SMART CITY MISSION

UJJAIN SMART CITY LIMITED

Ujjain Smart City Limited
Request for Proposal
(National Competitive Bidding)

Volume I: Instructions to Bidders (ITB)
Volume II: Draft Contract Agreement
Volume III: Scope of Work
2nd Call

CONSTRUCTION OF SWIMMING POOL AND SPORTS COMPLEX INCLUDING DEVELOPMENT WORKS UNDER PHASE -2 AT UMC COMPOUND, UJJAIN

Issued By

UJJAIN SMART CITY LTD.
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Madhya Pradesh
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Letters to Bidders

RFP No USCL/01 **Issued Dated**: 10/01/2019

Tender ID :- 2019_UAD_2144_1

RFP FOR "CONSTRUCTION OF SWIMMING POOL AND SPORTS COMPLEX INCLUDING DEVELOPMENT WORKS UNDER PHASE -2AT UMC COMPOUND, UJJAIN"

,

. Dear Madam/Sir,

1. The Ujjain Smart City Limited (USCL) represented by its Executive Director (hereinafter called "**the Authority**") is involved in execution of planning and implementationof various smart city projects in the city of Ujjainunder the Smart City Mission of Government of India. The programme involves enormous level of development work to be carried out across Ujjain city.

2. As parts of its endeavour, it has been decided to take up"Construction of swimming pool and sports complex including development works under Phase -2, Ujjain" through percentage rate contract as specified in the BOQ in RFP (which include MPUADD SOR and Non-schedule items).

3. The Executive Director, USCL now invites bids from eligible contractors for the following project under National competitive bidding:

4. **Table 1: Project Brief**

City and State (India)	RFP No.	Project Name	Estimated Cost of Contract	Completion Period	Defect Liability Period
Ujjain, Madhya Pradesh	-	Construction of swimming pool and sports complex including development works under Phase-2 at UMC compound, Ujjain	Rs. 17.92 Crore (Rupees Seventeen Crore Ninety Two Lakh only	18 months including rainy season from the Contract Commencement Date. The Date of Signing of Contract shall be considered as the Contract Commencement Date for the purpose of this RFP and the Contract.	(36 months from the date of Final Completion Certificate, whichever is later as specified in the RFP.

5. The complete Bid document can be viewed / downloaded from official portal of USCL https://ujjainsmartcity.com/en/and/or e-procurement portal of Madhya Pradesh e-procurement portal https://mptenders.gov.in/as per schedule in NIT. Bid must be

submitted online only at https://mptenders.gov.in/on or before Bid Due Date. Bids received online shall be opened as per separately published NIT.

6. Bid through any other mode shall not be entertained. However, the bidder is requested to submit the physical (original copy). In case the bidder has submitted the physical copy and online submission on the eProcurement portal not done, those bids shall not be considered and shall be rejected by the Authority. In case of any variation noticed between the documents submitted/ uploaded on e-procurement portal and documents submitted in physical form, the online document submitted shall prevail and final.However, Bid Security in form of Bank Guarantee, Power of Attorney, Joint Bidding Agreement etc.(if applicable)as mentioned in this RFP, shall be submitted physically in 'ORIGINAL' by the Bidder on or before due dates as per NIT, the scanned copy of these documents shall be uploaded on the e-procurement portal. The Bidder has to upload a signed scanned copy of the entire RFP document confirming its acceptance of terms and conditions of the bidding conditions through e-procurement portal.All the rules, procedures, notifications etc. as applicable to the Government of Madhya Pradesh (GoMP) or institutions under it, upto the Bid Due Date or the date of contract signing as the case may be shall apply to this Bid and conditions herein including scope of works, quality, safety, environmental norms etc. and the terms and conditions stated as part of this Bid shall stand modified/amended to that extend, as acceptable to the Authority at its discretion.

7. UjjainSmart City Limited reserves the right to accept or reject all or any of the Bid(s) without assigning any reason whatsoever.

8. A Bidder will be selected under "Least Cost Method of Selection (L1)" and as per procedures described in this RFP.

9. The RFP includes the following documents:

- Notice Inviting Bid;
- Instructions to E-Procurement;
- Instructions to Bidders,
- Scope of Work including technical details, specifications, design and drawings for bidding purpose, standards, applicable laws, service level parameters etc. (Scope of Work);
- Draft Contract;
- Addendum/Corrigendum/Reply to Queries/Clarifications issued for the purposes of this RFP.

10. All Addendum/Corrigendum/Reply to Queries/Clarifications issued for the purposes of this RFP will be uploaded online on website https://mptenders.gov.in/.

Executive Director

UJJAINSMART CITY LIMITED

Room No 16, Mela Office, Kothi Road,
Ujjain, Pin Code 456010
Madhya Pradesh
e-mail: ujjainsmartcity@gmail.com
Website: https://ujjainsmartcity.com/en/

Yours sincerely,
Executive Director

Authorised Signatory
Ujjain Smart City Limited

DISCLAIMER

The information contained in this Request for Proposal document (the "**RFP**") or subsequently provided to Bidder(s), whether verbally or in documentary or any other form by or on behalf of the Authority or any of its employees or advisors, is provided to Bidder(s) on the terms and conditions set out in this RFP and such other terms and conditions subject to which such information is provided.

This RFP is not an Agreement and is neither an offer nor invitation by the Authority to the prospective Bidders or any other person. The purpose of this RFP is to provide interested parties with information that may be useful to them in making their financial offers ("**Bid(s)**") pursuant to this RFP. This RFP includes statements, which reflect various assumptions and assessments arrived at by the Authority in relation to the Project. Such assumptions, assessments and statements do not purport to contain all the information that each Bidder may require. This RFP may not be appropriate for all persons, and it is not possible for the Authority, its employees or advisors to consider the investment objectives, financial situation and particular needs of each party who reads or uses this RFP. The assumptions, assessments, statements and information contained in the Bidding Documents, , may not be complete, accurate, adequate or correct. Each Bidder 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 RFP and obtain independent advice from appropriate sources.

Information provided in this RFP to the Bidder(s) is on a wide range of matters, some of 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 Authority accepts no responsibility for the accuracy or otherwise for any interpretation or opinion on law expressed herein.

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

The Authority also accepts no liability of any nature whether resulting from negligence or otherwise howsoever caused arising from reliance of any Bidder upon the statements contained in this RFP. The Authority 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 RFP.

The issue of this RFP does not imply that the Authority is bound to select a Bidder or to appoint the Selected Bidder JV or Contractor, as the case may be, for the Project and the Authority reserves the right to reject all or any of the Bidders or Bids without assigning any reason whatsoever.

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

1. INTRODUCTION

1.1. Background

1.1.1. UjjainSmart City Limited represented by its Executive Director (the "**Authority**") is involved in execution of planning and implementation of various smart city projects in the city of Ujjainunder the Smart City Mission of Government of India. The programme involves enormous level of development work to becarried out across Ujjain city.

1.1.2. As part of this endeavour, the Authority has decided to undertake"Construction of swimming pool and sports complex including development works under Phase -2 at UMC compound, Ujjain"on percentage rate contract to be completed within a period of 18 (eighteen)months for construction including the rainy seasonfrom the Contract Commencement Date(the "**Project**")and has decided to carry out the bidding process for selection of a bidder to whom the Project may be awarded. A brief description of the project is mentioned later in thisRFP. Brief particulars of the Project are as follows:

Table 2: Project Description

Project Name	Project Description	Estimated Cost of Contract (PAC)	Completion Period
'Construction of swimming pool and sports complex including development works under Phase -2 at UMC compound, Ujjain'	Construction of diving pool, warm up pool, leisure pool, badminton court, tennis court, spa/sauna bath/Jacuzzi facilities, restaurant, gym, meeting room, offices, courtyards including all plumbing, pumping & filtration units and electrical works, external development workswith landscaping and approach road, parking facilities etcand Operation and Maintenance for 5 Years	Rs. 17.92 Crore (Rupees Seventeen Crore Ninety Two Lakh only	18 months for construction including the rainy season from the Contract Commencement Date

1.1.3. The "**Bidder**", which expression shall, unless repugnant to the context who is either a company incorporated under the Companies Act, 1956/2013 or a partnership firm or a proprietorship firm under applicable laws of India. The Selected Bidder (the "**Contractor**"), shall be responsible for construction of the Project under including Defects Liability Period and in accordance with the provisions of thecontract (the "**Contract**" or "**Agreement**" or "**Contract Agreement**") to be entered into between the Contractor and the Authority in the form provided by the Authority as part of the Bidding Documents pursuant hereto.

1.1.4. The scope of work shall broadly include survey, design and construction of Project as specified in the Scope of Work etc.

1.1.5. The **estimated cost** of the Project has been specified in the clause1.1.2above. The assessment of actual costs, however, will have to be made by the Bidders.

1.1.6. The Agreement sets forth the detailed terms and conditions for award of the project to the Contractor, including the scope of the Contractor's services and obligations.

1.1.7. The statements and explanations contained in this RFP are intended to provide a better understanding to the Bidders about the subject matter of this RFP and should not be construed or interpreted as limiting in any way or manner the scope of services and obligations of the Contractor set forth in the Agreement or the Authority's rights to amend, alter, change, supplement or clarify the scope of work, the work to be awarded pursuant to this RFP or the terms thereof or herein contained. Consequently, any omissions, conflicts or contradictions in the Bidding Documents including this RFP are to be noted, interpreted and applied appropriately to give effect to this intent, and no claims on that account shall be entertained by the Authority.

1.1.8. The Authority shall receive Bids pursuant to this RFP in accordance with the terms set forth in this RFP and other documents to be provided by the Authority pursuant to this RFP (collectively the "**Bidding Documents**"), and all Bids shall be prepared and submitted in accordance with such terms on or before the Bid due date specified in clause1.3for submission of Bids (the "**Bid Due Date**").

1.2. Brief description of Bidding Process

1.2.1. The Authority has adopted a single stage two-part system (referred to as the "**BiddingProcess**") for selection of the Bidder for award of the Project. Under this process, the Bid shall be invited under two parts. Eligibility and qualification of the bidder will be first examined based on the details submitted under first part ("**TechnicalBid**") with respect to eligibility and qualifications criteria prescribed in this RFP.The Financial Bid under the second part shall be opened of only those Bidders whose Technical Bids are responsive to eligibility and qualifications requirements as per this RFP.

1.2.2. GOI has issued guidelines (Refer**Annexure** VII - Guidelines of the Department of Disinvestmentof **APPENDIX** IA - LETTER COMPRISING THE TECHNICAL BIDof RFP) for qualification of bidders seeking to acquire stakes in any public sector enterprise through the process of disinvestment. These guidelines shall apply mutatis mutandis to this Bidding Process. The Authority shall be entitled to disqualify any Bidder in accordance with the aforesaid guidelines at any stage of the Bidding Process. Bidders must satisfy themselves that they are qualified to bid and should give an undertaking to this effect in the form at **APPENDIX IA** - LETTER COMPRISING THE TECHNICAL BIDenclosed for the Bidders.

1.2.3. The concept design/drawings/plans etc. prepared by the Authority (the "**ProjectConcept Documents**") is also enclosed. Subject to the provisions of the clause2.1.3, the aforesaid documents and any addenda issued subsequent to this RFP Document, will be deemed to form part of the Bidding Documents.

1.2.4. A Bidder is required to submit, along with its Bid, a BidSecurity of an amount equal to INR. 10.00 lakhs(Indian Rupees Ten Lakhs only) (the "**Bid Security**"), refundable not earlier than 180 (One hundred &eighty) days from the Bid Due Date, except in the case of the Selected Bidder whose Bid Security shall be retained till it has provided a Performance Security under the Contract. The Bidders will have an option to provide Bid Security in the form of bank guarantee acceptable to the Authority and in such event, the validity period of the bank guarantee, shall not be less than 180 (one hundred and eighty) days from the Bid Due Date, inclusive of a claim period of 60 (sixty) days, and may be extended as may be mutually agreed between the Authority and the Bidder from time to time. **The Bid shall be summarily rejected if it is not accompanied by the Bid Security.**

1.2.5. Bidders are advised to examine the Project in greater detail, and to carry out, at their cost, such studies as may be required for submitting their respective Bids for award of the contract including implementation of the Project.

1.2.6. Bids will be evaluated for the Project on the basis of the lowest cost required by a Bidder for implementing the Project (the "**Bid Price**"). The total time allowed for completion of construction under the Contract (the "**Completion Period**") and the period during which the Contractor shall be liable for maintenance and rectification of any defect or deficiency in the Project after completion of the Construction Period (the "**Defect Liability Period**") shall be pre-determined and are specified in the draft Contract forming part of the Bidding Documents.

In this RFP, the term "**Lowest Bidder**" shall mean the bidder who is quoting the lowest BidPrice.

1.2.7. Generally, the Lowest Bidder shall be the Selected Bidder.

(a) In case the lowest tendered amount (estimated cost + amount worked on the basis of percentage above/below) of two or more Bidders is same, such lowest

Biddersmay be asked, at discretion of the Authority, to submit sealed revised offer; in the form of letter mentioning percentage above/below on estimated cost of tender including all sub sections/sub heads as the case may be; but the revised percentage quoted above/below on tendered cost or on each sub section/sub head should not be higher than the percentage quoted already, as the case may be, at the time of submission of tender. The lowest tender shall be decided on the basis of revised offers.

(b) If the revised tendered amount (worked out on the basis of quoted rate of individual items) of two or more Bidders received in revised offer is again found to be equal, then the lowest Bid, among such contractors, shall be decided by draw of lots in the presence of Engineer-in-chief of the Authority and the lowest contractors those have quoted equal amount of their Bids.

(c) In case of any such lowest Bidder in his revised offer quotes rate of any item more than their respective original rate quoted already at the time of submission of tender, then such revised offer shall be treated invalid. Such case of revised offer of the lowest Bidder or case of refusal to submit revised offer by the lowest Bidder shall be treated as withdrawal of his tender before acceptance and 50% of his Bid Security shall be forfeited.

(d) In case all the lowest Bidders those have same tendered amount (as a result of their quotation), refuse to submit revised offers, then Bids are to be recalled after forfeiting 50% of Bid Security of each lowest Bidders.

(e) Bidder, whose Bid Security is forfeited because of non-submission of revised offer or quoting higher revised rate(s) of any item(s) than their respective original rate quoted already at the time of submission of his Bid shall not be allowed to participate in the retendering process of the work and will be debarred from tendering in Smart City Projects in M.P.

(f) In case such Lowest Bidder withdraws or is not selected for whatsoever reason, the Authority shall annul the Bidding Process and invite fresh Bids.

1.2.8. Other details of the process to be followed under this bidding process and the terms thereof are spelt out in this RFP.

1.2.9. Any queries or request for additional information concerning this RFP shall be submitted by e-mail to the officer designated in clause 2.11.4below with identification/ title of this RFP.

1.3. Schedule of Bidding Process

The Authority shall endeavour to adhere to the schedule as specified in the NIT. However, the Authority reserves the right to modify the Bidding Schedule at its discretion.

2. INSTRUCTIONS TO BIDDERS

2.1. General Terms of Bidding

2.1.1. No Bidder shall submit more than one Bid for the Project. A Bidder bidding individually shall not be entitled to submit another Bid either individually or in association with other bidder as the case may be.

2.1.2. A Bidder bidding individually shall ensure that Power of Attorney is apostille by appropriate authority and requirement of relevant stamp act is duly fulfilled.

2.1.3. The Project Concept Documentis being provided only as a preliminary reference document by way of assistance to the Bidders who are expected to carry out their own surveys, investigations and other detailed examination of the Project before submitting their Bids. Nothing contained in the Project Concept Document shall be binding on the Authority nor confer any right on the Bidders, and the Authority shall have no liability whatsoever in relation to or arising out of any or all contents of the Project Concept.

2.1.4. Notwithstanding anything to the contrary contained in this RFP, the detailed terms specified in the draft Agreement shall have overriding effect; provided, however, that any conditions or obligations imposed on the Bidder hereunder shall continue to have effect in addition to its obligations under the Agreement.

2.1.5. The BID shall be furnished in the format exactly as per Appendix-I i.e. Technical Bid as per **APPENDIX IA** - LETTER COMPRISING THE TECHNICAL BIDand Financial Bid as per **APPENDIX – IB** - Letter Comprising the Financial Bid.Bid amount shall be indicated clearly in both figures and words, in Indian Rupees in prescribed format of Financial Bid and it will be signed by the Bidder's authorised signatory. In the event of any difference between figures and words, the amount indicated in words shall be taken into account.

2.1.6. The Bidder shall deposit a Bid Security for an amount as per clause 1.2.4 above in accordance with the provisions of this RFP. The Bidder has to provide the Bid Security in the form of online payment or a Bank Guarantee acceptable to the Authority, as per format at **APPENDIX – II- Bank Guarantee for BID Security**.

2.1.7. The validity period of the Bank Guarantee shall not be less than 180(Onehundred and eighty) days from the Bid Due Date, inclusive of a claim period of 60 (Sixty) days and may be extended as may be mutually agreed between the Authority and the Bidder. The Bid shall be summarily rejected if it is not accompanied by the Bid Security. The Bid Security shall be refundable notearlier than 150 (one hundred and fifty) days from the Bid Due Date except in the case of the Selected Bidder whose Bid Security shall be retained till it has provided a Performance Security under the Agreement.

2.1.8. The Bidder should submit a Power of Attorney (POA) as per the format at **APPENDIX- III -** Format for Power of Attorney for Signing of BID, authorising the signatory of the Bid to commit the Bidder.

2.1.9. Any condition or qualification or any other stipulation contained in the Bid shall render the Bid liable to rejection as a non-responsive Bid.

2.1.10. The Bid and all communications in relation to or concerning the Bidding Documents and the Bid shall be in English language.

2.1.11. The documents including this RFP and all attached documents, provided by the Authority are and shall remain or become the property of the Authority and are transmitted to the Bidders solely for the purpose of preparation and the submission of a Bid in accordance herewith. Bidders are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their Bid. The provisions of this clause 2.1.11shall also apply mutatis mutandis to Bids and all other documents submitted by the Bidders, and the Authority will not return to the Bidders any Bid, document or any information provided along therewith.

2.1.12. This RFP is not transferable.

2.1.13. Any award of Project pursuant to this RFP shall be subject to the terms of Bidding Documents and also fulfilling the criterion as mentioned in clause2.2.

2.1.14. Joint Venture is not allowed for the purpose of this Bid.

2.1.15. The following provisions shall apply to the Bid**: (Not Applicable)**

(a) Where, on the date of the Bid, not less than 50% (fifty percent) of the aggregate issued, subscribed and paid up equity share capital in a Bidder is held by persons resident outside India or where a Bidder or its Member is controlled by persons resident outside India; or

(b) if at any subsequent stage after the Bid due date, there is an acquisition of not less than 50% (fifty percent) of the aggregate issued, subscribed and paid up equity share capital or control, by persons resident outside India, in or of the Bidder;

then the Eligibility of such Bidder shall be subject to approval of the Authority from national security and public interest perspective. The decision of the Authority in this behalf shall be final and conclusive and binding on the Bidder.

The holding or acquisition of equity or control, as above, shall include direct or indirect holding/ acquisition, including by transfer, of the direct or indirect legal or beneficial ownership or control, by persons acting for themselves or in concert and in determining such holding or acquisition, the Authority shall be guided by the principles, precedents and definitions contained in the Securities and Exchange Board of India (Substantial Acquisition of Shares and Takeovers) Regulations, 1997, or any substitute or other applicable law, rules, regulations, order etc. as applicable thereof, as in force on the date of such acquisition.

The Biddershall promptly inform the Authority of any change in the shareholding, failure to do so shall render the Bidder liable for disqualification from the Bidding

Process. The Authority, may its discretion, allow the Change in Control or acquisition/merger/amalgamation/reconstruction as applicable to the Bidder or any Member or Members of the Joint Venture during the Bidding Process or thereafter upon selection as the Selected Bidder. For this purpose, the Change in Control shall mean:

"**Change in Control**" shall mean one or more of the followings:

(a) In relation to the Bidder or Contractor

(i) a transfer of the direct and/or indirect legal or beneficial ownership of any shares, or securities convertible into shares, that causes the aggregate holding in the Bidder or the Contractor, to decline below fifty per cent (50%) of the total Equity thereof; or

(ii) all acquisitions of Equity by an acquirer, either by himself or with any person acting in concert, directly or indirectly, including by transfer of the direct or indirect legal or beneficial ownership or control of any Equity, in aggregate of not less than fifteen per cent (15%) of the total Equity of the Bidder or the Contractor; or

(iii) acquisition of any control directly or indirectly of the Board of Directors of the Bidder or Contractor by any person either by himself or together with any person or persons acting in concert with him.

(b) The Bidder or the Contractor shall immediately notify the Authority of any proposed Change in Control (or, in the case of a Change In Control due to the transfer of shares or securities in a publicly listed company, as soon as it becomes aware of that Change in Control or proposed Change in Control and is permitted by the laws applicable to that publicly listed company to disclose that information to the Authority) in the Bidder or the Contractor and shall provide the Authority with details of:

(i) the identity of each proposed acquirer /entities seeking control;

(ii) the address of the aforesaid acquirer / entities;

(iii) the extent and nature of the proposed change in control; and

(iv) any other information necessary for the Authority to determine whether to consent, or not to consent, to the Change in Control in the Bidder or the Contractor.

(c) The Authority shall not unreasonably withhold its consent to such Change in Control of the Bidder or the Contractor, unless the Authority is of the reasonable opinion that:

(i) the proposed acquirer /entities seeking control of the Bidder or the Contractor or Supporting Entity following the change in control:

- is not solvent or reputable;

- has an interest which conflicts in a material way with the interests of Authority or is involved in a business or activities which are incompatible with, or inappropriate in relation to the Project; or
- does not have the same or greater financial and technical capacity than the entity it is replacing or from which it is taking control;

(ii) the proposed change is against the national security and / or public interest; or

(iii) the proposed change shall impact adversely on the ability of the Bidder or the Contractor to perform its obligations under this RFP or the Contract.

(d) The Bidder or the Contractor shall not undertake or permit any Change in Control, except with the prior approval of the Authority. Notwithstanding anything to the contrary contained in this RFP or the Contract, the Bidder or the Contractor agrees and acknowledges that the decision of the Authority in respect of Change of Control as being final, conclusive and binding on the Bidder or the Contractor, and undertakes that in the event of the Bidder or the Contractor becoming ineligible to execute the Project, the Authority reserves its rights to reject the Bid of the Bidder or execute the remaining works at the risk and cost of the Contractor as the case may be.In case of such Change in Control occurs after providing Performance Security but before signing of the Contract or after signing of the Contract but before execution of any work by the Contractor, the Authority reserves its right to terminate the Contract considering the event as breach of the Contract and invoke the Performance Security, provided the Change in Control is not allowed by the Authority. The Authority shall endeavour to convey its decision thereon expeditiously.

