, evidence of valid registration by the Competent Authority shall be attached.)”
- F. IN CASES WHERE SUB CONTRACTING IS PROVIDED:

A certificate is required to be submitted / uploaded by the Tenderer in respect of sub-contracting separately in the following format:

“I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries; I certify that this bidder is not from such a country or, if from such a country, has been registered with Competent Authority and will not sub-

contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. I hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]”

3. Qualification of the Tenderer

- 3.1 All Tenderers shall provide the requested information accurately and in sufficient detail in Section 3: Qualification information. [Requirements as listed in Clause 3.2, 3.3 & 3.4 are minimum qualification conditions and any Tenderer failing to meet the same shall stand disqualified at the technical evaluation stage].
- 3.2 To qualify for this Tender, each Tenderer in its name should have in the last five years i.e., 2021-22 to 2025-26;

Si. No	Qualification criteria
3.2 (a)	Achieved in at least two financial year a Minimum Financial turnover of INR. 10.37 Crores in the last five financial years (2021-22 to 2025-26) (in all classes of civil engineering construction works only). The Consolidated Annual Financial turnover certificate for the relevant financial years certified by Statutory Auditor along with UDIN number (also the audited financial statements for each of the financial years) to be submitted.
3.2(b)	Satisfactorily completed (90% of the Contract Value), as prime contractor at least one UGD scheme involving construction of Sewage Treatment Plant of MBR/SBR/MBBR technology with allied accessories of value not less than INR. 1.65 Crores . Note: The value of work mentioned in the work done certificate shall be excluding GST.
3.2 (c)	The Tenderer should have completed the following works in any one year
	i. Earthwork excavation quantity – 1139 cum
	ii. PCC/RCC quantity – 256 cum
3.2 (d)	Deleted.
3.2 (e)	Deleted.

- 3.3 The Tenderer should further demonstrate:

- a) Availability by owning/hired key and critical equipment for this work.

Sl. No.	Critical Equipment required	Total Quantity
1.	Excavator	1 No.
2.	Concrete mixing machine	1 No.
3.	Tipper	1 No.

- b) Liquid assets and/or availability of credit facilities of not less than **Rs.1.86 Crores** unconditional Credit line/ letter of credit/ certificates from banks for meeting the fund requirement etc. If the Banker Certificate is conditional, then the Tender is liable for rejection.

- c) Technical, administrative and managerial personnel proposed to be employed for key site management in this work with their qualification details should be furnished in **Annexure – III**.
 - d) Litigation details of the Tenderers with the details of the parties concerned and the amount involved should be furnished in **Annexure-V**.
- 3.4 To qualify for contract made up of this for which Tenders are invited in this Tender, the Tenderer must demonstrate having experience and resources to meet the aggregate of the qualifying criteria for the individual contracts.
- 3.5 Sub-contractors' experience and resources shall not be taken into account in determining the Tenderer's compliance with the qualifying criteria except to the extent stated in 3.2 (d) and (e) above.
- 3.6 Tenderer who meets the above specified minimum qualifying criteria, will only be qualified, if their available Tender capacity is more than the total Tender value (including GST). The available Tender capacity will be calculated as under
- Assessed available Tender capacity = $(A * N * 1 - 5 - B)$ where
- A=Maximum value of civil engineering works executed in any one year during the last five years (updated to 2026-27 price level) taking into account the completed as well as works in progress.
- N = Number of years prescribed for completion of the works for which Tenders are invited. (N = 0.75 years (09 months) in this Tender).
- B = Value, at 2026-27 price level, of existing commitments and on-going works to be completed during the next 0.75 years.
- Note: The statements showing the value of existing commitments and on-going works as well as the stipulated period of completion remaining for each of the works listed should be countersigned by the Employer in Charge, not below the rank of an Executive Engineer or who has executed the Agreement.
- 3.7 Even though the Tenderers meet the above criteria, they are subject to be disqualified if they have:
- made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or
 - Record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc.
 - Participated in the previous Tender for the same work and had quoted unreasonably high tender prices and could not furnish rational justification.

4. One Tender per Tenderer:

- 4.1 Each tenderer shall submit only one tender for one. A Tenderer who submits or participates in more than one Tender will cause all the proposals with the Tenderer's participation to be disqualified.

5. Cost of Tendering:

- 5.1 The tenderer shall bear all costs associated with the preparation and submission of his tender, and the Employer will in no case be responsible and liable for those costs.

6. Site visit:

- 6.1 The Tenderer at his own cost, responsibility and risk is required to visit and examine the site (s) of works and its surroundings and obtain all information that may be necessary for preparing the Tender and entering into a contract for construction of the Works. The cost of visiting the Site shall be at the Tenderer own expense. The bidder is solely responsible to carry out diligence of projects before bidding.

B. TENDER DOCUMENTS

7. Content of Tender documents

- 7.1 The Tender documents comprises of the following sections:

Section 1 – Invitation for Tenders

Section 2 – Instructions to Tenderers

Section 3 – Qualification Information

Section 4 – Forms of Tender, Letter of Acceptance, Notice to Proceed with the Work and Agreement Form

Section 5 – Conditions of Contract

Section 6 – Contract Data

Section 7 – Technical Specifications (Employer's Requirement)

Section 8 – Drawings

Section 9 – Bill of Quantities (Financial Proposal)

Section 10 – Format of Bank Guarantee for Security Deposit/Advance Payment

- 7.2 The tender documents are available on line on the website <http://kppp.karnataka.gov.in> and can be downloaded free of cost.

8. Clarification of Tender Documents

- 8.1 A prospective Tenderer requiring any clarification on the Tender documents may notify the Employer in writing or by cable (hereinafter “cable” includes telex and fax/Email) at the Employer's address indicated in the IFT. The Employer will respond to any request for clarification which he receives up to the pre-bid meeting date and time. Description of clarification sought and the response of the Employer will be uploaded for information of all the prospective tenderers without identifying the source of request for clarification.

8.2 Pre-Tender Meeting:

- 8.2.1 The Tenderer or his authorized representative is invited to attend a pre-Tender meeting which will take place at Office of The Chief Engineer, KUWS&D Board, Mysuru, Karnataka, at the date and time mentioned in the Karnataka Public Procurement portal.
- 8.2.2 The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 8.2.3 The tenderer is requested to submit any questions online through the Karnataka Public Procurement portal not later than the day of the meeting.

- 8.2.4 Minutes of the meeting, including the text of the questions raised (without identifying the source of enquiry) and the responses given will be uploaded on the web site <https://kppp.karnataka.gov.in> for the information all the prospective tenderers without identifying the source of questions raised. Any modification of the tender documents listed in Sub-Clause 7.1 which may become necessary as a result of the pre-tender meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to Clause 9 and not through the minutes of the pre-tender meeting.
- 8.2.5 Non-attendance at the pre-tender meeting will not be a cause for disqualification of a tenderer.

9. Amendment of Tender documents

- 9.1 Before the deadline for submission of tenders, the Employer may modify the tender documents by issuing addenda / corrigendum which shall be posted on the Karnataka Public Procurement portal. <https://kppp.karnataka.gov.in>
- 9.2 Any addendum/corrigendum thus issued shall be part of the tender documents and shall be notified as addendum/ corrigendum in the Karnataka Public Procurement portal, which shall be binding on all the prospective tenderers.
- 9.3 To give tenderers reasonable time in which to take an addendum / corrigendum into account in preparing their tenders, the Employer may extend as necessary the deadline for submission/uploading of tenders, in accordance with Sub-Clause 16.2 below. This shall be notified in the Karnataka Public Procurement portal.

C. PREPARATION OF TENDERS

10. Documents comprising the Tender

10.1 The Tender submitted by the Tenderer shall be in two tender documents in Karnataka Public Procurement and shall contain the documents as mentioned below:

10.1.1 First Folder - Techno-Commercial Tender:

- a) Details of Tender Processing and Earnest Money Deposit in accordance with Clause of ITT and in the form given in Section;
- b) Scanned copy of original DD/CC/BG or other financial instruments
- c) Qualification Information as per formats given in Section 3;
- d) Subcontractor's qualification and experience in support of their meeting the prescribed qualification criteria;
- e) Affidavit testifying the correctness of the information furnished and correctness of the documents uploaded by the tenderer in support of the qualification information.

10.1.2 Second Folder- Financial Tender:

- a) The Tender (in the format indicated in Section 4)
- b) Priced Bill of Quantities (Section 9);

and any other forms/statements etc., required to be completed and submitted by Tenderers in accordance with these instructions. The documents listed under Sections 3, 4, 6 and 9 shall be filled in without exception.

10.2 Tenderers submitting tenders together with other contracts stated in the IFT to form a package will so indicate in the tender together with any discounts offered for the award of more than one contract.

10.3 Only the originals of the affidavit regarding correctness of information furnished and documents uploaded shall be produced or delivered by post/courier to the Office of Employer within 5 days after the last date of submission/uploading of the tender which shall be verified and retained by the Employer. The Employer shall not be held responsible for any delays in the receipt of the aforesaid documents. The tenders of only those tenderers who have produced the original of affidavit regarding correctness of information/document for shall be opened at the appointed time to be notified on the Karnataka Public Procurement portal.

11. Tender prices:

- 11.1 The tender price shall be quoted as per section 9, The contract shall be for the whole works as described in Sub-Clause 1.1, based on the financial proposal submitted by the Tenderer online. The tender prices should be inclusive of the prevalent duties excluding GST applicable as per GOI notification issued from time to time.
- 11.2 The Tenderer shall make online entries to fill in rates in the financial proposal in Karnataka Public Procurement portal. Upon numerical entry of the rates for the various items, the amount in words would automatically appear and the total tender price would automatically be calculated by the system and would be displayed. Items for which no rate or price is entered by the Tenderer will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Financial Proposal.
- 11.3 The tender prices should be inclusive of all applicable duties (excluding GST), and other levies payable by the contractor under the contract (such as Royalty for minor minerals, Karnataka Building and other Construction Workers Welfare Cess), or for any other cause, Insurance, shall be included in the rates, prices and total Tender Price submitted by the Tenderer. The GST will be paid as per actual separately on production of documentary evidence for having paid GST for the said work.

Note: The contractors are required to procure the minor minerals from the government licensed query lease holders only obtaining the Mineral Dispatch Permits (MDPs) and produce these permits to the bills paying authorities. In such cases the royalty charges from the bills shall not be deducted. If the contractor fails to produce the Mineral Dispatch Permits, penalty at five times the applicable royalty charges along with the royalty from the bills of the contractor will be deducted as per the proceedings of the Director Mines and Geology Department Bangalore dated: 25.03.2018.

- 11.4 The rates and prices quoted by the Tenderer of the Contract shall be subject to adjustment during the performance of the Contract in accordance with the provisions of Clause 40 of the Conditions of Contract

12. Tender validity

- 12.1 Tenders shall remain **valid up to 90 (Ninety) days** after the deadline date for tender submission specified in Clause 16. A tender valid for a shorter period shall be rejected by the Employer as non-responsive.
- 12.2 In exceptional circumstances, prior to expiry of the original time limit, the Employer may request the Tenderers to extend the period of validity for a specified additional period. The request and the Tenderers responses shall be made in writing or by cable. A Tenderer may refuse the request without initiating action as stated in earnest money deposit. A Tenderer agreeing to the request will not be required or permitted to modify his tender, for the period of the extension, and in compliance with Clause 13 in all respects.

13. Earnest Money Deposit

- 13.1 The Tenderers shall furnish, as part of his Tender, earnest money deposit in the amount as shown in column 4 of the Table of ITT for this particular work through Karnataka Public Procurement only. This earnest money deposit shall be submitted in Karnataka Public Procurement Portal as per prescribed form & procedure in this regard.
- 13.2 Instruments having fixed validity issued as Earnest Money Deposit for the Tender shall be valid for 45 days beyond the validity period of the Tender.
- 13.3 Any Tender not accompanied by an acceptable earnest money deposit and not secured as indicated in Sub-Clauses 13.1 and 13.2 above shall be rejected by the Employer as non-responsive. The Tenders must be accompanied by Earnest Money Deposit (EMD) of **Rs.4.94 Lakhs (Rupees Four Lakh and ninety four thousands only), out of which Rs.1,00,000/- (Rupees One Lakh only)** shall be paid online through e - Procurement Portal using any of the following Payment Modes viz., Credit Card, Direct Debit, National Electronic Fund Transfer (NEFT), Over the Counter (OTC) and the balance amount of **Rs.3.94 Lakhs (Rupees Three Lakh and ninety four thousand only)**, in the form of Banker's Cheque/Demand Draft/Pay Order /Fixed Deposit Receipt or Unconditional Bank Guarantee (including e-Bank Guarantee) issued only from Nationalized Bank/ Scheduled Banks meaning as per the Section 2 (e) of the RBI Act 1934, in the Name of Chief Engineer, KUWS & D Board, Mysuru zone. The scanned copy of the original Bank Guarantee (including e-Bank Guarantee) shall be uploaded in the portal during bid proposal submission and the original Bank Guarantee (including e-Bank Guarantee) should be submitted to Office of the Chief Engineer, KUWS & D Board, Mysuru zone within 5 days from the last date of receipt of tender. The Earnest Money Deposit of unsuccessful Tenderers will be returned within 30 days of the end of the tender validity period specified in Sub-Clause 12.1.
- 13.4 The earnest money deposit of unsuccessful Tenderers will be returned within 30 days of the end of the tender validity period specified in Sub-Clause 12.1.
- 13.5 The Earnest Money Deposit of the successful Tenderer will be discharged when the

Tenderer has signed the Agreement and furnished the required Performance Security/Additional Performance Security if applicable.

13.6 The Earnest Money Deposit shall be forfeited:

- a. If the Tenderer withdraws the Tender after Tender opening during the period of Tender validity
- b. If the Tenderer does not accept the correction of the Tender Price, pursuant to Clause 24
- c. in the case of a successful Tenderer, if the Tenderer fails within the specified time limit to
 - i. Sign the Agreement
 - ii. furnish the required Security Deposit.
- d. If the Tenderer submitted any morphed / forged / fail / wrong documents with respect the claims made under tender proposals.

14. Format and signing of Tender

- 14.1 The Tenderer shall prepare the documents comprising the Tender as described in Clause 10 of these Instructions to Tenderers, and upload into the Karnataka Public Procurement Portal. Ordinarily, the document as uploaded in Karnataka Public Procurement Portal shall form the basis to decide the Tender.
- 14.2 The documents comprising the Tender shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the Tenderer. All pages of the Tender where entries or amendments have been made shall be initiated by the person signing the Tender and uploaded onto Karnataka Public Procurement Portal ([https:// kppp.karnataka.gov.in](https://kppp.karnataka.gov.in)).
- 14.3 The Tender shall contain no alterations or additions, except those to comply with instructions issued by the Employer, or as necessary to correct errors made by the Tenderer, in which case such corrections shall be initiated by the person signing the Tender.

D. SUBMISSION OF TENDERS

15. Online Tender Submission

- 15.1 The Tenderers shall upload their tenders through Karnataka Public Procurement platform. No other modes of submission are permitted. The tendering is through website <https://kppp.karnataka.gov.in>. Detailed guidelines for viewing of tenders and submission of online tenders are given in the website. The prospective tenderers can submit their tender online. However the tenderers are required to have enrolment/registration in the web site and should have valid Digital Signature Certificate (DSC). The DSC can be obtained from any authorized certifying agencies as given in the Karnataka Public Procurement Portal. The tenderers should register in the web site <https://kppp.karnataka.gov.in>. After this, the tenderers can log in the site through the secured login for submission of their proposal

(i) technical proposal and required details as per Clause 10.

(ii) Financial Proposal.

15.2 **The tenderers are requested to go through the tender documents carefully and submit the required information and documents without exception to avoid risk of rejection of tenders**

15.3 The financial tender shall be in the required folder. All the documents are to be signed digitally by the tenderer. After electronic online tender submission, the system generates a unique tender reference number which is time stamped. This shall be treated as acknowledgement of tender submission.

15.4 **Process of e-Tender Submission:**

15.4.1 Tender Processing Fees and Downloading of Tender Document

Tenderer can download the Tender document for free from the portal (<https://kppp.karnataka.gov.in>) till the due date and time for Tender submission. Tenderer shall pay the Tender processing fees prescribed in the Karnataka Public Procurement Portal to participate in this Tender. The Tender processing fee has to be paid through any of the four e-payment options in the portal:

- Credit Card
- Direct Debit
- National Electronic Funds Transfer (NEFT)
- Over the Counter (OTC)

Please note that payments submitted through cheque or demand draft shall not be accepted. Further details regarding e-Payment, please refer to Karnataka Public Procurement Portal at the above-mentioned website or call Karnataka Public Procurement helpline +91-8046010000 +91-8068948777. The details of Tender Processing Fee shall be filled in the FORM given in Section 4 and upload in the e-procurement portal at appropriate section.

Note: It will be in the interest of the Tenderers to familiarize themselves with the e-Procurement system to ensure smooth preparation and submission of the Tender documents.

15.5 **Authentication of Tender**

The responsive Tender shall be signed by the Tenderer or a person duly authorized to sign by the Tenderer. A letter of authorization shall be supported by a written power-of-attorney accompanying the Tender. All pages of the Tender, except for un-amended printed literature, shall be initiated and stamped by the person or persons signing the Tender.

16. Deadline for submission of the Tenders

16.1 Tenders must be uploaded all the documents before the due date as notified in Karnataka Public Procurement Portal. The Karnataka Public Procurement platform will not accept the tenders after the stipulated date and time (as per the clock of the

Karnataka Public Procurement platform)

- 16.2 The Employer may extend the deadline for submission of tenders by issuing an amendment in accordance with Clause 9, in which case all rights and obligations of the Employer and the Tenderers previously subject to the original deadline will then be subject to the new deadline as extended. The amendment/notification shall be notified in the Karnataka Public Procurement platform.

17. Late Tenders

- 17.1 Tenders cannot be uploaded by the tenderers after the deadline for submission / uploading of tenders (as per the clock of the Karnataka Public Procurement platform) prescribed by the Employer.

18. Modification and Withdrawal of Tenders

- 18.1 Tenderers may modify Tenders in Karnataka Public Procurement Portal or withdraw their Tenders before the deadline prescribed in Clause 16 through Karnataka Transparency in Public Procurements Portal ([https:// kppp.karnataka.gov.in](https://kppp.karnataka.gov.in)).
- 18.2 Tenderers may cancel / modify their tenders before the deadline for submission of the tenders.
- 18.3 For modification of tenders, the tenderers need not make any additional payment towards the cost of tendering process. For tender modification and consequent re-submission, the tenderer is required to cancel his bid submitted earlier (only the financial is cancelled. All the uploaded documents would be there). The last modified tender submitted by the tenderer within the tender submission time shall be considered as the tender. For this purpose, modifications / withdrawal by other means will not be accepted. In online system of tender submission, the modification/cancellations is allowed any number of times. The tenderers may cancel its bid by clicking on the cancel button in the MY Bids Section before the deadline for submission of tenders, however if the tender is cancelled and not resubmitted within the stipulated time on the last date of submission of tenders, it would be deemed to be withdrawn.
- 18.4 As per the system design, in case a tenderer wishes to modify his tender before the ; last date and time for submission of tenders and after submission of the tender, then the tenderer is required to withdraw his bid first. In order to provide a quick reference to his financial tender entered by the tenderer in the Karnataka Public Procurement system, a provision has been made in the Karnataka Public Procurement system wherein the tenderer can retain a copy of the financial tender in his local machine prior to his submission of tender. The values as available in the copy of the financial tender can subsequently be copied into the financial tender screen which then is made available to the tenderer on withdrawal of his tender price to last date and time of tender submission.
- 18.5 No tender may be modified/cancelled online after the deadline for submission of tenders.
- 18.6 Withdrawal or modification of a Tender between the deadline for submission of Tenders and the expiration of the original period of Tender validity specified in

Clause 12.1 above or as extended pursuant to Clause 12.2 is not allowed in the Karnataka Public Procurement system.

E. TENDER OPENING AND EVALUATION

19. Opening of Technical proposal of all Tenders and evaluation to determine technically qualified Tenderers:

- 19.1 The Employer will open the Technical proposal of all the Tenders received at the specified date and time mentioned in the Karnataka Public Procurement Portal. The intimation regarding opening of tenders shall be communicated through the Karnataka Public Procurement Portal. In the event of the specified date of Tender opening being declared a holiday for the Employer, the Tenders will be opened at the appointed time and location on the next working day.
- 19.2 The Tenderer's names, the presence or absence of earnest money deposit (amount, format and validity), the submission of qualification information and such other information as the Employer may consider appropriate will be announced by the Employer at the opening. No tenders shall be rejected at the tender opening.
- 19.3 The Employer shall prepare minutes of the Tender opening, including the information disclosed to those present in accordance with Sub-Clause 19.2 and the same shall be uploaded on the Karnataka Public Procurement portal.
- 19.4 The Employer will evaluate and determine whether each tender (a) meets the eligibility criteria defined in ITT Clause 2; (b) is accompanied by the required earnest money deposit as per stipulations in ITT Clause and (c) meets the minimum qualification criteria stipulated in ITT Clause 3.
- 19.5 To assist in the examination, evaluation the Employer may at his discretion, ask any tenderer for clarification regarding the information/documents uploaded. The request for clarification and the response shall be in writing, but no change in the information/document uploaded shall be sought, offered.
- 19.6 After completion of evaluation of the techno-economic tender, the Employer shall draw out a list of qualified Tenderers and upload the same on the Karnataka Public Procurement portal.

20. Opening of Financial Proposal of qualified Tenderers and evaluation: As per e-Portal

- 20.1 The Employer will notify all the Qualified Tenderers on the Karnataka Public Procurement portal, the time, date and venue fixed for the opening of the Second Folder containing the Financial Tenders. The Employer will open the Second Folders of Qualified Tenderers at the appointed time and date (as notified in the procurement portal) in the presence of the Tenders or their authorized representatives who choose to attend. In the event of the specified date of Second Cover opening being declared a holiday for the Employer, the Second Covers will be opened at the appointed time and location on the next working day.
- 20.2 Deleted.

- 20.3 The Tenderers' names, the Tender prices, the total amount of each Tender, any discounts, and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening. No Tender shall be rejected at Tender opening.
- 20.4 The Employer shall prepare minutes of the Second Folder Tender opening, including the information disclosed to those present in accordance with Sub-Clause 20.3 and upload the same on the Karnataka Public Procurement portal for information of the tenderers.

21. Process to be confidential

- 21.1 Information relating to the examination, clarification, evaluation, and comparison of Tenders and recommendations for the award of a contract shall not be disclosed to Tenderers or any other persons not officially concerned with such process until the award to the successful Tenderer has been announced. Any effort by Tenderer to influence the Employer's processing of Tenders or award decisions may result in the rejection of his Tender.

22. Clarification of Tenders

- 22.1 To assist in the examination, evaluation, and comparison of Tenders, the Employer may, at his discretion, ask any Tenderer for clarification of his Tender, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by cable, but no change in the price or substance of the Tender shall be sought, offered, or permitted.
- 22.2 Subject to sub-clause 22.1, no Tenderer shall contact the Employer on any matter relating to its Tender from the time of the Tender opening to the time the contract is awarded. If the Tenderer wishes to bring additional information to the notice of the Employer, it should do so by uploading on the Karnataka Public Procurement Portal.
- 22.3 Any effort by the Tenderer to influence the Employer in the Employer's Tender evaluation, Tender comparison or contract award decisions may result in the rejection of the Tenderers' Tender.

23. Examination of Tenders and determination of responsiveness

- 23.1 Prior to the detailed evaluation of Tenders, the Employer will determine whether each Tender; (a) has been properly signed; and; (b) is substantially responsive to the requirements of the Tender documents.
- 23.2 A substantially responsive Tender is one which conforms to all the terms, conditions, and specifications of the Tender documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the Tender documents, the Employers rights or the Tenderer's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Tenderers presenting substantially responsive Tenders.
- 23.3 If a Tender is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the

nonconforming deviation or reservation. All conditional Tenders shall summarily be rejected irrespective of their qualification.

24. Correction of errors – DELETED

25. Evaluation and comparison of Tenders

- 25.1 The Employer will evaluate and compare only the Tenders determined to be substantially responsive in accordance with Clause 23
- 25.2 In evaluating the Tenders, the Employer will determine for each Tender the evaluated Tender Price by adjusting the Tender Price as follows.
- a. making an appropriate adjustment for acceptable variations, deviations; and
 - b. making appropriate adjustments to reflect discounts or other price modifications offered in accordance with Clause 18.5
- 25.3 The Employer reserves the right to accept or reject any variation, deviation or alternative offer. Variations, deviations, and alternative offers and other factors which are in excess of the requirements of the Tender documents or otherwise result in unsolicited benefits for the Employer shall not be taken into account in Tender evaluation.
- 25.4 The estimated effect of the price adjustment conditions under Clause 40 of the Conditions of Contract, during the implementation of the Contract, will not be taken into account in tender Evaluation.
- 25.5 If the tender of the successful tenderer is seriously unbalanced in relation to the Employer's estimate of the cost of the work to be performed under the contract, the Employer may require the Tenderer to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, the Employer may require that the amount of the performance security set forth in Clause 29 be increased at the expense of the successful Tenderer to a level sufficient to protect the Employer against financial loss in the event of default of the successful under the contract. The Format of the Bank Guarantee is given in Section10. The Bank Guarantee shall be valid until 28 days from the date of issue of certificate of completion of works.

NOTE:(Unbalanced Tender is defined as a tender where the tender premium is negative beyond 10%. Additional Security shall be collected for all Tenders whose Tender Premium is negative beyond 10%, and no Additional Security shall be collected for all tenders whose Tender Premium is upto Minus 10%. Additional Security shall be collected only to the extent of negative premium beyond minus 10%).

F. AWARD OF CONTRACT

26. Award criteria

- 26.1 Subject to Clause 27, the Employer will award the Contract to the Tenderer whose Tender has been determined to be substantially responsive to the Tender documents

and who has offered the lowest evaluated Tender Price, provided that such Tenderer has been determined to be (a) eligible in accordance with the provisions of Clause 2, and (b) qualified in accordance with the provisions of Clause 3.2.

27. Employer's right to accept any Tender and to reject any or all Tenders

- 27.1 Notwithstanding Clause 26, the Employer reserves the right to accept or reject any Tender, and to cancel the Tender process and reject all Tenders, at any time prior to the award of Contract, without thereby incurring any liability to the affected Tenderer or Tenderers or any obligation to inform the affected Tenderer or Tenderers of the grounds for the Employer's action.

28. Notification of award and signing of Agreement

- 28.1 The Qualified Tenderer whose Tender has been accepted will be notified of the award by the Employer prior to expiration of the Tender validity period by cable, telex, e-mail or facsimile confirmed by registered letter. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") will state the sum that the Employer will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").
- 28.2 The notification of award will constitute the formation of the Contract, subject only to the furnishing of Security deposit in accordance with the provisions of Clause 29.
- 28.3 The Agreement will incorporate all agreements between the Employer and the successful Tenderer. It will be kept ready for signature of the successful Tenderer in the office of Employer within 30 days following the notification of award along with the Letter of Acceptance. Within 20 days of receipt of notification of award, and upon furnishing of the Performance Security as required (including the additional performance security for unbalanced tender) the successful Tenderer will sign the Agreement.
- 28.4 Upon signing of the Agreement, the Employer will promptly notify the other Tenderers that their Tenders have been unsuccessful.

29. Security Deposit / Performance Security

- 29.1 Within 20 days of receipt of the Letter of Acceptance, the successful Tenderer shall deliver to the Employer a Security deposit in any of the forms given below for an amount equivalent to 5% of the Contract price valid until a date 30 days beyond the date of completion of Defects Liability Period that shall be released on completion of defect liability period 365 days plus additional security for unbalanced tenders in accordance with Clause 25.5 of ITT and Clause 43 of the Conditions of Contract.:
- a. Cash or Banker's cheque/Demand draft, Pay Order in favour of Executive Engineer, KUWS & D Board Division, Mangaluru.
 - b. Unconditional bank guarantee in the form given in Section 10; or
 - c. Specified Small Savings Instruments pledged to Executive Engineer, KUWS & D Board Division, Mangaluru.

***(Unbalanced Tender is defined as a tender where the tender premium is negative beyond 10%. Additional Security shall be collected for all Tenders whose Tender Premium is negative beyond 10%, and no Additional Security shall be collected for all tenders whose Tender Premium is upto Minus 10%. Additional Security shall be collected only to the extent of negative premium beyond minus 10%).**

- 29.2 If the security deposit is provided by the successful Tenderer in the form of a Bank Guarantee (including e-Bank Guarantee), it shall be issued either by a Nationalized / Scheduled Bank (Scheduled Bank shall mean a bank as defined under Section 2(e) of the Reserve Bank of India Act, 1934)
- 29.3 Deleted.
- 29.4 Failure of the successful Tenderer to comply with the requirements of Sub-Clause 29.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Earnest Money Deposit and will be debarred as per the procedure laid under the KTPP Rule 26, 26A, 26B and 26C.
- 29.5 The Unconditional Security deposit will be discharged by the Employer and returned to the contractor not later than 30 days following the date of issue of certificate of completion of the defects liability period under the Contract. The Performance Security towards work will be released after successful completion of defect liability period of 365 days from the date of commissioning of work.

30. Advance Payment and Security:

- 30.1 The Employer will provide an advance payment (for mobilization) on the contract price (excluding operation and maintenance Charges) as stipulated in the Conditions of Contract, subject to the maximum amount as stated in the Contract Data. The advance payment shall be made on submission of the Unconditional Bank Guarantee for an equal amount in the Form as given in Section 10. The secured advance against materials brought to site of work is also payable subject to fulfilment of conditions as given in the Contract Data.

31. Corrupt or Fraudulent practices

- 31.1 The KUWS & DB require that the Tenderers/Suppliers/Contractors, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, KUWS&DB:
- (a) will reject a proposal for award if it determines that the Tenderer recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;
 - (b) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a KUWS&DB contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a KUWS&DB contract.
- 31.2 Furthermore, Tenderers shall be aware of the provision stated in sub-clause 49.2 of the Conditions of Contract.

32.0 Debarment of Tenderers by Procurement Entity:

1. The Procurement Entity may proceed with debarring such tenderer or contractor or supplier or any of the successor of the tenderer or contractor or supplier who has engaged directly or through an agent in a corrupt or fraudulent practice in participating or competing or executing the contract including misleading the Procurement Entity at any stage of procurement and executing activity.
2. The Procurement Entity may, by order, appoint a Committee consisting of such officers not below the rank of Tender Inviting Authority to be the Debarment Committee to consider the proposals for debarring bidder or contractor or supplier and to take a decision thereof.
3. On the receipt of information, Debarment Committee shall provide a reasonable opportunity, including an oral hearing, to the concerned for making representations before taking a decision.
4. For consideration of debarment, Tender Inviting Authority or any other officer authorized by Tender Accepting Authority shall furnish the details of such bidders or contractors or suppliers who have engaged in corrupt practice and fraudulent practices to the Debarment Committee constituted under sub rule (2) above.
5. The Debarment Committee may make recommendations with reasoning in writing, within thirty days from date of receipt of information. Provided that, the said period may be extended by another fifteen days by Procurement Entity for the reasons to be recorded in writing.
6. On the recommendations of the Debarment Committee, the Procurement Entity shall by notification debar any of tenderer or contractor or supplier and publish the same on its website and Karnataka Public Procurement Portal and also maintain the list of such tenderer or contractor or the supplier or any of its successors.
7. The debarred tenderer or contractor or supplier shall be removed from the list of registered contractors or vendors.
8. The order of debarment shall be deemed to have been automatically revoked on the expiry of the period specified in the debarment order.

33.0 Measures to be taken after Debarment:

The Procurement Entity may take appropriate measures in respect of debarred tenderer or contractor or supplier including one or more of the following, namely:

- i. reject the bid and take action as per Declaration form;
- ii. terminate the contract; forfeit or encash the performance guarantee; recover the compensation of loss incurred by Procurement Entity;
- iii. forfeit or encash any other security or guarantee or bond provided by such tenderer or contractor or supplier in relation to the such procurement; and
- iv. recover payments including advance payments, if any, made by the Procurement Entity along with the interest thereon at the prevailing rate of Nationalized Bank.

SECTION 3:
QUALIFICATION INFORMATION

ANNEXURE-I

SECTION 3: QUALIFICATION INFORMATION

Note: The Tenderer shall carefully fill in the herein required information completely and also upload in First Folder (Techno-Commercial tender) all the documents as requested in complete form. The information to be filled in by the Tenderer hereunder will be used for purposes of determining the Tenderer's eligibility to tender, determining whether he meets the specified minimum qualification criteria as specified in Clause 3 of ITT and also determine his capacity to perform the contract as provided for in Clause 3 of the Instructions to Tenderers. Incomplete and insufficient furnishing of information and not uploading the requested documents may result in rejection of the Tender. This information will not be incorporated in the Contract.

Constitution or legal status of Tenderer[Attach copy]

Place of Registration

Principal place of business:

1.1. Constitution or legal status of Tenderer¹

Certificate of Registration/Incorporation²

Principal place of business:

Details of PAN Card issued by Income tax authorities:

Number:

Date of Issue:

Place of Issue:

Issued by whom:

Unique document identification no:

1.2. Total value of civil engineering construction works executed and payments received in the last five years (in Rs. Crores)

2021-22.....

2022-23.....

2023-24.....

2024-25.....

2025-26.....

1.3. Work performed as Prime Contractor (in the same name) on at least one UGD scheme involving construction of Sewage Treatment Plant of MBR/SBR/MBBR technology with allied accessories during the five years specified in 1.2 above.

Project Name	Name of Employer	Description of Work	Contract Number	Value of Contract Rs. (Cr)	Date of issue of work order	Specified period of completion	Actual Date of completion	Remarks explaining reason for delay/incompletion of work
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

1.4. Quantities of work executed as prime contractor (in the same name) during the last five years specified in 1.2above:

Sl No	Year	Name of Work	Name of Employer	Quantity of work performed		Remarks (Indicate contract reference)
				Earthwork excavation -1212 cum	PCC/RCC 256 cum	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	2021-22					
	2022-23					
	2023-24					
	2024-25					
	2025-26					

1.5. Information on works for which Tenders have been submitted and works which are yet to be completed as on the date of this Tender.

(A) Existing commitments and on-going works:

Sl. No.	Description of Work	Place & State	Contract No. & Date	Name and Address of Employer	Value of Contract (Rs. Cr)	Stipulated period of completion	Value of works remaining to be completed (Rs. Cr)	Anticipated date of completion
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

(B) Works for which Tenders already submitted:

Sl. No.	Description of Work	Place & State	Name and Address of Employer	Estimated value of works (Rs. Cr)	Stipulated period of completion	Date when decision is expected	Remarks if any
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

- 1.6. The following items of equipment are considered essential for successfully carrying out the works. The Tenderer should furnish all the information listed below

Item of Equipment	Requirement		Availability Status			Remarks
	No.	Capacity	Owned/Leased/ to be Procured	Number/ Capacity	Age/ Condition	

Attach Certificates

Item of Equipment	Requirement		Owned	Owned and available		Remarks
	No	Capacity		Number/Capacity	Age/Condition	

- 1.7. Reports on the financial standing of the Tenderer, such as profit and loss statements and auditor's reports for the last five years;
- 1.8. Qualification and experience of the key technical and management personnel in permanent employment with the Tenderer and those proposed to be deployed on this contract, if awarded.
- 1.9. Name, address, telephone, telex, and fax numbers of the Tenderers' bankers who may provide references if contacted by the Employer.
- 1.10. Evidence of access to financial resources to meet the qualification requirement specified in ITT Clause 3.3 (b): Cash in hand, Letter of Credit etc. List them below and attach certificate from the Banker in the suggested format provided at Annexure– IV.
- 1.11. The proposed methodology and program of construction, backed with equipment planning and deployment, duly supported with broad calculations and quality control procedures proposed to be adopted, justifying their capability of execution and completion of the work as per technical specifications within the stipulated period of completion as per milestones.

ANNEXURE-II

CERTIFICATE FROM STATUTORY AUDITOR FOR ANNUAL TURNOVER

(To be on the letterhead of the statutory auditor with registration number)

This is to certify that M/s_____ registered under _____and having it head office at _____has the following Annual Turnover in the last five years.

2021-22..... Rs Crores

2022-23..... Rs Crores

2023-24..... Rs Crores

2024-25..... Rs Crores

2025-26..... Rs Crores

ANNEXURE-III

Qualification/Experience of key personnel proposed for staff for site management and execution of works under this contract

No.	Position	Number Required	Minimum Qualification	Total Work Experience [years]	Experience In Similar Works [years]
1	Project Manager STP Expert	1	Graduate in Civil Engineering with Post Graduation in Construction Management/MBA (Finance/operations)	5	5 years in construction supervision of STP projects
2	Project Engineer	1	Full time Graduate in Civil/ Environmental Engineering	3	3 years in design/execution of STP projects

Qualification/Experience of other Key Personnel proposed for the technical and administrative functions under this contract.

Sl. No	Name of the staff	Proposed Position	Qualification	Total Years of Experience	Years of Experience in the proposed position	Remarks

Seal of the firm

Signature of the Tenderer with date

ANNEXURE-IV

BANKER'S CERTIFICATE
FORMAT OF BANKER'S CERTIFICATE / LINE OF CREDIT LETTER
(as per FD Circular no: FD-CAM/16/2022 (P-2) dated: 22.08.2022)
(To be submitted by Single Entity on Banks letterhead)

*The bidder should submit the Banker's Certificate as per the Circular from Finance
Department No: FD-CAM/16/2022(p-2) Dated: 22-08-2022., which is given below
Format*

Reference Number (SL NO) Place:

Date:

To:

[Name & Address of the beneficiary]

This is to certify that Mr./ M/s.[Name of the customer]
having his / their registered / administrative office at
.....is a customer of our Bank and is / are engaged in
..... [nature of activity]. If the said customer is allotted
/ awarded with [Brief
details of works], we may extend credit facilities upto Rs. Lakh, to meet his /
their working capital requirement towards the execution of the said work order as per the
Loan Policy of the bank.

This certificate is valid up to three months from the date of issue, that is up to
dd/mm/yyyy.

Yours faithfully.

Bank Manger
Name of the Bank,
Address.....

NOTE: If the Banker Certificate is conditional then the bid proposal is liable for rejection.

ಕರ್ನಾಟಕ ಸರ್ಕಾರ

ಸಂಖ್ಯೆ: ಎಫ್‌ಡಿ-ಸಿಎಎಂ/16/2022(P-2)

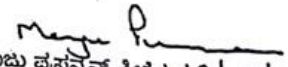
ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ಸಚಿವಾಲಯ
401, 4ನೇ ಗೇಟ್, ಬಹುಮಹಡಿ ಕಟ್ಟಡ,
ಬೆಂಗಳೂರು, ದಿನಾಂಕ: 22.06.2022.

ಸುತ್ತೋಲೆ

ವಿಷಯ: Format for Bankers' Certificate / Line of Credit (BC/LOC) letter
to be issued by the Banks ಬಗ್ಗೆ.

ರಾಜ್ಯ ಮಟ್ಟದ ಬ್ಯಾಂಕುಗಳ ಸಮಿತಿಯ 156ನೇ ಸಭೆಯಲ್ಲಿ ಸಂಚಾಲಕರು, ವಿವಿಧ ಇಲಾಖೆಗಳು ವಿವಿಧ ನಮೂನೆಗಳಲ್ಲಿ ಬ್ಯಾಂಕರ್ಸ್ ಸರ್ಟಿಫಿಕೇಟ್/ ಲೈನ್ ಆಫ್ ಕ್ರೆಡಿಟ್ ಗಳ ನಮೂನೆಯನ್ನು ಸೂಚಿಸುತ್ತಿದ್ದಾರೆಂದು ತಿಳಿಸಿದರು ಮತ್ತು ಈ ನ್ಯೂನತೆಗಳನ್ನು ಸರಿಪಡಿಸಲು ಆರ್ಥಿಕ ಇಲಾಖೆಯಿಂದ ಅನುಮೋದಿಸಲಾದ ಬ್ಯಾಂಕರ್ಸ್ ಸರ್ಟಿಫಿಕೇಟ್/ ಲೈನ್ ಆಫ್ ಕ್ರೆಡಿಟ್ ಗಳನ್ನು ಬ್ಯಾಂಕುಗಳು ಮತ್ತು ವಿವಿಧ ಇಲಾಖೆಗಳಿಗೆ ಅಳವಡಿಸಿಕೊಳ್ಳುವುದು ಸೂಕ್ತ ಎಂದು ಸದರಿ ಸಭೆಯಲ್ಲಿ ತೀರ್ಮಾನಿಸಲಾಯಿತು.

ಅದರಂತೆ ಸಂಚಾಲಕರು, ರಾಜ್ಯ ಮಟ್ಟದ ಬ್ಯಾಂಕುಗಳ ಸಮಿತಿಯು ಬ್ಯಾಂಕುಗಳು ಮತ್ತು ಸರ್ಕಾರದ ಇಲಾಖೆಗಳು ಅಳವಡಿಸಿಕೊಳ್ಳಬಹುದಾದ ಕರಡು ಬ್ಯಾಂಕರ್ಸ್ ಸರ್ಟಿಫಿಕೇಟ್/ ಲೈನ್ ಆಫ್ ಕ್ರೆಡಿಟ್ (Format No.-2) ಅನ್ನು ಸಲ್ಲಿಸಿದ್ದು, ಸಂಸದೀಯ ವ್ಯವಹಾರಗಳು ಮತ್ತು ಶಾಸನ ರಚನೆ ಇಲಾಖೆ ಮತ್ತು ಆರ್ಥಿಕ ಇಲಾಖೆಯಿಂದ ಅನುಮೋದಿಸಲಾದ ನಮೂನೆಯನ್ನು ಲಗತ್ತಿಸಿದೆ. ತಮ್ಮ ಅಧೀನದಲ್ಲಿ ಬರುವ ಎಲ್ಲಾ ಇಲಾಖೆಗಳು, ಸಂಸ್ಥೆಗಳು ಮತ್ತು ಬ್ಯಾಂಕುಗಳು Bankers' Certificate / Line of Credit (BC/LOC)ನ ಸದರಿ ನಮೂನೆಯನ್ನು ಅಳವಡಿಸಿಕೊಳ್ಳುವಂತೆ ಸೂಕ್ತ ಕ್ರಮ ಕೈಗೊಳ್ಳಲು ಕೋರಲಾಗಿದೆ.


(ಮಂಜು ಪ್ರಸನ್ನನ್ ಪಿಳ್ಳೆ) 22/6/2022
ಸರ್ಕಾರದ ಕಾರ್ಯದರ್ಶಿ
(ವಿತ್ತೀಯ ಸುಧಾರಣೆ)
ಆರ್ಥಿಕ ಇಲಾಖೆ

ಇವರಿಗೆ,

1. ಸರ್ಕಾರದ ಎಲ್ಲಾ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿ /ಪ್ರಧಾನ ಕಾರ್ಯದರ್ಶಿ/ ಕಾರ್ಯದರ್ಶಿಗಳಿಗೆ.
2. ಸಂಚಾಲಕರು, ರಾಜ್ಯ ಮಟ್ಟದ ಬ್ಯಾಂಕುಗಳ ಸಮಿತಿ ಹಾಗೂ ಪ್ರಧಾನ ವ್ಯವಸ್ಥಾಪಕರು, ಕನರಾ ಬ್ಯಾಂಕ್, H O ಅನೇಕ್, ಗಾಂಧಿನಗರ, ಬೆಂಗಳೂರು.
3. ಶಾಖಾರಕ್ಷಾ ಕಡತ / ಕಚೇರಿ ಪ್ರತಿ.

ON BANKS LETTER HEAD

.....
FORMAT OF BANKER'S CERTIFICATE/ LINE OF CREDIT LETTER
[TO BE ISSUED IN THE LETTER HEAD OF THE BANK BRANCH]

Reference Number (SL. No) Place:

Date:

To:

[Name & Address of the beneficiary]

This is to certify that Mr./M/s. _____ [name of
the customer] having his/ their registered/ administrative office at _____
_____ is a customer of our Bank and is/
are engaged in _____ [nature of activity]. If the said
customer is allotted / awarded with _____ [brief details
of works], we may extend credit facilities upto Rs _____ lakh, to meet
his/ their working capital requirement towards the execution of the said work order
as per the Loan Policy of the Bank.

This certificate is valid upto three months from date of issue, that is
upto dd/mm/yyyy.

Yours faithfully,

BRANCH MANAGER.

ANNEXURE-V
Information on litigations in which the Tenderer is involved:

Sl. No.	Other Parties	Employer	Details of dispute	Amount involved	Remarks showing present status

Attach certificates from the respective Employers.

ANNEXURE-VI

Declaration by the Tenderer for Not being Blacklisted:

It is to certify that our firm I..... has not been black listed /banned / debarred by any Central/ State / UT Government Department or Undertaking / Organization.

Seal Tenderer

.....

(Signature of the Tenderer)

Note: It is found at any stage during the bid processing or later that bidder / tenderer has submitted falsified information or misrepresented that facts, the Employer shall have right to reject the bids / terminate the agreement as the case may be. It is further clarified that the EMD/Performance Security / Additional Performance Security or as appropriate may also be forfeited in part or full by the Employer.

Annexure-VIIA

Format for Power of Attorney for signing of Tender (Refer Clause 10.1)

Know all men by these presents, we, _____ (name of the firm and address of the registered office) do hereby irrevocably constitute, nominate, appoint and authorize Mr./ Ms. _____ (name), son/daughter/wife of and presently residing at _____, who is presently employed with us and holding the position of _____, as our true and lawful attorney (hereinafter referred to as the "Attorney") to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our Tender for ' _____ ' (the "Project") proposed or being developed by the KUWS&DB, Bangalore (the "Employer") including but not limited to signing and submission of all applications, tenders and other documents and writings, participate in pre-tender and other conferences and providing information/ responses to the Employer, representing us in all matters before the Employer, signing and execution of all contracts including the agreement and undertakings consequent to acceptance of our Tender, and generally dealing with the Employer in all matters in connection with or relating to or arising out of our Tender for the said Project and/ or upon award thereof to us and/or until the entering into of the Contract with the Employer.

AND we hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, _____, _____ AND _____,
THE ABOVE NAMED PRINCIPAL HAVE EXECUTED THIS POWER OF
ATTORNEY ON THIS 1 OF 20.....

For .

(Signature, name, designation and address)
of person authorized by Board Resolution
(In case of Firm/ Company)

Witnesses:

- 1.
- 2.

Accepted

..... (Signature)

(Name, Title and Address of the Attorney)

(Notarized)

Person identified by me/ personally appeared before me/
Attested/ Authenticated*

(*Notary to specify as applicable)

(Signature Name and Address of the Notary)

Seal of the
Notary Registration
No. of the Notary
Date:

Notes:

- *The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and when it is so required, the same should be under common seal affixed in accordance with the required procedure.*
- *Wherever required, the Tenderer should submit for verification the extract of the charter documents and documents such as a board or shareholders' resolution/ power of attorney in favour of the person executing this Power of Attorney for the delegation of power hereunder on behalf of the Tenderer.*

ANNEXURE-VIII

LETTER OF DECLARATION – NOT APPLICABLE

(To be submitted by Single Entity and both Partners in case of JV)

ANNEXURE-VIII D

AFFIDAVIT REGARDING CORRECTNESS OF INFORMATION FURNISHED AND DOCUMENTS SUBMITTED

I Son/daughter of
..... residing at
..... (Address) Authorized
Signatory/ Proprietor /Partner/ Director of M/s..... situated at
.....
..... (Address) hereby solemnly declare as
under:

1. That I have submitted my tender for the
work..... in
response to Invitation to Tender No.
.....issued by
..... on the
Karnataka Public Procurement Portal <https://kppp.karnataka.gov.in>

2. That I have uploaded the scanned copies/copies of the following documents as
required by the tender document and in support of my meeting the stipulated eligibility and
qualification requirements as stipulated in the tender document:

- (a)
.....;
- (b)
.....;
- (c)
.....;
- (d)
.....;
- (e)
.....;
- (f)
.....;
- (g)
.....;
- (h)
.....;
- (i)
.....;

3. That the information furnished by me in the format are correct to the best of my
knowledge and the documents/ certificates uploaded are true to the originals;

4. That I am in possession of the original documents and ready to produce the original
documents and the original documents in support of the qualification information furnished
for verification by the Employer or his authorized representative within 5 days of receiving
the request from the Employer or his authorized representative;

5. That I have not made misleading or false representation in the Forms, Statements and
Attachments submitted/uploaded in proof of qualification requirements;

6. That I do not have record of poor performance such as abandoning the works, not
properly completing the contracts, inordinate delays in completion in completion, litigation
history or financial failures etc,

7. That I have not participated in the previous tenders for the same work and could not furnish rational justification for the prices quoted by me when requested by the Employer;
8. I am aware of the provision of ITT Clause 3.7 and agree that I am subject to be disqualified on the above accounts and also aware that the KUWS&DB can take administrative action against me.

Deponent

VERIFICATION:

Verified at On this month

Year that contents of the above affidavit are true and correct to the best of my knowledge and belief and nothing is false or fabricated or has been concealed there from.

Deponent:

Note:

- 1) This Form has to be duly completed, signed and uploaded on the Karnataka Public Procurement Portal in the First Folder – Techno Commercial Tender.**
- 2) The affidavit may be submitted in the letter head of the Bidder, duly Notarised by the Notary.**

SECTION 4: FORMS OF TENDER

DETAILS OF PAYMENT OF TENDER PROCESSING FEES & AND EARNEST MONEY DEPOSIT, FORMS OF TENDER, LETTER OF ACCEPTANCE, NOTICE TO PROCEED WITH THE WORK AND AGREEMENT FORM

Note: NOT TO BE UPLOADED along with financial bid at procurement portal as per letter issued by the Director, Karnataka Public Procurement Cell, centre for E-Governance vide letter no: CEG/04/EPP/2008 Dated: 14.8.2017. Only BOQ to be uploaded in the Karnataka Public Procurement portal.

ಕರ್ನಾಟಕ ಸರ್ಕಾರ
ಸಂಖ್ಯೆ:ಅಇ 165 ವೆಸ್ಟ್-12/2017
ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ಸಚಿವಾಲಯ
ಆರ್ಥಿಕ ಇಲಾಖೆ,
ಬೆಂಗಳೂರು, ದಿನಾಂಕ:21.03.2017

ಸುತ್ತೋಲೆ

ವಿಷಯ : ಇ-ಪ್ರಾಕ್ಯೂರ್‌ಮೆಂಟ್ ಮೂಲಕ ಕೈಗೊಳ್ಳುವ ಸಂಗ್ರಹಣೆಗಳ
ದರಗಳನ್ನು ಪರಿಗಣಿಸುವ ಬಗ್ಗೆ.

ಅಧಿಸೂಚನೆ ಸಂ:ಸಿಆಸುಇ 2 ಇಸಂಕ್ರ 2009, ದಿನಾಂಕ:09.10.2012 ರಲ್ಲಿ ರೂ.5.00 ಲಕ್ಷಗಳಿಗೆ ಮೀರಿದ ಖರ್ಚನ್ನು ಹೊಂದಿರುವ ಪ್ರತಿಯೊಂದು ಸಂಗ್ರಹಣೆಯ ಸಂಬಂಧದಲ್ಲಿ ಎಲ್ಲಾ ಸಂಗ್ರಹಣಾ ಸಂಸ್ಥೆಗಳು 2012 ರ ಡಿಸೆಂಬರ್ 3ನೇ ದಿನಾಂಕದಿಂದ ಜಾರಿಗೆ ಬರುವಂತೆ, ವಿದ್ಯುನ್ಮಾನ ಸಂಗ್ರಹಣಾ ವೇದಿಕೆಯ ಮೂಲಕವೇ ತಮ್ಮ ಸಂಗ್ರಹಣೆಗಳನ್ನು ಸಂಗ್ರಹಿಸತಕ್ಕದ್ದೆಂದು ನಿರ್ದಿಷ್ಟಪಡಿಸಲಾಗಿದೆ. ಅದರನ್ವಯ ಸಂಗ್ರಹಣಾ ಸಂಸ್ಥೆಗಳು ಸ್ವತಃ ಸಂಗ್ರಹಣಾ ಕಾರ್ಯಗಳನ್ನು ಕೈಗೊಳ್ಳುತ್ತಿದ್ದು, ಇತ್ತೀಚಿನ ದಿನಗಳಲ್ಲಿ ಇ-ಪ್ರಾಕ್ಯೂರ್‌ಮೆಂಟ್ ಪೋರ್ಟಲ್‌ನಲ್ಲಿ ನಮೂದಿಸಿರುವ ದರಗಳನ್ನು ಪರಿಗಣಿಸಬೇಕೆಂದು ಹಿಂದೂ ಡಾಕ್ಯೂಮೆಂಟ್‌ನೊಂದಿಗೆ ಸಲ್ಲಿಸಿರುವ ಅನುಬಂಧಗಳು ಹಾಗೂ ನಮೂನೆಗಳಲ್ಲಿನ ದರಗಳನ್ನು ಪರಿಗಣಿಸಬೇಕೆಂದು ಎಂಬುದರ ಬಗ್ಗೆ ಕೆಲವು ಗೊಂದಲಗಳು ಉಂಟಾಗಿರುವುದು ಕಂಡುಬಂದಿರುತ್ತದೆ.

ಈ ವಿಷಯವನ್ನು ಪರಿಶೀಲಿಸಲಾಗಿ, ಇ-ಪ್ರಾಕ್ಯೂರ್‌ಮೆಂಟ್‌ನಲ್ಲಿ ಖರೀದಿ ಲೆಕ್ಕಾಟಿಯ ಪದ್ಧತಿಯಲ್ಲಿ ಕೈಗೊಳ್ಳುವ ಎಲ್ಲಾ ಸಂಗ್ರಹಣೆಗಳಿಗೆ ಇ-ಪ್ರಾಕ್ಯೂರ್‌ಮೆಂಟ್ ಪೋರ್ಟಲ್‌ನಲ್ಲಿ ನಮೂದಿಸಿರುವ ದರಗಳನ್ನೇ ಪರಿಗಣಿಸಬೇಕೆಂದು ಹಿಂದೂ ಡಾಕ್ಯೂಮೆಂಟ್‌ಗಳೊಂದಿಗಿನ ಅನುಬಂಧಗಳು ಹಾಗೂ ನಮೂನೆಗಳು ಮತ್ತು ಇತರ ಯಾವುದೇ ಮಾಧ್ಯಮದ ಮೂಲಕ ಸಲ್ಲಿಸುವ ದರಗಳನ್ನು ಪರಿಗಣಿಸತಕ್ಕದ್ದಲ್ಲ. ಈ ಸೂಚನೆಯನ್ನು ಎಲ್ಲಾ ಸಂಗ್ರಹಣಾ ಪ್ರಾಧಿಕಾರಗಳು ಪಟ್ಟದೇ ಪಾಲಿಸತಕ್ಕದ್ದು.

(ಬಿ.ಎಸ್.ಎಸ್.ಪ್ರಸಾದ್)

ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿ

ಆರ್ಥಿಕ ಇಲಾಖೆ

ಸರ್ಕಾರದ ಎಲ್ಲಾ ಪ್ರಧಾನ ಕಾರ್ಯದರ್ಶಿಗಳು / ಕಾರ್ಯದರ್ಶಿಗಳು.
ಸರ್ಕಾರದ ಎಲ್ಲಾ ಸಂಗ್ರಹಣಾ ಸಂಸ್ಥೆಗಳು.

ಕರ್ನಾಟಕ ಸರ್ಕಾರ

ಸಂಖ್ಯೆ:ಆಇ 539 ವಜ್ಜೆ-12/2017

ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ಸಚಿವಾಲಯ

ಆರ್ಥಿಕ ಇಲಾಖೆ,

ಬೆಂಗಳೂರು, ದಿನಾಂಕ:02.06.2017

ಅನುದಿಕ್ಕು ತಿಪ್ಪಣಿ

ವಿಷಯ : ಇ-ಪ್ರೊಕ್ಯೂರ್‌ಮೆಂಟ್ ಮೂಲಕ ಕೈಗೊಳ್ಳುವ ಸಂಗ್ರಹಣೆಗಳ
ದರಗಳನ್ನು ಪರಿಗಣಿಸುವ ಬಗ್ಗೆ.
ಉಲ್ಲೇಖ : ಸುತ್ತೋಲೆ ಸಂ:ಆಇ 165 ವಜ್ಜೆ-12/2017, ದಿನಾಂಕ:
21.03.2017.

ಮೇಲಿನ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ, ಉಲ್ಲೇಖಿತ ಸುತ್ತೋಲೆಯಲ್ಲಿ ಇ-
ಪ್ರೊಕ್ಯೂರ್‌ಮೆಂಟ್‌ನಲ್ಲಿ ಎರಡು ಲಕ್ಷಾಂತರ ಪದ್ಧತಿಯಲ್ಲಿ ಕೈಗೊಳ್ಳುವ ಎಲ್ಲಾ ಸಂಗ್ರಹಣೆಗಳಿಗೆ ಇ-
ಪ್ರೊಕ್ಯೂರ್‌ಮೆಂಟ್ ಪೋರ್ಟಲ್‌ನಲ್ಲಿ ನಮೂದಿಸುವ ದರಗಳನ್ನೇ ಪರಿಗಣಿಸಬೇಕೆಂದು ಹೊರತು ಟೆಂಡರ್
ಡಾಕ್ಯುಮೆಂಟ್‌ಗಳೊಂದಿಗಿನ ಅನುಬಂಧಗಳು ಹಾಗೂ ನಮೂನೆಗಳು ಮತ್ತು ಇತರೇ ಯಾವುದೇ
ಮಾಧ್ಯಮದ ಮೂಲಕ ಸಲ್ಲಿಸುವ ದರಗಳನ್ನು ಪರಿಗಣಿಸತಕ್ಕದ್ದಲ್ಲ ಎಂದು ತಿಳಿಸಲಾಗಿದೆ.
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ತಂತ್ರಾಂಶದಲ್ಲಿ ಅಗತ್ಯ ಬದಲಾವಣೆಗಳನ್ನು ಮಾಡುವಂತೆ ಕೋರಿದೆ.

(ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು,
ಆರ್ಥಿಕ ಇಲಾಖೆ, ಇವರಿಂದ ಅನುಮೋದಿತ)

(ಸದಾನಂದ ಎನ್.ಪಾವಸ್ಯರ್)

ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿ (ಪ)

ಆರ್ಥಿಕ ಇಲಾಖೆ (ಸಂಗ್ರಹಣಾ ಕೋಶ)

21/6

21/6

ಸರ್ಕಾರದ ಪ್ರಧಾನ ಕಾರ್ಯದರ್ಶಿಗಳು,
ಸಿ.ಆ.ಸು.ಇ (ಇ-ಆಡಳಿತ) ವಿಭಾಗ

**DETAILS OF PAYMENT OF TENDER PROCESSING FEES AND EARNEST
MONEY DEPOSIT**

From: (Tenderer)

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

To: **The CHIEF ENGINEER**

Karnataka Urban Water Supply and Drainage Board
Jalabhavan, Saraswathipuram, 10th main, Mysuru

Sir:

1. I/ We have made the payment of the tender processing fees of Rs./- Rupees.....only(*in words*) through Credit Card/Direct Debit/ National Electronic Funds Transfer (NEFT)/ over the counter in branch of ICICI bank on..... (*Strike the modes not used*)
2. I/We have made the payment of the Earnest Money of Rs..... Rupees..... only (*in words*) through Credit Card/Direct Debit/National Electronic Funds Transfer (NEFT)/ over the counter in branch of ICICI bank on(*Strike the modes not used*)
3. I/We have made the payment of the balance of Earnest Money of Rs..... Rupees..... Only(*in words*) through the following:
 - (a) Bank Guarantee No:. dated issued by Valid up tofor an amount of Rs..... Rupees..... Only (*in words*);
 - (b) Demand Draft No..... dated issued by Bank.....Branch for an amount of Rs. Rupees ... only (*in words*)
 - (c) Certified Cheque /Banker's cheque No:..... dated issued by Bank Branch for an amount of Rs..... Rupees only (*in words*)
 - (d) SSI No..... dated issued by Post Office located at For Rupees..... (*in figures*) Rupees(*in words*)(*strike the mode not used*)
4. We agree that the Earnest Money deposited by us as detailed above may be forfeited by the Employer if we:
 - (a) Withdraw our bid during the period of validity specified in the bidding document;
 - (b) Do not sign the Agreement within the specified time limit in case we are successful and letter of acceptance has been communicated;
 - (c) Do not furnish the required Performance Security deposit as required in Clause 29 of ITB

.....
(Signature and Name of Tenderer)

Date:

Note: This Form has to be duly completed, signed and uploaded on the Karnataka Public Procurement portal in the First Folder – Techno Commercial Tender

DETAILS OF PAYMENT OF TENDER PROCESSING FEES

From: (Tenderer)

To:

The Chief Engineer
Karnataka Urban Water Supply and Drainage Board
Jalabhavan, Saraswathipuram, 10th main,
Mysuru

Sir,

1. I/ We have made the payment of the tender processing fees of Rs.
Rupees.....Only through Credit Card / Direct Debit / National
Electronic Funds Transfer (NEFT)/ over the counter in branch of
Nationalized bank on..... (*Strike the modes not used*)
2. I/We have submitted the Earnest Money Deposit in the Prescribed format.
3. We agree that the action may be initiated as stipulated in the Earnest Money
deposit by the Employer if we:
 - (a) Withdraw our bid during the period of validity specified in the bidding
document;
 - (b) Do not sign the Agreement within the specified time limit in case we are
successful and letter of acceptance has been communicated;
 - (c) Do not furnish the required Performance Security deposit as required in clause
29 of ITB.

.....

(Signature and Name of Tenderer)

Date:

LETTER OF ACCEPTANCE

(On the Letterhead of the Employer)

Date:

To,

[Name and address of the Contractor]

Dear Sir,

This is to notify you that your Tender dated: _____ for the execution of the (Name of the contract and identification number, as given in the Instructions to Tenderers) for the Contract Price of Rs. _____ (amount in words and figures), as corrected and modified in accordance with the Instructions to Tenderers is hereby accepted by our Agency

You are hereby requested to furnish Security deposit in the form detailed in Clause 29.1 of ITT for an amount of Rs. _____ towards Design, Build, Testing & Commissioning within 20 days of the receipt of this letter of acceptance valid up to 30 days of the intended date of completion of CAPEX works plus additional security for unbalanced tenders in terms of Clause 25.5 of ITT, in the form detailed in Clause 29.1 of ITT for an amount of Rs. _____ within 20 days of the receipt of this letter of acceptance valid up to 28 days from the date of expiry of Intended Completion Period of CAPEX and sign the contract, failing which action as stated in Para 29.4 of ITT will be taken.

Yours faithfully,

Authorized Signature

Name and Title of

Signatory Name of Agency

DETAILS OF PAYMENT OF TENDER PROCESSING FEES & AND EARNEST MONEY DEPOSIT

From: (Tenderer)

To: The CHIEF ENGINEER
Karnataka Urban Water Supply and Drainage Board
Jalabhavan, Saraswathipuram, 10th main,
Mysuru

Sir:

1. I/ We have made the payment of the tender processing fees of Rs. _____/- Rupees _____ only (*in words*) through Credit Card/Direct Debit/ National Electronic Funds Transfer (NEFT)/ over the counter in _____ branch of ICICI bank on _____ (*Strike the modes not used*)
2. I/We have made the payment of the Earnest Money of Rs _____ Rupees _____ only (*in words*) through Credit Card/Direct Debit/National Electronic Funds Transfer (NEFT)/ over the counter in _____ branch of ICICI bank on _____ (*Strike the modes not used*)
3. I/We have made the payment of the balance of Earnest Money of Rs _____ Rupees _____ Only (*in words*) through the following:
 - (a) Bank Guarantee No.: _____ dated _____ issued by _____ Valid up to _____ for an amount of Rs _____ Rupees _____ Only (*in words*);
 - (b) Demand Draft No. _____ dated _____ issued by _____ Bank _____ Branch for an amount of Rs. _____ Rupees _____ only (*in words*)
 - (c) Certified Cheque /Banker's cheque No: _____ dated _____ issued by _____ Bank _____ Branch for an amount of Rs _____ Rupees _____ only (*in words*)
 - (d) SSI No _____ dated _____ issued by Post Office _____ located at _____ For Rupees _____ (in figures) Rupees _____ (in words)
(*strike the mode not used*)
4. We agree that the Earnest Money deposited by us as detailed above may be forfeited by the Employer if we:
 - (a) Withdraw our bid during the period of validity specified in the bidding document;
 - (b) Do not sign the Agreement within the specified time limit in case we are successful and letter of acceptance has been communicated;
 - (c) Do not furnish the required Performance Security deposit as required in Clause 29 of ITB

(Signature and Name of Tenderer)

Date:

FORMAT OF BANK GUARANTEE FOR EARNEST MONEY DEPOSIT

To: _____

[name of Employer]
[address of Employer]

WHEREAS _____[name and address of Contractor] _____[name of Work]

AND WHEREAS it has been stipulated by you in the said Work that the Contractor shall furnish you with a Bank Guarantee by a recognized Nationalized / Scheduled Commercial Bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of Rs. _____ [amount of guarantee] Rupees _____ [in words], and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ [amount of guarantee] as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until till the Tender validity.

Signature and seal of the guarantor

ISSUE OF NOTICE TO PROCEED WITH THE WORK

(On the Letter head of the Employer)

To

(name and address of the Contractor)

Dear Sirs:

Pursuant to your furnishing the requisite security deposit as stipulated in ITT Clause 29.1 and signing of the contract agreement for the construction of _____ for Tender Price of Rs_____, you are hereby instructed to proceed with the execution of the said works in accordance with the contract documents.

Yours faithfully,

(Signature, name and title of signatory authorized to sign on behalf of Employer)

AGREEMENT FORM

This agreement made on this the ____ day of _____ 20____, between _____
[Name and address of Employer] (here in after called “the Employer”) of the one part and
_____[Name and address of contractor] (hereinafter called “the Contractor”) of the
other part.

Whereas the Employer is desirous that the Contractor execute _____ [name and
identification number of Contract] (hereinafter called “the Works”) and the Employer has
accepted the Tender by the Contractor for the execution and completion of such Works and
the remedying of any defects therein at a Contract Price of Rupees _____ [in Figures]
(_____) [in Words].

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement, words and expression shall have the same meanings as are
respectively assigned to them in the Conditions of Contract hereinafter referred to, and
they shall be deemed to form and be read and construed as part of this Agreement.
2. In consideration of the payments to be made by the Employer to the Contractor as
hereinafter mentioned, the Contractor hereby covenants with the Employer to execute
and complete the Works and remedy any defects therein in conformity in all aspects
with the provisions of the Contract.
3. The Employer hereby covenants to pay the Contractor in consideration of the
execution and completion of the Works and the remedying defects wherein the
Contract Price or such other sum as may become payable under the provisions of the
Contract at the times and in the manner prescribed by the Contract.
4. The following documents shall be deemed to form and be read and construed as part of
this Agreement, viz:
 - i) Letter of Acceptance;
 - ii) Notice to proceed with the works;
 - iii) Contractor’s Tender;
 - iv) Contract Data;
 - v) Conditions of contract (including Special Conditions of Contract)
 - vi) Specifications;
 - vii) Drawings
 - viii) Bill of Quantities/Schedules; and
 - ix) Any other document listed in the Contract Data as forming part of the contract.
 - x) Any Addendum/Corrigendum/ pre-bid meeting clarifications etc.

In witness whereof the parties thereto have caused this Agreement to be executed the day
and (year first) before written.

The Common Seal of _____

_____w

as hereunto affixed in the presence of:

Signed, Sealed and Delivered by the said

In Presence of:

Binding signature of Employer: _____

Binding signature of Contractor: _____

SECTION 5: CONDITIONS OF CONTRACT

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CONDITIONS OF CONTRACT

A. General

1. Definitions

- 1.1. Terms which are defined in the Contract Data are not also defined in the Conditions of Contract but keep their defined meanings. Bold letters are used to identify defined terms.

Bill of Quantities	means the priced and completed Bill of Quantities forming part of the Tender.
Board	Means Karnataka Urban Water Supply & Drainage Board.
Compensation events	are those defined in Clause 38 hereunder.
The Completion Date	is the date of completion of the Works as certified by the Employer in accordance with Sub Clause 45.1
The Contract	is the contract between the Employer and the Contractor to execute, complete and maintain the Works. It consists of the documents listed in Clause 2.2 below.
Contract Data	defines the documents and other information which comprise the Contract.
Commencement Date	shall be the date at which the following precedent conditions have all been fulfilled a) signature of the Contract Agreement by both Parties b) receipt of Performance Security c) Certificates for Insurance taken (if any)
Contractor	is a person or corporate body who's Tender to carry out the Works has been accepted by the Employer.
Contractor's Tender	is the completed Tender document submitted by the Contractor to the Employer.
Contract price	is the price stated in the Letter of Acceptance and Thereafter as adjusted in accordance with the provisions of the Contract.
Days	are calendar days; Months are calendar months.
Design Build Period / Construction period	shall be period as indicated by the Employer in the Contract from the date of signing of contract including testing and Trial Run Period.

Defect	is any part of the Works not completed in accordance with the Contract.
Defects liability period	is the period named in the Contract Data and calculated from the Completion Date.
Employer	is the party who will employ the Contractor to carry out the Works.
Employer Representative	is the person authorized by the Employer for the Contract
Force Majeure	is an event or effect that can neither be anticipated nor controlled (such as Act of God).
Equipment	is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.
Initial Contract price	is the Contract Price listed in the Employer's Letter of Acceptance
Intended Completion Date	is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the Employer by issuing an extension of time.
Materials	are all supplies, including consumables, used by the contractor for incorporation in the Works.
Operation Service Period / Operations and maintenance Period / O&M period	NA
Plant	is any integral part of the Works which is to have a mechanical, electrical, electronic or chemical or biological function etc.
Site	is the area defined as such in the Contract Data
Specification	means the Specification of the Works included in the Contract and any modification or addition made or approved by the Employer.
Start Date	is given in the Contract Data. It is the date when the Contractor shall commence execution of the works. It does not necessarily coincide with any of the Site Possession Dates. All milestones and intended completion dates will depend on this date.
Sub-contractor	is a person or corporate body who has a Contract with the

	Contractor to carry out a part of the work in the Contract which includes work on the Site.
Trial Run Period	shall be period as indicated by the Employer in the Contract before the completion of Design Build Period and commencement of O&M Period.
Variation	is an instruction given by the Employer which varies the scope of Works.
Works	what the Contract requires the Contractor to construct, install, and turn over to the Employer, as defined in the Contract Data.

2. Interpretation

- 1.1 In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter, and vice-versa. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Employer will provide instructions clarifying queries about the Conditions of Contract.
- 1.2 The documents forming the Contract shall be interpreted in the following order of priority:
 - (1) Agreement
 - (2) Letter of Acceptance, notice to proceed with the works
 - (3) Contractor's Tender
 - (4) Contract Data
 - (5) Conditions of Contract including Special Conditions of Contract
 - (6) Specifications
 - (7) Drawings
 - (8) Bill of quantities/Schedules and
 - (9) Any other document listed in the Contract Data as forming part of the Contract.
 - (10) Addendum/ Corrigendum/ pre-bid meeting clarifications etc.

3. Law governing contract

- 3.1 The law governing the Contract is the Laws of India supplanted by the Karnataka Local Acts.

4. Employer's decisions

- 4.1 Except where otherwise specifically stated, the Employer will decide contractual matters between the Employer and the Contractor.

5. Delegation

- 5.1 The Employer may delegate any of his duties and responsibilities to other people after notifying the Contractor and may cancel any delegation after notifying the Contractor.

6. Communications

- 6.1 Communications between parties which are referred to in the conditions are effective

only when in writing. A notice shall be effective only when it is delivered (in terms of Indian Contract Act).

7. Sub –Contracting: deleted

8. Other Contractors

- 8.1 The Contractor shall co-operate and share the Site with other contractors, public authorities, utilities, and the Employer.

9. Personnel

- 9.1 The Contractor shall employ the technical personnel (of number and qualifications) as may be stipulated by KUWS& D Board from time to time during the execution of the work. The technical staff so employed shall be available at site as may be stipulated by the Employer.
- 9.2 If the Employer asks the Contractor to remove a person who is a member of the Contractor's staff or his work force stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.

10. Employer's and Contractor's risks

- 10.1 The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks which this Contract states are Contractor's risks.

11. Employer's risks

- 11.1 The Employer is responsible for the excepted risks which are:
- (a) rebellion, riot commotion or disorder unless solely restricted to employees of the Contractor or his Sub-Contractors arising from the conduct of the Works; or
 - (b) a cause due solely to the design of the Works, other than the Contractor's design; or
 - (c) any operation of the forces of nature (in so far as it occurs on the Site) which an experienced contractor:
 - (i) could not have reasonably foreseen
 - (ii) could reasonably have foreseen, but against which he could not reasonably have taken at least one of the following measures:
 - A. Prevent loss or damage to physical property from occurring by taking appropriate measures.
 - B. insure against such loss or damage

12. Contractor's risks

- 12.1 All risks of loss of or damage to physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks are the responsibility of the Contractor.