It is also agreed that the Authority shall not be liable in any manner on account of grant or otherwise of such approval and that such approval or denial thereof shall not in any manner absolve the Bidder or the Contractor from any liability or obligation under this RFP or the Contract.

For the purposes of this Article

(i) the expression "acquirer", "control" and "person acting in concert" shall have the meaning ascribed thereto in the Securities and Exchange Board of India (Substantial Acquisition of Shares and Takeover) Regulations, 1997 or any statutory re-enactment thereof or other applicable regulation, laws, rules, orders as in force as on the date of acquisition of Equity, or the control of the Board of Directors, as the case may be, of the Bidder or the Contractor;

(ii) the indirect transfer or control of legal or beneficial ownership of Equity shall mean transfer of the direct or indirect beneficial ownership or control of any firm or company or companies whether in India or abroad which results in the acquirer acquiring control over the shares or voting rights of shares of the Bidder or the Contractor; and

(iii) power to appoint, whether by contract or by virtue of control or acquisition of shares of any firm, company holding directly or through one or more companies (whether situate in India or abroad) the Equity of the the Bidder or the Contractor, not less than half of the directors on the Board of Directors of the Bidder or the Contractor or of any firm or company, directly or indirectly whether situate in India or abroad, having ultimate control of not less than fifteen per cent (15%) of the Equity of the Bidder or the Contractor shall constitute acquisition of control, directly or indirectly, of the Board of Directors of the Bidder or the Contractor.

2.1.16. Notwithstanding anything to the contrary contained herein, in the event that the Bid Due Date falls within three months of the closing of the latest financial year of a Bidder, it shall ignore such financial year for the purposes of its Bid and furnish all its information and certification with reference to the 5 (five) years or 1 (one) year, as the case may be, preceding its latest financial year. For the avoidance of doubt, financial year shall, for the purposes of a Bid hereunder, mean the accounting year as per Indian laws.

2.1.17. Any entity which has been barred by the Ministry of Urban Administration and Development Department of Government of Madhya Pradesh or its agencies/departments/companies/autonomous bodies/authorities or Government of India or its agencies/departments/authorities/companies/autonomous bodies for similar works or other works which bars it from further participating in any government works, and the bar subsists as on the date of Bid, would not be eligible to submit the Bid.

2.1.18. The Bidder should, in the **last 2 (two) years**, have neither failed to perform for similar works, as evidenced by imposition of a penalty by an arbitral or judicial authority or a judicial pronouncement or arbitration award against the Bidder including individual or any of its Joint Venture Member, as the case may be, nor has been expelled or terminated by Ministry of Urban Administration and Development Department of Government of Madhya Pradesh or its agencies/departments/companies/autonomous bodies/authorities for breach by such Bidder including individual or any of its Joint Venture Member.

(a) The Bidder including may provide details of all their on-going projects along with updated stage of litigation, if so, against the Authority / Government.

(b) The Bidder including may also provide details of updated on-going process of blacklisting if so, under any contract with Authority / Government.

(c) The Authority reserves the right to reject an otherwise eligible Bidder on the basis of the information provided under thisClause2.1.18. The decision of the Authority in this regard shall be final.

2.2. Eligibility and Qualification Requirements of Bidder

2.2.1. For determining the eligibility of Bidder, the following shall apply:

(a) The Bidder shall be a single entity to implement the Project. A bidder cannot be member of another Bidder. The term Bidder used herein would apply to both a single entity.

(b) A Bidder shall not have a conflict of interest (the "**Conflict of Interest**") that affects the Bidding Process. Any Bidder found to have a Conflict of Interest shall be disqualified and liable for forfeiture of the Bid Security or Performance Security as the case may be. A Bidder shall be deemed to have a Conflict of Interest affecting the Bidding Process, if:

(i) the Bidder, its Joint Venture Member (or any constituent thereof) and any other Bidder, its Member or any Member of its Joint Venture thereof (or any constituent thereof) have common controlling shareholders or other ownership interest; provided that this disqualification shall not apply in cases where the direct or indirect shareholding of a Bidder, or its Joint Venture Member thereof (or any shareholder thereof having a shareholding of more than 5% (five percent) of the paid up and subscribed share capital of such Bidder, or its Joint Venture Member, as the case may be), in the other Bidder, its Joint Venture Member is less than 5% (five percent) of the subscribed and paid up equity share capital thereof; provided further that this disqualification shall not apply to any ownership by a bank, insurance company, pension fund or a public financial institution referred to in section 4A of the Companies Act, 1956 or in concordance with relevant section of the Companies Act, 2013. For the purposes of this Clause2.2.1(b), indirect shareholding held through one or more intermediate persons shall be computed as follows: (aa) where any intermediary is controlled by a person through management control or otherwise, the entire shareholding held by such controlled intermediary in any other person (the "**SubjectPerson**") shall be taken into account for computing the shareholding of such controlling person in the Subject Person; and (bb) subject always to sub-clause (aa) above, where a person does not exercise control over an intermediary, which has shareholding in the Subject Person, the computation of indirect shareholding of such person in the Subject Person shall be undertaken on a proportionate basis; provided, however, that no such shareholding shall be reckoned under this sub-clause (bb) if the shareholding of such person in the intermediary is less than 26% of the subscribed and paid up equity shareholding of such intermediary; or

(ii) a constituent of such Bidder is also a constituent of another; or

(iii) such Bidder, or any of its Joint Venture Member thereof receives or has received any direct or indirect subsidy, grant, concessional loan or subordinated debt from any other Bidder, or any of its Joint Venture Member thereof or has provided any such subsidy, grant, concessional loan or subordinated debt to any other Bidder, its Member or any of its Joint Venture Member thereof; or

(iv) such Bidder has the same legal representative for purposes of thisApplication as any other Bidder; or

(v) such Bidder, or any of its Joint Venture Member thereof has a relationship with another Bidder, or any of its Joint Venture Member thereof, directly or through common third party/ parties, that puts either or both of them in a position to have access to each other's' information about, or to influence the Application of either or each other; or

(vi) such Bidder, or any of its Joint Venture Member thereof has participated as a consultant to the Authority in the preparation of any documents, design or technical specifications of the Project.

(c) A Bidder shall be liable for disqualification and forfeiture of Bid Security, if any legal, financial or technical adviser of the Authority in relation to the Project is engaged by the Bidder, its Member or any Associate thereof, as the case may be, in any manner for matters related to or incidental to such Project during the Bidding Process or subsequent to the (i) issue of the LOA or (ii) execution of the Agreement. In the event any such adviser is engaged by the selected Bidder or Contractor, as the case may be, after issue of the LOA or execution of the Agreement for matters related or incidental to the project, then notwithstanding anything to the contrary contained herein or in the LOA or the Agreement and without Prejudice to any other right or remedy or the Authority, including the forfeiture and appropriation of the BID Security or Performance Security, as the case may be, which the Authority may have there under or otherwise, the LOA or the Agreement, as the case may be, shall be liable to be terminated without the Authority being liable in any manner whatsoever to the Selected Bidder or Contractor for the same. For the avoidance or doubt, this disqualification shall not apply where such adviser was engaged by the Bidder, its Member or Associate in the past but its assignment expired or was terminated 6 (six) months prior to the date of issue of this RFP. Nor will this disqualification apply where such adviser is engaged after a period of 3 (three) years from the date of commercial operation of the Project.

2.2.2. Qualification Requirements of Bidders:

(a) Bid Capacity

Bidders who interalia meet the minimum qualification criteria will be qualified only if their available Bid capacity is more than the total Bid value (value as per Clause1.1.2). The available Bid capacity will be calculated as per following, based on information mentioned **ANNEX-VI - Information required to evaluate the Bid Capacity**:

Assessed Available BID capacity = (A*N*1.5 – B), Where

A = Maximum value of civil engineering works in respect of projects executed in any one year during the last 5 (five) financial years (10% weightage per year shall be given to bring the value of work executed at present price level as indicated in table below under note) taking into account the completed as well as works in progress. The projects include turnkey project/ Item or Percentage rate contract/PPP/ construction works.

N= Number of years prescribed for completion of work for which Bid is invited.

B = Value (updated to the price level of the year indicated in table below under note) of existing commitmentsas per Annex-V, works for which LOA issued and on-going works to be completed during the period of completion of the works for which BID is invited.

***Note**: The Statement showing the value of all existing commitments, works for which LOA issued and ongoing works as well as the stipulated period of completion remaining for each of the works listed should be countersigned by the Client or its Engineer-in-charge not below the rank of Executive Engineer or equivalent in respect of projects or Concessionaire / Authorised Signatory of SPV in respect of BOT Projects and verified by Statutory Auditor. The factor for the year for updation to the price level is indicated as under. The Bidder, as part of Technical Bid shall submit its own calculation of Bid Capacity based on documents for eligible projects submitted:*

Table 3: Bid Capacity Updation Factor

Year	Year-1 FY 2017-18	Year-2 FY 2016-17	Year-3 FY 2015-16	Year-4 FY 2014-15	Year-5 FY 2013-14
Up-dation factor	1.00	1.10	1.21	1.33	1.46

(b) Technical Capacity

(i) For demonstrating technical capacity and experience (the "**Technical Capacity**"), the Bidder shall, over the last 5 (five) years preceding the

Bid Due Date, the Bidder should have completed Similar Works/Eligible Projects/Eligible Experience as mentioned below.

The bidder should have experience of having successfully executed and completed the following:

a) Three Work of similar nature each costing not less than amount equal to 20% of the estimated cost of the contract during last 5 years;

OR

b) Two Work of similar nature each costing not less than amount equal to 30% of the estimated cost of the contract during last 5 years;

OR

c) One Work of similar nature costing not less than amount equal to 50% of the estimated cost of the contract during last 5 years;

Note:

1. *Certificate duly signed by the employer shall be enclosed for the actual quantity executed in any one year (twelve calendar months) during the last 5 years.*
2. *The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum; calculated from the date of completion to last date of receipt of applications for the tenders.*
3. *Similar nature of work means:*

a) The bidder should have successfully executed and completed at least one RCC framed building with minimum total built up area of 1,200 sqm, roads and development works

OR

Road works including CC road, retaining walls and development works.

(These types of works will be considered in evaluation for fulfilling the similar work eligibility criteria i.e. 3 works amounting to Rs. 3.58 crore each or 2 works amounting to Rs. 5.38 crore each or 1 work amounting to Rs. 8.96 crore)

And

The bidder should have successfully executed and completed **at**

least one swimming pool of 250 sqm size with all peripheral systems of filtration, disinfection, recirculation etc. complete including all electrification and plumbing.

OR

The bidder should have successfully executed and completed **at least one** water retaining structure i.e. overhead tank, sump well, underground water tank, sedimentation tank including filtration unit of at least 1 (one) MLD capacity complete including all electrification and plumbing.

OR

b) The bidder should havesuccessfully executed and completed swimming pool works of minimum size 250 sqm size with all peripheral systems of filtration, disinfection, recirculation etc.complete including all electrification and plumbing and including RCC frame buildings (minimum area 1200 sqm), roads and development works.

OR

The bidder should havesuccessfully executed and completed water retaining structure works i.e. overhead tank, sump well, underground water tank, sedimentation tank including filtration unit of at least 1 (one) MLD capacity complete including all electrification and plumbing and including RCC frame buildings (minimum area 1200 sqm), roads and development works

(The works should be fulfilling the financial eligibility for similar nature works i.e. 3 works amounting to Rs. 3.58 crore each or 2 works amounting to Rs. 5.38 crore each or 1 work amounting to Rs. 8.96 crore then same shall also be considered fulfilling as eligibility criteria)

(c) Financial Capacity

(i) The Bidder shall have a positive Net Worth of at the close of the last financial year i.e. FY 2017-18.The Bidder shall also submit details of its net cash accrual for the last 5 financial years. The net cash accrual should be positive.

(ii) The Bidder shall have a minimum Average Annual Construction Turnover of not less than 50% of the estimated cost of Contract during the last 5 financial years. The last 5 (five) financial years for the purpose

of this RFP shall be FY 2017-18, FY 2016-17,FY 2015-16, FY 2014-15 and FY 2013-14.

(iii) Liquid assets and /or availability of credit facilities[1] of no less than INR5.20 Crore (Indian Rupees FiveCrore TwentyLakhs) [Credit lines/ letter of credit/ certificates from banks for meeting the fund requirement etc.].

(d) Eligible Experience/Eligible Projects for Consideration of Experience:

(i) For a project to qualify as an Eligible Project in case of PPP Projects:

A. It should have been undertaken as a PPP project on BOT, BOLT, BOO, BOOT or other similar basis for providing its output or services to a public-sector entity or for providing non-discriminatory access to users in pursuance of its charter, concession or contract, as the case may be.

B. the entity claiming experience should have held, in the company owning the Eligible Project, a minimum of 26% (twenty-six per cent) equity during the entire year for which Eligible Experience is being claimed; and

C. the entity claiming experience shall, during the last 5 (five) financial years, have itself undertaken the construction of the project for Eligible Projects, excluding any part of the project for which any contractor, sub-contractor or other agent was appointed for the purposes of construction.

(ii) For a project to qualify as an Eligible Project under other than PPP Projects:

A. the Bidder should have received payments from its client(s) for construction works executed on BOT, Turnkey or Item Rate Contract fully or partially, or work executed and certified by the Engineer-in- charge/Independent Engineer/Authority's Engineer during the last5 (five) financial years, and only the amounts (gross) actually received/ work executed, during such 5 (five) financial years shall qualify for purposes of the Technical Capacity. For the avoidance of doubt, construction works shall not include supply of goods or equipment except when such goods or equipment form part of a turn-key construction contract / EPC contract / Item Rate contract/ Percentage Rate contract for the project. Further, the cost of land and also cost towards pre-construction activities (like shifting of utilities etc.) shall not be included hereunder.

[1] The availability of credit facilities (Credit lines/ letterof credit/certificatesfrombanks) shall be unconditional. The Conditional availability of credit facilities shall not be accepted.

B. The Bidder shall quote experience in respect of a particular Eligible Project under any one category only, even though the Bidder (either individually or along with a member of the Joint Venture) may have played multiple roles in the cited project. Double counting for a particular Eligible Project shall not be permitted in any form.

(e) Submission in Support of Technical Capacity

(i) The Bidder should furnish the details of Eligible Experience for the last 5 (five) financial years.

(ii) The Bidder must provide the necessary information relating to Technical Capacity as per format at **ANNEX-II - Technical Capacity of the Bidder**of **APPENDIX IA** - LETTER COMPRISING THE TECHNICAL BID.

(iii) The Bidder should furnish the required Project-specific information and evidence in support of its claim of Technical Capacity, as per format at **ANNEX-IV** - Details of Eligible Projectsof**APPENDIX IA** - LETTER COMPRISING THE TECHNICAL BID.

(f) Submission in Support of Financial capacity

(i) The Technical Bid must be accompanied by the Audited Financial Statements of the last 5 (five) financial years.;

(ii) Certificate(s) from its statutory auditors including/attaching unconsolidated balance sheet in support of the certificate for proving the net-worth criteria as detailed in clause 2.2.2(c)(i);

(iii) The Bidder must provide details as per format at **ANNEX-III - Financial Capacity of the Bidder**of **APPENDIX IA** - LETTER COMPRISING THE TECHNICAL BID.

(g) The Bidder shall enclose with its Technical Bid, to be submitted as per the format at **APPENDIX IA** - LETTER COMPRISING THE TECHNICAL BID, complete with its Annexes, the following:

A. Certificate(s) from its statutory auditors[2]or the concerned client(s) stating the payments received or in case of a PPP project, the construction carried out by itself, during the past5 (five) financial years, in respect of the Eligible Projects. In case a particular job/ contract has been jointly executed by the Bidder (as part of a Joint Venture), it should further support its claim for the payments received or construction carried out by itself in PPP Projects or as applicable,

[2] Even if in case duly certified audited annual financial statements containing explicitly the requisite details are provided, a separate certification by statutory auditors would be necessary in respect of clause 2.2.2. In jurisdictions that do not have statutory auditors, the firm of auditors which audits the annual accounts of the Bidder may provide the certificates required under thisRFP.

the share in work done for that particular job/ contract by producing a certificate from its statutory auditor or the client; and

B. Certificate(s) from its statutory auditors specifying the net worth of the Bidder, as at the close of the last financial year (FY 2017-18), and also specifying that the methodology adopted for calculating such net worth conforms to the provisions of this clause2.2.2 (i) (ii). For the purposes of this RFP, net worth (the "**Net Worth**") shall mean the aggregate value of the paid-up share capital and all reserves created out of the profits and securities premium account, after deducting the aggregate value of the accumulated losses, deferred expenditure and miscellaneous expenditure not written off, as per the audited balance sheet, but does not include reserves created out of revaluation of assets, write-back of depreciation and amalgamation.

2.3. Proprietary data

All documents and other information supplied by the Authority or submitted by a Bidder to the Authority shall remain or become the property of the Authority. Bidders are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their Bid. The Authority will not return any Bid, or any information provided along therewith.

2.4. Cost of Bidding

The Bidders shall be responsible for all of the costs associated with the preparation of their Bids and their participation in the Bidding Process.The Authority will not be responsible or in any way liable for such costs, regardless of the conduct or outcome of the Bidding Process.

2.5. Site visit and verification of information

2.5.1. Bidders are encouraged to submit their respective Bids after visiting the Project site and ascertaining for themselves the site conditions, traffic, location, surroundings, climate, availability of power, water & other utilities for construction, access to site, handling and storage of materials, weather data, applicable laws and regulations, and any other matter considered relevant by them. Bidders are advised to visit the site and familiarise themselves with the Project with in the stipulated time of submission of the Bid. No extension of time is likely to be considered for submission of Bids.

2.5.2. It shall be deemed that by submitting a Bid, the Bidder has:

(a) made a complete and careful examination of the Bidding Documents, Schedules annexed to Contract Document;

(b) received all relevant information requested from the Authority;

(c) accepted the risk of inadequacy, error or mistake in the information provided in the Bidding Documents or furnished by or on behalf of the Authority relating to

any of the matters referred to in clause 2.5.1above. No claim shall be admissible at any stage on this account.

(d) satisfied itself about all matters, things and information including matters referred to in clause2.5.1hereinabove necessary and required for submitting an informed Bid, execution of the Project in accordance withthe Bidding Documents and performance of all of its obligations thereunder;

(e) acknowledged and agreed that inadequacy, lack of completeness or incorrectness of information provided in the Bidding Documents or ignorance of any of the matters referred to in clause 2.5.1hereinabove shall not be a basis for any claim for compensation, damages, extension of time for performance of its obligations, loss of profits etc. from the Authority, or a ground for termination of the Agreement by the Contractor;

(f) acknowledged that it does not have a Conflict of Interest; and

(g) agreed to be bound by the undertakings provided by it under and in terms hereof.

2.5.3. The Authority shall not be liable for any omission, mistake or error in respect of any of the above or on account of any matter or thing arising out of or concerning or relating to RFP, including any error or mistake therein or in any information or data given by the Authority.

2.6. Verification and Disqualification

2.6.1. The Authority reserves the right to verify all statements, information and documents submitted by the Bidder in response to the RFP and the Bidder shall, when so required by the Authority, make available all such information, evidence and documents as may be necessary for such verification. Any such verification, or lack of such verification, by the Authority shall not relieve the Bidder of its obligations or liabilities hereunder nor will it affect any rights of the Authority thereunder.

2.6.2. The Authority reserves the right to reject any Bid and appropriate the Bid Security if:

(a) at any time, a material misrepresentation is made or uncovered, or

(b) the Bidder does not provide, within the time specified by the Authority, the supplemental information/ document(s)/confirmation(s) sought by the Authority for evaluation of the Bid.

Such misrepresentation/ improper response shall lead to the disqualification of the Bidder. If such disqualification/rejection occurs after the Bids have been opened and the lowest Bidder gets disqualified / rejected, then the Authority reserves the right to annul the Bidding Process and invites fresh Bids.

2.6.3. In case it is found during the evaluation or at any time before signing of the Agreement or after its execution and during the period of defect liability, subsistence thereof, that one or more of the eligibility and /or qualification requirements have not been met by the Bidder, or the Bidder has made material misrepresentation or has given any materially incorrect or false information, the Bidder shall be disqualified forthwith if not yet appointed as the contractor either by issue of the LOA or entering into of the Contract, and if the Selected Bidder has already been issued the LOA or has entered into the Contract, as the case may be, the same shall, notwithstanding anything to the contrary contained therein or in this RFP, be liable to be terminated, by a communication in writing by the Authority to the Selected Bidder or the Contractor, as the case may be, without the Authority being liable in any manner whatsoever to the Selected Bidder or the Contractor. In such an event, the Authority shall be entitled to forfeit and appropriate the Bid Security or Performance Security, as the case may be, as Damages, without prejudice to any other right or remedy that may be available to the Authority under the Bidding Documents and / or the Contract, or otherwise.

2.7. Contents of the RFP

2.7.1. This RFP comprises the Disclaimer set forth hereinabove, the contents as listed below, and will additionally include any Addenda issued in accordance with clause 2.9.

Volume –I

Instruction to Bidders (ITB)

Section 1.	Introduction
Section 2.	Instructions to Bidders Section
Section 3.	Evaluation of BIDs
Section 4.	Fraud and Corrupt Practices
Section 5.	Pre-BID Conference
Section 6.	Miscellaneous

Appendices

IA.	Letter comprising the Technical Bid including Annexure I to VII
IB.	Letter comprising the Financial Bid
II.	Bank Guarantee for Bid Security
III.	Power of Attorney for signing of Bid

Volume –II

Draft Contract

Volume –III

Scope of Work and Project Concept Document

2.8. Clarifications

2.8.1. Bidders requiring any clarification on the RFP may notify the Authority in writing by e-mail in accordance with clause 1.2.9. They should send in their queries on or before the date mentioned in the Schedule of Bidding Process specified in clause 1.3. The Authority shall endeavour to respond to the queries within the period specified therein, but no later than 15 (fifteen) days prior to the Bid Due Date. The responses will be uploaded on the e-Procurement portal only. The Authority will reply all the queries without identifying the source of queries.

2.8.2. The Authority shall endeavour to respond to the questions raised or clarifications sought by the Bidders. However, the Authority reserves the right not to respond to any question or provide any clarification, in its sole discretion, and nothing in this clause shall be taken or read as compelling or requiring the Authority to respond to any question or to provide any clarification.

2.8.3. The Authority may also on its own motion, if deemed necessary, issue interpretations & clarifications to all Bidders. All clarifications and interpretations issued by the Authority shall be deemed to be part of the Bidding Documents and shall be uploaded on the e-procurement portal. Verbal clarifications and information given by Authority or its employees or representatives shall not in any way or manner be binding on the Authority.