13. Insurance:

- 13.1 The Contractor shall prior to commencing the works, effect and there after maintain insurances, in the joint names of the Employer and the Contractor, (cover from the first working day after the Start Date to the end of Defects Liability Period), in the amounts stated in the Contract Data:

- (a) for loss of or damage to the Works, Plants and Materials and the Contractor's equipment;
 - (b) for liability of both Parties for loss, damage, death and injury to third parties or the property arising out of the Contractor's performance of the Contract including the Contractor's liability for damage to the Employer's property other than the Works
 - (c) for liability of both Parties and of any Employer's representative for death and injury to the Contractor's personnel except to the extent that liability arises from the negligence of the Employer, any Employer's representative or their Employees.
- 13.2 Policies and certificates for insurance shall be delivered by the Contractor to the Employer for his approval before the Start Date. All such insurance shall provide for compensation to be payable to rectify the loss or damage incurred. All payments received from insurers relating to loss or damage shall be held jointly by the Parties and used for the repair of the loss or damage or as compensation for loss or damage that is not to be repaired.
- 13.3 If the Contractor fails to effect or keep in force any of the insurances referred to in the previous sub-clauses or fails to provide satisfactory evidence, policies or receipts, the Employer may without prejudice to any other right or remedy, effect insurance for the cover relevant to such default and pay the premiums due and recover the same as a deduction from any other monies due to the Contractor. If no payments is due, the payment of the premiums shall be adebt due.
- 13.4 Alterations to the terms of an insurance shall not be made without the approval of the Employer.
- 13.5 Both Parties shall comply with any conditions of the insurance policies.
- 14. Site Investigation Reports:**
- 14.1 The Contractor, in preparing the Tender, shall rely on any site investigation reports referred to in the Contract data, supplemented by any information available to the Tenderer.
- 15. Queries about the Contract Data**
- 15.1 The Employer will clarify queries on the Contract Data.
- 16. Contractor to construct the Works**
- 16.1 The Contractor shall construct the Works in accordance with the Specification and Drawings as approved by the Chief Engineer
- 17. The Works to be completed by the Intended Completion Date**
- 17.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the program submitted by the Contractor, as updated with the approval of the Employer, and complete them by the Intended Completion Date.
- 18. Approval by the Employer:**
- 18.1 The Contractor shall submit Specification and drawings showing the proposed Permanent and Temporary Works to the Employer, who will approve them if they comply with the Specifications and Drawings.

- 18.2 The Contractor shall be responsible for the design of Temporary Works
- 18.3 The Employer's approval shall not alter the Contractor's responsibility for design of the Temporary Works.
- 18.4 The Contractor shall obtain approval of third parties to the design of the temporary Works where required.
- 18.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Employer before their use.

19. Safety

- 19.1 The Contractor shall be responsible for the safety of all personnel and activities at the Site.

20. Discoveries

- 20.1 Anything of historical or other interest or of significant value unexpectedly discovered at the Site is the property of the Employer. The Contractor is to notify the Employer of such discoveries and carry out the Employer's instructions for dealing with them.

21. Possession of the Site

- 21.1 The Employer shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date stated in the Contract Data the Employer is deemed to have delayed the start of the relevant activities and this will be Compensation Event.

22. Access to the Site

- 22.1 The Contractor shall allow the Employer and any person authorized by the Employer to have access to the Site, to any place where work in connection with the Contract being carried out or intended to be carried out and to any place where materials or plant are being manufactured / fabricated / assembled for the works.

23. Instructions

- 23.1 The Contractor shall carry out all instructions of the Employer which comply with the applicable laws where the Site is located.

24. Procedure for resolution of Disputes: Deleted

B. Time Control

25. Program

- 25.1 Within the time stated in the Contract Data the Contractor shall submit to the Employer for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works.
- 25.2 The Employer's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Employer again at any time. A revised Program is to show the effect of Variations and Compensation Events.

26. Extension of the Intended Completion Date

- 26.1 The Employer shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date.

- 26.2 The Employer shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Employer for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information.

27. Delays ordered by the Employer

- 27.1 The Employer may instruct the Contractor to delay the start or progress of any activity within the Works.

28. Management meetings

- 28.1 The Employer may require the Contractor to attend a management meeting. The business of a management meeting shall be to review the progress achieved and the plans for remaining work.
- 28.2 The responsibility of the parties for actions to be taken is to be decided by the Employer either at the management meeting or after the management meeting and stated in writing to be distributed to all who attended the meeting.

C. QUALITY CONTROL

29. Identifying defects

- 29.1 The Employer or its authorized representatives shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Employer may instruct the Contractor to search for a Defect and to uncover and test any work that the Employer considers may have a Defect.

30. Tests

- 30.1 If the Employer instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect the test shall be a Compensation Event.

31. Correction of defects

- 31.1 The Employer shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion and is defined in the Contract Data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.
- 31.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Employer's notice.

32. Uncorrected defects

- 32.1 If the Contractor has not corrected a Defect within the time specified in the Employer's notice, the Employer will assess the cost of having the Defect corrected, and the Contractor will pay this amount and any delays caused to other works due to this shall be attributed to the Contractor.

D. COST CONTROL

33. Bill of Quantities (BOQ)

- 33.1 The BOQ shall contain items for the construction, installation, testing, and commissioning work to be done by the Contractor.
- 33.2 The BOQ issued to calculate the Contract Price. The Contractor is paid for the quantity of the work done at the rate in the BOQ for each item.

34. Variations - NOT APPLICABLE

35. Payments for Variations- NOT APPLICABLE

36. Submission of bills for payment

- 36.1 The Contractor shall submit to the Employer monthly bills, in the electronic spread sheet, of the value of the work completed less the cumulative amount paid previously.
- 36.2 The jurisdictional authority shall check the Contractor's bill and determine the value of the work executed which shall comprise of (i) value of the quantities of the items in the BOQ completed and (ii) valuation of Compensation Events and forward to the payment authority.
- 36.3 Deleted.
- 36.4 The Employer/ authorized representative may exclude any item paid in a previous bill or reduce the proportion of any item previously paid in the light of later information.

37. Payments

- 37.1 Payments shall be adjusted for deductions for advance payments, other than recoveries in terms of the contract and taxes, at source, as applicable under the law. The Employer shall pay the Contractor the within 60 days of submission of bill. The Contractor shall be liable to pay liquidated damages for short fall in progress.
- 37.2 Items of the Works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.

37.3

38. Compensation events

- 38.1 The following are Compensation events unless they are caused by the Contractor:
- (a) The Employer does not give access to a part of the Site by the Site Possession Date stated in the Contract Data. The Employer orders a delay or does not issue drawings, specifications or instructions required for execution of works on time.
 - (b) The Employer orders a delay or does not issue drawings, specifications or instructions required for execution of works on time.
 - (c) The Employer instructs the Contractor to uncover or to carry out additional tests upon work which is then found to have no Defects.
 - (d) The Employer gives an instruction for dealing with an unforeseen condition,

caused by the Employer, or additional work required for safety or other reasons.

- (e) The effect on the Contractor of any of the Employer's Risks.
- (f) The Employer unreasonably delays issuing a Certificate of Completion.
- (g) Other Compensation Events listed in the Contract Data or mentioned in the Contract.

38.2 If a Compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date is extended. The Employer shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.

38.3 As soon as information demonstrating the effect of each Compensation event upon the Contractor's forecast cost has been provided by the Contractor, it is to be assessed by the Employer and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Employer shall adjust the Contract Price based on Employer's own forecast. The Employer will assume that the Contractor will react competently and promptly to the event.

38.4 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor not having given early warning or not having cooperated with the Employer.

39. Tax

39.1 The rates quoted by the Contractor shall be deemed to be inclusive of all other taxes **excluding GST**, that the Contractor will have to pay for the performance of this Contract. The Employer will perform such duties in regard to the deduction of such taxes at source as per applicable law.

40. Price Adjustment:

NOT APPLICABLE. Only Star rates in respect of specified materials (cement, steel and bitumen) shall be payable as per Government Order No. FD 3 PCL 2008, Bangalore, dated: 21-11-2008.

(copy enclosed)

40.1 Contract price shall be adjusted for increase or decrease in rates and prices of labour, materials, fuels and lubricants in accordance with the following principles and procedures and as per formulae given in the Contract Data.

- (a) The price Adjustment shall apply for the work done from the date of commencement up to the end of original period of completion or extensions granted by the Employer and shall not apply to work carried out beyond the stipulated period of completion for reasons attributable to the Contractor;
- (b) Price Adjustment shall be admissible from the date of opening of tenders (original or extended)
- (c) The price adjustment shall be determined during each quarter from the formulae given in Contract Data.

- (d) Following expressions and meanings are assigned to the work done during the quarter:

R= Total value of work done during the quarter. It will include the amount of secured advance paid for (if any) during the quarter, less the amount of the secured advance recovered during the quarter. It will exclude value for works executed under variations. It will also exclude the value of work done during the quarter which was programmed to be done prior to this quarter as per the work schedule in the agreement.

- 40.2 To the extent that full compensation for any rise or fall in costs to the contractor is not covered by the provisions of this or other Clauses in the Contract, the unit rates included in the contract shall be deemed to include amounts to cover the contingency of such other rise or fall in costs.

Note: If the Finance department of GoK / C.A.O of the Board issues any clarification / amendments which might affect the P.A worked out / approved, the same shall be reviewed and any excess payment shall be recovered.

41. Liquidated damages

- 41.1 The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the Contract Data for each day that the Completion Date is later than the Intended Completion Date (for the whole of the works or the mile stone as stated in the Contract Data). The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages does not affect the Contractor's liabilities. If the bidder fails to achieve one or all the treated effluent parameters as listed in table under Cl. 3.3 SPECIAL SPECIFICATIONS for Construction of STP, Section-7, in any month during Defects Liability Period, then penalty of Rs.5.0 Lakhs will be levied for one month.
- 41.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Employer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment of bill.

42. Advance Payments:

- 42.1 The Employer shall make payment to the Contractor of the amounts stated in the Contract Data by the date stated in the Contract Data, against provision by the Contractor of an unconditional bank guarantee in a form acceptable to the Employer issued by a Nationalized/ Scheduled Banking amounts equal to the advance payment. The guarantee shall remain effective until the advance payment has been repaid, but the amount of the guarantee shall be progressively reduced by the amounts repaid by the Contractor. Interest will not be charged on the advance payment.
- 42.2 The Contractor shall use the advance payment only to pay for Mobilization expenses required specifically for execution of the Works. The Contractor shall demonstrate that advance payment has been used in this way by supplying copies of invoices or other documents to the Employer.
- 42.3 The advance payment shall be repaid by deducting proportionate amounts from payments otherwise due to the Contractor, following the schedule of completed percentages of the Works on a payment basis. No account shall be taken of the

advance payment or its repayment in assessing valuation of the work done, compensation events or liquidated damages.

43. Securities:

- 43.1 The Security deposit shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued for an amount and form and type of instrument acceptable to the Employer.

44. Cost of Repairs:

- 44.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

E. FINISHING THE CONTRACT

45. Completion

- 45.1 The Contractor shall request the Employer to issue a Certificate of Completion of the Works and the Employer will do so upon deciding that the Work is completed.

46. Taking over

- 46.1 The Employer shall take over the Site and the Works within seven days of issuing a certificate of Completion.

47. Final account

- 47.1 The Contractor shall supply to the Employer a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Employer shall issue a Defect Liability Certificate and certify any final payment that is due to the Contractor within 90 days of 'receiving the Contractor's account if it is correct and complete. If it is not, the Employer shall issue within 90 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Employer shall decide on the amount payable to the Contractor and make payment within 60 days of receiving the Contractor's revised account.

48. As built drawings and /or Operating and Maintenance Manuals

- 48.1 "As built" 2D Drawings and/or operating and maintenance manuals are required. The Contractor shall supply them by the dates stated in the Contract Data.
- 48.2 If the Contractor does not supply the Drawings by the dates stated in the Contract Data with the Employer's approval, the Employer shall withhold the amount stated in the Contract Data from payments due to the Contractor.

49. Termination

- 49.1 The Employer may terminate the Contract if the other party causes a fundamental breach of the Contract.
- 49.2 Fundamental breaches of Contract include, but shall not be limited to the following:
- (a) The Contractor stops work for 45 days when no stoppage of work is shown on

the approved Program and the stoppage has not been authorized by the Employer;

- (b) Deleted
- (c) The Employer gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Employer; is a fundamental breach of Contract.

Note***: If the Tenderer fails to perform, then the Employer shall terminate the contract as per procedures. After termination, assign the balance work to another agency at the Risk & Cost of the Original Tenderer duly following procedures as per KW-4 document.

- (d) Deleted;
- (e) the Contractor has delayed the completion of works by the number of days for which the maximum amount of liquidated damages can be levied as defined in the Contract data
- (f) if the Contractor, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in executing the Contract. For the purpose of this paragraph: "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official or another party in the procurement process or in contract execution. "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract in detriment of the Borrower, and includes collusive practice among Tenderers (prior to, during or after Tender submission) designed to establish Tender prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition."

- 49.3 When either party to the Contract gives notice of a breach of contract to the Employer for a cause other than those listed under Sub Clause 49.2 above, the Employer shall decide whether the breach is fundamental or not.
- 49.4 Notwithstanding the above, the Employer may terminate the Contract for convenience.
- 49.5 If the Contract is terminated the Contractor shall stop work immediately, make the Site safe and secure and leave the Site as soon as reasonably possible.

50. Payment upon Termination

- 50.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Employer shall prepare bill for the value of the work done less advance payments received up to the date of the bill, less other recoveries due in terms of the contract, less taxes due to be deducted at source as per applicable law and less the percentage to apply to the work not completed as indicated in the Contract Data. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor the difference shall be a debt payable to the Employer.
- 50.2 If the Contract is terminated at the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Employer shall prepare bill for the value of the work done, the reasonable cost of removal of Equipment, repartition

of the Contractor's personnel employed solely on the works, and the Contractor's costs of protecting and securing the Works and less advance payments received up to the date of the certificate, less other recoveries due in terms of the contract, and less taxes due to be deducted at source as per applicable law and make payment accordingly.

51. Property

- 51.1 All materials on the Site, Plant, Equipment, Temporary Works and Works are deemed to be the property of the Employer, if the Contract is terminated because of a Contractor's default.

52. Release from performance

- 52.1 If the Contract is frustrated by any event entirely outside the control of either the Employer or the Contractor the Employer shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which commitment was made.

53. Additional Clauses:

- 53.1 The Additional Clauses are added in connection with requirement of the project and contract implementation. The details of the additional clauses are given under the Contract Data.

A. Special Conditions of Contract

1. Labour:

The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.

The Contractor shall, if required by the Employer, deliver to the Employer a return in detail, in such form and at such intervals as the Employer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such other information as the Employer may require.

2. Compliance with labour regulations:

During continuance of the contract, the Contractor and his sub-contractors shall abide at all times by all existing labour enactments and rules made there under, regulations, notifications and bye laws of the State or Central Government or local authority and any other labour law (including rules), regulations, bye laws that may be passed or notification that may be issued under any labour law in future either by the State or the Central Government or the local authority. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by

the competent authority on account of contravention of any of the provisions of any Act or rules made there under, regulations or notifications including amendments. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications/bye laws/Acts/Rules/regulations including amendments, if any, on the part of the Contractor, Employer shall have the right to deduct any money due to the Contractor including his amount of security deposit. The Employer shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.

The employees of the Contractor and the Sub-Contractor in no case shall be treated as the employees of the Employer at any point of time.

SALIENT FEATURES OF SOME MAJOR LABOUR LAWS APPLICABLE TO ESTABLISHMENTS ENGAGED IN CONSTRUCTION WORKS
(The law as current on the date of bid opening will apply)

- a) Workmen Compensation Act 1923: The Act provides for compensation in case of injury by accident arising out of and during the course of employment.
- b) Payment of Gratuity Act 1972: Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years' service or more or on death the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.
- c) Employees P.F. and Miscellaneous Provision Act 1952 (since amended): The Act Provides for monthly contributions by the employer plus workers @ 10% or 8.33%. The benefits payable under the Act are:
 - (e) Pension or family pension on retirement or death, as the case may be.
 - (ii) Deposit linked insurance on the death in harness of the worker.
 - (iii) Payment of P.F. accumulation on retirement/death etc.
- d) Maternity Benefit Act 1951: The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.
- e) Contract Labour (Regulation & Abolition) Act 1970: The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Employer by Law. The Principal Employer is required to take Certificate of Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Employer if they employ 20 or more contract labour.
- f) Minimum Wages Act 1948: The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Buildings, Roads,

and Runways are scheduled employments.

- g) Payment of Wages Act 1936: It lays down as to by what date the wages are to be paid, when it will be paid and what deductions can be made from the wages of the workers.
- h) Equal Remuneration Act 1979: The Act provides for payment of equal wages for work of equal nature to Male and Female workers and for not making discrimination against Female employees in the matters of transfers, training and promotions etc.
- i) Payment of Bonus Act 1965: The Act is applicable to all establishments employing 20 or more employees. The Act provides for payments of annual bonus subject to a minimum of 8.33% of wages and maximum of 20% of wages to employees drawing Rs.3500/-per month or less. The bonus to be paid to employees getting Rs.2500/- per month or above upto Rs.3500/- per month shall be worked out by taking wages as Rs.2500/-per month only. The Act does not apply to certain establishments. The newly set-up establishments are exempted for five years in certain circumstances. Some of the State Governments have reduced the employment size from 20 to 10 for the purpose of applicability of this Act.
- j) Industrial Disputes Act 1947: The Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.
- k) Industrial Employment (Standing Orders) Act 1946: It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get the same certified by the designated Authority.
- l) Trade Unions Act 1926: The Act lays down the procedure for registration of trade unions of workmen and employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.
- m) Child Labour (Prohibition & Regulation) Act 1986: The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of Child Labour is prohibited in Building and Construction Industry.
- n) Inter-State Migrant workmen's (Regulation of Employment & Conditions of Service) Act 1979: The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter-State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, travelling expenses from home upto the establishment and back, etc.

- o) The Building and Other Construction workers (Regulation of Employment and Conditions of Service) Act 1996 and the Cess Act of 1996: All the establishments who carry on any building or other construction work and employs 10 or more workers are covered under this Act. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be modified by the Government. The Employer of the establishment is required to provide safety measures at the Building or construction work and other welfare measures, such as Canteens, First-Aid facilities, Ambulance, Housing accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.
- p) Factories Act 1948: The Act lays down the procedure for approval at plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power engaged in manufacturing process.
- q) Prohibition Act-1993: Employment of manual scavenging and construction of dry latrine (Prohibition) act 1993: The act prohibits the use of labour in cleaning of machinehole chambers which is in use.

Extract copy of the Karnataka labour Act is attached. Annexure A and A-1

3. ***Protection of Environment:***

The contractor shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation. During continuance of the contract, the contractor and his sub-contractors shall abide at all times by all existing enactments on environmental protection and rules made there under, regulations, notifications and bye-laws of the State or Central Government, or local authorities and any other law, bye-law, regulations that may be passed or notification that may be issued in this respect in future by the State or Central Government or the local authority.

Add the following as GCC Clause 16.2:

The contractor shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation.

During continuance of the contract, the contractor and his sub-contractors shall abide at all times by all existing enactments on environmental protection and rules made there under, regulations, notifications and bye-laws of the State or Central Government, or local authorities and any other law, bye-law, regulations that may be passed or notification that may be issued in this respect in future by the State or Central Government or the local authority.

Salient features of some of the major laws that are applicable are given below:

The Water (Prevention and Control of Pollution) Act, 1974, this provides for the prevention and control of water pollution and the maintaining and restoring of wholesomeness of water. 'Pollution' means such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may, or is likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms.

The Air (Prevention and Control of Pollution) Act, 1981, this provides for prevention, control and abatement of air pollution. 'Air Pollution' means the presence in the atmosphere of any 'air pollutant', which means any solid, liquid or gaseous substance (including noise) present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment.

The Environment (Protection) Act, 1986, this provides for the protection and improvement of environment and for matters connected therewith, and the prevention of hazards to human beings, other living creatures, plants and property. 'Environment' includes water, air and land and the inter-relationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property.

The Public Liability Insurance Act, 1991, this provides for public liability insurance for the purpose of providing immediate relief to the persons affected by accident occurring while handling hazardous substances and for matters connected herewith or incidental thereto. Hazardous substance means any substance or preparation which is defined as hazardous substance under the Environment (Protection) Act 1986, and exceeding such quantity as may be specified by notification by the Central Government.

4. Arbitration (Clause 24) : Deleted

5. Liquidated Damages: (GCC Clause 41)

Sub-clause 41.1:

Please substitute the last sentence with the following:

“Time is the essence of the contract and payment or deduction of liquidated damages shall not relieve the contractor from his obligation to complete the work as per agreed construction program and milestones or from any other of the contractor’s obligations and liabilities under the contract.”

Liquidated damages once levied as per Contract Data for delay of achievement of a milestone cannot be refunded even if the subsequent milestone is achieved in time or the entire work is completed by the intended completion date, unless the extension of time is granted for that particular milestone.

6. Royalties:

The Employer shall deduct Royalties on materials used in the works from progress payments to the Contractor at the rates specified in the “Karnataka Minor Minerals Concession Rules 2003” as published by the Commerce and Industries Department (Mines) and as amended from time to time till the date of submission of tenders. It shall be responsibility of the Tenderer to ascertain the applicable rates as on the date of submission of tenders. However, the latest amendment as per record available in this office. Any representation on the discrepancy between the rates as contained in Annexure C and the latest amendment will not be entertained.

The proceedings of Director, Mines and Geology Dtd: 25/03/2018 Annexure (1A) and circular No. KWB/CAO/IAW/2018-19/106, dtd:08/05/2018. Annexure (1B) is also binding on the successful bidder.

7. Karnataka Building and other Construction Worker’s Welfare Cess:

The Employer shall deduct Cess from the bills of the Contractor at the rates as may be notified from time to time under the Building and other Construction Workers Welfare Cess Act 1996. The current rate is 1% of the tender amount.

In addition GO No.LD/300/LET/2006, dated 18-01-2007 and addendum GO No.LD/95/ LET/2013, dated 01-04-2013 with latest amendments shall be part of the documents.

8. Quarry materials: (GCC Clause 14)

The Contractor shall be wholly responsible to identify the suitable sources for quarry materials required for the works, such as earth, sand, stone, murrum, etc., and to make his own arrangements for collection and transportation of the materials irrespective of the leads and lifts required. The quarry thus identified by the Contractor should have proper license from the Government of Karnataka. All materials that is quarried and transported by the Contractor shall satisfy the requirements set forth in the Specifications shall be subject to the approval of the Employer. The Contractor is deemed to have taken this into account while offering his rates and no claim whatsoever shall be entertained for extra costs on this account.

The proceedings of Director, Mines and Geology Dtd:25/03/2018 Annexure (1A) and circular No. KWB/CAO/IAW/2018-19/106, dtd:08/05/2018. Annexure (1B) is also binding on the successful bidder.

9. Third Party Inspection and Testing: (GCC Clause 29)

The Employer will engage a Third Party for inspection at manufacturer’s works and also the work site activities. The fee for the third party inspection shall be paid by the Employer. The items for Third Party Inspection and the stages of Inspection are given in **Annexure D**. The list is illustrative and not exhaustive.

10. Procurement of materials and equipment:

The Contractor shall procure and use ISI marked materials and equipment or those conforming to relevant Bureau of Indian Standards **or any applicable standards. The Contractor shall obtain approval to the drawings and the Quality Assurance Plan (QAP) of the materials to be used in the project by the competent authority before execution.**

11. Bill of Quantities: (GCC Clause 33)

The Tenderer shall quote for the activities / components involved for completion of

work on Lumpsum basis and **the tenderer should get approval for the break up schedule for payment from Employer based on which payment will be made for each item.**

12. **Price Adjustment: (GCC Clause 40) – NOT APPLICABLE. Only Star rates in respect of specified materials (cement, steel and bitumen) shall be payable as per Government Order No. FD 3 PCL 2008, Bangalore, dated:21-11-2008.**

13. **Transportation**

The Contractor shall at its own risk and expense transport all the Plant and Equipment and the Contractor's Equipment to the Site by the mode of transport that the Contractor judges most suitable under all the circumstances.

Unless otherwise provided in the Contract, the Contractor shall be entitled to select any safe mode of transport operated by any person to carry the Plant and Equipment and the Contractor's Equipment.

Upon dispatch of each shipment of the Plant and Equipment and the Contractor's Equipment, the Contractor shall notify the Employer by telex, cable, facsimile or Electronic Data Interchange (EDI) of the description of the Plant and Equipment and of the Contractor's Equipment, the point and means of dispatch, arrival at the Site.

The Contractor shall be responsible for obtaining, if necessary, approvals from the authorities for transportation of the Plant and Equipment and the Contractor's Equipment to the Site. The Employer shall use its best endeavours in a timely and expeditious manner to assist the Contractor in obtaining such approvals, if requested by the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any claim for damage to roads, bridges or any other traffic facilities that may be caused by the transport of the Plant and Equipment and the Contractor's Equipment to the Site.

13A **Installation**

13.1 **Setting Out/Supervision/Labour**

- 13.1.1 **Bench Mark:** The Contractor shall be responsible for the true and proper setting-out of the Facilities in relation to bench marks, reference marks and lines provided to it in writing by or on behalf of the Employer.

If, at any time during the progress of installation of the Facilities, any error shall appear in the position, level or alignment of the Facilities, the Contractor shall forthwith notify the Project Manager of such error and, at its own expense, immediately rectify such error to the reasonable satisfaction of the Employer's Representative. If such error is based on incorrect data provided in writing by or on behalf of the Employer, the expense of rectifying the same shall be borne by the Employer.

- 13.1.2 **Contractor's Supervision:** The Contractor shall give or provide all necessary superintendence during the installation of the Facilities, and the Construction Manager or its deputy shall be constantly on the Site to provide full-time superintendence of the installation. The Contractor shall provide and employ only technical personnel who

are skilled and experienced in their respective callings and supervisory staff who are competent to adequately supervise the work at hand.

14. Design, Drawings and Documents

14.1.1 General Design Obligations:

The Contractor shall carry out, and be responsible for, the design of the Works. Design shall be prepared by the qualified designers who are Engineers or other professionals who comply with the criteria (if any) stated in the Employer's Requirements. Unless otherwise stated in the Contract, the Contractor shall submit to the Employer for consent the name and particulars of each proposed designer and design sub-contractor. The Contractor warrants that he, his designers and design sub-contractors have the experience and capability necessary for the design. The Contractor undertakes that the designers shall be available to attend discussions with the Employer at all reasonable times, until the expiry date of the Defect Liability Period. The Board reserves rights to get the designs vetted by the third party at the Employer's cost for which the contractor shall provide the source/ raw data which are required for vetting of the designs submitted by the agency.

The Employer does not undertake to construct or make available any approach road to the proposed worksite if not mentioned in the Bill of Quantities and the bidder shall get acquainted with available means of approaches to the proposed site and quote for various items. The Employer shall not be liable for any claim raised later on the plea of non-availability or non-access to the site.

14.1.2 Contractor's Documents & obligations:

The Contractor's Documents shall comprise the technical documents specified in the Employer's Requirements, documents required to satisfy all regulatory approvals, as built drawings and Operation and maintenance manuals. The documents shall be in English language.

The Contractor shall prepare all Contractors' Documents and shall also prepare any other documents necessary to instruct the Contractor's personnel. The Employer's personnel shall have the right to inspect the preparation of all these documents, whenever they are being prepared.

If the Employer's Requirements describe the Contractor's Documents which are to be submitted to the Employer for review and/or approval, they shall be submitted accordingly. Contractor's Documents exclude any documents which are not specified as being required to be submitted for review and/or for approval.

The Employer shall review the documents and give his comments if any or approve the document failing which it would be presumed that the Contractor's Document is approved.

The execution of such part of the Works shall not commence till the approval of the document or expiry of 21 days of submission. Execution of such part of the Works shall be in accordance with the reviewed and approved Contractor's Documents. If the Contractor wishes to modify any design or drawing which has been submitted for

review previously, the Contractor shall give notice to the Employer. Thereafter the Contractor shall submit revised documents to the Employer in accordance with the above procedure. If the Employer instructs that further Contractor's Documents are required, the Contractor shall prepare them promptly.

If errors, omissions, ambiguities, inconsistencies, inadequacies or other defects are found in the Contractor's Documents, they and the Works shall be corrected at the Contractor's cost notwithstanding any consent or approval given earlier.

Any such approval or consent or any review (under this Clause or otherwise) shall not relieve the Contractor from any obligation or responsibility under this Contract.

15. Technical Standards and Regulations:

The design, the Contractor's Documents, the execution and the completed Works shall comply with Bureau of Indian Standards, building, construction, and environmental laws applicable to the product being produced from the Works and other standards specified in the Employer's Requirements, applicable to the Works, or defined by the applicable laws.

If changed or new applicable standards come into force in India after the date of commencement of Works, the Contractor shall give notice to the Employer and (if appropriate) submit proposals for compliance. In the event that:

(a) The Employer determines that compliance is required;

(b) The proposals for compliance constitute a variation;

then the Employer shall initiate a variation in accordance with Clause Variations and Adjustments.

16. Training:

The Contractor shall carry out the training of Employer's personnel / the new O&M operator for the operation and maintenance of Works to the extent specified in the Employer's Requirements. If the Contract specifies training which is to be carried out before taking over, the Works shall not be considered to be completed for the purposes of taking over under Clause [Taking Over of the Works] until this training has been completed.

17. Care and Supply of Documents

Each of the Contractor's Documents shall be in the custody and care of the Contractor, unless and until taken over by the Employer. Unless otherwise stated in the Contract, the Contractor shall supply to the Employer six copies of each of the Contractor's Documents.

The Contractor shall keep, on the Site, a copy of the Contract, publications named in the Employer's Requirements, the Contractor's Documents, and variations and other communications given under the Contract. The Employer's Personnel shall have the right of access to all these documents at all reasonable times.

If a Party becomes aware of an error or defect of a technical nature in a document which was prepared for use in executing the Works, the Party shall promptly give notice to the other Party of such error or defect.

If the Contractor suffers delay and/or incurs Cost as a result of an error in the Employer's Requirements, and an experienced contractor exercising due care would

not have discovered the error when scrutinizing the Employer's Requirements, the Contractor shall give notice to the Employer and shall be entitled subject to GCC Clause 26 to:

- (a) An extension of time for any such delay, if completion is or will be delayed;
- (b) Payment of any such cost plus reasonable profit which shall be included in the Contract Price

After receiving this notice, the Employer shall proceed in accordance with Clause 26 to agree or determine (i) whether and (if so) to what extent the error could not reasonably have been so discovered, and (ii) the matters described in sub-paragraphs (a) and (b) above related to this extent.

18. Contractor's use of Employer's Documents:

As between the Parties, The Employer shall retain the copyright and other intellectual property rights in the Specification, the Drawings and other documents made by (or on behalf of) the Employer. The Contractor may at his cost, copy, use and obtain communication of these documents for the purposes of the Contract. They shall not, without the Employer's consent, be copied, used or communicated to a third party by the Contractor, except as necessary for the purposes of the Contract.

19. Transportation of Goods:

The Contractor shall give the Employer not less than 21 days' notice of the date on which any Plant or a major item of other Goods will be delivered to the Site.

The Contractor shall be responsible for packing, loading, transporting, receiving, unloading, storing and protecting the Goods and other things required for the Works;

The Contractor shall indemnify and hold the Employer harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from the transport of Goods and shall negotiate and pay all claims arising from their transport.

20. Contractor's Equipment

The Contractor shall be responsible for all Contractors' Equipment. When brought on to the Site, Contractors' equipment shall be deemed exclusively intended for the execution of the Works.

The Contractor shall not remove from the Site any major items of Contractor's Equipment without the consent of the Employer. However consent shall not be required for vehicles transporting Goods or Contractor's personnel to the Site.

21. Electricity and Water:

The Contractor shall be responsible for the provision of all power, water and other services he may require.

22. Execution of the Contract

22.1 Manner of Execution:

The Contractor shall carry out the manufacture of Plant, the production and manufacture of materials and all other execution of the Works:

- (a) In the manner (if any) specified in the Contract;
- (b) In a proper workmanlike and careful manner, in accordance with recognized good practices; and
- (c) With properly equipped facilities and non-hazardous materials, except as otherwise specified in the Contract;

22.2 Contractor's Superintendence:

Throughout the design and execution of the Works and as long thereafter as is necessary to fulfil the Contractor's Obligations, the Contractor shall provide all necessary superintendence to plan arrange, direct, manage, inspect and test the work. Superintendence shall be given by a sufficient number of persons having adequate knowledge of the language for communications and of the operations to be carried out (including the methods and techniques required, the hazards likely to be encountered and methods of preventing accidents for the satisfactory and safe execution of the Works.

22.3 Contractor's Operation on Site:

The Contractor shall confine his operations to the Site and to any additional areas which may be obtained by the Contractor and agreed by the Employer as working areas. The Contractor shall take all necessary precautions to keep Contractor's equipment and personnel within the Site and these additional areas and to keep them off adjacent land.

During the execution of the Works, the Contractor shall keep the Site free from all unnecessary obstruction, and shall store or dispose of any Contractor's equipment or surplus materials. The Contractor shall clear away and remove from the Site any wreckage, rubbish and temporary works which are no longer required.

22.4 Program: (GCC Clause 25)

The Contractor shall submit a detailed time program to the Employer within 28 days after receiving the notice to commence the Works. The Contractor shall also submit a revised program whenever the previous program is inconsistent with actual progress or with the Contractor's obligation. Each program shall include:

- (a) The order in which the Contractor intends to carry out the Works, including the anticipated timing of each stage of design, Contractor's Documents, procurement, manufacture, inspection, delivery to Site, construction, erection, testing, commissioning and trial operations;
- (b) The periods of reviews and for any other submissions, approvals and consents specified in the Employer's Requirements;
- (c) The sequence and timing of inspections and tests specified in the Contract;
 - A supporting report which includes:
 - A general description of the methods which the Contractor intends to adopt and of the major stages in the execution of the works; and'
 - Details showing the Contractor's reasonable estimate of the number of each class of Contractor's personnel and of each type of Contractor's equipment required on the Site for each major stage

If at any time, the Employer gives notice to the Contractor that a program fails (to the extent stated) to comply with the Contract or to be inconsistent with the actual progress and the Contractor's stated intentions, the Contractor shall submit a revised program to the Employer.

22.5 Progress Reports:

Monthly progress reports shall be prepared by the Contractor and submitted to the Employer in six copies. The first report shall cover the period up to the end of the first

calendar month following the Commencement Date. Reports shall be submitted thereafter each within 7 days after the last day of the period to which it relates.

Reporting shall continue until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking Over Certificate for the Works.

Each Report should include:

- (a) Charts and detailed descriptions of progress, including each stage of design, Contractor's Documents, procurement, manufacture, delivery to Site, construction, erection, testing, commissioning and trial operation;
- (b) Photographs showing the status of manufacture and of progress at the Site;
- (c) For the manufacture of main items of Plant and Materials, the name of the manufacturer, manufacture location, percentage progress, and the actual and expected dates of:
 - (i) Commencement of manufacture;
 - (ii) Contractor's inspections;
 - (iii) Tests; and
 - (iv) Shipment and arrival at the Site;
- (d) Details of Contractor's personnel and equipment;
- (e) Copies of quality assurance documents;
- (f) List of variations, including details of any hazardous incidents and activities relating to environmental aspects and public relations; and
- (g) Comparisons of actual and planned progress, with details of any events or circumstances which may jeopardize the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome delays;

22.6 Inspection: (GCC Clause 29)

The Employer's personnel shall at all times:

- (a) Have full access to all parts of the Site and to all places from which natural materials are being obtained; and
- (b) During production, manufacture and construction (at the Site and elsewhere) be entitled to examine, inspect measure and test the materials and workmanship and to check the progress of manufacture of Plant and production and manufacture of materials.

The Contractor shall give the Employer's personnel full opportunity to carry out these activities, including providing access, facilities, permissions and safety equipment. No such activity shall relieve the Contractor from any obligation or responsibility.

The Contractor shall give notice to the Employer whenever any work is ready and before it is covered up, put out of sight, or packaged for storage or transport. The Employer shall then either carry out the examination, inspection, measurement or testing without unreasonable delay, or promptly give notice to the Contractor the Employer does not require to do so. If the Contractor fails to give the notice, he shall, if and when required by the Employer, uncover the work and thereafter reinstate and make good, all at the Contractor's cost.

22.7 Testing: (GCC Clause 30)

This Clause shall apply to all tests specified in the Contract, other than the Tests after

Completion (if any).

The Contractor shall provide all apparatus, assistance, documents, and other information, electricity, equipment, fuel, consumables, instruments, labour, materials and suitably qualified and experienced staff, as are necessary to carry out the specified tests efficiently. The Contractor shall agree with the Employer the time and place for the specified testing of any Plant, materials and other parts of the Works.

22.8 Rejection:

If as a result of an examination, inspection, measurement or testing any plant, materials, design or workmanship is found to be defective or otherwise not in accordance with the Contract, the Employer may reject the Plant, Materials, design or workmanship by giving notice to the Contractor with reasons. The Contractor shall then promptly make good the defect and ensure that the rejected item complies with the Contract.

23. Variations and Adjustments: (GCC Clause 34) Not Applicable

23.1 Right to Vary: Not Applicable

23.2 Value Engineering:

The Contractor may at any time submit to the Employer a written proposal which in the Contractor's opinion will, if adopted, (i) accelerate completion, (ii) reduce the cost to the Employer of executing, maintaining or operating the Works, (iii) improve the efficiency or value to the Employer of the completed Works, or (iv) otherwise be of benefit to the Employer. The proposal shall be prepared at the cost of the Contractor and shall include the items as specified in the variation procedure.

23.3 Variation Procedure: Not Applicable

24. Tests on Completion: (GCC Clause 45)

The Contractor shall carry out the tests on Completion in accordance with this Clause after providing the documents (as built drawings as well as Operation and Maintenance Manuals.

The Contractor shall give to the Employer not less than 21 days' notice of the date after which the Contractor will be ready to carry out each of the Tests on Completion. Unless otherwise agreed, Tests on Completion shall be carried out within 14 days after this date, on such day or days as the Employer may instruct.

The Tests on Completion shall be carried out in the following sequence:

- (a) Pre-commissioning tests, which shall include the appropriate inspections and functional tests to demonstrate that each item of Plant can safely undertake the next stage;
- (b) Commissioning tests, which shall include the specified operational tests to demonstrate that the Works or Section can be operated safely and as specified under all available operating conditions; and

- (c) Trial operation, which shall demonstrate that the Works perform reliably and in accordance with the Contract.

During trial operation, when the Works are operating under stable conditions, the Contractor shall give notice to the Employer that the Works are ready for any other Tests on Completion, including performance tests to demonstrate whether the Works conform with criteria specified in the Employer's Requirements and with the Schedules of Guarantees.

Trial operation shall not constitute a taking over under Clause. Unless otherwise stated elsewhere any product produced by the Works during trial operation shall be the property of the Employer.

In considering the results of the tests on Completion, the Employer shall make allowances for the effect of any use of the Works by the Employer on the performance or other characteristics of the Works. As soon as the Works have passed each of the Tests on Completion, the Contractor shall submit a certified report of the results of these Tests to the Employer.

25. Delayed Tests

If the Tests on Completion are being unduly delayed by the Employer it shall be a compensation event.

If the Tests on Completion are being unduly delayed by the Contractor, The Employer may by notice require the Contractor to carry out the Tests within 21 days after receiving the notice. The Contractor shall carry out the Tests on such day or days within that period as the Contractor may fix and of which he shall give notice to the Employer.

If the Contractor fails to carry out the Tests on Completion within the period of 21 days, the Employer's personnel may proceed with the Tests at the risk and cost of the Contractor. The Tests on Completion shall then be deemed to have been carried out in the presence of the Contractor and the results of the Tests shall be accepted as accurate.

26. Re-Testing

If the Works, or a component of the Work, fail to pass the tests on completion, Rejection Clause shall apply, and the Employer or the Contractor may require such failed tests, and the Tests on Completion to be repeated under the same terms and conditions.

27. Failure to Pass Tests on Completion

If the Works or a component of the Work fails to pass the tests on completion repeated under Sub-Clause 14.3, the engineer shall be entitled to:

- a) Require the contractor to make good the defects or ensure that the materials or plant comply with the contract and order further repetition of tests on completion under Sub-Clause 14.3; or
- b) If the failure deprives the Employer of substantially the whole benefit of the Works or component, reject the Works or component of the Works (as the case

may be), in which event the employer shall have the same remedies against the contractor as are provided under Clause 19; or

In the event that the performance of any item of plant or equipment tests out to be marginally less than stipulated under the contract, then the Employer, at his sole discretion, may authorize to issue Taking Over Certificate for said component as an alternative to the other remedies under this Sub-Clause. In such case, the Employer shall determine an appropriate reduction in the contract price with due regard to the circumstances, the actual performance of the item of plant or equipment compared to the specified performance, and the impact of the reduction in performance on the overall performance of the facility as a whole. Such reduction in the contract price shall be binding on the Contractor, and the Contractor shall then proceed in accordance with his other obligations under the contract.

28. Taking over the Works and components of the works: (GCC Clause 46)

The Employer shall take over the Works when all the Works are completed by the Contractor. The Contractor may apply by notice to the Employer for an initial Taking Over Certificate not earlier than 14 days before all the Works in the Contractor's opinion, be complete and ready for taking over.

The Employer shall within 21 days after receiving the Contractor's application:

- (a) Issue the initial Taking Over certificate to the Contractor, stating the date on which all the Works are completed in accordance with the Contract, except for any minor outstanding work and defects which will not substantially affect the use of the Works or component for their intended purpose (either until or whilst this work is completed and these defects are remedied); or
- (b) Reject the application, giving reasons and specifying the work required to be done by the Contractor to enable the initial Taking over Certificate to be issued. The Contractor shall then complete this work before issuing further notice under this Clause.

If the Employer fails either to issue the initial taking Over Certificate or to reject the Contractor's application within the period of 21 days, and the Works are substantially in accordance with the Contract, the initial Taking over Certificate shall be deemed to have been issued on the last day of that period.

Upon the issue of an initial Taking over Certificate, the Contractor shall clear away and remove, from and Works to which the initial Taking over Certificate refers, all Contractor's equipment, surplus material, wreckage, rubbish and temporary works. The Contractor shall leave the Site and the Works in a clean and safe condition. However, the Contractor may retain on Site, during the Defect Liability Period, such goods and equipment as are required for the Contractor to fulfil obligations under the Contract.

29. Performance Certificate

Performance of the Contractor's obligations shall not be considered to have been completed until the Employer has issued the Performance certificate to the Contractor

stating the date on which the Contractor completed the obligations under the Contract.

The Employer shall issue the Performance Certificate within 28 days after the latest of the expiry dates of the Defect Liability Period.

30. Clearance of Site:

Upon receiving the Performance Certificate, the Contractor shall remove any remaining Contractor's equipment, surplus material, wreckage, rubbish and temporary works from the Site. If these items have not been removed within 28 days of issue of the Performance, The Employer may get the site cleared at the cost of the Contractor and deduct the expenditure from the amounts due to the Contractor.

31. Operation and Maintenance Manual: Not applicable

32. Replacement Guarantee

- 32.1 The supplier guarantees that the all Goods & equipments supplied under this Contract are new, unused, of the most recent or current models and that they incorporate all recent improvements in design and materials unless provided otherwise in the Contract. The supplier further Guarantees that all Goods supplied under this contract shall have no defect arising from design, materials, or workmanship or from any act or omission of the Supplier that may develop under normal use of the supplied Goods in the conditions prevailing in the country of final destination.
- 32.2 The replacement guarantee for all Goods & equipments shall remain valid for one year after the Goods or any portions thereof as the case may be, have been commissioned. The supplier shall, in addition, comply with the performance and / or consumption guarantees specified under the Contract.
- 32.3 Upon receipt of such notice, the Supplier shall, with all reasonable speed replace the defective Goods & equipments or parts thereof, free of cost at the ultimate destination. The supplier shall take over the replaced parts / Goods & equipments at the time of their replacement. No claim whatsoever shall lie on the Purchaser for the replaced parts / Goods & equipments thereafter.

If the supplier, having been notified, fails to remedy the defect(s) within fifteen days, the Purchaser may proceed to take such remedial action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract. Until such replacement is done, the agency shall take necessary action so that the plant efficiency will not be affected.

33. Force Majeure Event

Any of the following events which is beyond the control of the party claiming to be affected thereby ("**Affected Party**") and which the Affected Party has been unable to overcome or prevent despite exercise of due care and diligence, and prevents the Affected Party from performing or discharging its obligations under this Agreement, shall constitute Force Majeure Event:

- (a) act of god or
- (b) any war, hostility, acts of public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restrictions, strikes, labour disruptions, riots or any other industrial disturbances not arising on account of the acts or omissions

of the Contractor, for which no offsetting compensation is payable to the Contractor/s.

- (c) acts of expropriation, compulsory takeover of the Project Site and Project Facilities by the Government or any part thereof or
- (d) Any judgement or any order of a court of competent jurisdiction or statutory authority in India made against the Contractor in any proceedings which is non-collusive and duly prosecuted by the Contractor.

33.1 Obligations of Parties

- (a) As soon as practicable and in any case within 7 (seven) days of the date of occurrence of a Force Majeure Event or the date of knowledge thereof, the Affected Party shall notify the other party of the same setting out, inter alia, the following in reasonable detail:
 - (i) the nature and extent of the Force Majeure Event;
 - (ii) the estimated Force Majeure Period;
 - (iii) the nature of and the extent to which, performance of any of its obligations under this Contract is affected by the Force Majeure Event;
 - (iv) the measures which the Affected Party has taken or proposes to take to alleviate/mitigate the impact of the Force Majeure Event and to resume performance of such of its obligations affected thereby; and
 - (v) any other relevant information concerning the Force Majeure Event, and /or the rights and obligations of the parties under this Contract.
- (b) As soon as practicable and in any case within 5 (five) days of notification by the Affected party in accordance with the preceding Clause 6.2 (a), the parties shall meet and hold discussions in good faith and where necessary conduct physical inspection/survey of the project site in order to:
 - (i) assess the impact of the underlying Force Majeure Event,
 - (ii) to determine the likely duration of Force Majeure Period and,
 - (iii) to formulate damage mitigation measures and steps to be undertaken by the parties for resumption of obligations, the performance of which shall have been affected by the underlying Force Majeure Event.
- (c) The Affected Party shall during the Force Majeure Period provide to the other Party with regular (not less than fortnightly) reports concerning the matters set out in the preceding Clause 6.2 (b) as also any information, details or document, which the Parties may reasonably require.

33.2 Performance of Obligations

If the Affected Party is rendered wholly or partially unable to perform any of its obligations under this Contract because of a Force Majeure Event, it shall be excused from performance of such obligations to the extent it is unable to perform the same on account of such Force Majeure Event provided that:

- (a) due notice of the Force Majeure Event has been given as required by the preceding Article 6.2;
- (b) the excuse from performance shall be of no greater scope and of no longer duration than is necessitated by the Force Majeure Event;

- (c) the Affected Party has taken all reasonable efforts to avoid, prevent, mitigate and limit damage, if any, caused or is likely to be caused to the Project as a result of the Force Majeure Event and to restore the Project, in accordance with the Good Industry Practice and its relative obligations under this Contract;
- (d) when the Affected Party is able to resume performance of its obligations under this Agreement, it shall give to the other party written notice to that effect and shall promptly resume performance of its obligations hereunder, the non-issue of such notice being no excuse for any delay for resuming such performance;
- (e) the Affected Party shall continue to perform such of its obligations which are not affected by the Force Majeure Event and which are capable of being performed in accordance with this Agreement;
- (f) any insurance proceeds received shall be entirely applied to repair, replace or restore the Project Site & Project Facilities damaged on account of the Force Majeure Event, in accordance with Good Industry Practice, unless otherwise agreed to by the Employer.

33.3 Termination due to Force Majeure Event

(a) Termination

- (i) If a Force Majeure Event, is an event described under Clause 6.1(a), (b) and (d), continues or is in the reasonable judgement of the Parties likely to continue beyond a period of 120 (one hundred and twenty) days, the parties may mutually decide to terminate this Contract or continue this Contract on mutually agreed revised terms. If the parties are unable to reach an agreement in this regard, the Affected Party shall after the expiry of the said period of 120 (one hundred and twenty) days, be entitled to terminate this Agreement.
- (ii) If the Force Majeure Event is an event described in Clause 6.1 (c) and the Contractor having exhausted the remedies available to him under the Applicable Laws, has been unable to secure the remedy, the Contractor shall be entitled to terminate this Agreement.

Provided further, the Employer may at its sole discretion have the option to terminate this Contract at any time after the occurrence of any event described under Clause 6.1(c)

(b) Termination Notice

If either party, having become entitled to do so, decides to terminate this Contract pursuant to the preceding Clause 6.4 (a) (i) or 6.4 (a) (ii), it shall issue Termination Notice setting out ;

- (i) in sufficient detail the underlying Force Majeure Event;
- (ii) the Termination Date which shall be a date occurring not earlier than 60 (sixty) days from the date of Termination Notice;
- (iii) the estimated Termination Payment including the details of computation thereof and;
- (iv) any other relevant information.

(c) **Obligation of Parties**

Following issue of Termination Notice by either Party, the Parties shall promptly take all such steps as may be necessary or required to ensure that;

- (i) the Termination Payment, if any, payable by the Employer in accordance with the following Clause 6.4 (d) is paid to the Contractor on the Termination Date and
- (ii) the Project Site along with the Project Facilities are handed back to the Employer by the Contractor on the Termination Date free from all Encumbrance.

(d) **Payment upon Termination**

Upon Termination of this Contract due to a Force Majeure Event, Employer shall pay to the Contractor the appropriate amount until such Termination as per the milestone achieved by the Contractor and in accordance with the payment schedule provided at - Schedule of Physical Activities progress provided the Employer shall be entitled to deduct from this payment any amount due and recoverable by the Employer from the Contractor as on the Termination Date and release the Performance Security.

33.4 Liability for other losses, damages etc.

Save and except as expressly provided in this Article, neither party hereto shall be liable in any manner whatsoever to the other party in respect of any loss, damage, cost, expense, claims, demands and proceedings relating to or arising out of occurrence or existence of any Force Majeure Event.

33.5 Emergency Work:

If by reason of any emergency arising in connection with and during the execution of the contract, any protective or remedial work is necessary as a matter of urgency to prevent the damage to the facilities, the Contractor shall immediately carryout such of work.

If the contractor is unable or unwilling to do such work immediately, the Employer may do or cause such work to be done as the Employer may determine is necessary in order to prevent damage to the Facilities. In such event the Employer shall, as soon as practicable after the occurrence of any such emergency, notify the contractor in writing of such emergency, the work done and the reasons therefore.

33.6 License / Use of Technical Information:

For the operation and maintenance of the Facilities, the Contractor hereby grants a non-exclusive and non-transferable license (without the right to sub-license) to the Employer under the patents, utility models or other industrial property rights owned by the Contractor or by a third Party from whom the Contractor has received the right to grant licenses there under, and shall also grant to the Employer a non-exclusive and non-transferable right (without right to sub-license) to use the know-how and other technical information disclosed to the Employer under the Contract. Nothing herein shall be construed as transferring ownership of any patent, utility model, trademark, design, copyright, know-how or other intellectual property right from the Contractor to any third Party to the Employer.

The copyright in all drawings, documents and other materials containing data and information furnished to the Employer by the Contractor herein shall remain vested in the Contractor or, if they are furnished to the Employer directly or through the Contractor by any third party, including suppliers of materials, the copyright in such materials shall remain vested in such third party.

35. Confidential Information:

35.1 The Employer and the Contractor shall keep confidential and shall not, without the written consent of the other party hereto, divulge to any third party any documents, data or other information furnished directly or indirectly by the other party hereto in connection with the Contract, whether such information has been furnished prior to, during or following termination of the Contract. Notwithstanding the above, the Contractor may furnish to its Subcontractor(s) such documents, data and other information it receives from the Employer to the extent required for the Subcontractor(s) to perform its work under the Contract, in which event the Contractor shall obtain from such Subcontractor(s) an undertaking of confidentiality similar to that imposed on the Contractor.

35.2 The Employer shall not use such documents, data and other information received from the Contractor for any purpose other than the operation and maintenance of the Facilities. Similarly, the Contractor shall not use such documents, data and other information received from the Employer for any purpose other than the design, procurement of Plant and Equipment, construction or such other work and services as are required for the performance of the Contract.

The obligation of a party, however, shall not apply to that information which

(a) now or hereafter enters the public domain through no fault of that party

(b) can be proven to have been possessed by that party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other party hereto

I otherwise lawfully become available to that party from a third party that has no obligation of confidentiality. The above provisions shall not in any way modify any undertaking of confidentiality given by either of the parties hereto prior to the date of the Contract in respect of the Facilities or any part thereof.

The provisions of this Clause shall survive termination, for whatever reason, of the Contract.

36. Guarantee Test

The Guarantee Test (and repeats thereof) shall be conducted by the Contractor during Commissioning of the Facilities or the relevant part thereof to ascertain whether the Facilities or the relevant part can attain the Functional Guarantees specified in the Technical Specifications. The Employer shall promptly provide the Contractor with such information as the Contractor may reasonably require in relation to the conduct and results of the Guarantee Test (and any repeats thereof).

37. Functional Guarantees:

37.1 The Contractor guarantees that during the Guarantee Test, the Facilities and all parts thereof shall attain the Functional Guarantees specified in the corresponding (Functional Guarantees) Contract Agreement, subject to and upon the conditions therein specified.

37.2 If, for reasons attributable to the Contractor, the minimum level of the Functional Guarantees specified in the corresponding to the Contract Agreement are not met

either in whole or in part, the Contractor shall at its cost and expense make such changes, modifications and/or additions to the Plant or any part thereof as may be necessary to meet at least the minimum level of such Guarantees. The Contractor shall notify the Employer upon completion of the necessary changes, modifications and/or additions, and shall request the Employer to repeat the Guarantee Test until the minimum level of the Guarantees has been met. If the Contractor eventually fails to meet the minimum level of Functional Guarantees, the Employer may consider termination of the Contract.

37.3 If, for reasons attributable to the Contractor, the Functional Guarantees specified in the Contract Agreement are not attained either in whole or in part, but the minimum level of the Functional Guarantees specified in the Contract Agreement is met, the Contractor shall:

- (a) make such changes, modifications and/or additions to the Facilities or any part thereof that are necessary to attain the Functional Guarantees at its cost and expense, and shall request the Employer to repeat the Guarantee Test ;
The Guarantee Test of the Facilities shall be successfully completed within 30 (Thirty days) from the date of Completion

38. Patent Indemnity:

The Contractor shall, subject to the Employer's compliance with, indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Employer may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract by reason of the installation of the Facilities by the Contractor or the use of the Facilities in India /Karnataka where the Site is located.

Such indemnity shall not cover any use of the Facilities or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, any infringement resulting from the use of the Facilities or any part thereof, or any products produced thereby in association or combination with any other equipment, plant or materials not supplied by the Contractor, pursuant to the Contract Agreement.

If any proceedings are brought or any claim is made against the Employer arising out of the matters referred to, the Employer shall promptly give the Contractor a notice thereof, and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim. If the Contractor fails to notify the Employer within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Employer within the twenty-eight (28) day period, the Employer shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.

The Employer shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from and against any and all suits, actions or

administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Contractor may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided or designed by or on behalf of the Employer.

39 Preparation of Bills

The contractor is responsible for submitting of bills duly supported by hard copy of detailed measurement of works using Electronic Spread Sheet and making computation there off. The contractor shall submit diskette or CD-ROM in addition to the hard copy in the format as per ANNEXURE-E.

40 Evaluation and comparison of Tenders (ITT-25)

The bid will be compared with the prevailing SR of UniSoR (common SR) / ESCOM/ KPTCL SRs as on the last date of submission of tenders.

41 Tender opening and evaluation (ITT- 19.5)

The tenderer has to give detailed technical presentation on the process, methodology, material of construction of the proposed technology, confirming to tender clause & specification and with relevant details as requested by the Employer.

42. Debarment of Tenderers by Procurement Entity:

1. The Procurement Entity may proceed with debarring such tenderer or contractor or supplier or any of the successor of the tenderer or contractor or supplier who has engaged directly or through an agent in a corrupt or fraudulent practices in participating or competing or executing the contract including misleading the Procurement Entity at any stage of procurement and executing activity.
2. The Procurement Entity may, by order, appoint a Committee consisting of such officers not below the rank of Tender Inviting Authority to be the Debarment Committee to consider the proposals for debarring bidder or contractor or supplier and to take a decision thereof.
3. On the receipt of information, Debarment Committee shall provide a reasonable opportunity, including an oral hearing, to the concerned for making representations before taking a decision.
4. For consideration of debarment, Tender Inviting Authority or any other officer authorized by Tender Accepting Authority shall furnish the details of such bidders or contractors or suppliers who have engaged in corrupt practice and fraudulent practices to the Debarment Committee constituted under sub rule (2) above.
5. The Debarment Committee may make recommendations with reasoning in writing, within thirty days from date of receipt of information. Provided that, the said period may be extended by another fifteen days by Procurement Entity for the reasons to be recorded in writing.
6. On the recommendations of the Debarment Committee, the Procurement Entity shall by notification debar any of tenderer or contractor or supplier and publish the same on its website and Karnataka Public Procurement Portal and also maintain the list of such tenderer or contractor or the supplier or any of its successors.
7. The debarred tenderer or contractor or supplier shall be removed from the list of registered contractors or vendors.

8. The order of debarment shall be deemed to have been automatically revoked on the expiry of the period specified in the debarment order.

43. Debarment by the Government

1. The Government may debar a tenderer or contractor or supplier, in the public interest and the grounds specified in the act.
2. There shall be a State Level Debarment committee consisting of such officers as may be notified by the State Government to consider the proposal for debarring bidder or contractor or supplier and to take a decision thereof
3. On the receipt of the information, the State Level Debarment committee shall provide a reasonable opportunity, including an oral hearing, to the concerned for making representations before taking a decision on the debarment
4. For consideration of Debarment of the bidders or contractors or suppliers, the officer authorized by the procurement entity shall furnish the details of such bidders or contractors or suppliers to the State Level Debarment Committee constituted under sub rule (2) above;
5. The State Level Debarment Committee may make recommendation to the State Government to such an effect, within thirty days, from the date of receipt of the information; Provided that, the said period may be extended by another fifteen days for the reasons to be recorded in writing by the Debarment Committee.
6. On the recommendation of the State Level Debarment Committee, the Government shall debar by notification such tenderer or Karnataka Public Procurement Portal and shall maintain the list of such bidder or contractor or the supplier or any of its successor.
7. The debarred tenderer or contractor or supplier shall be removed from the list of registered contractors or vendors.
8. The order of debarment shall be deemed to have been automatically revoked on the expiry of the specified period in the debarment order.

44. Measures to be taken after Debarment:

The Procurement Entity may take appropriate measures in respect of debarred tenderer or contractor or supplier including one or more of the following, namely:-

1. Reject the bid and forfeit or encash Bid Security;
2. Terminate the contract; forfeit or encash the performance guarantee; recover the compensation of loss incurred by Procurement Entity;
3. Forfeit or encash any other security or guarantee or bond provided by such tenderer or contractor or supplier in relation to the such procurement; and
4. Recover payments including advance payments, if any, made by the Procurement Entity along with the interest thereon at the prevailing rate of Nationalized Bank.

45. Contract Management:

1. The Procurement entity, as may be notified by the Government from time to time, shall undertake Contract Execution Management from the date of such notification on the Karnataka Public Procurement Portal in respect of works, goods and services exceeding the value of the contract as may be notified by the Government from time to time.

2. All the activities and processes relating to the Contract Management shall be created, entered, managed and monitored on the Karnataka Public Procurement Portal.”

Note: In case of inconsistency of provisions in GCC and SCC, the conditions under SCC will prevail.



Proceedings of the Government of Karnataka

Sub: Provision for Price Adjustment for Specified Materials for works – Clarification – reg.

Read: 1. G.O. No.FD 59 PRO CELL 2004, dated:26.11.2004
2. G.O. No.FD 3 PCL 2008, dated:21.11.2008

Preamble:

In Government Order reference at (1) above the instructions regarding Price Adjustment methods applicable were specified. Clarification are being sought on the method of computing Price Adjustment, whenever the contract period is extended due to lapse of part of the contractor and also when the contract period is extended due to no fault of the contractor. The rationale behind admissibility of Price Adjustment is to compensate the contractor on price fluctuations when extensions of time is given beyond the stipulated date of completion for reasons not attributable to the contractor. However, while extending such benefits it should be ensured that this will not result either in additional financial burden to Government or result in undue benefit to the contractor. Therefore after examining all aspects Government issues the following orders.

Government Order No:791 Exp-12/2015, Bangalore,
Dated:26.02.2016

In the circumstances explained in the preamble and in partial modification of the Government Order referred at (2) above, the following method, of price adjustment is applicable.

Case-1, When time extension is granted for the reasons not attributable to the contractor.

Price Adjustment is admissible as per terms of contract for the work carried out during the extension of the time granted for completion of work.

...2

Case-2, When the time extension is granted for reasons attributable to the contractor

Price Adjustment is admissible upto the original contract period only and for the period of extension, price adjustment is not admissible and payment for such extension shall be at tendered rates only.

Case-3, When extension of time is granted for the reasons attributable to employer followed by reasons attributable to the contractor

Price Adjustment is admissible as per terms of contract for the work carried out during the original period of completion and during the extension of time granted for completion of work for reasons attributable to employer. For the work carried out during the extension of time granted due to delay attributable to the contractor Price Adjustment is not admissible and the contractor shall be paid only at the Tendered rates.

Case-4, When delay occurs initially attributable to contractor and later attributable to Employer

Extension of time in such cases is to be granted by first appending extension of time due to delay by employer to the original contract period, although the delay is initially due to contractor and later by the employer. The extension of time granted due to delay by the contractor shall be considered as the last phase after extension due to delay by employer is added to the original contract period.

Price Adjustment is admissible to the delay attributable to the employer. The Price Adjustment for the initial delay attributable to the contractor is not admissible and the contractor shall be paid only at the Tendered rates.

General Clarification:

I - By way of abundant caution, it is also clarified that 'quarter' in this G.O. and G.O. at reference (1) and (2) above means a period of three consecutive months as detailed below:

(i) For reckoning the average base price index

Three consecutive calendar months preceding the calendar month of opening the Tender.

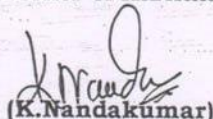
(ii) For reckoning the value of 'R'

Three consecutive Calendar months including the calendar month in which work was started in the first instance and thereafter next quarter shall be consecutive three months following the preceding quarter.

II - The value of R defined in Government order referred at (1) above is redefined as below:

R = Total value or work done during the quarter. It would include the amount of secured advance for materials paid for (if any) during the quarter, less the amount of the secured advance recovered during the quarter. It will exclude value for works executed under variations for which Price Adjustment (if any) will be worked out separately based on the terms mutually agreed. It will also exclude the value of work done during the quarter which was programmed to be done prior to this quarter as per the work schedule in the agreement.

By Order and in the name of the
Governor of Karnataka


(K. Nandakumar)

Special Officer and Ex-officio
Deputy Secretary to Government
Finance Department (PWFC)



To:

The Compiler, Karnataka Gazette for publication in the next issue of the Gazette and to supply 500 copies to Finance Department.

Copy to:

The Chief Secretary / Additional Chief Secretaries to Government.
The Principal Secretaries and Secretaries to Government.
The Accountant General (A&E), Karnataka, Bangalore.
The Secretary, Karnataka Legislative Assembly/Council.
The Registrar, Karnataka High Court, Bangalore.
The Registrar, Karnataka Lokayukta, Bangalore.
The Secretary, Karnataka Public Service Commission, Bangalore.
All the Deputy Commissioners.
All the CEOs of Zilla Panchayats.
All the Heads of Departments.
All the CEOs of Boards and Corporations.
All Internal Financial Advisors.
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The GO for restrictions on public procurement from Bidders of certain countries is as follows

PROCEEDINGS OF THE GOVERNMENT OF KARNATAKA

Sub: Restrictions on Public Procurement from Bidders of certain Countries.

Ref: 1. GO No. FD 09 PCL 2004(I) Dated: 06-08-2005.
2. GO No. FD 09 PCL 2004(II) Dated: 06-08-2005.
3. GO No. FD 09 PCL 2004 (III) Dated: 06-08-2005.
4. Government of India letter no.6/18/2019-PPD dated: 23-07-2020.

Preamble:

Government of India has inserted sub rule (xi) under Rule 144 of the General Financial Rules, 2017 to provide for restrictions on Procurement from bidders from a Country or Countries or class of Countries on the grounds of defence of India or matters directly or indirectly related thereto, including national security. In the letter referred above, Government of India has directed all the State Governments to implement the Public Procurement order issued in this regard. In view of this, the matter has been examined in detail and Government of Karnataka has decided to implement the Public Procurement Order issued by Government of India.

Hence the following order,

Government Order No. FD 455 Exp-12 2020 Bengaluru Dated:25-08-2020

In view of the circumstances explained in the preamble, all the Procurement Entities as defined in Section 2(d) of KTPP Act, are hereby ordered to procure the required goods, works and services including consultancy services after observing the following directions:-

1. All the Procurement Entities shall ensure that any bidder from a country which shares a land border with India will be eligible to bid in

any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with the Competent Authority as specified in **Annexure-1**.

2. The eligibility clauses as in **Annexure-2** enclosed herewith this order are to be inserted under Eligibility conditions in all the Tender Documents including the Standard Tender Documents wherever applicable for procurement of goods, works and services including consultancy services.
3. The Competent Authority for registration and the procedure to be followed for registration of the bidders in the State is as per **Annexure-1** appended to this order.
4. Registration granted by the Competent Authority of Government of India shall be valid for Procurements by the Procurement Entities of the State Government and its agencies also. No fresh registration by the Competent Authority of State Government is required in such cases for participating in the tenders called by these Entities.
5. Registration granted by the Competent Authority constituted by Government of Karnataka shall be valid only for procurement by Government of Karnataka and its agencies and shall not be valid for procurements by other States or by Government of India and their agencies/Public Enterprises etc., In the same way, the Registration granted by Competent Authority of the other State Government shall not be valid for the procurement by Procurement Entities of Government of Karnataka.

6. In transitional cases, wherein the tenders have been called and are at different stages of evaluation, it is hereby ordered to follow the procedure detailed herein below:

(i) Tenders where no contract has been concluded or no LoA has been issued so far shall be handled in the following manner:

a) In tenders which are yet to be opened, or where evaluation of technical bid or the first exclusionary qualificatory stage (i.e. the first stage at which the qualifications of tenderers are evaluated and unqualified bidders are excluded) has not been completed: No contracts shall be placed on bidders from such countries. Tenders received from bidders from such countries shall be dealt with as if they are non-compliant with the tender conditions and the tender shall be processed accordingly.

b) If the tendering process has crossed the first exclusionary qualificatory stage: if the qualified bidders include bidders from such countries, the entire process shall be scrapped and initiated *de novo*. The *de novo* process shall adhere to the conditions prescribed in this order.

(ii) In all the transitional cases, a certificate shall be obtained from the bidder whose bid is proposed to be considered or accepted in the following manner.

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I hereby certify that this bidder is not from such a country and is eligible to be considered."

- (iii) In such transitional cases where it is felt that it will not be practicable to exclude bidders from a country which shares a land border with India, a reference seeking permission to consider such bidders shall be made by the Procurement Entity to the Competent Authority giving full information and detailed reasons. The Competent Authority shall decide whether such bidders may be considered, and if so, shall follow the procedure laid down in the above paras.

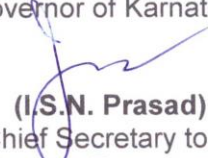
7. This order shall not apply to the following cases:

- (i) The cases where orders have been placed or contract has been concluded or letter of Intent/notice of award/letter of Acceptance (LoA) has been issued on or before the date of this order.
- (ii) Till 31st December 2020, Procurement of Medical Supplies directly related to containment of the covid-19 pandemic.
- (iii) *Bona fide* small procurements made through GeM without knowing the country of the bidder till the date fixed by GeM for this purpose.
- (iv) *Bona fide* small procurements made without knowing the country of the bidder.
- (v) In projects which receive international funding with the approval of the Department of Economic Affairs (DEA), Ministry of Finance, the Procurement Guidelines applicable to the project shall normally be followed, notwithstanding anything contained in this order and without reference to the Competent Authority of Government of India and

Government of Karnataka. Any exceptions to this shall be decided in consultation with DEA.

- (vi) The procurement by Indian missions and by offices of Government Agencies/undertakings located outside India.
 - (vii) Cases where there are bidders from those countries (even if sharing a land border with India) to which Government of India has extended lines of credit or in which the Government of India is engaged in development projects. For the updated list of countries to which lines of credit have been extended or in which development projects are undertaken, the Procurement Entities are advised to visit the website of the Ministry of External Affairs.
8. The provisions of this order shall apply to all the procurements including that of PPP Projects which receive financial support from Government or Public Sector Enterprises, undertaken by the Procurement Entities as defined in Section 2(d) of the KTPP Act. All the Procurement Entities are directed to incorporate mandatorily all these provisions in the tenders to be issued after the date of this order.
9. There is no change in the remaining clauses of the Standard Tender Documents.

By order and in the name of
Governor of Karnataka


(I.S.N. Prasad)
Additional Chief Secretary to Government
Finance Department

To:

The Compiler, Karnataka Gazette for Publication in the next issue of the Gazette.

Annexure-1

Competent Authority and Procedure for Registration

1. The Competent Authority for the purpose of registration of bidders under this Order has been constituted in the Department of Commerce & Industries, Government of Karnataka.
2. The Registration Committee shall have the following members:
 - i. Principal Secretary/Secretary to Govt., Department of Commerce and Industries shall be the Chairman;
 - ii. An officer not below the rank of Secretary to Govt., Home Department;
 - iii. An officer not below the rank of Secretary to Govt., of those Departments whose Procurements are covered by applications under consideration;
 - iv. Any other officer whose presence is deemed necessary by the Chairman of the Committee.
3. Department of Commerce and Industries shall lay down the method of application, format etc. for such bidders as stated in para (1) of this order.
4. On receipt of an application seeking registration from a bidder from a country covered by para (1) of this Order, the Competent Authority shall first seek political and security clearances from the Ministry of External Affairs and Ministry of Home Affairs, Government of India as per guidelines issued from time to time. Registration shall not be given unless political and security clearance have both been received.
5. The Department of Commerce & Industries in consultation with Home Department may issue guidelines for internal use regarding the procedure for scrutiny of such applications by them.
6. The decision of the Competent Authority, to register such bidder may be for all kinds of tenders or for a specified type(s) of goods or services, and may be for a specified or unspecified duration of time, as deemed fit. The decision of the Competent Authority shall be final.
7. Registration granted by the Competent Authority of the Government of Karnataka shall be valid only for procurements by

the Procurement Entities as defined in Section 2(d) of Karnataka Transparency in Public Procurements Act, 1999.

8. The Competent Authority is empowered to cancel the registration already granted if it determines that there is sufficient cause. Such cancellation by itself, however, will not affect the execution of contracts already awarded. Pending cancellation, it may also suspend the registration of a bidder, and the bidder shall not be eligible to bid in any further tenders during the period of suspension.
9. For national security reasons, the Competent Authority shall not be required to give reasons for rejection/cancellation of a bidder.
10. In transitional cases falling under para (6) of this Order, where it is felt that it will not be practicable to exclude bidders from a country which shares a land border with India, a reference seeking permission to consider such bidders shall be made by the procuring entity to the Competent Authority giving full information and detailed reasons. The Competent Authority shall decide whether such bidders may be considered, and if so shall follow the procedure laid down in the above paras.
11. The Competent Authority is required to send a quarterly report to the Cabinet Secretary, Government of India regarding the cases of registration given and denied.



I.S.N. PRASAD
Additional Chief Secretary to Govt.,
Finance Department

Annexure-2


1. Procurement Entities are required to incorporate the following under Eligibility Clauses and Sub Contract Clause in all the Tender Documents used for Procurement of Goods, Works and Services including Consultancy Services as detailed below:

Sl.No.	New Clause to be inserted in the tender documents
1	Any bidder from a country which shares a land with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority.
1.1	“Bidder” (including the term ‘tenderer’, ‘consultant’ or ‘service provider’ in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.
1.2	<p>“Bidder from a country which shares a land border with India” for the purpose of this Order means:-</p> <p>a. An entity incorporated, established or registered in such a country; or</p> <p>b. A subsidiary of an entity incorporated, established or registered in such a country; or</p> <p>c. An entity substantially controlled through entities incorporated, established or registered in such a country; or</p> <p>d. An entity whose <i>beneficial owner</i> is situated in such a country; or</p> <p>e. An Indian (or other) agent of such an entity; or</p> <p>f. A natural person who is a citizen of such a country; or</p> <p>g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above</p>

1.3	<p>I. The <i>beneficial owner</i> for the purpose of above clause will be as under:</p> <p>(i) In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.</p> <p>Explanation-</p> <p>a. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five percent of shares or capital or profits of the company;</p> <p>b. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;</p> <p>(ii) In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;</p> <p>(iii) In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;</p> <p>(iv) Where no natural person is identified under (i) or (ii) or (iii) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;</p> <p>(v) In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.</p>
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1.4	An Agent is a person employed to do any act for another, or to represent another in dealings with third person.
1.5	<p>A certificate for having read the above clauses is required to be submitted / uploaded by the tenderer separately in the following format:</p> <p><i>"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered. (Where applicable, evidence of valid registration by the Competent Authority shall be attached.)"</i></p>
1.6	<p>IN CASES WHERE SUB CONTRACTING IS PROVIDED:</p> <p>A certificate is required to be submitted/ uploaded by the Tenderer in respect of sub contracting separately in the following format :</p> <p><i>"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]"</i></p>

2. In respect of procurements wherein the Standard Tender Documents are not specifically issued by the Finance Department, the Procurement Entities are directed to incorporate the above Clauses as Eligibility Conditions and Sub Contract provisions in the concerned tender documents.


L.S.N. PRASAD
 Additional Chief Secretary to Govt.
 Finance Department

Annexure A

Extracts of Contract Labour (Regulation and Abolition) Act 1970

- (a) The Contractor shall, at all times during the continuance of the Contract, comply fully with all existing Acts, regulations and byelaws including all statutory amendments and re-enactment of State or Central Government and other local authorities and any other enactments, notifications and acts that may be passed in future either by the State or the Central Government or local authority, including Indian Workmen's Compensation Act, Contract Labour (Regulation and Abolition) Act 1970 and Equal Remuneration Act 1976, Factories Act, Minimum Wages Act, Provident Fund Regulations, Employees Provident Fund Act, schemes made under the same Act and also Labour Regulations mentioned in Annexure A to Section IV, Health and Sanitary Arrangement for Workmen, Insurance and other benefits and shall keep Employer indemnified in case any action is commenced by competent authorities for contravention by the Contractor. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated henceforth on the part of the Contractor, the Engineer shall have the right to deduct from any moneys due to the Contractor, his amount of performance security or recover from the Contractor personally any sum required or estimated to be required for making good the loss or damage suffered by the Employer, responsibility in connection with the employees of the Contractor, who shall, in no case, be treated as the employees of the Employer at any point of time.