2.9. Amendment of RFP

2.9.1. At any time prior to the Bid Due Date, the Authority may, for any reason, whether at its own initiative or in response to clarifications requested by a Bidder, modify the RFP by the issuance of Addenda.

2.9.2. Any Addendum issued hereunder will be hosted on the USCL's website (https://mptenders.gov.in/) and USCL's e-Tendering Portal (https://mptenders.gov.in/) only.

2.9.3. In order to afford the Bidders a reasonable time for taking an Addendum into account, or for any other reason, the Authority may, in its sole discretion, extend the Bid Due Date[3].

PREPARATION AND SUBMISSION OF BIDS

[3] While extending the Bid Due Date on account of an addendum, the Authority shall have due regard for the time required by Bidders to address the amendments specified therein. In the case of significant amendments, 15 (fifteen) days' time may be provided between the date of amendment and the Bid Due Date, and in the case of minor amendments, 7 (seven) days' time may be provided at the discretion of the Authority.

2.10. Format and Signing of Bid

2.10.1. The Bidder shall provide all the information sought under this RFP. The Authority will evaluate only those Bids that are received online in the required formats and complete in all respects and BG Bid Security, POA etc. are received in hard copies.

2.10.2. The Bid shall be typed and signed in indelible blue ink by the authorised signatory of the Bidder. All the alterations, omissions, additions or any other amendments made to the Bid shall be initialled by the person signing the Bid.

2.11. Documents comprising Technical and Financial Bid

2.11.1. The Bidder shall submit the Technical Bid& Financial Bid **online through e-procurement portal** comprising following documents along with supporting documents as appropriate:

Technical Bid

(a) **APPENDIX IA - LETTER COMPRISING THE TECHNICAL BID**(including **ANNEX-I** - Details of Bidder to **ANNEX-VI** - Information required to evaluate the Bid Capacity and supporting certificates / documents.;

(b) Power of Attorney for signing the Bid as per the format at **APPENDIX- III** - Format for Power of Attorney for Signing of BID;

(c) if applicable, Power of Attorney for Lead Member of Joint Venture as per the format at **APPENDIX III**;

(d) if applicable, Joint Bidding Agreement for Joint Venture as per the format at **ANNEXURE 1**;

(e) Bid Security as per clause 1.2.4 above in the form of online payment or Bank Guarantee in the format at **APPENDIX – II-** Bank Guarantee for BID Securityfrom a Scheduled Bank;

(f) Copy of proof of payment of cost of Bid document of INR 30,000/- (Indian Rupees ThirtyThousand only) along with applicable GST, to Ujjain Smart City Limited" payable at Ujjain and fees for e-procurement portal;

(g) An undertaking from the person having PoA referred to in sub clause-(b) above that they agree and abide by the BidDocuments uploaded by USCL and amendments uploaded, in the form of signed and scanned Bid Documents; and

Financial Bid

(h) **APPENDIX – IB - Letter Comprising the Financial** , and

(i) Financial Bid providing quotation of Bidders as per Uploaded BoQ in the e-procurement portal only.

(j) In the**Percentage Rate Tender**, Contractor must ensure to quote single percentage rate in attached financial bid format. Quote should be in percentage higher or below on the SOR Rates the same is to be quoted in the form of decimal only. For example, if contractor wants to quote 5 percent higher than he has to quote 1.05 and if he wants to quote 5 percent below he has to quote 0.95 in given column of financial bid sheet.

In addition to this, while selecting any of the cells a warning appears that if any cell is left blank the same shall be treated as "0". Therefore, if any cell is left blank and no rate is quoted by the Bidder, rate of such item shall be treated as "0" (ZERO).

i. Financial Bid format is uploaded in Excel Format in https://mptenders.gov.in/ At the time of financial bidding, bidder is requested to download the file, and update the same.

ii. Price bidBidders are requested to check final figure in all the totals of all sheets. USCL is not responsible for errors in the financial bid document.

iii. Bidders are required to upload the updated financial bid in the prescribed excel format in the https://mptenders.gov.in/ the time of final financial bid submission.

2.11.2. The Bidder shall **submit** the following **documents in originalphysically**:

1. Mandatory Submission:

(a) Power of Attorney for signing the Bid as per format at **APPENDIX- III -** Format for Power of Attorney for Signing of BID;

(b) Bid Security as per clause 1.2.4 abovein the form of online payment or Original Bank Guarantee in the format at **APPENDIX – II-** Bank Guarantee for BID Security from a Scheduled Bank;

(c) Payment receipt / acknowledgement document/details towards cost of Bid Document of amount as per clause 2.11.1(f)along with applicable GST in favour of "Ujjain Smart City Limited," payable at Ujjain through online mode only and fees for e-procurement portal;and

2. Optional Submission

(d) The bidders are requested to submit the Original Copy of the Technical Bid. The same shall be used for the comparison purposes only. If not submitted, the successful bidder shall submit the Original Copy of the Technical Bid.

3. Any other documents in original as required under the RFP.

2.11.3. The documents listed at clause2.11.2shall be placed in an envelope, which shall be sealed[4]. The envelope shall clearly bear the identification "Bid for the *(Name of the Project)*" and shall clearly indicate the name and address of the Bidder. In addition, the Bid Due Date should be indicated on the right hand top corner of the envelope.

2.11.4. The envelope[5]carrying original documents as required under this Bid shall be addressed to the following official and shall be submitted at the respective address through courier/post/in person submission. The queries as mentioned in the clause 1.2.9 shall be sent at the email id as mentioned below but shall be addressed to the Authority as mentioned herein below:

(a)	ATTN. OF:	Executive Director
	DESIGNATION	
	Address:	Ujjain Smart City Limited Room No 16, Mela Office, Kothi Road, Ujjain, Pin Code – 456010, Madhya Pradesh
	Landline:	0734 - 2525856
	E-mail:	ujjainsmartcity@gmail.com

2.11.5. If the envelope is not sealed and marked as instructed above, the Authority assumes no responsibility for the misplacement or premature opening of the contents of the BID submitted and consequent losses, if any, suffered by the Bidder.

2.11.6. Bids submitted by fax, telex, telegram or e-mail shall not be entertained and shall be summarily rejected.

2.12. Bid Due Date

Technical and Financial Bid comprising of the documents listed at clause 2.11.1of the RFP shall be submitted online through e-procurement portal as per schedule in the NIT. Documents listed at clause 2.11.2of the RFP shall be physically submitted on or before due date as per NIT at the address provided in clause 2.11.4in the manner and form as detailed in this RFP. A receipt thereof should be obtained from the person specified at clause2.11.4 in case of submission in person, in case of courier / postal delivery, acknowledgement receipt provided shall be considered as proof of submission.

2.13. Late Bids

E-procurement portal https://mptenders.gov.in/shall not allow submission of any Bid after the prescribed date and time at clause2.12. Physical receipt of documents listed

[4] Sealed means((wherever written in this RFP) - For Online submission- digitally sealed and for physically submission means physically sealed.

[5] Envelop (wherever written in this RFP) means- For online submission- digital envelop and For physical submission means paper cover envelop

at clause2.11.2of the RFP after the prescribed date and time at clause2.12shall not be considered and the Bid shall be summarily rejected.

2.14. Procedure for e-tendering

2.14.1. Accessing/ Purchasing of BID documents

(a) It is mandatory for all the Bidders to have class-III Digital Signature Certificate (DSC)in the name of Authorized Signatory of the Bidder from any of the licensed Certifying Agency (Bidders can Referthe list of licensed CAs from the link www.cca.gov.in) to participate in e-tendering of USCL.

The Authorized Signatory holding Power of Attorney (POA) or the person executing/delegating such POA shall only be the Digital Signatory otherwise, the Bid shall be considered non–responsive.

It should be in corporate capacity (that is in Bidder capacity / in case of JV in the Lead Member capacity, as applicable). The Bidder shall submit document in support of the class III DSC.

(b) To participate in the bidding, it is mandatory for the Bidders to get registered their firm / Joint Venture with e-procurement portal https://mptenders.gov.in/to have user ID & password. Following may kindly be noted:

(i) Registration with e-procurement portal of USCL should be valid at least up to the date of submission of Bid.

(ii) Bids can be submitted only during the validity of registration.

(c) If the firm / Joint Venture is already registered with e-procurement service provider of USCL, and validity of registration is not expired, the firm / Joint Venture is not required to do a fresh registration.

(d) The complete Bid document can be viewed / downloaded by the Bidder from e-procurement portal https://mptenders.gov.in/or official portal of USCL as per schedule in NIT.

2.14.2. Preparation & Submission of Bids

(a) The Bidder may submit its Bid online following the instruction appearing on the screen. The guidelines for e-procurement is also available on e-procurement portal of USCL.

(b) The documents listed at clause2.11.1shall be prepared and scanned in different file format as per requirements of e-procurement portal and uploaded during the on-line submission of Bid.

(c) Bid must be submitted online only through e-procurement portal https://mptenders.gov.in/using the digital signature of authorised representative of the Bidder on or before due date.

2.14.3. Modifications/ Substitution/ withdrawal of Bids

(a) The Bidder may modify, substitute or withdraw its Bid after submission up-to the Bid Due Date. No Bid can be modified, substituted or withdrawn by the Bidder after the Bid Due Date & Time.

(b) For modification of Bid, Bidder has to detach its old Bid from e-procurement portal and upload / resubmit digitally signed modified Bid. It may specifically be noted that after withdrawal of a Bid for any reason, Bidder cannot re-submit its Bid again.

2.15. Online Opening of Bids

2.15.1. Opening of Bids will be done through online process.

2.15.2. The USCL shall on-line open Technical Bids on scheduled date as per NIT, in the presence of the authorized representatives of the Bidders, who choose to attend. Technical Bid of only those bidders shall be online opened whose documents listed at clause2.11.2of the RFP. The USCLwill subsequently examine and evaluate the Bids in accordance with the provisions of Section 3 of RFP.The Financial Bids shall be opened of such Bidders only on the scheduled date and time as per NIT, who have passed the technical criteria or eligibility criteria as mentioned in the clause2.2.2. In case of scheduled date turns out to be a non-working date for USCL, Technical Bids or Financial Bids shall be opened on next working day.

2.16. Rejection of Bids

2.16.1. Notwithstanding anythingcontained in this RFP, the Authority reserves the right to reject any Bid and to annul the Bidding Process and reject all Bids at any time without any liability or any obligation for such acceptance, rejection or annulment, and withoutassigning any reasons thereof. In the event that, the Authority rejects or annuls all the Bids, it may, in its discretion, invite all eligible Bidders to submit fresh Bids hereunder.

2.16.2. The Authority reserves the right not to proceed with the Bidding Process at any time, without notice or liability, and to reject any Bid without assigning any reasons.

2.17. Validity of Bids

The Bids shall be valid for a period of not less than 120 (one hundred and twenty) days from the Bid Due Date. The validity of Bids may be extended by mutual consent of the respective Bidders and the Authority.

2.18. Confidentiality

Information relating to the examination, clarification, evaluation and recommendation for the Bidders shall not be disclosed to any person who is not officially concerned with the process or is not a retained professional advisor advising the Authority in relation to, or matters arising out of, or concerning the Bidding Process. The Authority will treat all information, submitted as part of the

Bid, in confidence and will require all those who have access to such material to treat the same in confidence. The Authority may not divulge any such information unless it is directed to do so by any statutory entity that has the power under law to require its disclosure or is to enforce or assert any right or privilege of the statutory entity and/ or the Authority or as may be required by law or in connection with any legal process.

2.19. Correspondence with the Bidder

Save and except as provided in this RFP, the Authority shall not entertain any correspondence with any Bidder in relation to acceptance or rejection of any Bid. However, the Authority, at its discretion,may display the result of technical evaluation on its website for 7 (seven) days including reasons for non-responsiveness, if any, and the Financial Bid will be opened thereafter.

2.20. Bid Security and Performance Security

2.20.1. The Bidder shall furnish as part of its Bid, a Bid Security referred to in clauses 2.1.6 and 2.1.7hereinabove in the form of online payment or Bank Guarantee issued by nationalised bank, or a Scheduled Bank in India having a net worth of at least INR. 1,000 crore (Indian Rupees one thousand crore), in favour of the Authority in the format at **APPENDIX – II**- Bank Guarantee for BID Security(the "**Bank Guarantee**") and having a validity period of not less than 180 (one hundred eighty) days from the Bid Due Date, inclusive of a claim period of 60 (sixty) days, and may be extended as may be mutually agreed between the Authority and the Bidder from time to time. In case the Bank Guarantee is issued by a foreign bank outside India, confirmation of the same by any nationalised bank in India is required. For the avoidance of doubt, Scheduled Bank shall mean a bank as defined under **Section 2(e) of the Reserve Bank of India Act, 1934**.

2.20.2. Any Bid not accompanied by the Bid Security shall be summarily rejected by the Authority as non-responsive.

2.20.3. The Selected Bidder's Bid Security will be returned, without any interest, upon the Bidder signing the Contract and furnishing the Performance Security in accordance with the provisions thereof.

2.20.4. The Authority shall be entitled to forfeit and appropriate the BidSecurity as Damages inter alia in any of the events specified in clause2.20.5herein below. The Bidder, by submitting its Bid pursuant to this RFP, shall be deemed to have acknowledged and confirmed that the Authority will suffer loss and damage on account of withdrawal of its Bid or for any other default bythe Bidder during the BidValidity Period as specified in this RFP. No relaxation of any kind on Bid Security shall be given to any Bidder.

2.20.5. The Bid Security shall be forfeited and appropriated by the Authority as damages payable to the Authority for, inter-alia, time cost and effort of the Authority without prejudice to any other right or remedy that may be available to the Authority under the RFP and / or under the Contract, or otherwise, under the following conditions:

(a) Deleted

(b) If a Bidder engages in a corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice as specified in **clause 4** of ITB ;

(c) If a Bidder withdraws its Bid during the period of Bid Validity as specified in this RFP and as extended by mutual consent of the respective Bidder(s) and the Authority;

(d) In the case of Selected Bidder, if it fails within the specified/extended time limit by Authority;

i. tosign and return the duplicate copy of LOA orIf the Selected Bidder fails to accept the LoA within the stipulated time period;

ii. to sign the Contract; or

iii. to furnish the Performance Securityand/or Additional Performance Security (if applicable) within the period prescribed as stipulated in the LOA thereof before signing of the Contract Agreement; or

iv. If any information or document furnished by the Successful Bidder turns out to be misleading or untrue in any material respect.

2.20.6. Performance Security

Within prescribed period as mentioned in the LOA,the Successful Bidder shall furnish to the Authority a Performance Security in accordance with the provisions of the Agreement and in the format given in this RFP.

The Successful Bidder shall along with the Performance Security(for an amount equal to the 5% (five percent) of the FinalAmount of Contract[6]) provide to the Authority an irrevocable and unconditional guarantee from a Bank for a sum equivalent to as mentioned below (the "**Additional Performance Security**"), to be modified, mutatis mutandis, for this purpose as security to the Authority if the Bid Price of the Selected Bidder is lower by more than 10% with respect to the Estimated Project Cost. In the case of any Bid where quoted rate appear unrealistic, such Bid will be considered as unbalanced and; in case the Bidder is unable to provide satisfactory explanation, such a Bid is liable to be disqualified and rejected. However, the Bidder may be asked;at the discretion of the Authority onlyto submit the Additional Performance Security calculated as under:

(a) If the bid price offered by the Successful Bidder is lower than 10% but up-to 20% of the Estimated Project Cost, then the Additional Performance Security shall be calculated @20% of the difference in the (a) Estimated Project Cost (as mentioned in RFP)-10% of the Estimated Project Cost and (b) the Bid Price offered by the Selected Bidder.

For example. The estimated cost is 100Cr.
Bid price offered by the bidder is 85Cr.
a = (100Cr- 10%of 100Cr) = 90Cr.,
b= 85Cr.
then Additional performance security = 20% of difference a-b= 5Cr.
=5*20%= 1 Cr.

(b) If the bid price offered by the Successful Bidder is lower than 20% of the Estimated Project Cost, then the Additional Performance Security shall be calculated @30% of the difference in the (a) Estimated Project Cost (as mentioned in RFP)-10% of the Estimated Project Cost and (b) the Bid Price offered by the selected Bidder.

[6] Contract Agreement amount

(c) The Additional Performance Security shall not be treated as part of Performance Security.

(d) The validity of the performance security shall be 3 months beyond the completion of Defect Liability Period (DLP)/extended DLP (if any).

(e) The validity of the additional performance security shall be 3 months beyond the **actual date of completion of work**[7]including time extension if any approved by the employer/Authority for the completion of the work except DLP/ Extended DLP.

[7] Actual date of completion of work – As per clause 35 of the GCC.

3. EVALUATION OF TECHNICAL BIDS AND OPENING & EVALUATION OF FINANCIAL BIDS

3.1. Evaluation of Technical Bids

3.1.1. The Authority shall open the Bids received online and physically(as applicable) as per schedule in NIT, at the place as specified in NIT; and in the presence of the Bidders[8]who choose to attend. In case of day on which Bid is to be opened is non-working day for the Authority, the Bid opening shall be on next working day. Technical Bid of only those bidders shall be online opened whose documents listed at clause2.11.2of the RFP have been received physically. The Authority shall prepare minutes of the Bid opening, including information disclosed to those present at the time of Bid opening.

3.1.2. Technical Bids of those Bidders who have not submitted their Bid online, shall not be considered for opening and evaluation.

3.1.3. If any information furnished by the Bidder is found to be incomplete, or contained in formats other than those specified herein, the Authority may, in its sole discretion, exclude the relevant information for consideration of eligibility and qualification of the Bidder.

3.1.4. To facilitate evaluation of Technical Bids, the Authority may, at its sole discretion, seek clarification(s)/document(s) in writing from any Bidder regarding its Technical Bid. Such clarification(s) shall be provided within the time specified by the Authority for this purpose. Any request for clarification(s) and all clarification(s) in response thereto shall be in writing.

3.1.5. If a Bidder does not provide clarifications sought under clause3.1.4above within the prescribed time, its Bid may be liable to be rejected. In case the Bid is not rejected, the Authority may proceed to evaluate the Bid by construing the particulars requiring clarification to the best of its understanding, and the Bidder shall be barred from subsequently questioning such interpretation of the Authority.

3.1.6. Tests of responsiveness

(a) As a first step towards evaluation of Technical BIDs, the Authority shall determine whether each Technical Bid is responsive to the requirements of this RFP. A Technical Bid shall be considered responsive only if:

i. Technical BID is received online as per the format at **APPENDIX IA - LETTER COMPRISING THE TECHNICAL BID**including **ANNEX-I** - Details of Bidderto ANNEX-VI - Information required to evaluate the Bid Capacity;

ii. Documents listed at clause2.11.2are received physically;

[8] The presence of the bidders is not mandatory.

iii. Technical Bid is accompanied by the Bid Security as specified in clause2.1.6 and 2.1.7;

iv. Technical Bid is accompanied by the Power of Attorney as specified in clauses 2.1.8;

v. Technical Bid contains all the information (complete in all respects);

vi. Technical Bid does not contain any condition or qualification; and

vii. Payment towards cost of Bid document of as per clause 2.11.1 (f) above along with applicable GST in favour of "Ujjain Smart City Limited India" payable at Ujjain and e-procurement portal fees is received; and

viii. Any other submission by the Bidder, which the Authority may determine at its discretion, as being non-responsive to the RFP terms and conditions.

(b) The Authority reserves the right to reject any Technical Bid which is non-responsive and no request for alteration, modification, substitution or withdrawal shall be entertained by the Authority in respect of such Bid.

3.1.7. In the event that a Bidder claims credit for an Eligible Project, and such claim is determined by the Authority as incorrect or erroneous, the Authority may reject / correct such claim for the purpose of qualification requirements.

3.1.8. The Authority will get the Bid security verified from the issuing authority and after due verification, the Authority will evaluate the Technical Bids for their compliance to the eligibility and qualification requirements pursuant to clause2.2.1 and2.2.2of this RFP.

3.1.9. After evaluation of Technical Bids, the Authority may publish, at its discretion, a list of Bidders who have passed the technical or eligibility criteria as mentioned in clause 2.2.2("**Technically Qualified Bidders**") whose Financial Bids shall be opened. The Authority, at its discretion,may notify other Bidders that they have not been technically qualified. The Authority will not entertain any query or clarification from Bidders who fail to qualify.

3.2. Opening and Evaluation of Financial Bids

The Authority shall inform the venue and time of online opening of the Financial Bids to the technically qualified Bidders through e-procurement portal and/or e-mail. The technically qualified bidders including joint venture partner(s), if any, shall inform the authority through email in the prescribed format enclosed at **ANNEX-VI** - Information required to evaluate the Bid Capacityof **APPENDIX IA - LETTER COMPRISING THE TECHNICAL BID**, for any change in their bid capacity, due to award/ declared to be the lowest bidder in any other project as on bid submission date. In case of no change, 'NIL' information shall be furnished. If any of the qualified bidders fails to furnish the above information due to whatsoever reasons on bid submission date or fails to qualify in Bid Capacity in this changed scenario, his financial bid shall not be opened. The Authority shall open the online Financial Bids of the remaining bidders only on schedule date and time in the presence of the authorised representatives of

the Bidders who may choose to attend. The Authority shall publicly announce the Bid Prices quoted by the Technically Qualified Bidders. Thereafter the Authority shall prepare a record of opening of Financial Bids.

3.3. Selection of Bidder

3.3.1. Subject to the provisions of clause2.16.1, the Bidder whose Bid is adjudged as responsive in terms of clause3.1.6 and who is Technically Qualified Bidder and who quotes lowest price shall be declared as the selected Bidder (the "**Selected Bidder**").

3.3.2. In the event that the Lowest Bidder is not selected for any reason, the Authority may, at its discretion, annul the Bidding Process and invite fresh Bids. In the event that, the Authority rejects or annuls all the Bids, it may, in its discretion, invite all eligible Bidders to submit fresh Bids hereunder.

3.3.3. After selection, a Letter of Award (the "**LOA**") shall be issued, in duplicate, by the Authority to the Selected Bidder and the SelectedBidder shall, within 7(seven) days of the receipt of the LOA, sign and return the duplicate copy of the LOA in acknowledgement thereof. In the event the duplicate copy of the LOA duly signed bythe Selected Bidder is not received by the stipulated date, the Authority may, unless it consents to extension of time for submission thereof, appropriate the Bid Security of such Bidder as Damages on account of failure of the Selected Bidder to acknowledge the LOA.

3.3.4. After acknowledgement of the LOA as aforesaid by the Selected Bidder, it shall cause the Bidder to execute the Agreement within the period prescribed in LOA or as separately prescribed by the Authority whichever is earlier. The Selected Bidder shall not be entitled to seek any deviation, modification or amendment in the Contract except as agreed by the Authority in the interest of the Project.