Fair Wages

- (b) The Contractor shall pay the labourers engaged by him on the work not less than fair wage which expression shall mean, whether for time or piecework, the respective rates of wages fixed by the Public Works Department as fair wages for the area payable to the different categories of labourers or those notified under the Minimum Wages Act for corresponding employees of the Employer, whichever may be higher.
- (c) The Contractor shall, notwithstanding the provisions of a contract to the contrary, cause to be paid a fair wage to labourers indirectly engaged on the Works, including any labour engaged by sub/ contractors in connection with the sand works as if the labourer had been directly employed by him.

NOTICES

- (d) The Contractor shall, before he commences the work, display, and correctly maintain, in a clean and legible condition at a conspicuous place on the Site, notices in English and in a language spoken by the majority of the workers, stating therein the rate of wages which have been fixed as fair wages and the hours of work for which such wages are earned and send a copy of such notices to the Engineer.

Wages Records

- (e) The contractor shall maintain records of wages and other remuneration paid to his employees in such form as may be convenient and as per the requirements of the Employer/Engineer and the Conciliation Officer (Central), Ministry of Labour,

Government of India, or such other authorized person appointed by the Central or State Government and the same shall include the following particulars of each worker:

- (i) Name, worker's number and grade;
 - (ii) Rate of daily or monthly wage;
 - (iii) Nature of work on which employed;
 - (iv) Total number of days worked during each wage period;
 - (v) Total, amount payable for the work during each wage period;
 - (vi) All deduction made from the wage with details in each case of the ground for which the deduction is made;
 - (vii) Wage actually paid for each wage period.
- (f) The Contractor shall provide a Wage Slip for each worker employed on a the Works.
- (g) The Wage records and Wage Slips shall be preserved for a least 36 months after last entry;

Inspection of Wage Records

- (h) The Contractor shall allow inspection of the aforesaid Wage Records and Wage Slips to the Engineer and to any of his workers or to his agent at a convenient time and place after due notice is received or to the Employer or any other person authorized by him on his behalf.
- (i) The Employer, the Engineer or any other person authorized by them on their behalf shall have power to make enquiries with a view to ascertaining and enforcing due and proper observance of the Fair Wages Clause. He shall also have the Power to investigate into any complaint regarding any default made by the Contractor or sub-contractor in regard to such provision.
- (j) The Employer shall have the right to deduct from the money's due to the Contractor any sum required or estimated to be required for making good the loss suffered by a worker or workers by reason of non-payment of the aforesaid fair wage, except on account of any deductions that may be permissible under any law for the time being in force.
- (k) (i) A workman shall be entitled to be represented in any investigation or enquiry under this Clause by:
- (a) An officer of a registered Trade Union of which he is a member.
 - (b) An officer of a federation of Trade Unions to which the Trade Union referred to in previous sub-clause is affiliated.
 - (c) Where the worker is not a member of any registered Trade Union, by an officer of a registered Trade Union connected with or by any other workmen employed in the industry in which the worker is employed.
- (ii) The Contractor or sub-contractor shall be entitled to be represented in any investigation or inquiry under this Clause by an office of an Association of Employers of which he is member.

(iii) No party shall be represented by a legal practitioner in any investigation or inquiry under this Clause, unless all parties agree otherwise.

Safety Provisions

- 1) The Contractor shall comply with all the precautions as required for the safety of the workmen by the I.L.O. Convention No. 62 as far as they are applicable to the contract.

The Contractor shall provide all necessary safety appliances, gears like goggles, helmets, masks, etc., to the workmen and the staff.

- (i) Suitable scaffolds shall be provided for workmen for all work that cannot safely be done from the ground, or from solid construction except for such short period work as can be done safely from ladders. When a ladder is used, an extra labour shall be engaged for holding the ladder and if the ladder is used for carrying materials as well, suitable foot-holds and hand-holds shall be provided on the ladder, which shall be given an inclination not steeper than 1/4 to (1/4) horizontal in 1 vertical).
- (ii) Scaffolding or staging more than 3.25 metres above the ground or floor, swing or suspended from an overhead support or erected with stationary support shall have guard rail properly attached bolted, braced and otherwise secured 1 metres high above the floor or platform of such scaffolding or staging and extending along the entire length may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the support for structure.
- (iii) Working platform, gangways, and stairways shall be so constructed that they do not sag unduly or unequally and if a height of a platform or gangway or stairway is more 3.25 metres above ground level or floor level, it shall have closely spaced Boards, have adequate width and be suitably provided with guard rails as described in (ii) above.
- (iv) Every opening in floor of a structure or in a working platform shall be provided with suitable means to prevent fall of persons or materials by providing suitable fencing or railing with a minimum height of one metre.
- (v) Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 metres in length. Width between side rails in a rung ladder shall in no case be less than 30 cm for ladders upto and including 3 metres in length. For longer ladders the width shall be increased at least 6mm for each additional 30cm of length. Spacing of steps shall be uniform and shall not exceed 30cm.

Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The Contractor shall provide all necessary fencing and lights to protect public from accidents and shall be bound to bear expenses of defending every suit, action or other proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit, action or proceeding to any such person or which may with the consent of the Contractor be paid to compromise any claim by any such person.

- (vi) **Excavation and Trenching:** All trenches, 1.5 metres or more in depth shall at all times be supplied with at least one ladder for each 20 metres in length or fraction thereof. Ladder shall be extended from bottom of trench to at least 1 metres above surface of the ground. Sides of trench which is 1.5 metres or more in depth shall be stepped back to give suitable slope or securely held by timber bracing, so as to avoid the danger of collapsing of sides. Excavated material shall not be placed within 1.5 metres of edge of trench or half the depth of trench, whichever is more. Cutting shall be done from top to bottom. Under no circumstances, undermining or undercutting shall be done.
- (vii) **Demolition:** Before any demolition work is commenced and also during the process of the work:
 - A. All roads and open areas adjacent to the work site shall either be closed or suitably protected.
 - B. No electric cable or apparatus which is liable to be a source of danger over a cable or apparatus used by operator shall remain electrically charged.
 - C. All practical steps shall be taken to prevent danger to persons employed by the Employer, from risk of fire or explosion, or flooding. No floor, roof or other part of a building shall be so overloaded with debris or materials as to render it unsafe.
- (i) All necessary personal safety equipment as considered adequate by the Engineer shall be available for use of persons employed on the Site and maintained in a condition suitable for immediate use and the Contractor shall take adequate steps to ensure proper use of the equipment by those concerned.
 - A. Workers employed on mixing asphaltic materials, cement, lime mortars/concrete shall be provided with protective footwear and protective goggles.
 - B. Those engaged in handling any material which is injurious to eyes shall be provided with protective goggles.
 - C. Those engaged in welding works shall be provided with welder's protective eye-shield.
 - D. Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
 - E. When workers are employed in sewers and machine-holes, which is in use, the Contractor shall ensure that machine-hole covers are open and machine-holes are ventilated at least for an hour before the work are taken up. Machine-holes so open shall be cordoned off with suitable railing and provide warning signals or Boards to prevent accident to public.

The Contractor shall not employ men below the age of 18 years and women on the work of painting with products containing lead in any form. Whenever men above the age of 18 years are employed on the work of lead painting, the following precautions shall be taken.

No paint containing lead or lead products shall be used except in the form of paste or

readymade paint.

Suitable face masks shall be supplied for use by workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.

Overalls shall be supplied by the Contractor to workmen and adequate facilities shall be provided to enable workers to wash during and on close of day's work.

- (ii) When work is done near any place where there is risk of drowning all necessary equipment shall be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.
- (iii) Use of hoisting machines and tackle including their attachments, anchorage and supports shall conform to the following:
 - (i) These shall be of good mechanical construction, sound material and adequate strength and free from patent defects and shall be kept in good adequate strength and free from patent defects and shall be kept in good working order and properly maintained.
 - (ii) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from defects.
- (F) Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 shall be in charge of any hoisting machine including scaffold or of signals to operator.
- (G) In case of every hoisting machine and of every chain hook, shackle swivel and pulley block used in hoisting, lowering or as means of suspension, safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with safe working load. In case of a hoisting machine or a variable safe working load each safe working load and conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in the paragraph shall be loaded beyond safe working load except for the purpose of testing.
- (H) In case of the Employer's machine, safe working load shall be notified by the Engineer or his representative. As regards Contractor's machines, the Contractor shall notify safe working load of each machine to Engineer or his representative whenever he brings it to site of work and get it verified by him.
- (iv) Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliance shall be provided with efficient safeguards hoisting appliances shall be provided with such means as will reduce the risk of accident during descent of load to the minimum. Adequate precautions shall be taken to reduce to the minimum risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations which are already 108rèche108ed, insulating mats, working apparel such as gloves, sleeves and boots, as may be necessary, shall be provided, workers shall not wear any rings, watches and carry keys or other material which are good conductors of electricity.

- (v) All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities shall be provided at or near places of work.
- (vi) These safety provisions shall be brought to the notice of all concerned by display on a notice Board at a prominent place at the work spot. Persons responsible for ensuring compliance with the safety code shall be named therein by the Contractor.
- (vii) To ensure effective enforcement of the rules and regulations relating to safety precautions, arrangements made by the Contractor shall be open to inspection by the Engineer or his representative and the Inspecting Officer as defined in the Contractor's Labour Regulation mentioned in thereafter these Documents as Annexure A of Section IV.
- (viii) Notwithstanding anything contained in conditions (i) to (xiv) above, the Contractor shall remain liable to comply with the provisions of all Acts, rules, regulations and byelaws for the time being in force in India and applicable in this matter.
- (m) The Contractor shall be responsible for observance, by his sub/contractors, of the forgoing provisions.
- (n) For work carried out in the vicinity of any wharf or quay, the Contractor shall abide by all the provisions of the Dock Workers (Safety, Health and Welfare) Scheme, 1961.

Footwear

- (o) The contractor shall at his own expense provide footwear for all labour engaged on concrete mixing work and other types of work involving the use of tar, cement, etc., to the satisfaction of the Engineer or his Representative, and on his failure to do so, the Employer shall be entitled to provide the same and recover the cost from the Contractor.

Local Labour

- (p) The Contractor is encouraged as far as possible to employ, in the execution of the Contract, qualified Indian citizens as workmen. Employment of expatriate personnel is subject to the Indian Laws and Regulations. In case the contractor wishes to employ expatriate personnel in any particular trade or skill required to execute the contract, the Employer will assist the Contractor in obtaining permission for which the Contractor shall submit requisite data.

Model Rules for Labour Welfare

(i) Definitions:

- (A) Workplace means a place at which, on an average, twenty or more workers are employed.
- (B) Large workplace means a site at which, on an average, 250 or more workers are employed.

(ii) First Aid:

At every workplace, there shall be maintained in a readily accessible place first aid appliances including an adequate supply of sterilized dressings and sterilized cotton wool as prescribed in the Factory Rules of the State in which the work is carried on. The appliances shall be kept in good order and, in large work places, they shall be placed under the charge of a responsible person who shall be readily available during working hours.

At large workplaces, where hospital facilities are not available within easy distance of the Works, First Aid Posts shall be established and be run by a trained compounder.

Where large workplaces are remotely situated and far away from regular hospitals, an indoor ward shall be provided with one bed for every 250 employees.

Where large workplace are situated in cities, towns or in their suburbs and no beds are considered necessary owing to proximity of city or town hospitals, suitable transport shall be provided to facilitate removal of urgent cases to these hospitals. At other workplaces, some conveyance facilities shall be kept readily available to take injured person on persons suddenly taken seriously ill, to the nearest hospital.

At large workplaces, there shall be provided and maintained an ambulance room containing the prescribed equipment and in the charge of such medical and nursing staff as may be prescribed. For this purpose, the relevant provisions of the Factory Rules of the State government of the area where the work is carried on, may be taken as the prescribed standard.

4. Accommodation for Labour:

The Contractor shall during the progress of the Work provide, erect and maintain necessary temporary living accommodation and ancillary for labour at his own expenses to the standards and scales as approved by the Engineer.

5. Drinking Water:

In every workplace, there shall be provided and maintained at suitable places, easily accessible to labour, a sufficient supply of cold water fit for drinking.

Where drinking water is obtained from an intermittent public water supply, each workplace shall be provided with storage of cold water fit for drinking.

Ever water supply storage shall be at a distance of not less than 15 metres from any latrine, drain or other source of pollution. Where water has to be drawn from an existing well, which is within such proximity of latrine, drain or any other source of pollution, well shall be properly chlorinated before water is drawn from it for drinking. All such wells shall be entirely closed in and be provided with a trap door which shall be dust-proof and water-proof.

A reliable pump shall be fitted to each covered well. The trap door shall be kept locked and opened only for cleaning or inspection which shall be done at least once a month.

6. Washing and Bathing Places:

Adequate washing and bathing places shall be provided separately for men and women. Such places shall be kept in clean and drained condition.

(i) Scale of Accommodation in Latrines and Urinals:

There shall be provided within the precincts of every workplace, latrines and urinals in an accessible place, and the accommodation, separately for each of these, shall not be less than at the following scale:-

		No. of Seats
(a)	Where number of persons does not exceed 50	2
(b)	Where number persons exceed 50 but does not exceed 100	3
(c)	For additional persons per 100 or part thereof	3

In particular cases, the Engineer shall have the power to increase the requirement, wherever necessary.

(vii) Latrines and Urinals:

Except in workplaces provided with water/flushed latrines connected with a water borne sewage system, all latrines shall be provided with receptacles on dry-earth system which shall be cleaned at least four times daily and at least twice during working hours and kept in a strictly sanitary condition. Receptacles shall be tarred inside and outside at least once a year.

If women are employed, separate latrine and urinals, screened from those for men and marked in the vernacular in conspicuous letters. “For Women Only” shall be provided on the scale laid down in rule (vi). Those for men shall be similarly marked “For Men Only”. A poster showing the figures of a man and a woman shall also be exhibited at the entrance to latrines for each sex. There shall be adequate supply of water, close to latrines and urinals.

(viii) Construction of Latrines:

Inside walls shall be constructed of masonry or other non-absorbent material and shall be cement washed inside and outside at least once a year. The dates of cement washing shall be noted in a register maintained for the purpose and kept available for inspection. Latrines shall have at least thatched roof.

(ix) Disposal of Excreta:

Unless otherwise arranged for by the local sanitary authority, arrangement for proper disposal of excreta by incineration at the workplace shall be made by means of suitable incinerator approved by the local medical, health and municipal or cantonment authorities. Alternatively, excreta may be disposed off by putting a layer or night soils at the bottom of a pucca tank prepared for that purpose and covering it with a 15 cm layer of waste or refuse and then covering it with a layer of earth for a fortnight (when it will turn into manure).

The Contractor shall, at his own expense, carry out all instructions issued to him by the Engineer to effect proper disposal of soil and other conservancy work in respect of Contractor’s work-purpose or employees on the site. The Contractor shall be responsible for payment of any charges which may be levied by municipal or cantonment authority for execution of such work on his behalf.

(x) Provisions of shelters during rest:

At every workplace, there shall be provided, free of cost, four suitable sheds, two for meals and two others for rest, separately for use of men and women labour. Height of each shelter shall not be less than 3 metres from floor-level to lowest part of roof. Sheds shall be kept clean and the space provided shall be on the basis of at least 0.5 sqm per head.

7. Creches:

At a place at which 20 or more women are ordinarily employed, there shall be provided at least one hut for use of children under the age of 6 years belonging to such women. Huts shall not be constructed to a standard lower than that of thatched roof, mud floor and wall with wooden planks spread over mud floor and covered with matting. Huts shall be provided with suitable and sufficient openings, for light and ventilation. There shall be adequate provision of sweepers to keep the places clean. There shall be two maid-servants in attendance. Sanitary utensils shall be provided to the satisfaction of local medical, health and municipal or cantonment authorities. Use of huts shall be restricted to children, their attendants and mothers of children.

Where the number of women workers is more than 25 but less than 50, the Contractor shall provide at least one hut and one maid-servant to look after children of women workers.

Size of crèche(s) shall vary according to the number of women workers employed.

Creche(s) shall be properly maintained and necessary equipment like toys, etc., provided.

8. Canteen:

A cooked food canteen on a moderate scale shall be provided for the benefit of workers wherever it is considered necessary.

(xiii) Planning, setting and erection of the above mentioned structures shall be approved by the Engineer or his representative and the whole of such temporary accommodation shall at all times during the progress of the work be kept tidy and in a clean and sanitary condition to the satisfaction of the Engineer or his representative and at the Contractor's expense. The Contractor shall conform generally to sanitary requirements of local medical, health and municipal or cantonment authorities and at all times adopt such precautions as may be necessary to prevent soil pollution of the site. On completion of the Works, the whole of such temporary structures shall be cleared away, all rubbish burnt, excreta or other disposal pits or trenches filled in and effectively sealed off and the whole of site left clean and tidy at the contractor's expense to the entire satisfaction of the Engineer.

(xiv) Anti-malarial precautions:

The Contractor shall, at his own expense, conform to all anti-malarial instructions given to him by the Engineer, including filling up any borrow pits which may have been dug by him.

(xv) Enforcement:

Inspecting Officer mentioned in the Contractor's Labour Regulations or any other Officer nominated on his behalf by the Engineer shall report to the Engineer all cases of failure on the part of the Contractor and/or his sub-contractor to comply with the provisions of these Rules either wholly or in part and the Engineer shall impose such fines and other penalties as are prescribed in the conditions of contract.

(xvi) Interpretations, etc.:

On any question as to the application, interpretation or effect of these Rules, the decision of the Chief Labour Commissioner or Deputy Chief Labour Commissioner (Central) shall be final and binding.

(xvii) Amendments:

The Employer may, from time to time, add to, or amend these Rules and issue such directions as it may be considered necessary for the proper implementation of these Rules or for the purpose of removing any difficulty which may arise in the administration thereof.

Extracts of Contract Labour (Regulation and Abolition) Act 1970

ANNEXURE - A – 1

(Reference sub-clause 34.2 and 35.1)

CONTRACTOR'S LABOUR REGULATIONS

Regulation 1 - Definition

In these regulations, unless otherwise expressed or indicated, the following words and expression shall have the meaning hereby assigned to them:

- a) "Labour" mean workers employed by a contractor directly, or indirectly, through a sub-contractor, or by an agent on his behalf on a payment not exceeding Rs. 1.600/- per month.
- b) "Wages" means wages, which shall include wages for weekly day of rest and other allowance, whether for time or piece work, after taking into consideration prevailing market rates for similar employments in the neighbourhood but shall not be less than the minimum rates of wages fixed under the Payment of minimum Wages Act.
- c) "Contractor" for the purpose of these regulations shall include an agent or sub-contractor employing labour on the work taken on contract.
- d) "Inspecting Officer" means any Labour Enforcement Officer, or Assistant Labour Commissioner of the chief labour Commissioner's Organization.
- e) "Form" means a form appended to these Regulations.

Regulation 2 - Notice of Commencement

The Contractor shall within SEVEN days of commencement of the Work, furnish in writing to the Inspecting Officer of the area concerned the following information:

- a) Name and situation of the work
- b) Contractor's name and address
- c) Particular of the Department for which the work is undertaken
- d) Name and address of sub-contractors as and when they are appointed
- e) Commencement and probable duration of the work
- f) Number of workers employed and likely to be employed
- g) Fair wages for different categories of workers

Regulations 3 - Hours of Work and Weekly Day of Rest

- I. **Number of hours of work which shall constitute normal working day:** The number of hours which shall constitute a normal working day for an adult shall be NINE hours. The working day of an adult worker shall be so arranged that, inclusive of intervals, if any, for rest, it shall not spread over more than Twelve hours on a day. When an adult worker is made to work for more than nine hours on any day or for more than FORTY EIGHT hours

in a week, he shall in respect of overtime work, be paid wages at double the ordinary rate of wages.

- II. Weekly day of Rest:** Every worker shall be given a weekly day of rest which shall be fixed and notified at least TEN days in advance. A worker shall not be required or allowed to work on the weekly rest day unless he has or will have a substituted rest day, one of the five days immediately before or after the rest day. Provided no substitution shall be made which will result in the worker working for more than ten days consecutively without a rest day for a whole day.

Where in accordance with the foregoing provisions, a worker works on the rest day and has been given a substituted rest day, he shall be paid wages for the work done on the weekly rest day at the overtime rate of wages.

NOTE: The expression “ordinary rate of wages” means the fair wage the worker is entitled to.

Regulations 4 - Display of Notice Regarding wages, Weekly day of Rest, etc.,

The Contractor shall before he commences his work on contract, display and correctly maintain and continue to display and correctly maintain in a clean and legible condition in conspicuous places on the works, notice in English and in the local language spoken by majority of workers, giving the rate of fair wages, the hours of work for which such wages are payable, the weekly rest days workers are entitled to and name and address of the Inspecting Officer. The Contractor shall send a copy of each of such notice to the Inspecting Officer.

Regulation 5 - Fixation of Wage periods

The Contractor shall fix wage periods in respects of which wages shall be payable. No wage period shall normally exceed one week.

Regulation 6 - Payment of wages

1. Wages due to every worker shall be paid to him direct. All wages should be paid in current coins or currency or in both.
2. Wages of every worker employed on the Contract shall be paid where the wage period is one week, within THREE days from the end of the wage period; and in any other case before the expiry of the 7th day or 10th day from the end of the wage period according as the number of workers does not exceed 1,000 or exceeds 1,000.
3. When employment of any worker is terminated by or on behalf of the Contractor, the wages earned by him shall be paid before expiry of the day succeeding the one on which his employment is terminated.
4. Payment of wages shall be made at the Work Site on a working day except when the work is completed before expiry of the wage period in which case final payment shall be made at the Work Site within 48 hours of the last working day and during normal time.

Note: The term “Working Day” means a day on which the work on which the labour is employed is in progress.

Regulation 7 - Register of Workmen

A register of workmen shall be maintained in the Form appended to the regulations and kept at the work site or as near to it as possible and relevant particulars of every workman shall be entered therein within THREE days of his employment.

Regulation 8 - Employment Card

The Contractor shall issue an Employment card in the Form appended to these regulations to each worker on the day of work or entry into his employment. If a worker already has any such card with him issued by the previous employer, the Contractor shall merely endorse that Employment Card with relevant entries. On termination of employment, the Employment Card shall again be endorsed by the Contractor and returned to the worker.

Regulation 9 - Register of Wages etc.

1. A Register of Wages cum Muster Roll in the Form appended to these regulations shall be maintained and kept at the Work Site or as near to it as possible.
2. A wage slip in the form appended to these regulations shall be issued to every worker employed by the Contractor at least a day prior to disbursement of wages.

Regulation 10 - Fines and Deductions which may be made from Wages

1. Wages of a worker shall be paid to him without any deductions of any kind except the following:
 - a) Fines
 - b) Deductions for absence from duty ; i.e. from the place of his employment where he is required to work. The amount of deduction shall be in proportion to the period for which he was absent;
 - c) Deduction for damage to or loss of goods expressly entrusted to the employed person for custody, or for loss of money which is required to be accounted for, where such damage or loss is directly attributable to his neglect or default.
 - d) Deductions for recovery of advances or for adjustment of overpayment of wages, advance granted being entered in a register; and
 - e) Any other deductions which the Employer may from time to time allows.
2. No fines shall be imposed on any worker save in respect of such acts and omissions on his part as have been approved by the Chief Labour commissioner.
3. No fine shall be imposed on a worker and no deductions for damage or loss shall be made from his wages until the worker has been given an opportunity of showing cause against such fines or deductions.
4. The total amount of fines which may be imposed in any one wage period of a worker shall not exceed an amount equal to 0.3% of the wages payable to him in respect of that wage period.
5. No fine imposed on a worker shall be recovered from him on instalments, or after expiry of sixty days from the date on which it was imposed. Every fine shall be deemed to have been imposed on the day of the act or omission in respect of which it was imposed.

6. The Contractor shall maintain both in English and the local language a list, approved by the Chief Labour Commissioner, clearly stating the acts and omissions for which penalty or fine may be imposed on a workman and display it in good condition in a conspicuous place on the Work Site.
7. The Contractor shall maintain a register of fines and the register of deductions for damage or loss in the forms appended to these regulations which should be kept at the place of work.

Regulation 11 - Register of Accidents

The Contractor shall maintain a register of accidents in such form as may be convenient at the work place but the same shall include the following particulars:

- a) Full particulars of the labourers who met with accident.
- b) Rate of wages
- c) Sex
- d) Age
- e) Nature of accident and cause of accident
- f) Time and date of accident
- g) Date of Time when admitted to hospital
- h) Date of discharge from the hospital
- i) Percentage of loss of earning capacity and disability as assessed by the medical Officer.
- j) Claim required to be paid under Workmen's Compensation Act.
- k) Date of payment of compensation.
- l) Amount paid with details of the person to whom the same was paid
- m) Authority by whom the compensation was assessed
- n) Remarks

Regulation 12 - Preservation of Register

The Register of workmen and the Register of wages cum Muster Roll required to be maintained under these Regulations shall be preserved for 3 years after the date on which the last entry is made therein.

Regulation 13 – Enforcement

The Inspecting Officer shall either on his own motion or on a complaint received by him carry out investigations and send a report to the Engineer specifying the amounts representing Workers Dues and amount of penalty to be imposed on the Contractor for breach of these regulations, that have to be recovered from the Contractor, indicating full details of the recoveries proposed and the reason therefore. It shall be obligatory on the part of the Engineer on receipt of such a report to deduct such amounts from payments due to the Contractor.

Regulation 14 - Disposal of Amounts Recovered from the Contractor

The Engineer shall arrange payment to workers concerned within FORTY FIVE days of receipt of a report from the Inspecting Officer except in cases where the Contractor had made an appeal under Regulation 16 of these regulations. In cases where there is an appeal,

payment of workers dues would be arranged by the Engineer wherever such payment arise, within THIRTY days from the date of receipt of the decision of the Regional Labour Commissioner (RLC).

Regulation 15 - Welfare Fund

All moneys that are recovered by the Engineer by way of worker's dues which could not be disbursed to workers within the time limit prescribed above, due to reasons such as whereabouts of workers not being known, death of workers, etc., and also amounts recovered as penalty, shall be credited to a Fund to be kept under the custody of the Employer for such benefit and welfare of workmen employed by Contractors as the Engineer may deem fit.

Regulation 16 - Appeal against decision of Inspecting Officer

Any person aggrieved by a decision of the Inspecting Officer may appeal, against such decision of the Regional Labour Commissioner concerned with THIRTY days from the date of the decision forwarding simultaneously a copy of this appeal of the Engineer.

The decision of the Regional Labour Commissioner shall be final and binding upon the Contractor and the Workmen.

Regulation 17 - Representation of Parties

1. Workmen shall be entitled to be represented in any investigation of enquiry under these Regulations by an officer of a registered trade union of which he is a member or by an officer of a Federation of Trade Unions to which the said trade union is affiliated or where the workman is not a member of any registered trade union by an officer of a registered trade union, connected with, or by any other workmen employed in the industry in which the worker is employed.
2. A contractor shall be entitled to be represented in any investigation or enquiry under these Regulations by an officer of an association of Contractors of which he is a member or by an officer of a Federation of associations of Contractors to which the said association is affiliated or by an officer of association of employees connected with or by any other employer engaged in the industry in which the Contractor is engaged.
3. No party shall be entitled to be represented by a legal practitioner in any investigation or enquiry under these Regulations.

Regulation 18 - Inspecting of Books and Other Documents

The Contractor shall allow inspection of the Registers and other documents prescribed under these Regulations by Inspecting Officers and the Engineer or his authorized representative at any time and by the worker or his agent on receipt of due notice at a convenient time.

Regulation 19 - Interpretation etc.:

On any question as to the application, interpretation or effect of these regulations, the decision of the Chief Labour Commissioner or Deputy Chief Labour Commissioner (Central) as the case may be, shall be final and binding.

Regulation 20 – Amendments:

The Employer may, from time to time, add to or amend these Regulations and issue such directions as it may consider necessary for the purpose of removing any difficulty which may arise in the demonstration thereof.

**REGISTRATION OF WORKMEN
SHEET NO. A-11
SECTION IV
(Regulation 7)**

1. Name and address of the Contractor _____
2. Number and date of Contract _____
3. Name and address of the Department awarding the Contract _____
4. Nature of the Contract and location of the work _____
5. Duration of the Contract _____

[illegible]

SECTION IV
SHEET NO. A-14
A – 13

EMPLOYMENT CARD

(Regulation 8)

1. Name and Sex of the Worker _____
2. Father's / Husband's Name _____
3. Address _____
4. Age or Date of Birth _____
5. Identification marks _____

Particulars of next kin (wife/husband and children, if any, or of dependent next of kin in case the worker has no wife/husband or child).

Name _____

Full address of Dependents

(Specify Village, Dist and State _____)

Sl. No.	Name and address of Employer (specify whether a contractor or subcontractor)	Particulars of work site and description of work done	Total period for which the worker is employed (from -- -- to -- --)	Actual number of days worked	Leave taken (No. Of days should be specified)	Nature of work done by the worker	Wage period	Wage rate with particulars of unit in case of piece	Total wages earned by the worker the period shown under	Remarks	Signature of the employer

N.B. For a worker employed at one time on piece work basis and at another on daily wages, relevant extra in respect of each type of employment should be made separately.

WAGE SLIP
(Regulation 9)
SHEET NO. A-9

Name of Contractor

Place

1.	Name of the Worker with father/husband's name	
2.	Nature of Employment	
3.	Wage Period	
4.	Rate of Wages Payable	
5.	Total attendance/Unit of work done	
6.	Date(s) on which overtime worked	
7.	Overtime Wages	
8.	Gross Wages Payable	
9.	Total Deductions (including nature of deductions)	
10.	Net Wages Payable	

Signature/Thumb Impression
of Contractor

Signature/Thumb Impression
of employee

REGISTER OF FINES

(Regulation No. 10 (vii))

Sl. No	Name	Father's/ Husband's name	Sex	Depart ment	Nature and date of the offense for which fine imposed	Whether workman showed cause against fine or not, if so enter date	Rate of wages	Date & amount of fine impose d	Date on which fine realized	Remark s
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Annexure: B

**LIST OF ORGANIZATIONS WHO ARE CONSIDERED AS APPOINTING
AUTHORITY FOR APPOINTMENT OF ARBITRATORS**

-Deleted -

Annexure C

**SUB: THE KARNATAKA MINOR MINERALS CONCESSION (AMENDMENT)
RULES, 2003.**

**COMMERCE AND INDUSTRIAL SECRETARIAT
NOTIFICATION NO. CI 81, MMN 2014, BANGALORE, DATED: 18th February, 2014**

SCHEDULE – I
(See Sub. Rule (1) of Rule 36)

“DEAD RENT”

SL. No.	Name of the Minor Mineral	Rate per Unit/quantity
1.	ORNAMENTAL AND DECORATIVE BUILDING STONES- as defined under clause (m) of rule 2.	37500
2	Felsite and its varieties suitable for use as Ornamental Stores.	37500
3	Quartzite and Sand stone and their varieties suitable for use as Ornamental Stones.	37500
4	Marble or crystalline lime stone as Ornamental Stone	37500
5	Bentonite	27500
6	Fullers Earth	27500
7	Lime Stone under title “ Shahabab stone”	16500
8	Lime Stone (Non Cement)	16500
9.	Ordinary building stones – Entire state As defined under clause (g) of rule 2	
a	Bangalore, Kolar, Mysore, Mandya and Tumkur	18750
b	Other Districts	11000
10.	Lime Shell	16500
11.	Lime Kankar.	16500
12.	Agate and Chalcedony.	16500
13.	Ordinary sand	11000
14	Brick and Tile clays	5500
15	Steatite and sand stone used for making household utensils/articles – Entire state	11000
16	Sand stone used for making house hold articles	11000
17	Murram.	4000
18	All other minor minerals – Entire state	5500

SCHEDULE – II
(See Sub. Rule (1) of Rule 36)

ROYALTY

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SCHEDULE II
(See sub-rule(1) of Rule 36)

Sl. No.	Name of the Mineral	Present Rate of Royalty	Royalty to be revised	
			Export	Domestic
1	Ornamental and Decorative Building Stones as defined under clause(m) of Rule 2			
	A) Dyke Rock			
	(i) Black granites: (a) Chamara Janagar District:	15% of Sale Value or of Average Selling Price on advalorem basis or Rs.4,500 per m3 which is higher.	Rs.1,200 per MT	Rs.600 per MT
	(b) All other Districts other than (a) above	15% of Sale Value or of Average Selling Price on advalorem basis or Rs.1,500 per m3 which is higher.	Rs.1700 per MT	Rs.400 per MT
	(ii) Other varieties of dyke other than black granites (Entire State)	15% of Sale Value or of Average Selling Price on advalorem basis or Rs.1,500 per m3 which is higher.	Rs.500 per MT	Rs.375 per MT
	(B) (i) Pink and Red Granites (Ilkal Pink Variety)			
	(i) Hungunda and Badami Taluk of Bagalkot District, Kustagi of Koppal District.	15% of Sale Value or of Average Selling Price on advalorem basis or Rs.1,200 per m3 which is higher.	Rs.1,000 per MT	Rs.400 per MT
	(ii) Pink and Red granites, Gneissess and their structural Varieties (Other than Ilkal Pink Variety)	15% of Sale Value or of Average Selling Price on advalorem basis or Rs.1,800 per m3 which is higher	Rs.600 per MT	Rs.350 per MT

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	(C) Grey and White Granites and their varieties: (i) Very fine grained Grey granite (Sira grey Variety) Chintanmani, Siddlaghatta of Chikballapura District Hoskote of Bangalore District. (ii) Grey and white granites and their textural varieties having shades of grey, black and white colours (Other than (i) above) Entire State. (iii) Grey Granite of Devanahalli Taluk of Bangalore Rural District and Chikballapur taluk of Chikballapur District.	15% of Sale Value or of Average Selling Price on advalorem basis or Rs.1,350 per m3 which is higher. 15% of Sale Value or of Average Selling Price on advalorem basis or Rs.1,050 per m3 which is higher. 15% of Sale Value or of Average Selling Price on advalorem basis or Rs.600 per m3 which is higher	Rs.500 per MT Rs.375 per MT Rs.300 per MT	Rs.350 per MT Rs.250 per MT Rs.200 per MT
2	Felsite and its varieties suitable for use as Ornamental Stone-Entire State	15% of Sale Value or of Average Selling Price on advalorem basis or Rs.1,800 per m3 which is higher	Rs.900 per MT	
3	Quartzite and sand stone and their varieties suitable for use as Ornamental Stones-Entire State.	15% of Sale Value or of Average Selling Price on advalorem basis or Rs.1,800 per m3 which is higher	Rs.900 per MT	
4	Marable and Crystalline Limestone as ornamental stone-Entire State.	15% of Sale Value or of Average Selling Price on advalorem basis or Rs.1,800 per m3 which is higher	Rs.1000 per MT	
5	Bentonite-Entire State	Rs.400 per MT	Rs.500 per MT	
6	Fuller Earth-Entire State	Rs.125 per MT	Rs.125 per MT	
7	Buff colour (waste) the permits not exceed 20% of permit issued for Fullers Earth	Rs.60 per MT	Rs.70 per MT	
8	Limestone under the title "Shahabad Stone"	Rs.70 per 10 Sq meters or Rs.70 per MT	Rs.50 per 10 Sq meters or Rs.50 per MT	
9	Limestone(non-cement)when used for building stone-Entire State	Rs.25 per MT	Rs.60 per MT	
10	Ordinary Building Stone(Entire State as defined under clause(g) of Rule 2(1)	Rs.60 per MT	Rs.70 per MT	
11	Lime shell-Entire State	100 Per MT	120 Per MT	
12	Lime Kankar (non cement) Entire State	50 per MT	80 per MT	
13	Agate, Chalcedony, Flint-Entire State	240 per MT	300 per MT	

14	Ordinary Sand-Entire State	60 Per MT	80 Per MT
15	Steatite and sandstone used for making household utensils/articles-Entire State.	40 per MT	80 per MT
16	(i)Murrum(All types of soils)-Entire State	20 per MT	40 per MT
	(ii)Clay used for manufacturing tiles and bricks	40 per MT	60 per MT
17	Waste rocks generated in ornamental stone quarry-which is suitable for ornamental purpose Entire State(See explanation under Rule 36)	300 per MT or 850 CUM	300 per MT
18	Irregular shaped waste rock generated in Ornamental stone quarry, which is not suitable for ornamental purpose (used for making aggregates and m-sand) Entire State.	60 per MT	40 per MT
19	Waste rocks generated in Shahabad stone quarry-Entire State (See explanation under Rule-36)	60 per MT	40 per MT
20	Finished Kerb stones/cubes not exceeding 30cms each face-Entire State.	110per MT	150 per MT
21	Barytes (i) A Grade (Grey colour) (ii) B Grade (Grey colour) (iii) C, D Grade & Waste	6.5% of average selling price or of sale value whichever is higher on ad-valorem basis	400 per MT 300 per MT 200 per MT
22	Calcite	15% of average selling price or of sale value whichever is higher on ad-valorem basis	80 per MT
23	China clay and Kaolin(including Ball clay, White shell, Fire clay and white clay) i)Crude/Raw ii)Processed	8% of average selling price or of sale value whichever is higher on ad-valorem basis. 12% of average selling price or of sale value whichever is higher on ad-valorem basis	80 Per MT 600 per MT
24	Corundum	12% of average selling price or of sale value whichever is higher on ad-valorem basis	15% of Sale Value or of Average Selling Price on advalorem basis which is higher.
25	Dolomite	Rs.75 per MT	100 per MT
26	Dunite and Pyroxenite	Rs.30 per MT	60 per MT

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02

27	Felsite (Other than for ornamental purpose)	12% of average selling price or of sale value whichever is higher on ad-valorem basis	120 per MT
28	Gypsum	20% of average selling price or of sale value whichever is higher on ad-valorem basis	150 per MT
29	Jasper	12% of average selling price or of sale value whichever is higher on ad-valorem basis	150 per MT
30	Quartz, feldspar	15% of average selling price or of sale value whichever is higher on ad-valorem basis	100 per MT
31	Mica i)Crude ii)Waste	4% of average selling price or of sale value whichever is higher on ad-valorem basis	1500 per MT 500 per MT
32	Quartzite& Fuchsite Quartzite not suitable for use as Ornamental/Gem Stones	12% of average selling price or of sale value whichever is higher on ad-valorem basis	100 per MT
33	Laterite i)/dispatched for use in cement or chemical industries or Abrasive or Refractory purpose (below threshold value as specified by IBM from time to time) ii) for use as building stone (below threshold value as specified by IBM)	Rs.60 per MT	160 per MT 60 per MT
34	Ochre	Rs.24 per MT	60 per MT
35	Pyrophyllite	20% of average selling price or of sale value whichever is higher on ad-valorem basis	200 per MT
36	Shale	Rs.60 per MT	150 per MT
37	Slate	Rs.45 per MT	150 per MT
38	Silica Sand	10% of average selling price or of sale value whichever is higher on ad-valorem basis	100 per MT
39	Steatite or Soapstone (Other than for household articles)	18% of average selling price or of sale value whichever is higher on ad-valorem basis	200 per MT
	Talc	--	200 per MT
40	All other minerals (which is not specified in schedule-II) Entire State	30% of Sale Value on advalorem basis	30% of Sale Value or of Average Selling Price on advalorem basis which is higher.

26. Amendment of Form.- For Form- AP and Form - MDP of the said rules, the following shall be substituted, namely:-

ಕರ್ನಾಟಕ ಸರ್ಕಾರ

ಸಂಖ್ಯೆ:ಗಭೂಇ/ಡಿಪಿಬಿ/2020-21

ನಿರ್ದೇಶಕರ ಕಛೇರಿ,

ಗಣಿ ಮತ್ತು ಭೂವಿಜ್ಞಾನ ಇಲಾಖೆ,

ನಂ.49, ಖನಿಜ ಭವನ, ರೇಸ್ ಕೋರ್ಸ್ ರಸ್ತೆ,

ಬೆಂಗಳೂರು-560001. ದಿನಾಂಕ:03.07.2020

e-mail: dcbdmg@gmail.com

ಸುತ್ತೋಲೆ

ವಿಷಯ: ಕರ್ನಾಟಕ ಉಪ ಖನಿಜ ರಿಯಾಯಿತಿ ತಿದ್ದುಪಡಿ ನಿಯಮಾವಳಿಗಳು

2020ರನ್ವಯ ದಿನಾಂಕ: 30.06.2020 ರಿಂದ ಜಾರಿಗೆ ಬರುವಂತೆ ಉಪ

ಖನಿಜಗಳ ರಾಜಧನ ದರಗಳನ್ನು ಪರಿಷ್ಕರಿಸಿರುವ ಕುರಿತು.

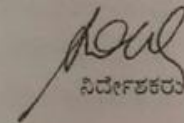
ಉಲ್ಲೇಖ: ಸರ್ಕಾರದ ಅಧಿಸೂಚನೆ ಸಂಖ್ಯೆ: ಸಿಐ 115 ಎಂಎಂಎನ್ 2019

ದಿನಾಂಕ:30.06.2020.

ಮೇಲ್ಕಂಡ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ, ಉಲ್ಲೇಖಿತ ಸರ್ಕಾರದ ಅಧಿಸೂಚನೆ ಪತ್ರದಲ್ಲಿ, ದಿನಾಂಕ: 30.06.2020 ರಿಂದ ಜಾರಿಗೆ ಬರುವಂತೆ ಕರ್ನಾಟಕ ಉಪ ಖನಿಜ ರಿಯಾಯಿತಿ ತಿದ್ದುಪಡಿ ನಿಯಮಾವಳಿಗಳು 2020ರನ್ವಯ ಉಪ ಖನಿಜಗಳ ಮೇಲೆ ರಾಜಧನ ದರಗಳನ್ನು ಪರಿಷ್ಕರಿಸಲಾಗಿದೆ. ವಿವರಗಳು ಕೆಳಕಂಡಂತಿರುತ್ತದೆ.

ಕ್ರ. ಸಂ.	ಉಪ ಖನಿಜ	ರಾಜಧನ ಪ್ರತಿ ಮೆಟ್ರಿಕ್ ಟನ್ ಗೆ	ಪರಿವರ್ತನ ಕೋಷ್ಟಕ ಕ್ಯೂಬಿಕ್ ಮೀಟರ್ ಗೆ	ರಾಜಧನ ಪ್ರತಿ ಕ್ಯೂಬಿಕ್ ಮೀಟರ್ ಗೆ
1	ಕಟ್ಟಡ ಕಲ್ಲು Size Stone	ರೂ.70	1 ಕ್ಯೂಬಿಕ್ ಮೀಟರ್ ಗೆ=2.63 ಟನ್	ರೂ.184
2	ಬ್ಯಾಟರ್‌ಸ್ಟೋನ್	ರೂ.60	1 ಕ್ಯೂಬಿಕ್ ಮೀಟರ್ ಗೆ=1.80 ಟನ್	ರೂ.108
3	ಜಲ್ಲಿ/ಮೆಟರ್ ಖಲ್ಲಾ ವಿಧವಾದ (ಪುಡಿ ಗ್ರಾನೈಟ್/ ಕ್ವಾರ್ಟೈಟ್)	ರೂ.70	1 ಕ್ಯೂಬಿಕ್ ಮೀಟರ್ ಗೆ=1.80 ಟನ್	ರೂ.126 ✓
4	ಮರಳು	ರೂ.80	1 ಕ್ಯೂಬಿಕ್ ಮೀಟರ್ ಗೆ=1.72 ಟನ್	ರೂ.138 ✓
5	ಗ್ರಾವೆಲ್(ಮುರು)	ರೂ.40	1 ಕ್ಯೂಬಿಕ್ ಮೀಟರ್ ಗೆ=1.50 ಟನ್	ರೂ.60
6	ಮಣ್ಣು(ಖಲ್ಲಾ ತರಹದ ಮಣ್ಣು ಮತ್ತು ಇಟ್ಟಿಗೆ ತಯಾರಿಕೆಗಾಗಿ)	ರೂ.60	1 ಕ್ಯೂಬಿಕ್ ಮೀಟರ್ ಗೆ=1.50 ಟನ್	ರೂ.90

ಸದರಿ ತಿದ್ದುಪಡಿ ಅಧಿಸೂಚನೆ ಪ್ರತಿಯನ್ನು ಮಾಹಿತಿಗಾಗಿ ಈ ಪತ್ರದೊಂದಿಗೆ ಲಗತ್ತಿಸಿದೆ.


ನಿರ್ದೇಶಕರು

Annexure D

Sl. No.	Items	Stages of Inspection
1	Pumps	<ol style="list-style-type: none"> 1. Review of material test certificate for pump casing, bowls, shaft, impeller bearings, columns pipe etc., 2. Review of heat treatment certificate if any 3. Dynamic balancing or rotating parts/impeller. 4. Examination of the shaft 5. Hydro test of casing 6. Performance test at 49 Hz frequency including vibrating measurement covering following test. <ol style="list-style-type: none"> i) Capacity in LPM/LPS ii) Delivery Head in mtrs. iii) Efficiency at the specified duty iv) Power absorbed by the pump at the specified duty v) N.P.S.H required vi) Maximum power required by the pump vii) Shut off Head of the pump viii) Discharge of the pump when only on pump is operated in the system ix) Delivery pressure when only on pump is operated in the system x) Power absorbed by the pump when only one pump is operated in the system xi) Efficiency of the pump when only one pump is operated in the system xii) Visual and dimensional check xiii) Strip test xiv) Speed test at 49 Hz and 50 Hz frequency.
2	MOTORS	<ol style="list-style-type: none"> 1. Dynamic balancing of rotor and visual examination of rotor assembly. 2. Visual inspection and testing of starter assembly. 3. Review of Test Certificate for conductor, Starter coils, shaft Bearings etc., 4. Routine tests no load x load test vibration measurement as per IS 5. Verification of type test report 6. Visual and dimensional check.
3	Switch gear and Electrical Panels	<ol style="list-style-type: none"> 1. Visual and dimensional check 2. Verification of bill of materials 3. Functional Test 4. HV/IR Test 5. Verification of type test reports 6. Voltage ratio, burden class, induced high voltage, applied high voltage test for potential transformers 7. Current ratio, burden, class of accuracy, test for current transformers 8. Rate symmetrical breaking capacity, rated making capacity, rated short time current, auxiliary voltage for release coils, impulse with standard voltage test for Switch Gear panels. 9. Test results of Relay provided.
4	Capacitor	All routine and type test as per IS:2834 such as sealing test, test for output/capacitance, Insulation resistance test between terminals. Containers and loss angle measurements, test for efficiency of discharge divide, test for dielectric loss angle, thermal stability test, self-healing test, voltage test between terminals.
5	Cables	<ol style="list-style-type: none"> 1. Visual Inspection and Dimensional check 2. Routine test as per IS: 1554 3. Insulation test, resistance test, current rating test, star

		reactance test, star capacitance test, short circuit current test, voltage drop test.
6	Valves	<ol style="list-style-type: none"> 1. Visual and dimension check. 2. Review of material test certificate for valve body and internals. 3. Operational smoothness. 4. Hydraulic test/Leakage test as per applicable codes. 5. Any other direction given by the Board to the inspecting agency to carry out the third arty inspection.
7	Instruments & automation	As per approved QAP
8	Pipes	<ol style="list-style-type: none"> 1. visual and dimensional check 2. Review of chemical and physical test certificates as per the relevant Indian standard specifications 3. Hydrostatic pressure test as per the relevant Indian Standard specifications. 4. Hydraulic proof testing Standards factory 5. Ultrasonic testing of welded joints for MS pipes 6. Checking the integrity of epoxy lining for MS pipes at joints after laying and jointing pipes.
9	Dismantling Joints	<ol style="list-style-type: none"> 1. All bodies, compression flanges 2. Fasteners 3. Sealing Gaskets 4. Bodies 5. All Components As per relevant IS/BIS standard or as per approved QAP.

Note: The successful Tenderer shall submit the Designs, QAPs, Drawings, Technical Data Sheets of the PROCESS AND ALL ALLIED EQUIPMENT and obtain approval from competent authority BEFORE TAKING UP THE WORK.

ANNEXURE –E

PROCEEDINGS OF THE GOVERNMENT OF KARNATAKA

Subject: Procurement Reforms- Measurement of Works and Supplies- Use of Measurement Books.

* * *

Preamble:

1. Paragraphs 208 & 209 of the Karnataka Public Works (KPW) Accounts Code Volume I, Paragraphs 300 & 301 of the Karnataka Public Works Departmental (KPWD) Code Volume I and Appendix VII of the KPWD Code Volume II detail the instructions regarding issue of measurement books, recording of measurements and storage of measurement books. The salient instructions are:
 - (i) Payments for all work done otherwise than by daily labour and for all supplies, are made on the basis of measurements recorded in measurement books. Form PWG-27 in accordance with the rules in paragraph 209;
 - (ii) The measurement should be considered as a very important initial account record since it is the basis of all accounts of quantities of work done, whether by daily labour or by piece work or by contract and of materials received which have to be counted or measured;
 - (iii) All measurements should be neatly taken down in the measurement book issued for the purpose and nowhere else;
 - (iv) The entries should be recorded in the measurement book at the work spot indelibly in ink so as to render it difficult to tamper with or to make unauthorized additions or alterations in entries once made;
 - (v) As all payments for works or supplies are based on the quantities recorded in the measurement books, it is incumbent upon the person taking the measurement to record the measurements clearly and accurately. He will also work out and enter in the measurement book the figures for the contents or area column;
 - (vi) Measurements for all works and repairs should in the first instance be taken by subordinates in charge and checked by Sub-Divisional Officers and Divisional Officers. (Assistant Executive Engineer (AEE) is to check 75% in case of works costing Rs.5000 or more and 50% in case of other works and repairs, At least 50% of the works are to be checked. Executive Engineer (EE) is to check 25% of items);
 - (vii) All final measurements irrespective of value to be recorded by Assistant Engineer (AE) and AEE should check-measure 100% for all works estimated to cost Rs.5000 and more if it is a departmental work and **Rs.25,000** and more if it is a contract work. EE should check 25% of the total value of work done if the works cost more than Rs.25,000;
 - (viii) No erasures of any kind should be permitted; mistakes should be corrected by drawing the pen through the incorrect entry, and inserting the correct figures or words between the lines. A reliable record is the object to be aimed at, as the measurement book may have to be produced as evidence in a court of law;
 - (ix) Apart from measurements, the description of the item as per tender has to be written in the hand of the AE.
2. Paragraph 5 of Appendix IV-A of the KPWD Code Volume II- Rules for Registration of Contractors in PWD, lays down that Class I and II Contractors should engage at least one Engineering Graduate for every work costing Rs.15 lakhs and

above and Class III Contractor should engage one Engineering Graduate for every work costing Rs.10 to 15 lakhs and at least one Diploma Holder on every work or group of works together costing more than Rs.2 lakhs but less than Rs.10 lakhs.

3. Clauses 7(a) and 7(b) of PWG-65 Form, the approved tender document for works, state:

- (i) A bill shall be submitted by the Contractor on or before the 15th of each month for all items of work executed in the previous month;
- (ii) The details furnished by the Contractor in the bill should be measured by the subordinate in the presence of the Contractor or his duly authorized agent. The countersignature of the Contractor or the said agent in the measurement book shall be sufficient proof to the correctness of the measurements, which shall be binding on the Contractor in all respects;
- (iii) If the Contractor does not submit the bills within the prescribed time, the EE may depute within seven days of the prescribed date, a sub-ordinate to measure up the said work. The countersignature of the Contractor shall be obtained in the measurement book concerned with reference to which, the Department may prepare the bill.

4. It is observed that the measurement books are not being used in most of the Government Departments, Public Sector Undertakings, Boards, Societies and Local Bodies for recording the receipt of goods and equipment and payments of invoices are being made on the basis of verification of receipt of materials. However, most of the Government Departments, Public Sector Undertakings, Boards, Societies and Local bodies are using the measurement books for recording the measurements as per provisions of KPWD Code. However, the compliance to the provisions of the Manual is resulting in lot of clerical work by the technical officers whose primary duty is supervision of work in the field. Also there are no consistent practices followed by various procurement entities of the State.

5. The Sub-Committee constituted under the Chairmanship of Secretary, Public Works Department by Government in GO No.PWD 122 SO/FC 2003 dated 8.5.2003 to look into certain technical issues like measurement books, from the Procurement Reforms Action Plan on the recommendations of the Country Procurement Assessment Report (CPAR) and make recommendations to the Standing Committee, has examined the issue, felt that the present provisions in the Codes and manuals regarding measurement of works and supplies are archaic, time and effort consuming, do not use the currently available information Technology and has made recommendations for improvement of the system. The Working Group constituted in G.O. No.PWD 1359 SO/FC 2001 dated 14.8.2002 for implementation of the said Action Plan reviewed and endorsed the recommendations of Sub-Committee. The Standing Committee constituted in GO No. PWD 1359 SO/FC 2001 dated 5.8.2002 for implementation of the said Action Plan on the recommendations of CPAR, examined the recommendations of the Sub-Committee in detail.

GOVERNMENT ORDER No. FD 56 Pro. Cell 2004, Bangalore, 18th January 2005

6. Based on the recommendations of the Standing Committee this order is issued for recording of measurement of Works and Supplies. This order shall supersede the current instructions contained in the Codes and Manuals.

- (a) A uniform procedure for recording of measurements for works and supplies should be enforced in all the Organizations coming under the purview of the Karnataka Transparency in Public Procurements Act 1999.
- (b) The current provisions of the KPW Accounts and Departmental Codes shall continue to be applicable for all Works Contracts of value Rs.25 lakhs and less;
- (c) In respect of Works Contracts of value more than Rs.25 lakhs, the Contractors shall be made responsible for submitting bills duly supported by hard copy of detailed measurements of work using electronic spreadsheets and making computations thereof. The Contractor shall submit diskette or CD ROM in addition to the hard copy;
- (d) The Assistant Engineer in direct charge of the work shall take independent measurements of the work and enter the same in the electronic spreadsheets and make computations thereof. The Assistant Engineer can make use of the detailed measurements as given by the Contractor in the diskette or CD ROM. In any case the responsibility for the correctness of the measurements shall be entirely of the Assistant Engineer, as prescribed in the Codes and Manuals;
- (e) The measurements would be checked by the officers from the hard copy of the spreadsheet as per present stipulations and computations would be made accordingly;
- (f) The countersignature of the Contractor or his authorized Agent shall be obtained on each page in the hard copy of the detailed measurement spreadsheets prepared by the Assistant Engineer, which shall be binding on the Contractor in all respects;
- (g) The hard copies of the detailed measurement spreadsheets shall be bound, numbered and stores, which shall be considered as the measurement books, as referred to in the Manuals and Codes. An index shall be prepared for each Contract or Work, which shall show the details of the bills, reference to measurement books and vouchers. Similarly, the diskettes or CD ROMs shall be indexed and stored.
- (h) In respect of supplies – goods equipment, the invoices detailing the items supplied with specifications, quantity, rate and amount would be sufficient. This shall be checked and inspected by the receiving authority and accounted as per normal accounting procedure prescribed by Government or Corporation or Board or Society or Local body from time to time. Entry in measurement books need not be insisted upon.

2.This order will apply prospectively and shall not be applicable for contracts concluded in the past.

3.This order shall apply to all Procurement Entities as defined in Section 2(d) Chapter 1 of the Karnataka Transparency in Public Procurements Act, 1999.

4.This order shall be appropriately incorporated in the Conditions of Contract of Tender Documents.

5.The contents of this order shall be appropriately incorporated in the Karnataka

Public Works Accounts and Departmental Codes and other Manuals.

By order and in the name of
Governor of Karnataka,

Sd/-

(Sudhakar Rao)

Principal Secretary to Government,
Finance Department.

KARNATAKA URBAN WATER SUPPLY & DRAINAGE BOARD

NO.KWB/TEC/SR-2008-09/VOL-II/3899/2008-09 DT: 04.03.2009

CIRCULAR

Sub: Adoption of Electronic Spread Sheets In lieu of Measurement Books for recording measurements for water supply and sewerage works.

Ref: G.O. No. FD/56/Pro.Cell / 2004 Bangalore Dtd: 18.01.2005.

The Government of Karnataka has issued an order to adopt Electronic Spread Sheets In lieu of Measurement Books for recording measurement of works vide G.O cited under reference. A copy of the G.O. is enclosed for reference. The recording of measurements of works and Running bills (both water supply) using Electronic Spread Sheets instead of Measurement Books shall be implemented in to for all the tenders to be invited in future where the amount put to tender is more than Rs.25.00 lakhs as per G.O. In order to facilitate uniform procedure, sample Electronic Spread Sheets for measurement and running bills are enclosed to this Circular as Annexure – I & II. The Contractors shall submit the bills duly supported by hard copy of detailed measurements of work using electronic spread sheets and making computations thereof. The Contractor shall submit diskette or CD ROM in addition to the hard copy. The hard copies of the detailed measurement spreadsheets shall be bound, numbered and stores, which shall be considered as the measurement books, as referred to in the Manuals and Codes. An index shall be prepared for each Contract or Work, which shall show the details of the bills, reference to measurement books and vouchers. Similarly, the diskettes or CD ROMs shall be indexed and stored.

The necessary original Electronic Spread Sheets will be supplied by the HRD Section in the same manner as that of Measurement Books Necessary backups shall be maintained both in Executive Engineer's and Chief Accounts Officer's Office for records. All the instructions as stipulated in G.O. should be followed strictly.

Sd/-
Managing Director
KUWS & D Board
Bengaluru

Electronic Spread Sheet for Water Supply Works

For Measurement Sheet

Name of work:

Bill No:

Agency:

Division Code:

Authority or Agreement No. & Date:

Book No.

Date of Measurement:

Sheet No.

Sl. No.	Description of Item	No	Measurement			Unit	Present Qty.	Previously paid Qty.	Qty. upto date	Remarks
			L	B	D					
1	2	3	4	5	6	7	8	9	10	11

Water Mark of
Board Emblem

Signature of Contractor with Seal	Signature of Assistant Engineer	Signature of Assistant Executive Engineer
--	--	--

Format For Running Bill

Division Code :

Name of the work	
Name of the Agency	
Authority or Agreement No. & Date	
R.A. Bill No:	
SBR or DBR or CBR No.	
Measurement Book and Sheet Nos.	

Sl. No.	Description of Item	Unit	As per Tender			Present			Up to date			Remarks
			Qty	Rate	Amount	Qty	Rate	Amount	Qty	Rate	Amount	
1												
2												
3												
n												
	Total											

Signature of Contractor	Signature of Assistant Engineer	Signature of Asst. Exe. Engineer	Signature of Executive Engineer
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SECTION 6: CONTRACT DATA

Clause Reference	Clause Description
CC 1.1	The Employer is: The Chief Engineer, KUWSDB, Mysuru, Karnataka.
	The start date shall be the date of issue of notice to proceed with the work.
	Employer Representative: Executive Engineer of the concerned area/slice as the case may be. The Employer may nominate any other officer of the KUWS&DB as Employer's representative for the execution of the work/contract.
	The Methodology and Program of Construction -Applicable: The methodology and Program of construction should be submitted within 7 days from the date of site possession and concurrence with Clause 1.13 of Section 3.
	<p>The Works consist of;</p> <ol style="list-style-type: none"> 1. Construction of 5.00 lakh litres capacity RCC Collection Tank of size 19.50mX9.50mX3.00m at existing 1.50MLD STP at Kollur. <ol style="list-style-type: none"> a. Construction of RCC Collection Tank (Equalization Tank) including Inlet chamber with SS manual screen. b. Installation of coarse bubble aeration system within the newly constructed equalization tank. c. Supply and installation of complete air piping network including header, branch lines, supports, valves, and accessories. d. Linking of existing DI rising main to the Collection Tank by providing DI K-9 class pipes of 250mm dia including supply & fixing necessary DI valves & specials and construction of required valve chambers. e. Supplying & fixing RCC NP3 class pipe of 450mm dia for diversion of storm water including construction of required storm water chambers. f. Removing and resetting existing heavy-duty cobble/interlocking stones in and around Collection Tank. g. Providing & fixing anodized Aluminium ladder using 65mmX32mmX3mm with necessary bed inside the Collection Tank. h. Providing & fixing MS inspection door of size 60cmX60cm, 3mm thick including painting with anticorrosive paint to the Collection Tank. i. Providing & fixing gauge with iron sheet/enamelled gauge plate of 3-4mm thick, 0.23m width with copper float indicators – 3 mtrs depth to the Collection Tank.

Clause Reference	Clause Description
	<p>2. Upgradation of existing 1.50MLD capacity MBBR type STP at Kollur to MBR type with all associated mechanical, electrical, automation and integration work.</p> <p>i) Newly constructed Equalization Tank to Rotary Screen System</p> <ul style="list-style-type: none"> • Supply and installation of transfer pumping system from newly constructed equalization tank to rotary screen feed line. • Laying of required pipeline from newly constructed equalization tank to rotary screen. • Supply of rotary screen of suitable capacity. • Required civil works for rotary screen foundation and erection support structure. • Interconnection of overflow line from newly constructed equalization tank to aeration tank as process safety measure. <p>ii) Modification of Existing MBBR to Aeration Tank</p> <ul style="list-style-type: none"> • Conversion of the existing MBBR tanks into aeration tanks. • Removal or deactivation of existing media retention system as required. • Cleaning of existing diffusers. • Replacement of damaged or torn diffusers wherever necessary. • Process modifications and piping alterations required for aeration tank functionality. • Revamping of existing MBBR tank by removing rust, repainting the outer surface with anti-corrosive paint and providing bituminous waterproof membranes to inside surface to prevent corrosion. <p>iii) Clarification and MBR Integration</p> <ul style="list-style-type: none"> • Provision of overflow/bypass line arrangement from aeration system to existing lamella clarifier as required. • Process modification to divert clarified water from lamella clarifier to newly proposed MBR tank. • Required interconnecting pipelines and structural supports. <p>iv) MBR System Supply and Installation</p> <ul style="list-style-type: none"> • Supply of MBR membranes of Mitsubishi/Asahi Kasei or any equivalent reputed make of required flow capacity as per design. • Supply of membrane modules, racks, headers, and accessories. • Supply of permeate pumps. • Supply of permeate backwash pump. • Required piping for permeate line, backwash line, and air scouring line. • Installation and integration of complete MBR system.

Clause Reference	Clause Description
	<p>v) Pumping and Ancillary Equipment</p> <ul style="list-style-type: none"> • Supply of any additional pumps required for system upgradation including transfer pumps and process pumps. • Installation of valves, flow meters, pressure gauges, and relevant instrumentation. • Interconnection up to treated water tank. <p>vi) Electrical, Control and Automation</p> <ul style="list-style-type: none"> • Supply and installation of upgraded electrical control panel. • Integration of all process units under a centralized PLC-based control system. • Development and commissioning of SCADA system for continuous monitoring and control. • Automation coverage from newly constructed equalization tank to treated water tank. • Integration of pumps, blowers, membranes, screens, level sensors, and interlocks under PLC logic. • Alarm generation, trend logging, and system safety interlocks. • Facility to display the treated effluent parameters online in the KSPCB website/Dashboard as per KSPCB norms. <p>vii) Commissioning and Handover</p> <ul style="list-style-type: none"> • Dry and wet commissioning of entire system duly obtaining CFO from KSPCB. • Trial run of complete treatment plant. • Performance stabilization support. • Operator training. • Final handover to concerned authority after satisfactory operation. <p>3. The work includes all associated mechanical, electrical, automation, piping and integration works including any other work required for successful commissioning of the Plant.</p> <p>4. The existing sewage treatment process should not be hampered until completion of the proposed work. Temporary arrangements required if any, shall be made by the contractor. The infrastructure of the existing STP shall be utilized to its full extent with necessary modifications/rectifications to it.</p> <p>5. KSPCB has provided CFE (Expansion) for taking up the work of upgradation of existing STP. Upon completion of work, the Contractor shall operate the STP duly obtaining Consent for Operation (CFO) from KSPCB. The necessary fee towards obtaining CFO shall be paid by the Temple authorities.</p> <p>6. As per KSPCB norms, the upgraded STP shall be equipped with a facility</p>

Clause Reference	Clause Description																
	<p>to display the treated effluent parameters online in the KSPCB website/Dashboard.</p> <p>7. The work shall be carried out strictly in accordance with all safety measures and guidelines for maintenance and construction of UGD system mandated in Karnataka Gazette Notification No. UDD 04 UDS 2012, Bengaluru, dated 15.05.2013. Refer ANNEXURE-F.</p>																
a.	<p>13.1 Insurance requirements are as under for the tender period:</p> <table><tr><th>Si. No</th><th>Type of Cover</th><th>Minimum cover for Insurance</th></tr><tr><td>(a)</td><td>Works and of materials Plant and machineries</td><td>The sum stated in the Agreement plus 20%</td></tr><tr><td rowspan="2">(b)</td><td>Loss or damage to equipment</td><td>Full replacement cost</td></tr><tr><td>Loss or damage to property of Third Party</td><td>Full replacement cost</td></tr><tr><td rowspan="2">(c)</td><td>Personal injury insurance or death (i) for Third Party.</td><td>For normal works it could be Rs.20 lakhs to cover 4 persons @ Rs.5 lakhs each.</td></tr><tr><td>(ii) for Contractor’s employees or labour.</td><td>In accordance with the statutory requirements applicable to Karnataka</td></tr></table> <p>Note: For the purpose of this Contract Clause 13 along with its sub-clauses shall also be applicable for O&M period. In addition to above the contractor is obligated to Insure all the plant & equipment’s for Fire & Any other risks during the contract period.</p>	Si. No	Type of Cover	Minimum cover for Insurance	(a)	Works and of materials Plant and machineries	The sum stated in the Agreement plus 20%	(b)	Loss or damage to equipment	Full replacement cost	Loss or damage to property of Third Party	Full replacement cost	(c)	Personal injury insurance or death (i) for Third Party.	For normal works it could be Rs.20 lakhs to cover 4 persons @ Rs.5 lakhs each.	(ii) for Contractor’s employees or labour.	In accordance with the statutory requirements applicable to Karnataka
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	(ii) for Contractor’s employees or labour.	In accordance with the statutory requirements applicable to Karnataka															
CC 14	<p>The Contractor shall be wholly responsible to identify the suitable sources for quarry materials required for the works, such as earth, sand, stone, murrum, etc., and to make his own arrangements for collection and transportation of the materials irrespective of the leads and lifts required. The quarry thus identified by the Contractor should have proper license from the Government of Karnataka. All materials that are quarried and transported by the Contractor shall satisfy the requirements set forth in the Specifications shall be subject to the approval of the Employer. The Contractor is deemed to have taken this into account while offering his rates and no claim whatsoever shall be entertained for extra costs on this account.</p> <p>The proceedings of Director, Mines and Geology Dtd:25/03/2018 Annexure (1A) and circular No. KWB/CAO/IAW/2018-19/106, dtd:08/05/2018. Annexure (1B) is also binding on the successful bidder.</p>																
CC 15	<p>The Employer will provide the additional information if any regarding the project.</p>																
CC 16	<p>The Tenderer is required to prepare DSR including design/drawings etc., complete in accordance with the Technical Specification (Section 7) and in accordance with the terms of the Contract.</p> <p>The Contractor (Tenderer) is required to submit Workplan, Material supply schedule to execute the work. The same shall be reviewed & approved by the Employer.</p>																

Clause Reference	Clause Description				
	<p>The type of Material for construction (MoC)/E&M should be strictly in accordance with Technical Specification-Section-7, no change in MoC shall be allowed without prior approval of the Employer</p> <p>It is further clarified that the DSR / Design / Drawings as prepared by the Tenderer should give the details of the quantities of various items proposed by the Tenderer in DSR.</p>				
CC 17 & 26	<p>The Intended Completion Date for the whole of the Works is 09 months. In addition, the Intended Completion Date for each town / city shall be as under;</p> <table border="1"> <tr> <th>Name of City/ Town</th><th>Construction Time Period</th></tr> <tr> <td>Kollur Gram Panchayath</td><td>09 Months</td></tr> </table>	Name of City/ Town	Construction Time Period	Kollur Gram Panchayath	09 Months
Name of City/ Town	Construction Time Period				
Kollur Gram Panchayath	09 Months				
CC 25	<p>Program:</p> <p>The Contractor shall submit a detailed time program to the Employer within 28 days after receiving the notice to commence the Works. The Contractor shall also submit a revised program whenever the previous program is inconsistent with actual progress or with the Contractor's obligation. Each program shall include:</p> <ul style="list-style-type: none"> (a) The order in which the Contractor intends to carry out the Works, including the anticipated timing of each stage of design, Contractor's Documents, procurement, manufacture, inspection, delivery to Site, construction, erection, testing, commissioning and trial operations; (b) The periods of reviews and for any other submissions, approvals and consents specified in the Employer's Requirements; (c) The sequence and timing of inspections and tests specified in the Contract; <ul style="list-style-type: none"> • A supporting report which includes: • A general description of the methods which the Contractor intends to adopt and of the major stages in the execution of the works; and' • Details showing the Contractor's reasonable estimate of the number of each class of Contractor's personnel and of each type of Contractor's equipment required on the Site for each major stage <p>If at any time, the Employer gives notice to the Contractor that a program fails (to the extent stated) to comply with the Contract or to be inconsistent with the actual progress and the Contractor's stated intentions, the Contractor shall submit a revised program to the Employer.</p> <p>Progress Reports:</p> <p>Monthly progress reports shall be prepared by the Contractor and submitted to</p>				

Clause Reference	Clause Description
	<p>the Employer in six copies. The first report shall cover the period up to the end of the first calendar month following the Commencement Date. Reports shall be submitted thereafter each within 7 days after the last day of the period to which it relates.</p> <p>Reporting shall continue until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking Over Certificate for the Works.</p> <p>Each Report should include:</p> <ul style="list-style-type: none"> (a) Charts and detailed descriptions of progress, including each stage of design, Contractor's Documents, procurement, manufacture, delivery to Site, construction, erection, testing, commissioning and trial operation; (b) Photographs showing the status of manufacture and of progress at the Site; (c) For the manufacture of main items of Plant and Materials, the name of the manufacturer, manufacture location, percentage progress, and the actual and expected dates of: <ul style="list-style-type: none"> (i) Commencement of manufacture; (ii) Contractor's inspections; (iii) Tests; and (iv) Shipment and arrival at the Site; (d) Details of Contractor's personnel and equipment; (e) Copies of quality assurance documents; (f) List of variations, including details of any hazardous incidents and activities relating to environmental aspects and public relations; and (g) Comparisons of actual and planned progress, with details of any events or circumstances which may jeopardize the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome delays;
CC 29	<p>The Employer will engage a Third Party for inspection at manufacturer's works and also the work site activities. The fee for the third-party inspection shall be paid by the Employer. The items for Third Party Inspection and the stages of Inspection are given in ANNEXURE D. The list is illustrative and not exhaustive.</p> <p>The Employer's personnel shall at all times:</p> <ul style="list-style-type: none"> (a) Have full access to all parts of the Site and to all places from which natural materials are being obtained; and (b) During production, manufacture and construction (at the Site and elsewhere) be entitled to examine, inspect measure and test the materials and workmanship and to check the progress of manufacture of Plant and production and manufacture of materials. <p>The Contractor shall give the Employer's personnel full opportunity to carry out these activities, including providing access, facilities, permissions and safety equipment. No such activity shall relieve the Contractor from any</p>

Clause Reference	Clause Description
	<p>obligation or responsibility.</p> <p>The Contractor shall give notice to the Employer whenever any work is ready and before it is covered up, put out of sight, or packaged for storage or transport. The Employer shall then either carry out the examination, inspection, measurement or testing without unreasonable delay, or promptly give notice to the Contractor the Employer does not require to do so. If the Contractor fails to give the notice, he shall, if and when required by the Employer, uncover the work and thereafter reinstate and make good, all at the Contractor's cost.</p> <p><i>Procurement of materials and equipment:</i></p> <p>The Contractor shall procure and use ISI marked materials and equipment or those conforming to relevant Bureau of Indian Standards or any applicable standards. The Contractor shall obtain approval to the drawings and the Quality Assurance Plan (QAP) of the equipment/materials to be used in the project by the competent authority before execution.</p>
CC 31	The Defects liability Period is One Year (365 days)
CC 33	<p>Bill of Quantities:</p> <p>The Tenderer shall quote for the activities / components involved for completion of work on lumpsum basis and the tenderer should get approval for the break up schedule for payment from Employer based on which payment will be made for each item.</p> <p>The contractor is responsible for submitting of bills duly supported by hard copy of detailed measurement of works using Electronic Spread Sheet and making computation there off. The contractor shall submit diskette or CD-ROM in addition to the hard copy in the format as per ANNEXURE-E.</p> <p>Royalties:</p> <p>The Employer shall deduct Royalties on materials used in the works from progress payments to the Contractor at the rates specified in the “Karnataka Minor Minerals Concession Rules 2003” as published by the Commerce and Industries Department (Mines) and as amended from time to time till the date of submission of tenders. It shall be responsibility of the Tenderer to ascertain the applicable rates as on the date of submission of tenders. However, the latest amendment as per record available in this office. Any representation on the discrepancy between the rates as contained in Annexure C and the latest amendment will not be entertained.</p> <p>The proceedings of Director, Mines and Geology Dtd: 25/03/2018 Annexure (1A) and circular No.KWB/CAO/IAW/2018-19/106, dtd: 08/05/2018. Annexure (1B) is also binding on the successful bidder.</p>

Clause Reference	Clause Description
	<p>Karnataka Building and other Construction Worker's Welfare Cess:</p> <p>The Employer shall deduct Cess from the bills of the Contractor at the rates as may be notified from time to time under the building and other Construction Workers Welfare Cess Act 1996. The current rate is 1% of the tender amount.</p> <p>In addition, GO No. LD/300/LET/2006, dated 18-01-2007 and addendum GO No. LD/95/ LET/2013, dated 01-04-2013 with latest amendments shall be part of the documents.</p>
CC 34	<p>Variation: No variations are applicable in this contract. However, variation will arise only in case the Employer intends to add any additional scope of work apart from the original scope defined proposed to be taken up under this contract. The variation applicable shall be as per the scope of work envisaged for such additional scope or work and as mutually agreed between the Parties and at the discretion of the Employer.</p> <p>Value Engineering: The Contractor may at any time submit to the Employer a written proposal which in the Contractor's opinion will, if adopted, (i) accelerate completion, (ii) reduce the cost to the Employer of executing, maintaining or operating the Works, (iii) improve the efficiency or value to the Employer of the completed Works, or (iv) otherwise be of benefit to the Employer. The proposal shall be prepared at the cost of the Contractor and shall include the items as specified in the variation procedure.</p>
CC 35	No payments for variations are applicable in this contract. Payment for variation shall be applicable only in case of any variation arising due to addition new scope of work by the Employer apart from the scope of work which is already proposed under this contract and the corresponding scope of work and payment for such additional scope of work and at the discretion of the Employer as mutually agreed.
CC 36	Minimum amount of each bill to be submitted by the Contractor for claim shall not be less 5% of the Total Contract Price.
CC 37.1	The time limit for payment to the contractor is 45 days from the date of submission of the bills.
CC 37.3	<p>i) Supply payment for Materials shall be paid only for the requirement of materials for the next 3 months only, as per the approved work plan and Material supply schedule as per Contract condition.</p> <p>ii) Before making RA (Running account) Bill payment, the corresponding permanent assets/works executed should be mapped in GIS portal, a mechanism shall be placed.</p>
CC 37.4	The payment shall be as per the SCHEDULE 3: Schedule of Payment
CC 39.1	Taxes shall mean all taxes and duties applicable for execution of this Contract except GST. The GST shall be paid by the Employer to the Contract after statutory deductions as per the prevailing rates during payment.
CC 40	Price Adjustment Formula: NOT APPLICABLE. Only Star rates in respect

Clause Reference	Clause Description
	<p>of specified materials (cement, steel and bitumen) shall be payable as per Government Order No. FD 3 PCL 2008, Bangalore, dated:21-11-2008.</p> <p>Transportation:</p> <p>The Contractor shall at its own risk and expense transport all the Plant and Equipment and the Contractor's Equipment to the Site by the mode of transport that the Contractor judges most suitable under all the circumstances. Unless otherwise provided in the Contract, the Contractor shall be entitled to select any safe mode of transport operated by any person to carry the Plant and Equipment and the Contractor's Equipment.</p> <p>Upon dispatch of each shipment of the Plant and Equipment and the Contractor's Equipment, the Contractor shall notify the Employer by telex, cable, facsimile or Electronic Data Interchange (EDI) of the description of the Plant and Equipment and of the Contractor's Equipment, the point and means of dispatch, arrival at the Site.</p> <p>The Contractor shall be responsible for obtaining, if necessary, approvals from the authorities for transportation of the Plant and Equipment and the Contractor's Equipment to the Site. The Employer shall use its best endeavors in a timely and expeditious manner to assist the Contractor in obtaining such approvals, if requested by the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any claim for damage to roads, bridges or any other traffic facilities that may be caused by the transport of the Plant and Equipment and the Contractor's Equipment to the Site.</p>
CC 40.1	<p>PRICE ADJUSTMENT IS NOT APPLICABLE. Only Star rates in respect of specified materials (cement, steel and bitumen) shall be payable as per Government Order No. FD 3 PCL 2008, Bangalore, dated:21-11-2008.</p>
CC 41	<p>The maximum liquidated damages for the whole of the works can be levied up to 10% (ten percent) of final contract price. If the bidder fails to achieve one or all the treated effluent parameters as listed in table under Cl. 3.3 SPECIAL SPECIFICATIONS for Construction of STP, Section-7, in any month during Defects Liability Period, then penalty of Rs.5.0 Lakhs will be levied for one month.</p>

Clause Reference	Clause Description		
CC 42			
	Nature of Advance	Amount	Conditions to be fulfilled
	<p>1. Mobilization 5% of the contract price On submission of un</p> <p>2.Secured advance for non perishable materials/ equipment/plant brought to site</p>	<p>conditional bank guarantee for the amount of advance (to be drawn before end of 20% of Contract period)</p> <p>75% of the invoice value or assessed market value whichever is lower 10% after laying & jointing 10% after successful hydraulic testing. balance 5% after successful commissioning</p>	<p>1. Mobilization 5% of the contract price On submission of unconditional bank guarantee.</p> <p>(a) The materials/ equipment/ plant conform to the specifications for works;</p> <p>(b)Such materials/ equipment/ plant have been delivered to site of work and are properly stored and protected against damage or deterioration to the satisfaction of the Employer. The Contractor shall store the bulk material in measurable stacks;</p> <p>(c) The Contractor's records of the requirements. orders, receipt and use of materials/ equipment/ plant are kept in a form approved by the Employer and such records shall be available for inspection by the Employer or his authorized representative;</p> <p>(d) The Contractor has submitted with his monthly statement the estimated value of the materials/ equipment /plant on site together with such documents as may be required by the Employer for the purpose of valuation of the materials/ equipment/ plant and providing evidence of ownership and payments thereof;</p> <p>(e) Ownership of such materials/ equipment/ plant shall vest in the Employer for which the Contractor has submitted an indemnity bond in an acceptable format;</p> <p>and (f) The quantity of materials/ equipment are not excessive and shall be used within a reasonable time period as determined by the Employer.</p>

(The advance payment will be paid to the Contractor no later than 30 days after fulfilment of the above conditions).

The agency shall submit bills for the works executed along with documents for having paid GST. Failing which, the GST will be deducted in the bill and remitted to the competent authority

Repayment of advance payment for mobilization: [42]

The advance loan shall be repaid with percentage deductions from the interim payments certified by the Employer under the Contract. Deductions shall commence in the next Interim Payment Certificate following that in which the total of all such payments to the Contractor has reached not less than 15 percent of the Contract Price or 3 months from the date of payment of first instalment 143 of advance, whichever period concludes earlier, and shall be made at the rate of 7.5% percent of the amounts of all Interim Payment Certificates until such time as the loan has been repaid, always provided that the loan shall be completely repaid prior to the expiry of the original time for completion pursuant to Clauses 17 and 26.

Repayment of secured advance:

The advance shall be repaid from each succeeding monthly payments to the extent materials/ equipment/ plant (for which the advance was previously paid pursuant to Clause of GCC and of Contract Data on pre page) have been incorporated into the works.

Payments:

The agency shall submit component wise break up for payment against the BOQ amount (Lumpsum) and shall get the same approved from the Employer for payment of bills for the works executed.

The date by which “as-built” drawings (as per the requirement of the employer) in 6 sets are required is within 30 days of issue of certificate of completion of Whole or Section of the Work as the case may be. [48]

The amount to be withheld for failing to submit “as built” drawings by the date required is Rs.5.00 lakhs per city/town [48]

The following events shall also be fundamental breach of the contract: [49.2]

1. The contractor has contravened Sub-clause 7.1 and Clause 9 of CC.
2. The contractor does not adhere to the agreed construction program and agreed environmental management plan and also fails to take satisfactory remedial action as per agreements reached in the management meetings (Clause 28) for a period of 60 days.
3. The contractor fails to carry out of the instructions of Employer within a reasonable time determined by the Employer in accordance with GCC Clause 23.1.

The percentage to apply to the value of the work not completed representing the Employer's Additional cost for completing the Works shall be 30 percent, sufficient to get the balance works completed by alternate agency. [50.1] Trail run period is 3 months, wherein the Contractor would have to train the Employer/Authority or the agency taking over the Operations and Maintenance period. The training shall have to include hands on operations training along with the manual of operations for a period of 3 months. In addition to the training in the trail run period the Contractor will be responsible for 1 year Defect Liability Period.

ANNEXURE-F

ಭಾಗ ೨

ಕರ್ನಾಟಕ ರಾಜ್ಯಪತ್ರ, ಗುರುವಾರ, ಜೂನ್ ೧೩, ೨೦೧೩

೧೧೯೩

ನಗರಾಭಿವೃದ್ಧಿ ಸಚಿವಾಲಯ

ಅಧಿಸೂಚನೆ

ಸಂಖ್ಯೆ: ನಆಇ ೦೪ ಯುಡಿಎಸ್ ೨೦೧೨, ಬೆಂಗಳೂರು, ದಿನಾಂಕ:15.05.2013

ಕರ್ನಾಟಕ ರಾಜ್ಯದಲ್ಲಿ ಕುಡಿಯುವ ನೀರು ಸರಬರಾಜು ಮತ್ತು ನಗರ ನೈರ್ಮಲೀಕರಣದ ಯೋಜನೆಗಳನ್ನು ಅನುಷ್ಠಾನ ಮತ್ತು ನಿರ್ವಹಣೆ ಕಾಮಗಾರಿಗಳಲ್ಲಿ ನಿರತರಾದ ಕಾರ್ಮಿಕರು ದುರ್ಮರಣಕ್ಕೆ ಈಡಾಗುತ್ತಿರುವುದನ್ನು ತಡೆಯಲು ಅನುಸರಿಸಬೇಕಾದ ರಕ್ಷಣಾ ಸೂತ್ರಗಳ ರಚನೆಗಾಗಿ ರಾಜ್ಯ ಸರ್ಕಾರವು ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ:ನಆಇ ೦೪ ಯುಡಿಎಸ್ ೨೦೧೨ ದಿನಾಂಕ:02.03.2012 ರಂದು ಇಂಜಿನಿಯರಿಂಗ್ ಇನ್ ಚೀಫ್, ಬೆಂಗಳೂರು ನೀರು ಸರಬರಾಜು ಮತ್ತು ಒಳಚರಂಡಿ ಮಂಡಳಿ ಇವರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ರಾಜ್ಯ ಮಟ್ಟದ ಸಮಿತಿಯೊಂದನ್ನು ರಚಿಸಲಾಗಿತ್ತು.

ಸದರಿ ಸಮಿತಿಯು ಸಿದ್ಧಪಡಿಸಿದ ಕರಡು ರಕ್ಷಣಾ ಕೈಪಿಡಿಯ ಬಗ್ಗೆ ಸಾರ್ವಜನಿಕರಿಂದ/ಜನಪ್ರತಿನಿಧಿಗಳು ಸರ್ಕಾರೇತರ ಸಂಸ್ಥೆಗಳೂ ಹಾಗೂ ಇತರೆ ಪಾಲುದಾರರಿಂದ ಆಕ್ಷೇಪಣೆ/ಸಲಹೆ/ಅಭಿಪ್ರಾಯಗಳನ್ನು ಕೋರಿ ಕರಡು ಅಧಿಸೂಚನೆಯನ್ನು ಸರ್ಕಾರದ ಸಮ ಸಂಖ್ಯೆ ಅಧಿಸೂಚನೆ ದಿನಾಂಕ:02.07.2012ರಲ್ಲಿ ಪ್ರಕಟಿಸಿ 30 ದಿನಗಳೊಳಗಾಗಿ ಸಮಿತಿಯ ಅಧ್ಯಕ್ಷರಿಗೆ ಆಕ್ಷೇಪಣೆಗಳನ್ನು ಸಲ್ಲಿಸಲು ಅವಕಾಶ ಕಲ್ಪಿಸಲಾಗಿದ್ದು, ಸದರಿ ಕರಡು ರಕ್ಷಣಾ ಕೈಪಿಡಿ ಸಂಬಂಧಿಸಿದಂತೆ ಯಾವುದೇ ಆಕ್ಷೇಪಣೆಗಳನ್ನು ಸ್ವೀಕರಿಸಿರುವುದಿಲ್ಲ.

ದಿನಾಂಕ:29.01.2013 ಮತ್ತು 30.01.2013 ರಂದು ಎರಡು ದಿನಗಳ ಕಾರ್ಯಾಗಾರವನ್ನು ಹಮ್ಮಿಕೊಂಡು ಕರಡು ರಕ್ಷಣಾ ಕೈಪಿಡಿಯಲ್ಲಿ ಅಳವಡಿಸಲಾಗಿರುವ ರಕ್ಷಣಾತ್ಮಕ ಕ್ರಮಗಳ ಬಗ್ಗೆ ತಜ್ಞರ ಅಭಿಪ್ರಾಯಗಳನ್ನು ಪಡೆದು ಕರಡನ್ನು ಪರಿಷ್ಕರಿಸಿ ಅಂತಿಮಗೊಳಿಸಿ ಅಧಿಸೂಚನೆ ಹೊರಡಿಸಲು ಸರ್ಕಾರಕ್ಕೆ ಶಿಫಾರಸ್ಸು ಮಾಡಿರುತ್ತದೆ.

ಕರ್ನಾಟಕ ರಾಜ್ಯದಲ್ಲಿ ಕೈಗೊಳ್ಳುವ ಒಳಚರಂಡಿ ನಿರ್ಮಾಣ ಮತ್ತು ನಿರ್ವಹಣೆ ವಿಷಯದಲ್ಲಿ ಅನುಸರಿಸಬೇಕಾದ ಅಂತಿಮ ರಕ್ಷಣಾ ಸೂತ್ರಗಳ ಕೈಪಿಡಿಯನ್ನು ಸರ್ಕಾರವು ಕೂಲಂಕುಶವಾಗಿ ಪರಿಶೀಲಿಸಿ ಲಗತ್ತಿಸಲಾಗಿರುವ ಅನುಬಂಧದಲ್ಲಿರುವಂತೆ ಮಾರ್ಗಸೂಚಿಗಳನ್ನು ಈ ಮೂಲಕ ಪ್ರಕಟಿಸಲಾಗಿದೆ.

ಈ ಮಾರ್ಗ ಸೂಚಿಗಳು ತಕ್ಷಣದಿಂದ ಜಾರಿಗೆ ಬರುತ್ತವೆ.

ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆದೇಶಾನುಸಾರ ಮತ್ತು ಅವರ ಹೆಸರಿನಲ್ಲಿ,

ಟಿ.ಎಂ.ವಾಸುದೇವರಾವ್,

ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿ,

ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ.

1) Introduction:

a) About Karnataka

Karnataka is a state located in the Deccan Plateau in South West India. The Bangalore City is the largest city and also the capital of the state. Karnataka is bordered by the Arabian Sea to the west, Goa to the northwest, Maharashtra to the north, Andhra Pradesh to the east, Tamil Nadu to the southeast, and Kerala to the southwest. The state covers an area of 191,976 square kilometers, or 5.83% of the total geographical area of India. It is the eighth largest Indian state by area. With over 61 million inhabitants (2011), Karnataka is the ninth largest state by population, divided into 4 divisions. (Bangalore Division, Belgaum Division, Gulbarga Division and Mysore Division) comprising 30 districts.

Karnataka experiences four seasons. The winter in January and February is followed by summer between March and May, the monsoon season between June and September and the post-monsoon season from October till December. Meteorologically, Karnataka is divided into three zones — coastal, north interior and south interior. Of these, the coastal zone receives the heaviest rainfall with an average rainfall of about 3,638.5 mm (143 in) per annum, far in excess of the state average of 1,139 mm (45 in). Agumbe in the Shivamogga district receives the second highest annual rainfall in India. The highest recorded temperature was 45.6 °C (114 °F) at Raichur and the lowest recorded temperature was 2.8 °C (37 °F) at Bidar. About 38,724 km² (14,951 sq mi) of Karnataka (i.e. 20% of the state's geographic area) is covered by forests.

b) About Urban Local Bodies of Karnataka

The 74th Constitutional Amendment has accorded constitutional status to the municipal bodies by initiating a process of democratic decentralization with the objective of making urban governance more responsive and also for meeting the growing aspirations and expectations of people and to meet the challenges of urbanization. As a result entire state is divided in to 219 ULBs under five categories. 8 City Corporations including BBMP (Bruhath Bengaluru Mahanagara Palike), 44 City Municipal Councils, 94 Town Municipal Councils, 68 Town Panchayaths and 5 Notified Area Committees based on the population.

For a municipal area with a population of not less than 10000 but less than 20000 is categorized as Town Panchayath area with a population, area with a population not less than 20000 but less than 50000 as Town Municipal Council, not less than 50000 but less than 300000 as City Municipal Council and the city with population greater than 300000 is categorized as City Corporation. Irrespective of the minimum limit of the population the taluk and district headquarters are upgraded to Town Municipal Councils and City Municipal Councils respectively.

c) About Bangalore Sewerage System – Bangalore Water Supply and Sewerage Board was formed during 1968 with the aim of supplying potable water to the citizens and to collect, convey and treat the wastewater generated in the Bangalore city.

For collection and conveyance of wastewater generated in the core area of the Bangalore, BWSSB has laid 3600 Kms of various diameter pipeline and constructed about 1,25,000 manholes to facilitate the maintenance of sewerage system. The

erstwhile CMCs and TMC was added to core Bangalore city during the year 2007 to form Bruhat Bangalore Mahanagara Palike (BBMP) increasing the area to 800 Sq. Kms. Thus the present BWSSBs jurisdictional area is extended to the entire area marked as BBMP.

In order to provide Under Ground Drainage (UGD) in the new areas merged with BBMP in the year 2007, BWSSB has taken up the project under Karnataka Municipal Reforms Project (KMRP) and the work is under progress. About 2300 Kms of sewerage network will be established in this project. Further UGD works will be taken up in 110 villages shortly. Hence BWSSB has to maintain about 7900 Kms of sewerage pipeline in the coming years.

d) **Sewerage System in the rest of the State-** the Karnataka Urban Water Supply & Drainage Board (KUWS&DB) is responsible for providing adequate Water Supply from assured and safe sources of supply and also proper sanitation to all the urban local bodies of the state.

- The Status of UGD in urban areas as on 31st December 2012 is as below.

• UGD system operational (fully/partially)	... 43 ULBs
• UGD works under implementation	... 61 ULBs
• UGD schemes for which Administrative approval given but tender is yet to be invited due to land for STP not yet handed over.	... 22 ULBs
• UGD schemes for which action plan is prepared.	... 12 ULBs
- Laying of UGD network including up gradation of water supply system to 135 LPCD in the remaining ULBs will require Rs. 25862 Crores. This is being proposed to be taken up in phased manner in 12th and 13th Five Year Plan.

2) Sewerage System

In olden days there were no water sealed latrines and the people used to defecate in open fields. The defecated matter used to get dried or eaten away by the animals or the rain water runoff used to carry the pollutant to the nearby water bodies

over the period of time individual small toilets were built for defecations. The defecated matter was collected in the baskets placed in the toilets. A scavenger used to carry the human excreta, termed as night soil on their heads from the individual toilets and dump the same in the tankers. For easy movement of scavengers in back yard, conservancy spaces were created. Subsequently prohibition orders were issued for carrying night soil on human head.

After the abolition of manual scavenging system, Underground Drainage System (UGD) was developed for the conveyance of human waste, liquid waste from bath room, kitchen etc.,

Direct involvement of human interference was eliminated in handling human waste in the present system of UGD. But definitely labour force is required for day to day operation and maintenance of UGD. This can be minimized to maximum extent but cannot be eliminated completely with the usage of mechanical equipments or by adopting advanced technologies.

In order to maintain the UGD system in good working condition, the optimum use of labour, equipment and material is essential. If the UGD system is maintained in good working condition, the very purpose of providing UGD that is optimal collection; conveyance of human waste to treatment plants is accomplished with least human intervention.

3) Hazards

Personnel involved in operation & maintenance of sewerage systems are often exposed to various types of occupational hazards like

- Physical injuries,
- Injured by chemicals and radioactive waste
- Infections caused by pathogens
- Exposure to explosive or obnoxious gases
- Oxygen deficiency

Gases and vapours found in sewers can be toxic, flammable & invisible. The major types of hazards are Oxygen deficiency, presence of Hydrogen Sulphide (H_2S), Carbon Monoxide, Methane, Gasoline vapours, Fire, biological, physical, improper design, characteristics of sewage etc.,. Damage due to above mentioned hazards can be minimized by adopting suitable designs and precautionary methods, using safety gears & educating the personnel involved in sewer cleaning activities.

a) Types of hazards

- 1) **Oxygen Deficiency:** Oxygen gets displaced by other gases and vapours, creating an oxygen deficient atmosphere in the sewers. Various chemical action occurring in the sewer may also result in oxygen being used up, e.g. the rotting of organic matter of sewage by the bacterial action. These activities can deplete oxygen level to an extent where the oxygen levels are below the minimum required levels (worker's breathing air is 19.50% by volume) for performing work.
- 2) **Hydrogen Sulphide (H_2S):** H_2S is commonly found in sewers and is formed by the decomposition of organic matter. Concentrations of less than 1 ppm have a characteristic rotten egg smell. At concentrations above 100 ppm, the odour of

H₂S might not be detected since the H₂S gas, muffle the sense of smell. Concentrations of H₂S above 500 ppm may lead to unconsciousness in few seconds. Death quickly follows if the victim is not immediately shifted to fresh air.

Concrete or mortar surfaces may be damaged when Hydrogen sulphide converted into sulphur dioxide comes in contact with concrete or mortar surfaces. Acid forming bacteria, in presence of nutrients such as ammonia, phosphates etc. will convert Hydrogen sulphide into Sulphuric Acid in presence of moisture. Hence permeable and weaker concretes are easily attacked by this. Condensed moisture on the walls of the conduit leads to acidic conditions leading to channel scour.

- 3) **Carbon Monoxide:** Carbon monoxide is a colourless, odourless and toxic gas. It is the product of incomplete combustion and the most common source is the exhaust of gasoline and diesel engines. If such engines must be operated near an open sewer or manhole/entry point, precautions must be taken to ensure that exhaust gases are directed away from the opening. Exposure of workers to concentration exceeding 25 ppm may result in a worker experiencing ringing noise in the ears, nausea, headaches and drowsiness. The effects may become severe as the concentration and duration of exposure increase. Unconsciousness followed by death may occur if failed to undertake immediate rescue measures.
- 4) **Methane:** Fire and explosion are the two main dangers associated with methane as it is highly flammable. It may be released from a leak in a sewer lines and also be a by-product of blocked sewers or sluggish sewers. This gas acts as an asphyxiate, displacing oxygen to such a level where sustainability of life becomes impossible.
- 5) **Gasoline vapours:** Gasoline is sometimes found in both sanitary and storm sewers. It may enter sewer lines from underground gasoline storage tank leakages, inadvertent spillage, or illegal disposal. Gasoline vapours, even in small quantities, can become a potent fire and explosion hazard. Gasoline vapour is also a respiratory irritant and acts as an anesthetic agent when inhaled. The most common physical ailments observed from exposure to gasoline vapours are symptoms of intoxication, headaches, blurred vision, dizziness and nausea. Concentrations above 2,000 ppm cause intoxication within 5 to 10 minutes.
- 6) **Fire:** Fires and explosions in confined spaces are often caused by gases or vapours ignition. Two or more chemicals react together to cause explosives or generate flammable vapours. Flammable components that may be present in sewers include methane, hydrogen sulphide gases and solvents, gasoline vapours or some other materials that might have resulted due to work being carried in that area. For a fire or explosion to occur, fuel, oxygen and an ignition source (heat) must be present in the right proportions.
- 7) **Pathogens:** Presence of viral, bacterial, or parasitic microorganisms in the sewers acts as a potential threat, since it may result in infections. For those workers exposed to sewage, the most serious viral risk is hepatitis and the most serious bacterial risk is tetanus. Intestinal parasites have never been identified as a problem for workers exposed to sewage who follow safe work practices. Medical sharps, such as syringes, may be found under sewer entry covers and in storm drains hence workers should be educated about the health hazard and preventive inoculations should be administered to the workers.
- 8) **Physical - Slips, trips and falls:** workers enter sewer lines via manholes through ladders or rungs in the wall. Workers may slip while getting into the sewers as well as when they are inside sewer lines. In addition, since sewers are wet environments, the floors, walls and rungs of the ladder may be very slippery. In pumping stations/rooms, cluttered materials may act as a tripping hazard.
- 9) **Falling objects:** There may be a danger of being struck by falling objects, such as tools or equipment.
- 10) **Electrical shock:** Electrical shock can result from defective extension cords, welding cables or other electrical equipment. Work done in moist condition can be particularly dangerous. Ground fault circuit interrupters (GFCIs) or double insulated equipment should be used when there is a danger of electrical shock.
- 11) **Substances entering through piping:** Sewer lines or associated connecting pipes can contain harmful liquids, toxic gases or other harmful substances. If these substances enter the sewer where workers are working, hazardous and life threatening conditions can be created.
- 12) **Poor visibility:** Poor visibility increases the risk of incidents and makes it harder for a standby person to see a worker who may be in distress. Portable lighting may be required to ensure that lighting is adequate. Lighting units used in such settings must be "explosion-proof".
- 13) **Noise:** Noise created in a sewer can be particularly harmful due to reflection off the walls. Noise levels from a source inside a sewer is said to be 10 times greater than the same source located outdoors. If work that generates noise, such as cutting, grinding or welding must be done inside the sewer lines/manholes, monitoring is required to ensure that workers are not exposed to noise levels exceeding the limit stated in the Occupational Health and Safety Code (OHSC). If noise levels cannot be reduced, workers may be provided with hearing protection aids.

- 14) Drowning:** It is usually not possible to fully drain out or dry sewer/manholes prior to entry. Spaces that are not fully drained or dry pose a risk of drowning. It takes relatively little stagnant water or other liquid can act as a drowning hazard. For example, due to lack of sufficient oxygen or the presence of a toxic material/vapour can make a worker unconscious, and if the worker falls down into a small pool of water can lead to death.
- 15) Improper design:** Serious and expensive sewer problems can result from faulty design or poor construction. Adequate slopes to maintain self cleaning velocities are essential to minimize maintenance. Selection of a suitable pipe joint is vital to prevent penetration of roots and excessive infiltration since cutting of tree roots from sewer lines can be expensive and recurring cleaning process. Ground water entering joints carries soil with it which is collected all around the pipe, which ultimately leads to structural failure.
- 16) Characteristics of sewage:** Sewers convey various types of waste water including domestic /industrial/others sources. Some of its constituents can be hazardous and can cause various types of nuisances. Some are explosive in nature and can cause fire or other explosion hazards. Some can obstruct the flow of sewage and some cause nuisances to the public, during treatment processes, or in receiving waters or in the sewerage systems.
- b) Control of hazards through Maintenance of sewers:** There are two types of maintenance of the sewerage system one being preventive breakdown & another is emergency breakdown. It is necessary that preventative or routine maintenance are carried out to prevent any breakdowns in the system and to avoid emergency situations such as clogging of sewer lines, overflowing of manhole, backflow of sewage into the house or structural failure of the system. Preventive maintenance is more economical than post repairs and is reliable in operations of sewer facilities. Emergency repair, which might be very rare if proper preventive maintenance is carried out, shall have to be provided for periodical inspection and preventive maintenance if necessary.
- 1) Necessity of Maintenance: Sewer Maintenance activities are often neglected and are attended only when emergency arises. Keeping in view of the health hazards, that the public has to face, it will be appropriate to provide sufficient funds required for welfare of labour, procurement of material, equipment and machinery required for efficient maintenance of sewerage systems.
 - 2) Maintenance helps in saving the capital investment and ensures an effective and economical expenditure of operation and maintenance the sewerage facilities. It also helps in building up and maintaining of cordial relations with the public, whose understanding and support are essential for the existence of the facility.
 - 3) Maintenance of sewer begins with the good quality design and construction of the sewerage system. Hence due considerations shall be given to maintenance requirements during the time of designing of sewerage systems.
 - 4) Since sewer maintenance commences from manholes located on the street, the size of the manholes must be designed in such way that allow safe access and sufficient working space.
 - 5) Location of manholes depends on several factors, but considerations of safety alone require that they should be situated at all locations of sewer sections and gradients, junctions and the heads of all sewers. The spacing between manholes should not be ideally more than 30 mts.
 - 6) Particular care should be taken to ensure that the adequate provisions made for ventilation
 - 7) As far as possible, deep sewers should be avoided. Manhole covers should be designed / provided with inbuilt locking arrangement so as to check against theft and trespassing / abuse of manholes.
- c) Responsibilities of Urban Local Bodies (ULB) in maintenance of sewers:**
- 1) Even though it is mandatory to provide efficient sanitation system in all the ULBs, laying of UGD system in ULBs mainly depend on availability of funds & population. UGD system for the conveyance of wastewater and its treatment is yet to be developed in most of ULBs.
 - 2) Wastewater treatment plants are yet to be developed in some of the ULBs where UGD is in its place.
 - 3) The maintenance of the sewerage system varies with the size, type and the relative age of the sewerage system in the ULB. The larger the ULB, maintenance of sewerage system turns out be more complex. Strength of cleaning staff depends on the population in ULB.
 - 4) It is the primary objective of the ULB, to ensure that flow of sewage is smooth without any obstructions.
 - 5) The sewerage systems with its components are to be properly designed and installed. The maintenance should be taken over by the competent official in ULB who is in over all in charge of maintenance and shall take of the responsibility satisfactory functioning of sewerage systems for the benefit of the community. Designated official should have prior experience in the design and construction of the system that enable him to perform his task efficiently with an understanding and appreciation of the problems that may arise during maintenance period. In order to provide a

successful service to the public, personnel involved in maintenance work has to appreciate human relations apart from looking at the solution through technical point of view. In-service training shall be imparted to the maintenance personnel, to improve upon the methods adopted based on the latest trends. Failure to develop a better understanding of human relations and lack of development of the concept of service to the community results in the poor maintenance and making ULB service unpopular. The general public should be given awareness on dos and don'ts in order to maintain free flow in sewers free flowing without obstructions.

- 6) The work of cleaning, desilting and other maintenance works shall be carried out through departments or concerned urban local body / civic authority / sewerage board by entering into mutual arrangement and it shall not be entrusted to the private contractors, unless there is an exigency for engaging contractors.
- 7) In case of emergency/necessity, if any private contractor/agencies is entrusted with the work of cleaning, desilting and other maintenance works, it has to be ensured that such private contractors/agencies have necessary experience and is well equipped with trained manpower. Such private contractor/ agencies shall be engaged on annual/ periodical contract basis. Such agencies shall be required to strictly observe all the conditions of the safety code which shall form as part of the contract.
- 8) As far as possible cleaning, desilting and rehabilitation of sewer lines should be mechanized and must minimize human intervention in these works.
- 9) The ULB has overall responsibility of health and safety of all the workers engaged at the work site. Where the employer/private contractor/ private agency is operating under contractual terms, the owner of the sewerage system i.e ULB is required to ensure that the employer carries out their responsibilities for the health and safety of workers at the site.
- 10) The responsibility of the ULB is as under
 - a) The Worker - any worker entering a sewer must be trained and is aware of possible hazards & emergency remedial measures. The worker must be adequately qualified, suitably trained and have enough experience to carry out the work safely, or must be under the direct supervision of a competent supervisor/ work inspector/JE depending on the availability. The employer must ensure that all workers who enter a sewer are aware of the hazards they may encounter as well as how to recognize and deal with them. Workers must also be trained in the entry procedures and the use of safety equipment necessary for carrying out the job.
 - b) The equipment – to ensure that all equipment necessary to protect the health and safety of workers is available at work site are in good working condition. Training should be given to the workers about the correct usage, maintenance.
 - c) The environment – any hazard associated with sewer lines must be identified and if any particular harmful substance is found to be present in the sewerage system, as a first step, necessary precautions shall be taken to reduce the concentration levels and also suitable respiratory protection equipments shall be provided.
- 11) ULB shall ensure that the proper assessment of the hazard is made and remedial action has been made before allowing any worker enters the sewerage system.
- 12) ULB shall ensure that all the precautionary measures are taken as per the norms.

4) Sewer Maintenance and Cleaning Procedure

- 1) The entire sewerage system of the city should be marked on a city sanitation i.e map, plan showing location, depth and diameter of sewer pipes, type of line, direction of flow, location of manholes, flushing inlets, service connections and other appurtenances should be clearly marked in the maps.
- 2) The entire system of the city should be divided into different zones / circles / divisions / sub divisions / sections / subsections and assign specific responsibility to respective heads.
- 3) Sewer inspection and maintenance should be planned.
- 4) For each section / subsection, depending upon the size & depth of sewers, spacing of manholes, the conditions of sewer line, method of cleaning needs to be finalized as to whether mechanical / manual cleaning depending on circumstances. In either case each of the working group should be provided with dedicated workers.
- 5) Records should be maintained with particular emphasis on known troublesome lines which require frequent inspection or cleaning. While large sewers with adequate slopes may not require frequent flushing or cleaning, other sewer lines must be placed on routine inspection or cleaning schedule that may range from every month to once in a year. The number of sewer blockages can be substantially reduced by such preventative maintenance.

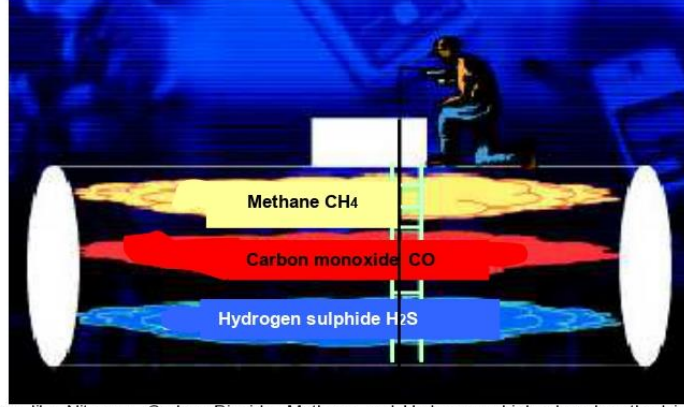
- 6) The successive manholes must be checked for accessing the flow conditions
- 7) All operating records of the sewerage system shall be properly compiled and maintained on daily, monthly and yearly basis and reports must be generated. History cards for individual sewer line and the equipment installed on the sewerage system should also be recorded. Record should also contain the details of maintenance, operations carried out, cost incurred, time and resources involved and also defect noticed during maintenance operation. This will facilitate not only the prompt preventive action that can be included in future planning.

5) Probable Accidents

- a) Types – the major type of accidents that may occur include road accidents during construction & maintenance and accidents due to machinery used for construction & maintenance of sewerage system
 - i) Road Accidents – The vehicles moving on the road are often prone to meet with the accident. The speeding vehicles will always be a threat to the men and material working on the site.
 - ii) Accidents due to improper barricading- It is required to keep open the manholes on a street during maintenance of sewerage system. When manholes are kept open without proper barricading, there are chances of accidents occurring due to slipping of men/vehicles into the manhole.
 - iii) Accidents due to loss of manhole lids- When manhole covers are stolen; there is possibility of occurrence of accidents.
 - iv) Accidents caused during maintenance work- During maintenance, workers may have to enter into the sewerage system. While doing so there are chances of physical injuries, suffocation, drowning, infections etc.
- b) Prevention – Following precautions may be taken to prevent accidents stated above.
 - i) Road Accidents –
 - 1) Place easily readable and warning signals well ahead of work area.
 - 2) Provide Red Lanterns or electric light signals at night.
 - 3) Fence off adequate space around the manhole for placing equipment/machineries and deposition of silt removed.
 - 4) Place barricades or signs to channelize the traffic.
 - 5) Vehicles can be parked between the traffic and the work area as a time gap arrangement.
 - 6) Use a flagman at the two ends for controlling flow of traffic from each direction and to avoid a traffic jam, if the road is narrow and only one lane of traffic is possible.
 - 7) Traffic police needs to be informed well in advance to control / direct traffic on heavy traffic / congested roads.
 - 8) On completion of the work, all manholes shall be checked and it should be ascertained that the same are properly closed.
 - ii) Physical Injuries to the working men – workers are exposed for physical injuries due to the fall of tools, broken pieces, slippage, sudden entry of sewerage flow etc.
 - 1) Provide protective instruments like helmets to the workers working in the sewer.
 - 2) Use lighting equipment which must be explosion and fire proof or use mirror for reflection of light.
 - 3) Whenever portable ladders are used they should be properly seated or fixed.
 - 4) Ensure that no material or tools are located near the edge, which can fall into the manhole and injure the workman
 - 5) Lower all tools to the workman in bucket
 - 6) Do not allow any igniting materials inside the sewer that could cause fire /explosion
 - iii) Suffocation due to sewer gases - Sewer gas is a mixture of gases in sewers and manholes containing abnormally high percentage of carbon dioxide, varying amounts of methane, hydrogen, hydrogen sulphide and low percentages of oxygen caused by septic action through the accumulation of organic matter inside the sewer. The actual hazards are
 - Presence of high level of methane, forming an explosive mixture
 - the oxygen deficiency
 - hydrogen sulphide in excess of permissible levels.

Sometimes different constituents of wastes may also contribute to generation of gases like chlorine, ammonia, sulphur dioxide etc., a noxious gas or vapour that is directly or indirectly injurious or destructive to the health of cleaning staff. Inhalation of these gases in small quantities may lead to simple asphyxiate, chemical asphyxiate, irritant, volatile solvent or a combustible gas.

Depending on their density, gases may be found at different levels in the confined space. Methane being lighter than air is concentrated in the upper portion, whereas hydrogen sulphide and chlorine, which are heavier than air, may be found at the bottom. It is therefore necessary to make sure that the sensor is lowered at different levels to cover all the strata.



Simple asphyxiates inert gases like Nitrogen, Carbon Dioxide, Methane and Hydrogen which when breathed in high concentration cause physiological effects in humans

Chemical asphyxiates are substances like Carbon monoxide which when combined with the hemoglobin of the blood or with some constituents of the tissues either prevent Oxygen from reaching the tissues or prevent the tissues from using it resulting in suffocation and might ultimately lead to death.

Irritants are substances like Chlorine which obstruct the air passage in lungs and induce inflammation in the respiratory tract.

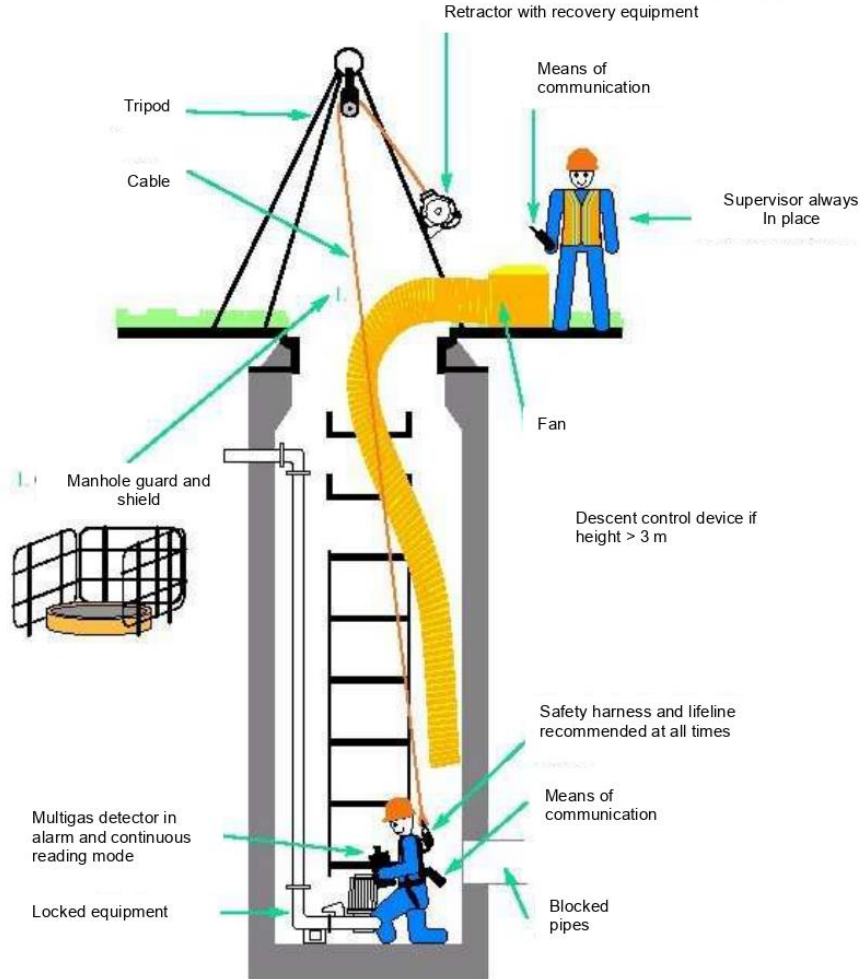
Volatile solvents and drug like substances exert little or no effect on the lungs, but affect the nervous system by inducing anesthesia. Inorganic and organic metallic poisonous substances in a volatile form can prove to be toxic after their absorption into the body.

Combustible gas or vapours will burn as long as they are in contact with flame, spark or a heated material, which has a temperature equal or greater than the ignition temperature of the existing gas or vapours in presence of oxygen. The reaction of the gas or vapour with the Oxygen, results in progressive combustion or propagation of flame and occurs only when the concentration of the gas or vapours is within explosive limits. Beyond the explosive limits of gases or vapours, local combustion may occur at the source of ignition but there will be no propagation of flame and hence the combustion ceases on removal of the source of ignition. Within the explosive limits, along with the propagation of the flame through the mixture, there will be development of pressure leading to violent explosion. Following precautions may be taken to avoid the above said disastrous.

- 1) Ventilate the sewer line by opening two or three manholes on both the sides of the work spot. This is more important when adequate blowers for ventilating sewers are not available. The manholes should be kept open at least one hour before commencement of the work.
- 2) Whenever manholes are kept open the area surrounding the work space should be properly fenced to prevent any person, especially children, accidentally falling into the sewer. BRC welded fabric covers can be also be used for covering.
- 3) Where ever it is required to use the blowers, operate the blowers for at least 30 minutes prior to the commencement of work. Blowers can also be used during cleaning operations to ventilate the lowest working levels. Portable air blowers are recommended for all tanks, pits or manholes where there is a possibility of presence of noxious gas, vapours or Oxygen deficiency while executing
- 4) The motor of the air blowers should be made up of weatherproof and flameproof material with diesel compression ignitions type (without spark plug). These blowers should be placed at more than 2 meters distance, away from the opening of manholes/pits and on the leeward side protected from wind so that they will not serve as source of ignition for any inflammable gas which may be present in the sewerage system. Forced type ventilation should be provided by blower located at ground level with suitable flexible ducting to displace out air from the manhole.
- 5) Mandatory use safety harness and life line before entering the sewer line has to be ensured. Two helpers should be provided at the top for each person who has entered sewerage system. The helper standing at

the top must send signals at every few minutes interval, to the worker in the manhole to ensure safety. Two way wireless communication system is recommended for better communication.

- 6) Test for presence of hazardous gases before worker enters into the sewer line has to be carried out, same has to be repeated if the operations are for a longer duration. In case of scum formation the water and sediments in the manhole should be agitated with the help of rod or any other suitable instrument for the trapped gases. Manholes/pits shall be checked for sufficiency of oxygen.



Schematic representation of safety measures to be taken

- 7) For extended jobs the gas tests shall be repeated every three minutes while workers are still executing the works in the sewer.
- 8) Presence of H_2S can be detected by the usage of the lead acetate paper available in the market or else the lead acetate paper can also be prepared by dipping a filter paper in solution of 5% lead acetate. For detecting H_2S the lead acetate paper should be moistened and lowered in the manhole. Change of acetate paper to brown or grey indicates presence of H_2S .
- 9) To ensure the presence of minimum required level of Oxygen in the sewer line, a safety lamp is to be inserted into the manhole. The lamp will burn smoothly if sufficient Oxygen is available in the sewer line.
- 10) If the oxygen deficiency is noticed while inserting the safety lamps and it is not possible to ventilate the sewerage system adequately before worker enter the system, a hose mask shall be used and extreme

care shall be taken to avoid all sources of ignition. Workers shall be trained to use the hose equipment. While using the hose mask, the workers shall always use safety lights and not ordinary flash lights and non sparking Rubber boots shall be used.

- iv) Infection - Infection to the workers may be caused when cuts or wounds are coming in contact with sewage. The workers should be asked to apply Coconut oil on their body before entering into the manholes and take bath immediately after completion of the work. Providing rubber hand gloves and boots is a good practice. The following precautions may be taken.

- 1) Emergency First Aid treatment kits shall be provided at the work site to take care of all minor injuries like cuts and burns.
- 2) A physician's services should be made available to attend any emergency situation.
- 3) The workers should be educated about the hazards of waterborne diseases, such as typhoid and cholera during the execution of works in sewerage system and chances of occurrence of tetanus due to cuts and wounds while execution of works.
- 4) Cuts and grazes should be covered with waterproof plasters.
- 5) Effective immunization of workers against diseases such as typhoid, cholera, tetanus, etc., should be ensured through periodical vaccination.
- 6) The importance of personal hygiene should be emphasized and the workers should be instructed to keep finger nails short and well trimmed, after the completion of the UGD cleaning task, insist for washing of hands soap solution and hot water before consuming food or smoking. The workers should be asked not to keep fingers in the nose, mouth and eyes, because the hands carry most of the infections.
- 7) Use of rubber gloves should be insisted so that sewage or sludge in sewers does not come in direct contact with the hands.
- 8) Before starting work, skin likely to be exposed to sewage should be covered with protective cream or worker should be provided with wader suit.
- 9) The workers should be provided with an additional set of clothes and gum boots to be worn during working hours.
- 10) When the work is completed, workers should be insisted to take bath or wash those body parts which might have come in contact with the health hazards.
- 11) Depending upon the site condition, provision to connect an air line with compressor or Oxygen cylinder can be provided.

6) Different types of Equipments - Sewer cleaning work require usual implements like pick axes, manhole guards, tripod stands, danger flags, lantern, batteries, safety lamps, lead acetate paper, silt drums, ropes, iron hooks, hand carts, plunger rods, observation rods, shovels etc., In addition, sewer cleaning work requires special equipments and devices like a portable pump-set operate on either diesel/ petrol, manila rope and cloth balls, sectional sewer rods, a sewer cleaning bucket machine, a dredge, a rodding machine with flexible sewer rods and cleaning tool attachments such as flush bags, sewer balls, wooden ball and sewer scooters, sewer letting machine, gully emptier and pneumatic plugs.

- a) Portable Pump Set - In cases, where sewers are blocked completely and sewage has accumulated in manholes, the accumulated sewage has to be pumped out to tackle the sewer blockages, portable pump sets can be used. Such pumps should be of non clogging type preferably on four wheel trailers and should be provided with a self propelling unit to save time and effort. Small pneumatic pumps can be used where high lifts are required and the volume of liquid to be pumped is not large for example when it is required to pump out flooded basements and dewatering of deep trench. In case of steep manholes, non clogging submersible pumps may be used.
- b) Manila Rope & Cloth Ball - The most common way of cleaning sewer lines upto 300 mm diameter can be done by using the manila rope and cloth ball. If necessary, another man inside the manhole helps in pushing the rod through the sewer line. When the front end of the bamboo stripe reaches the next manhole, a thick manila rope is tied to the rear end of the bamboo splits. The bamboo splits are then pulled by another man in the downstream of the sewer line and the accumulated grit is carried to the next manhole where it is removed out by means of buckets. The operation is repeated between the next manholes until the stretch of sewer line is cleaned.
- c) Sectional Sewer Rods - These rods used for cleaning small sewers. The sewer rods may be made up of bamboo or teakwood or light metal, about one meter length with coupling at the ends, which remains intact in the sewer but can be easily disjointed in the manhole. Sections of the rods are pushed down the sewer. The front or the advancing end of the sewer rod is generally fitted with a brush along with a rubber ring for cleaning or a cutting edge to cut and dislodge the obstructions. These rods are also useful to locate the obstruction from either of the two adjacent manholes.

- d) Sewer Cleaning Bucket Machine - The bucket machine consists of two powered winches with cables in between. In cleaning a section of sewer, the winches are centered over two adjacent manholes. To get the cable from one winch to the other, it is necessary to thread the cable through the sewer line by means of sewer rods or flexible spilt bamboo rods. The cable from the drum of each winch is fastened to the barrel on each end of an expansion sewer bucket fitted with closing device, so that the bucket can be pulled in either direction by the machine on the appropriate end. The bucket is pulled into the loosened material in the sewer out of gear and the opposing winch is put into action. When the reverse pull started, the bucket automatically closes and the dirt is deposited in a truck or a trailer. This operation is repeated until the line is clear. Various bucket sizes are available for sewers 150 mm to 900 mm in size. The machine is also used along with other scrapping instruments for loosening sludge banks of detritus or cutting roots and dislodging obstructions.
- e) Dredger - It consists of a grab bucket on a wire which is lowered into the manhole in open condition with the help of a crane and pulley. On reaching the bottom of the manhole the segments are closed picking up the accumulated silt. The bucket is then raised above ground level where the bucket opens and the silt is automatically dropped into a truck or a trailer. The closing of the bucket can be affected by wire ropes or by a pneumatically operated cylinder. The disadvantage in this system is that it cannot clean the corner of the catch pit of manholes. Sometimes the deposits at the corners may become so hard that the same may be required to be chiseled out.
- f) Roding Machine with Flexible Sewer rods - This consists of a machine which rotates a rod with auger, corkscrew or hedgehog and sand cups. The flexible rod consists of a series of steel rods with screw couplings. The flexible rod is guided through the manhole by a bent pipe. The machine rotates the rod with the tool attached to one end, the other being fixed to the machine. The rotating rod is thrust into the bent pipe manually through clamps with long handles holding the rod near the couplings. As the rod is thrust inside, the machine also is drawn towards the manhole. The rod is pulled in and out in quick succession when the tool is engaging the obstructions, so as to dislodge or loosen it. When the obstruction is cleared, the rod is pulled out by means of clamps keeping the rod rotating to facilitate quick and easy removal.
- g) Scraper - This method is used for sewers of diameter larger than 750 mm. The scraper is an assembly of wooden planks of slightly smaller size than the sewer to be cleaned. Where the scraper cannot be lowered through the opening of a manhole, the scraper has to be assembled inside the manhole. The scraper chains, attached to a control chain in the manhole into which it is lowered is then connected to a winch in the next downstream manhole by means of chains. The winch is then revolved to push the debris ahead of the scraper. The heading up of the flow behind the scraper and the water dropping from the top of the scraper will also assist in pushing it in the forward direction. This ensures that the bottom and the sides of the sewer are cleaned thoroughly. The scrapped debris is removed manually. Circular scrapers are used on small sewers below 350 mm diameter for cleaning the body of the line. They are commonly known as discs and these discs are either of collapsible type made out of metal or a wooden pair separated about 200 mm apart by steel rods.
- h) Hydraulically Propelled Devices - The hydraulically propelled devices take advantage of the force of impounded water to effectively clear sewers. Efficiency depends on the hydraulic principle that an increase in velocity in a moving stream is accompanied by a greatly increased ability to move entrapped material. The transporting capacity of water varies as the sixth power of its velocity.
- i) Flush Bags - A most effective tool for cleaning portions of sewers where rods cannot be used is the sewer flusher or flush bag. The flusher is a canvas bag or rubber bag equipped with a fire hose – coupler at one end and a reducer at the other end. The flusher is connected to the fire hose and placed in the downstream end from the point where a choke is located. The bag is allowed to fill up until it expands and seals the sewer. The upstream pressure built up due to this damming effect breaks loose the obstructions. Caution must be exercised in using these types of devices as there is a likely hood of sewage flowing back into the house connections or breaking of the pipes or joints due to high pressure that may develop.
- j) Sewer Balls - These are simple elastic pneumatic type rubber balls which can be blown upto varying degree of inflation. These are manufactured in sizes from 150 mm to 750 mm when fully inflated. When used in cleaning a sewer the ball is first inflated and then wrapped in a canvas cloth, the edges of which are sewed together. A trail line, little longer than the distance between the manholes, is attached securely to the covering. The size of the ball and the covering shall be such as to fit fairly snugly into the sewer. Immediately the ball is thrust into the sewer, sewage commences to back up in the manhole and continues to rise until such time as its pressure is great enough to force the ball, moving it downstream through the pipe. Acting as a compressible floating plug, it affords enough obstruction, so that a continuous high velocity jet spurts under and to some extent around the ball, thereby sluicing all the moveable material ahead to the next manhole. If the ball encounters an obstruction which is immovable, the ball merely indents to the necessary degree and moves forward. The only fixed obstruction which will stop the forward progress of the ball is a root mass or some similar obstruction tightly wedged into the

pipe. Bricks, stones, bottles, loose metal parts, broken pieces of pipes, sand, gravel and settled sludge are easily moved ahead. If the ball stops momentarily, a pull on the trial line is usually sufficient to set it in motion again. If the pipe is very dirty, the trial line can be tied to step in the upper manhole and the balls progress can be retarded to the required degree as the lower manhole is reached thus giving time for complete removal of accumulated silt and debris which has piled up ahead of the ball. A wooden ball, also called a sewer pile, can also be used for this purpose, particularly for cleaning large out fall sewers. It is dropped into the sewer and owing to its buoyant action rolls along the invert of the sewer. The obstruction caused by it to the flow produces a vigorous scouring action along the invert and the sides which has the effect of removing the growths and the deposits from the sewers. The method is economical and hence can be used at frequent intervals.

- k) **Sewer Scooter** - This arrangement is an improved version of the scraper and consists of two lacks a controlling rope and the scooter with a tight fittings shield. In contrast to the scraper, the scooter completely stops any flow of sewage. The scooter, attached to the control rope, is lowered into the manhole and then into the downstream sewer line. The downstream manhole jack is lowered into place from the road and upper manhole jack across the top of the manhole. When the scooter is introduced into the line, it stops the flow of sewage thus building up a head behind the shield. The resulting pressure causes the scooter to move through the sewer until it accumulates enough debris to stop its movement. The head is then allowed to build approximately one meter before the control rope is pulled, causing the shield to fold back, thus allowing the accumulated sewage to gush into the sewer downstream, flushing the debris ahead to the next manhole from where it is removed. The control rope is released, clearing the shield against the sewage and causing the scooter to advance again until the debris stops its movement. This process is repeated till the scooter reached the downstream manhole where it may be removed or allowed to continue through the next section.
- l) **Velocity Cleaners (Jetting machine)** - The high velocity sewer cleaner makes use of high velocity water jets to remove and dislodge obstructions, soluble grease, grit and other materials from sanitary, storm and combined sewerage systems. It combines the functions of a rodding machine and gully emptier machine. Basically it includes a high pressure hydraulic pump capable of delivering water at variable pressure up to about 80 kg/cm² through flexible hose to a sewer cleaning nozzle. The nozzle has one forward facing hole and a number of rear ward facing holes. The high pressure water coming out of the holes with a high velocity breaks up and dislodges the obstructions and flushes the materials down the sewer. Moreover by varying the pressure suitably, the nozzle itself acts as jack hammer and breaks up stubborn obstructions. (A separate suction pump or air flow devices may also be used to suck the dislodged material). The entire equipment is usually mounted on a heavy truck chassis with either a separate prime mover or a power take off for the suction device. The high pressure hose reel is also hydraulically driven. The truck also carries fresh water tanks for the hydraulic jet and a tank for the removed sludge and the various controls grouped together for easy operation during sewer cleaning. The manufacture's operating and servicing manuals should be carefully followed for best results in the use of the machine.
- m) **Suction Units (Gully Emptier)** - Suction units create vacuum required for siphoning of mud, slurry, grit and other materials from sanitary, storm and combined sewerage systems. The vacuum created is such as to siphon the materials from the manholes, catch pits etc., having depth ranging from 1 m to 8 m in normal cases with an option to suck additional 4 m with the help of special accessories for the purpose. The unit can be vehicle or trolley mounted. Slit and heavy particles settled at the bottom can be agitated and loosened by pressurized air with the help of the pump and then sucked in a tank. Once the silt tank is full, the effluent is discharged in the nearby storm water drain or manhole, and the operation is repeated till the manhole is cleared off the silt. The silt deposited in the tank is then emptied at the predetermined dumping spot. This machine is very much useful in desalting surcharged manholes and in routine course the manholes can be silted without the workers getting down into the manhole.
- n) **Pneumatic Plugs** - The plugs are used for Isolating the gravity for low pressure testing of sewers, Stopping the flow of sewerage in the sewer line to carry out structural repairs and stopping the flow to carry out routine maintenance on the downstream side of plugged sewer line. The plugs are made of metal plates which can withstand the action of waste water. The plates are bounded with suitable quality strong elastic materials. The plugs should withstand the minimum hydrostatic back pressure likely to be encountered. The plugs can be inflated and deflated within the sewer line itself by suitable controls from the road level. Suitable hook and chain are provided to chain the plug in the manhole. Tethering life line and inflation hose are supplied with each plug. All plugs above 450 mm diameter should have a bye pass fitting suitable for fixing a fire hose and suction hose.

7) **Precautions to be taken while entering the sewerage system**

Throughout the country there are many hundreds of men involved in cleaning of sewer lines, manholes, pumping stations or at sewage treatment & disposal works. The efficiency of sewer /manhole cleaning activities depends on design and execution of the sewerage systems. Successful operation and prevention of sewerage system breakdown depend upon the skill of the men who maintain them.

- a) Safety – It is observed, that during maintenance of sewer lines Safety awareness, i.e, acquiring necessary skill and knowledge to avoid the hazards, among workers & supervisors is the basic requirement.
- b) It is essential that the workers in work area are aware about the probable times/spots/incidents that can lead to accidents so that it can be prevented from occurring. Each one of the worker must learn how to avoid accidents.
- c) In any given circumstances worker should enter a manhole, sewer, sump or any underground chamber until all the necessary safety precautions have been taken or else one may land himself in danger and also may hinder the rescue of others.
- d) Even in the pressing circumstances care should be taken not to neglect safety procedures.
- e) Statutory provisions for safety – specific guidelines has been laid down under section 36 of the Factories Ad, 1948 regarding safety measures to be adopted by each department in regard to workmen deputed for desilting / cleaning of sewers. BIS code of practice for safety precautions to be taken when entering a sewerage system is detailed out in BIS code no.11972 1987.
- f) Personnel engaged in operation and maintenance of sewerage systems including sewage pumping stations are exposed to different types of occupational hazards. The health and safety of personnel can be safeguarded to a greater extent by taking the likely hazards into consideration at the time of designing the sewers, sewer appurtenances and pumping stations itself. Hazards which are still possible despite due consideration in the design period can be reduced by adopting safety equipment and precautionary measures appropriate during each of the probable hazardous condition. Finally to guard against human error and carelessness, suitable job instructions needed to be given to workers before execution of the work and also should ensure that sewer cleaning works are carried out in presence of the effective supervisory staff not less the rank of work inspector/JE/AEE depending on the complexity of the situation
- g) Only workers who are above 18 years of age, physically fit, aware of the possible hazards, capable of reacting to emergency situations and able to take right decisions should be employed.
- h) The selection of prospective employees for the development & cleaning of sewerage and sewage disposal systems should take into consideration the duties that they are expected to perform.
- i) Persons considered for employment shall be physically fit and capable of understand the complexity of work and appreciate the training given. Those with the undemoted disabilities shall not be recruited for this type of work. Following categories of people should not be employed in sewer construction and cleaning works viz. (1) history of fits, blackouts or fainting attacks, (2) A history of heart disease or disorder; (3) High blood pressure; (4) Asthma, bronchitis or a shortness of breath on exertion; (5) Deafness; (6) Disease involving giddiness or loss of balance; (7) Claustrophobia or nervous or mental disorder; (8) Back pain or joint trouble that would limit mobility in confined spaces; (8) Deformity or disease of the lower limbs limiting movement; (9) Chronic skin disease; (10) Serious defects in eyesight in eyesight; (12) Lack of sense of smell.
- j) The workmen entrusted with the work of sewers cleaning and de-salting should have basic functional literacy.
- k) Employees should be medically re-examined at reasonable intervals, taking into account the person's age and duties.
- l) The local agency shall impart training to the supervisory staff regarding the basic objective of implementation of the scheme, safety measures including rescue methods and the use of safety equipment that are part of the project so that they can ensure accomplishment of the task assigned successfully. Such training programme shall be repeated periodically.
- m) Training and demonstration regarding implementation of the safety measures including rescue method and the use of safety equipment shall be imparted to each worker and a certificate shall be issued to that effect.
- n) An annual schedule for medical checkup of workers engaged in such work will be drawn and put into practice. These checkups should include a complete clinical examination, blood tests, radiological tests, pulmonary functions test, psychiatric evaluation and other specialized tests wherever necessary. Special emphasis must be given to study of the respiratory system, eyes and skin problems.
- o) Copy of the safety measures in regional language shall be given to each worker and also read out to them by Supervisors of the Urban local bodies or and the Contractor's Super visors.
- p) During the summer or hot period, persons should be allowed to go inside the manhole only during morning hours or when the temperature is low.
- q) No person should work inside the manhole for more than 15 minutes at a stretch. He should be withdrawn afterwards and the next person be sent.
- r) Man working in manholes or sewers must be provided with detector lamp, test papers (lead acetate paper). Air must be treated at frequent intervals. If at any given circumstances, unsafe conditions are indicated or if there is an unusual smell or peculiar smell, all men must be directed to leave the Manhole immediately.

- s) When the sewers are large enough to be entered, guard bars or chains must be kept in position across the sewer downstream of the place of the work.
- t) No one worker should be allowed to walk inside the sewer lines. A helping hand must be provided when men are working in fast flowing sewage and special care must be taken while cleaning blockage.
- u) Care should be taken for immediate treatment arrangement, including emergency admission and treatment at any hospital in the vicinity of site. The information about each of the accident should be reported to the concerned authorities and the labour welfare officer immediately over telephone as well in writing.
- v) In case if any worker who has entered manhole/sewerage system suddenly collapses due to inhalation of hazardous "gases", the workers who are present at the top must be warned immediately. In case due to unavoidable circumstances, if the casualty can't be removed immediately, the men with him must return to the surface instantaneously. No further rescue attempt should be attempted without breathing apparatus, and help from fire and ambulance services must be summoned straight away over telephone.
- w) A responsible officer not less than supervisory cadre of the department such as work inspector or Junior Engineer or Assistant Engineer should be physically present at the site and should ensure and document the compliance of the safety guidelines and entry worthiness into the manhole. He/she should be available throughout the operation and the onus of compliance with the safety guidelines should lie on him/her. If the said Supervising Officer is not satisfied about the safety aspects should immediately stop the work.
- x) List of various safety tools and equipment to be used while entering the manhole and during the cleaning/de silting operation should be periodically reviewed / checked. Each section of Main Sewer Division shall be equipped with these tools, overall and safety equipment.
- y) Each worker engaged in cleaning and de silting operation of the sewer lines, manholes, etc. shall be medically examined once in an year and of any worker is found to be suffering from respiratory, skin, eye problems, infections, cardio vascular, spinal, psychiatric nature ailments, should not be engaged for cleaning and de silting work inside the manhole or sewer lines till he is cured of the ailment completely and readiness certificates should be obtained from not less than Taluk level assistant surgeons cadre. Similarly, the contractors engaged in cleaning and de silting operations shall get their workers/ employees medically examined and shall not employ any worker who is found to be suffering from any of the above mentioned ailments. The contractor shall submit with the contract agency, a certificate from a registered medical practitioner showing that the workers to be engaged for the said contract of cleaning and de silting operation are not suffering from respiratory, skin, eye problems, infections, cardio vascular, spinal, psychiatric nature ailments.
- z) The workers should be provided with vaccination against certain diseases which sewage workers normally suffer due to the nature of their work.
- aa) First Aid Box should be always stocked with the required medicines
- bb) If any worker on medical examination is found to be suffering from disease attributable to this work and when certified by a Taluk level Assistant surgeon, the victimized worker shall be granted special disability leave as per the provisions of the relevant regulations.
- cc) If ULB hires contractor for carrying out sewer cleaning and de silting works, It should be made mandatory that Rupees Five lakh worth workmen insurance needs to be provided for each of the worker engaged by the Contractors at the contractor's cost. If the worker belongs to ULB/ boards is permanently disabled or hospitalized during sewer cleaning and de silting works, similar compensation will also be arranged by the local body/ any other implementing authority / authorized agency.
- dd) A vehicle with the safely equipment such as breathing apparatus, diver's suit, air blower, escape set, etc., should be available to meet any emergency situation. The same vehicle shall have other facility such as first aid kit provision for eyewash, etc. This vehicle should also be made use as ambulance van in case of an emergency or accident.
- ee) Local body/Authority should incorporate conditions regarding safety procedure, use of safety equipment, tools & insurance in the tender documents and should ensure that the contractors fulfill them.
- ff) Penalty clause shall be incorporated in the tender document for non compliance of the conditions related to health, safety and welfare of the workers and other conditions of this scheme. The contractors shall not be allowed to start the work of cleaning and de silting of the sewer line until the requisite insurance policy is produced and verified. Senior Officers of department should verify the records during their periodical inspection and check the compliance of the conditions related to safety and welfare of the workers.
- gg) List of the contractor's employees including their residential addresses, age, etc. must be maintained and made available in separate registers.

- hh) If the contractor has engaged more than 20 laborers, He must get registration Certificates from Labour Department , ESI & PF departments.
- ii) Contractors should abide by all the rules and regulations in respect of labour laws prescribed by the Government/Authorities.
- jj) The Workmen compensation should be paid to the contractor's employees as per the provisions of Workmen's Compensation Act.
- kk) After working in sewers or manholes - The supervisory staff ensure that all men have left the work spot at the end of working hours.
- ll) All equipment should be cleaned, dried, checked and adjusted ready for further immediate use.
- mm) Calibration and checking of gas monitor: some time the gas monitor may not work due to moisture, dust and impact happened at monitor and sensors. These have to be checked regularly
- nn) Emergency preparedness: On exposing to the toxic gases depending on the condition of the victim CPR (cardio pulmonary resuscitation) has to be given.

8) Trench safety hazards & precautions

While working on invert cut(downward cut) trench walls, wet trenches, water stagnating trenches, loose soils, internal cracked trench walls, vibration /loading at the shores of trenches by any equipments like crane/DG/Compressor, water seepage into the trenches /above the shores of the trenches, Existing pipelines/utilities-unsupported, over dumped soil, stones above trenches are dangerous following Precautions needs to be taken.

- remove excess earth,
- cut the trench walls with slight slope,
- do not cut the wall /weld pit invert,
- dewater frequently,
- control outsider disturbing the trench walls,
- do not park at unsafe distance at the trenches,
- put ladders main and short ladders, support existing utilities at trenches, power lines above-crossing pipes,
- check daily before allowing work group and record-trench log,
- new excavation -implement permit system ,
- no lonely works,
- Communicate to the site engineers and concerned, give feedback from site for unsafe conditions/actions.

9) Snake bit hazards: make good housekeeping including grass removal at sites, instruct workers not to sit near grasses or inside pipes having darkness or on debris, de-shuttering works or under the stored steels-woods or inside the sack bags.

Keep potassium permanganate and teach how to use the same after bites and also train the workers regarding first aid procedures that needs to be followed.

Every 15 days take pieces of cotton duly mix with the acid and keep it everywhere wherefrom the snake could enter

10) Electrical safety:

- 30 milli amphs will give shock to human
- 300 milli amphs will lead to loss of life

Hence in all pipeline work areas, GLRs, Pumping stations, WTP, Sewerage works, yards and all location labour camps/sheds this fact need to be kept in mind and suitable precautionary measures need to be taken up

- Overload trip (ELCB) is must for all working machineries, equipments connected with power.
- All electrical connections and Designated Ground (DG) inside the pipes to have body earthing and ELCB facilities
- All DG sets are to be fixed with Distribution Box (DB), change over switch and good cables/wires.
- Do not allow personnel to access the pipe /fitting lifting area while working under power lines. Instruct workers to be away from the pipes and equipments to avoid electrocution.

Working under power line: following safety distance needs to be maintained

- 440 volts--10ft from top tip of equipment to the line
- 11KV (11000 volts) –13ft from top tip of equipment to the line
- Above 11KV –18ft from top tip of equipment to the line

11) Odd time works control:

Working inside the trenches/inside the pipes on Sundays/ holidays, lonely working at trenches/heights, unloading/loading after sunset, working after sunset at heights/trenches, uncontrolled confined space works, accessing site near water sources, heaped earth under power lines, working at poor lighting/no lighting after sunset, working at 50 volts & above during night time, sitting or any kind of access near grassy/forest areas at site or near labour camps are very dangerous and it may lead to fatal risk. Hence if at all workers are expected to work in odd timings it needs to be carried out in presence of officer not less than Assistant Engineer grade.

12) Safety Equipments /gadgets

The labours should be equipped with the following safety equipment :

- Safety helmet preferably with cap lamp (explosion proof);
- Safety belt;
- Protective gloves;
- Overall heavy coat or other heavy duty protective clothing preferably waterproof;
- Knee or thigh length safety boots with toe protection and antiskid studs;
- Gas masks and breathing apparatus;
- Eye protectors;
- Portable lighting equipment;
- Non-sparking tools;
- Portable air blowers;
- Gas test equipments, such as safety candle lamps, Davy's safety lamps, lead acetate papers and electronic gas detectors; and
- First aid equipment.

13) Training –

Proper training has to be imparted to all workers engaged in the sewage cleaning related works at training institutions. Issuing of attendance certificate ensures that worker has undergone training and refresher training courses is recommended at regular intervals for adoption of new technologies.

14)Check lists

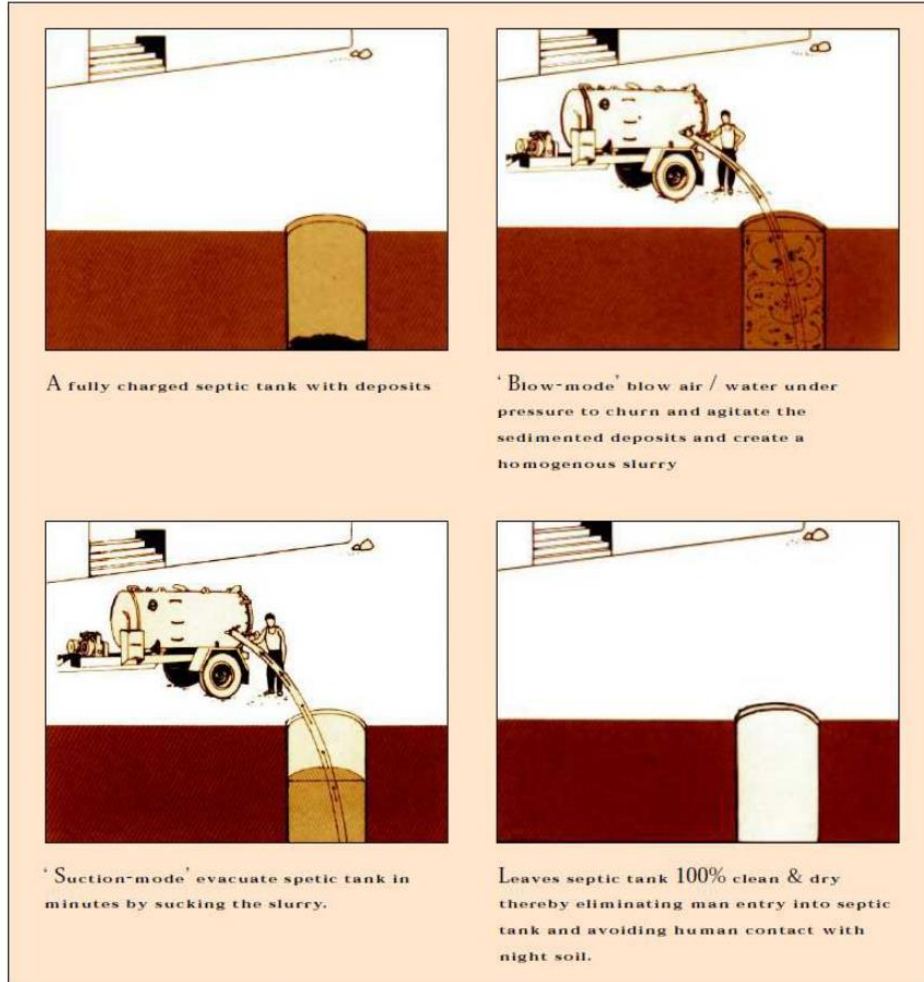
Is it absolutely necessary to enter the sewer to complete the work?	Yes <input type="checkbox"/> No. <input type="checkbox"/>
Will traffic control be a factor? If yes, what traffic control devices will be needed? _____ _____ _____ _____ _____	Yes. <input type="checkbox"/> No. <input type="checkbox"/>
Has this sewer been recently entered? If yes, were any problems encountered previously? _____ _____ _____ _____ _____	Yes. <input type="checkbox"/> No. <input type="checkbox"/>

<p>Are there businesses or industries nearby which may dispose of Chemicals or fuels?</p> <p>If yes, identify substances of concern:</p> <p>Fuels (gasoline, diesel, natural gas)</p> <p>Solvents</p> <p>Other</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Yes. <input type="checkbox"/> No. <input type="checkbox"/></p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p>
<p>What are the tasks are being carried out in the sewer?</p> <p>Inspection</p> <p>Repair work</p> <p>De silting</p> <p>Any other work</p>	<p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p>
<p>What tests are needed to ensure that the air in the sewer is safe?</p> <p>Oxygen concentration</p> <p>Hydrogen sulphide concentration</p> <p>Carbon monoxide concentration</p> <p>Lower Explosive Limit (LEL)</p> <p>Other</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p>
<p>If contaminants are present, what special precautions are needed?</p> <p>_____</p> <p>_____</p> <p>Engineering controls</p> <p>_____</p> <p>_____</p> <p>Administrative controls</p> <p>_____</p> <p>_____</p> <p>Personal protective equipment</p> <p>List all required</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p>

<p>Will it be possible to isolate the work space?</p> <p>If no, what special precautions will be taken?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	
<p>Are there procedures/precautions in place for biological hazards?</p> <p>If yes, list</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	
<p>Will special equipment be needed for this entry?</p> <p>If yes, indicate types:</p> <p>Explosion-proof electrical equipment</p> <p>Pumps</p> <p>Non-sparking tools</p> <p>Fans/ventilation equipment</p> <p>Full body harnesses</p> <p>Tripod and winch</p> <p>Other</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p>
<p>What rescue equipment will be required?</p> <p>List all:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>Has the weather office been contacted regarding storm or flash flood conditions or other weather conditions that could cause a hazard?</p> <p>If yes, identify</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Yes No.</p>

Whether all the men who have entered the sewer have come out	Yes	No
Whether all the material taken inside has been brought back	Yes	No
Whether sewer can be charged	Yes	No
Signature of the contractor	Signature of J E or A E	

Septic Tank cleaning with sucking machine



Retriever – simple mechanism for clearing the chockage

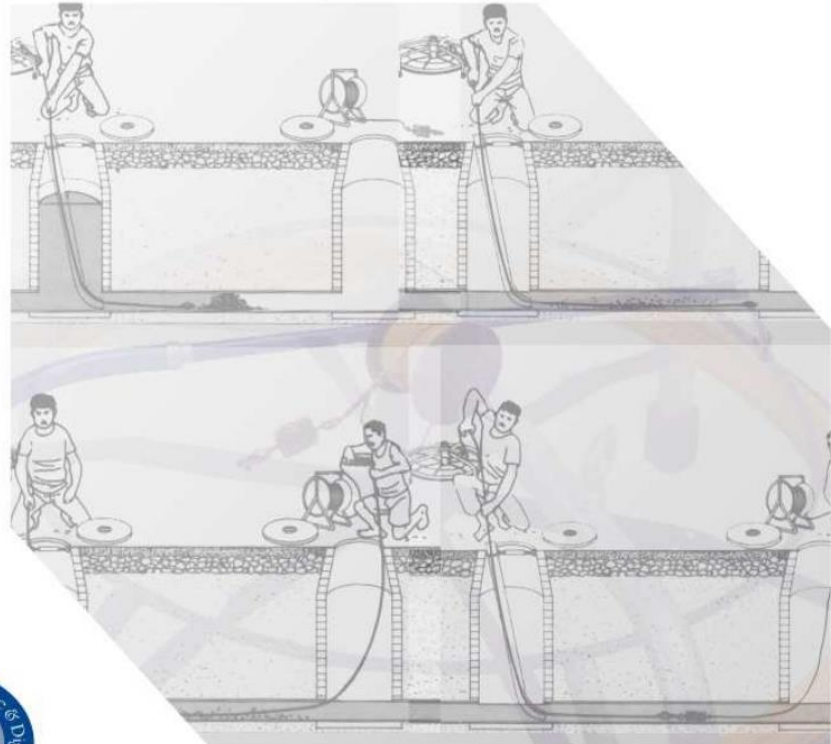
RETRIEVER



RETRIEVER
Non - motorised drain cleaner

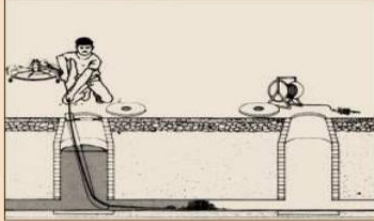


ACCESSORIES
Standard : nylon rope with brush,
Optional : manhole guide pipe assembly



SPECIFICATIONS :

WEIGHT OF UNIT	DIAMETER OF WHEEL	FLEXO RIGID ROD LENGTH	FLEXO RIGID ROD DIAMETER	MANHOLE GUIDE PIPE	OPTIONAL ACCESSORY
21kg.	835 mm	100 feet & multiples of 50 ft. thereof	9mm	10 feet PVC Telescopic pipe	3.0" wirebrush fixed to a 100' nylon rope

DE-CHOKING

Release the rod from the wheel cage and introduce the end in to the sewer line through the manhole guide pipe. Push gently until it reaches the choke / blockage.