3.3.5. The Authority will notify[9] other Bidders that their Proposals have not been accepted and their Bid Security will be returned by the Authority, without any interest, as promptly as possible as set out in various provisions in this RFP.

3.4. Contacts during Bid Evaluation

Bids shall be deemed to be under consideration immediately after they are opened and until such time the Authority makes official intimation of award/ rejection to the Bidders. While the Bids are under consideration, Bidders and/ or their representatives or other interested parties are advised to refrain, save and except as required under the Bidding Documents, from contacting by any means, the Authority and/ or their employees/ representatives on matters related to the Bids under consideration.

3.5. Correspondence with Bidder

Save and except as provided in this RFP, the Authority shall not entertain any correspondence with any Bidder in relation to the acceptance or rejection of any Bid.

[9] The Information shall be uploaded on the e-procurement/ Web-portal of the Authority only.

3.6 Any information contained in the Bid shall not in any way be construed as binding on the Authority, its agents, successors or assigns, but shall be binding against the Bidder if the Project is subsequently awarded to it on the basis of such information.

3.7 The Authority reserves the right not to proceed with the Bidding Process at any time without notice or liability and to reject any or all Bid(s) without assigning any reasons.

4. FRAUD AND CORRUPT PRACTICES

4.1 The Bidders and their respective officers, employees, agents and advisers shall observe the highest standard of ethics during the Bidding Process and subsequent to the issue of the LOA and during the subsistence of the Contract. Notwithstanding anything to the contrary contained herein, or in the LOA or the Contract, the Authority may reject a Bid, withdraw the LOA, or terminate the Contract, as the case may be, without being liable in any manner whatsoever to the Bidder, if it determines that the Bidder, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bidding Process. In such an event, the Authority shall be entitled to forfeit and appropriate the Bid Security or Performance Security, as the case may be, as Damages, without prejudice to any other right or remedy that may be available to the Authority under the Bidding Documents and/ or the Contract, or otherwise.

4.2 Without prejudice to the rights of the Authority under clause0hereinabove and the rights and remedies which the Authority may have under the LOA or the Contract, or otherwise if a Bidder or Contractor, as the case may be, is found by the Authority to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice during the Bidding Process, or after the issue of the LOA or the execution of the Contract, such Bidder shall not be eligible to participate in any tender or RFP issued by the Authority during a period of 2 (two) years from the date such Bidder, or Contractor, as the case may be, is found by the Authority to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practices, as the case may be.

4.3 For the purposes of this Section 4, the following terms shall have the meaning hereinafter respectively assigned to them:

(a) "corrupt practice" means (i) the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the actions of any person connected with the Bidding Process (for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of the Authority who is or has been associated in any manner, directly or indirectly, with the Bidding Process or the LOA or has dealt with matters concerning the Agreement or arising therefrom, before or after the \ execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of the Authority, shall be deemed to constitute influencing the actions of a person connected with the Bidding Process); or (ii) save and except as permitted under the clause 2.2.1(d) of this RFP, engaging in any manner whatsoever, whether during the Bidding Process or after the issue of the LOA or after the execution of the Agreement, as the case may be, any person in respect of any matter relating to the Project or the LOA or the Contract Agreement, who at any time has been or is a legal, financial or technical adviser of the Authority in relation to any matter concerning the Project;

(b) "fraudulent practice" means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Bidding Process;

(c) "coercive practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any person or property to influence any person's participation or action in the Bidding Process;

(d) "undesirable practice" means (i) establishing contact with any person connected with or employed or engaged by the Authority with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Bidding Process; or (ii) having a Conflict of Interest which includes having a close relative in the Authority; and

(e) "restrictive practice" means forming a cartel or arriving at any understanding or arrangement among Bidders with the objective ofrestricting or manipulating a full and fair competition in the Bidding Process.

5. PRE-BID CONFERENCE

5.1 Pre-Bid conference of the Bidders, at the discretion of the Authority, shall be convened at the designated date, time and place as per NIT. A maximum of two representatives of prospective Bidders shall be allowed to participate on production of authority letter from the Bidder.

5.2 During the course of Pre-Bid conference(s), the Bidders will be free to seek clarifications and make suggestions for consideration of the Authority. The Authority shall endeavour to provide clarifications and such further information as it may, in its sole discretion, consider appropriate for facilitating a fair, transparent and competitive Bidding Process.

6. MISCELLANEOUS

6.1 The Bidding Process shall be governed by, and construed in accordance with, the laws of India and the Courts at Ujjain shall have exclusive jurisdiction over all disputes arising under, pursuant to and/ or in connection with the Bidding Process.

6.2 The Authority, in its sole discretion and without incurring any obligation or liability, reserves the right, at any time, to;

a) suspend and/ or cancel the Bidding Process and/ or amend and/ or supplement the Bidding Process or modify the dates or other terms and conditions relating thereto;
b) consult with any Bidder in order to receive clarification or further information;
c) retain any information and/ or evidence submitted to the Authority by, on behalf of, and/ or in relation to any Bidder; and/ or
d) independently verify, disqualify, reject and/ or accept any and all submissions or other information and/ or evidence submitted by or on behalf of any Bidder.

6.3 It shall be deemed that by submitting the Bid, the Bidder agrees and releases the Authority, its employees, agents and advisers, irrevocably, unconditionally, fully and finally from any and all liability for claims, losses, damages, costs, expenses or liabilities in any way related to or arising from the exercise of any rights and/ or performance of any obligations hereunder, pursuant hereto and/ or in connection with the Bidding Process and waives, to the fullest extent permitted by applicable laws, any and all rights and/ or claims it may have in this respect, whether actual or contingent, whether present or in future.

7. APPENDIX IA - LETTER COMPRISING THE TECHNICAL BID

Executive Director,
UJJAIN SMART CITY LTD.
Room No 16, Mela Office, Kothi Road,
Ujjain, Pin Code 456010
Madhya Pradesh
Telephone: +07342525856
E-mail: ujjainsmartcity@gmail.com

Subject: Bid for Selection of Bidder for "Construction of swimming pool and sports complex including development works under Phase -2at UMC compound, Ujjain" inthe State of Madhya Pradesh

Dear Sir,

With reference to your RFP document dated _____, I/we, having examined the Bidding Documents and understood their contents, hereby submit my/our Bid for the aforesaid Project. The Bid is unconditional and unqualified.

2. I/ We acknowledge that the Authority will be relying on the information provided in the Bid and the documents accompanying the Bid for selection of the Contractor for the aforesaid Project, and we certify that all information provided in the Bid and its the Annexure I to VI along with the supporting documents are true and correct; nothing has been omitted which renders such information misleading; and all documents accompanying the Bid are true copies of their respective originals.

3. This statement is made for the express purpose of our selection as Contractor for the construction of the aforesaid Project and maintenance of the Project during the Defect Liability Period.

4. I/ We shall make available to the Authority any additional information it may find necessary or require tosupplement or authenticate the Bid.

5. I/ We acknowledge the right of theAuthority to reject our Bid without assigning any reason or otherwise and hereby waive, to the fullest extent permitted by applicable law, our right to challenge the same on any account whatsoever.

6. I/ We certify that in the last two years, I/ we as / anyof the JV members have neither failed to perform for the similar or other works, as evidenced by imposition of a penalty by an arbitral or judicial authority or a judicial pronouncement or arbitration award against us, nor been expelled or terminated by any ministry of Government of Madhya Pradesh or Government of India or its implementing agencies for breach on our part.

7. I/ We declare that:

(a) I/ We have examined and have no reservations to the Bidding Documents, including any Addendum issued by the Authority; and

(b) I/We do not have any conflict of interest in accordance with clauses 2.2.1(b)and 2.2.1(c)of the RFP document; and

(c) I/We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in clause0of the RFP document, in respect of any tender or request for proposal issued by or any Agreement entered into with the Authority or any other public sector enterprise or any government, Central or State; and

(d) I/ We hereby certify that we have taken steps to ensure that in conformity with the provisions of **clause 4** of the Instruction to Bidders (ITB) , no person acting for us or on our behalf has engaged or will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice; and

(e) the undertakings given by us along with the Bid in response to the RFP for the Project and information mentioned for the evaluation of the Bid Capacity in **ANNEX-VI** - Information required to evaluate the Bid Capacitywere true and correct as on the date of making the Application and are also true and correct as on the BID Due Date and I/we shall continue to abide by them.

(f) I/We do hereby confirm our documents as per clause 2.6.2.of ITB.

8. I/ We understand that you may cancel the Bidding Process at any time and that you are neither bound to accept any Bid that you may receive nor to invite the Bidders to Bid for the Project, without incurring any liability to the Bidders, in accordance with clause2.16.2of the RFP document.

9. I/We believe that I/ we/our Joint Venture satisfy(s) the Technical / Eligibility Criteria, as per clause 2.2.2 and meet(s) the requirements as specified in the RFP document.

10. I/ We certify that in regard to matters other than security and integrity of the country, we/ any Member of the Joint Venture or any of our/their Joint venture member have not been convicted by a Court of Law or indicted or adverse orders passed by a regulatory authority which could cast a doubt on our ability to undertake the Project or which relates to a grave offence that outrages the moral sense of the community.

11. I/ We further certify that in regard to matters relating to security and integrity of the country, I/ we/ any Member of the Joint Venture or any of our/their Joint venture member have not been charge-sheeted by any agency of the Government or convicted by a Court of Law.

12. I/ We further certify that no investigation by a regulatory authority is pending either against us/any member of Joint Venture or against our MD/CEO or any of our directors/ managers/ employees.

13. I/ We further certify that we are not disqualified in terms of the additional criteria specified by the Department of Disinvestment in their OM No. 6/4/2001-DD-II dated 13.7.01, a copy of which forms part of the RFP at **Annexure VII** - Guidelines of the Department of Disinvestment of **APPENDIX IA** - LETTER COMPRISING THE TECHNICAL BIDthereof.

14. I/ We undertake that in case due to any change in facts or circumstances during the Bidding Process, we are attracted by the provisions of disqualification in terms of the guidelines referred to above, we shall intimate the Authority of the same immediately.

15. I/We further acknowledge and agree that in the event a change in control occurs after signing of the Contract upto its validity; It would, unless anything to the contrary contained in the Contract, may be considered a breach thereof by the Authority at its discretion, and theContract shall be liable to be terminated without the Authority being liable to us in any manner whatsoever.

16. I/ We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the Authority in connection with the selection of the Bidder, or in connection with the Bidding Process itself, in respect of the above-mentioned Project and the terms and implementation thereof.

17. In the event of my/ our being declared as the Selected Bidder, I/we agree to enter into a Contract in accordance with the draft that has been provided to me/us prior to the Bid Due Date. We agree not to seekany changes in the aforesaid draft and agree to abide by the same.

18. I/ We have studied all the Bidding Documents carefully and also surveyed the project area and the components. We understand that except to the extent as expressly set forthin the Agreement, we shall have no claim, right or title arising out of any documents or information provided to us by the Authority or in respect of any matter arising out of or relating to the Bidding Process including the award of Agreement.

19. I/ We offer a Bid Security as per Clause no. 1.2.4 to the Authority in accordance with the RFP Document.

20. The Bid Security in the form of a Bank Guarantee is attached.

21. The documents accompanying the Technical Bid, as specified in clause2.11.1of the RFP, have been submitted in separate files.

22. I/ We agree and understand that the Bid is subject to the provisions of the Bidding Documents. In no case, I/we shall have any claim or right of whatsoever nature if the Project / Contract is not awarded to me/us or our Bid is not opened or rejected.

23. The Bid Price has been quoted by me/us after taking into consideration all the terms and conditions stated in the RFP, draft Contract, our own estimates of costs and after a careful assessment of the site and all own the conditions that may affect the project cost and implementation of the project.

24. I/ We agree and undertake to abide by all the terms and conditions of the RFP document.

25. {We, the Joint Venture agree and undertake to be jointly and severally liable for all the obligations of the Contractor under the Contract}.

26. I/ We shall keep this offer valid for 120 (one hundred and twenty) days from the BID Due Date specified in the RFP.

27. I/ We hereby submit our Bid and offer a Bid Price as indicated in Financial Bid for undertaking the aforesaid Project in accordance with the Bidding Documents and the Agreement.

In witness thereof, I/we submit this Bid under and in accordance with the terms of the RFP document.

Yours faithfully,

Date: (Signature, name and designationofPlace:

(The Authorised signatory)

Name & seal of Bidder

Note: Paragraphs in curly parenthesis may be omitted by the Bidder, if not applicable to it, and 'Deleted' may be indicated there.

8. APPENDIX – IB - Letter Comprising the Financial Bid

Dated:

Mr./Ms. _____,
UJJAIN SMART CITY LTD.
Room No 16, Mela Office, Kothi Road,
Ujjain, Pin Code 456010
Madhya Pradesh
Telephone: 0734-2525856
E-mail: ujjainsmartcity@gmail.com

Subject: **Bid for Selection of Bidder for "Construction of swimming pool and sports complex including development works under Phase -2at UMC compound, Ujjain"in the State of Madhya Pradesh**

Dear Sir,

(TO BE CONTAINED IN ENVELOPE C – ONLINE ONLY)

NAMEOFWORK:_____
(Name of the work as appearing in the bid for the work)

I/We do hereby BID to execution of the above work within the time specified at the rate (In figures) (In words) percent below / above or at par based on the Bill of Quantities and item wise rates given therein in all respects and in accordance with the specifications, designs, drawings and instructions in writing in all respects in accordance with such conditions so far as applicable.

I/We have visited the site of work and am/are fully aware of all the difficulties and conditions likely to affect carrying out the work. I/We have fully acquainted myself/ourselves about the conditions in regard to accessibility of site and quarries/kilns, nature and the extent of ground, working conditions including stacking of materials, installation of tools and plant conditions effecting accommodation and movement of labour etc. required for the satisfactory execution ofcontract.

Should this bid be accepted, I/We hereby agree to abide by and fulfil all the terms and provisions of the said conditions of contract annexed hereto so far as applicable, or in default thereof to forfeit and pay to the Executive Director, Ujjain Smart City Limited, Ujjain or his successors in office the sums of money mentioned in the said conditions.

Note:

- Only one rate of percentage above or below or at par based on the Bill of Quantities and item wise rates given therein shall be quoted.
- Percentage shall be quoted in figures as well as in words. If any difference in figures and words is found lower of the two shall be taken as valid and correct rate. If the bidder is not ready to accept such valid and correct rate and declines to furnish performance security and sign the agreement his earnest money deposit shall be forfeited.
- In case the percentage "above" or "below" is not given by a bidder, his bid shall be treated as non-responsive.
- All duties, taxes, and other levies excluding GST, payable by the bidder shall be included in the

percentage quoted by the bidder.
Rates quoted by the contractor shall be excluding GST.
GST shall be payable as applicable at the time of billing by the employer.

Signature of Bidder

Name of Bidder

The above bid is hereby accepted by me on behalf of the Executive Director, UJJAIN Smart City Ltd., Ujjain,datedthe_____dayof_____20__

Yours faithfully,

Date:
Place:

(Signature, name and designation of the Authorised Signatory)
Name & seal of Bidder/Lead Member: .....
Class III DSC ID of Authorised Signatory: .....

9. ANNEX-I - Details of Bidder

1.
(a) Name:

(b) Country of incorporation and place of registration:

(c) Address of the corporate headquarters and its branch office(s), if any, in India:

(d) Date of incorporation and/ or commencement of business:

(e) Articles of Association and Memorandum of Association Documents: to be attached.

(f) Principal place of Business:

2. Brief description of the Bidder including details of its main lines of business and proposed role and responsibilities in this Project:

3. Brief description of the Bidder including details of its main lines of business and proposed role and responsibilities in this Project:

   (a) Name:

   (b) Designation:

   (c) Company:

   (d) Address:

   (e) Telephone Number:

   (f) E-Mail Address:

   (g) Fax Number:

4. Particulars of the Authorised Signatory of the Bidder:

   (a) Name:

   (b) Designation:

   (c) Address:

   (d) Phone Number:

   (e) Fax Number:

   (f) Class III Digital Signature Certificate ID number:

5. The following information shall also be provided w.r.t. clause 2.1.17:

Name of Bidder/ member of Joint Venture:

S. No.	Criteria	Yes/No
1.	Has the Bidder individually / as a constituent of the Joint Venture been barred by the any ministry of Government of Madhya Pradesh, Government of India or its implementing agencies for the similar or other works, from participating in bidding.	
2	If the answer to 1 is yes, does the bar subsist as on Bid due date.	

6. A statement by the Bidder disclosing material non-performance or contractual non-compliance in past projects, contractual disputes and litigation/ arbitration in the last 2 years is given below (Attach extra sheets, if necessary) w.r.t.clause2.1.18:

Name of Bidder/ member of Joint Venture (If applicable asper RFP):

S.No.	Criteria	1st last year	2nd last year
1.	If Bidder have either failed to perform similar or other works, as evidenced by imposition of a penalty by an arbitral or judicial authority or a judicial pronouncement or arbitration award against the Bidder or any of its Joint Venture Member, as the case may be, or has been expelled / terminated by any ministry of Government of Madhya Pradesh or Government of India or its implementing agencies for breach by such Bidder or as a Joint Venture Member, along-with updated details ofongoing process of litigation / blacklisting.		

Appendix IA
Annex-II

10.ANNEX-II - Technical Capacity of the Bidder

S.No.	Particulars	Project Details
1	Project Name:	
2	Client Details: Name: Address: Contact Address:	
3	Project Location	
4	Completion Time Line – including Start Date and End Date	
5	Project Cost	
6	Project Description and use	

Note:

1. *Certificate duly signed by the employer shall be enclosed for the actual quantity completed in during the last 5 financial years,*
2. *Completion Certificate must be attached for each eligible project or experience claimed. In absence of such evidences, eligibility may not be considered at the discretion of the Authority.*
3. *Provide details of only those projects that have been undertaken by the Bidder, or as a Lead member including as members in case of joint venture, under its own name separately and/ or by a project company for EligibleProjects.*
4. *Construction shall not include supply of goods or equipment except when such goods or equipment form part of a turn-key construction contract/ EPC contract / Percentage Rate / Item Rate Contract for the project. In no case shall the cost of maintenance and repair, operation of similar or other works considered for eligibility of bidders and land be included while computing the Experience Score of an Eligible Project.*

11.ANNEX-III - Financial Capacity of the Bidder

Name of Company/Firm/Organisation (Sole Bidder):

A.

Net Cash Accrual					
Year 1 2017-18 (INR Crore)	Year 2 2016-17 (INR Crore)	Year 3 2015-16 (INR Crore)	Year 4 2014-15 (INR Crore)	Year 5 2013-14 (INR Crore)	Net Worth at the end of FY 2017-18 (INR Crore)

B.

Annual Construction Turnover					
Year 1 2017-18 (INR Crore)	Year 2 2016-17 (INR Crore)	Year 3 2015-16 (INR Crore)	Year 4 2014-15 (INR Crore)	Year 5 2013-14 (INR Crore)	Average Annual Construction Turnover (INR Crore)

…… ……. Name of the Statutory Auditor's firm: Seal of the audit firm: (Signature, name and designation and Membership No. of authorised signatory)	..... …….. Signature, name and designation of Authorized Signatory For and on behalf of ……(*Name of the*Bidder)

Instructions:

1. The Bidder shall attach copies of the annual reports including balance sheets, profit and loss account, cash flow statements and income tax return for last 5 (five) financial years preceding the Bid Due Date. The audited annual reports and financial statements shall:

   (a) reflect the financial situation of the Bidder;
   (b) be audited by a statutory auditor;
   (c) be complete, including all notes to the financial statements; and
   (d) correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).
   (e) In case audit for FY 2017-18 is in progress, then Audit reports for last five years upto FY 2016-17 will be considered for the bids submitted upto 30.09.2018.

2. Net Cash Accruals shall mean Profit After Tax + Depreciation.

3. Net Worth (the "**Net worth**") shall mean as in the clause2.2.2(g) of the RFP document.

4. Year 1 will be the latest completed financial year, preceding the financial year of the Bid. Year 2 shall be the year immediately preceding Year 1 and so on.

5. The Bidder shall also provide the name and address of the Bankers to the Bidder.

6. The Bidder shall provide an Auditor's Certificate specifying the net worth, net cash accrual, and average construction turnover of the Bidder and also specifying the methodology adopted for calculating such net worthin accordance with clause 2.2.2(g)of the RFP document.

7. The financial audited statements in case of registered company shall match with the statements uploaded on the Register of Companies (ROC) and in case of other than registered companies shall match with the statements submitted to Government Organisation such as Income Tax Dept. etc.