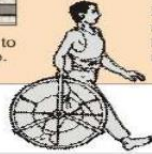
Now de-choke / break blockage forcefully. The flexo rigid property of the rod will ensure maximum transfer of impact / force.

PREVENTIVE MAINTENANCE

For preventive maintenance allow the rod to travel further, until it reaches the other manhole.



Pull out the rod, attach the brush and feed back rod into the wheel. The brush on its way backwards will dislodge / collect deposited material.



Man entry with safety equipment in a confined area and Blower





Typical Man entry with safety equipments



MODEL CHECKLIST

The following checklist provides a ready reference of the major considerations that apply to work in a confined space. This list, designed for a particular confined space or industry in order to minimize the risks involved in confined space work.

PRE-ENTRY The pre-entry considerations should be at least as follows:

- (a) Employee selection, including evaluation of an employee's aptitude and fitness for task and confined space entry.
- (b) Employee training should include the following:
 - (i) Emergency entry and exit procedures.
 - (ii) Use of respiratory protective devices.
 - (iii) First aid including cardio-pulmonary resuscitation (CPR).
 - (iv) Lockout procedures.
 - (v) Safety equipment use.
 - (vi) Rescue drills.
 - (vii) Fire protection.
 - (viii) Communications.
- (c) Actions required before execution are as follows:
 - (i) Coordinate planning of work.
 - (ii) Coordinate supervising of work.
 - (iii) Implement emergency rescue plan.
 - (iv) Initiate safe work practices.
 - (v) Signpost work area.
 - (vi) Isolate confined space.
 - (vii) Evaluate confined space environment.
 - (viii) Comparison of initial test results with existing standards to determine ventilation and/or personal protection requirements.
 - (ix) Ventilate and/or provide personal protection.
 - (x) Provide for monitoring of confined space during work.
 - (xi) Ensure that standby staffs are available for rescue and operation of essential equipment.
 - (xii) Ensure rescue equipment is readily available and in order.
 - (xiii) Authorise entry by permit.
 - (xiv) Suspend work/evacuate space if conditions change to present real/potential danger.

DURING ENTRY AND RE-ENTRY -The minimum considerations prior to the entry and re-entry should be as below

- (a) A comparison of initial test results with an existing standard to determine whether ventilation or personal protective equipment will be used.
- (b) Continuous or periodic monitoring of confined space atmosphere.
- (c) Ensure safe work practices followed.
- (d) Reissue permit if conditions change.
- (e) Confirmation that all persons and equipment are accounted for.

AFTER EXIT The consideration after exit should include the following:

- (a) Ensure safe work practices followed.
- (b) Review of operation - comment of any unsatisfactory aspects.
- (c) Acceptance of completed job.
- (d) Secure the entry point
- (e) Clean the equipment and store it in safe place.

All the safety measures /guidelines proposed in the manual during maintenance of UGD system is also applicable during construction of UGD System also



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ಕರ್ನಾಟಕ ನಗರ ನೀರು ಸರಬರಾಜು ಮತ್ತು ಒಳಚರಂಡಿ ಮಂಡಳಿ Karnataka Urban Water Supply & Drainage Board

ನಂ. 5 ಮತ್ತು 6, ಜಲ ಭವನ, ಬಿ.ಟಿ.ಎಂ.ಲೇಔಟ್
1ನೇ ಘಟ್ಟ, 1ನೇ ಹಂತ, ಬನ್ನೇರುಘಟ್ಟ ಮುಖ್ಯರಸ್ತೆ
ಬೆಂಗಳೂರು 560029

ಸಂಖ್ಯೆ : ಕ.ನ.ನೀ.ಸ.ಒ.ಜ.ಮ/ಮು.ಅ/ಡಿಸಿಇ/ತಾ.ಸ/ಸುತ್ತೋಲೆ/ 1146 /2018-19

ದಿನಾಂಕ : 10/08/2018

ಸುತ್ತೋಲೆ

ವಿಷಯ : ರಾಜ್ಯದಲ್ಲಿ ಒಳಚರಂಡಿ ಕಾಮಗಾರಿಗಳನ್ನು ಕೈಗೊಳ್ಳುವಾಗ ಮತ್ತು ನಿರ್ವಹಣೆ ಮಾಡುವಾಗ ತೆಗೆದುಕೊಳ್ಳಬೇಕಾದ ಮುನ್ನೆಚ್ಚರಿಕೆ ಕ್ರಮಗಳ ಬಗ್ಗೆ ಮತ್ತು ಶೌಚಾಲಯ ಗುಂಡಿಗಳನ್ನು ಯಾಂತ್ರಿಕವಾಗಿ ವಿಧಾನದ ಮೂಲಕವೇ ಸ್ವಚ್ಛಗೊಳಿಸುವ ಬಗ್ಗೆ

ಉಲ್ಲೇಖ : 1) ಕರ್ನಾಟಕ ನಗರಾಭಿವೃದ್ಧಿ ಸಚಿವಾಲಯ, ಇವರ ಅಧಿಸೂಚನೆ ಸಂಖ್ಯೆ : ನಅಇ 04 ಯುಡಿಎಸ್ 2012, ಬೆಂಗಳೂರು ದಿನಾಂಕ : 15.05.2013, ಕರ್ನಾಟಕ ರಾಜ್ಯ ಪತ್ರ ಸಂಪುಟ 149 ಸಂಚಿಕೆ 23, ಪ್ರಕಟವಾದ ದಿನಾಂಕ : 5-6-2014ರಲ್ಲಿ ಪ್ರಕಟಿಸಲಾದುದು.
2) ಈ ಕಛೇರಿ ಸುತ್ತೋಲೆ ಸಂಖ್ಯೆ : 53 / 2017-18 ದಿನಾಂಕ : 6-4-2017.

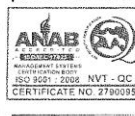
ಕರ್ನಾಟಕ ನೀರು ಸರಬರಾಜು ಮತ್ತು ಒಳಚರಂಡಿ ಮಂಡಳಿಯು ರಾಜ್ಯ ಮತ್ತು ಕೇಂದ್ರದ ಯೋಜನೆಗಳ ಅಡಿಯಲ್ಲಿ ಹಲವಾರು ನಗರ / ಪಟ್ಟಣಗಳಲ್ಲಿ ಒಳಚರಂಡಿ ಕಾಮಗಾರಿಗಳನ್ನು ಕೈಗೊಂಡಿರುತ್ತದೆ ಮತ್ತು ಕೆಲವು ನಗರ / ಪಟ್ಟಣಗಳಲ್ಲಿ ಒಳಚರಂಡಿ ವ್ಯವಸ್ಥೆಯ ನಿರ್ವಹಣೆಯನ್ನೂ ಮಾಡುತ್ತಿದೆ. ಕಾಮಗಾರಿ ನಡೆಯುವ ಸಂದರ್ಭದಲ್ಲಿ ಮತ್ತು ನಿರ್ವಹಣೆ ಮಾಡುವಾಗ ಕೆಲವು ಕನಿಷ್ಠ ಮುನ್ನೆಚ್ಚರಿಕೆ ಕ್ರಮಗಳನ್ನು ಪಾಲಿಸದೆ ಇರುವುದು ಕಂಡು ಬಂದಿರುತ್ತದೆ.

ಈ ಸಂಬಂಧವಾಗಿ ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ನಗರಾಭಿವೃದ್ಧಿ ಸಚಿವಾಲಯವು ಅಧಿಸೂಚನೆ ಸಂಖ್ಯೆ : ನಅಇ 04 ಯುಡಿಎಸ್ 2012, ಬೆಂಗಳೂರು ದಿನಾಂಕ : 15.05.2013ರಲ್ಲಿ ಕರ್ನಾಟಕ ರಾಜ್ಯದಲ್ಲಿ ಕೈಗೊಳ್ಳುವ ಒಳಚರಂಡಿ ನಿರ್ಮಾಣ ಮತ್ತು ನಿರ್ವಹಣೆ ವಿಷಯದಲ್ಲಿ ಅನುಸರಿಸಬೇಕಾದ ಅಂತಿಮ ರಕ್ಷಣಾ ಸೂತ್ರಗಳ ಕೈಪಿಡಿಯನ್ನು ಹೊರಡಿಸಿರುತ್ತದೆ. ಈ ರಕ್ಷಣಾ ಸೂತ್ರಗಳ ಕೈಪಿಡಿಯನ್ನು ಕರ್ನಾಟಕ ರಾಜ್ಯ ಪತ್ರದಲ್ಲಿ ಸಂಪುಟ 149 ಸಂಚಿಕೆ 23, ದಿನಾಂಕ : 5-6-2014ರಲ್ಲಿ ಪ್ರಕಟಿಸಲಾಗಿದೆ. ಸದರಿ ಅಧಿಸೂಚನೆಯಲ್ಲಿ ಹಲವು ರಕ್ಷಣಾ ವಿಷಯಗಳ ಬಗ್ಗೆ ವಿವರಣೆ ನೀಡಲಾಗಿದ್ದು, ಕೆಲವು ಮುಖ್ಯವಾದ ವಿಷಯಗಳನ್ನು ಈ ಕೆಳಕಂಡಂತೆ ವಿವರಿಸಲಾಗಿದೆ :-

- Hazards – Types of Hazards are Oxygen deficiency, presence of Hydrogen Sulphide, Carbon monoxide, methane, gasoline vapours, fire, pathogens, falling objects, physical slips, trips, falls, electrical shock, poor visibility, noise, drowning, control of hazards through maintenance of sewers.



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- (ii) Sewer maintenance and cleaning procedure
- (iii) Probable accidents – types, prevention,
- (iv) Different types of equipments – portable pump set, rope, cloth ball, sewer rods, sewer cleaning bucket machine, dredger, roding machine with flexible sewer rods, scraper, hydraulically propelled devices, flush bags, sewer balls, sewer scooter, jetting machine, suction units, pneumatic plugs, responsibility of ULB in maintenance of sewers
- (v) Precautions to be taken while entering the sewerage system
- (vi) Trench safety hazard and precautions
- (vii) Snake bite hazards
- (viii) Electrical safety – working under power line
- (ix) Odd time works control
- (x) Safety equipments / gadgets like belt, helmet, gloves, coat, eye protector, masks, lighting equipment, first aid
- (xi) Training at regular intervals
- (xii) Check lists – with model checklist for pre-entry considerations, during entry and after exit

ಕರ್ನಾಟಕ ರಾಜ್ಯಪತ್ರ ಪ್ರತಿಯನ್ನು ಸುತ್ತೋಲೆಯೊಂದಿಗೆ ತಮ್ಮೆಲ್ಲರ ಗಮನಕ್ಕೆ ಹಾಗೂ ಅದರನ್ವಯ ಸೂಚಿಸಲಾಗಿರುವ ಅಂಶಗಳ ಕಟ್ಟುನಿಟ್ಟಿನ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಅನುವಾಗಲು ಅಡಕಿಸಲಾಗಿದೆ.

ಈ ಕುರಿತು ವಿವರವಾದ ಮಾಹಿತಿಯನ್ನು CPHEEO ರವರ Manual on Sewerage and Sewage Treatment Systems, Part B- Operation and Maintenance, 2013ರ ಅಧ್ಯಾಯ 9 – Occupational Health Hazards and Safety Measures ರಲ್ಲಿ ಲಭ್ಯವಿದೆ, ಮತ್ತು ಅಧ್ಯಾಯ 2 – Sewer Systems ನ ಕಂಡಿಕೆ 2.11.1.2 – Safety measures to be taken before any manhole entry ರಲ್ಲಿ ಅಳುಗುಂಡಿಗಳ ನಿರ್ವಹಣೆ ಬಗ್ಗೆ ವಹಿಸಬೇಕಾದ ಸುರಕ್ಷತಾ ಕ್ರಮಗಳ ಬಗ್ಗೆ ಮಾಹಿತಿಯನ್ನು ಪ್ರಕಟಿಸಲಾಗಿದೆ. ಕೆಲವು ಮುಖ್ಯ ಅಂಶಗಳು ಈ ಕೆಳಕಂಡಂತೆ ಒದಗಿಸಲಾಗಿದೆ :

- (i) Occupational Hazards – types of diseases and their causes



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- (ii) Accidents – confined space hazards, risk of oxygen deficiency, hydrogen sulphide poisoning, risk of combustible gas in confined space, risk of chlorine, fall, slip, electrical shock, fire, risks in sewage testing laboratory, instances of accidents
- (iii) Safety aspects and measures – preventive maintenance- hazard specific, pumping station, sewage treatment plant,
Corrective measures – emergency contact, emergency measures, first aid tools, extinguisher, emergency lighting, searching out hazards
- (iv) Health aspects and measures – personal hygiene against pathogen, cleanliness, health check, welfare measures, corrective measures
- (v) Safety personnel – institutional arrangement, human resources
- (vi) Awareness and training
- (vii) Emergencies – situations explained

Chapter 2 : Section 2.11.1.2 – Safety measures to be taken before any manhole entry :

- (i) Oxygen content minimum requirement
- (ii) Ventilate the sewer line
- (iii) Fresh air blower ventilation system
- (iv) Gas inflammability
- (v) Presence of toxic gases
- (vi) Structural safety
- (vii) Caution signboards
- (viii) Gas masks for respiratory protection
- (ix) Sewer inspection and examination

CPHEEO Manual ಅನ್ನು ಈ ಅಂಕನಲ್ಲಿ ಪಡೆಯಬಹುದಾಗಿದೆ :

<http://cpheeo.gov.in/cms/manual-on-sewerage-and-sewage-treatment.php>.

ಮಂಡಳಿಯ ಯೋಜನೆಗಳ ಕರಾರು ಒಪ್ಪಂದದಲ್ಲಿಯೂ ಈ ಕುರಿತು ಕಂಡಿಕೆ ಇರುತ್ತದೆ.

ಮುಂದುವರಿದಂತೆ, ಮಾನ್ಯ ಸರ್ವೋಚ್ಚ ನ್ಯಾಯಾಲಯದ ಆದೇಶದಂತೆ, ಪೌರಕಾರ್ಮಿಕರು ಮಲಹೊರುವ ಪದ್ಧತಿಯನ್ನು ರದ್ದುಪಡಿಸಿ, ತ್ಯಾಜ್ಯ ನೀರನ್ನು ನೇರವಾಗಿ ಮುಟ್ಟುವುದು ನಿರ್ಬಂಧಿಸಿರುವ ಜೊತೆಗೆ ತ್ಯಾಜ್ಯ ನೀರು ನಿರ್ವಹಿಸುವ



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ಮುಂದುವರಿದ ಪಾಳೆ ಸಂಖ್ಯೆ.....
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ಸಿಬ್ಬಂದಿ ಆಳುಗುಂಡಿಗಳಲ್ಲಿ ಇಳಿಯುವುದನ್ನು ನಿರ್ಬಂಧನೆ ಮಾಡಿರುತ್ತದೆ ಹಾಗೂ ಮಲ ಹೊರುವ ಪದ್ಧತಿಗೆ ಪ್ರಚೋದನೆ ನೀಡುವುದನ್ನು ನಿಷೇಧಿಸಿದೆ. ಶೌಚಾಲಯದ ಗುಂಡಿಗಳನ್ನು ಯಾವುದೇ ವ್ಯಕ್ತಿಗಳು ಸ್ವಚ್ಛ ಮಾಡದೆ, ಸಕ್ಕಿಂಗ್ ಮತ್ತು ಜೆಟ್ಟಿಂಗ್ ಯಂತ್ರದ ಮೂಲಕವೇ ಸ್ವಚ್ಛಗೊಳಿಸುವಂತೆ ತಿಳಿಸಲಾಗಿರುತ್ತದೆ.

ಪೌರಕಾರ್ಮಿಕರನ್ನು ಒಳಚರಂಡಿ ಆಳುಗುಂಡಿಗಳಲ್ಲಿ ದುರಸ್ತಿ ಕಾರ್ಯ ಮಾಡುವ ಸಲುವಾಗಿ ಇಳಿಯುವುದನ್ನು ಎಂಪ್ಲಾಯ್ಮೆಂಟ್ ಆಫ್ ಮ್ಯಾನ್ಯುಯಲ್ ಸ್ಯಾವೆಂಜಿಂಗ್ ಅಂಡ್ ಕನ್ಸ್ಟ್ರಕ್ಷನ್ ಆಫ್ ಡ್ರೈ ಲೆಟ್ರಿನ್ (ಪ್ರಾಹಿಬಿಷನ್) ಆಕ್ಟ್ 2013 ರಲ್ಲಿ ಕಲಂ 5ರ ಪ್ರಕಾರ ನಿರ್ಬಂಧಿಸಿರುತ್ತದೆ ಹಾಗೂ ಸದರಿ ಮ್ಯಾನ್ಯುಯಲ್ ಸ್ಯಾವೆಂಜಿಂಗ್ ಆಚರಣೆಗೆ ಕಾರಣರಾದವರು ಮತ್ತು ಸದರಿ ಪದ್ಧತಿಯನ್ನು ಅನುಸರಿಸುತ್ತಿರುವವರು ಅಪರಾಧಿಗಳಾಗುತ್ತಾರೆ.

ಮುಂದುವರೆದಂತೆ, ನಿರ್ಮಾಣ ಹಾಗೂ ನಿರ್ವಹಣೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ ನಗರ ಸ್ಥಳೀಯ ಸಂಸ್ಥೆಗಳಾದ ಪಟ್ಟಣ ಪಂಚಾಯಿತಿ, ಪುರಸಭೆ, ನಗರಸಭೆ ಮತ್ತು ಮಹಾನಗರಪಾಲಿಕೆಗಳ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಇಂತಹ ಘಟನೆಗಳ ಮೂಲಕ ಅಚಾತುರ್ಯ ನಡೆದು, ಕೆಲವು ವ್ಯಕ್ತಿಗಳು ದುರ್ಮರಣ ಹೊಂದಿರುವುದು ಮಂಡಳಿಯ ಗಮನಕ್ಕೆ ಬಂದಿದೆ.

ರಾಜ್ಯದ ನಗರ/ಸ್ಥಳೀಯ ಸಂಸ್ಥೆಗಳ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಒಳಚರಂಡಿ, ಶೌಚಾಲಯಗಳ ಹಿಟ್‌ಗಳನ್ನು ಸ್ವಚ್ಛಗೊಳಿಸಲು ಜೆಟ್ಟಿಂಗ್ ಮತ್ತು ಸಕ್ಕಿಂಗ್ ಯಂತ್ರಗಳು ಹಾಗೂ ಡಿಸಿಟ್ಟಿಂಗ್ ಯಂತ್ರಗಳ ಮುಖಾಂತರ ಮಾತ್ರವೇ ಸ್ವಚ್ಛಗೊಳಿಸಬಹುದಾಗಿರುತ್ತದೆ. ಸಫಾಯಿ ಕರ್ಮಚಾರಿ ಆಂದೋಲನ ಮತ್ತು ಇತರರು ಯೂನಿಯನ್ ಆಫ್ ಇಂಡಿಯಾ ಮೊಕದ್ದಮೆಯಲ್ಲಿ ಭಾರತದ ಮಾನ್ಯ ಸರ್ವೋಚ್ಚ ನ್ಯಾಯಾಲಯವು ಕೂಡ The Prohibition of Employment as Manual Scavengers and Their Rehabilitation Act-2013 ಕಲಂಗಳನ್ನು ಹಾಗೂ ಕಾನೂನಿನ ನಿರ್ದೇಶನಗಳನ್ನು ಕಟ್ಟುನಿಟ್ಟಾಗಿ ಪಾಲಿಸುವಂತೆ ಸಕಾರಕ್ಕೆ ನಿರ್ದೇಶನ ನೀಡಿರುತ್ತದೆ. ಅಲ್ಲದೆ, ಸದರಿ ಕಾನೂನಿನ ಉಲ್ಲಂಘನೆಯಾದ ಸಂದರ್ಭದಲ್ಲಿ ಉಲ್ಲಂಘಿಸಿದವರ ವಿರುದ್ಧ 6 ತಿಂಗಳ ಜೈಲು ಮತ್ತು ರೂಪಾಯಿ ಎರಡು ಲಕ್ಷಗಳ ದಂಡ ವಿಧಿಸುವ ಅವಕಾಶವಿದ್ದು, ಅಂತಹವರ ಮೇಲೆ ಕ್ರಮವಹಿಸುವಂತೆ ನಿರ್ದೇಶಿಸಿದೆ.

ಸದರಿ ವಿಷಯವನ್ನು ಕಡ್ಡಾಯಗೊಳಿಸಲು ಅನೇಕ ಬಾರಿ ಸುತ್ತೋಲೆ ಸೂಚನೆಗಳನ್ನು ನೀಡಲಾಗಿರುತ್ತದೆ. ಆದರೂ ಸಹ, ಇಂತಹ ಘಟನೆಗಳು ಮರುಕಳಿಸುತ್ತಿರುವುದು ಅತ್ಯಂತ ವಿಷಾದನೀಯ ಹಾಗೂ ನೋವಿನ ಸಂಗತಿಯಾಗಿರುತ್ತದೆ. ಆದ್ದರಿಂದ, ಒಳಚರಂಡಿ ವ್ಯವಸ್ಥೆಯ ನಿರ್ಮಾಣ ಹಾಗೂ ನಿರ್ವಹಣಾ ಕಾರ್ಯವನ್ನು ನಿರ್ವಹಿಸುವ ಅಧಿಕಾರಿಗಳು ಮತ್ತು ನೌಕರರಿಗೆ ಈ ಮೂಲಕ ತಿಳಿಸುವುದೇನೆಂದರೆ, ಆಳುಗುಂಡಿಗಳನ್ನು ಹಾಗೂ ಮಲನ ಕೊಳವೆಗಳನ್ನು ದುರಸ್ತಿ ಅಥವಾ ಸ್ವಚ್ಛಗೊಳಿಸುವಾಗ ಸಿಬ್ಬಂದಿಗಳನ್ನು ಒಳಗೆ ಇಳಿಸದೆ, ಸಕ್ಕಿಂಗ್ ಮತ್ತು ಜೆಟ್ಟಿಂಗ್ ಉಪಕರಣಗಳ ನೆರವಿನೊಂದಿಗೆ ಸ್ವಚ್ಛಗೊಳಿಸಲು ಹಾಗೂ ಕಾರ್ಮಿಕರಿಗೆ ಸೂಕ್ತ ಭದ್ರತಾ ವ್ಯವಸ್ಥೆಯನ್ನು ಕಲ್ಪಿಸುವಂತೆ ಆದೇಶಿಸಿದೆ. ಕರ್ನಾಟಕ ನಗರಾಭಿವೃದ್ಧಿ ಸಚಿವಾಲಯದ ಅಧಿಸೂಚನೆಯಲ್ಲಿ ಪ್ರಕಟವಾದ ರಕ್ಷಣಾ ಸೂತ್ರಗಳನ್ನು, CPHEEO Manual ನಲ್ಲಿನ ವಿವರವಾದ ಕ್ರಮಗಳನ್ನು ಮತ್ತು ಯೋಜನೆಗಳ ಕರಾರು ಒಪ್ಪಂದದಲ್ಲಿನ ಸುರಕ್ಷಿತ ಕ್ರಮಗಳನ್ನು ಕಡ್ಡಾಯವಾಗಿ ಪಾಲಿಸಲು ಆದೇಶಿಸಿದೆ.



ಕರ್ನಾಟಕ ನಗರ ನೀರು ಸರಬರಾಜು ಮತ್ತು ಒಳಚರಂಡಿ ಮಂಡಳಿ
Karnataka Urban Water Supply & Drainage Board



ಮುಂದುವರಿದ ಹಾಳೆ ಸಂಖ್ಯೆ.....

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ಮೇಲ್ಕಂಡ ಕರ್ತವ್ಯಗಳು ಮತ್ತು ಜವಾಬ್ದಾರಿಗಳನ್ನು ಅತ್ಯಂತ ಜಾಗರೂಕತೆಯಿಂದ ಒಳಚರಂಡಿ ಯೋಜನೆಗಳ ಕಾರ್ಯನುಷ್ಠಾನ ಮತ್ತು ನಿರ್ವಹಣೆಯ ಸಂದರ್ಭದಲ್ಲಿ ಎಚ್ಚರಿಕೆ ವಹಿಸಲು ಸೂಚಿಸುತ್ತಾ, ಸದರಿ ವಿಷಯದಲ್ಲಿ ಯಾವುದೇ ಲೋಪದೋಷ ಕಂಡುಬಂದಲ್ಲಿ ಅಥವಾ ನಿರ್ಲಕ್ಷ್ಯತನ ತೋರಿದಲ್ಲಿ, ಸಂಬಂಧಪಟ್ಟ ಗುತ್ತಿಗೆದಾರ/ಅಧಿಕಾರಿಗಳ/ನೌಕರುಗಳ ಮೇಲೆ ಮಂಡಳಿಯು ನಿಯಮಾನುಸಾರ ಕಾನೂನುರೀತ್ಯಯ ಕ್ರಮ ಜರುಗಿಸಲಾಗುವುದು ಎಂದು ಈ ಮೂಲಕ ತಿಳಿಸಿದೆ.

ಈ ಸುತ್ತೋಲೆಯು ಈ ತಕ್ಷಣದಿಂದ ಜಾರಿಗೊಳಿಸಲು ಹಾಗೂ ತಲುಪಿದಕ್ಕೆ ಸ್ವೀಕೃತಿಯನ್ನು ಮರು ಟಪಾಲ್‌ನಲ್ಲಿ ಕಳುಹಿಸಲು ಸೂಚಿಸಿದೆ.

ಅಡಕ :- 1) ಕರ್ನಾಟಕ ನಗರಾಭಿವೃದ್ಧಿ ಸಚಿವಾಲಯದ ಅಧಿಸೂಚನೆ
2) ಮಂಡಳಿಯ ಸುತ್ತೋಲೆ

ಸಹಿ/-

ವ್ಯವಸ್ಥಾಪಕ ನಿರ್ದೇಶಕರು,
ಕ.ನ.ನೀ.ಸ ಮತ್ತು ಒ.ಚ ಮಂಡಳಿ, ಬೆಂಗಳೂರು

1. ಪ್ರತಿಯನ್ನು ಕಾರ್ಯದರ್ಶಿಗಳು, ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ, ವಿಕಾಸಸೌಧ, ಬೆಂಗಳೂರು ಇವರ ನಮ್ರ ಮಾಹಿತಿಗಾಗಿ ಸಲ್ಲಿಸಲಾಗಿದೆ.
2. ಪ್ರತಿಯನ್ನು ನಿರ್ದೇಶಕರು, ಪೌರಾಡಳಿತ ನಿರ್ದೇಶನಾಲಯ, ವಿ.ವಿ.ಟವರ್, 10 ನೇ ಮಹಡಿ ಬೆಂಗಳೂರು ಇವರ ಮಾಹಿತಿಗಾಗಿ ಸಲ್ಲಿಸಲಾಗಿದೆ.
3. ಪ್ರತಿಯನ್ನು ಮುಖ್ಯ ಅಭಿಯಂತರರು, ಬೆಂಗಳೂರು/ಮೈಸೂರು/ಧಾರವಾಡ/ಕಲಬುರಗಿ ವಲಯ, ಕ.ನ.ನೀ.ಸ.ಮತ್ತು ಒ.ಚ. ಮಂಡಳಿ, ಬೆಂಗಳೂರು / ಮೈಸೂರು / ಧಾರವಾಡ / ಕಲಬುರಗಿ. ಇವರ ಮಾಹಿತಿಗಾಗಿ ಹಾಗೂ ಮುಂದಿನ ಸೂಕ್ತ ಕ್ರಮಕ್ಕಾಗಿ ರವಾನಿಸಲಾಗಿದೆ.
4. ಪ್ರತಿಯನ್ನು ಕಾರ್ಯದರ್ಶಿಗಳು, ಕ.ನ.ನೀ.ಸ. ಮತ್ತು ಒ.ಚ. ಮಂಡಳಿ, ಬೆಂಗಳೂರು ಇವರ ಮಾಹಿತಿಗಾಗಿ.
5. ಪ್ರತಿಯನ್ನು ಮುಖ್ಯ ಲೆಕ್ಕಾಧಿಕಾರಿಗಳು, ಕ.ನ.ನೀ.ಸ. ಮತ್ತು ಒ.ಚ. ಮಂಡಳಿ, ಬೆಂಗಳೂರು ಇವರ ಮಾಹಿತಿಗಾಗಿ.
6. ಪ್ರತಿಯನ್ನು ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು, ಕ.ನ.ನೀ.ಸ. ಮತ್ತು ಒ.ಚ ಮಂಡಳಿ, ವಿಭಾಗ----- ಇವರ ಮಾಹಿತಿಗಾಗಿ ಹಾಗೂ ಮುಂದಿನ ಸೂಕ್ತ ಕ್ರಮಕ್ಕಾಗಿ ಹಾಗೂ ತಮ್ಮ ಕಚೇರಿ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಬರುವ ಎಲ್ಲಾ ಉಪವಿಭಾಗ ಕಛೇರಿಗಳಿಗೆ ಮತ್ತು ಒಳಚರಂಡಿ ಕಾಮಗಾರಿಗಳನ್ನು ನಿರ್ವಹಿಸುತ್ತಿರುವ ಗುತ್ತಿಗೆದಾರರಿಗೆ ಸೂಕ್ತ ನಿರ್ದೇಶನ ನೀಡಲು ನಿರ್ದೇಶಿಸಲಾಗಿದೆ.

ವ್ಯವಸ್ಥಾಪಕ ನಿರ್ದೇಶಕರು,
ಕ.ನ.ನೀ.ಸ ಮತ್ತು ಒ.ಚ ಮಂಡಳಿ, ಬೆಂಗಳೂರು



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ಕರ್ನಾಟಕ ನಗರ ನೀರು ಸರಬರಾಜು ಮತ್ತು ಒಳಚರಂಡಿ ಮಂಡಳಿ Karnataka Urban Water Supply & Drainage Board

ಸಂ. 5 ಮತ್ತು 6, ಜಲ ಭವನ, ಬಿ.ಟಿ.ಎಂ.ಲೇಔಟ್
1ನೇ ಘಟ್ಟ, 1ನೇ ಹಂತ, ಬನ್ನೇರುಘಟ್ಟ ಮುಖ್ಯರಸ್ತೆ
ಬೆಂಗಳೂರು-16(000000) : 06-04-2017
ಸಂಖ್ಯೆ : ಕ.ನ.ನೀ.ಸ.ಒ.ಚ.ಮ/ಮು.ಅ/ಡಿಎಂ/ಡಿಸಿಎಂ/ತಾ.ಸ/ಸುತ್ತೋಲೆ/ **ಸುತ್ತೋಲೆ** 53

ವಿಷಯ: ರಾಜ್ಯದ ನಗರ ಸ್ಥಳೀಯ ಸಂಸ್ಥೆಗಳು ಹಾಗೂ ನಿಗಮ/ಮಂಡಳಿಗಳ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ
ಶೌಚಾಲಯ ಗುಂಡಿಗಳನ್ನು ಯಾಂತ್ರಿಕವಾಗಿ ವಿಧಾನದ ಮೂಲಕವೇ ಸ್ವಚ್ಛಗೊಳಿಸುವ ಬಗ್ಗೆ.

ತಲೆಯ ಮೇಲೆ ಮಲ ಹೊರುವ ಪದ್ಧತಿ, ಒಳಚರಂಡಿ ಇಳಿಗುಂಡಿಗಳಲ್ಲಿ ದುರಸ್ತಿ ಕಾರ್ಯ ಮಾಡುವ
ಸಲುವಾಗಿ ಮತ್ತು ಮಲನ ಕೊಳವೆಗಳನ್ನು ದುರಸ್ತಿ ಅಥವಾ ಸ್ವಚ್ಛಗೊಳಿಸುವ ಕಾರ್ಯಕ್ಕೆ ಪರಿಕಾರ್ಮಿಕರನ್ನು
ಇಳಿಸುವುದನ್ನು ನಿರ್ಬಂಧಿಸಿ ಭಾರತ ಸರ್ಕಾರವು Employment of Manual Scavenging and
Construction of Dry Latrines (Prohibition) Act 1993ರನ್ನು ಜಾರಿ ಮಾಡಿರುತ್ತದೆ. ಆದರೂ ಸಹ,
ಒಳಚರಂಡಿ ಇಳಿಗುಂಡಿಗಳಲ್ಲಿ ದುರಸ್ತಿ ಕಾರ್ಯ ಮಾಡುವ ಸಲುವಾಗಿ ಮತ್ತು ಮಲನ ಕೊಳವೆಗಳನ್ನು ದುರಸ್ತಿ
ಅಥವಾ ಸ್ವಚ್ಛಗೊಳಿಸುವ ಸಮರ್ಥದಲ್ಲಿ ಕಾರ್ಮಿಕರು ನಗರ ಸ್ಥಳೀಯ ಸಂಸ್ಥೆಗಳಾದ ಪಟ್ಟಣ ಪಂಚಾಯಿತಿ,
ಪುರಸಭೆ, ನಗರಸಭೆ ಮತ್ತು ಮಹಾನಗರಪಾಲಿಕೆಗಳ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಇಂತಹ ದುರ್ಘಟನೆಗಳ ಮೂಲಕ
ಅಜಾತುರ್ಯ ನಡೆದು ಕೆಲವು ವ್ಯಕ್ತಿಗಳು ದುರ್ಮರಣ ಹೊಂದುತ್ತಿರುವುದು ಸರ್ಕಾರದ ಗಮನಕ್ಕೆ ಬಂದಿರುತ್ತದೆ.

ಈ ಹಿನ್ನೆಲೆಯಲ್ಲಿ, ಮಾನ್ಯೂಲ್ ಸ್ಕ್ಯಾವೆಂಜಿಂಗ್ ನಿರ್ಬಂಧಿಸಲು ಹಾಗೂ ಮಾನ್ಯೂಲ್
ಸ್ಕ್ಯಾವೆಂಜರಗಳ ಮತ್ತು ಅವರ ಪರಿವಾರಗಳ ಪುನರ್ವಸತಿಗಾಗಿ ಭಾರತ ಸರ್ಕಾರವು, "The Prohibition of
Employment As Manual Scavangers and Their Rehabilitation Act 2013"ಅನ್ನು ಜಾರಿಗೆ
ತಂದಿರುತ್ತದೆ.

The Prohibition of Employment As Manual Scavangers and Their Rehabilitation Act
2013ರ ಸೆಕ್ಷನ್ 5ರ ಅನ್ವಯ :

'No person, local authority or any agency shall, after the date of commencement of
this Act,-

engage or employ, either directly or indirectly, a manual scavenger, and every
person so engaged or employed shall stand discharged immediately from any obligation,
express or implied, to do manual scavenging.

ಸೆಕ್ಷನ್ 7ರ ಅನ್ವಯ : No person, local authority or any agency shall, from such date as
the State Government may notify, which shall not be later than one year from the date of
commencement of this Act, engage or employ, either directly or indirectly, any person for
hazardous cleaning of a sewer or a septic tank.

ಸೆಕ್ಷನ್ 9ರ ಅನ್ವಯ : Whoever contravenes the provision of section 7 shall for the first
contravention be punishable with imprisonment for a term which may extend to two years
or with fine which may extend to two lakh rupees or with both, and for any subsequent
contravention with imprisonment which may extend to five years or with fine which may
extend to five lakh rupees, or with both.'



ಕರ್ನಾಟಕ ನಗರ ನೀರು ಸರಬರಾಜು ಮತ್ತು ಒಳಚರಂಡಿ ಮಂಡಳಿ
Karnataka Urban Water Supply & Drainage Board



ಮುಂದುವರಿದ ಹಾಳೆ ಸಂಖ್ಯೆ.....
Continuation Page No.

ಇದರನ್ವಯ, ಒಳಚರಂಡಿ ಇಳಿಗುಂಡಿಗಳಲ್ಲಿ ದುರಸ್ತಿ ಕಾರ್ಯ ಮಾಡುವ ಸಲುವಾಗಿ ಮತ್ತು ಮಲನ ಕೊಳವೆಗಳನ್ನು ದುರಸ್ತಿ ಅಥವಾ ಸ್ವಚ್ಛಗೊಳಿಸುವ ಕಾರ್ಯಕ್ಕೆ ಪೌರಕಾರ್ಮಿಕರನ್ನು ಇಳಿಸುವುದನ್ನು ನಿರ್ಬಂಧಿಸಲಾಗಿರುತ್ತದೆ ಹಾಗೂ ಸದರಿ ಕಾನೂನಿನ ಉಲ್ಲಂಘನೆಯಾದ ಸಂದರ್ಭದಲ್ಲಿ ಉಲ್ಲಂಘಿಸಿದವರ ವಿರುದ್ಧ 5 ವರ್ಷಗಳ ಕಾಲ ಜೈಲು ಮತ್ತು ರೂಪಾಯಿ ಐದು ಲಕ್ಷಗಳ ದಂಡ ವಿಧಿಸುವ ಅವಕಾಶವು ಸಹ ಇರುತ್ತದೆ.

ಅಲ್ಲದೆ, ಭಾರತದ ಮಾನ್ಯ ಸರ್ವೋಚ್ಚ ನ್ಯಾಯಾಲಯವು ದಿನಾಂಕ : 27.03.2014ರ ತನ್ನ ತೀರ್ಪಿನಲ್ಲಿ 'in the light of various provisions of the Act referred to the above and the Rules in addition to various directions issued by this Court, we hereby direct all the State Governments and the Union Territories to fully implement the same and take appropriate action for non-implementation as well as violation of the provisions contained in the 2013 Act. In as much as the Act 2013 occupies the entire field, we are of the view that no further monitoring is required by this Court. However, we once again reiterate that the duty is cast on all the States and the Union Territories to fully implement and to take action against the violators' ಎಂದು ಆದೇಶಿಸಿರುತ್ತದೆ. ಇದರನ್ವಯ, ಕಾಯ್ದೆ 2013ರನ್ನು ಕಟ್ಟುನಿಟ್ಟಾಗಿ ಪಾಲಿಸತಕ್ಕದ್ದು ಹಾಗೂ ಈ ಕಾಯ್ದೆಯನ್ನು ಉಲ್ಲಂಘಿಸಿದವರ ವಿರುದ್ಧ ಸೂಕ್ತ ಕ್ರಮ ಕೈಗೊಳ್ಳಲು ತಿಳಿಸಲಾಗಿರುತ್ತದೆ.

ಸದರಿ ವಿಷಯವನ್ನು ಕಡ್ಡಾಯಗೊಳಿಸಲು ಅನೇಕ ಬಾರಿ ಸುತ್ತೋಲೆ ಸೂಚನೆಗಳನ್ನು ನೀಡಲಾಗಿದರೂ ಸಹ ಇಂತಹ ಘಟನೆಗಳು ಮರುಕಳಿಸುತ್ತಿರುವುದು ಅತ್ಯಂತ ವಿಷಾದನೀಯ ಸಂಗತಿಯಾಗಿರುತ್ತದೆ. ಆದ್ದರಿಂದ, ಒಳಚರಂಡಿ ವ್ಯವಸ್ಥೆಯ ನಿರ್ಮಾಣ ಹಾಗೂ ನಿರ್ವಹಣಾ ಕಾರ್ಯವನ್ನು ನಿರ್ವಹಿಸುವ ಅಧಿಕಾರಿಗಳು ಮತ್ತು ನೌಕರರಿಗೆ ಈ ಮೂಲಕ ತಿಳಿಸುವುದೇನೆಂದರೆ, ಇಳಿಗುಂಡಿಗಳನ್ನು ಹಾಗೂ ಮಲನ ಕೊಳವೆಗಳನ್ನು ದುರಸ್ತಿ ಅಥವಾ ಸ್ವಚ್ಛಗೊಳಿಸುವಾಗ ಸಿಬ್ಬಂದಿಗಳನ್ನು ಒಳಗೆ ಇಳಿಸದೆ ಸಕ್ಕಿಂಗ್ ಮತ್ತು ಜೆಟ್ಟಿಂಗ್ ಉಪಕರಣಗಳ ನೆರವಿನೊಂದಿಗೆ ಮಾತ್ರ ಸ್ವಚ್ಛಗೊಳಿಸಲು ಹಾಗೂ ಕಾರ್ಮಿಕರಿಗೆ ಸೂಕ್ತ ಭದ್ರತಾ ವ್ಯವಸ್ಥೆಯನ್ನು ಕಲ್ಪಿಸುವಂತೆ ಆದೇಶಿಸಿದೆ. ಕನಸೀಸ ಮತ್ತು ಒಚ ಮಂಡಳಿಯು ರಾಜ್ಯ ಮಟ್ಟದ ಶಾಸನವಿಹಿತ ಸಂಸ್ಥೆಯಾಗಿದ್ದು, ನಗರ ಸ್ಥಳೀಯ ಸಂಸ್ಥೆಗಳ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ನೀರು ಸರಬರಾಜು ಮತ್ತು ಒಳಚರಂಡಿ ಕಾಮಗಾರಿಗಳ ನಿರ್ಮಾಣ ಮತ್ತು ನಿರ್ವಹಣೆಗೆ ಸೂಕ್ತ ತಾಂತ್ರಿಕ ನೆರವು ಹಾಗೂ ಸಲಹೆಯನ್ನು ನಿಡುವುದು ಮಂಡಳಿಯ ಕಾಯ್ದೆಯನ್ವಯ ಒಂದು ಕಾರ್ಯವಾಗಿರುತ್ತದೆ. ಆದ್ದರಿಂದ, ತಮ್ಮ ಕಾರ್ಯ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಬರುವ ನಗರ ಸ್ಥಳೀಯ ಸಂಸ್ಥೆಗಳಿಗೂ ಸಹ ಈ ಕುರಿತು ತಿಳಿವಳಿಕೆ ನೀಡಲು ಕೋರಿದೆ.

ವಹಿಸಲಾಗಿರುವ ಕರ್ತವ್ಯಗಳು ಮತ್ತು ಜವಾಬ್ದಾರಿಗಳನ್ನು ಅತ್ಯಂತ ಜಾಗರೂಕತೆಯಿಂದ ನಿರ್ವಹಿಸಲು ಹಾಗೂ ಈ ಕಾರ್ಯನುಷ್ಠಾನದ ಸಂದರ್ಭದಲ್ಲಿ ಎಚ್ಚರಿಕೆ ವಹಿಸಲು ಸೂಚಿಸುತ್ತಾ ಸದರಿ ವಿಷಯದಲ್ಲಿ ಯಾವುದೇ ಲೋಪದೋಷ ಕಂಡುಬಂದಲ್ಲಿ ಅಥವಾ ನಿರ್ಲಕ್ಷ್ಯತನ ತೋರಿದಲ್ಲಿ ಅಂತಹ ಅಧಿಕಾರಿಗಳ ಮೇಲೆ, The Prohibition of Employment As Manual Scavengers and Their Rehabilitation Act 2013ರ ಸೆಕ್ಷನ್ 8 ಮತ್ತು 9ರ ಅನ್ವಯ ಕ್ರಮ ಜರುಗಿಸಲಾಗುವುದು ಎಂದು ಈ ಮೂಲಕ ಆದೇಶಿಸಿದೆ.

ಸಹ/-

ವೈವಸ್ಥಾಪಕ ನಿರ್ದೇಶಕರು,
ಕ.ನ.ನೀ.ಸ ಮತ್ತು ಒ.ಚ ಮಂಡಳಿ,
ಬೆಂಗಳೂರು

ಪ್ರತಿಯನ್ನು ನಿರ್ದೇಶಕರು, ಪೌರಾಡಳಿತ ನಿರ್ದೇಶನಾಲಯ, ವಿ.ವಿ.ಟವರ್, ಬೆಂಗಳೂರು ಇವರ ಮಾಹಿತಿಗಾಗಿ ಸಲ್ಲಿಸಲಾಗಿದೆ.

ಪ್ರತಿಯನ್ನು ಮಾಹಿತಿಗಾಗಿ ಹಾಗೂ ಮುಂದಿನ ಸೂಕ್ತ ಕ್ರಮಕ್ಕಾಗಿ:

1. ಮುಖ್ಯ ಅಭಿಯಂತರರು, ಬೆಂಗಳೂರು/ಮೈಸೂರು/ಧಾರವಾಡ/ಕಲಬುರಗಿ ವಲಯ, ಕ.ನ.ನೀ.ಸ.ಮತ್ತು ಒ.ಚ. ಮಂಡಳಿ, ಬೆಂಗಳೂರು / ಮೈಸೂರು / ಧಾರವಾಡ / ಕಲಬುರಗಿ.

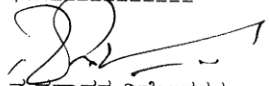


ಕರ್ನಾಟಕ ನಗರ ನೀರು ಸರಬರಾಜು ಮತ್ತು ಒಳಜಲರಕ್ಷೆ ಮಂಡಳಿ
Karnataka Urban Water Supply & Drainage Board



ಮುಂದುವರಿದ ಪಾಲೆ ಸಂಖ್ಯೆ.....
Continuation Page No.

2. ಕಾರ್ಯದರ್ಶಿಗಳು, ಕ.ನ.ನೀ.ಸ. ಮತ್ತು ಒ.ಜ. ಮಂಡಳಿ, ಬೆಂಗಳೂರು.
3. ಆಯ್ಕೆಲೇಣಿ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು ಕ.ನ.ನೀ.ಸ. ಮತ್ತು ಒ.ಜ. ಮಂಡಳಿ, ಬೆಂಗಳೂರು / ಮೈಸೂರು / ಬೆಳಗಾವಿ/ಕಲಬುರಗಿ ಕಂದಾಯ ವಿಭಾಗ ಬೆಂಗಳೂರು / ಮೈಸೂರು / ಧಾರವಾಡ / ಕಲಬುರಗಿ.
4. ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು, ಕ.ನ.ನೀ.ಸ. ಮತ್ತು ಒ.ಜ. ಮಂಡಳಿ, ವಿಭಾಗ-----


ವ್ಯವಸ್ಥಾಪಕ ನಿರ್ದೇಶಕರು,
ಕ.ನ.ನೀ.ಸ ಮತ್ತು ಒ.ಜ. ಮಂಡಳಿ,
ಬೆಂಗಳೂರು



ಕರ್ನಾಟಕ ರಾಜ್ಯಪತ್ರ

ಅಧಿಕೃತವಾಗಿ ಪ್ರಕಟಿಸಲಾದುದು

ಸಂಪುಟ ೧೪೯ Volume 149	ಬೆಂಗಳೂರು, ಗುರುವಾರ, ಜೂನ್ ೫, ೨೦೧೪ (ಜ್ಯೇಷ್ಠ ೧೫, ಶಕ ವರ್ಷ ೧೯೩೬) Bangalore, Thursday, June 5, 2014 (Jyeshtha 15, Shaka Varsha 1936)	ಸಂಚಿಕೆ ೨೩ Issue 23
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ಭಾಗ ೪ಎ

ರಾಜ್ಯದ ವಿಧೇಯಕಗಳ ಮತ್ತು ಅವುಗಳ ಮೇಲೆ ಪರಿಶೀಲನಾ ಸಮಿತಿಯ ವರದಿಗಳು, ರಾಜ್ಯದ ಅಧಿನಿಯಮಗಳು ಮತ್ತು ಅಧ್ಯಾದೇಶಗಳು, ಕೇಂದ್ರದ ಮತ್ತು ರಾಜ್ಯದ ಶಾಸನಗಳ ಮೇರೆಗೆ ರಾಜ್ಯ ಸರ್ಕಾರವು ಹೊರಡಿಸಿದ ಸಾಮಾನ್ಯ ಶಾಸನಬದ್ಧ ನಿಯಮಗಳು ಮತ್ತು ರಾಜ್ಯಾಂಗದ ಮೇರೆಗೆ ರಾಜ್ಯಪಾಲರು ಮಾಡಿದ ನಿಯಮಗಳು ಹಾಗೂ ಕರ್ನಾಟಕ ಉಚ್ಚ ನ್ಯಾಯಾಲಯವು ಮಾಡಿದ ನಿಯಮಗಳು

SOCIAL WELFARE SECRETARIAT

NOTIFICATION

No. SWD 237 SDC 2012(1), Bangalore, dated: 03-05-2014.

In exercise of the power conferred under Section 21(1) of the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013, the Government of Karnataka hereby notify that, the sub divisional Magistrates of the Revenue sub-division are conferred with the powers of a Judicial Magistrate of the First class for the trial of offences under this Act within the Jurisdiction of their sub division in the State of Karnataka.

By Order and in the name of the Governor of Karnataka,

NANJUNDAPPA,

Deputy Secretary to Government,
Social Welfare Department.

SOCIAL WELFARE SECRETARIAT

NOTIFICATION

No. SWD 237 SDC 2012(2), Bangalore, dated: 03-05-2014.

In exercise of the power conferred under Section 7 of the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013, the Government of Karnataka hereby notify that with effect from the date of publication of this notification in official Gazette no person, local authority or any agency shall, engage or employ either directly or indirectly, any person for hazardous cleaning of a sewer or a septic tank in the entire State of Karnataka.

As per the said Act under section 2(1)(d) the 'hazardous cleaning' by an employee, in relation to a sewer or septic tank, means its manual cleaning by such employee without the employer fulfilling his obligations to provide protective gear and other cleaning devices and ensuring observance of safety precautions, as may be prescribed or provided in any other law, for the time being in force or rules made there under.

By Order and in the name of the Governor of Karnataka,

NANJUNDAPPA,

Deputy Secretary to Government,
Social Welfare Department.

IV-A-F-1B/B

Chief person		
Member	(೧೬೯)	
Member		

[Signature]
25/6/14

SOCIAL WELFARE SECRETARIAT**NOTIFICATION****No. SWD 237 SDC 2012(3), Bangalore, dated: 03-05-2014.**

In exercise of the power conferred under Section 18 of the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013, the Government of Karnataka hereby authorized the following officers to exercise all powers and duties for effective implementation of the said Act in the State of Karnataka.

Sl.No.	Designation /Post	Jurisdiction
1	Deputy Commissioner / District Magistrates	Within their District.
2	Chief Executive Officer of Zilla Panchayat	Within their District.
3	All Commissioners of ULBs including BBMP, Municipal Corporations / CMCs	Within their Local limits
4	Chief Officers of TMCs and TP	Within their Local limits

The above said officers may specify their sub-ordinate officers who shall exercise all or any of the powers and perform all or any of the duties so conferred or imposed as required within their local limits to carryout the implementation of the Act by the officer or officers so specified.

By Order and in the name of the Governor of Karnataka,

NANJUNDAPPA,

Deputy Secretary to Government,
Social Welfare Department.

SOCIAL WELFARE SECRETARIAT**NOTIFICATION****No. SWD 237 SDC 2012(4), Bangalore, dated: 03-05-2014.**

In exercise of the power conferred under Section 20 of the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013, the Government of Karnataka hereby appoint the following officers / officials as Inspectors to exercise the power as conferred in the said Act under section 20(2), (3) and (4) of the Act, within the local limit of their jurisdiction.

Sl No.	Designation /Post	Jurisdiction
1	Tahasildar of all Talukas	Within their local Jurisdiction.
2	Chief Officers of Town Municipalities	Within their local Jurisdiction
3	Chief Officers of Town Panchayats	Within their Town Panchayat limits
4	Revenue Inspectors of all urban local bodies in the State of Karnataka	Within their local Jurisdiction of ULB
5	Health Inspectors of all urban local bodies in the State of Karnataka	Within their local Jurisdiction of ULB
6	Panchayat Development Officers / Secretaries of all Grama Panchayat- the State of Karnataka	Within their Grama Panchayat limits

By Order and in the name of the Governor of Karnataka,

NANJUNDAPPA,

Deputy Secretary to Government,
Social Welfare Department.

SOCIAL WELFARE SECRETARIAT**NOTIFICATION****No. SWD 237 SDC 2012(5), Bangalore, dated: 03-05-2014.**

In exercise of the power conferred under Section 28 of the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013, the Government of Karnataka hereby notify the State monitoring Committee consisting of the Following members namely:-

State Monitoring Committee:-

1	Hon'ble Minister for Social Welfare Dept.	Chair person
2	Hon'ble Minister for Urban Development Dept.	Member
3	Hon'ble Minister for RDPR Dept.	Member

4	Chairperson / Karnataka State Commissions for Safai Karamcharis	Member
5	Chairperson / Karnataka State Commissions for SC & ST	Member
6	State representatives of the National Commission for Scheduled Castes and Safai Karamcharis	Member
7	Two members of the State Legislature (MLAs/MLCs) belonging to the Scheduled Castes, nominated by the State Government	Member
8	The Director-General of Police	Member
9	ACS/ Principal Secretary of Home Department	Member
10	Principal Secretary/Secretary of RDPR Department	Member
11	ACS/ Principal Secretary of Urban Development Department	Member
12	Principal Secretary / Secretary of Social Welfare Department	Member Secretary
13	Principal Secretary / Secretary of Women and Child Welfare Department	Member
14	ACS/ Principal Secretary of Commerce and Industry Department	Member
15	Principal Secretary/Secretary of Labour Department	Member
16	ACS/ Principal Secretary of Finance Department	Member
17	Commissioner - BBMP	Member
18	State Representative / General Manager from Railway Department	Member
19	Representative from Sub-area commander Bangalore	Member
20	Not more than four social workers belonging to organisation working for the prohibition of manual scavenging and rehabilitation of manual scavengers, or, representing the scavenger community, resident in the State, to be nominated by the State Government, two of whom shall be women;	Members
21	Convener- SLBC	Member

- The above said State Monitoring Committee shall meet at least once in every six months and proceedings shall be drawn and circulated.
- The functions of the State Monitoring Committee shall be (under Section 27 of the Act) :-
 - To monitor and advise the State Government and local authorities for effective implementation of this Act;
 - To co-ordinate the functions of all concerned agencies.
 - To look into any other matter incidental their too or connected there with for implementation of this Act.

By Order and in the name of the Governor of Karnataka,

NANJUNDAPPA,

Deputy Secretary to Government-2,
Social Welfare Department.

SOCIAL WELFARE SECRETARIAT

NOTIFICATION

No. SWD 237 SDC 2012(6), Bangalore, dated: 03-05-2014.

In exercise of the power conferred under Section 24(1) of the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013, the Government of Karnataka hereby notify the District Vigilance Committee and Sub divisional Vigilance Committee for each district and each sub-division.

District Vigilance Committee:-

1	Deputy Commissioner / District Magistrate	Chair person
2	All MLAs and MLCs belonging to the Scheduled Caste from the District (if a District as no member of State legislature belonging to SC the State Govt. may nominate not exceeding two other members of the State Legislature from the District.)	Members
3	District Superintendent of Police	Member
4	Chief executive officer of ZP	Member

೧೬.೩

ಕರ್ನಾಟಕ ರಾಜ್ಯಪತ್ರ, ಗುರುವಾರ, ಜೂನ್ ೨೧, ೨೦೧೪

ಭಾಗ ೪ಎ

5	Commissioners of CMCs City Corporation within the District.	Member
6	One representative to be nominated by Railway Authority located in the District	Members
7	Not more than four social workers belonging to organization working for the prohibition of manual scavenging and rehabilitation of manual scavengers or representing the scavenger community, resident in the district, to be nominated by the District Magistrate, two of whom shall be women;	Member
8	District lead bank manager or One person to represent the financial and credit institutions in the district, to be nominated by the District Magistrate;	Member
9	DSWO of the District	Member Secretary
10	Any District-level officers of Departments and agencies who, in the opinion of the District Magistrate have a significant role to play in the implementation of this Act (to be nominated by the DC)	Member

Sub Divisional Vigilance Committee:-

1	AC / Sub divisional Magistrate	Chair person
2	All Executive Officer so Taluka Panchayat	Members
3	Deputy Superintendent of Police	Member
4	All commissioners / CEOs of CMCs / TMCs / Corporations	Member
5	One representative to be nominated by Railway Authority located in the Sub-division	Members
6	Two social workers belonging to organization working for the prohibition of manual scavenging and rehabilitation of manual scavengers, or, representing the scavenger community, resident in the sub-division to be nominated by the District Magistrate, one of whom shall be women;	Member
7	One person to represent the financial and credit institutions in the sub-division, to be nominated by the Sub divisional Magistrate	Member
8	TSWO of the sub-divisional Head quarters	Member Secretary
9	TSWOs of other taluks within the Sub-division	Member
10	Any sub-divisional level officers of Departments and agencies who, in the opinion of the Sub divisional Magistrate have a significant role to play in the implementation of this Act (to be nominated by the Sub divisional Magistrate)	Member

1. The above said District and Sub-divisional Vigilance Committee shall meet atleast once in every three months;
2. The functions of Vigilance Committee shall be (under Section 25 of the Act) :-
 - (a) To advise the District Magistrate or, as the case may be, the Sub-Divisional Magistrate, on the action which needs to be taken, to ensure that the provisions of this Act or of any rule made thereunder are properly implemented;
 - (b) To oversee the economic and social rehabilitation of manual scavengers;
 - (c) To co-ordinate the functions of all concerned agencies with a view to channelize adequate credit for the rehabilitation of manual scavengers;
 - (d) To monitor the registration of offences under this Act and their investigation and prosecution.

The Chair person of District level vigilance Committees shall inform to all the MLAs and MLCs belonging to SC within the District and also the non-official members as and when nominated in this regard.

The Chair persons of Sub divisional level vigilance Committee shall inform to all the non-official members as and when nominated in this regard.

By Order and in the name of the Governor of Karnataka,

NANJUNDAPPA,

Deputy Secretary to Government-2,
Social Welfare Department.

P.R. 341

S.C. 1000

ANNEXURE-F: QUALITY ASSURANCE PLAN FOR MATERIALS

1. U-PVC pipe.
2. DI Pipes.
3. Valves.
4. HSC

QUALITY ASSURANCE PLAN FOR PVC-U PIPE AS PER IS:-15328-2003						
SL NO	PARAMETER	SPECIFICATIONS/TOLERANCE	UNIT	INSTRUMENT	SAMPLE SIZE/ FREQUENCY	AGENCY
COMPOSITION OF MATERIAL						
1	Titanium Di-oxide	Min of 0.3%, As per clause-5.2 of IS 15328-2003	-	-	As per IS 15328-2003	Record review by TPIA
PHYSICAL PROPERTIES						
2	Visual inspection	As per Clause 7.1 of IS 15328-2003	-	-		
3	Colour	Colour shall be Dark (any shade of Brown) ,As per Clause 7.2 of IS 15328-2004	-	-		Witness by TPIA
4	Mean outside Diameter	As per Clause 6.1.1 & Table 1 of IS 15328-2003	Mm	Pie tape		Witness by TPIA
5	Outside diameter at any point	As per Clause 6.1.1 & Table 1 of IS 15328-2003	Mm	Vernier calipers		Witness by TPIA
6	Wall thickness	As per Clause 6.1.2 & Table 2 of IS 15328-2003	Mm	Micrometer		Witness by TPIA
7	Length	Shall not less than as agre Witness B/w the purchaser and Manufacturer	Mtr	Tape		Witness by TPIA
8	Spigot End	As per Clause 6.1.4 & Table 3 & 4 of IS 15328-2003	Mm	Vernier callipers		Witness by TPIA
9	Socket dimensions	As per Clause 6.1.4 & Table 3 & 4 of IS 15328-2003	Mm	Vernier callipers		Witness by TPIA
10	Vicat softening temperature	Min 790	0C	V.S.T.Apparatus	As per Table of IS 15328-2003	Witness by TPIA
11	Reversion test	Require Witness Temperature should be ± 5	%	Oil Bath and Vernier Callipers		

MECHANICAL PROPERTIES						
12	Resistance to external Blows at 0 0C	As per Clause 8.1 of IS 15328-2003	-	Impact Tester and accessories	As per Table-15 of IS 15328-2003	Witness by TPIA
13	Ring stiffness	≤ 2 for 51/SN-2, ≥ 4 for 41/SN-4, ≥ 8 for 34/SN-8	KN/m2	Stiffness tester	As per Table-5 of IS 15328-2003	Witness by TPIA
14	Resistance to Internal Hydrostatic Pressure (Acceptance test)	As per Clause 8.3 & Table-6 of IS 15328-2003	-	Hydrostatic Pressure testing Machine and End fittings	As per Table-17 of IS 4985-2000	Witness by TPIA
15	Resistance to Internal Hydrostatic Pressure (Type test)	As per Clause 8.3 & Table-6 of IS 15328-2003		Hydrostatic Pressure testing Machine and End fittings	1 sample once in three months or whenever Formulation Change	Record Review by TPIA
PERFORMANCE PROPERTIES (Elastomeric Sealing Ring Joints)						
16	Internal Hydrostatic Pressure	As per Clause 10.1.1 of IS 15328-2003	-	Typical arrangement of frame work, Hydrostatic Pressure testing Machine and End fittings	Every 10th Control unit	Record Review by TPIA
17	Internal Negative Hydrostatic Pressure (internal vaccume)	As per Clause 10.1.2 of IS 15328-2003	-	Typical arrangement of frame work, Hydrostatic Pressure testing Machine and	Every 10th Control unit	Record Review by TPIA

				End fittings		
18	Sealing rings	As per Clause 9.1 of IS-15328-2003	Nos	-	EPDM black colour as per IS 5382	Record Review by TPIA

NOTE:- TPIA-Third party Inspection agency

QUALITY ASSURANCE PLAN									
FOR MANUFACTURE OF DUCTILE IRON PIPES, INSPECTION AND TESTING PLAN									
SL NO.	Component / Material	Characteristics Check	Category	Type of Check	Quantum of Check	Reference Documents	Acceptance Norms	Format of Record	Agency
I	<u>Raw Material</u>								M
1.	BF Liquid Metal or Pig Iron	%C, %SI, %MN, %S, %P	Major	Chemical	One Per Lot or Batch	As per Manufacturers standard	As per Manufacturers standard	MTC	W
2.	Ferro Silicon	%SI, %AL	Major	Chemical	One Per Lot or Batch	As per Manufacturers standard	As per Manufacturers standard	MTC	W
3.	Silica Sand / River Sand	Sieve Analysis Compaction	Major	Chemical	One Per Lot or Batch	As per IS 8329 - 2000/IS 383	As per IS 8329 -2000	MTC	W
4.	Magnesium	Purity of Mg	Major	Chemical	One Per Lot or Batch	As per IS 8329 -2000	As per IS 8329 -2000	MTC	W
5.	Zinc	Purity of Zn	Major	Chemical	One Per Lot or Batch	As per Manufacturers standard	As per Manufacturers standard	MTC	W
6.	Cement	Material Conformation	Major	Physical and Chemical	One Per Lot or Batch	As per IS 8112	As per IS 8112/ IS 12330	MTC	W
7.	Bitumen Paint	Specific Gravity	Major	Specific Gravity	One Per Lot or	As per Manufacturer	As per Manufacturer	MTC	W

					Batch	s standard	s standard		
II	<u>Process Control</u>								
1.	Heat Treatment	Temperature Recording Time Cycle	Major	-	100%	As per Manufacturer's standard	As per Manufacturer's standard	Heat Treatment Chart	W
2.	Zinc Coating	Deposit of Zn	Major	-	One Per Batch	IS 8329 – 2000	IS 8329 – 2000	Manufacturer's internal Record	W
III	<u>Inspection & Testing</u>								
1	Visual	As per IS - 8329 – 2000	Major	Visual	100%	As per IS 8329- 2000	As per IS 8329- 2000	Manufacturer Report	W
2	Dimensional	As per IS - 8329 – 2000	Major	Measurement	100%	As per IS 8329- 2000	As per IS 8329- 2000	Manufacturer Report	W
3	Lining Thickness	As per IS - 8329 – 2000	Major	Physical	Random Check	As per IS 8329- 2000 / IS 11606	As per IS 8329- 2000	Manufacturer Report	W
4	Bitumen Coating Thickness	As per IS - 8329 – 2000	Major	Physical	Random Check	As per IS 8329- 2000 / IS 11606	As per IS 8329- 2000	Manufacturer Report	W
5	Compression test of Cubes	As per IS - 8329 – 2000	Major	Physical	One test per lot or batch	As per IS 8329- 2000 / IS 11606	As per IS 8329- 2000	Manufacturer Report	W
6	Gasket Fitment and Leak tightness test	As per IS - 8329 – 2000	Major	Physical	One Per Lot or Batch	As per IS 8329- 2000 / IS 11606	As per IS 8329- 2000	Manufacturer Report	W
7	Marking on Pipes	As per IS - 8329	Major	Physical	Random	As per IS	As per IS	Manufacturer	W

		– 2000			Check	8329- 2000 / IS 11606	8329- 2000	Report	
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Note:

1. Manufacturer shall carryout 100% inspection on final product
2. All measuring instruments should be calibrated.
3. Cement used for lining shall conform to IS 8112 or IS 12330 depending on the usage of pipeline
4. The rubber gasket shall conform to IS 5382 / 1985
5. Legend :**M**: Manufacturer, **B**: KUWS & DB , **TPI**: Third Party Inspection, **R**: Review, **W**: Witness

Reviewed items may be randomly witnessed by the concerned if necessary. All measuring instruments and testing equipment shall be calibrated periodically and put up for verification to Third Party Inspection agency.

DI Specials

SL. NO.	Material	Characteristics	Type of Check	Quantum of Check	Acceptance Standard	Format of Record	Inspection Agents
1	D.I. Fittings to IS-9523	Tensile / elongation / hardness	Mechanical Test	One test for casting produced during 24 hours	Relevant IS Standard, IS-9523	Test Report	Review
2	Surface	Workmanship	Visual	100% by manufacturer	As per IS-9523 Standard	--	Witnessing
3	Hydrostatic test as per relevant standards	Hydrostatic Pressure Test	Visual	100% by Manufacturer	Hydraulic test as per IS-9523 Std.	Test Certificate by Manufacturer	Inspection Agency to witness 100% of materials manufactured
4	Final Dimensions & Documentation	Dimensions as per standards and documents as specified in purchase order	Measure & Review	100% by Manufacturer	Tolerance as specified in relevant IS-9523 Standards	Internal inspection report / record	Review of manufacturer report / record and random sample check
5	Zinc coating & Bitumen Painting	Coating thickness	Visual	Sampling	As per IS-9523 Standard	Internal Inspection report / record	Review of manufacturer report / record and random sample check
6	Cement mortar lining	Lining Thickness	Visual	Sampling	As per IS-9523 Standard	Internal Inspection Report	Review of manufacturer report / record and random sample check

Note:

Wherever Sampling involved to be checked at 10% maximum. Total quantity of P.O. to be considered as one lot. All stage 100% internal inspection by the Manufacturer.

All materials will be offered for Inspection after complete Paining & Cement Mortar lining.

QUALITY ASSURANCE PLAN for DI SLUICE VALVE												
SL N O	Item & Component	Characteristi cs Checked	Categor y	Type of Check	Quantu m of check	Materials Specificatio n	Acceptance Document	Reference Document	Agency			Remarks
									P	W	V	
1a)	RAW MATERIAL(DUC TILE IRON)BODY, COVER	Physical properties	Major	Physical testa) UTSb)% Elongationc) Hardness	One Test piece Per Heat	Ductile Iron DIN:1693,G r. GGG-40 or S.G.I., IS:1865 Gr.400/15	IS:3896-1985 (DIN:1693, Gr. GGG-40 or IS:1865 Gr.400/15)	JEC Test Certificate	1	1	3	T.C. review by Inspection Agency
b)	(Stainless steel)Float, belts/ studs & nuts	Chemical Analysis	Major	Chemical Analysis	One Test piece Per Lot	S.SAISI- 304	S.SAISI-305	JEC Test Certificate	1	1	3	T.C. review by Inspection Agency
2	<u>IN PROCESS INSPECTION</u> Machining , Drilling as per Drg& Std., Assembling & Finishing	a. Surface defects	Major	Visual	100%	As per Mfg. Std./GA Drawing	No Harmful Defects	Internal Inspection Report (IR)	1	1	3	Internal record
		b. Dimensions	Major	Measurement	100%	As per Mfg.Drg. / IS:1538	As per Mfg. Drg. / IS:1538-Tab 6					
		c. Lapping	Major	Blue matching	100%	As per Mfg. Std./GA Drawing	Uniform contact b/w Seat & Contact					
3	VALVES ASSEMBLY	Dimensions	Major	Measurement	100%	As per Mfg.Drg. / IS:1538	As per AWWA C- 512/ GA Drawing	Internal Inspection Report (IR)	1	1	3	The Hydrastatic Test shall be done with water
		Performance	Major	Floating of Ball	100%	----DO----	Seating between Ball & Orifice					
4	TESTING	Hydrostatic Pressure test	Critical	Pressure test (Hyd) PN-10 Body at 15 Kg/cm2 & Seat at 10 Kg/cm2	100%	As per Drawing	No Leakage	Internal Inspection Report (IR)	1	3	2	Duration of Tests: Body- 5 minutes, Seat- 2 minutes

5	FINAL INSPECTION	a. Surface defects & appearance	Major	Visual	100%	As per Drawing	No Harmful Defects	Inspection Certificate	1	3	2	All Valves should be offer for inspection in painted condition &'after final inspection client's inspector will issue inspection certificates and release the valves for despatch
		b. Overall Dimensions	Major	Measurement	100%	As per Mfg.Drg. / IS:1539	As per AWWA C-512/ GA Drawing	----DO----	1	3	2	
		c. Leakage test	Critical	Pressure test (Hydrostatic)	100%	As per Drawing specification	As per Drawing	----DO----	1	3	2	
		d. Performance	Major	Visual	Random	As per Drawing / Standards	Seating between Ball & Orifice	----DO----	1	3	2	
		e. Painting	Major	Visual	100%	As per specification	As per Drawing/specification	Internal Inspection Report (IR)	1	1	2	
		f. Marking	Major	Visual	100%	As per Drawing	As per Drawing		1	3		
		1. Manufacturer			P- Performed byIR- Inspection Report							
		2. Purchaser			W- Witnessed by							
		3. Inspection Agency			P- Verified							

Reviewed items may be randomly witnessed by the concerned if necessary. All measuring instruments and testing equipment shall be calibrated periodically and put up for verification to Third Party Inspection agency.

Liquidated Damages

Schedule 2: Liquidated Damages

The liquidated damages for the whole of the works for Part A is 0.1% per day of the total cost quoted by the Contractor towards Part A, subject to maximum of 10% of Part A and that for the milestone are as under.

Sl. No.	Description	LD
1	Milestone based LDs	0.1% per day of the cost of undelivered balance milestone work

Sl No	Description	LD (RS.
1	Milestone - 1	4500
2	Milestone -2	32100
3	Milestone – 3	48800

If the bidder fails to achieve one or all the treated effluent parameters as listed in table under Cl. 3.3 SPECIAL SPECIFICATIONS for Construction of STP, Section-7, in any month during Defects Liability Period, then penalty of Rs.5.0 Lakhs will be levied for one month.

SCHEDULE 3: SCHEDULE OF PAYMENT

The Tenderer has to submit a detailed breakup schedule which will be approved by the Competent Authority (Employer). The Tenderer has to submit a detail breakup schedule which will be approved by the Competent Authority (Employer). As per Detail Breakup submitted by the Tenderer and approved by Authority

Note-1: The payment for (i) Pipes, specials, chamber covers, HSC materials

- i 50% of approved Tender Price for these items shall be payable upon successful supply, at worksite.
- ii 35% of approved Tender Price for these items upon successful laying/ installation of these items. This payment could be on per Kilometre basis for pipes actually laid.
- iii Upon successful hydraulic testing of pipes that are laid/installed, 5% of the approved Tender price for these items shall be paid. This payment could be on per Kilometre basis for pipes actually laid and tested successfully.
- iv 10% of approved Tender Price of these items after successful trial run and commissioning.

Note-2: The payment for (i) Electro Mechanical and other allied works shall be as follows,

- (i) 70% of approved Tender Price for these items shall be payable upon successful supply at worksite.
- (ii) 25% of approved Tender Price for these items upon successful laying/ installation and testing of these items. This payment could be on Kilometer basis for Transmission Line and each machinery basis which is installed.
- (iii) 5% of approved Tender Price of these items after successful completion of Defect liability period of 1 year with third party inspection report

SECTION 7: SPECIFICATIONS

The Specifications for the various construction materials and completed items of Works shall be as contained in the “Book of Specification” as issued by the Karnataka Urban Water Supply Board and as amended from time to time. The Book of Specifications as well as the amendments issued as of date is available on the Web site of the Board. The prospective tenders are requested to familiarize themselves with the specification acceptable and prescribed by the Board.

However, for ready reference the important specifications for some of the materials and items of work are reproduced hereunder for ready reference. In case of any discrepancy between the specifications reproduced hereunder and that contained in the Book of Specification and the amendments issued by Board, the specifications contained in the Book of Specification and the amendments issued shall prevail.

1.0 GENERAL

1.1 Equivalency of Standards and Codes

Wherever reference is made in the Contract to specific standards and codes to be met by the goods and materials to be furnished, and work performed or tested, the provisions of the latest current edition or revision of the relevant standards and codes in effect shall apply, unless otherwise stated in the Contract. Where such standards and codes are national, or relate to a particular country or region, other authoritative standards which ensure an equal or higher quality than the standards and codes specified will be acceptable subject to the Engineer's prior review and written approval. Differences between the standards specified and the proposed alternative standards must be fully described in writing by the Contractor and submitted to the Engineer at least 28 (Twenty Eight) days prior to the date when the Contractor desires the Engineer's approval. In the event the Engineer determines that such proposed deviations do not ensure equal or higher quality, the Contractor shall comply with the standards specified in the documents.

The following codes and standards unless specified herein shall be applicable and referred to.

1.2 Sign Board

The Contractor shall provide a sign board at the site of the Works of approved size and design which provides (i) the name of the Project and the financing agency (ii) the names and addresses of the Employer, the Contractor and the Consultant; (iii) the name and short description of the Project, (iv) the amount of the Contract Price; and (v) the starting and completion dates.

1.3 Samples and Tests

Pursuant to Clause 36 of Chapter 2, the Contractor shall be responsible to develop a quality control program and to provide all necessary materials, apparatus, instruments, equipment, facilities and qualified staff for sampling, testing and quality control of the materials and the works under the Contractor. Without limiting the generality of the foregoing, the Contractor shall either (i) establish a testing laboratory at the site of Works which is adequately equipped and staffed to carry out all sampling and testing in accordance with the requirement set out in the General Specifications and/or these Special Specifications and provide all field equipment and apparatus as necessary to conduct all specified in-situ tests and/or any Tests on Completion, or (ii) arrange for routine sampling, testing and reporting, as required, through a certified independent testing laboratory acceptable to the Engineer. All costs of such sampling, testing and reporting of test results will be borne by the Contractor, and the Contractor shall include sufficient provisions in his tendered rates to allow for independent sampling and laboratory testing under the direction of the Engineer of the required tests. The Contractor shall furnish certified copies of all test reports to the Engineer within 3 days of completion of the specified tests.

The Contractor shall, within 14 days after the date of the Letter of Acceptance, submit to the Engineer for his consent a detailed description of the arrangements for conducting the quality control programme during execution of the Works, including details of his testing laboratory, equipment, staff and general procedures. If following submission, or at any time during the progress of Works, it appears to the Engineer that the Contractor's quality control programme is not adequate to ensure the quality of the Works, the Contractor shall produce a revised programme which will be adequate to ensure satisfactory quality control

1.4 Protection of Utilities

The Contractor is required to carefully examine the location of the Works and their alignments and to make special enquiries with all authorities concerning all utility lines such as water, sewers, gas pipe, telephone (underground and/or overhead) lines, electric cable (underground and/or overhead) lines, etc.; and to determine and verify to his own satisfaction the character, sizes, position and lengths of such utilities from authentic records. The Contractor shall be wholly responsible for the protection and/or facilitating relocation of such utilities as may be required, and shall not make any claim for extra work or extra time that may be required to protect or facilitate relocating such utilities. If any major shifting or realignment of water, sewers, gas pipes, electric and telephone lines is necessary due to their interference with the proposed Works, the same may be done by the Employer. The cost of such relocation will be borne by the Employer.

In case the alignment of the pipeline crosses the high tension electrical transmission lines belonging to the Karnataka State Electricity Board (KPTCL) or other authorities, the Contractor shall take all precautions necessary to see that the work is carried out with care and safety, without disturbing such transmission lines. The Contractor will be responsible to carry out all construction activities in such reaches in consultation with the owners of such facilities. However, satisfactory completion of the entire work will be the responsibility of the Contractor.

1.4.1 Arrangement for Traffic during construction

The contractor shall at all times carry out work on the roads in a manner creating least interference to the flow of traffic while consistent with the satisfactory execution of the same. For all works involving improvements to the existing roads, the contractor shall, in accordance with the directives of the Engineer, provide and maintain, during execution of the work, a passage for traffic either along a part of the existing carriageway under improvement or along a temporary diversion constructed close to the road. The contractor shall take prior approval of the Engineer regarding traffic arrangements during construction.

Passage of Traffic along a part of the existing carriageway under improvement.

For widening/strengthening existing carriageway where part width of the existing carriageway is proposed to be used for passage of traffic, treated shoulders shall be provided on the side on which works is not in progress. The treatment to the shoulder shall consist of providing at least 150mm thick granular base course covered with bituminous surface dressing in a width of at least 1.5 m and the surface shall be maintained throughout the period during which traffic uses the same to the satisfaction of the Engineer. The continuous length, in which such a work shall be carried out, would be limited normally to 500 m at a place. However, where work is allowed by the Engineer in longer stretches passing places at least 20 m long with additional paved width of 2.5 m shall be provided at every 0.5 km interval.

In case of widening existing two lane to four lane, the additional two lanes would be constructed first and the traffic diverted to it and only thereafter the required treatment to the existing carriageway would be carried out. However, in case where on the request of the contractor, work on existing two lane carriageway is allowed by the Engineer with traffic using part of the existing carriageway, stipulations as in para above shall apply.

After obtaining, permission of the Engineer, the treated shoulder shall be dismantled, the debris disposed off and the area cleared as per the direction of the Engineer.

Passage of Traffic along a Temporary Diversion

1. In stretches where it is not possible to pass the traffic on part width of the carriageway, a temporary diversion shall be constructed with 7 m carriageway and 2.5 m earthen shoulders on each side (total width of roadway 12m) with the following provision for road crust in the 7 m width:
 - 200mm (compacted) granular sub base
 - 225 mm (compacted) granular base course: and
 - Premix carpet with Seal coat/mix seal surfacing.
2. The alignment and longitudinal section of diversion including junctions and temporary cross drainage provision shall be as approved by the Engineer.

1.4.2 Traffic safety and control

1. The contractor shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain such barricades, including signs, markings, flags, lights and flagmen as may be required by the Engineer for the information and protection of traffic approaching or passing through the section of the highway under improvement. Before taking up any construction, an agreed phased programme for the diversion of traffic on the highway shall be drawn up in consultation with the Engineer.
2. The barricades erected on either side of the carriageway/portion of the carriageway closed to traffic, shall be of strong design to resist violation and painted with alternate black and white stripes. Red lanterns or warning lights of similar type shall be mounted on the barricades at night and kept lit throughout from sunset to sunrise.
3. At the points where traffic is to deviate from its normal path (whether on temporary diversion or part width of the carriage way) the channel for traffic shall be clearly marked with the aid of pavement markings, painted drums or a similar device as per the directions of the Engineer. At night, the passage shall be delineated with lanterns or other suitable light source.
4. One way traffic operation shall be established whenever the traffic is to be passed over part of the carriageway inadequate for two lane traffic. This shall be done with the help of temporary traffic signals or flagmen kept positioned on opposite sides during all hours. For regulation of traffic, the flagmen shall be equipped with red and green flags and lanterns/lights.
5. On both sides, suitable regulatory/warning signs as approved by the Engineer shall be installed for the guidance of road users. On each approach, at least two signs shall be put up, one close to the point where transition of carriageway begins and the other 120 m away. The signs shall be of approved design and of reflectory type, if so directed by the Engineer.

1.4.3 Maintenance of Diversions and Traffic Control Devices

Signs, lights, barriers and other traffic control devices, as well as the riding surface of diversions shall be maintained in a satisfactory condition till such time they are required as directed by Engineer. The temporary travelled way shall be kept free of dust by frequent application of water, as directed by the Engineer.

1.4.4 Measurements for payment and rate

1. All arrangements for traffic during construction including provision of temporary cross drainage structures, if required, and treated shoulder as described in Clause 1.9.2.2 including their maintenance, dismantling and clearing debris, where necessary, shall be considered as incidental to the works and shall be the contractor's responsibility
2. The construction of temporary diversion including temporary cross drainage structures as described in Clause 1.9.2.3 shall be measured in linear m and the unit contract rate shall be inclusive of full compensation for construction (including supply of material, labour, tools, etc) maintenance, final dismantling and disposal.

1.4.5 Safety, Security and Protection of the Environment

The Contractor shall, throughout the execution and completion of the Works and remedying of any defects therein

- (a) have full regard for the safety of all persons entitled to be upon the Site and keep the Site (so far as the same is under his control) and the Works (so far as the same are not completed or occupied by the Employer) in an orderly state appropriate to the avoidance of danger to such persons
- (b) provide and maintain at his own cost all lights, guards, fencing, warning signs, watching, when and where necessary or required by the Engineer or by any duly constituted authority, for the protection of the Works or for the safety and convenience of the public or others
- (c) take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation and
- (d) Screen all lights provided by the Contractor so as to not to interfere with any signal light on the railways or with any traffic or signal lights of any local or other authority.

1.4.6 Fossils

All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest discovered on the Site shall, as between the Employer and the Contractor, be deemed to be the absolute property of the Employer. The Contractor shall take reasonable precautions to prevent his workmen or any other persons from removing or damaging any such article or thing and shall, immediately upon discovery thereof and before removal, acquaint the Engineer of such discovery and carry out the Engineer's instructions for dealing with the same. If, by reason of such instructions, the Contractor suffers delay and/or incurs costs then the Engineer shall, after due consultation with the Employer and the Contractor, determine any extension of time to which the Contractor is entitled under Sub-Clause 44.1 to 44.3, and shall notify the Contractor accordingly, with a copy to the Employer. Any price adjustment which may be applicable for such time extension granted by the Engineer.

1.4.7 Patent Rights

The Contractor shall save harmless and indemnify the Employer from and against all claims and proceedings for or on account of infringement of any patent right, design trademark or name or other protected rights in respect of any Contractor's Equipment, materials or Plant used for or in connection with or for incorporation in the Works from and against all damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto, except where such infringement results from compliance with the design or Specification provided by the Engineer.

1.4.8 Avoidance of Damage to Roads

The Contractor shall use every reasonable means to prevent any of the roads or bridges communicating with or on the routes to the Site from being damaged or injured by any traffic of the Contractor or any of his Subcontractors and, in particular, shall select routes, choose and use vehicles and restrict and distribute loads so that any such extraordinary traffic as will inevitably arise from the moving of materials, Plant, Contractor's Equipment or temporary Works from and to the Site shall be limited, as far as reasonably possible, and so that no unnecessary damage or injury may be occasioned to such roads and bridges.

1.4.9 Transport of Contractor's Equipment or Temporary Works

Save insofar as the Contract otherwise provides, the Contractor shall be responsible for and shall pay the cost of strengthening any bridges or altering or improving any road

communicating with or on the routes to the Site to facilitate the movement of Contractor's Equipment or Temporary Works and the Contractor shall indemnify and keep indemnified the Employer against all claims for damage to any such road or bridge caused by such movement, including such claims as may be made directly against the Employer, and shall negotiate and pay all claims arising solely out of such damage.

If it is found necessary for the Contractor to move one or more loads of heavy constructional and equipment, materials or pre-constructed units or parts of units of work over roads, highways, bridges on which such oversized and overweight items are not normally allowed to be moved, the Contractor shall obtain prior permission from the concerned authorities. Payments for complying with the requirements, if any, for protection of or strengthening of the roads, highways or bridges shall be made by the Contractor and such expenses shall be deemed to be included in his Contract Price.

1.4.10 Transport of Materials or Plant

If, notwithstanding Sub-Clause 30.1, any damage occurs to any bridge or road communication with or on the routes to the Site arising from the transport of materials or Plant, the Contractor shall notify the Engineer with a copy to Employer as soon as he becomes aware of such damage or as soon as he receives any claim from the authority entitled to make such claim. Where under any law or regulation the hauler of such materials or Plant is required to indemnify the road authority against damage the Employer shall not be liable for any costs, charges or expenses in respect thereof or in relation thereto.

1.4.11 Waterborne Traffic

Where the nature of the Works is such as to require the use by the Contractor of waterborne transport the foregoing provisions of the Clause shall be construed as though "road" included a lock, dock, sea wall or other structure related to a waterway and "vehicle" included craft, and shall give effect accordingly.

1.4.12 Opportunities for Other Contractors

The Contractor shall, in accordance with the requirements of the Engineer, afford all reasonable opportunities for carrying out their work to:

- (a) any other contractors employed by the Employer and their workmen,
- (b) the workmen of the Employer, and
- (c) the workmen of any duly constituted authorities who may be employed in the execution on or near the Site of any work not included in the Contract or of any contract which the Employer may enter into in connection with or ancillary to the Works.

1.4.13 Facilities for Other Contractors

If, however, pursuant to Sub-Clause 31.1 the Contractor shall, on the written request of the Engineer:

- (a) Make available to any such other contractor, or to the Employer or any such authority, any roads or ways for the maintenance of which the Contractor is responsible, or
 - (b) Permit the use, by any such, or Temporary Works or Contractor's Equipment on the Site, or
 - (c) Provide any other service of whatsoever nature for any such Works
- the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer.

1.4.14 Contractor to Keep Site Clear

During the execution of the Works the Contractor shall keep the Site free from all unnecessary obstruction and shall store or dispose of any Contractor's Equipment and surplus materials and clear away and remove from the Site any wreckage, rubbish or Temporary Works no longer required.

1.4.15 Clearance of Site on Completion

Upon the issue of any Taking-Over Certificate the Contractor shall clear away and remove from that part of the Site to which such Taking-Over Certificate relates all Contractor's Equipment, surplus material, rubbish and Temporary Works of every kind, and leave such part of the Site and Works clean and in a workmanlike condition to the satisfaction of the Engineer. Provided that the Contractor shall be entitled to retain on Site, until the end of the Defects Liability Period, such materials, Contractor's Equipment and Temporary Works as are required by him for the purpose of fulfilling his obligations during the Defects Liability Period.

1.4.16 Epidemics

In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with such regulations and carry out such orders as are issued by the Government or Local Authority.

1.4.17 Labour

1.4.18 Engagement of Staff and Labour

The Contractor shall make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding, water and transport.

1.4.19 Compliance with Labour Regulations

The Contractor and his Sub-contractors shall abide by the local laws and regulations governing labour as detailed in Annexure A and Annexure A- I.

1.4.20 Returns of Labour and Contractor's Equipment

The Contractor shall, if required by the Engineer, deliver to the Engineer a return in detail, in such form and at such intervals as the Engineer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such information in respect of Contractor's Equipment as the Engineer may require. For Contractor's Labour Regulation, refer to Annexure A and A-1.

1.4.21 Materials, Plant and Workmanship

1.4.22 Quality of Materials, Plant and Workmanship

All materials, Plant and workmanship shall be:

- a) of the respective kinds described in the Contract and in accordance with the Engineer's instructions, and
- b) subjected from time to time to such tests as the Engineer may require at the place of manufacture, fabrication or preparation, or on the Site or at such other place or places as may be specified in the Contract, or at all or any of such places.

The Contractor shall provide such assistance, labour, electricity, fuels, stores, apparatus and instruments as are normally required for examining, measuring and testing any materials or Plant and shall supply samples of materials, before incorporation in the Works, for testing as may be selected and required by the Engineer.

The Contractor is encouraged, to the extent practicable and reasonable, to use plant and materials from sources within India.

1.4.23 Cost of Samples

All samples shall be supplied by the Contractor at his own cost if the supply thereof is clearly intended by or provided for in the Contract.

1.4.24 Cost of Tests

The cost of making any test shall be borne by the Contractor if such test is:

- (a) Clearly intended by or provided for in the Contract, or
- (b) particularized in the Contract (in cases only of a test under load or of a test to ascertain whether the design of any finished or partially finished work is appropriate for the purposes which it was intended to fulfil) in sufficient detail to enable the Contractor to price or allow for the same in his Tender.

1.4.25 Cost of Tests Not Provided For

If any test required by the Engineer which is:

- (a) not so intended by or provided for, or
- (b) (in the cases above mentioned) not so particularized, or
- (c) (though so intended or provided for) required by the Engineer to be carried out at any place other than the Site or the place of manufacture, fabrication or preparation of the materials or Plant tested.

1.4.26 Suspension

1.4.26.1 Suspension of Work

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

Unless such suspension is:

- (a) otherwise provided for in the contract, or
 - (b) necessary by reason of some default of or breach of Contract by the Contractor or for which he is responsible, or
 - (c) necessary by reason of climatic conditions on the site, or
 - (d) necessary for the proper execution of the Works or for the safety of the Works or any part thereof (save to the extent that such necessity arises from any act or default by the Engineer or the Employer or from any of the risks defined in Sub-Clause 20.4),
- Sub-Clause 40.2 shall apply.

1.4.26.2 Engineer's Determination Following Suspension

Where, pursuant to Sub-Clause 40.1 this Sub-Clause applies the Engineer shall after due consultation with the Employer and the Contractor, determine any extension of time to which the Contractor is entitled under Sub-Clause 44.1 to 44.3 and shall notify the Contractor accordingly, with a copy to the Employer. Any price adjustment which may be applicable for such time extension granted by the Engineer will be determined in accordance with Sub-Clause 70.1 to 70.2.

1.4.26.3 Suspension Lasting More than 180 Days

If the progress of the Works or any part thereof is suspended on the written instructions of the Engineer and if permission to resume work is not given by the Engineer within a period of 180 days from the date of suspension then, unless such suspension is within paragraph (a), (b), (c) or (d) of Sub-Clause 40.1 the Contractor may give notice to the Engineer requiring permission, within 28 days from the receipt thereof, to proceed with the Works or that part thereof in regard to which progress is suspended. If, within the said time, such permission is not granted, the Contractor may, but is not

bound to, elect to treat the suspension, where it affects part only of the Works, as an omission of such part under Sub-Clause 51.1 to 51.2 by giving a further notice to the Engineer to that effect, or where it affects the whole of the Works, treat the suspension as an event of default by the Employer and suspend his work under the Contract.

1.5 Confined Space Safety Procedure:

The contractor shall implement a well-prepared Space Entry Safety Procedure to work in Confined areas / Elevated areas. Such procedures shall incorporate all aspects of staff work activities, internationally adopted best practices, site staff and workmen training, hazard awareness, first aid procedures, particularly applicable to workmen in Elevated / Confined space, provision and use of appropriate safety equipment's, personal hygiene, safety / emergency procedures, method of easy evacuation of workers etc. The Contractor has to develop and implement his own safety procedures. He should also provide necessary insurance to the workers involved in the execution of work.

1.6 Special Traffic Precautions.

Contractors Attention is specially drawn to the requirements by the traffic police and road authorities and specification regarding traffic control, access and reinstatement of road surface. It is necessary to obtain permission from traffic Inspector of Police prior to taking up any stretch of road for excavation and sewer laying. It is necessary to carry out the work in such a manner as to cause minimum interference with the public use of roads, footpaths and other thoroughfares.

1.7 Working in Restricted areas.

In addition to the clause stated in other section of the special specification the Contractor shall determine prior to constructing the lengths of sewers where access to properties commercial, domestic and institutional will be restricted.

The identification of these areas shall be agreed in consultation with the Engineer, Police and Urban local body. In this case it may be necessary to operate one-way traffic system or to close roads. The Contractor shall be responsible for liaising with the police and other local representatives to obtain permission to close roads or restrict traffic movement. No additional time will be allowed for these pre-construction activities. Where roads are closed alternative routes are to be determined in conjunction with the authorities. Sign Boards are to be placed at both junctions of the route indicating "ROAD CLOSED & WORK UNDER PROGRESS". The expense for the same shall be borne by the contractor. The Contractor shall discuss these arrangements with the occupants of houses affected to ensure that their disruption is kept to a minimum. The Contractor is to offer assistance to residents who are infirm or need special arrangements for access during construction.

In narrow roads and streets it may not be possible to operate excavation machinery. If hand excavation is required no additional payment shall be made. The method of operation, length of sewer to be excavated, method of barricading, property access, dewatering, shoring, pipe laying, backfilling and road reinstatement shall be stated in a 'Method Statement' to be submitted at least 4 weeks before work is scheduled to commence in a particular location. The written agreement of the Engineer shall be obtained to the method statement. If any additional safeguards are required by the Engineer these shall be incorporated in the method statement at no extra cost and the method statement is to be resubmitted.

The Contractor will ensure that the noise created by his activities is suppressed. Adequate silencers fitted to construction machinery, particularly compressors and drills. Dust is to be kept to a minimum by using water sprinklers. Utility service connections shall be maintained to every property throughout the construction phase and thereafter. If any defect/ damage is caused it shall be repaired immediately and at the Contractors expense. The disruption to the normal activities of residents and other members of the public is to be kept to an absolute minimum. Providing adequate noise control and other nuisances are kept to a minimum,

extended working hours may be permitted with the agreement of the Engineer and local residents. No additional payment shall be made for any of these arrangements. Adequate lighting shall be provided by the Contractor at his cost if night working is adopted.

1.8 Interfaces with other packages.

If this contract Package will have interface with other contracts, the contractor shall only undertake the end connections of sewers at the interface points, after the sewer has passed the hydraulic test on completion of end connections. The contractor shall lay the bedding and backfill for sewers in normal manner.

1.9 Contractor to Resurvey the Pipeline Route

While setting up the site, contractor shall undertake survey of the pipeline route and compare this with the survey supplied at the time of Tender, maintaining a joint record. Levels are to be taken at 30 m intervals, at any sharp change in levels and other necessary locations. Where practical the chainage points shall coincide with those of original surveys. Not less than 14 days before commencement of excavation for pipe laying, the contractor shall supply the Engineer, any discrepancies if observed with two hard copies and one computer copy of the survey. The Zone wise resurvey details shall be provided by the contractor, in accordance with the detailed construction programme as approved by the Engineer.

The format of the survey shall be identical to the longitudinal sections which formed part of the Tender documents and shall be produced using Auto CAD in latest version of software package.

The Engineer shall resolve any problems arising from discrepancies between the two surveys and supply the contractor with any revised drawings that may be required.

2.0 BRIEF DESCRIPTION

2.1 General

Kollur town is one of the major pilgrim centers in the coastal district, Udupi of Karnataka State. Dakshina Kannada and Udupi Districts are known for many world famous tourist and pilgrim centers, which contribute to the economic growth of the districts. Kollur town is one among many such centers, which is known for its famous temple “Goddess Mookambika” located at a distance of 34 km from Kundapur amid deep Western Ghats.

The population of the town as per 2011 census is 3265 and the present population is about 3300. The floating population due to pilgrims varies from 3000 to 5000 during common days, about 15,000 to 20,000 during holidays and special days about 25,000 to 40,000 during Navarathri festival. The annual rainfall of Kollur is about 4500 mm and the average ground level of the town varies from RL +97.50 to RL +65.00 m above MSL.

An underground drainage system has been established in Sri. Kollur Mookambika Temple and town by KUWSDB at an estimated cost of Rs.19.97 crores under the Deposit Contribution works of Sri. Kollur Mookambika Temple Authority during June-2020. The underground drainage scheme is designed for an ultimate capacity of 1.50MLD for a population projected for the year 2047. The UGD

scheme comprised of a sewer network of 10.40 km length, 336 sewer service connections, a 6.0m dia wetwell and 1.5MLD capacity MBBR type STP.

Under this scheme, a 1.50 MLD capacity MBBR type of package STP plant has been established in Sy. No. 121 of Kollur Village.

2.2 Existing Sewage Treatment Plant:

The sewage generated from the town is of starchy type and has a very high concentration of Total Suspended Solids (TSS), resulting in a shock load on the STP during peak seasons. The uncharacteristic sewage has deteriorated the treatment capacity of the STP and hence, the work of upgradation of 1.5 MLD capacity MBBR type STP with MBR technology is proposed to improve the treatment capacity of the STP. Under this work, it is proposed to provide an equalization/stabilization tank and provide Membrane Bioreactors with additional aeration zone to improve the hydraulic retention time of the STP. The upgradation would also ensure performance as per the standards specified by the NGT and KSPCB and the quality of Treated effluent shall conform to the NGT guidelines & KSPCB standards mandatorily.

The estimate for upgradation of 1.5MLD capacity MBBR type STP with MBR technology amounting to Rs. 470.00 lakhs is approved by the Govt. vide G.O No. RD 02 2026 dated 05-02-2026. The estimate is technically sanctioned by the Chief Engineer, KUWS & D Board, Mysuru vide proceedings No.1797, dated 26-02-2026. The work is proposed to be taken up under the Deposit Contribution of Sri. Mookambika Temple, Kollur.

2 Scope of Work:

The Works consist of;

1. Construction of 5.00 lakh litres capacity RCC Collection Tank of size 19.50mX9.50mX3.00m at existing 1.50MLD STP at Kollur.

- a. Construction of RCC Collection Tank (Equalization Tank) including Inlet chamber with SS manual screen.
- b. Installation of coarse bubble aeration system within the newly constructed equalization tank.
- c. Supply and installation of complete air piping network including header, branch lines, supports, valves, and accessories.
- d. Linking of existing DI rising main to the Collection Tank by providing DI K-9 class pipes of 250mm dia including supply & fixing necessary DI valves & specials and construction of required valve chambers.

- e. Supplying & fixing RCC NP3 class pipe of 450mm dia for diversion of storm water including construction of required storm water chambers.
- f. Removing and resetting existing heavy-duty cobble/interlocking stones in and around Collection Tank.
- g. Providing & fixing anodized Aluminium ladder using 65mmX32mmX3mm with necessary bed inside the Collection Tank.
- h. Providing & fixing MS inspection door of size 60cmX60cm, 3mm thick including painting with anticorrosive paint to the Collection Tank.
- i. Providing & fixing gauge with iron sheet/enamelled gauge plate of 3-4mm thick, 0.23m width with copper float indicators – 3 mtrs depth to the Collection Tank.

2. Upgradation of existing 1.50MLD capacity MBBR type STP at Kollur to MBR type with all associated mechanical, electrical, automation and integration work.

(i) Newly constructed Equalization Tank to Rotary Screen System

- Supply and installation of transfer pumping system from newly constructed equalization tank to rotary screen feed line.
- Laying of required pipeline from newly constructed equalization tank to rotary screen.
- Supply of rotary screen of suitable capacity.
- Required civil works for rotary screen foundation and erection support structure.
- Interconnection of overflow line from newly constructed equalization tank to aeration tank as process safety measure.

(ii) Modification of Existing MBBR to Aeration Tank

- Conversion of the existing MBBR tanks into aeration tanks.
- Removal or deactivation of existing media retention system as required.
- Cleaning of existing diffusers.
- Replacement of damaged or torn diffusers wherever necessary.
- Process modifications and piping alterations required for aeration tank functionality.
- Revamping of existing MBBR tank by removing rust, repainting the outer surface with anti-corrosive paint and providing bituminous waterproof membranes to inside surface to prevent corrosion.

(iii) Clarification and MBR Integration

- Provision of overflow/bypass line arrangement from aeration system to existing lamella clarifier as required.
- Process modification to divert clarified water from lamella clarifier to newly proposed MBR tank.

- Required interconnecting pipelines and structural supports.

(iv) MBR System Supply and Installation

- Supply of MBR membranes of Mitsubishi/Asahi Kasei or any equivalent reputed make of required flow capacity as per design.
- Supply of membrane modules, racks, headers, and accessories.
- Supply of permeate pumps.
- Supply of permeate backwash pump.
- Required piping for permeate line, backwash line, and air scouring line.
- Installation and integration of complete MBR system.

(v) Pumping and Ancillary Equipment

- Supply of any additional pumps required for system upgradation including transfer pumps and process pumps.
- Installation of valves, flow meters, pressure gauges, and relevant instrumentation.
- Interconnection up to treated water tank.

(vi) Electrical, Control and Automation

- Supply and installation of upgraded electrical control panel.
- Integration of all process units under a centralized PLC-based control system.
- Development and commissioning of SCADA system for continuous monitoring and control.
- Automation coverage from newly constructed equalization tank to treated water tank.
- Integration of pumps, blowers, membranes, screens, level sensors, and interlocks under PLC logic.
- Alarm generation, trend logging, and system safety interlocks.
- Facility to display the treated effluent parameters online in the KSPCB website/Dashboard as per KSPCB norms.

(vii) Commissioning and Handover

- Dry and wet commissioning of entire system duly obtaining CFO from KSPCB.
- Trial run of complete treatment plant.
- Performance stabilization support.
- Operator training.
- Final handover to concerned authority after satisfactory operation.

3. The work includes all associated mechanical, electrical, automation, piping and integration works including any other work required for successful commissioning of the Plant.

4. The existing sewage treatment process should not be hampered until

completion of the proposed work. Temporary arrangements required if any, shall be made by the contractor. The infrastructure of the existing STP shall be utilized to its full extent with necessary modifications/rectifications to it.

5. KSPCB has provided CFE (Expansion) for taking up the work of upgradation of existing STP. Upon completion of work, the Contractor shall operate the STP duly obtaining Consent for Operation (CFO) from KSPCB. The necessary fee towards obtaining CFO shall be paid by the Temple authorities.
6. As per KSPCB norms, the upgraded STP shall be equipped with a facility to display the treated effluent parameters online in the KSPCB website/Dashboard.
7. The work shall be carried out strictly in accordance with all safety measures and guidelines for maintenance and construction of UGD system mandated in Karnataka Gazette Notification No. UDD 04 UDS 2012, Bengaluru, dated 15.05.2013.

A Key map showing the various components of the works under the scope of the tender is presented in Section 8, Drawings. The bidder shall carry out the total station survey & prepared design & drawing as per the standards and got approved by employer for all the components. The designs shall be prepared as per the relevant IS and CPHEOO recommendations.

Survey, verification of existing levels, Submission of hydraulic designs, designing, & Drawing of proposed works & getting approval from competent authority for the work of **“UPGRADATION OF EXISTING 1.50MLD CAPACITY STP AT KOLLUR UNDER DEPOSIT CONTRIBUTION OF SRI MOOKAMBIKA TEMPLE, KOLLUR (INCLUDING 1 YEAR DLP) (LUMPSUM TENDER –NO VARIATION)”**:

3.0	CONSTRUCTION OF 5LL CAPACITY COLLECTION TANK (19.5 x 9.5 x 3 M SIZE)
1	Earth work excavation for Foundation by mechanical means for all works & depth upto 3 m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including dressing of excavated surfaces, disposing off or levelling the excavated earth or sorting & stacking the selected earth for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, tools, usage of machinery & other appurtenances required to complete the work. In all kinds of soils Depth upto 1.5 m with all lead and lift etc complete as directed by the EIC.
2	In all kinds of soils Depth 1.5 m to 3 m including dewatering with all lead and lift etc complete as directed by the EIC.
3	In ordinary/soft rock without blasting Depth upto 1.5 m with all lead and lift etc complete as directed by the EIC.
4	In ordinary/soft rock without blasting Depth 1.5 m to 3 m including dewatering with all lead and lift etc complete as directed by the EIC.
5	In ordinary/soft rock without blasting Depth 3 m to 4.5 m including dewatering with all lead and lift etc complete as directed by the EIC.

6	Providing and laying in position Cement Concrete for all Foundation works. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed with super plasticizers laid in finished layers, well compacted using needle vibrators, including all lead & lifts, cost of all materials, quality confirming to the requirements of relevant IS codes, labour, Usage charges of machinery, curing and all the other appurtenances required to complete the work as per technical specifications. M20 Design Mix Using 20 mm nominal size graded crushed coarse aggregates-for PCC with all lead and lift etc complete as directed by the EIC.
7	Providing and laying in Cement Concrete for all Basement & surface level works, return walls, retaining walls, sunken floors etc. The granite/trap/ basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed with super plasticisers, laid in layers, well compacted using needle vibrators, providing weep holes wherever necessary, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing and all other appurtenances required to complete the work as per technical specifications.M30 Design Mix Using 20 mm nominal size graded crushed coarse aggregates- For raft with all lead and lift etc complete as directed by the EIC.
8	Providing and laying in position Cement Concrete for all Sub structures of building, Irrigation works, Sub structure works of bridges, Drain works & other parallel works from 0.50m to 3.50 m height. The granite/ trap/ basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed with super plasticisers, laid in layers, well compacted using needle vibrators, providing weep holes wherever necessary, including all lead & lifts, cost of all materials of quality, confirming to the requirements of relevant IS codes, labour, Usage charges of machinery, curing and all other appurtenances required to complete the work as per technical specifications. M30 Design Mix Using 20 mm nominal size graded crushed coarse aggregates. for vertical side walls with all lead and lift etc complete as directed by the EIC.
9	Providing and laying in position Cement Concrete for all Sub structures of building, Irrigation works, Sub structure works of bridges, Drain works & other parallel works from 0.50m to 3.50 m height. The granite/ trap/ basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed with super plasticisers, laid in layers, well compacted using needle vibrators, providing weep holes wherever necessary, including all lead & lifts, cost of all materials of quality, confirming to the requirements of relevant IS codes, labour, Usage charges of machinery, curing and all other appurtenances required to complete the work as per technical specifications. M30 Design Mix Using 20 mm nominal size graded crushed coarse aggregates. for columns with all lead and lift etc complete as directed by the EIC.
10	Providing and laying in position Cement Concrete for all Sub structures of building, Irrigation works, Sub structure works of bridges, Drain works & other parallel works from 0.50m to 3.50 m height. The granite/ trap/ basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed with super plasticisers, laid in layers, well compacted using needle vibrators, providing weep holes wherever necessary, including all lead & lifts, cost of all materials of quality, confirming to the requirements of relevant IS codes, labour, Usage charges of machinery, curing and all other appurtenances required to complete the work as per technical specifications. M25 Design Mix Using 20 mm nominal size graded crushed coarse aggregates. for bracing beams & Roof beams with all lead and lift etc complete as directed by the EIC.

11	Providing and laying in position Cement Concrete for all Sub structures of building, Irrigation works, Sub structure works of bridges, Drain works & other parallel works from 0.50m to 3.50 m height. The granite/ trap/ basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed with super plasticisers, laid in layers, well compacted using needle vibrators, providing weep holes wherever necessary, including all lead & lifts, cost of all materials of quality, confirming to the requirements of relevant IS codes, labour, Usage charges of machinery, curing and all other appurtenances required to complete the work as per technical specifications. M25 Design Mix Using 20 mm nominal size graded crushed coarse aggregates. for covering slab with all lead and lift etc complete as directed by the EIC.
12	Supplying, fitting and placing TMT FE 550 / 550D Steel Reinforcement including cost of all materials, machinery, labour, cleaning, straightening, cutting, bending, hooking, laping/welding joints, tying with binding wire / soft annealed steel wire and other ancillary operations complete as per drawing and technical specification with all lead and lift etc complete as directed by the EIC.
13	Providing anodized aluminum ladder using 65mm x 32mm x 3.0mm 'C' section for ladder side channel x 25mm dia., flutal pipe for Rungs at 250mm c/c ladder fixed at an angle of 70 degrees to horizontal including necessary 25mm dia., G.I. shutters with necessary G.I. fasteners for bracing the ladders to the Tank walls to prevent buckling of the ladder with necessary (M-15) bed for embedding the ladder bottom comple with all lead and lift etc complete as directed by the EIC.
14	Providing 15 mm cement plaster with Cement mortar 1:3 (1 cement: 3 coarse sand) finished with a floating coat of neat cement to brick masonry including rounding off corners wherever required smooth rendering, providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications with all lead and lift etc complete as directed by the EIC.
15	Providing and fixing MS inspection door of size 60 cms x 60 cms, including MS frame made of 50x50x6mm angle, shutters made of 3mm thick MS sheets, with hinges, locking arrangements at top etc. including painting with anticorrosive approved paint etc. completewith all lead and lift etc complete as directed by the EIC.
16	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations and other similar works etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, with all lead and lift etc complete as directed by the EIC.
17	Providing and fixing gauge with iron sheet or enamelled guage plate of 3mm to 4mm thick, 0.23 M width with copper floats indicators and flexible nylon wires, painting figures with approved enamel paint etc. with all lead and lifts, complete for, MS Guage sheet for 3 Mtrs depth with all lead and lift etc complete as directed by the EIC.

18	Providing and fixing DI Resilient seated soft sealing SLUICE VALVE of various dia. with body bonnet of Ductile Iron (DI) conforming to IS-1865 with the latest amendments and of grade GGG 40/50, shaft of stainless steel, wedge fully rubber lined with EDPM seals of NBR and the valves should be vacuum tight and 100% leak proof with face to face dimensions as per IS 14846-2000 with the latest amendments only. The stem sealing should be with toroidal sealing rings (minimum 2 " O " rings). Body and bonnet should be coated with Electrostatically applied Epoxy Powder Coating with minimum coating thickness of 250 micron both inside and outside. The rate is inclusive of cost of valves, T.P set, galvanized bolts & nuts and rubber insertions etc. but excluding earth work. For PN-10: (Note: TP set should be considered only for DI pipes estimate. For MS pipes estimates, TP sets cost of corresponding dia shall be deducted from the SR rates of valves and provision for corresponding dia MS flanges should be made in the estimate.) etc. complete. For inlet & over flow Valve - 250mm dia PN - 10.0 with all lead and lift etc complete as directed by the EIC.
19	For scour Valve - 150mm dia PN - 10.0 with all lead and lift etc complete as directed by the EIC.
	Construction of 1.2m x 1.2m x 1.0m size valve chamber (2nos.)
20	Earth work excavation for Foundation by mechanical means for all works & depth upto 3 m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including dressing of excavated surfaces, disposing off or levelling the excavated earth or sorting & stacking the selected earth for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, tools, usage of machinery & other appurtenances required to complete the work. In all kinds of soils. Depth upto 3.00Mtr) with all lead and lift etc complete as directed by the EIC.
21	Ordinary/soft rock (without requiring blasting) Depth upto 1.50m with all lead and lift etc complete as directed by the EIC.
22	Providing and laying in position plain cement concrete for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machineries, curing, and all the other appurtenances required to complete the work as per technical specifications. (The cost of steel reinforcement & formwork shall be paid separately) Mix 1:3:6 (M10) Using 20 mm nominal size graded crushed coarse aggregates for foundation with all lead and lift etc complete as directed by the EIC.
23	Providing and laying in Reinforced cement concrete for all Basement & surface level works, return walls, retaining walls, sunken floors etc. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed with super plasticisers, laid in layers, well compacted using needle vibrators, providing weep holes wherever necessary, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing and all other appurtenances required to complete the work as per technical specifications. (The cost of steel reinforcement & formwork to be paid separately) - M20 for raft with all lead and lift etc complete as directed by the EIC.
24	do- M20 for Side wall with all lead and lift etc complete as directed by the EIC.
25	do- M20 covering slab (Flat slab) with all lead and lift etc complete as directed by the EIC.

26	Supplying, fitting and placing TMT FE 550 / 550D Steel Reinforcement including cost of all materials, machinery, labour, cleaning, straightening, cutting, bending, hooking, laping/welding joints, tying with binding wire / soft annealed steel wire and other ancillary operations complete as per drawing and technical specification with all lead and lift etc complete as directed by the EIC.
27	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations and other similar works etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5m with all lead and lift etc complete as directed by the EIC.
	Construction of 1m x 1m x 0.6m size inlet chamber - 1 no.
28	Earth work excavation for Foundation by mechanical means for all works & depth upto 3 m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including dressing of excavated surfaces, disposing off or levelling the excavated earth or sorting & stacking the selected earth for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, tools, usage of machinery & other appurtenances required to complete the work. In all kinds of soils. Depth upto 3.00Mtr) with all lead and lift etc complete as directed by the EIC.
29	Ordinary/soft rock (without requiring blasting) Depth upto 1.50 m with all lead and lift etc complete as directed by the EIC.
30	Providing and laying in position plain cement concrete for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machineries, curing, and all the other appurtenances required to complete the work as per technical specifications. (The cost of steel reinforcement & formwork shall be paid separately) Mix 1:3:6 (M10) Using 20 mm nominal size graded crushed coarse aggregates with all lead and lift etc complete as directed by the EIC.
31	Providing and laying in Reinforced cement concrete for all Basement & surface level works, return walls, retaining walls, sunken floors etc. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed with super plasticisers, laid in layers, well compacted using needle vibrators, providing weep holes wherever necessary, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing and all other appurtenances required to complete the work as per technical specifications. (The cost of steel reinforcement & formwork to be paid separately) -M20 for raft with all lead and lift etc complete as directed by the EIC.
32	do- M20 for Side wall with all lead and lift etc complete as directed by the EIC.
33	do- M20 for covering slab (Flat slab) with all lead and lift etc complete as directed by the EIC.
34	Supplying, fitting and placing TMT FE 550 / 550D Steel Reinforcement including cost of all materials, machinery, labour, cleaning, straightening, cutting, bending, hooking, laping/welding joints, tying with binding wire / soft annealed steel wire and other ancillary operations complete as per drawing and technical specification with all lead and lift etc complete as directed by the EIC.
35	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations and other similar works etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5m with all lead and lift etc complete as directed by the EIC.

36	Providing and fixing SS manual screen inside inlet chamber with all lead and lift etc complete as directed by the EIC.
	Linking of Rising main to collection tank and diversion of storm water line
37	Earth work excavation for pipeline trenches in all kinds of soils by mechanical means as per drawing and technical specifications, including setting out, construction of shoring, strutting, barricading, caution lights, bracing, using sight rails & bonding rods at every 100 mm wherever necessary as directed, removal of stumps and other deleterious matter, dressing of sides and leveling the bottom of trench to the extent required, utilising the available excavated earth locally for the work etc., and all other appurtenances complete in the following strata. in all kinds of soils Depth upto 1.5 m with all lead and lift etc complete as directed by the EIC.
38	Ordinary/soft rock (without requiring blasting) Depth upto 1.50 m with all lead and lift etc complete as directed by the EIC.
39	Hair charges for concrete cutting machine including cost of fuel, crew charges etc. complete. For cutting of drains for providing HSC pipes & for groove cutting -Concrete cutting machine with all lead and lift etc complete as directed by the EIC.
40	Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead. Lime /Cement Concrete - By Manual Means-Prestressed / Reinforced cement concrete grade M-20 & above with all lead and lift etc complete as directed by the EIC.
41	Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead. Dismantling Stone Masonry-By Manual means-Rubble stone masonry in cement mortar with all lead and lift etc complete as directed by the EIC.
42	Providing and laying Ductile Iron pipes of class conforming to IS 8329:2000 with latest amendments, conveying to work site, rolling and lowering into trenches, laying true to line, level and perfect linking at joints, testing and commissioning, including loading and unloading at both destinations, cutting of pipes wherever necessary, jointing with DI specials (excluding cost of specials) and rubber gaskets, cleaning the socket and spigot end with soap solution, applying soft soap to the socket and spigot ends before insertion of rubber gaskets, jacking and fixing in perfect conditions etc. The cost to include soap solution, soft soap, waste etc. and giving necessary hydraulic test to the required pressure as per ISS with all lead and lifts and cost of all jointing materials. (The contractor will make his own arrangements for water for testing. Earth work excavation in trenches to be measured and paid for separately) Note: In sewerage projects for internal cement mortar lining (CML) of DI pipes, if High Alumina Cement (HAC) as recommended in Annexure B clause 16.3 of IS8329:2000 is considered in place of Slag or Sulphate Resistance Cement (SRC), the cost of pipes may be increased by 5-6% from the prices listed. For DI K9 pipes. 250mm dia with all lead and lift etc complete as directed by the EIC.

43	<p>Providing and fixing of DI specials with ISI mark conforming to IS 9523 / 2000 suitable for jointing 100 mm to 600 mm dia DI pipes coated with rust prevention coatings as below: NOTE: A) External coating:</p> <p>a) Metallic zinc with finishing layer of bituminous as per Annexure "A" of IS:9523/2000</p> <p>b) Zinc rich paint with finishing layer of bituminous as per Annexure "A" of IS:9523 / 2000 c) Bituminous paint as per Annexure "C" of IS:9523 / 2000</p> <p>B) Internal Lining:</p> <p>a) Portland Cement (with or without additives) mortar as per Annexure - "B" of IS:9523/2000</p> <p>b) Cement Mortar with coat coat as per Annexure "B" of IS:9523 / 2000</p> <p>c) Bituminous paint as per Annexure "C" of IS:9523 / 2000 etc. complete with all lead and lift etc complete as directed by the EIC.</p>
44	<p>Refilling available earth around trenches/pipelines, cables in layers not exceeding 20 cms in depth, compacting each deposited layer by ramming after watering with a lead upto 50m, and lift upto 1.5 m. Including cost of all labour complete as per specifications with all lead and lift etc complete as directed by the EIC.</p>
45	<p>Providing S&S RCC SPUN / VIBRATED CAST PIPES (REINFORCED) pipes NP-3 Class conforming to IS:458-1988 with latest amendments using ordinary Portland cement, for sanitary works and conveying to work site, rolling and lowering into trenches, laying true to line and level including loading and unloading at both destinations and jointing of pipes and specials, perfect linking of joints with jack to correct position including cost of jointing materials, i.e, rubber rings conforming to IS: 5382 for S&S RCC pipes, with all leads and lifts as directed and giving necessary hydraulic test as per ISS to the required pressure and commissioning etc. complete. (Contractor will make his own arrangements for procuring water for testing). Before the execution of the work, the contractor shall carry out the survey. RCC NP3 Class pipe of 450 mm dia with all lead and lift etc complete as directed by the EIC.</p>
46	<p>Removing & Resetting existing Heavy Duty Cobble/Interlocking stones/Pavers of thickness 60/75/80/100mm using Cement and 40mm thick sand bed (average thickness) and compacting with plate vibrator to achieve final desired compaction & setting of paver to its final level , including cost of materials, labour and usage charges of machinery complete as per specifications. (The cost of new paver/stones required shall be added separately) with all lead and lift etc complete as directed by the EIC.</p>
47	<p>Earth work excavation for Foundation by mechanical means for all works & depth upto 3 m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including dressing of excavated surfaces, disposing off or levelling the excavated earth or sorting & stacking the selected earth for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, tools, usage of machinery & other appurtenances required to complete the work. In all kinds of soils. Depth upto 3.00Mtr) with all lead and lift etc complete as directed by the EIC.</p>
48	<p>Ordinary/soft rock (without requiring blasting) Depth upto 1.50 m with all lead and lift etc complete as directed by the EIC.</p>
49	<p>Ordinary/soft rock (without requiring blasting) Depth exceeding 1.50 m, but upto 3m with all lead and lift etc complete as directed by the EIC.</p>

50	Providing and laying in position plain cement concrete for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machineries, curing, and all the other appurtenances required to complete the work as per technical specifications. (The cost of steel reinforcement & formwork shall be paid separately) Mix 1:3:6 (M10) Using 20 mm nominal size graded crushed coarse aggregates For foundation with all lead and lift etc complete as directed by the EIC.
51	Providing and laying in Reinforced cement concrete for all Basement & surface level works, return walls, retaining walls, sunken floors etc. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed with super plasticisers, laid in layers, well compacted using needle vibrators, providing weep holes wherever necessary, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing and all other appurtenances required to complete the work as per technical specifications. (The cost of steel reinforcement & formwork to be paid separately) -M20 for raft with all lead and lift etc complete as directed by the EIC.
52	do- M20 for Side wall with all lead and lift etc complete as directed by the EIC.
53	do- M20 for covering slab (Flat slab) with all lead and lift etc complete as directed by the EIC.
54	Supplying, fitting and placing TMT FE 550 / 550D Steel Reinforcement including cost of all materials, machinery, labour, cleaning, straightening, cutting, bending, hooking, lapping/welding joints, tying with binding wire / soft annealed steel wire and other ancillary operations complete as per drawing and technical specification with all lead and lift etc complete as directed by the EIC.
55	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations and other similar works etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5m with all lead and lift etc complete as directed by the EIC.
2	Upgradation of existing 1.50MLD MBBR STP
56	Supply, installation, erection, testing, and commissioning of mechanical bar screen designed to remove large solids and debris from the influent. The screen consists of interlocking bars arranged in a step-like configuration that automatically lifts and removes coarse materials, ensuring continuous and efficient screening with minimal manual intervention with all lead and lift etc complete as directed by the EIC. Type of Screen: Mechanical Drum Screen, Design Flow: 75 m ³ /hr, MOC: Stainless Steel (SS 304/316), Bar Spacing: 10–20 mm
57	Supply, installation, erection, testing and commissioning of Blower and Motor sufficient for providing the necessary airflow to the air scoring system, facilitating efficient cleaning of MBR membranes. The unit should be in working stand-by mode (as indicated by the quantity of 2 blowers) with separate motor, drive coupling/V-belt, pulleys, and necessary safety cut-offs and base plates (bed), along with all other necessary components required for successful operation. The motor should be having a canopy with all lead and lift etc complete as directed by the EIC. Blower Type: Twin Lobe Root Blower, Blower Flow: 580m ³ /hr @ 0.5kg/cm ² , Make: Everest/A1/Equivalent (Blower), CG/A1/LHP (Motor), Motor Specs: 25hp with 1440RPM.

58	<p>Supply, installation, erection, testing and commissioning of Blower Accessories and GI C Class pipe Air Distribution Line sufficient for efficient and controlled delivery of air from the blowers to the aeration system in the MBR process. The system includes essential components such as filters, silencers, and control valves at the blower discharge, with the pipework connected using flanges with all lead and lift etc complete as directed by the EIC.</p> <p>Pipe Sizes: 8-inch (Main header), 4-inch, 2.5 inches (Distribution line sizes vary as per design), Accessories: Filters, Silencers, Control Valves, Flanges, Diffuser Connectors, Fittings: Butterfly valve, NRV, Pressure gauge, Safety air vent, GI/MS fittings (TEE, Elbow, dummy, etc.), Paints, Bolts and Nuts. MOC of Fittings: CI/GI/MS.</p>
59	<p>Supply, installation, erection, testing and commissioning of Membrane Skid sufficient for housing and supporting the membrane modules in the MBR process. The skid is fabricated as per design for the capacity of holding and suction capacity of 24 membrane modules. The unit shall include a guiding rod for placement and easy movement of the skid during CIP with all lead and lift etc complete as directed by the EIC.</p> <p>MOC (Skid/Guiding Rod): SS 304, Make: AES.</p>
60	<p>Supply, installation, erection, testing and commissioning of Submerged Hollow Fiber Membranes of Mitsubishi/Asahi Kasei or any equivalent reputed make, sufficient for filtration of MBR mixed liquor. Each module has a membrane area of 40 sq.m with a 0.05-micron pore size with all lead and lift etc complete as directed by the EIC.</p> <p>Membrane Type: Reinforced PVDF fiber, Module Area: 40m² surface area per module, Pore Size: 0.05micron, Make: Mitsubishi/ Asahi Kasei or any equivalent reputed make.</p>
61	<p>Supply, installation, erection, testing and commissioning of Permeate Pump and Backwash Pump sufficient for drawing treated water from MBR membranes and backwashing membranes, respectively. All pumps must be self-priming, working in standby mode of operation, and equipped with separate isolation valve, NRV, and other required accessories for successful operation for Permeate Pump with stand with all lead and lift etc complete as directed by the EIC.</p> <p>Permeate Pump with stand: Type: Self-priming coupled set, 3 HP, Head: 14-meter head, MOC: CI, SS Impeller, Make: Kirloskar/Lubi/equivalent.</p> <p>CIP Backwash Pump with stand: Type: Self-priming coupled, Head: 14-meter head, MOC: CI, SS Impeller, Make: Kirloskar/Lubi/equivalent.</p>
62	<p>Supply, installation, erection, testing and commissioning of Permeate Pump and Backwash Pump sufficient for drawing treated water from MBR membranes and backwashing membranes, respectively. All pumps must be self-priming, working in standby mode of operation, and equipped with separate isolation valve, NRV, and other required accessories for successful operation for CIP backwash Pump with stand with all lead and lift etc complete as directed by the EIC.</p>
63	<p>Supply, installation, erection, testing and commissioning of PLC based automatic control panel sufficient for completely automatic and programmable operation of all equipment (pump, blower, etc.) in the MBR system. The panel should allow any parameter to be changed on site without special support from the supplier. The control panel must have a compulsory IOT-based module for sending necessary data to a dedicated server with a facility to display the prescribed treated effluent parameters online in KSPCB Dashboard with all lead and lift etc complete as directed by the EIC.</p> <p>Panel Type: HMI AND PLC with IOT-based and VFD control, Housing MOC: MSEP sheets with powder coating, Make: Lauritz Knudsen/equivalent, Components: Switch gears, other necessary components, Electrical cable wiring with cable tray.</p>

64	Supply, installation, erection, testing and commissioning of Liquid Piping's sufficient for transferring permeate backwash, sludge, and other flows within the plant. The system includes all necessary brackets and plumbing for full installation and commissioning for MOC with all lead and lift etc complete as directed by the EIC.
65	Supply, installation, erection, testing and commissioning of Liquid Piping's sufficient for transferring permeate backwash, sludge, and other flows within the plant. The system includes all necessary brackets and plumbing for full installation and commissioning For Electromagnetic Flow meter with all lead and lift etc complete as directed by the EIC.
66	Supply, installation, erection, testing and commissioning of Liquid Piping's sufficient for transferring permeate backwash, sludge, and other flows within the plant. The system includes all necessary brackets and plumbing for full installation and commissioning For Solenoid valves with all lead and lift etc complete as directed by the EIC. MOC: UPVC high grade materials, Flow Meter: Electromagnetic, Solenoid Valves: Electric SV.
67	Supply, installation, erection, testing and commissioning of MBR Tank sufficient for housing the MBR process components (Membrane Skids, Diffusers, etc.). The scope includes fabrication, welding, material transport, and application of protective coatings with all lead and lift etc complete as directed by the EIC. Capacity: 75KL, MOC: MSEP, Plate Thickness: MS Plate - 6mm Tk (Tank base/internal structures), Coating: One coat primer and Two Coat Epoxy Paint.
68	Supervising, installation, erection, testing and commissioning of the entire MBR plant duly obtaining CFO from KSPCB, including all material transport and loading. The scope explicitly includes the supply of sufficient quantity of bacteria culture for startup and disinfectant chemical for the initial trial with all lead and lift etc complete as directed by the EIC.

3.2 Detailed Process Description of MBR Technology STP

The proposed Sewage Treatment Plant (STP) upgradation involves integration of newly constructed advanced treatment units with the existing infrastructure. The existing Collection Tank and three Aeration Tanks (converted from MBBR reactors) are retained and optimized. Newly constructed units include the Equalization Tank, Rotary Drum Screen, Membrane Bioreactor (MBR) system, and Chlorination Unit. The entire system is operated through a PLC-based automatic control system integrated with SCADA.

The upgraded system is designed to ensure consistent treatment performance and produce high-quality treated water suitable for reuse.

1. Collection Tank

Raw sewage generated from residential and commercial facilities is conveyed through the sewer network and received in the Collection Tank. This tank serves as the initial receiving chamber and provides temporary storage to manage variations in incoming flow.

Submersible sewage pumps transfer wastewater to the Equalization Tank at controlled rates.

Level sensors are provided for automatic pump operation to prevent overflow and dry running. The tank is designed to handle peak flow conditions and ensures uninterrupted downstream operation.

Function

- Receives raw sewage from the sewer network.
- Provides temporary storage to manage flow fluctuations.
- Prevents hydraulic shock to downstream units.

Operational Details

- Designed for peak flow handling.
- Equipped with **submersible sewage pumps**.
- Fitted with **level sensors** for automatic pump start/stop.
- Prevents overflow and dry running.

The collected sewage is pumped at controlled flow rates to the Equalization Tank for further treatment.

2. Equalization Tank (Newly Constructed)

The Equalization Tank is constructed to balance variations in flow rate and pollutant concentration.

Purpose

Domestic sewage characteristics vary throughout the day due to usage patterns. The Equalization Tank ensures:

- Uniform hydraulic loading
- Consistent organic loading (BOD, COD)
- Stable pH conditions
- Protection of biological system from shock loads

Mixing & Aeration System

- **Coarse bubble diffusers** are installed at the bottom.
- Continuous aeration ensures:
 - Proper mixing
 - Prevention of solids settling
 - Avoidance of septic conditions
 - Control of odor generation

Maintaining aerobic conditions in this tank reduces the formation of hydrogen sulfide and improves downstream biological efficiency.

3. Rotary Drum Screen (Newly Constructed)

After equalization, wastewater passes through a mechanically operated Rotary Drum Screen with 2 mm perforation.

The Rotary Drum Screen provides advanced primary screening before biological treatment.

Technical Features

- **Screen opening size: 2 mm**
- Fine mesh stainless steel drum
- Fully automatic mechanical cleaning system

Working Principle

- Wastewater flows through the rotating drum.
- Solids larger than 2 mm are retained on the screen surface.
- The drum rotates continuously.
- A spray and scraper mechanism removes trapped solids.
- Screened solids are discharged into a collection bin.

Advantages

- Protects pumps and diffusers
- Prevents membrane clogging
- Reduces maintenance cost
- Ensures smoother downstream operation

The 2 mm opening ensures effective removal of fine suspended debris, significantly improving membrane life in the MBR system.

4. Aeration Tanks (Converted from Existing MBBR Tanks)

The three existing MBBR tanks are converted into **conventional suspended growth activated sludge aeration tanks** by removing bio-media and installing fine bubble aeration systems.

The total design flow of **1.5 MLD is split equally into three tanks**, with **0.5 MLD flowing to each tank**, ensuring uniform hydraulic and organic loading for stable operation.

Biological Treatment Mechanism

The aeration tanks operate on the **Activated Sludge Process (ASP)** principle.

Biological Reactions

1. **Oxidation of Organic Matter**

- Microorganisms consume biodegradable organic pollutants.
- BOD and COD levels are reduced significantly.

2. Biomass Growth

- Microorganisms multiply and form flocs.
- Organic matter is converted into new cell mass.

3. Nitrification

- Ammonia nitrogen is oxidized to nitrite and nitrate.
- Occurs under aerobic conditions with sufficient DO.

Operational Parameters

- DO maintained between **2–3 mg/L**
- Optimum MLSS maintained
- Designed Hydraulic Retention Time (HRT)
- Continuous air supply through fine bubble diffusers.

5. Membrane Bioreactor (MBR) System (Newly Constructed)

The MBR tank contains submerged membrane modules for solid-liquid separation.

Working Principle

Instead of a secondary clarifier, membrane filtration separates treated water from mixed liquor.

The membranes:

- Allow only treated water (permeate) to pass
- Retain suspended solids
- Retain biomass
- Remove bacteria and pathogens

Air Scouring System

Continuous air supply below membrane modules:

- Reduces fouling
- Maintains permeability
- Enhances membrane lifespan

Operational Benefits

- Higher MLSS operation (compact system)
- Eliminates need for secondary clarifier
- Produces low turbidity effluent
- Near-zero suspended solids

- High pathogen removal

The MBR ensures consistent high-quality treated water suitable for reuse.

6. Chlorination Unit (Newly Constructed)

Following membrane filtration, treated water undergoes final disinfection through a newly installed Chlorination Unit.

A metered chlorine dosing system injects controlled quantities of disinfectant into the treated water stream. Adequate contact time is provided in a contact chamber to ensure effective pathogen destruction.

Residual chlorine is maintained within permissible limits to ensure safe reuse and regulatory compliance.

7. Treated Water Tank

Disinfected treated water is collected and stored in the Treated Water Tank. The treated water is suitable for reuse applications such as:

- Gardening and landscaping
- Toilet flushing
- Cooling tower make-up
- Other non-potable uses

The tank is equipped with level indicators and distribution pumps to ensure consistent supply and operational reliability.

8. Sludge Drying Bed

Excess sludge generated from the aeration and MBR process is periodically withdrawn and conveyed to Sludge Drying Beds.

In the drying beds:

- Sludge is spread over sand and gravel layers
- Water drains through the underdrain system
- Remaining moisture evaporates naturally under sunlight
- Dried sludge is manually collected for safe disposal

The Sludge Drying Bed system provides a simple, low-cost, and energy-efficient method of sludge dewatering. It significantly reduces sludge volume, minimizes handling costs, and ensures environmentally safe disposal.

9. PLC-Based Automatic Control System with (Newly Constructed)

The entire STP is operated through a centralized PLC-based automatic control system integrated with SCADA. The PLC receives signals from field instruments (level sensors, pressure switches, pump feedbacks, etc.) and automatically controls pumps, blowers, membrane systems, and other equipment based on programmed logic.

SCADA provides real-time graphical monitoring, data recording, and system control from a central panel.

Control Features

1. Automatic Pump Operation (Level-Based)

Tank levels are continuously monitored. Pumps start and stop automatically based on preset high and low levels. Dry-run and overload protection are included.

2. Membrane Filtration Cycle Management

The PLC controls filtration, relaxation, and air scouring cycles. Transmembrane pressure (TMP) is monitored to prevent fouling and trigger alarms if required.

3. Alarm Monitoring

In case of faults such as high level, pump trip, blower failure, or high membrane pressure, audible and visual alarms are generated with fault indication.

4. Emergency Interlocks

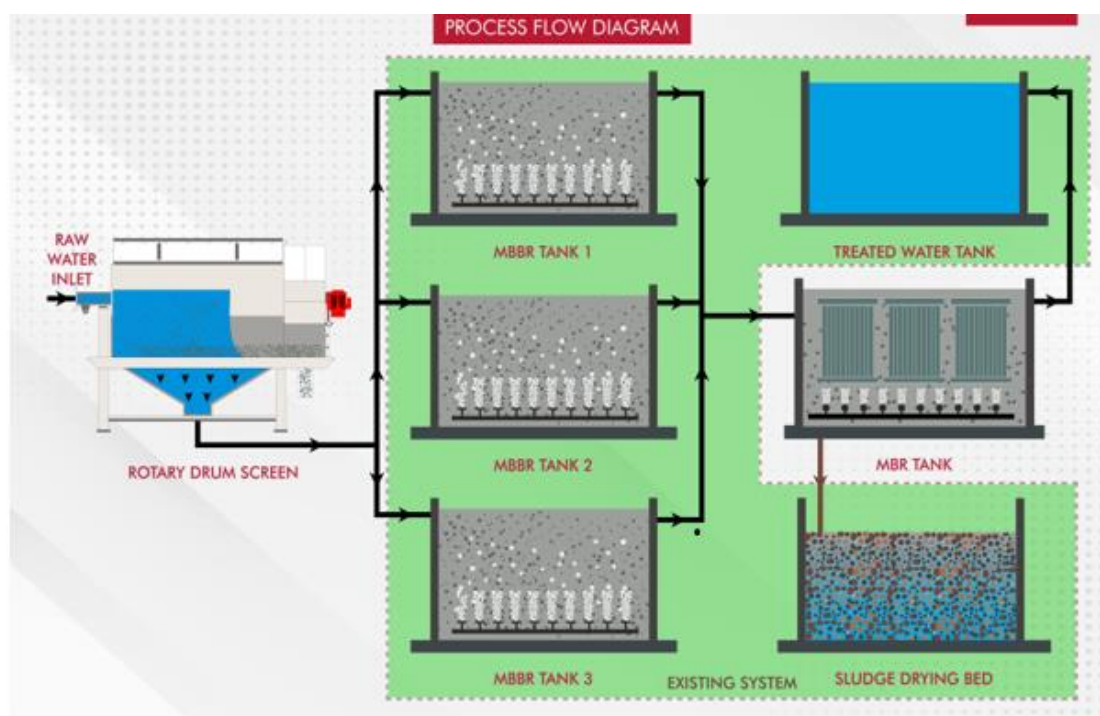
Safety interlocks automatically stop equipment during abnormal conditions to prevent damage and ensure safe operation.

5. Data Logging & Trends

SCADA records operational data such as flow, levels, operating hours, and alarm history for performance monitoring and maintenance planning.

The PLC-SCADA system ensures synchronized plant operation, reduces manual intervention, improves energy efficiency, enables remote monitoring, and maintains consistent treated water quality in compliance with regulatory standards.

***Note: Other than the above, if any other civil work is required for successful commissioning of the plant, the same shall be constructed within the quoted offer of the bidder. It is the responsibility of the contractor to achieve the required treated effluent standards as per NGT norms.**



3.3 SPECIAL SPECIFICATIONS for Construction of STP

DESIGN BASIS

Design Flow

- The following aspects are to be considered for the design of Sewage treatment.
- Plant is designed with operating Hours: 24 hrs
- Capacity proposed are:

Sl.No.	Plant Capacity	Operating hours
1	1.50MLD	24 hrs

Raw Sewage Characteristics considered are;

Sl.No.	Parameter	Concentration Range	Unit
1	pH	6.0–7.5	mg/l
2	BOD	180-250	mg/l
3	COD	325-700	mg/l
4	TSS	300-650	mg/l

5	VSS	225-300	mg/l
6	TN	40-45	mg/l
7	Organic Nitrogen	10-15	mg/l
8	Ammonical Nitrogen	27-37	mg/l
9	Nitrate Nitrogen	3-6	mg/l
10	TP (as PO ₄)	5-8	mg/l
11	Ortho Phosphorus	4-6	mg/l

Treated effluent Characteristics REQUIRED as per KSPCB standards

Sl.No.	Parameter	Concentration Range	Unit
1	pH	7-8.5	mg/l
2	Temperature	Shall not exceed 5 degree above incoming water temp.	
3	BOD ₃	10	mg/l
4	COD	50	mg/l
5	TSS	20	mg/l
6	Residual Chlorine	1	mg/l
7	Oil & Grease	5 or less	mg/l
8	Total Nitrogen	10	mg/l
9	Dissolved Phosphorus	2	mg/l
10	Faecal Coliforms	Less than or equal to 100MPN/100ml	

Note: If the bidder fails to achieve one or all the parameters as listed above in any month during Defects Liability Period, then penalty of Rs.5.0 Lakhs will be levied for one month.

4.0 GENERAL SPECIFICATIONS

Key maps showing the various components of the works under the scope of the tender is presented in the Drawings.

4.1 The work also includes conducting detailed survey, Design and drawing, supply, construction, installation, testing, commissioning, trial run (3 months) and attending to defects/ repairs during the defect liability period of 12 months after successful commissioning along with the following works are to be carried out by the bidder:

- Earth work excavation laying of bedding wherever specified, dry rough stone revetment to the slopes wherever the slopes are of loose soil back filling the trenches and restoring and making good all surfaces which are damaged during excavation, disposal of excavated earth as directed by the Engineer in charge.
- Construction of all appurtenant structures such as machine holes with covers, frames, ventilating shafts, pipe supports, drain and road crossings etc.
- Filling the ground with available approved earth including watering and compaction layers of 15cms.
- Maintenance of all the works under the scope of the tender for 12 months after commissioning. During this period, the contractor has to set right the defect of any kind in the manufacture, laying & jointing of sewer lines, also in construction of machine holes or in any other works in this scope of tender at their cost.
- Dismantling and reconstruction of the structures such as culverts, storm water drains, utility lines such as water supply pipe lines, sewer pipe lines, Telephone cables OR any other structure in the way of proposed alignment.
- Testing and commissioning of the SEWER NETWORK/ STPs and other components under the scope of the tender.
- Construction of suitable culverts at valley points and at suitable places as directed by the Engineer.
- All work shall be done as per the specifications. The works shall include providing all materials, equipments, labour, tools, plants, transport etc., and all other services necessary for the complete construction including necessary sub-soil investigations.

5.0 EARTH WORK

The Earthwork for laying of the sewer lines shall generally be carried out as per Standard Specifications for Procurement of Project Works as provided in the Standard specification of the bid document with additions and modifications as enumerated in the Special Specifications under this Chapter.

The Earthwork for laying of the sewer lines/WWs/ construction of STPs shall include:

- i) Removal of all surface obstructions including shrub, jungle, etc.;
- ii) Carrying out all necessary excavations. The width of the trench shall depend upon size of the pipe & depth of excavation. This will be decided by the engineer in-charge & depends upon the site condition.

- iii) Providing and installing at place all sheathing, shoring and bracing to the excavated surface as necessary for the work and removal thereof after the work;
- iv) Pumping and bailing out water for progressive excavation and to keep trenches dry during concreting, pipe laying and jointing process till the joints mature;
- v) Providing for uninterrupted surface water flow during progress of work;
- vi) Arrangement for diversion of flows from storm drains, valleys or other sources. And also making temporary diversion arrangement for sewage flow in existing sewer lines during execution of revamping works.
- vii) Protecting all pipes, conduits, culverts, roads, railway tracks, utility poles, fences, buildings, and other public and private properties fouling the work;
- viii) Backfilling with excavated material, except where granular fill is recommended;
- ix) Removal and disposal of surplus spoil from excavation after back filling to the specified lead;
- x) Levelling and dressing of surplus spoil from excavation or part of it in soil banks along with the trench as directed by Engineer;
- xi) Restoring all structures and properties injured or disturbed by the construction activities to as near its original shape, as possible.
- xii) Restoring the surface of all roads, streets, valleys, walks, drives, easements, working spaces, and right of way to condition as good as prior to excavation, unless otherwise required by the Engineer; and introducing safety measures for carrying out the work in all respect.

xiii) Cross section for excavation for all underground structures and pipe lines

Contractor shall prepare sectional drawings showing the details of excavation for all underground structures and pipe lines, in all kinds of soil, boulders, soft and hard rock etc., based on test results of soil testing and investigation reports and shall submit to the Engineer for review and approval, prior to starting of the work. If during excavation any change in section is considered necessary for reasons of safety of workers, the Engineer will issue directions for compliance by the Contractor. The contractor shall comply with the Engineer's directions without any extra charge of payment.

xiv) SAFETY MEASURES

For Procurement of Project Works, the Contractor shall provide adequate safety measures. They shall include:

1. Barricading all sides of the open trenches.
2. Red danger lights as can be easily visible from dusk to dawn at an interval of 20 m and at all the road crossings.
3. Traffic signals and display boards giving direction for diversion of traffic at the appropriate places as may be directed by the Engineer.
4. Adequately safe wooden plank I board or steel plate over the trenches at every 15 meters interval to facilitate crossing by the public residing on either side of the trench.

5. Round the clock watch and ward maintaining all safety regulations at the site of work and protecting the site from unauthorized intrusions.

5.1 General

The earth work excavation for laying of pipe shall be carried out, in general, as per Standard Specifications for Procurement of Project Works, as specified in Sub-Clause 15.7.5.1 for rising main and Clause 5 for the reservoir. Any additions or modifications specified shall be followed. The Contractor shall make all excavations required for laying and jointing of the pipeline and construction of pertinent structures as required by the project. Except where otherwise required by the project or instructed by the Engineer, all excavation shall be in open cut to the required widths and depths. The Contractor is advised to satisfy himself with regard to the likely conditions that may be met with during the execution of the works, with regard to the underground obstructions or conditions, necessary dewatering requirements etc., before quoting the rates.

The contractor shall be responsible for the adequate pumping, drainage and bailing out of water from the excavation. In case of failure to make such provisions or any other provisions which may result in unsuitable sub-grade conditions, the contractor shall replace and repair the sub-grade as directed to the satisfaction of the Engineer, at his own cost and responsibility.

Should the contractor select to use a gravel sub-grade to facilitate flow of water to pumps or other points of disposal such gravel sub-grade shall not be measured or paid for as an extra item.

5.2 Classification of Excavation

All materials involved in excavation shall be classified in three categories as follows:

5.2.1 Ordinary soil

This includes excavation in all types of soil including soil containing gravels, murrum, loose boulders, viz., ordinary gravelly soil, hard gravelly soil, wet soil, stiff slushy soil, chettu soil and calcareous strata, but exclusive of disintegrated rock, soft rock/shale;

5.2.2 Soil Containing Disintegrated Rock, Soft Rock and Soft Shale

This category includes excavation in soil containing disintegrated rock, soft rock or soft shale which can be cut by shovel and no hand or mechanical chiselling is required.

5.2.3 Medium Hard rock: -

This category includes excavation in lime stone, sand stone, hard shale and schist, fissured rock without restoring to blasting.

5.2.4 Hard Rock

This category includes excavation in hard rock requiring hand or mechanical chiselling or blasting. In case of difference in opinion between the classification of rock requiring blasting and that requiring chiselling, wedging, the decision of the Engineer shall be final and binding on the Contractor.

5.3 Limits of excavation

The Contractor shall be responsible to ensure that the widths and depths of the trenches do not exceed the limits shown in the construction drawings. Should the excavation occur beyond the dimensions specified therein, because of the negligence of the Contractor, the Contractor shall fill the excess space with granular material or concrete as directed by the Engineer. Nothing extra shall be paid to the Contractor on account of this.

5.4 Trial pits

The details of trial pits as shown on the alignment plans are only for general information. There is no expressed or implied agreement or guarantee that depths or character of materials are correctly shown

or the conditions affecting the work will not differ from those shown on the plans. Trial pits may be dug by the Contractor, without being directed to do so, along the lines of the trenches as shown on the drawings in advance of the excavations for the purpose of satisfying himself as to the location of underground obstructions or soil conditions.