8. C. Bidder to give declaration in support of clause 2.2.2(c).

12.ANNEX-IV - Details of Eligible Projects

Project Code: **Entity: Self/Members:**

Item	Refer Instruction	Particulars of the Project
Title & nature of the project	-	
Category	5	
Year-wise (a) payments received for construction or work executed and certified by the Engineer-in-charge/Independent Engineer/Authority's Engineer,and/or (b) revenues appropriated for self-construction under PPPprojects	6	
Entity for which the project was constructed	7	
Location	-	
Project cost	-	
Date of commencement of project/ contract	-	
Date of completion/ commissioning	8	
Equity shareholding (with period during which equity was held)	9	

Instructions:

1. *Bidders are expected to provide information in respect of each Eligible Projects in this Annex. Information provided in this section is intended to serve as a backup for information provided in the Bid. Bidders should also refer to the instructions below.*
2. *The Project Codes would be a, b, c, d etc.*
3. *A separate sheet should be filled for each Eligible Project.*
4. *In case the Eligible Project relates as Members of a JV, write "Member".*
5. *Refer to clause2.2.2(d) of the RFP for category type.*
6. *The total payments received and/or revenues appropriated for self-construction for each Eligible Project are to be stated as mentioned below. The figures to be provided here should indicate the break-up for the past 5 (five) financial years. Year 1 refers to the financial year immediately preceding the Bid Due Date; Year 2 refers to the year before Year 1, Year 3 refers to the year before Year 2, and so on.*
7. *In case of projects in PPP categories, particulars such as name, address and contact details of owner/ Authority/ Agency (i.e. concession grantor, counter party to concession, etc.) may be provided. In case of projects in other than PPP categories, similar particulars of the client need to be provided.*

8. *For PPP Projects, the date of commissioning of the project, upon completion, should be indicated. In case of non-PPP projects, date of completion of construction should be indicated. In the case of projects under construction, the likely date of completion or commissioning, as the case may be, shall be indicated.*

9. *For PPP projects, the equity shareholding of the Bidder, in the company owning the Eligible Project, held continuously during the period for which Eligible Experience is claimed, needs to be given.*

10. *Experience for any activity relating to an Eligible Project shall not be claimed twice. In other words, no double counting in respect of the same experience shall be permitted in any manner whatsoever.*

11. *It may be noted that in the absence of any detail in the above certificates, the information would be considered inadequate and could lead to exclusion of the relevant project in computation of Experience.*

12. *The statutory auditor of the Bidder should certify this declaration under its seal and stamp along with the details of the auditor indicating its name, address and registration no.*

13.ANNEX-VI - Information required to evaluate the Bid Capacity

To calculate the value of "**A**"

1. A table containing value of Civil EngineeringWorks in respect toprojects (PPP/ EPC / Turnkey projects / Item rate contract / Percentage rate contract/ Construction works) undertaken by the Bidder during the last 5 financial years is as follows:

S. No.	Financial Year	Value of Civil Engineering Works undertaken (INR In Crore)
1	2017-18	
2	2016-17	
3	2015-16	
4	2014-15	
5	2013-14	

2. Maximum value of projects that have been undertaken during the F.Y. _____out of the last financial 5 years and value thereof is INRCrores (Rupees)[10]. Further, value updated to the price level of the year indicated in Appendix is as follows:

   Indian Rupees_____Crores x _____(*Updation Factor as per Appendix*) =INR. _____Crore

   (Rupees _____)

…… ……. Name of the Statutory Auditor's firm: Seal of the audit firm: (Signature, name and designation and Membership No. of authorised signatory)	…….. …….. Signature, name and designation of Authorized Signatory For and on behalf of ……(*Name of the*Bidder)

[10] Attach proof of document(s)

To calculate the value of "B"

A table containing value of all the existing commitments and on-going works to be completed during the next 12 (twelve) Months is as follows:

Sl. No.	Name of Project/ Work	Percentage of participation of Bidder in the project	Date of start / appointed date of project	Construction period as per Agreement /LOA	Value of contract as perAgreement /LOA[β11]	Value of work completed	Balance value of work to be completed	Anticipated date of completion	Balance value of work at 2017-18 price level
					INR in Crore	INR in Crore	INR. in Crore		INR in Crore
1	2	3	4	5	6	7	8= (6-7)	9	10(3x 8x #)

Updation Factor as given below:

For Year	Financial Year	Updation Factor
1	2017-18	1.00
2	2016-17	1.10
3	2015-16	1.21
4	2014-15	1.33
5	2013-14	1.46

The Statement showing the value of all existing commitments, anticipated value of work to be completed in the period of construction of the project for which Bid is invited and ongoing works as well as the stipulated period of completion remaining for each of the works mentioned above is verified from the certificate issued that has been countersigned by the Client or its Engineer-in-charge not below the rank of Executive Engineer or equivalent in respect of EPC/Turnkey/Item Rate/Percentage Rate Projects or Concessionaire / Authorised Signatory of SPV in respect of BOT Projects. No awarded / ongoing works has been left in the aforesaid statement which has been awarded to M/s……individually / and other member M/s …….. and M/s ……., as on bid due date of this RFP.

……
……
Signature, name and of AuthorisedSignatory

For and on behalf of ……(*Name of the Bidder)*

……
……
Signature, name and

For and on behalf of ……(*Name of the Bidder)*

In case balance period of construction is less than the value of period of construction of the project for which Bid is invited, then full value of contract as per Agreement/LOA to be mentioned, else, anticipated value of work to be completed in the period of construction of the project for which Bid is invited is to be mentioned. In the absence of the anticipated value of work to be completed, the proportionate value shall be considered while evaluating the Assessed Available Bid Capacity.

Date:
Place:

Appendix - IA
Annexure-VI A

Format for information to be furnished by Technically Qualified Bidder regarding updated Bid Capacity as on Bid Submission Date:

1. Name of instant project: -
2. Name of the Technically Responsive Bidder: -
3. Details of lowest/accepted bid price declared in favourof the Technically Qualified Bidder (either sole or J.V.) in any other project as on Bid Submission Date.

S. no.	**Name of Work**	**Details and contact nos., email of Bid invitingauthority**	**Lowest bid price as per financial bid opening (INR in ___)**	**Date & time when Financial bid wasopened**	**Date of LOA in case issued**	**Remarks, if any**
1.						
2.						

I/ We hereby confirm that the information furnished above are latest and true to the best of my/our knowledge. We/I undertake to bear consequences as per provision of RFP in case of any above mentioned is found to be incorrect.

Authorised Signatory

.....

Name: ....

Place: .....Date: .....

Note: Please enclose separate details for the Joint Venture Partner(s), if any

APPENDIX-IA
Annexure VII

14.Annexure VII - Guidelines of the Department of Disinvestment

No. 6/4/2001-DD-II
Government of India
Department of Disinvestment

Block 14, CGO Complex
New Delhi.
Dated 13th July, 2001.

OFFICE MEMORANDUM

Sub: Guidelines for qualification of Bidders seeking to acquire stakes in Public Sector Enterprises through the process of disinvestment

Government has examined the issue of framing comprehensive and transparent guidelines defining the criteria for bidders interested in PSE-disinvestment so that the parties selected through competitive bidding could inspire public confidence. Earlier, criteria like net worth, experience etc. used to be prescribed. Based on experience and in consultation with concerned departments, Government has decided to prescribe the following additional criteria for the qualification/ disqualification of the parties seeking to acquire stakes in public sector enterprises through disinvestment:

(a) In regard to matters other than the security and integrity of the country, any conviction by a Court of Law or indictment/ adverse order by a regulatory authority that casts a doubt on the ability of the bidder to manage the public sector unit when it is disinvested, or which relates to a grave offence would constitute disqualification. Grave offence is defined to be of such a nature that it outrages the moral sense of the community. The decision in regard to the nature of the offence would be taken on case to case basis after considering the facts of the case and relevant legal principles, by the Government of India.

(b) In regard to matters relating to the security and integrity of the country, any charge-sheet by an agency of the Government/ conviction by a Court of Law for an offence committed by the bidding party or by any sister concern of the bidding party would result in disqualification. The decision in regard to the relationship between the sister concerns would be taken, based on the relevant facts and after examining whether the two concerns are substantially controlled by the same person/ persons.

(c) In both (a) and (b), disqualification shall continue for a period that Government deems appropriate.

(d) Any entity, which is disqualified from participating in the disinvestment process, would not be allowed to remain associated with it or get associated merely because it has preferred an appeal against the order based on which it has been disqualified. The mere pendency of appeal will have no effect on the disqualification.

(e) The disqualification criteria would come into effect immediately and would apply to all bidders for various disinvestment transactions, which have not been completed as yet.

(f) Before disqualifying a concern, a Show Cause Notice why it should not be disqualified would be issued to it and it would be given an opportunity to explain its position.

(g) Henceforth, these criteria will be prescribed in the advertisements seeking Expression of Interest (EOI) from the interested parties. The interested parties would be required to provide the information on the above criteria, along with their Expressions of Interest (EOI). The bidders shall be required to provide with their EOI an undertaking to the effect that no investigation by a regulatory authority is pending against them. In case any investigation is pending against the concern or its sister concern or against its CEO or any of its Directors/ Managers/ employees, full details of such investigation including the name of the investigating agency, the charge/ offence for which the investigation has been launched, name and designation of persons against whom the investigation has been launched and other relevant information should be disclosed, to the satisfaction of the Government. For other criteria also, a similar undertaking shall be obtained along with EOI.

sd/-

(A.K. Tewari)

Under Secretary to the Government of India

15.APPENDIX – II- Bank Guarantee for BID Security(On the letter head of the Issuing Branch of the Bank)

B.G. No. Dated:

1. In consideration of you, Ujjain Smart City Limited, having its office at _____, (hereinafter referred to as the "Authority", which expression shall unless it be repugnant to the subject or context thereof include its, successors and assigns) having agreed to receive the Bid of …… and having its registered office at …… (and acting on behalf of its JV) (hereinafter referred to as the "**Bidder**" which expression shall unless it be repugnant to the subject or context thereof include its/their executors, administrators, successors and assigns), for Selection of Contractor for **[Project Name**] in Ujjain in the State of Madhya Pradesh (hereinafter referred to as "the **Project**") pursuant to the RFP Document dated …… issued in respect of the Project and other related documents including without limitation the draft contract (hereinafter collectively referred to as "Bidding Documents"), we (Name of the Bank) having our registered office at …… and one of its branches at _____ (hereinafter referred to as the **"Bank**"), at the request of the Bidder, do hereby in terms of **clause2.1.6**read with **clause2.1.7**of the RFP Document, irrevocably, unconditionally and without reservation guarantee the due and faithful fulfilment and compliance of the terms and conditions of the Bidding Documents (including the RFP Document) by the said Bidder and unconditionally and irrevocably undertake to pay forthwith to the Authority an amount of Rs. ____ lakhs (Rupees ____ lakhs only) (hereinafter referred to as the "Guarantee") as our primary obligation without any demur, reservation, recourse, contest or protest and without reference to the Bidder if the Bidder shall fail to fulfil or comply with all or any of the terms and conditions contained in the said Bidding Documents.

2. Any such written demand made by the Authority stating that the Bidder is in default of the due and faithful fulfilment and compliance with the terms and conditions contained in the Bidding Documents shall be final, conclusive and binding on the Bank.

3. We, the Bank, do hereby unconditionally undertake to pay the amounts due and payable under this Guarantee without any demur, reservation, recourse, contest or protest and without any reference to the Bidder or any other person and irrespective of whether the claim of the Authority is disputed by the Bidder or not, merely on the first demand from the Authority stating that the amount claimed is due to the Authority by reason of failure of the Bidder to fulfil and comply with the terms and conditions contained in the Bidding Documents including failure of the said Bidder to keep its Bid open during the Bid validity period as set forth in the said Bidding Documents for any reason whatsoever. Any such demand made on the Bank shall be conclusive as regards amount due and payable by the Bank under this Guarantee. However, our liability

under this Guarantee shall be restricted to an amount not exceeding Rs_____ lakhs (Rupees _____lakhs only).

4. This Guarantee shall be irrevocable and remain in full force for a period of 180(One hundred and eighty) days from the Bid Due Date inclusive of a claim period of 60 (sixty) days or for such extended period as may be mutually agreed between the Authority and the Bidder, and agreed to by the Bank, and shall continue to be enforceable till all amounts under this Guarantee have been paid.

5. We, the Bank, further agree that the Authority shall be the sole judge to decide as to whether the Bidder is in default of due and faithful fulfilment and compliance with the terms and conditions contained in the Bidding Documents including, inter alia, the failure of the Bidder to keep its Bid open during the Bid Validity Period set forth in the said Bidding Documents, and the decision of the Authority that the Bidder is in default as aforesaid shall be final and binding on us, notwithstanding any differences between the Authority and the Bidder or any dispute pending before any Court, Tribunal, Arbitrator or any other Authority.

6. The Guarantee shall not be affected by any change in the constitution or winding up of the Bidder or the Bank or any absorption, merger or amalgamation of the Bidder or the Bank with any other person.

7. In order to give full effect to this Guarantee, the Authority shall be entitled to treat the Bank as the principal debtor. The Authority shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee from time to time to vary any of the terms and conditions contained in the said Bidding Documents or to extend time for submission of the Bids or the Bid Validity Period or the period for conveying acceptance of Letter of Award by the Bidder or the period for fulfilment and compliance with all or any of the terms and conditions contained in the said Bidding Documents by the said Bidder or to postpone for any time and from time to time any of the powers exercisable by it against the said Bidder and either to enforce or forbear from enforcing any of the terms and conditions contained in the said Bidding Documents or the securities available to the Authority, and the Bank shall not be released from its liability under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the said Bidder or any other forbearance, act or omission on the part of the Authority or any indulgence by the Authority to the said Bidder or by any change in the constitution of the Authority or its absorption, merger or amalgamation with any other person or any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect of releasing the Bank from its such liability.

8. Any notice by way of request, demand or otherwise hereunder shall be sufficiently given or made if addressed to the Bank and sent by courier or by registered mail to the Bank at the address set forth herein.

9. We undertake to make the payment on receipt of your notice of claim on us addressed to **[name of Bank along with branch address]** and delivered at our above branch which shall be deemed to have been duly authorised to receive the said notice of claim.

10. It shall not be necessary for the Authority to proceed against the said Bidder before proceeding against the Bank and the guarantee herein contained shall be enforceable against the Bank, notwithstanding any other security which the Authority may have obtained from the said Bidder or any other person and which shall, at the time when proceedings are taken against the Bank hereunder, be outstanding or unrealised.

11. We, the Bank, further undertake not to revoke this Guarantee during its currency except with the previous express consent of the Authority in writing.

12. The Bank declares that it has power to issue this Guarantee and discharge the obligations contemplated herein, the undersigned is duly authorised and has full power to execute this Guarantee for and on behalf of the Bank.

13. For the avoidance of doubt, the Bank's liability under this Guarantee shall be restricted to Rs. _____ lakhs only (Rupees _____ lakhs only). The Bank shall be liable to pay the said amount or any part thereof only if the Authority serves a written claim on the Bank in accordance with paragraph 9 hereof, on or before **[*** (indicate date falling 180days after the Bid Due Date)]**.

14. This guarantee shall also be operatable at our**……..** Branch at Ujjain, from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

Signed and Delivered by ……. Bank

By the hand of Mr./Ms …….., its …….. and authorised official.

(Signature of the Authorised Signatory)

(Official-Seal)

E- Mail id of the bank -

Phone no -

(E-mail id and phone number of the bank are mandatory)

16.APPENDIX- III - Format for Power of Attorney for Signing of BID

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/ the Lead Member of our Joint Venture 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 BID for the Selection of Contractor for **[Project Name**] in Ujjain in the State of Madhya Pradesh proposed or being developed by the Ujjain Smart City Limited (the "Authority") including but not limited to signing and submission of all applications, Bids and other documents and writings, participate in Pre-Bid and other conferences and providing information/ responses to the Authority, representing us in all matters before the Authority, signing and execution of all contracts including the agreement and undertakings consequent to acceptance of our Bid, and generally dealing with the Authority in all matters in connection with or relating to or arising out of our Bid for the said Project and/ or upon award thereof to us and/or until the entering into the Contract with the Authority.

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, ……., THE ABOVE NAMED PRINCIPAL HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS …… DAY OF…….2…..

For ……..
(Signature, name, designation and address)
of person authorized by Board Resolution
(in case of Firm/ Company)/ partner
in case ofPartnership firm

Witnesses:
1.
2.
Accepted
……
(Signature)

(Name, Title and Address of the Attorney)

(Notarised)
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 Bidder 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 Bidder.*

Volume II: Draft Contract

17. Conditions of Contract

Part - I General Conditions of Contract [GCC]

Table of Clauses of GCC

A. General

1. DEFINITIONS

1.1. Deleted

1.2. Deleted

1.3. **Completion:** means completion of the work as certified by the Engineer-in-Charge, in accordance with provisions of agreement.

1.4. **Contract:** means the Contract between the Employer and the Contractor to execute, complete and/or maintain the work. Agreement is synonym of Contract and carries the same meaning wherever used.

1.5. **Contract Data:** means the documents and other information, which comprise of the Contract.

1.6. **Contractor:** means a person or legal entity whose bid to carry out the work has been accepted by the Employer.

1.7. **Contractor's bid:** means the completed bid document submitted by the Contractor to the Employer.

1.8. **Contract amount:** means the amount of contract worked out on the basis of accepted bid.

1.9. **Completion of work:** means completion of the entire contracted work; Exhaustion of quantity of any particular item mentioned in the bid document shall not imply completion of work or any component thereof.

1.10. **Day:** means the calendar day.

Deliverables: Means the deliverables for completing the contract.

1.11. **Defect:** means any part of the work not completed in accordance with the specifications included in the contract.

1.12. **Department:** means Department of the, State Government viz. Water Resources Department, Public Works Department, Public Health Engineering Department Rural Engineering Service and any other organization which adopts this document.

1.13. **Drawings:** means drawings including calculations and other information provided or approved by the Engineer-in-Charge.

1.14. **Employer:** means the Authority as defined in the Contract Data, who employs the Contractor to carry out the work. The Employer may delegate any or all functions to a person or body nominated by him for specified functions. The word Employer / Government / Department wherever used denote the Employer.

1.15. **Engineer:** means the person named in the Contract Data.

1.16. **Engineer in charge:** means the person named in the Contract Data.

1.17. **Equipment:** means the Contractor's machinery and vehicles brought temporarily to the Site far execution of work.

1.18. **Government:** means Government of Madhya Pradesh.

1.19. **In Writing:** means communicated in written form and delivered against receipt.

1.20. **Material:** means all supplies, including consumables, used by the Contractor for incorporation in the work.

1.21. **Superintending Engineer:** means Superintending Engineer-in-Charge of the Authority concerned.

1.22. **Stipulated period of completion:** means the period in which the Contractor is required to complete the work. The stipulated period is specified in the Contract Data.

1.23. **Specification:** means the specification of the work included in the Contract and any modification or addition made or approved by the Engineer-in-Charge.

1.24. **Start Date:** means the date of signing of Contract for the work.

1.25. **Sub-Contractor**: means a person or corporate body who has a Contract with the Contractor, duly authorized to carry out a part of the construction work under the Contract.

1.26. **Temporary Work:** means work designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the work.

1.27. **Tender/Bid, Tendered/Bidder**: are the synonyms and carry the same meaning where ever used. -

1,28. **Variation:** means any change in the work which is instructed or approved as variation under this contract.

1.29. **Work:** The expression "work' or "works" where used in these conditions shall unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the work by virtue of contract, contracted to be executed, whether temporary or permanent and whether original, altered, substituted or additional,

2. INTERPRETATIONS AND DOCUMENTS

2.1 Interpretations

In the contract, except where the context requires otherwise:

a. words indicating one gender include all genders;

b. Wards indicating the singular also include the plural and vice versa.

c. provisions including the word "agree", "agreed" or "agreement' require the agreement to be recorded in writing;

d. written" or "in writing" means hand-written, type-written, printed or electronically made, and resulting in a permanent record;

2.2 Documents Forming Part of Contract:

1. NIT with all amendments.

2. Instructions to Bidders (ITB, Bid Data Sheet with all Annexure's)

3. Conditions of Contract:

I. Part I General Conditions of Contract and the Contract Data; with all Annexures

II. Part II Special Conditions of Contract.

4. Specifications

5. Drawings

6. Reference schedule / milestones

7. Technical and Financial Bid

9. Any other document(s), as specified.

3. Language and Law

The language of the Contract and the law governing the Contract are stated in the Contract Data.

4. Communications

All certificates, notice or instruction to be given to the Contractor by Employer/Engineer shall be sent to the address or contact details given by the Contractor in [Annexure H of ITB]. The address and contact details for communication with the Employer/Engineer shall be as per the details given in the Contract Data. Communication between parties that are referred to in the conditions shall be in writing. The notice sent by facsimile (fax) or other electronic means (email) shall also be effective on confirmation of the transmission. The notice sent by registered post or speed post shall be effective on delivery or at the expiry of the normal delivery period as undertaken by the postal service. In case of any change in address for communication, the same shall be immediately notified to Engineer-in- Charge.

5. Subcontracting

Subcontracting shall be permitted for contracts of value more than amount specified in the Contract Data with following conditions.

a. The Contractor may subcontract up to 25 percent of the contract price with the approval of the Employer in writing, but will not assign the Contract. Subcontracting shall not alter the Contractors obligations.

b. Following shall not form part of subcontracting:

   I. Hiring of labour through a labour contractor.

   II. The purchase of Materials to be incorporated in the works.

   III. Hiring of plant & machinery.

c. The sub-contractor will have to be registered in the appropriate category in the centralized registration system for contractors of the GoMP.

6. Personnel

6.1 The Contractor shall employ for the construction work and routine maintenance the technical personnel as provided in the Annexure I (FormatI-2)if applicable. If the Contractor fails to deploy required number of technical staff, recovery as specified in the Annexure I (FormatI-2)will be made from the Contractor.

6.2 If the Engineer asks the Contractor to remove a person who is a member of the contractor's staff or work force, stating the reasons, the Contractor shall ensure that the person leaves the Site within three days and has no further connection with the Works in the Contract.

7. Force Majeure

7.1 The term "Force Majeure" means an exceptional event or circumstance:

(a) Which is beyond a Party's control,

(b) Which such Party could not reasonably have provided against before entering into the Contract

(c) Which, having arisen, such Party could not reasonably have avoided or overcome, and

(d) Which is not substantially attributable to the other Party.

Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied:

i. War, hostilities (whether war be declared or not), invasion, act of foreign enemies,

ii. Rebellion, terrorism, sabotage by persons other than the contractor's Personnel, revolution, insurrection, military or usurped power, or civil war,

iii. Riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel,

iv. Munitions of war, explosive materials, ionising radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, and

v. Natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity.

7.2. In the event of either party being rendered unable by force majeure to perform any duty or discharge any responsibility arising out of the contract, the relative obligation of the party affected by such force majeure shall upon notification to the other party be suspended for the period during which force majeure event lasts. The cost and loss sustained by either party shall be borne by respective parties.

7.3 For the period of extension granted to the Contractor due to Force Majeure the price adjustment clause shall apply but the penalty clause shall not apply. It is clarified that this sub clause shall not give eligibility for price adjustment to contracts which are otherwise not subject to the benefit of price adjustment clause.

7.4 The time for performance of the relative obligation suspended by the force majeure shall stand extended by the period for which such cause lasts. Should the delay caused by force majeure exceed twelve months, the parties to the contract shall be at liberty to foreclose the contact after holding mutual discussions.

8. Contractor's Risks -

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

8.2 All risks and consequences arising from the inaccuracies or falseness of the documents, drawing, designs, other documents and/or information submitted by the contractor shall be the responsibility of the Contractor alone, notwithstanding the fact that the design/ drawings or other documents have been approved by the department.

9. Liability for Accidents to Person

The contractor shall be deemed to have indemnified and saved harmless the Employer against all action, suits, claims, demands, costs etc. arising in connection with injuries suffered by any persons employed by the contractor or his subcontractor for the works whether under the General law or under workman's compensation Act or any other statute in force at the time of dealing with the question of the liability of employees for the injuries suffered by employees and to have taken steps properly to ensure against any claim there under.

10. Contractor to Construct the Works

10.1 The Contractor shall construct install and maintain the Works in accordance with the Specifications and Drawings as specified in the Contract Data.

10.2 In the case of any class of work for which there is no such specification as is mentioned in Contract Data, such work shall be carried out in accordance with the instructions and requirement of the Engineer-in-charge.

10.3 The contractor shall supply and take upon himself the entire responsibility of the sufficiency of the scaffolding, timbering, machinery, tools and implements, and generally of all means used for the fulfilment of this contract whether such means may or may not be approved or recommended by the Engineer.