5.5 Slips and slides

Pursuant to Clause 5.8 of Standard Specifications for Procurement of Project Works, the Contractor is responsible for proper protection of excavations made by him from any slips and slides. All slides and caving shall be handled, removed or corrected by the Contractor without any extra compensation at whatever time and under whatever circumstances they may occur. The excavations shall be made good and brought to necessary depth, width and levels without any extra cost.

5.6 Stacking of excavated material

Pursuant to Clause 15.7.5.1, item 7 of Standard Specifications for Procurement of Project Works, the excavated material shall be stacked at least 600 mm away from the sides of the trench.

5.7 Safety measures

The Contractor shall provide adequate safety measures during excavation. They shall include :

- i) Barricading all sides of the open trenches.
- ii) Red danger lights as can be easily visible from dusk to dawn at an interval of 20 m and at all the road crossings.
- iii) Traffic signals and display boards giving direction for diversion of traffic at the appropriate places as may be directed by the Engineer.
- iv) Adequately safe wooden plank / board or steel plate over the trenches at every 15 meters interval to facilitate crossing by the public residing on either side of the trench.
- v) Round the clock watch and ward maintaining all safety regulations at the site of work and protecting the site from unauthorized intrusions.

5.8 Shoring and Bracing

Pursuant to Clauses 5.7, 15.7.5.1 (item 9), 15.7.11 and 15.7.12 of Standard Specifications for Procurement of Project Works, the Contractor shall supply, fix and maintain necessary sheathing, shoring and bracing etc., in steel or wood, as may be required to support the sides of the excavation, to protect workmen in the trench and to prevent any trench movement which might in any way injure or delay the work, change the required width of the trench, make unsafe condition for adjacent pavements, utilities, buildings or other structures above or below ground. Sheathing, shoring and bracing shall be withdrawn and removed as the backfilling is being done, except when the Engineer may agree that such sheathing, shoring and bracing be left in place, at the Contractor's request. In any case, the Contractor shall cut off any such sheathing at least 600 mm below the surface and shall remove the cut off material from the trench. All sheathing, shoring and bracing which is left in place under the foregoing provisions shall be removed in a manner so as to not endanger the completed work or other structures, utilities or property, whether public or private.

5.9 Excavation in Rock

Excavation in rock shall be carried out to a depth, 150 mm more than the bottom level of pipe and to a width equal to the diameter of the pipe plus minimum working space on either side as given in drawing. Unless otherwise directed by the Engineer, rock excavation shall be progressed at least by 20 m in advance of the pipe length proposed to be laid.

6.0 Blasting of Rock

Excavation of rock by blasting may be carried out if permitted by the Engineer depending upon the location and circumstances. Contractor shall submit a detailed plan and methodology for such blasting operation to the Engineer for approval. The responsibility of the Contractor with respect to the use of

explosives in blasting includes compliance with all laws, rules and regulations of the State or Local Municipalities governing the storage, use, manufacture, sales, handling, transportation or other disposition of explosives. All operations involving the handling, storage and use of explosives, shall be conducted with every precaution by trained and reliable men under experienced supervisors. Blasting shall not be undertaken until all persons in the vicinity have had ample notice and have reached positions out of danger there from. The Contractor shall take special precautions for blasting at and near the top of trench as well as for the proper use of explosives in the trench to prevent damage to surface, structures, water supply mains, sewers, storm drains or other buried structures. The Contractor shall advise the department in advance when charges are to be set off.

After blasting, the Contractor shall thoroughly seal the excavated trench/pit, remove all loose and shattered rock or other loose materials and make the excavation safe before proceeding with further work. The Contractor shall not be entitled to compensation for removal of loose or shattered rock or other loose materials resulting from the enlargement of the excavation beyond the required limits. Rock requiring blasting or chiselling shall exclude all rocks such as soft rock, small boulders which can be removed either with pickaxe or crow bars, and shall apply to only rocks which cannot be removed by any of these means. In case of differences in opinion, the decision of the Engineer shall be final and binding on the Contractor.

6.1 Excavation for Inlets, Junction Chambers and Other Appurtenant Structures

The Contractor shall excavate as required for all structures with foundations to firm, undisturbed earth up to the level of the underside of the structure. If the excavation is in rock, the Contractor shall excavate all rock at least to the minimum limits shown on the standard details for trenches and to the grade of the bottom of inlets, junction chambers or other structures as required. Where the bottom of the structure is in rock, it should be ensured that no rock shall project above the lower surface of the concrete in such a manner so as to reduce the required thickness of concrete placed simultaneously as an integral part of the foundation and to the outside of structure foundation where structure is to be built. The Contractor shall excavate the trench / pit to provide necessary working space on all sides and for accommodating any sheathing, shoring or bracing etc.

6.2 Contractor's Responsibility

The Contractor shall be responsible for the adequate pumping, drainage and bailing out of water from the excavation. In case of failure to make such provisions or any other provisions which may result in unsuitable sub-grade conditions, the Contractor shall replace and repair the sub-grade as directed to the satisfaction of the Engineer, at his own cost and responsibility.

Should the Contractor select to use a gravel sub-grade to facilitate flow of water to pumps or other points of disposal, such gravel sub-grade shall not be measured or paid for as an extra item.

6.3 Works Included in Excavation

Pursuant to Clause 15.7.6.1 of Standard Specifications for Procurement of Project Works, the following works as per specifications are also included in excavation and the term 'Excavation' shall construe to mean all such items of work. The quoted rates should include the same:

1. Provision of side space or additional space in the trench/pit for working and/or accommodating sheathing, shoring, bracing, etc.
2. Supply, installation and removal after the work, all sheathing, shoring and bracing required to protect the excavation where required or where such work is recommended by the Engineer.
3. Protection of excavations.
4. Providing adequate safety measures.
5. Additional work in connection with overhead wires and poles.
6. Excavations for socket hollows.
7. Change of trench location in accordance with Clause 15.7.7 of Standard specifications.
8. Additional work in conducting blasting operations as required, in case the excavation is in rock.

9. Supplying and fixing of sight rails and boning rods in the trench to facilitate measurement of work.

6.4 Bedding for the pipe

Bedding shall be provided all along the stretch of the pipe line, which differs based on the area through which the pipe line passes. Pipe shall be generally laid on earth bedding. When rock is met with, it shall be provided with gravel/sand bedding. Concrete arch bedding shall be used in situations where the pipeline crosses the road below and the pipe may be subjected to damage from passing vehicles. However, the type of bedding to be provided shall be as decided by the Engineer. The various types of beddings are specified below:

6.4.1 Earth Bedding

The pipes shall be placed on the natural, undisturbed earth bedding, which has been carefully shaped to fit the lower part of the pipe for a width of at least 50 % of its external diameter. The trench shall be excavated to an extra breadth and depth, wherever weld joints are coming and the bedding shall be given to the weld joint such that it is relieved of all loads, permitting the pipe Chapter to be firmly bedded throughout its length. Filling and removing earth or similar materials beneath the pipe to adjust with the grade will not be permitted except filling with compacted granular bedding material or murrum.

6.4.2 Gravel Bedding

Wherever rock is met with, it shall be removed upto 150 mm below the bottom level of the pipe to a minimum width equal to the width of the trench and the resulting space shall be filled up with good quality compacted gravel. The granular material shall be filled in the trench upto the level of $\frac{1}{4}$ the outer diameter of the pipe line, above the bottom of trench and well compacted. Unless otherwise directed by the Engineer, rock excavation shall progress at least 20 m in advance of the pipe length proposed to be laid.

6.4.3 Concrete Arch bedding

Wherever concrete bedding is proposed to be provided, it shall be provided as per the approved drawings or as directed by the Engineer. The sub-grade shall be prepared to dimension as shown in the Drawings. The pipe shall be provided with sand bedding below and concrete arch above. The dimensions and thickness of bedding etc., shall be as per the approved Drawings.

The bottom of the trench may be slopped on the sides or kerbed. The sand bedding shall be provided below the pipe. The sand used shall be clean, medium grained and free from impurities. The sand shall be compacted by hand compaction, by watering and ramming, in layers not exceeding 150 mm.

The minimum thickness of concrete for the arch portion shall be as specified in the Drawings or as directed by the Engineer. Dry mix will not be permitted. The slump for concrete for the arch portion shall not be more than 25 mm. All water in the trench must be bailed out prior to taking up bedding work. When concrete is to be placed over the pipe for arch portion, it shall be placed carefully so as not to damage or injure the joints or displace the pipe. Back filling shall be done in a careful manner and at such time after the concrete is set, so as not to damage the concrete. Joints shall be avoided under the roads, but they shall be located on either side of the roads.

The concrete arch bedding shall only be used when the pipe line crosses the road below and where directed by the Engineer.

6.4.4 Special Bedding in poor sub-grades

During the progress of work, if the sugared is observed to be of poor quality which is unsuitable for laying the pipe line and which is not the result of the Contractor's negligence, the Engineer may direct the Contractor to strengthen the sub-grade as per Clause 15.7.10 of Standard Specifications for Procurement of Project Works. The strengthening shall be done either by crushed stone or local lime

stone, with depth not exceeding 450 mm (ref. Clause 15.7.10.4 of Standard Specifications for Procurement of Project Works); or by gravel, with depth not exceeding 225 mm (ref. Clause 15.7.10.5 of Standard Specifications for Procurement of Project Works); or by concrete of mix 1:4:8 (ref. Clause 15.7.10.6 of Standard Specifications for Procurement of Project Works).

7.0 Backfilling of Trenches and around foundations of structures

7.1 General

Pursuant to Clauses 5.15.4.1, 5.15.4.2, 5.15.4.3, 5.15.4.6 and 15.7.23.1 of Standard Specifications for Procurement of Project Works, the Contractor shall use selected surplus spoils from excavated materials for backfilling. All fill material shall be subject to Engineer's approval and shall be conforming to Clause 5.15.4.2 of Standard Specifications for Procurement of Project Works. The excavated materials suitable for backfilling shall be stored not closer than 600 mm from the edge of the trench and shall not obstruct any public utilities or interfere with travel by local inhabitants or general public. Handling and storage of excavated materials must meet with the regulations of the Local Government Authorities. The detailed specifications for backfilling shall be as per Clause 8 of IS: 3114-1994.

7.2 Method of Backfilling:

Trenches and excavated pits for structures shall be backfilled to original ground level or to such other levels, as the Engineer may direct. All backfilling shall be carried out in orderly manner expeditiously and consistent with good workmanship.

Backfill material put into the trenches/pits for backfilling, shall unless otherwise specified be compacted and built up as to minimise future settlement as much as is reasonably possible. For this, care shall be exercised in selecting backfill material free from large hard clay lumps, especially in cramped areas directly adjoining the walls of structures.

Backfilling in trenches shall be done as pipe laying progresses, with the permission of the Engineer, after the pipe or conduit is properly bedded, jointed and inspected and all measurements for the location of Y-Junctions, tees, etc., are properly recorded by the Engineer and sufficient time is allowed for the joint materials or cement concrete or mortar to set. However the joints shall be left open for inspection during testing, which shall be backfilled after successful completion of testing, after obtaining permission from the Engineer. Backfilling around and over the pipe, conduit, or structure shall be taken up uniformly on all sides and in the sequence and manner specified hereinafter, with care to avoid the displacement or damage to the pipe, conduit or structure.

For the purpose of backfilling, the depth of trench shall be divided into the following three zones measured from bottom to top of trench, as follows:

- i. Zone A : From bottom of trench to the centre line of pipe,
- ii. Zone B : From the level of centre line of pipe to a level of 300 mm above the top of pipe,
- iii. Zone C : From a level of 300 mm above the top of pipe to the top of trench.

Backfilling in the trenches and around structures shall be carried out in horizontal layers of uniform thickness of not more than 150 mm when measured loose. As may be necessary to attain maximum compaction, the backfill material shall be moistened by sprinkling with water. After placing each layer of backfill material, the layer shall be thoroughly and uniformly compacted by means of mechanical or hand tampers. The compacting equipment and the manner of its use shall be subject to the approval of the Engineer.

After the backfill material is placed in Zone A and Zone B as specified above, the remaining portion i.e., Zone C of the trench may be machine backfilled. Even in this case the backfill material shall be placed in uniform horizontal layers of not more than 150 mm thickness. Small pebbles of size less than 50 mm, if any, shall be so distributed throughout the mass, that all interstices are solidly filled with fine material. The backfill material shall be stamped with mechanical tamping equipment, after moistening the backfill by sprinkling with water to obtain maximum compaction.

Machine backfill shall be so conducted that the material deposited in the trench shall not fall directly on top of the pipe from such a height as might result in damage to the pipe joints or alignment.

If the trench is subjected to conditions which might cause flotation of the pipe before sufficient backfill has been placed, the Contractor shall take the necessary precautions to prevent flotation of the pipe, conduit or structure.

Before final acceptance of the work, additional tamped earth shall be added to restore the settled trench surface to the required level of the adjacent earth surface or to the base of crushed rock wearing surface or to the finished earth base.

Pursuant to Clauses 5.15.4.2 and 15.7.5.1 (item 17) of Standard Specifications for Procurement of Project Works, if from the excavated spoil, enough backfill material is not available, imported, selected and approved backfill material from the borrow pits is required to be placed for backfill, on approval of the Engineer. Pursuant to Clause 15.7.5.1 (item 16) of Standard Specifications for Procurement of Project Works, backfilling of trenches where the excavation is in the rock shall be with the surplus soft soil, with all lead and lift.

7.3 Disposal of Surplus Excavated Material

The excavated material which is in surplus to the requirements after backfilling shall be removed and disposed off as directed by the Engineer and spread at places shown by the Engineer, with all lead and lift from the site of work. No surplus or excess material shall be disposed in a stream / channel or in any place where the pre-construction surface drainage may have to be provided, without written permission of the Engineer.

8 DETAILED SPECIFICATIONS

8.0 DUCTILE IRON PIPES:-

The DI pipe should be manufactured for class K-9 (working pressure confirming to IS8329:2000 with internal cement mortar lining of smooth finishing confirming to ISO 4179 with its latest amendments.

8.1 Laying and jointing of DI pipes.

The DI pipes should be conveyed to site, rolled, lowered into trenches, laid true to line levelled with perfect linking at joints using rubber gaskets confirming to relevant IS, including cleaning the socket spigot ends with soap solutions and applying soft soap solution to the spigot and socket ends before insertion of rubber gasket jacking and fixing perfect condition. The pipes should be hydraulically tested as per relevant IS the bidder shall make his own arrangements for procurements of water for testing purposes.

8.2 Field Hydrostatic testing of DI pipes

After laying and jointing of DI pipes the field Hydraulic testing has to be carried as per relevant IS. The pipes or fittings which are found defective shall be replaced and joints found leaking shall be redone without any extra payment. The water used for testing shall be of approved quality.

8.3 DI Specials

Manufacturing, providing, transporting, rolling, lowering, laying & jointing, testing and commissioning of DI Specials conforming to ISI 9523-2000 with latest amendments.

9 MS Specials

Manufacturing, providing, transporting, rolling, lowering, laying & jointing, testing and

commissioning of Mild Steel Specials conforming to ISI 7322-1985 with latest amendments, perfect linking and welding of joints to correct position including cost and conveyance of materials with all lead and lifts, cost of all labour and giving satisfactory hydraulic test as per IS 3589-2001 with latest amendments for test pressure and working pressure both at factory and site etc., complete as per detailed specification with inside lining two coats of food grade epoxy painting of approved make with minimum 250 micron thick, over one coat food grade epoxy primer of approved make with minimum of 50 micron thick and outside 25mm thick in CM 1:3 by providing 50x50 mm weld mesh including loading and unloading of pipes for the following category to suit PSC/MS/CI/DI/AC/PVC pipes. The specials shall be suitable for jointing both with Steel / DI pipes. For the internal surface of the specials cement mortar lining should be used. (For calculating the rate, the weight of the MS shell only be considered i.e., excluding the weight of external and internal CM lining/coating)

10 MANUFACTURING / SUPPLYING LAYING AND JOINTING OF PIPES

10.1 Reinforced Cement Concrete (RCC) Pipes

10.1.1 Manufacture of pipe

The RCC pipes to be used for trunk/ outfall sewers shall be of class NP3, spigot and socket (S&S) type, with rubber gasket jointing, manufactured in conformity with IS 458, **Sulphate resistant cement** shall be used in manufacture of pipes. The ends of the pipes shall conform to Clause 5.3 of IS 458 as applicable for S&S joints. The rubber ring shall conform to IS 5382 and IS 12820 as applicable for sewer lines and shall of type "IA". The diameters of pipes shall be as required for various trunk/ outfall sewers as per designs and drawings.

The method of manufacture shall be such that the form and dimensions of the finished pipes are accurate within the limits specified in relevant IS:458. Pipes manufactured in compliance with IS 458 shall be either water cured or stream cured in accordance with the relevant requirements of IS:458.

The internal diameter, wall thickness, length of barrel, reinforcement (longitudinal and spiral), type of ends and minimum clear cover to reinforcement, strength test requirements, tolerances on overall length, internal diameter or dimensions of sockets/ spigots of pipes shall be as per the relevant clauses/ tables of IS:458. Minimum clear cover to reinforcement shall be 15cms.

Each pipe unit can be in lengths of 2mtr to 4mtr based on availability, ease in handling transportation and laying. The workmanship and finish for the pipe. Cleaning of pipes, Jointing of pipes with spigot and socket joints shall conform to the relevant Standard specification.

It is permitted to use the any one of the following if there is non-availability of SRC cement for manufacturing RCC pipes:

- a) Portland slag cement conforming to IS 455 with minimum slag content of 50%.
- b) An additional sacrificial 10mm cover may be provided to the rebars in the pipes manufactured using commercially available Portland slag cement.
- c) Use of Portland Pozzolana cement (PPC) conforming to IS 1489-Part(1) (Fly ash based), with fly ash content of 25% may be considered as the last alternative.

10.1.2 Testing of pipes during manufacture

During manufacture, tests on concrete shall be carried out as per IS:456.

The specimen of pipes for the following tests shall be selected in accordance with sub-clause 9.1 of IS:458 and tested in accordance with the methods described in IS:3597.

1. Hydrostatic testing.

2. Three edge bearing test
3. Absorption test.

Marking

Marking shall be done as per IS: 458 or any other relevant IS codes approved by the Engineer. The following information shall be clearly marked on each pipe,

- a). Internal diameter of pipe.
- b). Class of pipe.
- c). Date of manufacture and
- d). Name of manufacture or his registered trade-mark or both.

Carting & Handling

Carting and handling of RCC pipes and fittings shall be in accordance with the clause 3.1.4. of GSW pipes specifications.

Applicable Codes

The jointing and testing at work sites of RCC pipes shall comply with all currently applicable statutes, regulations, standards and Codes. In all cases, the latest revision of the Codes shall be referred to. If requirements of this specification conflict with the requirements of the Codes and Standards, this specification shall govern.

10.1.3 Laying

Laying of concrete pipes shall conform to the code of practice of IS:783. Pipes shall be laid underground with a minimum earth cover of 1.0mtr. Pipes shall be generally laid in sections of 500mtr each. Laying of pipes shall be as per standard specifications for procurement of project works. All pipes, fittings and material shall be tested and approved by the Engineer before being laid. Any pipes, fittings or material placed before they are tested and approved shall be removed and replaced with tested and approved material. Before laying the pipe, necessary bedding shall be provided.

10.1.4 Jointing

Jointing of RCC pipes shall be done as per the requirements of following Specifications and as per the relevant IS. The type of joints shall be as specified in the Contract/Drawing. After jointing extraneous material if any, shall be removed from the inside of the pipe and newly made joints shall be thoroughly cured. In case, rubber sealing rings are used for jointing, these shall conform to IS:5382. The pipe joints shall be flexible joints jointed by rubber ring as per IS 783-1985. The section of pipes shall be jointed in such a manner that there shall be as little unevenness as possible along the inside of pipe. Care should be taken while jointing to provide the correct gap between the ends of the spigot and back of the socket to ensure flexibility at each joint and correct location.. The joints shall be finished as directed by the engineer.

10.1.5 Spigot and Socket Joint (Flexible)

The RCC pipe with the rubber ring accurately positioned on the spigot shall be pushed well home into the socket of the previously laid pipes. The manufacturer instructions shall be used, and the manufacturer's instructions shall be deemed to form a part of this Specifications. The rubber rings shall be lubricated before making the joint and the lubricant shall be soft soap water or an approved lubricant supplied by the manufacturer.

10.1.6 Flush Joint (Internal)

This joint shall be generally used for culvert pipe of 60-cm diameter and over. The ends of the pipes are specially shaped to form a self-centering joint with an internal jointing spaces 1.3 cm wide. The finished joint is flush with both inside and outside with the pipe wall. The jointing space is filled with cement mortar in the proportion of 1:1 1/2, mixed sufficiently dry to remain in position when forced with a trowel or rammer.

10.1.7 Flush Joint (External)

This joint is suitable for pipes which are too small for jointing from inside. This joint is composed of specially shaped pipe ends. Each end shall be butted against the other and adjusted in correct position. The jointing space shall then be filled with cement mortar in the proportion of 1:1 1/2, sufficiently dried and finished off flush. Great care shall be taken to ensure that the projecting ends are not damaged as no repairs can be readily effected from inside the pipe.

10.1.8 Cleaning of pipes

As soon as a stretch of RCC pipes has been laid complete from manhole to manhole or for a stretch as directed by Engineer, Contractor shall run through the pipes both backwards and forwards a double disc or solid or closed cylinder 75mm less in diameter than the internal diameter of pipes. The open end of an incomplete stretch of pipe line shall be securely closed as may be directed by Engineer to prevent entry of mud or slit etc.

If as a result of the removal of any obstruction, Engineer considers that damages may have been caused to the pipe lines, he shall be entitled to order the stretch to be tested immediately. Should such test prove unsatisfactory Contractor shall amend the work and carry out such further tests as are required by Engineer.

It shall also be ascertained by Contractor that each stretch from manhole to manhole or the stretch as directed by Engineer is absolutely clear and without any obstruction by means of visual examination of the interior of the pipeline suitably enlightened by projected sunlight or otherwise.

10.1.9 Testing at work site

After laying and jointing of RCC pipes is completed the pipe line shall be tested at work site as per the following Specifications and as directed by Engineer. All equipment for testing at work site shall be supplied and erected by the Contractor and shall be rectified by him/her to the full satisfaction of Engineer. Water used for test shall be removed from pipes and not released to the excavated trenches.

After the joints have thoroughly set and have been checked by Engineer and before backfilling the trenches, the entire section of the sewer (or storm water drain) shall be proved by Contractor to be water tight by filling in pipes with water to the level of 1.50m. above the top of the highest pipe in the stretch and heading the water up for the period of one hour. The apparatus used for the purpose of testing shall be approved by Engineer. Contractor if required by Engineer shall dewater the excavated pit and keep it dry during the period of testing. The loss of water over a period of 30 minutes should be measured by adding water from a measuring vessel at regular 10 minutes intervals and noting the quantity required to maintain the original water level. For the approval of this test the average quantity added should not exceed 1 litre/hour/100 linear metres/10 mm for nominal internal diameter. Any leakage including excessive sweating which causes a drop in the test water level will be visible and the defective part of the work should be removed and made good.

In case of pressure pipeline the completed stretch of pipeline shall be tested for site test

pressure of 0.15g/sq.cm. The site test pressure should not be less than the maximum operating pressure plus the calculated surge pressure, but in no case should it exceed the hydrostatic test pressure, as specified in IS:458.

10.2 Sluice Valves

Supply and delivery to work site, loading, unloading, stacking and fixing of Resilient seated soft sealing Sluice Valves with body, bonnet of Ductile Iron of grade GGG 40/50, wedge fully rubber lined with EPDM and seals of NBR and the valves should be of vacuum tight and 100% leak proof with face dimensions as per BS 5163-89/ IS 14846-2000 / DIN 3202 F4/F5. The stem sealing should be with Toroidal sealing rings (minimum 2 'O' rings). All the valves should be with electrostatic powder coating both inside and outside with pocket less body passage. The valves shall be supplied with suitable size galvanized bolts and nuts of required numbers as per relevant IS etc. complete with all lead and lifts.

10.3 Sewage Air Valves P N 10

Sewage Air Valves PN 10 , Valve body made of Steel St. 37, cover made of Ductile Iron ASTM A-536 60-40-18. Valve coating: fusion bonded epoxy coating according to standard DIN 30677-2. Operating parts are made of specially selected corrosion- resistant materials. All inner metal parts made of stainless steel. Working pressure range: 0.2-16 bar. Maximum operating temperature: 60°C. Maximum intermittent temperature: 90° C. Additional one-way option for air intake/discharge only as well as an additional non-slam option. The D-023's orifice plug-disc linkage assembly is external, keeping the levers and pins outside the air valve body and its corrosive atmosphere. Combines the features of both an air & vacuum valve and an air release valve. Triple function: Air & vacuum component discharges large volumes of air during filling of the system. Air & vacuum component admits large volumes of air during drainage and at water column separation. float assembly - Polycarbonate + SS 316, Automatic Disc - Reinforced Nylon, Disc Seal - E.P.D.M, Ball valve 1"- Brass Chrome plate, End connection - DIN 16/ ANSI 150

10.4 Reflux Valves

Supply and fixing of Cast Steel Double flanged Dual plate check valve Class 150 Conforming to API 594 with latest amendments as detailed below of following diameters and types and conveying to work site, loading, unloading, stacking etc., complete with all lead and lift. The rates are inclusive of cost of Bolts and Nuts.

11.00 PVC-U pipes:

Supplying UPVC FOAM CORE pipes conforming to IS 16098 P-I 2013 with latest amendments ended with integral sockets with ISI mark and conveying to worksite, rolling and lowering into trenches, laying true to line and level and perfect linking at joints, testing and commissioning, including loading and unloading at both destinations and cuts of pipes wherever necessary including jointing of UPVC pipes (with cost of elastomeric sealing rings) and specials (excluding cost of specials) with jointing of approved type with all labour, lead and lifts, including encasing the pipes alround to a depth of not less than 15cms with soft gravel or selected earth available from the excavation etc., complete and giving necessary hydraulic test to the required pressure as per IS.

11.1 Laying& jointing of PVC-U Pipes

The pipes should be conveyed, rolled, lowering into the trenches, laying true to line, levelling with perfect linking at joints using rubber gaskets confirming to relevant IS including cleaning the

socket, spigot ends with soap solution and applying soap solution to the spigot and socket ends before insertion of rubber gaskets, jacking end fixing in perfect condition. The pipes should hydraulically tested as per relevant IS. The bidder shall make his own arrangements for procurement of water for testing purposes.

11.2 Field Hydrostatic Testing of PVC-U Pipes:

After laying and jointing of pipes the field hydraulic testing has to be carried as per relevant IS. The pipes or fittings which are found defective shall be replaced and joints found leaking shall be redone without any extra payment the water and any other equipment required for field hydraulic testing shall be arranged by contractor. The water used for testing shall be of approved quality.

11.3 PVC Ringtite pipes

Supplying PVC ringtite pipes conforming to IS 4985:2000 with latest amendments and conveying to worksite, rolling and lowering into trenches, laying true to line and level and perfect linking at joints, testing and commissioning, including loading and unloading at both destinations and cuts of pipes wherever necessary including jointing of PVC pipes and specials (excluding cost of specials) with jointing of approved type, with all labour, with all lead & lift including encasing the pipe alround to a depth of not less than 15cms with soft gravel or selected earth available from the excavation etc. complete and giving necessary hydraulic test to the required pressure as per IS.

11.4 Field Hydrostatic Testing of PVC Pipes:

After laying and jointing of pipes the field hydraulic testing has to be carried as per relevant IS. The pipes or fittings which are found defective shall be replaced and joints found leaking shall be redone without any extra payment the water and any other equipment required for field hydraulic testing shall be arranged by contractor. The water used for testing shall be of approved quality.

12.0 Cement:

Cement to be used in the works shall be any of the following types with the prior approval of the Engineer:

1. Rapid Hardening Portland Cement conforming to IS :8041
2. Ordinary Portland Cement 43 Grade conforming to IS :8112
3. Ordinary Portland Cement 53 Grade conforming to IS :12269
4. Sulphate Resistant Portland Cement conforming to IS :12269

Cement conforming to IS :269 shall be used only after ensuring that the minimum required design strength can be achieved without exceeding the maximum permissible cement content of 540 Kg/cum of concrete.

Cement conforming to IS: 8112 and IS: 12269 may be used provided the minimum cement content mentioned elsewhere from durability considerations is not reduced. From strength considerations, these cements shall be used with a certain caution as high early strengths of cement in the 1 to 28 day range can be achieved by finer grinding and higher constituent ratio of C_3S/C_2S , where C_3S is Tricalcium Silicate and C_2S is Dicalcium Silicate. In such cements the further growth of strength beyond say 4 weeks may be much lower than that traditionally expected. Therefore, further strength tests shall be carried out for 56 and 90 days to fine tune the mix design from strength considerations.

Cement conforming to IS: 12330 shall be used when sodium sulphate and magnesium sulphate

are present in large enough concentration to be aggressive to concrete. The recommended threshold values as per IS :456 are sulphate concentration in excess of 0.2 percent in soil substrata or 300 ppm (0.03 percent) in ground water. Tests to confirm actual values of sulphate concentration are essential when the structure is located near the sea coast, chemical factories, agricultural land using chemical fertilizers and sites where there are effluent discharges or where soluble sulphate bearing ground water level is high. Cement conforming to IS :12330 shall be carefully selected from strength can be considerations to ensure that the minimum required design strength can be achieved without exceeding the maximum permissible cement content of 540 Kg/cum of concrete.

Cement conforming to IS: 8041 shall be used only for precast concrete products after specific approval of the Engineer.

Total chloride content in cement shall in no case exceed 0.05 percent by mass of cement also, total sulphur content calculate as sulphuric anhydride (SO_3) shall in no case exceed 2.5 percent and 3.0 percent when tri-calcium aluminate percent by mass is up to 5 or greater than 5 respectively.

13.0 Coarse Aggregates:

For plain and reinforced cement concrete (PCC and RCC) or pre stressed concrete (PSC) works coarse aggregate shall consist of clean, hard, strong, dense, non-porous and durable pieces of crushed stone, crushed gravel, natural gravel or a suitable combination thereof of other approved inert material. They shall not consist pieces of disintegrated stones soft flaky, elongated particles, salt alkali vegetable matter or other deleterious materials in such quantities as to reduce the strength and durability of the concrete or to attack the steel reinforcement. Coarse aggregates shall conform to IS: 383 and tests for conformity shall be carried out as per IS :2386 Parts I to VIII.

The Contractor shall submit for the approval of the Engineer, the entire information indicated in Appendix A of IS: 383.

Maximum nominal size of coarse aggregate for various structural components in PCC, RCC or PSC, shall conform to Chapter 9.

The maximum value for flakiness index for coarse aggregate shall not exceed 35 percent. The coarse aggregate shall satisfy the following requirements of grading:

IS Sieve Size	Present by Weight Passing the Sieve		
	40mm	20mm	12.5mm
63mm	100	-	-
40mm	95-100	100	-
20mm	30-70	95-100	100
12.5mm	-	-	90-100
10mm	10-35	25-55	40-85
4.75mm	0-5	0-10	0-10

a. Sand / Fine Aggregates

For masonry work sand shall conform to the requirements of IS :2116.

For plain and reinforced cement concrete (PCC and RCC) or pre-stressed concrete (PSC) works, fine aggregate shall consist of clean hard strong and durable pieces of crushed stone crushed gravel, or a suitable combination of natural sand crushed stone or gravel. They shall not contain dust, lumps, soft or flaky, materials, mica or other deleterious materials in such quantities as to reduce the strength and durability of the concrete or to attack the embedded quantities as to reduce the strength and durability of the concrete or to attack the embedded steel. Motorised sand washing machines should be used to remove impurities from sand. Fine aggregate having positive alkali-silica reaction

shall not be used. All fine aggregate shall conform to IS: 383 and test for conformity shall be carried out as per IS: 2386 (Part I to VII). The contractor shall submit to the Engineer the entire information indicated in Appendix A of IS: 383. The fineness modulus of fine aggregate shall neither be less than 2.0 nor greater than 3.5.

b. Sand / fine aggregate for structural concrete shall conform to the following grading requirements:

c. Sand / fine aggregate for structural concrete shall conform to the following grading requirements:

IS Sieve Sized	Percent by Weight Passing the Sieve		
	Zone I	Zone II	Zone III
10mm	100	100	100
4.75mm	90-100	90-100	90-100
2.36 mm	60-95	75-100	85-100
1.18mm	30-70	55-90	75-100
600mm	15-34	35-59	60-79
300mm	5-20	8-10	12-40
150mm	0-10	0-10	0-10

14.0 Water

Water used for mixing and curing shall be clean and free from injurious amounts of oils acids alkalis, salts, sugar, organic materials or other substances that may be deleterious to concrete or steel. Potable water is generally considered satisfactory for mixing permissible values:

1. To neutralise 200ml sample of water using phenolphthalein as an indicator it should not require more than 2 ml of 0.1 normal Na OH.
2. To neutralise 200ml sample water using methyl orange as an indicator it should not require more than 10ml of 0.1 normal HCl.
3. The permissible limits for solids shall be as follows when tested in accordance with IS :3025.

1	Organic	200mg/lit
2	Inorganic	3000mg/lit
3	Sulphates (SO ₄)	500mg /lit
4	Chlorides (Cl)	500 mg / lit
5	Suspended matter	2000mg /lit

* In case of structures of lengths 30m and below, the permissible limit of chlorides may be increased up to 1000 mg /lit.

All samples of water (including potable water) shall be tested and suitable measures may be where necessary to ensure conformity of the water to the requirements states herein.

4. The pH value shall not be less than 6.

15.0 Cement concrete

For all water retaining concrete structures, cement concrete mix M30 grade shall be used. For all other concrete structures, cement concrete M25 grade shall be used unless otherwise specified.

15.1 Lean concrete

Lean concrete mix of 1:1.5:3, 150mm thick shall be provided under all foundations and floors of structures.

16.0 Structural Concrete and Mortar

16.1 Grade of Concrete

16.2 Controlled Concrete

For controlled concrete, design of the mix shall be arrived at after preliminary tests and in its production. All necessary precautions shall be taken to ensure that the required work cube strength is attained and maintained. The controlled concrete shall be in nine grades designated as M 10, M 15, M 20, M 25, M 30, M 35, M 40, M 45 and M 50.

16.3 Ordinary Concrete

In case of ordinary concrete, mix is not required to be designed by preliminary tests and proportions of cement, fine aggregates and coarse aggregates are specified by volume. The ordinary concrete shall be in four grades designated as M 7.5, M 10, M 15 and M 20. It can also be specified by volumetric mix as given in **Table-4** below. For cement which normally comes in bags and is used by weight, volume shall be worked out taking 50 kg of cement as 0.035 cubic metres in volume. Shaking, ramming or hammering shall not be done. Proportioning of sand shall be as per its dry volume and in case it is damp, allowance for 'bulkage' shall be made as per IS:2386 (Part III).

Ingredients required for ordinary concrete containing one bag of cement for different proportions of mix shall be as given in **Table-4** below.

Table-4

Ingredients Required for Ordinary Concrete

Grade of Concrete *	Nominal Mix by volume Cement : Fine Aggregate : Coarse Aggregate **	Total quantity of dry aggregates in kg (max) by mass per 50 kg of cement (to be taken as the individual masses of fine and coarse aggregates)	Quantity of water in litre (max) per 50 kg of cement ***
M 7.5	1:4:8	625	45
M 10	1:3:6	480	34
M 15	1:2:4	350	32
M 20	1:1.5:3	250	30

* In the designation of a concrete mix, letter 'M' refers to the mix and the number refers to the specified 28 days' work compressive strength of that mix on 150 mm cubes, expressed in N/ sq. mm.

** The proportions of the aggregate shall be adjusted from upper limit to lower limit progressively as the grading of the fine aggregates becomes finer and the maximum size of coarse aggregate becomes larger.

*** The amount of water should be kept minimum required for proper workability. The quantity given in the column is not to be exceeded.

16.4 Strength Requirement of Concrete

Where Ordinary Portland Cement conforming to IS:269 or Portland Blast Furnace Cement conforming to IS:455 is used, the compressive strength requirements for various grades of concrete controlled as well as ordinary shall be as given in **Table-5**. Where rapid hardening Portland cement is used, the 28 days compressive strength requirements specified in **Table-5** shall be met at 7 days.

For controlled concrete, the mix shall be so designed as to attain in preliminary tests strength at least 33 per cent higher than that required on work tests for concrete up to and including M 25, and 25 per cent higher for higher grades. Preliminary tests need not be made in case of 'ordinary concrete'.

Table-5

Strength Requirements of Concrete

Grade of Concrete	Compressive test Strength on 150 mm cubes after testing in accordance with IS:516 (N/sq.mm)	
	Minimum at 7 days	Minimum at 28 days
M 10	7	10
M 15	10	15
M 20	13.5	20
M 25	17	25
M 30	20	30
M 35	23	35
M 40	27	40
M 45	30	45
M 50	33.5	50

In all cases, the 28 days compressive strength specified in **Table-5** shall alone be the criterion for acceptance or rejection of the concrete.

Where the strength of a concrete mix, as indicated by tests, lies in between the strength for any two grades specified in **Table-5**, such concrete shall be classified for all purposes as a concrete belonging to the lower of the two grades between which its strength lies.

16.5 Use of Plums in Ordinary Concrete

Stone Plums shall not be used unless specified in the drawings. When stone plums are used, the size may be from 150 to 300 mm. The maximum dimension of these stones or plums shall not exceed 1/3rd the least dimension of the members.

All plums shall be hard, durable, clean and free from soft materials or loose pieces or deleterious substances in them and shall not have sharp corners.

During concreting the first layer of concrete of the specified mix shall be laid to a thickness of at least two and a half times the thickness of the maximum size of plums to be used. The plums shall then be laid while the top portion of this concrete is still green but sufficiently stiff to prevent complete submergence of the plums under their own weight. These plums shall be about half embedded in the concrete and the remaining part exposed so as to form a key with the next layer of concrete. No plums shall be used for concrete-laid under water.

While placing the plums, care shall be taken to see that the clear distance between any two plums is not less than either the width or thickness of either of the plums. The distance from plums to the outer surface or from any steel reinforcement shall be equal to greatest width of the plum. If plums of stratified stone are used, they shall be laid on their natural bed. Stones with concave faces shall be laid with the concave portion upwards. The thickness of the next and successive layers of concrete shall be at least twice that of the largest plums. The total volume of plums shall not exceed 15% of the volume of the finished concrete.

16.6 Design Mix:

As per IS 456:2000- code of practice for reinforced Cement Concrete and IS 3370 (Part-1):2009 for Concrete Structures for Storage of Liquids – code of practice have recommended to adopt minimum grade of concrete for reinforcement concrete as M20 and for water retaining structure, min. grade of concrete for plain cement concrete as M20 and for reinforced concrete as M30 design mix respectively. As per IS 456:2000, the mix proportions shall be selected to ensure the workability of the fresh concrete and when concrete is hardened, it shall have the required strength, durability and surface finish. Design mix concrete is preferred to nominal mix. If the design mix concrete cannot be used for any reason on the work of grades of M20 or lower, nominal mixes may be

used with the permission of Engineer-in charge, which however is likely to involve higher cement content and mix design done earlier not prior to one year may be considered adequate for later work provided, there is no change in source and the quality of the materials.

Maximum of 400 kgs of cement is adopted for M30 design mix and maximum of 360 kgs of cement is adopted for M25 design mix. During execution of design mix, if the cement quantity is less than the standard quantity considered in working out the data rate, the same is to be deducted at the rate considered during evaluation of tender from the quoted rate of tenderer for that particular item.

17.0 Curing

Green work shall be protected from rain by suitable covering and shall be kept constantly moist on all faces for a minimum period of seven days. Brick work carried out during the day shall be suitably marked indicating the date on which the work is done so as to keep a watch on the curing period. Top of the masonry work shall be left flooded with water at the close of the day. Watering may be done carefully so as not to disturb or wash out the green mortar.

During hot water all finished or partly completed work shall be covered or wetted in such a manner as will prevent rapid drying of the brick work.

During the period of curing of brick work it will be suitably protected from all damages. At the close of day's work or for other period of session watering and curing shall have to be maintained. Should the mortar perish i.e., become dry white or powdery, through neglect of curing, work shall be pulled down and rebuilt as directed by the Engineer. If any stains appear during watering the same shall be removed from the face.

18.0 Scaffolding

The Scaffolding shall be sound, strong and safe to withstand all loads likely to come upon it. The holes which provide resting space for horizontal members shall not be left in masonry under one meter in width or immediately near the skew backs of arches. The holes left in the masonry work for supporting the scaffolding shall be filled and made good. Scaffolding shall be got approved by the Engineer. However, the Contractor shall be responsible for its safety.

19.0 Civil specifications

The following civil specifications shall be applicable for providing and executing all such items which are not mentioned in foregoing paras but are necessary to be provided and for the items which are mentioned above but require some elaboration. No extra cost shall be paid for such items.

It should clearly be understood by the Contractors / tendering firms that all civil specifications mentioned here below shall be treated as part of the technical specifications already mentioned. The specific requirement of different items of work involved in the construction, completion and commissioning of the plant as a whole, shall be provided in accordance with the requirement given in these civil specifications.

20.0 Site clearance

Before taking up construction, site shall be cleared of all jungles, bushes and unwanted vegetation growth. After completion of plant, the entire site area shall be cleared of all left over material and debris.

21 Design of structures

Materials

All materials used in the work shall be subjected to mandatory tests in accordance with relevant IS codes and before using them on the work, the test reports shall be submitted to the Engineer for seeking his permission.

Form work

Form work, shuttering, centering, scaffolding etc., shall be of steel plants or plywood, lined with MS sheets and for scaffolding steel tubular shall be used. Joints should be sufficiently tied to prevent loss of cement slurry from the concrete. All forms, shuttering shall be levelled, aligned, thoroughly cleaned, before they are used for concreting.

Form work shall be removed after specified days of curing with the prior written permission of the Engineer. The surface of RCC after removal of form work/shuttering shall be smooth, even and without honeycombing or undulations.

Finishing of RCC surfaces

To give an even finish to the concrete surfaces, unless otherwise specified, the outside faces of walls and inside surfaces of ceiling shall be of form work finish, smoothly rendered and other inside faces shall be finished with cement plaster 20mm thick in 1:3 cement mortar. All concrete surfaces coming in contact with water shall be provided with cement plaster 20mm thick 1:3 cement mortar with approved quality water proofing compound in requisite proportion.

Minimum clear cover over Reinforcement

Minimum clear cover over the steel reinforcement shall be in conformity with IS 3370 in the case of water retaining structures. For other structures the clear cover over the reinforcement shall be as per IS 456.

Minimum reinforcement

For water retaining structures, the minimum reinforcement in walls, floors and roofs etc., shall be as per IS 3370 (Part 1 to 4), with latest amendments.

Minimum thickness of RCC

The minimum thickness of all RCC members' viz., walls, roofs, floors etc., shall not be less than 150mm.

Tested steel

Only tested and approved steel reinforcement shall be used on the work and the Contractor shall produce the test certificate of the manufacturer to the Engineer. The grade of steel shall be Fe-415 conforming to IS 1786.

22.0 Other Specials and Instruments

The Contractor is responsible to provide sufficient number of specials, as required for completing the work satisfactorily. The exact number of specials specified in Bill of Quantities, may increase or decrease depending on the requirement.

23.0 Ancillary Structures**❖ Valve Chambers, Thrust Blocks/Anchor blocks etc.**

The Contractor shall build Valve Chambers & Thrust Blocks/Anchor blocks and such other miscellaneous structures that may be required at the locations shown by the Engineer and as shown in the drawings or as may be otherwise specified or directed. The specifications of these ancillary structures shall generally be as enumerated in As per Standard Specifications for Procurement of Project Works, unless otherwise specified in

this Chapter or advised by the Engineer based on the site conditions. The various structures shall be built as the pipe laying progresses and the Engineer at his discretion, may stop work entirely on the laying of pipe or construction of other structures, until the construction of the structures already approved by the Engineer are completed by the Contractor. The contractor should submit the designs and drawings of thrust and anchor blocks for approval.

❖ **Pipe Supports**

Pipe supports shall be constructed as per Standard Specifications for Procurement of Project Works, wherever needed, as per the directions of the Engineer. Pipe supports shall be of saddle type. Pipe supports shall also be provided for the stretches of the pipe, where the pipe is to be gradually brought above the ground for crossing any obstructions as shown in the drawings. The Distance between pipe supports shall not exceed 5.0 m centre-to-centre. The contractor should submit the designs and drawings of pipe support for approval. Pipe supports shall be as per the approved designs and to be taken to a depth of at least 1.30 mtrs below ground level as shown in the drawing and shall have sufficient height above ground to be able to support the pipe. 20 mm dia tor steel clamp shall be provided all round the pipe and fixed to the pipe supports using appropriate means as shown in the drawings or as directed by the Engineer. There shall be no joints at the location of the pipe supports. The joints shall be located on any one side of the support, at a minimum distance of 200 mm from the face of the support. The successful bidder should execute the pipe supports as per the approved designs obtained from the Employer.

❖ **Thrust Blocks**

Thrust blocks shall be provided for both horizontal and vertical bends greater than 5° , to effectively transfer the hydrostatic thrust developed during the operation of the rising main, to the ground. They shall be constructed at the locations shown in the alignment drawings, and are of the respective dimensions shown therein, depending on the angle of bends, and the pressures developed in the main. They shall be constructed as per Standard Specifications for Procurement of Project Works. The surrounding virgin land of the thrust blocks shall not be disturbed, to effectively transfer the thrust developed in the main.

24.0 Structures for Crossing Canal/ Nallahs and Other Miscellaneous Structures

Structures for crossing the pipeline over canals/Nallahs and other miscellaneous structures not listed in these specifications but may be required to be built shall be as per construction drawings and as described in Chapter 6: Bill of quantities. The materials of construction of workmanship for those structures shall conform to the relevant Standard Specifications for Procurement of Project Works as given in Chapter 10. The measurement of quantities involved in these structures for payment shall be done as per dimensions of the respective drawings.

25.1 Crossings of Roads and Culverts

Under major roads, as directed by Engineer, the rising main shall be provided with concrete arch bedding. Steel pipe shall be used for such crossings and for culvert crossings. The details of such crossings shall be furnished in construction drawings.

26.0 Other Specials and Instruments

The Contractor is responsible to provide sufficient number of specials, as required for completing the work satisfactorily. The exact number of specials specified in Section 9: Bill of Quantities, may

increase or decrease depending on the requirement.

27.0 Protection against Floatation due to Up lift Pressure.

The Contractor shall ensure that all structures constructed underground by lowering sub soil water level, shall be protected against uplift and consequent floatation and tilting. Adequate measures including nonstop dewatering shall be taken as per relevant IS codes.

27.1 Water for Hydraulic testing

The Contractor shall have to make all arrangements for water supply at his own cost for hydraulic testing pipes and valves. Underground water if found suitable shall be permitted for testing. Noting extra shall be payable for above mentioned hydraulic testing.

28.0 Water for Drinking and Construction work

The Contractor shall have to make all arrangements at his own cost for water fit for construction purposes and also water fit for drinking purposes as per norms of IS codes and nothing extra will be paid.

29.0 Power for Construction work and Stand by Diesel Generator Set

The Contractor shall make all arrangements at his own cost for providing power supply to the site of work, site office and for construction activities.

30.0 Surveying Instruments

Contractor shall keep at least two accurate leveling instruments at each of the site and shall be responsible for checking all the levels as per designs before starting the construction, during construction and after completion. The Contractor shall be fully responsible for rectifying any mistake noticed at any time at his own cost.

31.0 Site Engineer of the Contractor

Contractor shall depute at each site of work at least one qualified graduate civil Engineer and one diploma Engineer having experience in the construction of RCC water retaining Structures, STP , deep sewer and trunk water mains for supervising the execution and also for receiving instructions from the Engineer.

31.1 Site Office

At each site of work, the Contractor shall construct and provide a suitable electrified temporary office with two steel tables, six steel chairs and one steel almirah, for the supervisory staff of the Employer. The cost of all these shall be deemed to have been included in the tendered rates.

31.2 Materials not to be issued by the Employer

Contractor must keep in mind at the time of tendering that NO material or equipment required for the construction and timely completion of the work shall be issued by the Employer. The Contractor shall be fully responsible for arranging all material / equipment in advance of the actual requirement for construction purposes.

32.0 PROCESS VALIDATION

Process validation for laying pipe shall be done by the contractor before starting such process.

This shall be done to the satisfaction of Engineer in charge.

33.0 Earthing System.

33.1 General

- The entire earthing system shall fully comply with Indian electricity act and rules.
- The chemical / rod earthing shall be as per BOQ specification and standard GESCOM drawing.
- The main earth grid shall be laid at a depth of 750 mm below Grade level. In trenches, earth strip shall be laid along the trench. It shall be protected against mechanical damage. Joints and tappings in the main earth grid shall be made in such a way that reliable and good electrical connections are permanently ensured. All joints except the equipment end shall be welded. All joints buried in ground shall be suitably protected.
- Conduits in which cables have been installed shall be bonded and earthed. Cable armours shall be earthed at both ends.
- Earth pipe electrodes shall be installed as per IS 3043. Their location shall be marked on earth pit chamber covers.
- The electrodes shall be tested for earth resistance by means of standard earth tester.
- A disconnecting facility shall be provided for individual earth pit to check earth resistance.
- All electrical equipment above 230 V shall be earthed at two points and equipment 230 V and below shall be earthed at one point.
- Conductor size for connections to various equipment shall be as per the table as follows:

Equipment	Conductor Size
Motors	50 x 10 mm GI flat
Panels	50 x 10 mm GI flat
Local control station, street light pole & its junction box	8 SWG GI wire
All switchyard equipment	50 x 10 mm GI flat
Main earth grid	50 x 10 mm GI flat
Indoor fixtures	14 SWG GI wire

- All paint, scale etc. shall be removed before earthing connections are made.
- Anchor bolts or fixing bolts shall not be used for earthing connections.

33.2 EARTH PIT CHAMBER: The earth pit chamber size shall be 300mmx300mmx5mm concrete chamber with concrete slab or cover.

33.3 TESTING POINT: Earth pit testing point shall be provided at the suitable location and above ground level.

Testing shall be done after completion of installation. Final grid resistance of each area shall be measured and shall be within 1 ohm.

NOTE:-

- 1) All the equipments, such as switchgears, transformers lighting arrestors

shall be earthed by two separate and distinct connection as per IE rules and as required by electrical Inspectorate without any extra cost.

- 1) Necessary soil testing shall be carried out by the contractor at his own cost before carrying out the work.
- 2) Since the earthing points of different equipments and fault level are interconnected, the contractor shall submit the calculations for no. of pits required before executing the work.
- 3) The work also includes connecting the common point of earthing to the earth pit with necessary coupler/ Exothermic welding as per IE rules.

33.4 Pipe electrode type

The pipe electrode of 40 mm dia. x 3000 mm long GI pipe shall be provided. Salt and coke shall be filled in layers of 25 mm up to one metre and balance shall be filled with loose soil. However, care shall be taken that the earth pit does not sink. The brick chamber (600 x 600) shall be made 75 mm above Finished ground level (FGL) and shall have a heavy duty cast iron frame with hinged cover at top for inspection. A 40 mm NB GI Watering pipe shall be provided in the pit.

33.5 Cable glands and lugs

All cable glands shall be made out of brass and shall be of double compression type.
All cable lugs shall be of tinned copper, crimping type.

Pressure Gauges

- a. Pressure gauges shall comply with IS 3624. Glycerin filled dial shall be provided where the gauge is subjected to pressure pulsation and / or vibrations. The internal parts of pressure gauge shall be stainless steel.
- b. The minimum diameter for round pressure gauges shall be 150 mm unless specified otherwise or where the gauge forms part of a standard item of equipment.
- c. The zero and span of pressure gauge shall not change by more than ± 0.1 % of the span per 0C changes in ambient temperature.

34.0 Civil works

The civil works required for electrical installation will also be part of this package. Necessary design inputs shall be provided for transformer foundation details, foundation details of supporting structures, etc. to obtain then necessary approvals.

34.1 Civil works in switchyard

1. All necessary foundations for structures, equipment, fence posts/door posts etc.
2. Levelling of ground & gravel spreading.
3. Fencing and doors.

35.0 MASONRY AND ALLIED WORKS:

These works should be in accordance with Bombay P.W.D. Hand book latest edition.

35.1 Size stone masonry for foundation:

The stone used should be of good granite and the course should not be less than 20 cms. high. If cement mortar or lime mortar is used, a quantity of 30 percent of size stone is to be used as mortar.

The bond stones should be laid 2 mtrs. apart in every course.

35.2 Size stone masonry for basement and superstructure: -

The stones used should be of good granite and the course should not be less than 20 cms high. The length of the stone should always be 1.5 to 2 times the height. The percentage of cement mortar or lime mortar is to be 30 percent of the size stone quantity. The quoin stones should be two line dressed to 5.00 cms wide on all sides. Bond stones are to be used atleast two meters apart in every course. Pointing shall be done at the construction stage by raking excess mortar. The pointing should be atleast 1.3 cms inside the stone edges and the stone faces should be thoroughly cleaned. Cement washing shall be prohibited.

35.3 Burnt Brick Masonry for superstructure:

The bricks used shall be table moulded and should be of well burnt quality and these should be soaked well before use. Bricks shall take an initial cracking load of atleast 100 metric tons per square mtr. The bricks should not absorb more than 20 percent of their weight of water after 24 hours immersion in water. The percentage of cement mortar or lime mortar used should not be less than 30 percent of the masonry quantity.

36.0 DOORS AND WINDOWS: The main door shall be of rolling shutters The Aluminium glazed windows shall be used which shall be free from any kind of defect. The size of the frames and shutters should be finished to size and if there is any reduction in size, the same has to be removed and replaced by new ones at the contractor's own cost. The iron fitting or brass fitting to the almirah's and cupboard etc., should be of best approved quality and conform to the specifications insisted upon by the Engineer at the time of execution. The painting should be done after preparing the surface of wood to required finish and must have a minimum of 2 coats which is to be approved by the Engineer.

37.0 FLOORING:

Flooring shall be with vitrified tiles. Surface is to be finished to the required pattern as per the direction of Engineer-in-charge is at the time of execution.

38.0 FABRICATION OF STEEL STRUCTURES: Fabrication means jointing of the angles flat etc., by riveting, welding etc. It is left to the decision of the Engineer-in-charge the steel structure fabricated by any of the above means. After fabrication, the painting of the works shall be done as per the approved specification with 2 coats of approved anti-corrosive paints.

The trusses thus fabricated shall be hoisted on the pillar with necessary foundation bolts etc. to the correct alignment etc., as per directions.

39.0 SPECIFICATION FOR ANTI-CORROSIVE PAINT: The paint used for preventing the rusting of the steel surfaces, shall be quick drying, and corrosion resisting with good binding properties to the steel. It shall dry, crack free and smooth within four hours after supplying. The paint shall be applied in 2 coats. The surface steel shall be cleaned of all dust, scales rust etc.

40.0 GENERAL REQUIRMENTS FOR STRUCTURAL & BUILDING WOKS

40.1 Design Submissions: -The Contractor shall submit complete detailed design calculations of each of the components such as foundations and superstructure together with general arrangement drawings, construction drawings and explanatory sketches as required to the Employer's Representative. Separate calculations for foundations or superstructures submitted independent of each other shall be deemed to be incomplete. Incomplete submissions will not be accepted by the Employer's Representative.

The design considerations described here under establish the minimum basic design requirements of

plain and reinforced concrete structures, architectural details, masonry structures and structural steel works. However, any particular structure shall be designed for the satisfactory performance fulfilling the functions for which it is being constructed. The Contractor shall also check the stability of partly completed structures.

40.2 Design Standards: -All designs shall be based on the latest Indian Standard (BIS, GOI) Specifications or Codes of Practice published 28 days prior to the last date of submission of bid. The design standards adopted shall follow the best / modern engineering practice of the field based on any other international standard or specialist literature subject to such standard reference or extract of such literature in the English language being supplied to and approved by the Employer's Representative.

All reinforced concrete structural design shall generally confirm to the recommendations made in the following, amongst others, latest publications of the Indian Standards Institution:

- (i) IS: 456 Code of Practice for Plain and reinforced concrete.
- (ii) IS: 875 Code of Practice for design loads for buildings and structures (Part I to IV).
- (iii) IS: 3370 Code of Practice for concrete structures for the storage of liquids (Part I to IV).
- (iv) IS: 1893 Criteria for earthquake resistant design of structures.
- (v) IS: 2974 Code of Practice for design and construction of machine foundations (Part I to IV).
- (vi) IRC: 6 Part II Standard Specification and Code of Practice for road bridges Loads and Stresses

All structural steel design shall generally conform to the following, amongst others, recommended latest publications of the Indian Standards Institution:

- (i) IS: 800 Code of Practice for general construction in steel
- (ii) IS: 806 Code of Practice for use of steel tubes in general building construction.

40.3 Design Life:-The minimum design life of all structures and buildings shall be 50 years.

40.4 Design Loadings:-All buildings and structures shall be designed to resist the worst combination of the following loads / stresses under test and working conditions which include dead load, live load, wind load, seismic load, stresses due to temperature changes/variations, shrinkage and creep in materials, dynamic loads, etc.:

40.5 Dead Load: This shall comprise of loads, as defined in codes, arising due to all permanent construction including walls, floors, roofs, partitions, stairways, fixed service equipments and other items of machinery. In estimating the loads of process equipment all fixtures and attached piping shall be included.

The following minimum loads shall be considered in design of structures:

- (i) Weight of water : 15.00 kN/m³
 - (ii) Dry Weight of soil : 20.00 kN/m³
- (Irrespective of strata available at site and type of soil used for filling etc.)
- (iii) Weight of concrete : 24.00 kN/m³
 - (iv) Weight of reinforced concrete : 25.00 kN/m³
 - (v) Weight of brickwork (exclusive of plaster) : 22.00 N/m² per mm thickness of brickwork.
 - (vi) Weight of plaster to masonry surface: 18.00 N/m² per mm thickness
 - (vii) Weight of granolithic terrazzo finish or rendering : 24.00 N/m² per mm Thickness screed etc.

40.6 Live Load: Live loads shall be in general as per IS: 875 or as applicable. However, the following minimum loads shall be considered in the design of structures in additions to specific machinery/equipment/etc. loads likely:

- (i) Live loads on roofs : 1.50 kN/m²

- (ii) Live loads on floors supporting equipment such as: 15.00 kN/m² pumps, blowers, compressors, valves etc.
- (iii) Live load on all other floors, walkways, stairways and platforms: 5.00 kN/m²

In the absence of any suitable provisions for live load in I.S. Codes or as given for any particular type of floor or structure, assumptions made must receive the approval of the Employer's/Employer's representative prior to starting of the design work. Apart from the specified live loads or any other load due to storage of materials, any other equipment load or possible overloading during maintenance or erection/construction in part or full, most critical condition shall be considered in the design.

40.7 Wind load: Wind Loads shall be as per IS: 875.

40.8 Earthquake Load: This shall be computed as per IS: 1893. An importance factor appropriate to the type of structure (important infrastructures with consequences of spillage) shall be considered for design of all the structures.

40.9 Dynamic Load: Dynamic loads due to working of plant items such as pumps, blowers, compressors, centrifuges, reduction gears, traveling cranes, etc. shall be considered in the design of structures.

40.10 Temperature & Other loads: Loads and stresses due to temperature variation/change/gradient, relative settlement, etc shall all be considered in the design of the structures.

41.0 Joints: Recommendations of IS codes with regards to joints shall be satisfied. Movement joints such as expansion joints, complete contraction joints, partial contraction joints and sliding joints shall be designed to suit the requirements. However, contraction joints shall be provided at specified locations spaced not more than 7.5 m in both directions right angle to each other for walls and rafts.

Suitable gaps at the location of expansion joints at suitable interval of not more than 30m shall be provided in walls, floors and roof slabs of all structures.

Construction joints shall be provided at right angles to the general direction of the member. The locations of construction joints shall be decided as per convenience of construction. To avoid segregation of concrete in walls, horizontal construction joints are normally to be provided at every 2m height. Approved PVC water-stops of 230 mm width and 8 mm thickness shall be used.

Expansion joints for non-liquid retaining structures shall be provided as per IS 3414, etc.

42 Partly / fully underground Liquid Retaining structures basis for design.

All underground or partly underground liquid containing structures shall be designed for the following conditions:

- (i) Liquid depth up to full height of wall (including free board) : no relief due to lateral soil pressure from outside to be considered;
- (ii) Reservoir empty (i.e., no liquid or any material inside the storage area): full lateral pressure due to surrounding soil and surcharge pressure as applicable, shall be considered;
- (iii) Partition wall between dry sump and wet sump: to be designed for full liquid depth up to full height of wall;
- (iv) Partition wall between two compartments : to be designed as one compartment empty and other full;
- (v) Structures shall be designed for safety against uplift in empty conditions considering the depth of the ground water table as RL 889.00 m.
- (vi) Walls shall be designed under operating conditions to resist earthquake forces developed due to mobilization of earth and dynamic water loads;

Underground or partially underground structures shall also be checked against stresses developed due to any combination of full and empty compartments with appropriate ground/uplift pressures on the base slab. A minimum factor of 1.2 shall be ensured against uplift or floatation resisted by the dead load of the structure. In structures with IL lower than 4m from

FGL actual buoyant weight of soil (only the vertical column over projections of the base slab) shall be considered in resisting uplift along with the dead load. No pressure release valves will be permitted to be used.

43.0 Foundations

- (i) The minimum depth of foundations for all structures, equipments, buildings and frame foundations and load bearing walls shall be as per IS: 1904. However, it shall not be less than 1m from the Natural Ground Level at that location. It may be reviewed by the Employer's representative in hard strata.
- (ii) Care shall be taken to avoid the interference of the foundations or any other component of the new building with the foundations of adjacent buildings or structure. Suitable adjustments in depth, location and size may have to be made depending on site conditions. The Employer shall accept no extra claims for such adjustments.
- (iii) Special attention is drawn to the danger of uplift being caused by the ground water table. A base raft for underground structure shall be designed for uplift forces that are likely to be developed.
- (iv) Where the level of foundation is above or near the natural/existing ground level, this difference shall be filled up in the following ways:
 - a) In case of non-liquid retaining structures the natural topsoil shall be removed till a firm stratum is reached (minimum depth of soil removed shall be 500 mm) and the elevation difference shall be made up by compacted backfill as per specifications. However, the thickness of each layer of the backfill shall not exceed 150mm.
 - b) The area of backfilling for floor slabs shall be confined to prevent soil from slipping out during compaction.
- 2) The safe bearing capacity of this well compacted backfilled soil shall not be considered more than 100 KN/sq.m in the design. Pitching shall be provided to maintain slope.
- 3) In case of liquid retaining structures, the natural topsoil shall be removed and the elevation difference shall be made up with plain cement concrete (1:4:8)

44.0 Design Requirements for concrete.

- All binding and leveling concrete shall be a minimum 100 mm thick in concrete M10 grade. (M10-100 mm thick for Non liquid retaining structures) & M15-150 mm thick for Liquid retaining structures).
- All structural reinforced concrete other than for liquid water retaining structures shall at least be of M 20 grade.
- The minimum grade of concrete for liquid retaining structure shall be M30 design mix having

minimum cement content of 360 kg/m³ with maximum 20 mm size coarse aggregates. The quantity of the admixture shall be as per mix design and as permitted. The exposure shall be considered as 'severe'.

- All design for liquid retaining structures will be as per IS 3370 latest revision.
- The minimum cover to all reinforcement including stirrups and links shall be as specified in Standard Specifications and IS: 4515. However the minimum clear cover shall not be less than the following :

For Liquid retaining structures –

Slab, Beams, columns = 45 mm

Footings top = 50 mm

Footing Bottom = 75 mm

Walls = 45 mm.

For Non-Liquid retaining structures :-

Location	Minimum Clear Cover (in mm)
At each end of reinforcing bar	Maximum of 30 mm and twice the diameter of bar
Column longitudinal bar	40 mm
Beam main bar	Maximum of 30 mm and the diameter of bar
Slab	Maximum of 20 mm and diameter of bar
Wall	30 mm
Footing and base slab	50 mm

- All buildings shall have minimum 1.0 m wide, 125 mm thick plinth protection paving in M15 grade concrete over 125 mm thick well compacted coarse stone aggregates, voids filled with fine aggregates. All plinth protection shall be supported on well-compacted stratum.
- Any structure or pipeline crossing below roads shall be designed for Class AA of IRC loading.
- The bridges and supporting structures shall be designed to safely withstand the all likely loadings such as loads and torque transmitted through equipment, etc. depending on the arrangement offered besides other loads. Necessary camber shall be provided in the bridges/pipe supports to account for deflection.
- All pipes & conduits laid below the structural plinth and road works shall be embedded in concrete of grade M 20 having minimum 150 mm thick concrete cover all around.
- Approved quality waterproofing compound (chloride free) shall be added during concreting of all liquid containing structures, in the proportion as per design mix.
- For walls and base slabs of liquid retaining structures, Minimum reinforcement shall be as per IS 3370, part II. This reinforcement shall be placed closer to the concrete faces and the minimum specified clear cover as per IS:3370.
- The maximum length of panel to be concreted, sequential of pouring and height of pour shall be as per standard specifications, IS: 456 and IS: 3370 part I, latest revision as applicable.
- The following minimum thickness shall be used for different reinforced concrete members, irrespective of design thickness:

Sl No	Structure part		Thickness
	Walls for liquid retaining structures	:	200 mm
	Roof slabs for liquid retaining structures	:	150 mm
	Bottom slabs for liquid retaining structures	:	200 mm
	Floor slabs including roof slabs, walkways, canopy slabs	:	125 mm
	Walls of cables / pipe trenches, underground pits etc-	:	125 mm
	Column footings	:	300 mm

	Parapets, chajja	:	125 mm
	Precast trench cover	:	100 mm

Standards of Construction Safety

- IS: 3696 - Safety code for scaffolds and ladder (Part 1 &2)
IS: 376 -Safety code for Excavation work
IS: 7205 - Safety code for erection of structural steel work

45.0 General Arrangement of Plant/Building

- (a) Suitable passages, lifting eyes or other means shall be provided to permit the removal of equipment that may be required during the course of its normal operational life for maintenance or any other purpose. Areas where spillage is likely to occur whether under normal use or during maintenance shall be provided with covered drainage channels, which shall direct spilled liquid either to a suitable plant drain or to a sump from where it can be pumped out to external drain in the plant area.
- (b) Future up gradation/ expansion (for increasing the capacity of the plant and/or nutrient removal) shall be considered while planning and designing the present system. In the wall and base of the foundation provision shall be made for future expansion by leaving dowels etc. Such dowels shall be covered with lean concrete to prevent corrosion.

45.1 Orientation : The layout of the proposed plant/building shall be suitably prepared so that it shall allow space for future expansion of treatment plant and to fit it within the space allotted in order to interface conveniently with the existing infrastructure of roadways as well as inlet and outlet pipe-work. Underground services, requiring to be relocated in order to accommodate the proposed site layout, shall be relocated by the Contractor with the approval of the Employer's representative.

45.2 Buildings and Structures

Unless otherwise specified, all the buildings and structural works shall generally comply with the following Employer's requirements:

The buildings shall have an aesthetically good elevation. Stone cladding etc. shall be used for outer finish.

All building works shall be in reinforced concrete (RCC) framework. Elevation of all buildings should match with elevation of other buildings in the vicinity.

All external walls of all building structures shall be of minimum 230 mm in thickness.

All internal partition walls shall be preferably 230 thick but not less than 115 mm thick brick masonry built in cement mortar (1:4).

All internal masonry surfaces shall be finished with 12 mm thick smooth faced cement plaster in cement mortar (1:4). The walls shall be finished with painting and the type of painting shall be in accordance specified by the engineer in charge.

All external masonry surfaces without rock facing shall be plastered in two layers with sand faced cement plaster in cement mortar (1:4) and shall have total thickness of 20 mm. Waterproofing compound of approved make and quality shall be added to the cement mortar in proportions specified by the engineer in charge.

All external surfaces of all buildings and water retaining structures shall be painted as specified & as directed.

Type of flooring of various units shall be as per standards and the required slopes shall be provided, if necessary by making use of screed of appropriate mix/strength, etc.

Bathroom / W.C. floor slab shall be sunk and filled with brickbat coba (broken bricks set in lime) and provided with waterproofing as per the specifications of an approved specialist waterproofing company. The finished floor level in Bathroom/ W.C. areas shall be min. 25 mm below the finished floor level on the outer side.

The toilet facilities shall include at least:

- (i) 1 Water closets with white porcelain Orissa pan minimum 580 mm long with flushing cistern of 10 liters capacity.
- (ii) 2 Urinals of size 600 mm x 400 mm x 300 mm flat back type in white porcelain separated by a marble partition of size 680 mm x 300 mm.
- (iii) 1 washbasin of size 510 mm x 400 mm in white Porcelain with inlet, outlet and overflow arrangements.
- (iv) 1 mirror of size 400 mm x 600 mm wall mounted type fitted over washbasins.
- (vi) 2 stainless steel soap trays. 2. stainless steel towel rails minimum 750 mm long.
- (vii) All stopcocks, valves and pillar cocks shall be of chrome finished, of heavy duty, as approved.
- (viii) All fittings such as 'P' or 'S' traps, floor traps, pipes, down take pipes etc.
- (ix) The sewage from toilet blocks, laboratory, canteen etc. shall be led to the inlet chamber of sewage treatment plant or a local septic tank, as directed.

Wherever specified, internal staircases shall be The rise of stairs shall not exceed 170 mm and minimum width of the tread shall not be less than 250mm. All steps shall have min 15mm nosing.

RCC stairways shall be provided to permit access between different levels within buildings. All roof tops and tops of overhead tanks shall be made accessible with stair/ladder provision. Vertical ladders fitted with landing point extensions may be permitted where considered appropriate by the Employer's Representative to access areas not frequently visited.

All floor cut-outs and cable ducts, etc. shall be covered with pre-cast concrete covers in outdoor areas and G.I. chequered plates of adequate thickness in indoor areas with proper lifting and opening arrangement.

Hand railing shall be provided as follows:

Railing to consist of 25 mm dia., class B G I pipes in two rows (one at 1000mm and other 500 mm above finished floor level) with ISA 50x50x6 G.I. vertical post at a maximum distance of 1500 mm c/c, having holes for fixing railing pipe with all accessories like elbow, tees etc. including threading and fixing in cement concrete floor using base plate, etc. Railing shall be painted to protect it against corrosion. Hand railing fabricated from galvanized mild steel pipes and fitting shall at least conform to IS: 1239. A 6mm thick toe plate 100 mm wide shall be provided at the bottom of handrails. Vertical post shall be built into the concrete or bolted to the MS plate embedded in concrete. Top of vertical post shall be capped with plastic or wooden cap. Hand railing and vertical post shall be painted with two coats of approved paints excluding primer.

The reinforced concrete roofs shall be made waterproof by application of approved cement / lime based water proofing treatment, guaranteed for 10 years. Lime concrete/ cement concrete shall be provided for insulation. The finished roof surface shall have adequate slope to drain rainwater to R.W. down take points. Screed shall be used to give slope over the RCC roof.

For roofing drainage, UPVC pipes conforming to IS: 13592 shall be provided. For roof areas up to 40 sqm. minimum two numbers 110 mm diameter pipes shall be provided. For every additional area of 40 sqm or part thereof, at least one no. 110 mm diameter pipe shall be provided. The RW pipes shall preferably be concealed.

Top surfaces of chajjas and canopies shall be made waterproof by providing a screed layer of adequate slope or application of an approved roof membrane and sloped to drain the rainwater.

Plinth shall be 750 mm above finished ground level around building, unless otherwise deemed fit and as approved.

All concrete channels and ducts used for conveying liquid shall have smooth finish from inside. The width of concrete channels shall not be less than 400 mm

Kerbs to be provided below the hand railing on the catwalks / pathways should be as per relevant sections of the Factory Act.

All rooms in the treatment plant buildings shall be provided with appropriate signboards indicating the function of the rooms involved.

Wherever equipment & machinery is required to be moved for inspection, servicing, replacement etc., suitable installed/moveable gantry/monorail of required capacity shall be provided.

The design of buildings shall reflect the climatic conditions existing on site. Laboratory buildings shall as far as be possible permit the entry of natural light.

Emergency exit doorways shall be provided in buildings to comply with local and international regulations. Stairways & paved areas shall be provided at exit points.

Laboratory building shall be provided with appropriate number. of sinks with two drinking water Bib cocks of 12 mm size with appropriate drainage for each sink.

Drinking water shall be supplied from an overhead tank to be constructed on top of office building. All plumbing work shall be carried out in GI pipes of Class B both outside and inside the building.

All chequered plates shall be hot dip galvanized.

All doors and windows shall be as specified as per approved architectural plan, and as directed. They shall be in accordance with climatic requirements, durable and aesthetic.

Opening of the openings and windows shall be minimum 20% of the wall area, especially the external.

Minimum sizes of various structures shall be as given in layout drawing or as obtained from the parameters for sizing or as specified for carpet areas of utility buildings as in earlier section.

Fire safety board and 'No Smoking' sign board shall be installed in the area near flammable materials, fumes, fuels, etc. to prevent any accident.

Furniture shall be supplied according to approved architectural plans and as per requirement and as directed. The furniture shall be from approved suppliers, of established brands, durable and aesthetic. Reinforcement steel used shall be cold twisted deformed bars or thermo mechanically treated steel bars confirming to IS: 1786 latest revision with up to date amendments.

46.0 Testing of Water Tightness

The Contractor shall carry out a water tightness test for the maximum head condition in liquid retaining structures i.e. with the liquid standing at full supply level. All cost of testing shall be borne by the Contractor. This test shall be carried out in accordance with the procedure given below & in accordance

with codal provisions.

For water tightness test, before the filling operations are started, the reservoirs shall be jointly inspected by the Employer's representative and the representative of the Contractor and condition of surfaces of wall, construction joints etc shall be inspected and noted and it shall be ensured that jointing material filled in the joints is in position and all openings are closed. The Contractor shall make necessary arrangement for ventilation and lighting of reservoir by way of flood lights, circulators etc. for carrying out proper inspection of surfaces and internal conditions if so desired by the Employer's representative.

The water retaining structures shall be filled with water gradually at the rate not exceeding 30 cm. rise in water level per hour and shall not be filled more than one fourth capacity in one day. Records of leakages starting at different level of water in the reservoirs, if any, shall be kept.

The reservoirs once filled shall be allowed to remain filled for a period of 7 days before any readings or drop in water level is recorded. The top level shall be maintained for 7 days. Then drop in water level for 7 days shall be observed. The total drop in surface level over a period of 7 days shall be taken as indication of the water tightness of the reservoir which shall confirm to IS :3370. Also there shall be no indication of leakage around the puddle collars or on the wall and bottom of the reservoir.

If the structure does not satisfy the test requirements, and the daily drop in water level is decreasing, the period of test may be extended for further seven days and if the specified limit is not exceeded, the structure may be considered as satisfactory.

In case the drop in water level exceed the permissible limit with the stipulated period of test, the Contractor shall carry out such additional works and adopt such measures as may be directed by the Employer's representative to reduce the leakage to permissible limit. The entire rectification work that shall be carried out in this connection shall be at Contractor's cost.

If the test results are unsatisfactory, the Contractor shall ascertain the cause and make all necessary repairs and repeat the water tightness test procedures, at his own cost. Should the re-test results still be unsatisfactory after the repairs, the structure will be condemned and the Contractor will dismantle and reconstruct the structure to the original specification, at his own cost.

During testing and during the defect liability period the impression marks created due to seepage shall be rectified and made good as directed/approved.

Paved pedestrian access ways shall be constructed to provide a network of logical routes interlinking all plant areas. Damage to any existing roads on account of their use by the Contractor shall be made good to the satisfaction of the Employer's Representative.

Hard standing areas shall be provided to permit the parking of vehicles involved in the delivery of consumables from blocking site roadways during unloading or loading. The road system shall be designed such that vehicles involved in the delivery of consumables can follow a continuous route through the plant area and leave again without carrying out complicated manoeuvres in order to exit the plant.

47.0 Walkway

Walkway with railing should connect at the operating level from top of channel of fine screen to connecting all process units of plant on top level The width of walkway

Shall not be less than 1.0 meter.

48.0 Site Drainage; Storm water drains running along the existing and proposed roads (to be provided

under this contract) shall be sized for a rainfall intensity of 50 mm/hr, allowing for 100% run-off. Drains adjacent to roads shall be in brick / stone masonry (1:6) of appropriate thickness, topped with 75 mm thick M10 concrete and plastered internally in 20 mm thick cement mortar (1:4), 50 mm thick CC flooring in bed (M-15). RCC drains or other alternative approved arrangements may be provided. Culverts at crossing be designed for Class AA loading.

49.0 Cable and Pipe Trenches: Cable and pipe trenches shall generally be constructed in reinforced concrete. However, 500 mm x 500 mm size or smaller trenches, not on fill may be constructed using 350 mm thick stone masonry in C.M. (1:4) over a 150 mm thick PCC base slab. The trenches shall be plastered internally with cement mortar (1:4). Trenches within the buildings or plant areas shall be covered with G.I. chequered plates, and those outside the buildings shall be covered with M20 precast RCC covers. The trenches shall be suitably sloped to drain off rainwater to a suitable location. The layout of trenches outside the buildings shall allow space for construction of future trenches where necessary with due consideration for planning for future developments. This aspect shall be brought to the notice of the Employer's Representative while planning the works.

50.0 Pipes and Ducts:

RCC ducts for drainage shall have minimum 1m thick of soil overburden while running across road. Access shafts of size not less than 600 mm x 1000 mm shall be provided.

All drains (except storm water drains running along the roads) shall be covered and designed structurally for appropriate loads.

a minimum of maintenance. Particular attention shall be given to extra temperature and the rating of electrical and mechanical equipment, cooling systems and the choice of lubricants shall be for the temperatures as specified.

51.0 Commissioning

After satisfactory testing of STP and allied works etc., executed under the scope of work, the same shall be commissioned for operation.

52.0 Defect Liability Period

The STP and other structures executed by the Contractor under the scope of the tender shall be maintained for a period of 12 months during Defect liability period. During this period, any defects of any kind in manufacture, laying, jointing and construction etc., shall be rectified by the Contractor as per the same specification as that of the item of work done at free of cost.

Note: If the bidder fails to achieve one or all the parameters as per NGT guidelines and KSPCB norms in any month during Defects Liability Period, then penalty of Rs.5.0 Lakhs will be levied for one month.

52.1 Training after commissioning & Defect Liability Period.

52.1.1 Training of Employer's Personnel

The Contractor shall be responsible to provide practical training in all aspects of the operation, maintenance, equipment and facilities to all personnel selected by the Employer, who will ultimately be responsible for the operation, maintenance and repair of the system and its facilities after defects liability period.

For this purpose, the Contractor shall provide a comprehensive training program for the

Employer's personnel during the entire period of the trial run, and for as long thereafter as may be reasonably required to ensure that the designated personnel are adequately trained to take up their responsibilities.

All costs for the bidder's personnel and the training facilities required for the training during trial run period, and any incidental training expenses, shall be borne by the contractor.

53.0 Completeness of the Offer:

The Bidder shall be fully responsible to include in his bid the whole of the Works, including each individual component, designed and constructed in accordance with good engineering practice and best Industrial standards. The offered plant should function as a whole, a fully integrated system which is capable of achieving the required effluent parameters in an efficient and economical manner, and eliminate all public complaints originating from the odours and pest nuisance assignable to improper design and/or poor Operation & Maintenance. The offer shall include all buildings, plant, equipment and accessories required for the efficient, safe and satisfactory operation of the facilities. Any accessories which are not specifically mentioned in the specifications/requirement, but which are usual or necessary for completion of the Works and successful performance of the plant and facilities, shall be provided by the Bidder within the tendered cost. The Bidder shall, to the maximum extent practical and feasible, endeavour to offer standardized designs and Plant and equipment keeping in view minimization of operation and maintenance requirements. The Bidder shall ensure that his offered designs and equipment are "maintenance-friendly".

54.0 Electro-Mechanical Works

51.1 General Requirements

51.1.1 Material

All materials incorporated in the Work shall be the most suitable for the service conditions and duty concerned. They shall be new and of reputed make/approved quality, free from imperfections and selected for long life and minimum maintenance. Non-destructive tests, if called for in the Specification, shall be carried out. All submerged moving parts of the Plant, or shafts and spindles or faces etc. in contact with them shall be of corrosion resistant materials. All parts in direct contact with various chemicals, shall be completely resistant to corrosion, or abrasion by these chemicals, and shall maintain their properties without aging due to the passages of time, exposure to light or any other cause. All materials shall conform to the material standards as per BIS or any equivalent standard.

51.1.2 Workmanship

Workmanship and general finish shall be of first class quality and in accordance with best workshop practice. All welds shall be as per IS, BS, ASME standards. All tolerances and clearances shall be as per good and sound engineering practices. Should any material be not considered acceptable by the Employer's representative, it shall be replaced.

51.1.3 Design Features

- a) As far as practicable, all designs shall be as per latest concept and practices. The equipment shall be new, of robust design for a long reliable operating life. These shall be capable of 24 hours per day continuous operation for prolonged period in the climatic and working

conditions prevailing at the site and with a minimum of maintenance. Particular attention shall be given to extra temperature and the rating of electrical and mechanical equipment, cooling systems and the choice of lubricants shall be for the temperatures as specified.

- b) Paints used shall be the manufacturers' standard and shall be suitable for duty as described. The equipment shall be designed to provide easy access to and replacement of component parts which are subject to wear without the need to replace whole units. All parts in contact with water shall have a life from new to replacement for 15 years minimum and new to repair of not less than five years.
- c) Design features shall include the protection of equipment against damage caused by vermin, dirt, dust and dampness and to reduce risk of fire. Equipment shall operate without undue vibration. Noise reduction measures shall be adopted such that levels of 85dB (A) at 3 meters are not exceeded. Parts shall be designed to withstand the maximum stresses under the most severe conditions of normal service. Materials shall have a high resistance to change in their properties due to the passage of time, exposure to light, temperature and any other cause which may have a detrimental effect upon the performance or life of the Plant.
- d) All rotating elements shall be dynamically and statically balanced.
- e) All equipment shall have name plates specifying the makes, model, rating and other pertinent information.

51.1.4 Lubrication

- a) The equipment shall be lubricated by long life lubricants such that working life is not less than 3000 operation hours or as recommended by equipment manufacturer.
- b) A complete schedule of recommended oils and other lubricants shall be furnished by the Contractor. The number of different types of lubricants shall be kept to a minimum. The schedule and the name of the supplier of the lubricants shall be submitted to the Employer's representative for approval.
- c) Lubricants shall be oil and grease. The Contractor shall indicate indigenously available equivalent lubricants, with complete specification.
- d) Where the lubricant is grease, preference shall be given to a pressure system which does not require frequent adjustment or recharging. Preferably, life lubricated grease packed bearings shall be used.
- e) Where more than one special grease is required, a grease gun for each special type shall be supplied and permanently labelled.

51.1.5 Name Plates

Each equipment of the Plant shall have permanently attached to it a nameplate and rating plate in a conspicuous position, Upon these shall be engraved or stamped, the manufacturers name, type and serial number of the equipment, details of the loading and duty at which the equipment has been designed to operate, and such diagrams as may be required by the Employer's representative. All indicating and operating devices shall have securely attached to them or marked upon them designations as to their functions and proper manner of use.

52.0 Painting

52.1 At Manufacturer's Works

The Contractor shall be responsible for the cleaning, preparation for painting, and priming or

otherwise protecting, as specified, all parts of the Plant/ Equipment at the place of manufacture prior to packing. Parts may be cleaned but surface defects may not be filled in before testing at the manufacturer's works. Parts subject to hydraulic test shall be tested before any surface treatment. After testing, all surfaces shall be thoroughly cleaned and dried out, if necessary by washing with an approved de-watering fluid prior to surface treatment. Except where the specification provides to the contrary, all painting materials shall be applied in strict accordance with the paint manufacturer's instructions. Steel and cast iron parts shall be sand blasted to near white cleaning before painting. Edges, sharp corners etc. shall be ground to a curve before sand blasting. A primer coat of a zinc rich epoxy resin based coating with at least 75 microns dry film thickness is to be provided. In addition, the parts for wet duty are to be provided with an adequate number of coats of coal tar epoxy polyamine coating to a dry film thickness of 175 microns excluding primer coating.

52.2 At Site

Immediately on arrival at the site, all items of Plant shall be examined for damage to the paint coat applied at the manufacturer's works. Any damaged portions shall be cleaned down to the bare metal, all rust removed, and the paint coat made good with similar paint.

After erection, such equipment/ items which are not finish painted shall be done so. Items that have been finish painted at the manufacturer's works shall be touched up for any damaged paint work. For finish painting, two coats of synthetic enamel conforming to IS: 2932 shall be applied. Dry film thickness of each coat shall be at least 25 microns.

The dry paint film thickness shall be measured by Electrometer or other instruments approved by the Employer's representative. In order to obtain the dry film thickness specified, the Contractor shall ensure that the coverage rate given by the paint manufacturer will enable this thickness to be obtained. Strength of adhesion shall be measured with an adhesion tester and this value shall not be less than 10 kg/cm². Painted fabricated steel work which is to be stored prior to erection shall be kept clear of the ground and shall be laid out or stacked in an orderly manner that will ensure that no water or dirt can accumulate on the surface. Suitable packing shall be laid between the stacked materials. Where cover is provided, it shall be ventilated.

52.3 Galvanizing

Wherever galvanizing has been specified the hot dip process shall be used and electro galvanized parts, equipment shall not be permitted. The galvanized coating shall be of uniform thickness. Weight of zinc coatings for various applications shall not be less than those indicated below:

Fabricated steel : 460 gms/sq. m

Fasteners : 300 gms/ sq. m

Galvanizing shall be carried out, after all drilling, punching, cutting, bending and welding operations have been carried out. Burrs shall be removed before galvanizing. Any site modification of galvanized parts should be covered well be zinc rich primer and aluminum paint.

53.0 Supports for Pipe Work & Valves

All necessary supports, saddles, slings, fixing bolts & foundation bolts shall be provided to support the pipe work. Valve and other equipment mounted in the pipe work shall be supported independently of the pipes to which they connect.

All valves to be installed in straight lines shall be installed between the flanges with a

dismantling joint or SS expansions bellow at one side of the valve (if required). The dismantling joint must allow a minimum clearance of 20 mm. The pressure rating of the dismantling joint / expansion below shall be same as that of the valve.

54.0 Design Criteria for Pumping Station

Operation of pumps shall be automatic based on the levels in the suction sump. Level switch and indicators shall be provided for automatic start and stop operation of pumps. Necessary switches/ alarms required for safe operation of plant shall be provided. Instruments provided shall be compatible with SCADA, when implemented in future.

54.1 Centrifugal Pumps

Centrifugal pumps shall have head/quantity characteristics which fall continuously from the maximum pressure at closed valve conditions and which are steep in order that variation in head shall have a minimal effect on the quantity discharged. The design speed of any pump with a duty flow greater than 20 l/s shall not exceed 1500 rpm. Pump motor ratings shall exceed the maximum pump power consumption over the operational range of the pump by at least 10%.

Waterways through the pump shall be smooth in finish and free from recesses and obstructions. Impeller passageways shall be as large as possible. The leading edges of the impeller vanes shall be rounded and smooth. Water velocities in the pump suction side shall not exceed 1.5m/s and on delivery branches of a pump the velocity shall not exceed 2.0 m/s when the pump is operating within its specified duty range and within this working range there shall be no discernible noise due to hydraulic turbulence or cavitations within either the pump or its associated pipe work and valves. The NPSH requirements of the pumps, based on the 3% output drop criterion shall be at least 2 m less than the NPSH available at every working condition. The velocity of vibration shall be within 4.5mm/sec. Combined noise level of pump motor system shall be limited to 85dBA at a distance of 1.85m from the equipment, at manufacturer's works. The pump shaft shall be of stainless steel to BS: 970 Grade 410S21 compatible with the impeller which shall be of stainless steel ASTM A743 CF8M and the impellers and shaft sleeves shall be secured to the shaft by means of a key or keys. The impeller retaining nut shall be fitted with a locking device. The pump casing shall be of Cast iron to IS210 Gr.FG260, wearing rings shall be of Bronze to IS: 318 Gr.LTB2 and shaft sleeve shall be of stainless steel to ASTM A 743 CA 15. All parts exposed to wear shall be adequately protected by means of renewable sleeves, bushes, wear rings etc which shall be arranged for easy inspection, adjustment, or replacement without removal of the pump casings, pipe work etc, or the need to disturb the drive shaft alignment.

The pump thrust shall be taken by a combined thrust and radial type bearing assembly capable of taking the weight of the moving parts and the hydraulic loads under all conditions of operation with a minimum life of 100 000 hours. Bearing cooling arrangements if used shall be designed on the closed-circuit principle; open discharge of cooling water into the pumping station drainage system is not permissible. The pump casing and other parts of the pump subject to pressure shall be hydraulically tested by the manufacturer to at least one and a half times the maximum working pressure. Integral inlet and discharge flanges shall be provided and integral lifting lugs shall be incorporated. Facilities shall be provided for the removal of air during priming and for draining. Glands may be fitted with mechanical seals or conventional soft packing. The gland arrangement shall be designed for easy adjustment and removal of the seal.

When soft packed glands are used suitable means shall be provided for collecting and preventing splashing of the gland leakage water. Drainage and gland leakage water shall be piped into the building drainage system. The shafts of pumps fitted with conventional packed glands shall be fitted with removable gland sleeves. The rotating element of the pump and the

motor shall be readily removable from the pump casing without the need to disconnect the adjoining pipe work. Rotating assemblies of pumps of 100 mm diameter inlet and over shall be statically and dynamically balanced and shall be designed so that the first critical speed is at least 50% greater than the maximum operating speed. Lubrication arrangements shall be so designed that there is no contamination of the pumped fluid. On pumps of 75 mm inlet and over, tapping shall be provided at both the suction and discharge flanges of suitable size for pressure gauges.

54.2 End Suction Pumps

End suction pumps shall be horizontally mounted complete with drive motor on a common base plate. The pump/drive coupling shall be of the spacer type to facilitate removal of the pump rotating element and bearing housing without dismantling the pump casing, adjoining pipe work or drive motor. The dimensions of the pump shall be metric conforming to BS 5257 or its equivalent standard. Flanges shall conform to BS EN 1092-2/BS 4504.

The bedplate shall be of substantial fabricated steel construction with floor fixing bolt holes ready drilled. All holding down bolts etc. shall be supplied with the units. The velocity at the entrance to the pump impeller shall not exceed 3.5 m/s. Impellers shall be provided with means to prevent abrasive matter reaching the glands and with fully shrouded impellers, to prevent the trapping of matter between the impeller vanes and the casing.

The speed of any pump shall not exceed 1500 rpm. glands may be fitted with suitable mechanical seals or conventional soft packing. The gland arrangement shall be designed for ease of adjustment or removal of the seal or packing material. Shafts shall be sleeved around the area of the gland when soft pack glands are used. Flushing facilities shall be provided for mechanical seals or packed glands where pump fluid may be contaminated with abrasive material. Where soft packed glands are used, means shall be provided for collection of the gland leakage water, which shall be piped into the drainage system through adequately sized ports.

Lubrication arrangements shall be so designed that there is no contamination of the pumped fluid. The pumps and associated pipe work shall be, wherever possible, arranged so that air can be completely expelled during priming. Where this is not possible, facilities shall be provided for the removal of the trapped air. Adequate facilities shall be provided for drainage of the pumps for inspection purposes. Tapping shall be provided at discharge flanges for pressure gauge equipment.

54.3 Pump Performance Guarantees

The pump performance guarantee shall relate to the flow rate, the total head and the efficiency of the pump when tested at the manufacturer's work and shall obtain approval of Engineer.

The pump shall operate at its design point within acceptance tolerances for flow rate and total head laid down in BS EN ISO 9906:2000.

Each pump shall be tested at the manufacturer's factory in accordance with BS EN ISO 9906:2000 or other relevant standards in conjunction with one of the contract motors.

This test shall be carried out on at least one pump set using the flexible coupling and contract drive shaft arrangement to establish that the drive arrangement with supports and couplings operates satisfactorily under all operating conditions.

A test shall be carried out of the performance from closed valve to the maximum quantity that can be delivered under abnormally low discharge heads.

Sufficient readings shall be taken at each test to produce accurate curves of the heads, flow,

pump speed and power required at pump coupling throughout the operating range of the pump.

Vibration and noise dB(A) levels shall be measured and shown to be acceptable and shall have Engineer's approval. The Contractor shall have Engineer approval and provide acceptable test certificates, showing the NPSH requirement for the pump is at least 2 m less than the NPSH available under all working conditions.

In the absence of the approved test certificates the supplier shall carry out a test on one pump of each type to verify the NPSH requirement based upon the 3% output drop criterion and shall take approval of Engineer..

Test Certificates in duplicate shall be submitted to the Engineer immediately following each of the tests mentioned above. Performance curves shall also be incorporated in the Operation and Maintenance Manual.

(a) Single Pump Operation

- (i) Head/quantity curve
- (ii) Motor kW input/quantity curve
- (iii) Overall efficiency/quantity curve
- (iv) NPSH required/quantity curve

(b) Parallel Pump Operation

- (v) Head/quantity curves
- (vi) Motor kW input/quantity curve
- (vii) Overall efficiency/quantity curve
- (viii) NPSH required/quantity curve

54.4 Chemical Bulk transfer Pumps

Pumps shall be selected taking into account the chemical being pumped, form of chemical, wear leakage and resistance to corrosion.

For centrifugal pumps, the pump shaft shall be of stainless steel to BS: 970 Grade 410S21 compatible with the impeller which shall be of stainless steel ASTM A743 CF8M and the impellers and shaft sleeves shall be secured to the shaft by means of a key or keys. The impeller retaining nut shall be fitted with a locking device. The pump casing shall be of stainless steel ASTM A743 CF8M, wearing rings shall be of Bronze to IS:318 Gr.LTB2 and shaft sleeve shall be of stainless steel to ASTM A 743 CA 15. All stainless steel parts shall be hard chrome plated.

Each pump shall be provided with inlet and outlet isolating valves and where necessary, with pressure relief and non-return valves and also Pressure Gauges with stopcock.

A relief valve shall be incorporated in the delivery lines under conditions where the pump discharge pipe can be shut off or where pressure may rise to an excessive point. The relief valve shall be sized to handle the system pressure and to discharge maximum pump output freely, and shall be located in the discharge line between the pump and the first downstream isolating valve. Relief valves when used on pumps handling non-hazardous chemicals shall discharge the vented liquid to waste. When used on hazardous chemicals the valve outlet shall be piped back to the suction supply tank or bunded-area. The open end of the return pipe shall be located where it is visible, so that any relief valve leakage/operation can be detected.

Pump transferring chemicals to systems under pressure shall incorporate a pressure gauge on the pump delivery.

Flushing connections shall be provided at each pump inlet and flushing shall be manual. When flushing, water shall be discharged either locally through a drain valve or to the point of application of the chemical. Facilities shall also be provided for flushing chemical pump suction and delivery manifolds and delivery lines to point of application.

54.5 Submersible Pumps

Submersible pumps shall be of the single entry design supplied complete with boltless self-aligning duck-foot assemblies giving automatic connection to the discharge pipe work.

The total head capacity curve shall be continuously rising towards the shut off with the highest at shut off. Pumps shall be suitable for single as well as parallel efficient operation at any point in between the maximum and minimum system resistances. Pumps shall run smoothly without undue noise & vibration. Noise level shall be limited to 85 dBA at 1.86 m. Vibration shall be limited to class BS 7854 – Part I: 19915. The pump set shall be suitable for starting with discharge valve open or closed.

The pump set shall be capable of withstanding accidental rotation in reverse direction.

54.5 Features of Construction:

- a. Pump shall be centrifugal, vertical spindle, wear resisting, and single stage type.
- b. Pump casing shall be of robust construction. Liquid passages shall be finished smooth and designed as to allow free passage of solids. The volute tongue shall be filed to a smooth rounded edge. Double Mechanical seals shall be provided to protect the motor from ingress of liquid along the shaft. The preliminary and secondary seals shall be oil-lubricated with tungsten carbide or silicon-carbide faces and they shall be equipped with an electrical monitoring system for seal failure detection.
- c. Sensors are to be provided to detect if leakage of liquid into the oil housing is above 30 % concentration.
- d. Impeller shall be non-clog enclosed type with smooth blunt edges and large waterways to allow free passage of the large size solids. It shall be free from sharp corners and projections likely to catch and hold rags and stringy materials. The number of impeller vanes for pumps up to 1000 m³/hr shall be limited to two and shall be limited to three for the pumps higher than 1000 m³/hr.
- e. The critical speed of the rotor shall be at least 25% above the operating speed.
- f. Pump sets shall have double bearings. The bearing life shall be minimum 40,000 hrs of operation.
- g. Each pump shall be complete with a cast iron delivery connection arrangement for fixing to the concrete floor of the suction well. All necessary stainless steel fixtures required for guiding the pumps during lifting / lowering shall be provided. The installation shall facilitate automatic installation and removal of pump without a person entering the wet well. Each pump shall be provided with a SS 304 lifting chain with suitable provision for engaging the hook of the crane at 1 m interval.
- h. Each pump shall be provided with an automatic coupling device for attaching the chain pulley block hook to the pump at low level, even whilst the pump is submerged, without the need for personnel to enter the well. This automatic coupling device shall easily and automatically couple and uncouple the hoist hook and be complete with necessary accessories. All links and cables shall be multi-stranded stainless steel.
- i. The submersible pumps shall be suitable for operation with or without submergence.
- j. The pump shall start and stop automatically based on level in the wet well.
- k. The synchronous speed shall not exceed 1500 rpm at 50 Hz supply.
The materials of construction for submersible pumps shall be as follows:

Sl. No.	Component	Material
	Impeller *	Stainless Steel : ASTM A 743
	Casing *	Cast Iron to IS:210 Gr. FG 200
	Shaft*	Stainless steel : AISI Gr.316
	Guide System	Stainless Steel : AISI Gr. 304
	Fasteners And Foundation Bolts	Stainless Steel : AISI Gr. 316

Material test certificates shall be furnished by the Contractor and shall have the approval of Engineer. The submerged cable shall be a multi-core flexible cord, vulcanized rubber insulated with tough rubber sheath and outer PCP sheath to BS 6500. Where both thermal protective and moisture-sensitive devices are incorporated within the pump, both devices shall be brought out via separate conductors within the motor cable, although one such conductor may be common.

546 Progressive Cavity Pumps

Pumps shall be of the type in which a pumping action is generated by a helical rotating eccentrically within a resilient stator in the form of a double internal helix. The eccentric motion of the rotor shall maintain a constant seal across the stator as it travels through the pump to give a uniform positive displacement. Pumps shall be arranged generally with a single shaft seal at the suction end. Mechanical seals shall be used. If a flexible shaft is used to accommodate the eccentric motion, a corrosion resistant shroud shall be fitted to prevent fiber build-up on the shaft. Enlarged inspection access holes shall be fitted to the suction chambers of all pumps for periodic removal of accumulated debris.

The shaft bearing shall be positively isolated from the fluid being pumped.

The rotor material shall be selected for corrosion and abrasion resistance for the fluid being pumped, and for prolonged service life. Hard chrome or other approved coatings shall be not less than 250 micron thickness and shall be diffused in to the base material. The rotor shall generally be single-stage and shall incorporate not less than 3600 of twist, but for high-head applications, it may be necessary to use more than a single-stage. The stator shall be of a resilient material selected for chemical and abrasion resistance for the fluid being pumped.

The size and speed range of the pump shall ensure that the highest expected duty point shall lie within the available speed range. Pumps shall normally be driven by a fixed-speed electric motor through reduction gearing and the combined drive shall be continuously rated. Pump and motor shall preferably be mounted in-line on a common base plate. Alternatively, the drive motor may be top-mounted above the pump to minimize floor area, and shall be connected by external V-belts and pulleys. V-belt drives shall have full guards of the type that allow the belts observed without removal of the guard. Facilities shall be provided for ready adjustment of belt tension.

Coupling guards shall be provided, which shall be rigid, securely fixed, and designed so that removal is not necessary during normal operation, routine maintenance and routine inspections. All motor enclosures shall be provided with ingress protection to IP55. Motor anti-condensation heaters shall be provided and shall be suitable for use on a 220V single-phase, 50Hz supply.

All bearing shall have a B10 design life of not less than 40,000 running hours and shall be designed for loading 20% in excess of calculated maximum loading. Pumps shall be fitted with individual dry-running protection to initiate pump trip. Dry-running protection by 'under-current' monitoring or 'pipeline-intrusive' device shall not be used.

Material of construction

Pump Housing	CI IS 210 GR. FG220 or FG260
Rotor	SS AISI 316(Hard chrome Plated)
Shaft	SS AISI 410(Hard chrome Plated)
Stator	Nitrite black
Type of drive	V belt & Pulleys
Base plate	MS fabricated
	Gland packing (Asbestos Free)

54.7 Pressure Gauges (Glycerine Filled)

Pressure gauges shall comply with BS EN 837.1:1998 and shall not be less than 100 mm in diameter. Unless otherwise specified, scales shall be calibrated in meters head of water, with zero representing atmospheric pressure. The lettering shall be in black where the working fluid is of a corrosive or dirty nature the pressure gauge shall be protected from the working fluid by a diaphragm or similar arrangement.

Each pressure gauge shall be fitted with a stopcock immediately adjacent to the gauge and all pressure gauge piping shall be fitted with an isolating valve at the point of connection to the main system. Where pressure gauges are mounted within or on a panel a suitable connection for a test gauge shall be provided.

54.8 Chemical Dosing Pumps

Chemical dosing pumps shall be mechanically actuated diaphragm type as specified. Pumps may be simplex or duplex arrangements to suit the capacity or process requirements. The pump design shall incorporate positive stroke return. The maximum stroking speed shall not exceed 150 strokes per minute (spm). Pump, motor and driving arrangement shall be mounted on a robust combined base plate. Pump liquid ends shall be selected for compatibility with the pumped liquid. Suction and discharge valves shall be the single ball type allowing a free flow self-cleaning action. Ball and seat materials shall be resistant to abrasion.

Pumps shall incorporate a variable stroke mechanism to allow the output to be varied while the pump is running. Stroke adjustment shall be manual or where specified by electrical or pneumatically controlled stroke positioned. A stroke length indicator and digital stroke counter shall be fitted. Pumps shall be driven by a flange mounted IP 55 motor, via an oil bath reduction gearbox and variable stroke mechanism giving step less adjustment between zero and maximum stroke length. Where flow proportional dosing is required the variation of output shall be achieved by varying the speed of the pump motor and not the pump stroke length.

The normal operating range of dosing pump shall be not less than 6:1.

- a. Mechanical Diaphragm Diaphragm rigidly coupled to the drive train. Single suction Pumps and discharge valves. Glandless. Accuracy: 5% of stroke.

Materials shall be selected to suit the chemicals being pumped. Liquid ends shall be polypropylene, AISI 316 stainless steel, glass, or Hastelloy C. Diaphragm materials shall be butyl rubber, PTFE, or Hypalon and glands shall be PTFE or Neoprene.

Each pump shall be provided with outlet isolating valves and where necessary, with pressure relief and non-return valves. Dosing pumps shall be provided with back pressure loading valves and pulsation dampeners in the delivery lines depending on the downstream conditions.

A relief valve shall be incorporated in the delivery lines under conditions where the pump discharge pipe can be shut off or where pressure may rise to an excessive point. The relief valve shall be sized to handle the system pressure and to discharge maximum pump output

freely, and shall be located in the discharge line between the pump and the first downstream isolating valve or in the case of dosing pumps the back pressure loading valve. Relief valves when used on pumps handling non-hazardous chemicals shall discharge the vented liquid to waste. When used on hazardous chemicals the valve outlet shall be piped back to the suction supply tank or bunded area. The open end of the return pipe shall be located where it is visible, so that any relief valve leakage/operation can be detected.

Pump transferring/dosing chemicals to systems under pressure shall incorporate a pressure gauge on the pump delivery.

Unless otherwise specified flushing connections shall be provided at each pump inlet and flushing shall be manual. When flushing, water shall be discharged either locally through a drain valve or to the point of application of the chemical. Facilities shall also be provided for flushing chemical pump suction and delivery manifolds and delivery lines to point of application.

Dosing pumps and motors shall preferably incorporate an integral reduction gearbox drive which shall be totally enclosed and oil bath lubricated. The gear box shall incorporate the cams for the diaphragm drive and shall be provided with filling and drain connections and visible oil level indication.

54.9 Dewatering Pump

- a) The pump motor shall be suitable for working with or without submergence in water/waste water. The motor rating shall be more than the maximum power required by the pump.
- b) Pump shall be vertical, centrifugal, submersible, non-clog & single stage type. The pump set shall be portable with necessary hooks.
- c) The pump shall have double mechanical seals to prevent ingress of moisture in to the motor. The pump impeller shall be mounted on the extended shaft of the motor. The pump shall be supplied with flexible hose pipe of 80 mm dia. & 10 m length. Suitable cable of 10 M length shall be supplied with the pump.

54.10 Sump Drainage Pumps

Sump drainage pumps shall be of the open impeller centrifugal type vertically mounted close coupled to their fully submersible electric drive motors.

Sump pumps of 1.5 kW and under shall incorporate an integral level detector, control and motor starter and shall be powered only with a suitably fused three phase or single phase low voltage supply and with supply isolation at the building distribution board.

Sump pumps over 1.5 kW shall be controlled and started from the building distribution board and be fed with a 3 phase supply. Control shall be via adjustable float level switches mounted adjacent to the pump.

The pumps shall be supplied with all necessary discharge pipe work, including non-return valves. Pumps weighing 40 kg and more shall be lowered in the sump via guide rails and be located to their respective discharge pipe work with an angle flange connection and self-locating clamps. The pump impeller shall be designed to pass solids of sizes which pass through the inlet ports of the pump and shall be capable of pumping solids of up to 20 mm diameter.

55.0 Electric Actuators

Where required penstocks and valves shall be operated by means of electrically driven actuators with integral reversing starters. Each actuator shall be fully weatherproof and fitted with an anti-condensation heater, upper and lower limit switches and torque switch. All local controls shall be protected by a lockable weather proof cover.

The electrical supply available is 415 volts, 3 phases, 4 wire 50 Hz, and the unit shall incorporate a 415/110 volts transformer for control circuits.

Each actuator shall be adequately sized to suit the application and be continuously rated to suit the modulating control required. The operating gear of all penstocks shall be capable of opening or closing the gate against an unbalanced head equal to the maximum working pressure. The gearbox shall be oil or grease filled, and capable of installation in any position.

Alternative hand operation shall be provided, and the hand wheel together with a suitable reduction gearbox if necessary, shall be of adequate dimensions for ready operation by one man. The motor drive shall be automatically disengaged when under manual operation. Hand wheel shall be rotated clockwise to close the valves, and shall be clearly marked with the words "OPEN" and "CLOSE" and arrow in the appropriate directions. The rims of hand wheel shall have a smooth finish.

All actuators with the exception of rising spindle penstock shall be equipped with indicators showing whether the penstock is fully open or closed. A transparent P.V.C. cover shall be fitted to protect the thread of the rising spindle.

All operating spindles, gears and head stock shall be provided with adequate points for lubrication.

55.1 Actuator Starters

The actuators starters shall be integrally housed with the actuator in a robustly constructed totally enclosed weather proof housing. The motor started shall be capable of starting the motor under the most severe conditions.

The starter housing shall be fitted with contact and terminals for power supply, remote control and remote positional indicating, and shall also be fitted with internal heaters so as to provide protection against damage to conditions. Heaters shall be suitable for single phase 110 or 240 volt operation. The heaters shall be switched "ON" when the starters are "OFF" and shall be switched "OFF" when the starters "ON".

Each starter shall be equipped as follows :-

2 No. T.P. Magnetically operated line contractors with no-volt release and electrical and mechanical interlock.

1 No. T.P. Thermal cut-out device.

1 No 415 - 110V, Control, Circuit Transformer fully protected by fuses on primary and secondary circuits.

1 No. Set of "Open", "close" and "Stop" buttons.

1 No. Local - Off-Remote switch with padlocking facilities.

1 No. Set of Torque and limit switches for "Open" and "Close" positions.

3 No. Sets of Auxiliary limit switches in each direction.

56.0 Sluice Gates

The construction of sluice gates shall be in accordance with the specification and generally as per AWWA C 501 or IS 13349. The sluice gates shall be capable of performing the duties set in the specification without undue wear or deterioration. They shall be constructed so that maintenance is kept to a minimum. All parts of sluice gate, including mechanism components shall be designed for the heads specified with a minimum safety factor of five. All sluice gates shall be of the rising spindle type. All sluice gates shall be manually operated. Motorized gates, if provided by the Contractor, the actuator specs be got approved from the Employer's representative.

a. Constructional features

The sluice gates shall be standard design of manufacturer's and of robust construction.

b. Frame:

The frames shall be of ample section and cast in one piece. All surface forming joints and bearings shall be machined. The frame shall be of the flange back type and shall be machined on the rear face to bolt directly to the machined face of the wall thimble.

c. Guide:

The guide shall be bolted to the frame or cast integrally with it and shall be machined on all bearing and contact faces. The length of the guide shall be such that it should support the gate upon the horizontal line of stem nut pocket. Arrangements shall be such that it should support the gate upon the horizontal line of stem nut pocket. Arrangements shall be made to prevent lateral movement of bolted on guides. They shall be capable of taking the entire thrust produced by water pressure and wedging action. Wedges or wedge facings shall be attached to the guides at point where, in the closed position, they will make full contact with the wedging surface on the slides.

d. Seating Faces

The seating faces shall be of full width, solid section. They shall be secured firmly by means of counter sunk fixings in finished grooves in the frame and slide faces in such a way as to ensure that they will remain permanently in place as well as free from distortion and loosening during the life of the sluice gates.

e. Wedging devices

Sluice gates shall be equipped with adjustable side, top and bottom wedging devices required providing contact between the slide and frame facing when the gate is closed position. All faces shall be machined accurately to give maximum contact and wedging action. Wedges shall be fully adjustable with suitable adjusting screws and lock nuts and so designed that they will remain in the fixed position after adjustment.

f. Gate slides

The slide shall be with strengthening ribs where required and reinforced section to receive the seating faces. The slide shall have tongues on each side extending its full length and tongues shall be machined accurately on contact surfaces. Surfaces of the slide that in come in contact

with the seat facing and wedges shall be machined accurately. The maximum allowable clearances between the slide and slide gate shall be 1.6 mm. An integrally cast stem nut pocket with reinforced ribs shall be provided above the central line of the slide.

g. Stem nut and Lift nut

A gate shall be provided with lower fixed stem nuts for connecting the stem to the slide and revolving lift nut located in the lifting mechanism in the head stock. They shall be of ample design to endure the thrust developed during gate operating under maximum gate operating condition loads in opening and closing direction. The stem nut and slide shall be constructed to prevent turning of the stem nut in the pocket in the slide. The stem be threaded and keyed or threaded and pinned to the stem.

h. Stem

The operating stem shall be designed for a tensile strength to withstand 90 kg effort on the crank and for a critical buckling compressive load assuming a 36 kg effort on the crank. The threads of the stem be machine cut or rolled and of the square or acme type. The number of threads per inch shall be such as to work most effectively with the lift mechanism used. The top of the stem be provided with a stop collar. Stem shall be provided with GI pipe cover shall be fixed to the head stock.

i. Stem coupling

The coupling shall be threaded and keyed or threaded and bolted and shall be of greater strength than the stem

j. Stem guide

Stem guides shall be cast, with bushings and mounted on cast brackets. Guides shall be adjustable in two directions and shall be so constructed that when properly spaced they shall hold the stem in alignment. The number of stem guides shall be such that the unsupported length of stem shall not exceed one hundred times its diameter.

l. Lifting Mechanism

Sluice gates shall be operated through a suitable lifting mechanism, which shall incorporate gearing if required. The lifting mechanism shall be suitable for operation by one man under all conditions. The lifting mechanism shall incorporate a strong locking device suitable for use with a padlock or padlock and chain. The manual operation shall be of the hand wheel crank operated type and shall have a lift nut threaded to fit the operating stem. The crank shall be removable. Ball or roller thrust bearings shall be provided above and below flange on the lift nut to take the load developed in opening and closing the gate with torque of 14 kg-m on the crank. Fittings shall be provided to lubricate gears and bearing. The design of the lift mechanism of the hand operated gates shall be such that the slide can be operated with torque is not more than 7 kg-m on the operator after the slide is unseated from wedges based on the operating head. The maximum crank radius shall be 380 mm.

m. Gears and bearings

All gears and bearings shall be enclosed in cast iron housing with labyrinth seals. The lifting mechanism shall be of cast iron pedestal, machined and drilled to receive the gear housing and suitable for bolting to the operating floor. The gates shall close with clockwise rotation of the crank. The direction of rotation to close the gates shall be indicated on the lift mechanism. A suitable means shall be provided for lubricating the stem threads directly adjacent to the lift nut. An inspection cover shall be provided to access the lift nut and gearing.

n. Fasteners

All anchor bolts, assembly bolts, screw, nuts etc., shall be of ample section to safely withstand the forces created by the operation of the gate.

o. Wall thimbles

The wall thimbles shall be made of cast iron and shall be supplied along with the gate. The wall thimbles shall provide a rigid mounting and designed to prevent warping of the gate frame during installation. The cross section of the thimble shall have the shape of the letter 'F'. The front, or mounting flange, shall be machined and shall be attached to the thimble with bolts and studs. The depth of the wall thimbles shall not be less than 300mm. To permit entrapped air to escape as the thimbles are being encased in the concrete, holes not less than 35 mm diameter at not more than 600 mm span, shall be cast or drilled in each entrapment zone formed by the reinforcing ribs or flange and water stop.

57.0 Open channel Gates

The manufacture of open channel gates shall be in accordance with the standard.

All open channel gates shall be of the raising spindle type.

All open channel gates shall be manually operated.

Open channel gates shall be tested as per standard.

The Material of Construction of Manual gates should be as follows:

- Gate frame, shutter/door, headstock, flush bottom seal support bar, stop nut : CI FG 260 (IS 210:1993)
- Sealing faces/seat facings : SS ASTM 276 AISI:304
- Resilient rubber seal : EPDM/Neoprene rubber
- Rubber seal retainer bar: SS ASTM 276 AISI:304
- Connecting block/stem block/thrust nut: Leader gun metal /CF8
- Stem/spindle :SS ASTM 276 AISI:410
- Coupling : SS 304
- Operating nut/stem nut: LTB1/LTB2, IS:318-1981
- Fasteners & studs : SS ASTM 276 AISI: 304
- Anchor bolts: SS ASTM 276 AISI: 304
- Yoke : MS IS 2062-1992 , Gr A
- Painting : 1 coat of primer with 2 coats of epoxy black paint
- Operation-By hand wheel

The Material of Construction of Mechanical Gates should be as follows

- Gate frame, shutter/door, headstock, flush bottom seal support bar, stop nut : CI FG 260 (IS 210:1993)
 - Sealing faces/seat facings : SS ASTM 276 AISI:304
 - Resilient rubber seal : EPDM/Neoprene rubber
-
- Rubber seal retainer bar: SS ASTM 276 AISI:304
 - Connecting block/stem block/thrust nut: Leader gun metal /CF8

- Stem/spindle :SS ASTM 276 AISI:410
- Coupling : SS 304
- Operating nut/stem nut: LTB1/LTB2, IS:318-1981
- Fasteners & studs : SS ASTM 276 AISI: 304
- Anchor bolts: SS ASTM 276 AISI: 304
- Yoke : MS IS 2062-1992 , Gr A
- Painting : 1 coat of primer with 2 coats of epoxy black paint
- Operation- By motorized
- Mechanical operation through actuator coupled with TEFC sq cage induction motor, IP 56 Class F insulation.

58.0 Fire Extinguishers

The Contractor shall provide 3 Kg CO2 fire extinguishers of suitable capacity and numbers for the treatment plant at the following locations after consultation with the Employer's representative.

Laboratory	- 1
Blower room	- 1
Administration Building	-1
MCC room	-1

These shall be installed in a fashion such that their use is facilitated in case of fire emergency.

59.0 First Aid kits

The first aid kit shall consist of all materials, medicines necessary for treatment of cuts, wounds, burns etc.

Laboratory
Security room
Plant in charge room

60.0 Exhaust fans

The fans shall be as per IS 2312 and the blades shall of mild steel dynamically balanced to avoid noise and vibration. The blade and its carriers shall be securely fastened to avoid loosening in operation and shall have a SS AISI guard as a grill inside and a 10 sq mm mesh screen to safeguard birds from getting sucked in. These shall be provided at the following locations

Blower room
Laboratory
Material of Construction
Casing: M S as per IS 2062
Impeller: Cast Aluminium
Test: As per IS 2312

61.0 Chain Pulley Blocks

61.1 Electrically Operated Hoists

Electric hoists shall be complete with hoisting motor, wire rope drum, wire rope, hook, necessary gearing, sheaves, electromagnetic brake for hoisting motion, weather & dust-proof push button station, contractor panel, all wiring, limit switches, etc.

Electric hoists shall conform to IS: 3938 and shall be suitable for outdoor application. All the parts of the hoist shall be designed to withstand surrounding atmospheric conditions without any deterioration.

Rope drums shall be either cast or welded to sustain concentrated loads resulting from rope pull. Drums shall be machine grooved right and left with grooves of a proper shape for the rope used.

Gears shall be cut from solid cast or forged steel blanks or shall be of stress-relieved welded steel

construction or built-up from steel billets and welded together to form a one piece gear section. Hoist ropes shall be extra flexible, improved plough steel rope with a well lubricated hemp core and having six strands of 37 wires per strand with minimum ultimate tensile strength of $1.6 \times 106 \text{ KN / Sqm}$.

Hooks shall be solid, forged, heat treated alloy or carbon steel of rugged construction of the single hook type and provided with a standard depress type safety latch. Hoisting motor shall be equipped with electrically released, spring set, friction shoe type brakes having torque capable of holding 125% of the full rated hook load. Brake shall apply when either the motor controller or the main power switch is in 'OFF' position or in the event of power failure.

Drive motors shall be designed for frequent reversal, braking and acceleration and shall be as per IS: 325. Pendant control switch, controllers and resistors, controls, electrical protective devices, cables and conductors, earthing guards etc. shall be as per IS:3938. Limit switches shall be provided for over-hoisting and over-lowering.

The electric hoists shall be of Class II duty.

25% overload test, speed tests, limit switch tests and brake test shall be conducted for the hoist and trolley at manufacturer's works.

61.2 Hand Operated Hoists and Trolleys

Manual hoists shall be complete with hand-chain, trolley, pulley block, hook, hand and load chains, brake and other accessories. They shall comply with the latest applicable standards, regulations and safety codes in the locality where equipment will be installed.

Each hoist shall be operated on a monorail (I-Beam). The factor of safety shall not be less than 3. The load chain may be heat-treated to give ductility, toughness and conforming to I.S. 3109/B.S. 1663/B.S. 3114. The load wheel is to be made from heavy duty malleable castings. The hand chain is to Conform with B.S. 6405:1984 and hand chain wheel may be made from pressed sheet steel with roller type guarding. Gears shall be cut from solid cast or forged steel blanks or shall be stress – relieved welded steel construction. Pinions shall be of forged carbon or heat treated alloy steel. Strength, Quality of Steel, heat treatment, face, pitch of teeth and design shall confirm to BS-436, BS-545 and BS-721. Spur and helical gears must comply with B.S. 436 and worm with B.S. 721. Bearing must be ball and roller type conforming to I.S. 2513/B.S.2525-32:1954. Proper lubricating arrangements are to be provided for bearings and pinions. The brake for the lifting gear shall be automatic and always in action.

The proof testing of each chain pulley block is to be carried out as per latest applicable standards. The safe working load is to be marked in such way that is clearly visible from the operating level.

61.3 Manually Operated Travelling Crane

The crane bridge shall consist of a single bridge girder carrying two wheels at each end of the span. Steel used shall be tested quality steel conforming to IS 2062. The girder shall have enough strength to carry the test load without causing undue stress or deflection.

The long travel bridge wheels shall be rim toughened, heat treated carbon steel or low alloy steel or C.I. They shall be double flanged type. The wheels shall have antifriction ball/roller bearings. The wheels shall be machined on their treads to match the runway rail section. The bridge shall have a geared shaft and pulley connecting to opposite wheels of the span, to achieve the long travel motion of the bridge, by means of a chain. The runway rails of adequate strength and rigidity, rail clamps and other accessories for mounting the rails and suitable end stops for the bridge shall be supplied by the Contractor.

Trolley and Chain Pulley Block

The chain pulley block shall be operated on the lower flange of the bridge girder.

The load chain shall be made of alloy steel as per IS: 3109. It shall be heat treated to give ductility and toughness so that it will stretch before breaking. It shall be of welded construction with a factor of safety not less than 3.

The hand chains for the hoisting and traverse mechanism shall hang well clear of the hook and both the chains shall be on the same side. The hand chain wheel shall be made from pressed sheet steel and shall be provided with roller type guarding to prevent snagging and fouling of the chain.

All the gearing shall be totally encased. Proper lubricating arrangements shall be provided for bearings and pinions. Gears shall be cut from forged steel blanks. Pinions shall be of heat treated alloy steel. Gears shall be as per BS 436/IS: 4460.

The trolley track wheels shall be rim toughened, heat treated carbon steel or low alloy steel or C.I. and shall be single flanged and shall have antifriction ball bearings. The wheels shall be machined on their treads to match the flanges of the track joints.

The travelling trolley frame shall be made of rolled steel conforming to IS: 2062. The side plates of trolley frame shall extend beyond wheel flanges, thus providing bumper protection for the wheels. The two side plates shall be connected by means of an equalising pin.

Axles and shafts shall be made of carbon steel and shall be accurately machined and properly supported.

The lifting hooks shall be forged, heat treated alloy or carbon steel of rugged construction. They shall be of single hook type provided with a standard depress type safety latch. They shall swivel and operate on antifriction bearings with hardened races. Locks to prevent hooks from swivelling shall be provided. Hook shall be as per BS: 2903/IS: 3815

The brake for the lifting gear shall be automatic and always in action. It shall be of screw and friction disc type self-actuating load pressure brake. Brakes shall offer no resistance during hoisting.

Ratchet and Pawl mechanism shall be provided to arrest the full load from lowering due to gravity. The ratchet and pawl shall be of steel, hardened and tempered so as to attain required wear resistance and toughness.

61.4 Electrically Operated Overhead Travelling Crane

The crane shall be electrically operated, bridge type complete with all accessories including down shop conductor, crane rails and fixtures, and shall conform to BS 2573, IS:3177 or relevant internationally approved standards.

The crane bridge shall consist of bridge girders on which a wheeled trolley is to run. The bridge trucks and trolley frames shall be fabricated from structural steel. Access walkway with safe hand railing as is required along the full span length of the bridge girder. Steel shall be tested quality conforming to ASTM A36 except that, plates more than 20 mm thick shall conform to IS: 2062, BS: 4360 or relevant internationally approved standards. The bridge shall be designed to carry safely the loads specified in IS: 807, BS: 2573 or relevant internationally approved standards. All anti-friction bearings for bridge and trolley track wheels, gear boxes and bottom sheaves on hook shall be lubricated manually by hand operated grease pump through respective grease nipples.

Wheel base and structural frame of the wheel mounting of the end carriages shall be designed so as to ensure that the crane remains square and prevent skewness. Bridge and trolley track wheels shall be of forged steel and shall be double flanged type. The wheel diameter and rail sizes shall be suitable for the wheel loads. The crane rails shall be manufactured from wear resistant austenitic manganese steel. Mountings of the wheels shall be designed to facilitate easy removal for maintenance. Walkways shall be at least 500 mm clear inside width with a 6 mm thick non-skid steel plate surface. Steel rail stops to prevent

rails from creeping and trolley from running off the bridge shall be abutted against ends of rails and welded to the girders. Bridge and trolley stops to match the wheel radius shall be provided before the buffer stops. All exposed couplings, shafts, gear, wheels, pinions and chain drives etc. shall be safely encased and guarded completely to prevent any hazard to persons working around. All bearings and gears shall have a design life of 100000 hours. Electro-magnetic and hydraulic thruster brake shall be provided for the main hoist. One electro-magnetic brake shall be provided for each of the cross travel and long travel motions.

Hook shall be solid forged, heat treated alloy or carbon steel suitable for the duty service. They shall have swivels and operate on ball thrust bearings with hardened races. The lifting hooks shall comply with the requirements of IS 8610 or BS: 2903 / BS: 3017 or relevant internationally approved standards and shall have a safety latch to prevent rope coming off the hook.

Hoist rope shall be extra flexible, improved plough galvanized steel rope with well lubricated hemp core and having six strands of 37 wires per stand with minimum ultimate tensile strength of $1.6 \times 106 \text{ kN/m}^2$ of Right Hand Ordinary (RHO) lay construction. The ropes shall have a 6:1 safety factor on the specified safe working load, and shall conform to IS: 22615. Rope drums shall be grooved and shall be either cast iron or cast steel or welded steel conforming to IS: 3177, BS: 466 or relevant internationally approved standards.

Gears shall be cut from solid cast or forged steel blanks or shall be stress relieved welded steel construction. Pinions shall be of forged carbon or heat treated alloy steel. Strength, quality of steel, heat treatment, face, pitch of teeth and design shall conform to BS: 436, IS: 4460 and BS: 721 or relevant internationally approved standards.

Name Plate showing the capacity, year of manufacture and rated capacity of hoist, in figures not less than 150 mm height, shall be placed on each side of the crane girder.

The maximum deflection under full load shall not exceed $1/900$ of the span (as per IS: 3177).

All accessory and auxiliary electrical equipment including drive motors, electrically operated brakes, controllers, resistors, conductors, insulators, current collectors, pendant push button station, protective devices, operating devices, cables, conduits, etc. necessary for the safe and satisfactory operation of the crane shall be provided.

Power to the crane shall be provided by down shop conductors manufactured from high conductivity hard drawn copper. Conductors shall be completely shrouded such that they have no exposed current carrying surfaces. Pendant type push button station shall be sheet steel enclosed and shall comprise the following push buttons and indicating lamps:

a. 'Start' and 'Stop'.

Long travel - 'Right' and 'Left'.

Cross travel - 'To' and 'From'.

Hook - 'Hoist' and 'Lower'.

Red indicating lamp for supply 'ON' indication.

Pendant type push button shall be supported independently of the electrical cable and shall be earthed separately, independent of the suspension. Automatic reset type of limit switches shall be provided to prevent overtravel for each of the following:

For 'UP' and 'Down' motions of the hook.

Long travel motion

Cross travel motion

Crane structures, motor frames and metal cases of all electrical equipment including metal conduit and cable guards shall be earthed. All motors, brakes, limit switches, panels, drum controllers, resistor unit sets shall be provided with two studs for earthing.

All motors shall be of the quick reversing type with electric mechanical brakes suitable for the duties specified. All movements shall be electrically powered suitable for operating with the hook loaded. Facilities shall be provided for the accurate location of the hook by means of 'inching' the cross travel and down shop travel motions.

Sufficient slings, ropes, shackles, lifting beams, etc shall be supplied to handle all items of plant covered by the crane. They shall be labelled or marked with the Safe Working Load (SWL) and the purpose for which they are intended.

The crane, and all slings, ropes, shackles and other lifting equipment supplied shall be tested by the manufacturer at his works. The tests shall be carried out at 125% of Safe Working Load, and Test Certificates shall be supplied.

The Contractor shall include with the cranes all necessary contactors, control cubicles and protection equipment necessary to operate the crane and provide adequate electrical protection against overload, phase and earth fault and fail-safe protection in the event of an interruption in the power supplies. All access ladders and platforms necessary to carry out maintenance and repairs shall be provided and installed by the Contractor.

All electrical equipment shall be fully tropicalized.

62.0 SAFETY/SECURITY

The contractor shall take all safety precautions under various Acts/Rules under central/State Govt. from time to time and he shall be responsible for safety of its staff and the consequences thereof. The contractor shall deploy round the clock security personnel at entrance of plant's premises and in the compound for the safety of the plant and premises during the 1yr O&M period i.e, during defect liability period. The contractor shall be completely responsible for the safety of the plant, equipment and personnel during this period.

63.0 Responsibility for damages:

The care of the whole of the permanent works shall remain with the contractor who shall be responsible for all accidents or damages from whatever cause arising and chargeable for anything that may be stolen, removed destroyed or damaged to whomsoever belonging and also for making good all defects and damages to the said works or to any property adjoining or any cause whatever, whether such damage or defects were occasioned by the negligence of the contractor or not or may be or might have been discovered during the progress to be known after the completion whereof or whether payment may wholly or partially have been made or the works approved as supposed to have been properly done and no certificate of approval of any works by any officers or members of the Board shall affect or prejudice the right of the Board against the contractor or be considered or held as at all conclusive as to the sufficiency of any work materials. Adequate safety precautions against fire, flooding, lightening, electrical shocks, accident due to moving/non-moving heavy/light equipments shall be strictly observed by the contractor at his own cost. Suitable safety measures like gumboots, gloves, safety belts, ladders, safety lamps, gas masks, Oxygen apparatus, insulated tools, alarms etc. shall be provided by the contractor except those provided by the Department. Necessary medical first aid kit shall be made available all the time. In absence of observance of above safety precautions, the contractor shall be responsible for any unforeseen loss of the equipments or persons dealing with it. Special care shall be taken by the contractor while carrying out the work in sewage gas zone. Any incidence of human life or accident will be totally contractor's responsibility.

The contractor shall ensure that the staff employed takes all necessary precautions while carrying out the work either in shift duties or any general shift as per Indian Electricity Rules/Factory Act/CPHEEO Manual, or manufacturer's special instruction for safety / gas handling. The staff should use Gas masks, Oxygen apparatus, Gum Boots, Safety Belts and Safety Lamps, etc. while carrying out the work in Bar Screens, sumps etc. The contractor will make arrangement for all necessary safety equipments for persons working at STP as per Factory Act/Safety Rules. In the event of any accident on or off site, in which the contractor or his personnel are involved, in which an injury occurs to any

person whether directly concerned with the project or a third party, the contractor shall inform KUWS & D Board within 24 hrs of the occurrence of the event. The plant will be open to local/state/central agencies for verification of safety/emission/acts compliance. During night hours, the main gate should be locked. However, shift duty staff should be alert and open the gate during surprise checking of KUWS & D Board staff or any other Government Authorities or his nominee without any wait. Only bona-fide persons be allowed in the plant premises being a prohibited area. Smoking and drinking are prohibited in the plant. The staff engaged shall wear common uniform with name plate indicating name and designation during duty hours.

64.0 Record Keeping

Running Records are required to be kept for various operating machines such as Mechanical Screens, Mechanical Grit Removers, Pumps, Motors, Scrapers, Air Blowers, Chemical consumption, Chlorine consumption etc. as maintained by the operators and kept at Control Room or duty room of the operators that is closer to the location of the machines. The records of effluent quality and other laboratory tests are kept in the laboratory as per daily sample collection and testing schedules. The record with respect to flow shall be maintained by operators as per Table below. The operator passes the daily log sheet to the plant Manager on the subsequent day duly signed in the first shift. All operators shall be responsible to fill up their part of observations and calculations. The plant Manager shall verify the daily record as well as the calculations and shall be responsible to generate further data using these. It is pertinent to mention that there shall be a requirement of drawing site-specific procedures and formats / forms for keeping records. This shall be the responsibility of the plant manager.

65.0 Arrangement of spares

The Contractor shall procure the necessary spares, cost of the Materials viz., pipes, specials, etc., required for repairs and replacement of Pipelines, machineholes, Valves, Flow meters and any other gazettes, etc at his cost required for the maintenance of the proposed UGD System.

66.0 Arrangement of Consumables

All Consumable items used for operation and maintenance of valves and other devices installed in the UGD System e.g. gland packing, nut bolts, etc., shall be procured and maintained by the contractor.

67.0 DELAYS IN PROCUREMENT OF SPARES AND CONSUMABLES

Whenever Engineer in charge feels that the Contractor is delaying the procurement and installation / use of some particular spare or consumable and which in his opinion may hamper the proper operation of distribution system, then the Engineer in-charge will be authorized to procure the same & get it installed/fixed through some other agency and the cost incurred would be recovered from the payment due to Contractor or his deposit lying with the department. Such situation will be treated as unsatisfactory performance of Contractor and he shall be liable as per clause of special conditions of contract.

68.0 DAMAGES TO DEPARTMENTAL EQUIPMENTS

Normally there should not be any break down in the system. However if break down is found to happen because of damage of any part or equipment due to negligence of contractor then the same shall have to be replaced / repaired by the contractor at his cost without any loss of time.

69.0 REPLACEMENT OF EQUIPMENTS AND THEIR PARTS

Any part or equipment found necessary by the contractor to replace during the preventive maintenance shall be replaced after written approval of Engineer In charge. The cost of such part / equipment shall be borne by the contractor only.

70.0 UP KEEPING of LOG BOOKS AND RECORDS

The following records shall be maintained and produced periodically by the contractor and shall be made available to the Engineer in-charge for regular checking and verification. (As per pro-forma desired by Engineer in charge) The log book / necessary other records shall be up dated on daily basis.

- a) Log book showing discharge and interruption of power if any, to be recorded. The format of log book shall be finalized in consultation with Engineer in-charge.
- b) History sheet of overhauling / maintenance / replacement of consumable / non consumable related to all the important mechanical equipments which will be duly verified by the Engineer in-charge.
- c) A return in the format prescribed at Appendix shall be prepared and submitted to the Engineer in-charge (separately) on the say of due date.
- d) The observation in the log books should be recorded on hourly basis. Printed log books shall be provided by the Contractor at his own cost. The log books shall be securely kept under the charge of a responsible person and shall be made available to any officer of the department on demand. Log books of the previous month shall be deposited to the Engineer concerned every month. All the log books will be deposited to the Engineer In –charge after completion of the contract.
- e) An inspection Register will be maintained by the contractor. Instruction recorded in the register shall be compiled with immediately under the directions of the Engineer in charge and the compliance shall be recorded in books.

71.0 UP KEEPING AND GUARDING OF SYSTEM

Watch & ward shall be made available round the clock for safety of the valves and other devices installed in the System.

72.0 Periodical maintenance and overhauling of equipments

All type of valves and other devices shall also be operated and periodically maintained as per manufacture manual and standard practice. All measuring equipments / devices for measuring pressure discharge, levels etc., shall be operated and periodically maintained and calibrated as per manufacturer's manual.

73.0 Manual on operation of valves & UGD System

Manual indicating the location, type, and operation of different valves and the operation system of UGD System is to be prepared by the contractor and necessary training to the Board / ULB staff is to be provided by the contractor.

74.0 Daily flow measurements shall be recorded & the data shall be updated into the computers of the offices established at the project site by the contractor.

75.0 SAFETY

Bidders shall be solely responsible for safety of men, materials and equipments during the performance of all operation and maintenance Works. Bidder shall take satisfactory precautions to protect the sewer segments and appurtenances from damage that might be inflicted upon them by the use of cleaning equipment. Any damage inflicted upon a sewer segment or other public or private property as a result of the Bidder's cleaning operations, regardless of the cleaning method used and regardless of any other circumstance which may contribute to the damage, shall be repaired by the Bidder at his sole expense.

Bidder shall not enter into any sewer segment where hazardous conditions may exist until such time as the source of those conditions is identified and eliminated by Bidders and/or Employer. Bidder shall perform all work in accordance with the latest confined space entry regulations. Bidder shall coordinate his work with local fire, police and emergency rescue units. Precautions shall be taken by Bidder to ensure that the water pressure utilized does not result in any damage or flooding to public or private property being served by the sewer segment(s) involved.

The bidder shall comply with all the precautions as required for the safety of the workmen by the I.L.O convention No.62.as far as they are applicable to the contract.

Manual labor shall strictly not be deployed for cleaning of sewers and machine holes and shall use machineries in case of any choking up of the sewer line. Further, for the sewage system which is in use, the contractor shall ensure that manhole covers are open and machine holes are ventilated at least for an hour before machinery is used for cleaning purpose. Machine holes, so open shall be cordoned off with suitable railing and provide warning signals or boards to prevent accident to public.

76.0 Debris Removal and Disposal

Bidder shall remove all sludge, dirt, sand, rocks, grease and other solid or semisolid material and debris resulting from the cleaning operations from the downstream manhole of the sewer segment being cleaned. Passing material from sewer segment to sewer segment shall not be permitted. In the event that sludge, dirt, sand, rocks, grease and other solid or semisolid material or debris resulting from the cleaning operations are observed and/or detected by as passing to downstream sewer segment(s), Bidder shall be responsible for cleaning such downstream sewer segment(s) at no additional cost to Employer.

Bidder shall be responsible for the handling, hauling and disposal of all debris, silt, and accumulated solids removed from the sewer. All debris, silt and solids removed by Bidder shall be disposed of at a facility licensed for the handling and disposal of such materials in accordance with all appropriate codes, rules and regulations for the handling and disposal of such materials. Under no circumstances shall the removed sewage or solids be dumped onto streets or into ditches, catch basins, storm drains, sanitary or combined sewer machine holes, or otherwise improperly disposed. If sewage is unintentionally spilled, discharged, leaked or otherwise deposited in the open environment, Bidder shall be responsible for any clean-up and disinfection of the affected area. Bidder shall comply with all local, State regulatory requirements regarding spills. Improper disposal of sewage or solids removed from the sewers may subject Bidder to fines imposed by Employer or other regulatory entities. In addition, Bidder may be subject to civil and/or criminal penalties for improper disposal of removed materials under the law.

SECTION 8: DRAWINGS

(uploaded Separately)

SECTION 9 - BILL OF QUANTITIES (FINANCIAL PROPOSAL)

Enclosed Separately

Preamble:

1. The BoQ is provided for illustration purpose only. The BoQ value shall have to be directly filled and submitted on the KPP portal by the Tenderers. Scanned copies of Section 9: Bill of Quantities (Financial Proposal) shall not be submitted with the Technical proposal. Any tender with scanned copies of the BoQ (Financial Proposal) along with the Technical Proposal shall be summarily rejected and such Tenderers shall be disqualified from further evaluation.
2. The BoQ do not generally give a full description of the Construction Details, Plant and Materials to be supplied and the services to be performed under each item. The entered rates and prices shall be deemed to include for the full compliance with all provisions of the Contract.
3. The Contractor shall quote for each item indicated in the Financial Proposal. The Contractor shall be responsible for making suitable assumptions for any item not indicated in the BoQ and shall include the cost of such item/s while quoting the price.
4. The Contractor shall make his own arrangements and include in the costs towards disposing off of surplus excavated earth, debris etc., without causing any infringements.
5. The spares, tools and test equipment required during testing and commissioning is deemed to be included in the total amount quoted by the Tenderer. No additional claim whatsoever from the Contractor will not be entertained by KUWSDB for any plant, equipment, machinery, spares, parts, tools, test equipment etc. procured by the Contractor during testing and commissioning.
6. At the end of Defect Liability Period, Employer will assess the condition of all the equipment, machinery, plant, pipeline works, civil, mechanical, electrical, I & C, works etc. and all the damaged, non performing equipment, machinery, plant etc. shall be replaced by the Contractor before handing over the plant to the Employer. The Contractor shall demonstrate satisfactory working of all the equipment, machinery, plant etc. during handing over of the facility to the Employer.

SECTION 10: FORMAT OF BANK GUARANTEE FOR SECURITY DEPOSIT

To,

WHEREAS _____[name and address of Contractor] (hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. dated__ to execute [name of Contract and brief description of Works] (herein after called "the Contract");

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOWTHEREFORE where by affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of Rs. _____[amount of guarantee] Rupees _____[in words],and we undertake to pay you, upon your first written demand and without caveat or argument, any sum or sums within the limits of _____[amount of guarantee] as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until 30 days from the date of expiry of the Defects Liability Period.

Signature and seal of the guarantor _____

Name of Bank _____

Address _____

Date _____

PERFORMANCE BANK GUARANTEE (for unbalanced items)

To: _____ *[name of Employer]*
_____ *[address of Employer]*

WHEREAS _____ *[name and address of Contractor]*
(hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. _____
dated _____ to execute _____ *[name of Contract*
and brief description of Works] (hereinafter called "the Contract");

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of _____ *[amount of guarantee]*¹ _____ *[in words]*, such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ *[amount of guarantee]*¹ as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until (i.e.) 28 days from the date of issue of the certificate of completion of works.

Signature and seal of the guarantor _____

Name of Bank _____

Address _____

Date _____

BANK GUARANTEE FOR ADVANCE PAYMENT

To: _____ *[name of Employer]*
_____ *[address of Employer]*
_____ *[name of Contract]*

Gentlemen:

In accordance with the provisions of the Conditions of Contract, sub-clause 51.1 ("Advance Payment") of the above-mentioned Contract, _____ *[name and address of Contractor]* (hereinafter called "the Contractor") shall deposit with

_____ *[name of Employer]* a bank guarantee to guarantee his proper and faithful performance under the said Clause of the Contract in an amount of _____ *[amount of guarantee]*¹ _____ *[in words]*.

We, the _____ *[bank or financial institution]*, as instructed by the Contractor, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to _____ *[name of Employer]* on his first demand without whatsoever right of objection on our part and without his first claim to the Contractor, in the amount not exceeding _____ *[amount of guarantee]*¹ _____ *[in words]*.

We further agree that no change or addition to or other modification of the terms of the Contract or of Works to be performed thereunder or of any of the Contract documents which may be made between _____ *[name of Employer]* and the Contractor, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until _____ *[name of Employer]* receives full repayment of the same amount from the Contractor.

Yours truly,

Signature and seal: _____

Name of Bank/Financial Institution: _____

Address: _____

Date: _____

- 1** An amount shall be inserted by the bank representing the amount of the Advance Payment, and denominated in Indian Rupees.

INDENTURE FOR SECURED ADVANCES

THIS INDENTURE made the..... day of 2016 BETWEEN (herein after called the Contractor which expression shall where the context so admits or implies be deemed to include his executors, administrators and assigns) of the one part and the Chief Engineer (North), Karnataka Urban Water Supply and Drainage Board or his authorized representative,(herein after called the Employer, which expression shall where the context so admits or implies be deemed to include his successors in office and assigns) of the other part.

WHEREAS by an agreement dated (herein after called the said agreement) the Contractor has agreed AND WHEREAS the Contractor has applied to the Employer that he may be allowed advances on the security of materials absolutely belonging to him and brought by him to the site of Works the subject of the said agreement for use in the construction of such of the works as he has undertaken to execute at rates fixed for the finished work (inclusive of the cost of materials, labour, plant, equipment and other charges) AND WHEREAS the Employer has agreed to advance to the Contractor the sum of Rupees. on the security of materials, the quantities and other particulars of which are detailed in the accounts of Secured Advances attached to the Running Account Bill for the said works signed by the Contractor on and the Employer has reserved to himself the option of making any further advance or advances on the security of other materials(such materials to include materials, plant, equipment etc) brought by the Contractor to the site of the said works.

NOW THIS INDENTURE WITNESSETH that in pursuance of the said agreement and in consideration of the sum of Rupees. on or before the execution of these presents paid to the Contractor by the Employer (the receipt whereof the Contractor doth hereby acknowledge) and of such further advances (if any) as may be made to him as aforesaid the Contractor doth hereby covenant and agree with the Employer and declare as follows:

- (1) That the said sum of Rupees..... so advanced by the Employer to the Contractor as aforesaid and all or any further sum or sums advanced as aforesaid shall be employed by the Contractor in or towards expediting the execution of the said works and for no other purpose whatsoever;
- (2) That the materials detailed in the said Account of Secured Advances which have been offered to and accepted by the Employer as security are absolutely the Contractor's own property and free from encumbrances of any kind and the Contractor will not make any application for or receive a further advance on the security of materials which are not absolutely his own property and free from encumbrances of any kind and the Contractor indemnifies the Employer against all claims to any materials in respect of which an advance has been made to him as aforesaid;
- (3) That the materials detailed in the said Account of Secured Advances and all other materials on the security of which any further advance or advances may hereafter be made as aforesaid(herein after 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 Employer and in the terms of the said agreement;
- (4) That the Contractor shall make at his own cost all necessary and adequate arrangements for the proper watch, safe custody and protection against all risks of the

said materials and that until used in construction as aforesaid the said materials shall remain at the site of the said works in the Contractor's custody and on his own responsibility and shall at all times be open to inspection by the Employer or his authorized representatives. In the event of the said materials or any part thereof being stolen, destroyed or damaged or becoming deteriorated in a greater degree than is due to reasonable use and wear thereof the Contractor will forthwith replace the same with other materials of like quality or repair and make good the same as required by the Employer or his authorized representative;

- (5) That the said materials shall not on any account be removed from the site of the said works except with the permission of the Employer or his authorized representative on that behalf;
- (6) That the advances shall be repayable in full when or before the Contractor receives payment from the Employer of the price payable to him for the said works under the terms and provisions of the said agreement, provided that if any intermediate payments are made to the Contractor on account of the work done than on the occasion of each such payment the Employer will be at liberty to make a recovery from the Contractor's bill for such payment by deducting there from the value of the said materials then actually used in the construction and in respect of which recovery has not been made previously, the value for this purpose being determined in respect of each description of materials at the rates at which the amounts of the advances made under these presents were calculated;
- (7) That if the Contractor shall at any time make any default in the performance or observance in any respect of any of the terms and provisions of the said agreement or of these presents the total amount of the advance or advances that may still be owing to the Employer shall immediately on the happening of such default be repayable by the Contractor to the Employer together with interest thereon at twelve percent per annum from the date or respective dates of such advance or advances to the date of repayment and with all costs, charges, damages and expenses incurred by the Employer in or for the recovery thereof or the enforcement of this security or otherwise by the reason of the default of the Contractor and the Contractor hereby covenants and agrees with the Employer to repay and pay the same respectively to him accordingly;
- (8) That the Contractor hereby charges all the said materials with the repayment to the Employer of the said sum of Rupees and any further sum or sums advanced as aforesaid and all costs, charges, damages and expenses payable under these presents PROVIDED ALWAYS and it is hereby agreed and declared that notwithstanding anything in the said agreement and without prejudice to the powers contained therein if and whenever the covenant for payment and repayment herein before contained shall become enforceable and the money owing shall not be paid in accordance therewith the Employer may at any time thereafter adopt all or any of the following courses as he may deem fit:-
 - (a) Seize and utilize the said materials or any part thereof in the completion of the said works on behalf of the Contractor in accordance with the provisions in that behalf contained in the said agreement debiting the Contractor with the actual cost of effecting such completion and the amount due in respect of advances under these presents and crediting the Contractor with the value of work done as if he had carried it out in accordance with the said agreement and at the rates thereby

provided. If the balance is against the Contractor he is to pay same to the Employer on demand;

(b) Remove and sell by public auction the seized materials or any part thereof and out of the moneys arising from the sale retain all the aforesaid repayable or payable to the Employer under these presents and pay over the surplus (if any) to the Contractor;

(c) Deduct all or any part of the moneys owing out of the security deposit or any sum due to the Contractor under the said agreement.

(9) That except in the event of such default on the part of the Contractor as aforesaid interest on the said advance shall not be payable;

(10) That in the event of any conflict between the provision of these presents and the said agreement, the provisions of these presents shall prevail and in the event of any dispute or differences arising over the construction or effect of these presents, the settlement of which has not been herein before expressly provided for the same shall be referred to the Managing Director KUWS&DB whose decision shall be final.

In witness whereof the said..... and by the order and under direction of the Employer have hereunto set their respective hands the day and year first above written.

Signed, sealed and delivered by.....
The said Contractor in the presence of:

Witness: Signature:
Name:
Address:.....

Signed by the order and direction of the Employer in the presence of :

Witness: Signature:
Name:
Address:.....