11. Discoveries

Anything of historical or other interest or of significant value unexpectedly discovered on the Site shall be the property of the Employer. The Contractor shall notify the Engineer of such discoveries and carry out the Engineer's instructions for dealing with them.

12. Dispute Resolution System

12.1 No dispute can be raised except before the Competent Authority as defined in Contract Data in writing giving full description and grounds of dispute. It is clarified that merely recording protest while accepting measurement and/or payment shall not be taken as raising a dispute.

12.2 No dispute can be raised after 45 days of its first occurrence. Any dispute raised after expiry of 45 days of its first occurrence shall not be entertained and the Employer shall not be liable for claims arising out of such dispute.

12.3 The Competent Authority shall decide the matter within 45 days.

12.4 Appeal against the order of the Competent Authority can be preferred within 30 days to the Appellate Authority as defined in the Contract Data. The Appellate Authority shall decide the dispute within 45 days.

12.5 Appeal against the order of the Appellate Authority can be preferred before the Madhya Pradesh Arbitration Tribunal constituted under Madhya Pradesh *MadhyasthamAdhikaranAdhiniyam, 1983.*

12.6 The Contractor shall have to continue execution of the Works with due diligence notwithstanding pendency of a dispute before any authority or forum.

B. Time Control

13. **Programme**

13.1 Within the time stated in the Contract Data, the Contractor shall submit to the Engineer for approval a Programme showing the general methods arrangements, order and timing for all the activities for the construction of works.

13.2 The program shall be supported with all the details regarding key personnel, equipment and machinery proposed to be deployed on the works for its execution. The contractor shall submit the list of equipment and machinery being brought to site, the list of key personnel being deployed, the list of machinery/equipment being placed in field laboratory and the location of field laboratory along with the Programme.

13.3 An update of the Programme shall be a programme showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining Works, including any changes to the sequence of the activities.

13.4 The Contractor shall submit to the Engineer for approval an updated Programme at intervals no longer than the period stated in the Contract Data. If the Contractor does not submit an updated Programme within this period, the Engineer may withhold the amount stated in the Contract Data from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Programme has been submitted.

13.5 The Engineer's approval of the Programme shall not alter the Contractor's obligations.

14. Extension of Time

14.1. If the Contractor desires an extension of time for completion of the work on the ground of his having been unavoidably hindered in its execution or on any other grounds, he shall apply, in writing, to the Engineer-in-charge, on account of which he desires such extension. Engineer-in-Charge shall forward the aforesaid application to the Competent Authority as prescribed.

14.2 The competent authority shall grant such extension at each such occasion within a period of 30 days of receipt of application from contractor and shall not wait for finality of work. Such extensions shall be granted in accordance with provisions under clause 15 of this agreement.

14.3 In case the work is already in progress, the Contractor shall proceed with the execution of the works, including maintenance thereof, pending receipt of the decision of the competent authority as aforesaid with all due diligence.

15. Compensation for delay

15.1 The. time allowed for carrying out the work, as entered in the agreement, shall be strictly observed by the Contractor.

15.2 The time allowed for execution of the contract shall commence from the date of signing of the agreement. It is clarified that the need for issue of work order is dispensed with.

15.3 In the event milestones are laid down in the Contract Data for execution of the works, the contractor shall have to ensure strict adherence to the same.

15.4 Failure of the Contractor to adhere to the timelines and/or milestones shall attract such liquidated damages as is laid down in the Contract Data.

15.5 In the event of delay in execution of the Works as per the time lines mentioned in the Contract Data the Engineer-in-charge shall retain from the bills of the Contractor amount equal to the liquidated damages leviable until the Contractor makes such delays good. However, the Engineer-in-charge may accept bankable security in lieu of retaining such amount.

15.6 If the Contractor is given extension .of time after liquidated damages have been paid, the Engineer in Charge shall correct any over payment of liquidated damages by the Contractor in the next payment certificate.

15.7 In the event the Contractor fails to make good the delay until completion of the stipulated contract period (including extension of time) the sum so retained shall be adjusted against the liquidated damages levied.

16. Contractor's quoted rate

The Contractor's quoted rate referred to in the **"Bid for works'** will be deducted addedfrom/to the net amount of the bill after deducting the cost of material supplied by the department, if any.

C. Quality Control

17. Tests

17.1 The Contractor shall be responsible for:

a. Carrying out the tests prescribed in specifications, and as per the provisions of the BIS/ISI standards

b. For the correctness of the test results, whether preformed in his laboratory or elsewhere.

17.2 **The contractor shall have to establish field laboratory within the time specified and having such equipments as are specified in the Contract Data.**

17.3 Failure of the Contractor to establish laboratory shall attract such penalty as is specified in the Contract Data.

17.4 Ten percent (10%) of the mandatory test prescribed under the specification shall be got carried out through laboratories accredited by national Accreditation Board of laboratories (NABL) By the Engineer-in-charge and the cost of such testing shall be deducted form the payments due to contractor .

18. Correction of Defects noticed during the Defect Liability Period

18.1 The Defect Liability Period of work in the contract shall be as per the Contract Data.

18.2 The Contractor shall promptly rectify all defects pointed out by the Engineer well before the end of the Defect Liability Period. The Defect Liability Period shall automatically stand extended until the defect is rectified.

18.3 If the Contractor has not corrected a Defect pertaining to the Defect Liability Period to the satisfaction of the Engineer, within the time specified by the Engineer, the Engineer will assess the cost of haying the Defect corrected, and the cost of correction of the Defect shall be recovered from the Performance Security or any amount due or that may become due to the contractor and other available securities.

D. COST CONTROL

19. Variations - Change in original Specifications, Designs, and Drawings etc.

19.1 The Engineer-in-charge shall have power to make any alterations, omissions or additions to or substitutions in the original specifications, drawings, designs and instructions, that may appear to him to be necessary during the progress of the work and the contractor shall carry out the work in accordance with any instructions which may be given to him in writing signed by the Engineer-in-charge, and such alterations, omission, additions or substitutions shall not invalidate the contract and any altered, additional or substituted work, which the contractor may be directed to do in the manner above specified, as part of the work, shall be carried out by the contractor on the same conditions in all respects on which he agrees to do the main work.

19.2 The time for the completion of the work shall be adjusted in the proportion that the altered, additional or substituted work bears to the original contract work and the certificate of the Engineer-in-charge shall be conclusive as to such proportion.

20. Extra items

20.1 Generally not applicable, unless otherwise additional scope is added in the contract.

21. Payments for Variations and / or Extra Quantities

21.1 The rates for such additional (Extra quantity), altered or substituted work / extra items under this clause shall be worked out in accordance with the following provisions in the irrespective order:

a. Payment for increase in the items of quantities in the BOQ shall be made at the rates quoted by the contractor.

b. If the item is not in the Priced BOQ and is included in the SOR of the Department of UAD, GoMP (with latest amendments if any), the rate shall be arrived at by applying the quoted tender (RFP) percentage on the SOR rate.

c. If the rates for the altered / substituted, additional items of work cannot be determined either 21.1 a and b above, the contractor shall be requested to submit his quotations for the items supported by analysis of rate or rates claimed, within seven days.

d. If the contractor's quotation is determined unreasonable, the authority may order the variation and make a change in the contract price which shall be based on Authority's own forecast of the effects of the variation on the contractor's cost.

e. But under no circumstances, the contractor shall suspend the work on the plea of non-settlement of rates for items falling under this clause.

22. No compensation for alterations in or restriction of work to be carried out.

22.1. If at any time after the commencement of the work, the Engineer-in-charge for any reason whatsoever, not require the whole or any part of the work as specified in the bid to be carried out the Engineer-in-charge shall give notice in writing of the fact to the Contractor and withdraw that whole or any part of the work.

22.2 The Contractor shall have no claim to any payments or compensation whatsoever, on account of any profit or advantage which he might have derived from the execution of work in full or on account of any loss incurred for idle men and machinery due to any alteration or restriction of work for whatsoever reason.

22.3 The Engineer-in-charge may supplement the work by engaging another agency to execute such portion of the work, without prejudice to his rights.

23. 'No Interest Payable

No interest shall be payable to the Contractor on any payment due or awarded by any authority.

24. Recovery from Contractors

Whenever any claim against the Contractor for the payment arises under the contract, the Department may be entitled to recover such sum by:

(a) Appropriating, in part or whole of the Performance Security and Additional Performance Security, if any; and/or Security Deposit and / or any sums payable under the contract to the contractor.

(b) If the amount recovered in accordance with (a) above is not sufficient, the balance sum may be recovered from any payment due to the contractor -under any other contract of the department, including the securities which become due for release.

(c) The department shall, further have an additional right to effect recoveries as arrears of land revenue under the M.P. Land-Revenue Code.

25. Tax -

25.1 The rates (in case of percentage rate bids)/ lump-sum offer (in case of lump-sum bids)quoted by the Contractor shall be deemed to be inclusive of all commercial tax and other levies, duties, royalties, cess, toll, taxes of central and state governments, local bodies and authorities etc. **except Goods and Service Tax (GST)**. The amount of applicable GST will be paid separately to the Contractor with each bill at the time of payment as per prevailing rules,

25.2 The liability, if any, on account of quarry fees, royalties, octroi and any other taxes and duties in respect of materials actually consumed on public work, shall be borne by the Contractor.

25.3 Any changes in the taxes due to change in legislation or for any other reason shall not be payable to the contractor.

26. Check Measurements

26.1 The department reserves to itself the right to prescribe a scale of check measurement of work in general or specific scale for specific works or by other special orders.

26.2 Checking of measurement by superior officer shall supersede measurements by subordinate officer(s), and the former will become the basis of the payment.

26.3 Any over/excess payments detected, as a result of such check measurement or otherwise at any stage up to the date of completion of the defect liability period specified in this contract, shall be recoverable from the Contractor, as per clause 24 above.

27. Termination by Engineer in charge

27.1 If the Contractor fails to carry out any obligation under the Contract, the Engineer in Charge may by notice require the Contractor to make good the failure and to remedy it within a specified reasonable time.

27.2 The Engineer in Charge, shall be entitled to terminate the Contract if the Contractor

a) abandons the Works or otherwise plainly demonstrates the intention not to continue performance of his obligations under the Contract;

b) the Contractor is declared as bankrupt or goes into liquidation other than for approved reconstruction or amalgamation;

c) without reasonable excuse falls to comply with the notice to correct a particular defect within a reasonable period of time;

d) the Contractor does not maintain a valid instrument of financial security as prescribed;

e) the Contractor has delayed the completion of the Works by such duration for which the maximum amount of liquidated damages is recoverable;

f) If the Contractor fails to deploy machinery and equipment or personnel or set up a field laboratory as specified in the **Contract Data**;

g) If the contractor, in the judgment of the Engineer in chargé has engaged in corrupt or fraudulent practices in competing for or in executing the contract;

h) Any other fundamental breaches as specified in the **Contract Data**.

27.3 In any of these events or circumstances, the Engineer in Charge may, upon giving 14 days' notice to the Contractor, terminate the Contract and expel the Contractor from the Site, However, in the case of sub-paragraph (b) or (g) of clause 27.2, the Engineer in Charge may terminate the Contract immediately.

27.4 Notwithstanding the above, the Engineer-in-Charge may terminate the Contract for convenience by giving notice to the Contractor.

28. Payment upon Termination

28.1 If the contract is terminated under clause 27.3, the Engineer shall issue a certificate for value of the work accepted on final measurements, less Advance Payments and Penalty as indicated in the Contract Data. The amount so arrived at shall be determined by the Engineer-in-Charge and shall be final and binding on both the parties.

28.2 Payment on termination under clause 27.4 above -

If the Contract is terminated under clause 27.4 above, the Engineer shall issue a certificate for the value of the work done, the reasonable cost of removal of Equipment, repatriation, 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.

28.3 If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be recovered as per clause 24 above.

29. Performance Security

The Contractor shall have to submit, performance security and additional performance security, if any, as specified in the clause 2.20.6 of ITB, at the time of signing of the contract. The contractor shall have to ensure that such performance security and additional performance security, if any remains valid for the period 'as specified in the Contract Data.

30. Security Deposit-

30.1 Security Deposit shall be deducted from each running bill at the rate as specified in the **Contract Data**. The total amount of Security Deposit so deducted shall not exceed the percentage of Contract Price specified in the Contract Data.

30.2 The security deposit may be replaced by equivalent amount of bank guarantee or fixed deposit receipt assigned to the Employer, with validity up to 3 (three) months beyond the completion of Defect Liability Period/ extended Defect Lability Period (if any).

30.3 The Security Deposit shall be returned after completion defect Liability period/Extended defect liability period(if any) as specified in the **contract Data**.

31. Price Adjustment

31.1 Applicability

1. Price adjustment shall be applicable only if provided for in the Contract Data.
2. The price adjustment clause shall apply only for the works executed from the date of signing of the agreement until the end of the initial intended completion date or extensions granted for reasons attributed to the Employer by the Engineer.
3. The Contractor shall not be entitled to any benefit arising from the price adjustment clause for extension in the contract period for reasons attributed to the Contractor.
4. In the Force Majeure event the price escalation clause shall apply.

31.2 Procedure

1. Contract price shall be adjusted for increase or decrease in rates and price of labor, materials, fuels and lubricants in accordance with following principles and procedures and as per formula given in the contract data.
2. The price adjustable shall be determined during each quarter from the formula given in the contract data.
3. Following expression and meaning are assigned to the work done during each quarter:

   R = Total value of work during the quarter. It would include the amount of secured advance granted, if any, during the quarter, less the amount of secured advance recovered, if any during the quarter, less value of material issued by the department, if any, during the quarter.

4. Weightages of various components of the work shall be as per the Contract Data.

31.3 To the extent that full compensation for any rise or fail in costs to the contractor is not covered by the provisions of this or other clauses in the contract the unit rates and prices included in the contract shall be deemed to include amounts to cover the contingency of such other rise or fall in costs.

31.4 The index relevant to any quarter, for which such compensation is paid, shall be the arithmetical average of the indices relevant of the calendar month.

31.5 For the purpose of clarity it is pointed out that the price adjustment may be either positive or negative, i.e. if the price adjustment is in favour of the Employer, the same shall be recovered from the sums payable to the Contractor.

32. Mobilization and Construction Machinery Advance

32.1 Payment of advances shall be applicable if provided in the Contract Data.

32.2 If applicable, the Engineer in Charge shall make interest bearing advance payment to the contractor of the amounts stated in the Contract Data, against provision by the contractor of an unconditional Bank Guarantee in a form and by a nationalized/ scheduled banks, in the name as stated in the Contract Data in 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.

32.3 The rate of interest chargeable shall be as per Contract Data.

32.4 The construction machinery advance, if applicable, shall be limited to 80% of the cost of construction machinery and admissible only for new construction machinery.

32.5 The advance payment shall be recovered as stated in the Contract Data by deducing proportionate amounts from payment otherwise due to the Contractor. No account shall be taken of the advance payment or its recovery in assessing valuations of work done, variations, price adjustments, compensation events, or liquidated damages.

33. Secured Advance

33.1 Payment of Secured Advance shall be applicable if provided in the Contract Data.

33.2 If applicable, the Engineer shall make advance payment against materials intended for but not yet incorporated in the Works and against provision by the contractor of an unconditional Bank Guarantee in a form and by a nationalized/ scheduled bank, in the name as stated in the Contract Data, in amounts equal to the advance payment. The guarantee shall remain effective until the advance payment has been adjusted, but the amount of the guarantee shall be progressively reduced by the amounts adjusted by the contractor.

33.3 The amount of secured advance and conditions to be fulfilled shall be as stipulated in the Contract Data.

33.4 The Secured Advance paid shall be recovered as stated in the Contract Data.

34. Payment Certificates

The payment to the contractor will be as follows for construction work:

(a) The Contractor shall submit to the Engineer monthly statements,as per activity completed, of the value of the work executed less the cumulative amount certified previously, supported with detailed measurement of the items of work executed.

(b) The Engineer shall check the Contractor's monthly statement and the activity completed, and certify the amount to be paid to the Contractor.

(c) The value of work executed shall be determined, based on the measurements approved by the Engineer/ Engineer-in-charge.

(d) The value of work executed shall comprise the value of the activities completed:

(e) The value of work executed shall also include the valuation of Variations and Compensation Events, if any.

(f) All payments shall be adjusted for deductions for advance payment, security deposit, other recoveries in terms of contract and taxes at source as applicable under the law.

(g) The Engineer may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

(h) Payment of intermediate certificate shall be regarded as payments by way of advance, against the final payment and not as payments for work actually done and completed.

(i) Intermediate payment shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be removed and taken away and reconstructed or be considered as an admission of the due performance of the contractor any part thereof, in any respect or the occurring of any claim.

(j) The payment of final bill shall be governed by the provisions of clause 36 of GCC.

E. Finishing the Contract

35. Completion Certificate

35.1 A Completion Certificate in the prescribed format in Contract Data shall be issued by the Engineer-in-Charge after physical completion of the Work.

35.2 After final payment to the Contractor a Final Completion Certificate in the prescribed format in the Contract Data shall be issued by the Engineer-in Charge.

36. Final Account

36.1 The Contractor shall supply the Engineer with a detailed account of the total amount that the Contractor considers payable for works under the Contract within 21 days of issue of certificate of physical completion of works. The Engineer shall issue a Defects Liability Certificate and certify any payment that is due to the Contractor within 45 days of receiving the Contractor's account if it is correct and complete. If the account is not correct or complete, the Engineer shall issue within 45 days a schedule that states the scope of the corrections or additions that are necessary. If the Account is still unsatisfactory after it has been resubmitted, the matter shall be referred to the Competent Authority as defined in the Contract Data, who shall decide on the amount payable to the Contractor after hearing the Contractor and the Engineer in Charge.

36.2 In case the account is not received within 21 days of issue of Certificate of Completion as provided in clause 32.1 above, the Engineer shall proceed to finalize the account and issue a payment certificate within 28 days.

F. Other Conditions of Contract

37. Currencies

All payments will be made in Indian Rupees (INR).

38. Labour

38.1 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.

38.2 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 labourfrom time to time employed by the Contractor on the Site and such other information as the Engineer may require.

39. Compliance with Labor Regulations

39.1 During continuance of the Contract, the Contractor and his Sub Contractors shall abide at all times by all existing labor enactments and rules made there under, regulations, notifications and bye laws of the, State or Central Government or local authority and any other labor law (including rules), regulations, bye laws that may be passed or notification that may be issued under any labor law in future either by the State or the Central Government or the local authority. Salient features of some of the major labour laws that, are applicable to construction industry are given in the Contract Data. 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 their 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/ byelaws/ Acts/Rules / regulations including amendments, if any, on the part of the Contractor, the Engineer/Employer shall have the right to deduct from any money due to the Contractor including his amount of performance security. The Employer/Engineer 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.

40. Audit and Technical Examination

Government shall have the right to cause an audit and technical examination of the works and the final bill of the contract including all supporting vouchers abstract etc to be made after payment of the final bill and if as a result of such audit and technical examination any sun is found to have been overpaid in respect of any work done by the contractor under the contract or any work claimed by him to have been done under the contract and found not to; have been executed, the Contractor shall be liable to refund the amount of overpayment and it shall be lawful for Government to recover the same from him in the manner prescribed in clause 24 above and if it is found that the Contractor was paid less than what was due to him, under the contract in respect of any work executed by him under it, the amount of such under payment shall be duly paid by Government to the Contractor.

41. Death or Permanent Invalidity of Contractor

If the Contractor is an individual or a proprietary concern, partnership concern, dies during the currency of the contract or becomes permanently incapacitated, where the surviving partners are only minors, the contract shall be closed without levying any damages/compensation as provided for in clause 28.2 of the contract agreement However, if the competent authority is satisfied about the competence of the survivors, then the competent authority shall enter into a fresh agreement for the remaining work strictly on the same terms and conditions under which the contract was awarded.

42. Jurisdiction

This contract has been entered into the State of Madhya Pradesh and its validity, construction, interpretation and legal effect shall be subjected to the courts at the place where this agreement is entered into. No other jurisdiction shall be applicable.

43. MONTHLY RA BILLS

The payments certificate shall be regulated as per the clause 34 of the contract.

- Upon the signing of agreement, the Engineer shall decide the date of submission of monthly statement (RA Bills) as mentioned in clause 34 (a).
- The engineer shall check contractor's monthly statement (RA bills) and certify the amount to be paid to the contractor within 15 (fifteen)days on submission of monthly statements (RA Bills) along with requisite documents.
- The employer shall ensure the payment to the contractor as per clause 34 (d), (e), (f) & (g) within 30 days of submission of monthly statements (RA Bills) along with all requisite documents.

44. INSURANCE

- The Contractor shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles stated for the following events which are due to the Contractor'srisks:
  - (a) loss of or damage to the Works, Plant, andMaterials;
  - (b) loss of or damage toEquipment;
  - (c) loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract;and
  - (d) personal injury ordeath.
- Policies and certificates for insurance shall be delivered by the Contractor to the Project Manager⁄Employer for the Project Manager's⁄Employer's approval before the Start Date[12]of the contract. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damageincurred.
- If the Contractor does not provide any of the policies and certificates required, the Employer may affect the insurance which the Contractor should have provided and recover the premiums the Employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debtdue.
- Alterations to the terms of an insurance shall not be made without the approval of the ProjectManager.
- Both parties shall comply with any conditions of the insurancepolicies.

45. CLARIFICATION OF BIDS

- To assist in the examination, evaluation, and comparison of the Technical and Price Bids, the Employer may, at its discretion, ask any Bidder for a clarification of its bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change in the substance of the Technical Bid or prices in the Price Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Price Bids, in accordance with ITB.
- If a Bidder does not provide clarifications of its Bid by the date and time set in the Employer's request for clarification, its bid may be rejected.

[End of GCC]

[12] Start date of the Contract – As mentioned in the Contract Data.

18. Contract Data

Clause reference	*G.C.C/ S.C.C*	*Particulars*	*Data*
1.14	G.C.C	Employer	**Ujjain Smart City Limited, Ujjain**
1.15	G.C.C	Engineer	Superintending Engineer/ Executive Engineer
1.16	G.C.C	Engineer in Charge	Engineer/ PDMC/Agency Authorized by Executive Director
1.17	G.C.C	Detail of Equipment	(As per Annexure I-3)
1.22	G.C.C	Stipulated period of completion	18 months (including Rainy season) from the date of start of Contract Agreement
3	G.C.C	Language & Law of Contract	English & Indian Contract Act, 1872 and other applicable laws
4	G.C.C	Address & contact details of the Contractor	As per Appendix 1A – Annexure 1
	G.C.C	Address & contact details of the Employer/ Engineer-phone, Fax, email.	Executive Director, USCL UJJAIN SMART CITY LIMITED Room No 16, Mela Office, Kothi Road, Ujjain, Pin Code 456010 Madhya Pradesh e-mail: ujjainsmartcity@gmail.com Ph. No. 0734-2525856
5	G.C.C	Subcontracting permitted for the Contract Value	Maximum Upto 25 % of the Contract Amount on written prior approval of employer.
6	G.C.C	Technical Personnel to be provided the contractor—requirement, & Penalty, if required Technical Personnel not employed	Penalty for Non-deployment of above staff are as follows: S. No. | Details of Personnel | Penalty to be computed on Per Month basis 1 | Project Manager | INR. 65,000/- p.m. 2 | Site Engineer | INR. 45,000/- p.m. each 3 | Quality Control cum Lab Technician | INR. 20,000/- p.m. NOTE: after signing of the contractor agreement the contractor has to submit the bio data of above position for the approval from USCL and shall be appointed after the approval
10	G.C.C	Specifications	As per Annexure E
	G.C.C	Drawings	As per Annexure N

12	G.C.C	Competent Authority for deciding dispute under Dispute Resolution System	Executive Director, USCL
	G.C.C	Appellate Authority for deciding dispute under Dispute Resolution System	Board of Directors, USCL
13	G.C.C	Period for submission of updated construction program by the Successful Bidder	Within fifteen (15) days from the date of signing of the contract agreement.
	G.C.C	Amount to be withheld for not submitting construction program in prescribed period	INR 5,50,000/- (Indian Rupees Five Lakhs Fifty Thousand only) per week (or part thereof) of for delay after fifteen days (15) days of signing of the contract.
14	G.C.C	Competent Authority for granting Time Extension.	Executive Director/Engineer in-Charge
15	G.C.C	Milestones laid down for the contract	YES
	G.C.C	If Yes, details of Milestones	As per Annexure – O
	G.C.C	Liquidated damage	As per Annexure – P
17	G.C.C	List of equipment for lab	As per Annexure – Q
	G.C.C	Time to establish lab	30 days from date of signing of the Agreement
	G.C.C	Penalty for not establishing field Laboratory	INR10,000/- (ten Thousand only) per month (or part thereof) of delay
18	G.C.C	Defect Liability Period	***36 months (3 years***) after final completion of the work and the date of completion of work shall be as per completion certificate issued . The contractor shall also have to again do the complete painting of the building between the time period of 1-3 months before end of the Defect Liability Period
21	G.C.C	Competent Authority for determining the rate	Executive Director/Engineer in-Charge
27	G.C.C	Any other condition for breach of contract	As per Special condition of the Contract, as applicable
28	G.C.C	Penalty	Penalty Shall include (a) as per Clause 13 of the Contract data (withheld amount). (b) as per Clause 17 of the Contract data. (c) Security deposit deducted as per clause 30 of General Conditions of Contract. (d) Liquidated Damages imposed as per clause 15 or Performance Security

			(Guarantee) including Additional Performance Security (Guarantee), if any, as per clause 29 of General Conditions of Contract, whichever is higher
29	G.C.C	Performance Security	Performance security @ mentioned in clause 2.20.6 of ITB and shall be valid as per clause 2.20.6 (d) of ITB.
	GCC	Performance Security	The performance security shall be returned after completion of Defect Liability Period / Extended Defect Liability Period (if any) but not later than 3 months after completion of the Defect Liability Period / Extended Defect Liability Period (if any).
	G.C.C	Additional Performance Security, if applicable shall be valid up to	As per clause 2.20.6(e) of ITB.
		Refund of Additional Performance Security (if any).	Additional performance security shall be returned afteractual completion of work as per completion certificate issued but not later than the three (03) months after actual completion of work as per completion certificate issued.
30	G.C.C	Security Deposit to be deducted from each running bill	At the rate of 5% of the RA Bill.
	G.C.C	Maximum limit of deduction of Security Deposit	Up to 5% of Final Contract Amount.
	G.C.C	Refund of Security Deposit	(a) Security deposit which will be returned, 50% after the after 1 year of issuing of Completion Certificate, 25% amount after 2 years of issuing of Completion Certificate and remaining 25% after 3 year of issuing of Completion Certificate
31	G.C.C	Price Adjustment formula and procedure to calculate	Not Applicable
31.1 (1)	G.C.C	Price adjustment shall be applicable	Not Applicable
32	G.C.C	32:1 Mobilization and Construction Machinery Advance Applicable	Not Applicable

	G.C.C	32.2 If yes, Unconditional Bank Guarantee	Not Applicable
	G.C.C	32.3 If yes, Rate of interest chargeable on advances	Not applicable.
	G.C.C	32.4 If yes, Type & Amount of Advance payment that can be paid	1. Mobilization advance – Not applicable. 2. Construction Machinery Advance — Not applicable.
	G.C.C	32.5 If yes, Recovery of advance payment	Not Applicable
33		33.1 secured Advance Applicable	Not Applicable
		33.2 if yes, Unconditional Bank Guarantee	Not Applicable
		33.2 if yes, Amount of Secured Advance:	Not Applicable
		33.3 if yes, Conditions for secured advance.	Not Applicable
		33.4 if yes, Recovery of Secured advance	Not Applicable
35		Completion certificate Format - after physical completion of the Work	As per Annexure - U
		Final Completion Certificate Format— after final payment on completion of the Work	As per Annexure-V
36		Competent Authority	***Executive Director, Ujjain Smart City Limited***
37		Salient features of some of the major labour laws that are applicable	As per Annexure – W

Annexure – I (Format: I - 2)

19.LIST OF TECHNICAL PERSONNEL FOR THE KEY POSITIONS

The Contractor will have to appoint the following key personnel during the execution and entire contract period, apart from other key personnel and support staff as necessary.

S. No.	Details	Required nos.
1	Project Manager with degree in Civil Engineering having minimum relevant post qualification experience of 15 years and should have completed three similar works.	One
2	MEP Engineer with degree in Electrical Engineering and 10 yrs working experience	One
3	Site Engineer with Degree/Diploma in Civil Engineering having minimum 5(for Degree holders) / 7 (for Diploma holders) years' experience in building work.	Two
4	Quality Control Lab Technician with diploma holder with 5 years of Experience	One
5	Structural Engineer (MS/M.Tech) with minimum 10 years' experience	One
6	Architect (B. Arch) with minimum 7 years' experience	One

Penalty for Non-deployment of above staff are as follows:

S. No.	Details	Penalty to be computed on Per Month basis
1	Project Manager	Rs. 65,000/- p.m.
2	Structural Engineer	Rs. 65,000/- p.m.
3	Architect	Rs. 65,000/- p.m.
4	MEP Engineer	Rs. 65,000/- p.m.
5	Site Engineer	Rs. 45,000/- p.m. each

6	Quality Control Lab Technician	Rs. 20,000/- p.m.
NOTE: after signing of the contractor agreement the contractor has to submit the bio data of above position for the approval from USCL and shall be appointed after the approval		

Note:

1. Aforesaid personnel shall be deployed within the period starting from the date of award of contract as stipulated in the contract.

2. Approval of the superintending engineer about suitability of personnel shall be obtained before deployment.

3. The Bidder shall submit CVs of proposed personnel confirming eligibility, experience and suitability of the personnel for the project.

Annexure – I (Format: I - 3)

LIST OF EQUIPMENTS / MACHINES FOR CONSTRUCTION WORK

Bidders to furnish details of minimum requirement in the format given below for the Work:

S. No.	Name of Equipment/ Machinery	Min Quantity Required	Details of Equipment/ Machinery Available with the bidder	Quantity Available
1	JCB/Excavator	1		
2	Dumpers	2		
3	Pin Vibrator	3		
4	Plate vibrator	2		
5	Concrete Mixer Machines	3		
6	Any other machine/ equipment required for Project work from time to time			

Annexure—N

(Referclause 10 of Section 3— GCC)

20.Drawings

Drawings attached separately

ANNEXURE—O

(Referclause 15 of Section 3 -GCC)

Mile stones to be followed are as under:

The time allowed for carrying out the work shall be strictly observed by the contractor and shall be deemed to be essence of the contract and shall be reckoned immediately after 14 days from signing of the agreement.

The work shall throughout the stipulated period of contract be proceeded with all due diligence keeping in view that time is the essence of the contract. The contractor shall be bound in all cases to complete the following **financial target:**

i. 1/6th of the whole work [13]within 1/4th of the contract period(i.e in 4 Months 15 days)

ii. 1/3nd of the whole work within 1/2nd of the contract period (i.e in 9 Months)

iii. 3/4th of the whole work before 3/4th of the contract period(i.e in 13 Months 15 days)

iv. Completion of the balance work as per date of completion of the contract(i.e in 18 months)

[13] Whole Work means the Contract Amount

ANNEXURE—P

(Referclause 15 of Section 3-GCC)

21.Compensation for Delay

Compensation for Delay

If the contractor fails to achieve the milestones as per Annexure-O, and the delay in execution of work is attributable to the contractor, the Employer shall retain an amount[14]from the sums payable and due to the contractor as per following scale -

i. Slippage[15] up to 25% in financial target during the milestone under consideration 2.5% of the work remained unexecuted in the related time span.
ii. Slippage exceeding 25% but Up to 50% in financial target during the milestone under consideration - 5% of the work remained unexecuted in the related time span.
iii. Slippage exceeding 50% but Up to 75% in financial target during the milestone under consideration -7.5% of the work remained unexecuted in the related time span,
iv. Slippage exceeding 75% in financial target during the milestone under consideration-10% of the work remained unexecuted in the related time span.

Note: *For arriving at the dates of completion of time span related to different milestones, delays which are not attributable to the Contractor shall be considered. The slippage on any milestone is if made good in subsequent milestones or at the time of stipulated period of completion, the amount retained as above shall be refunded. In case the work is not completed within the stipulated period of completion along with all such extensions which are granted to the Contractor for either Employer's default or Force Majeure, the compensation shall be levied on the contractor at the rate of 0.05% per day of delay limited to a maximum of 10% of contract price. The decision of Superintending Engineer shall be final and binding upon both the parties.*

[14] The Amount shall be retained by the Employer permanently as Penalty
[15] Slippage means- Balance Financial Targets

Annexure – Q

(Referclause 17 of Section 3 GCC)

22.List of Equipment for Quality Control Lab

Indicative Laboratory Equipment List			Available with the bidder		
S. No.	Name of Equipment/ Machinery	Quantity	S. No.	Name of Equipment/ Machinery	Quantity
1	Machinery and Equipment Required for ConductingTests as per MOST / BIS/ MORTH Specifications (5th Revision) for Roads, Bridges and building Works/ MPUADD Specifications(Part 3 – Road, Bridge and Building work) As per the requirement of the project.				
2					
3					
4					
5					
6					
…					
…					
…					

- The contractor shall arrange to provide fully furnished and adequately equipped field laboratory with adequate qualified technical staff. Preferably located adjacent to the Project Office and provided amenities like water supply, electric supply etc.
- The laboratory equipment shall confirm I.S. specifications and MOST / MORTH specifications. The Contractor shall carry out the calibration of the instruments as directed by the Engineer in- Charge on expiry date of calibration. On completion of work in all respect, the equipment will be the sole property of the contractor.
- It shall be considered as incidental to the work, and no extra payment will be made, what so ever, will not be made for the same.

ANNEXURE - R

(Referclause 31 of Section 3 -GCC)

Price Adjustment

(If applicable in Contract Data)

The formulas for adjustment of price are as follow:

R = Value of work as defined in Clause 31.2(3) of General Conditions of Contract

Weightages* of component in the work

S.No.	Component	Percentage of Component in the work
1.	Cement -P_c	
2.	Steel -P_s	
3.	Bitumen –P_b	
4.	POL P_f	

* Weightages of various components of the work shall be as determined by the competent Technical authority.

Adjustment for cement component

(ii) Price adjustment for increase or decrease in the cost of cement procured by the contractor shall be paid in accordance with the following formula:

V_c= $0.85 \times P_c/100 \times R \times (C_1-C_0)/C_0$

V_c= increase or decrease in the cost of work during the month under Consideration due to changes in rates for cement.

C_0= The all India wholesale price index for Grey cement on the date of opening of Bids as published by the Ministry of Industrial Development, Government of India, New Delhi (www.eaindustry.nic.in)

C_1= The all India average wholesale price Index for grey cement for the month under consideration as published by Ministry Government of India, New Delhi. (www. eaindustry.nic.in)

P_c= Percentage of cement component of the work

Note: For the application of this clause, index of Grey Cement has been chosen to represent Cement group.

Adjustment of steel component

(iii) Price adjustment for increase or decrease in the cost of steel procured by the Contractor shall be paid in accordance with the following formula:

V_s $0.85 \times P_s \times /100 \times R \times (S_1-S_o)/S_o$

V_s= Increase or decrease in the cost of work during the month under consideration due to changes in the rates for steel.

S_o = The all India wholesale price index for steel (Bars and Rods) on the date of opening of Bids as published by the Ministry of Industrial Development, Government of India, New Delhi (www.eaindustry.nic.in)

S_i= the all India average wholesale price index for steel (Bars and Rods) for the month under consideration as published by Ministry of Industrial Development, New Delhi (www.eaindustry.nic.in)

P_s= Percentage of steel component of the Work.

Note : *For the application of this clause, index of Bars and Rods has been chosen to represent steel group.*

Adjustment bitumen component

(iv) Price adjustment for increase or decrease is the cost of bitumen shall be paid in accordance with the following formula:

V_b= $0.85xP_b/100xRx(B_I-B_0/B_o$

V_b= Increase or decrease the cost of work during the month under consideration due to changes in rates for bitumen.

B_0= The official retail price of bitumen at the IOC depot at nearest center on the date of opening of Bids.

B_i = The official retail price of bitumen of IOC depot at nearest center for the 15th day of the month under consideration.

P_b = Percentage of bitumen component of the work.

Adjustment of POL (fuel and lubricant) component

(V) Price adjustment for increase or decrease in cost of POL (fuel and lubricant) shall be paid in accordance with the following formula:

V_f = $0.85x\ P_f/100xRx(F_i—F_o)/F_o$

V_f= Increase or decrease in the cost of work during the month under consideration due to changes in rates for fuel and lubricant.

F_0= the official retail price of High speed Diesel (HSD) a the existing consumer pumps of IOC at nearest center on the date of opening of Bids.

f_i = The official retail priee of HSD at the existing consumer pumps of IOC at nearest center for the 15th day of month of the under consideration.

P_f= Percentage of fuel and lubricants component of the work.

Note: For the application of this douse, the price of High Speed Diesel has been chosen to represent fuel and lubricants group.

Annexure - S

(Referclause 32 of Section 3-GCC)

23.Bank Guarantee Form for Mobilization and Construction Machinery Advance

To

_____[name of Employer)
_____[address of Employer]
_____[name of Contractor)

In accordance with the provisions of the General Conditions of Contract, clause 31 ("Mobilization and Construction Machinery Advance") 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]* _____[in words].

We, the _____(bank of 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 obligation on our part and without his first claim to the Contractor, in the amount not exceeding '[amount of guarantee]* _____[in words].

We further agree that no change or addition to or other modification of the terms of the Contractor or 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: _____
Mail id-
Phone no-
Date: _____

* An amount shall be inserted by the Bank or Financial Institution representing the amount of the Advance Payment and denominated in Indian Rupees.

Annexure - T

(Referclause 33 of Section 3 -GCC)

24.Bank Guarantee Form for Secured Advance

INDENTURE FOR SECURED ADVANCES

This indenture made the _____ day of _____ 20__ BETWEEN _____ (hereinafter called the contractor which expression shall where the context so admits or implies be deemed to include his executors, administrators and assigns) or the one part and the Employer of the other part.

Whereas by an agreement dated _____ (hereinafter called the said agreement) the contractor has agreed.

AND WHEREAS the contractor has applied to the Employer that he may be allowed advanced on the security of materials absolutely belonging to him and brought by him to the site of the works the subject of the said agreement for use in the construction of such of the works as he has undertaken to executive at rates fixed for the finished work (inclusive of the cost of materials and labour 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 Accounts of Secured Advance 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 authority of other materials 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 where of the Contractor doth hereby 'acknowledge) and of such further advances (if any) as may be made to him as a for said the Contractor doth hereby covenant and agree with the President and declare as follows:

That the said sum of Rupees _____ so advanced by the Employer to

(1) the Contractor as aforesaid and all or any further sum of sums advanced as aforesaid shall be employed by the Contractor in or towards expending the execution of the said works and for no other purpose whatsoever.

(2) That the materials details 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 propriety 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 indemnified the Employer against all claims to any materials in respect of which an advance has be 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 here after be made as aforesaid (hereafter called the said materials) shall be used by the Contractor solely in the execution of the said works in accordance with the directions of the Engineer.

(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 Engineer or any officer authorized by him. 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 required by the Engineer.

(5) That the said materials shall not be removed from the site of the said works except with the written permission of the Engineer or an officer authorized by him on that behalf.

(6) That the advances shall be repayable in full when or before the Contract 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 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 than 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 of the Employer shall immediately on the happening of such default were payable by the Contractor to be 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 reason of the default of the Contractor and the Contractor hereby covenants and agrees with the Employer to reply 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 of 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 power contained therein if and whenever the covenant for payment and repayment here-in-before contained shall become enforceable and the money owing shall not be paid in accordance there with the Employer may at any time thereafter adopt all or any of the following courses as he may deem best:

(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 provision in that behalf contained in the said agreement debiting the contractor with the actual cost of effecting such completion and the amount due to 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 sums aforesaid repayable or repayable 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 provisions of these presents and the said agreement the provisions of these presents shall prevail and in the event of any dispute or difference arising over the construction or effect of these presents the settlement of which has not been here-in-before expressly provided for the same shall be referred to the Employer whose decision shall be final and the provision of the Indian Arbitration Act for the time being in force shall apply to any such reference.

Annexure - U

(Referclause 35 of Section 3 -GCC)

25.Physical Completion Certificate

Name of Work:

.....

.....

.....

Agreement No .....Date .....

Amount of Contract Rs .....

Name of Agency .....

Used MB No. .....

Last measurement recorded

a. Page No. & MB No. _____

b. Date _____

Certified that the above mentioned work was physically completed on .....(date) and taken over on .....(date) and that I have satisfied myself to best of my ability that the work has been done properly.

Date of issue

Executive Engineer/Engineer-in-charge

.....

.....

Annexure-V

(Referclause 35 of Section 3-GCC)

26.Final Completion Certificate

Name of Work:

.....

.....

.....

Agreement no .....Date .....

Name of Agency: .....

Used MB No. .....

Last measurement recorded

a: Page No. & MB No. _____

b. Date _____

Certified that the above mentioned work was physically completed on .....(date) and taken over on .....(date).

Agreemented amount Rs .....

Final Amount paid to contractor Rs. .....

Incumbency of officers for the work

I have satisfied myself to best of my ability that the work has been done properly.

Date of issue

Executive Engineer

.....

.....

Annexure - W

(Referclause 39 of Section 3 -GCC)

Salient Features of Some Major Labour Laws Applicable

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 the prescribed minimum years (say, five years) of service or more or on death the rate of prescribed minimum days'(say, 15 days) wages for every completed year of service. The Act is applicable to all establishments employing the prescribed minimum number (say, 10) or more employees.

c) **Employees P.F. and Miscellaneous Provision Act 1952:** The Act Provides for monthly contributions by the Employer plus workers at the rate prescribed (say, 10% or 8.33%), The benefits payable under the Act are:

i. 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 prescribed minimum (say 20) or more contract labour.

f) **'Minimum Wages Act 1948;** - The Employer is 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, runways is scheduled employment.

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 prescribed minimum (say, 20) or more workmen. The Act provides for payments of annual bonus within the prescribed range of percentage of wages to employees drawing up to the prescribed amount of wages, calculated in the prescribed manner. The Act does not apply to certain establishments. The newly set-up establishments are exempted for five years in certain circumstances. States may have different number of employment size.

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 prescribed minimum (say, 100, or 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and gets these certified by the designated Authority.

I) **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 regulations 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 prescribed minimum (say, five) 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, Traveling expenses from home up to 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 the prescribed minimum (say, 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 of 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 the prescribed minimum (say, 10) persons or more with aid of power, or another prescribed minimum (say, 20) or more persons without the aid of power engaged in manufacturing process.

Annexure – X

27.UNDERTAKING FOR NOT DEBARRED

(To be enclosed with technical Bid)
(on the letter head of the bidder)

This is to certify that our firm _____[name of firm with registered address] is not black listed or debarred by any Government/Semi Government/International Agency of India in any of Indian States as well as in any other country outside India by respective Governments (including any state government / State Government Body)/International Agencies like World Bank/IMF/DFID/JICA/USAID etc. as on the date of submitting technical bid.

(Sign & Seal of Authorized Signatory of firm)

SECTION 3

28.Conditions of Contract

Part — II Special Conditions of Contract [SCC]

1. General

The data and information given in the Contract Document are based on the investigations, planning and designs carried out so far. The data considered for the project planning have been included in the bid documents. The data/information provided with the Bid document in the form of detailed project report is meant for the reference and guidance only to the bidders. The Bidder shall, therefore, satisfy himself about the adequacy and accuracy of the said data/information and interpretation thereof and collect fresh data/additional data/information and carry out/conduct further investigations and studies and prepare the proposal and get the approval of same from the employer. The Authority shall not be responsible for the accuracy/adequacy of the data/information provided and interpretation thereof on the same by the Bidder/Contractor.

2. Sufficiency of Bid

2.1 The Contractor shall be deemed to have visited and carefully examined the Project Site and it's surrounding to have satisfied himself to the nature and conditions of the means of transport and communications, whether by land or air, as available at present and as to possible interruptions thereto including the access and regress conditions for the Site. The Contractor is also deemed to have made enquiries, examined and satisfied himself as to the sites source for obtaining sand, stones, bricks and other materials, the sites for disposal of surplus materials and accommodation for depots, colonies, workshops and other infrastructure facilities as may be necessary for executing and completing the Works, as also the sub-soil water and variations thereof, storms, prevailing winds, climatic conditions and all other similar matters affecting the works including law &order.

2.2 Any neglect or omission or failure on the part of the Contractor in obtaining necessary and reliable information upon the foregoing or any other matter affecting the Contract shall not relieve him from any risks or liabilities or the entire responsibility for the completion of the Works in accordance with the Contract.

3. Safety, Security and Protection of the Environment

3.1 The contractor shall comply with all applicable national, provincial, and local environmental laws and regulations.

3.2 The Contractor shall take all measures and precautions to avoid any nuisance or disturbance arising from the execution of the Works. This shall wherever possible be achieved by suppression of the nuisance at source rather than abatement of the nuisance once generated.

3.3 The Contractor shall take all the necessary precautions and abide by relevant rules and regulations of safety which are presently in force and which may come into force during the currency of the contract.

3.4 The Contractor shall also take such other additional precautions and resort to such other additional safety measures as may be directed from time to time by the Engineer-in-

charge. Violation of any rules, regulations and guidelines contained herein will entail immediate termination of the contract.

3.5 In the event of any spoil, debris, waste or any deleterious substance from the Site being deposited on any adjacent land, the Contractor shall immediately remove all such material and restore the affected area to its original state to the satisfaction of the Employer.

3.6 The Contractor shall prevent any interference with the supply to or abstraction from, and prevent any pollution of, water resources (including underground percolating water) as a result of the execution of the Works.

3.7 The Contractor shall at all times ensure that all existing water courses / bodies within, and adjacent to the Site are kept safe and free from any debris and materials arising from the Works.

3.8 The Contractor shall devise and arrange methods of working to minimize dust, gaseous or other air-borne emissions and carry out the Works in such a manner as to minimize adverse impacts on air quality.

3.9 The Contractor shall utilize effective water sprays during delivery manufacture, processing and handling of materials when dust is likely to be created, and to dampen stored materials during dry and windy weather. Stockpiles of friable materials shall be covered with clean tarpaulins, with application of sprayed water during dry and windy weather. Stockpiles of material or debris shall be dampened prior to their movement, except where this is contrary to the Specification.

3.10 In the event that the Contractor is permitted to use gravel or earth roads for haulage, he shall provide suitable measures for dust palliation, if these are, in the opinion of the USCL officials necessary. Such measures may include spraying the road surface with water at regular intervals.

3.11 The Contractor shall take all necessary measures so that the operation of all mechanical equipment and construction processes on and off the Site shall not cause any unnecessary or excessive noise, taking into account applicable environmental requirements. The Contractor shall use all necessary measures and shall maintain all plant and silencing equipment in good condition so as to minimize the noise emission during construction works.

3.12 The Contractor shall control the disposal of all forms of waste generated by the construction operations and in all associated activities. No uncontrolled deposition or dumping shall be permitted. Wastes to be controlled shall include, but shall not be limited to, all forms of fuel and engine oils, all types of bitumen, cement, surplus aggregates, gravels, bituminous mixtures, etc. The Contractor shall make specific provision for the proper disposal of these and any other waste products, conforming to local regulations and acceptable to the Project Manager.

3.13 The Contractor shall plan and provide for remedial measures to be implemented in the event of occurrence of emergencies such as spillages of oil or bitumen or chemicals.

3.14 The Contractor shall provide the Employer with a statement of the measures he intends to implement in the event of such an emergency which shall include a statement of how he intends to provide personnel adequately trained to implement such measures.

3.15 Should any pollution arise from the Contractor's activities he shall clean up the affected area immediately at his own cost and to the satisfaction of the Project Manager and shall pay full compensation to any affected party.

3.16 The contractor shall barricade/cover (isolate) the construction site during construction with GI sheet or Hanson cloth (green) from all sides for the security of the resources and/or moving of the resources in and around the site. It is deemed that the payment for

deployment of such resources, equipment and materials shall be included in the quoted rates of the items. No separate payment shall be made on this account.

3.17 The contractor shall be responsible for the over and underground utilities already laid to keep them in the good condition. If there is any damage to the existing utilities (Over and/ or underground) the contractor shall restore them to its original condition. The risk for the same shall be assessed by the contractor/bidder before quoting the rates in the bid. The rates shall be deemed to be included in the quoted rates by the contractor, no extra amount shall be paid to the contractor on this account.

Note: - In addition to above contractor shall have to follow the instruction of IS codes for security and Safety (As per Handbook on construction And Safety Practices: SP 70: 2001)

4. Protection of Trees and Vegetation

The Contractor shall ensure that no trees or shrubs or waterside vegetation are felled or harmed except for those required to be cleared for execution of the Works. The Contractor shall protect trees and vegetation from damage to the satisfaction of the Employer. No tree shall be removed without the prior approval of the Employer and any competent authorities. Should the Contractor become aware during the period of the Contract that any tree or trees designated for clearance have cultural or religious significance he shall immediately inform the Employer and await his instructions before proceeding with clearance. In the event that trees or other vegetation not designated for clearance are damaged or destroyed, they shall be repaired or replaced to the satisfaction of the Employer, who shall also impose a penalty of twice the commercial value of any timber affected, as assessed by the Employer.

Contractor shall keep provision of compensatory plantation in lieu of trees cut down in the process of development and construction. The contractor shall compensate plantation of 10 trees against felling/cutting of each mature tree. The area for compensatory tree plantation shall be decided in consultation with the employer. The contractor shall be responsible for protection, up-keeping, and watch & ward of the said compensatory plantation till 1 years of Projects defect liability period.

5. Water Supply

The Contractor shall make his own arrangements at his own expense for water supply for construction, sectional testing if any and other purposes.

6. Relations with Local Communities and Authorities

In setting and operating his plant and facilities and in executing the Works the Contractor shall at all-time bear in mind and to the extent practicable minimize the impact of his activities on existing communities. Where communities are likely to be affected by major activities such as road widening or laying of utility lines or the establishment of a camp, large borrow pit or haul road, he shall liaise closely with the concerned communities and their representatives and if so directed, shall attend meetings arranged by the Employer to resolve issues and minimize impacts on local communities.

7. Fire Prevention

The Contractor shall take all precautions necessary to ensure that no vegetation or property/ies along the line of the road outside the area of the permanent works is affected by fires arising from the execution of the Works. The Contractor shall obtain and follow any instructions of the competent authorities with respect to fire hazard when working in the vicinity of gas installations. Should a fire occur adjacent to the project road for any reason, the Contractor shall immediately suppress it. In the event of any other fire emergency in the vicinity of the Works the Contractor shall render assistance to the civil authorities to the best of his ability. Any scrub or plantation damaged by fire considered by the Employer to have been initiated by the Contractor's staff or labour shall be replanted and otherwise restored to the satisfaction of the Employer at the Contractor's expense.

8. Interference with Traffic and Adjoining Properties

In case any operation connected with the works necessitates diversion, obstruction or closure of any road, waterway or any other right of way, the approval of respective competent authorities shall be obtained well in advance by the Contractor. In case the Contractor's operations obstruct access to adjacent properties, the Contractor shall be responsible to provide reasonable temporary access to the affected parties. In case the Contractor fails to provide adequate temporary facilities, this shall be deemed to be an Uncorrected Defect and the Employer shall have the right to engage a third party to correct the Defect and the cost of such correction will be deducted from the Contract Price.

9. Arrangement for Traffic During Construction

9.1 General

The Contractor shall at all times, carry out work on the City/Urban road 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 urban road, the Contractor shall, in accordance with the directives of the Engineer as well as the Traffic Police, provide and maintain, during execution of the work, a passage for traffic either along a part of the existing carriageway under improvement or along an alternative diversion route. Before taking up any construction, the Contractor shall prepare a Traffic Management Plan for each road and submit it to the Engineer for prior approval. This plan should include interalia:

A qualified safety officer with support staff to serve as a site safety team with required safety devices. Provision of traffic safety devises as per IRC: SP 55 with the following specifications:

- Signage of retro-reflective sheet of high intensity grade
- Delineators in the form of cones/drums made of plastic/rubber having retro-reflective red and white bands, at a spacing of 5 m along with a reflective tape to be tied in between the gaps of cones/drums. A bulb preferably using solar energy is to be placed on the top of the cone/drum for delineation in the dark hours and night.
- **Barricades using iron sheet with adequate iron railing/frame painted with retro-reflective paint in the alternate yellow and black & white stripes. Warning lights at 5 m spacing shall be mounted on the barricades and kept lit in dark hours and night.**
- Road markings with hot applied thermoplastic paint with glass beads.
- Safety measures for the workers engaged including personal protection equipment First aid and emergency response arrangements

9.2 Passage of Traffic along a Part of the Existing Carriageway under improvement

a) 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 work is not in progress. The treatment to the shoulder shall consist of providing at least 300 mm moorum layer properly rolled and compacted 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.

b) After obtaining permission of the Engineer, the treated shoulder shall be dismantled, the debris disposed of and the area cleared as per the direction of the Engineer.

9.3 Traffic Safety and Control

The Contractor shall keep the roadway under construction open to traffic and pedestrian movement with proper drainage arrangement and smooth surface condition. Suitable ingress and egress shall be provided as necessary for all intersecting roads and for all abutting properties. Its purpose shall be to protect people from associated hazards and to prevent trespassing into the construction zone.

The Contractor shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain such barricades, including signs, marking, flags, lights, drums, traffic cones, delineators and flagmen as per the traffic management plan submitted by the Contractor and approved by the Engineer. An agreed phased programme for the diversion of traffic on the urban road shall be drawn up in prior consultation with the Engineer and the Traffic Police.

The Contractor shall keep all signs in proper position, clean and legible at all times.

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. 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 reflective type, as directed by the Engineer. Two persons with red / green flag and whistle to be deputed at both ends of the barricades to regulate traffic. Red lanterns or warning lights of similar type shall be mounted on the barricades at night and kept lit throughout from sunset to sunrise.

At the points where traffic is to deviate from its normal path (whether on temporary diversion or part width of the carriageway) the channel for traffic shall be clearly marked with the aid of pavement markings, painted drums or a similar device to the directions of the Engineer. At night, the passage shall be delineated with lanterns or another suitable lightsource.

No material to project / spill beyond barricades.

This work item shall include all labour, equipment and services involved in the erection, maintenance, moving, adjusting, cleaning, relocating and storing of signs, barricades, drums, traffic cones and delineators furnished by the Contractor as well as all labour and equipment involved in the maintenance of traffic lanes and detours, for maintenance of traffic.

9.4 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 and as directed by the Engineer. Such temporary ways shall be kept free of dust by frequent applications of water.

10. Transport of Contractor's Equipment or Temporary Works

Where the Contractor intends to use a particular route for the haulage of large quantities of materials he shall consult well in advance with any affected communities and submit in advance for the Employer's approval a plan including but not limited to the proposed route, the existing condition of the pavement and bridges, the estimated number and type of vehicle movements per day, a programme for monitoring the condition of the pavement and structures, and measures for limiting vehicle speeds and dust nuisance in built-up areas. The Employer reserves the right to disallow certain haul routes should these in his opinion cause or be likely to cause unreasonable nuisance or hazards to the public. The Employer's approval will not remove the Contractor's obligations under this Sub-Clause to prevent and repair damage to roads or his liability for compensation for any accidents caused by hisvehicles.

11. Work in Monsoon and Dewatering

The execution of the work may entail working in the monsoon also. The contractor must maintain labour force as may be required for the job and plan and execute the construction and erection according to the prescribed schedule. No special/ extra rate will be considered for such work in monsoon. The contractor's rate shall be considered inclusive of cost of dewatering required if any and no extra rate shall be payable on this account.

12. Site Clearance

Before handing over the work to the Authority, the contractor shall remove all temporary structure like the site offices, cement godown, stores, labour hutments etc., scaffolding rubbish, left over materials tools and plants, equipment's etc., clean and grade the site to the entire satisfaction of the Engineer-In-Charge. If this is not done the same will be got done by USCL at his risk and cost.

13. Site Documents

The following site documents shall mainly be maintained by the contractor at site:

- Copy of contract documents and drawings.
- Computerized bill format.
- Site Order Book.
- Material testing registers / Quality Inspection Reports.
- Measurement books on computerized format.
- Progress bar chart.
- Sample approval register.
- Hindrance Register.
- Work Diary.
- Deviation/variation order registers.
- Cement consumption register.
- Reinforcement registers. Concrete cube test register.
- Slump test register.
- Silt content and sand bulkage register.

- Request for Inspection (RFI) sheets
- Joint Measurement Sheets(JMS)

14. Safety Guidelines

i. Proper and correct lifting methods shall be adopted.
ii. All lifting tools, tackles and wire ropes etc. shall be of tested quality for safe working loads. Wire ropes shall be of sound construction without any splaying.
iii. It is mandatory for all jobs done at a height of 2.5 M and more to use fall arrestor type safety belts & safety nets.
iv. While carrying out work in confined areas, proper ventilations and lighting arrangement should be made by the contractor. Adequate precautions shall be taken while the work is in progress to ensure that naked light, fire, welding or any other hot work is not in progress in the vicinity of the area where painting is being carried out.
v. If the work is to be carried out at height, safety of the personnel is of utmost importance. Therefore, all necessary precautions must be taken by the contractor and he has to obtain work permit from authorized official of USCL for working at height before start the work.
vi. In addition to the above, contractor has to adhere to the following safety checklist:

A. CIVIL WORKS

i. During excavation, the excavated earth must be dumped at a safe distance from the edge of excavation. In no case, this shall be less than 1.5 meters from the top edge of the excavation.
ii. Safe cross walkways are to be provided at distances not more than 30 meters along a continuous trenching for pipelines etc.
iii. Hard hats (safety helmets), rubber boots, safety shoes, and hand gloves, etc. are required to be provided for supervising as well as other working personnel by the contractor.
iv. Keep a watch on buried cables and underground systems. Ladders, gangways are to be provided at convenient places for carrying out required works. Ladders shall be firmly secured to ground, and rungs of the ladders shall be properly secured and safe.
v. Install Barricading as per IS code with the marking “Ujjain Smart City Works”.

B. ELECTRICAL WORKS

i. All temporary electrical connections should be got done to conform to statutory regulations and a certificate obtained from the authorities. The connection and the wiring to be maintained by competent and licensed supervisors and wiremen. As far as possible, the cables are to be safely buried to ensure free access to equipment and machineries movements.
ii. Hard hats (safety helmets) made out of insulating material to be used by personnel working in 'live' areas like substations, etc.
iii. Safety boots, necessary hand-gloves as required, shall be used.
iv. ‘Earthing’ of machineries and equipment shall be ensured. No open/ bare connections allowed. The arrangements should be checked periodically for damages to insulation and loose connections, etc and rectified so that the wiring becomes non-hazardous.
v. The areas of working during nights shall be properly illuminated with floodlights and hand- Hard hats (safety helmets), safety belts, eye goggles, face shields, safety boots, hand- gloves, respirators, etc as required/ directed shall be used.
vi. Proper, correct and safe lifting methods shall be adopted
vii. All lifting tools tackle and wires ropes etc shall be of tested quality for safe working loads. Wire ropes shall be of sound construction without any splaying.

viii. Checks to be exercised for broken wires and core proportion in the main body of the wire ropes to be rejected. Manufacturer's guidelines/ standards instructions are to be followed for using wire ropes and slings with broken wires. Experience and common sense is of immense help.

ix. Usage of hoisting belts/ safety belts is must for personnel working at higher elevations.

x. Only safe gangways / walkways shall be used for movement of personnel. Short cuts shall be avoided.

xi. Check connections to headman anchors before hoisting.

xii. All live wires to be crossed during hoisting shall be made dead near the vicinity of the area during hoisting/ rigging.

xiii. Avoid keeping the loads supported by hoisting equipment's for an unreasonable length of time.

xiv. Ropes, cables, and slings must be protected with pads or wooden blocks at sharp edges. xv. lamps as per the demand of the job.

xv. Danger signals and safety tags in the live areas shall be demonstrated properly. All connections to be switched off after the working hours.

xvi. Isolation switches and main switches shall be accessible easily. Necessary precautions should be taken while excavating earthing pits.

xvii. All works shall be carried out in strict accordance to the norms, procedure and specifications issued and enforced by BIS in Relevant Indian Standard specifications and code of Practices with up to date amendments and revisions, latest edition of National building code and National electric code. In addition, the installation shall comply in all respects with the requirements of Indian. Electricity Act 2003 and Indian Electricity Rule 1956 with up to date amendments and revisions and special requirements if any of the M.P. State Electricity Board or Chief Electrical Advisor to Government of Madhya Pradesh cum Chief Electrical Inspector and his subordinate office.

xviii. The contractor shall make his own arrangements for supply of water and electricity at his expense required for execution of work. The USCL shall neither make any such arrangements nor shall make any payments in this regard.

xix. The contractor has to construct at his own cost his site office foe contractor staff and USCL staff and store at site on a suitable place and location as permitted by USCL. The USCL shall not provide any place for storage of equipment's required for work. No amount shall be paid to the contractor in this regard.

xx. Proper upkeep and maintenance and safety of store and stocks of materials brought at site shall be the sole responsibility of the contractor. The materials got damaged due to negligence of its up keeping at site or due to mishandling shall have to be replaced by the contractor at his own cost. On discovery of such damages the USCL shall recover the amount paid through the running bills to the contractor and shall only be reimbursed after the replacement of the same. The USCL shall also not be responsible for theft of materials from site and the contractor has to replace all such materials at his own cost. No compensation whatsoever shall be payable to the contractor on above grounds.

xxi. The contractor shall not be entitled to any compensation for any loss suffered by him on account of delay in commencement or execution for work whatever the cause of delay may be including delay arising out of other materials, supply of materials, transportation for any matter related with MPPKVV Co. Ltd. & Electrical Safety Department or any other reasons whatsoever, the USCL shall not be liable for any claim in respect thereof.

xxii. The contractor shall finalize the layout of work, physically at site, and get approved by MPPKVV Co. Ltd. Before placing orders for material. Approval of above layout by

MPPKVV Co. Ltd. shall be general and shall not absolve the contractor with responsibility of its correctness.

xxiii. The contractor shall within specified period from the date of issue of work order shall prepare all relevant drawings to be submitted to the applicable office of Electrical Inspector MP Govt or any other competent office for approval. All required sanctions and approvals form the above offices shall have to be obtained by the contractor within the above stipulated period at his own cost.

xxiv. Rate quoted shall be applicable for works at all height unless otherwise specified in the schedule of quantities.

xxv. The contractor shall submit the drawing in three sets to USCL for this work duly approved by the Office of the electrical Inspector MP govt. and MPPKVV Co. Ltd. Within specified days from the date of work order. The approval of these drawing will be general and will not absolve the contractor of the Responsibility of the correctness of those drawings.

xxvi. The contractor shall submit test reports of the equipment to be supplied and drawings for approval of the Engineer in Charge before supplying the equipment. The successful tenderer shall also submit the purchase bill of all items as required and directed at no cost.

xxvii. (A) The contractor shall have to arrange all free of cost facilities for the inspection, such as employ or material labour etc. and any fees payable to Government or any competent authority at his own cost. The contractor shall arrange to obtain all sanctions from the concerning office of MPPKVV Co. Ltd. and from the elect. inspector Govt. of M.P. at his own cost. Any fees in respect of above work paid by the contractor shall not be reimbursed or refunded by the USCL and no claim for compensation shall be entertained in this regard. Copy of all such sanctions have to be submitted to Engineer In charge USCL.

xxviii. xxviii. (B) The contractor has to arrange factory inspection of all major items as required by Engineer in Charge at the manufacturer's works before dispatch of material. Date of inspection should be informed 15 days in advance to USCL. The contractor has to get any equipment or complete installation checked and tested by any Government/ Semi Government/ Private authority such as CPRI, BHEL, NABL laboratory, Testing department of MPPKVV Co. Ltd. etc. at his own cost. He shall also provide free of cost all labour, material, equipments etc. for the purpose of above testing. The contractor shall not be entitled for any compensation on this ground. If required by Engineer in Charge contractor will have to arrange for third party inspection of entire installation done by him and he will have to rectify / repair / replace any defects pointed out by inspection agency.

xxix. (C) The consultant appointed by USCL is authorized for following:

a) To visit the site from time to time to inspect the quality of work.
b) To issue working drawings with specifications to the contractor.
c) Technically guide the contractor if required.
d) To accompany USCL officials for factory inspections of material if required.

xxx. The contractor shall be responsible for removal of all defects and shall make rectification in the work at his own cost if any at the time of handing over the installation to MPVV Co. Ltd. without any claim for compensation.

xxxi. It shall be the duty of the contractor to arrange all clearances from Electrical Inspector MP Govt, to coordinate and peruse the officers of MPPKVV Co. Ltd. for periodical inspections during the currency of contract and final inspection of the work and get the complete installation electrically charged. No extra payment shall be made to the contractor in above account.

xxxii. The contractor at his own cost and efforts shall arrange periodical inspection of work by various officers of MPPKVV Co. Ltd. during course of execution of work and any instruction

issued by the officers of MPPKVV Co. Ltd. shall be communicated to USCL in writing by the contractor and prior permission shall be taken from USCL before its compliance.

xxxiii. The contractor should note that any delay / on the part of MPPKVV Co. Ltd. on any account what so ever shall not be entertained as a reason for time extensions in case of delay in completion of the work covered under this entire contract. The tenderer should therefore be aware and should not that execution and timely completion of External Electrification work in full coordination with other development and construction works covered under the scope of contract shall be sole responsibility of successful tenderer.

xxxiv. The contractor has to quote his rates in strict accordance to the list of approved make of materials. The tenderer has to ensure before filling up the rates regarding their availability and period of delivery.

xxxv. The contractor shall note that during the execution of works there is likelihood in change of layout, specification and change in quantities of items entered in the schedule of items for which the contractor has tendered his rates. The increase or decrease in the quantities of such items may be up to any extent and the tenderer shall not be entitled to any compensation for any loss suffered by him on account or procurement of additional quantities of such items due to such changes.

xxxvi. The contractor shall not be entitled to any compensation for any loss suffered by him on account of delay in commencement or execution of work whatever the cause of delay may be including delay arising out of other materials or any reasons whatever and the USCL shall not be liable for any claim in respect thereof.

xxxvii. All dismantled material to be deposited at M.P.P.K.V.V.C.L. store by the contractor without any extra cost.

xxxviii. The contractor shall if required arrange for temporary mobile / trolley mounted distribution substations of required capacity to give supply to the areas being fed from the existing pole mounted transformer / transformers being removed. This will be necessary at the places where new transformer / CSS are to be installed at the same place from where pole mounted existing transformer/ transformers are being removed. No extra payment shall be made for the temporary mobile / trolley substations and associated temporary HT and LT cabling done for charging the same. The contractor shall be responsible for all necessary statutory permissions required for thispurpose.

xxxix. Successful Tenderer should have A-Class Electrical license issued by M.P. Licensing Board. The license must be submitted at the time of agreement.

C. GENERAL

i. Safety starts from the individual on the job. Experience and common sense shall be generously used. In case of any doubt regarding safety, Engineer–in-Charge can be consulted.
ii. Proper communication and alertness on the job is to be ensured.
iii. Manholes and openings for ducts etc shall be kept properly covered.
iv. Correct tools and tackles should be used for every work. Make shift tools and tackles will result in accidents.
v. Fire-fighting equipment shall be placed at designated locations and kept unobstructed.
vi. Do not use loose clothing, neckties, and etc. while on the job.
vii. Safety precautions recommended by the manufacturers/ vendors shall be strictly adhered to.
viii. All machinery, tools and tackles shall be maintained properly, and clearly.

15. Encumbrances in Construction Area, including Trees and Utilities -

i. The contractor shall be responsible to coordinate with service provider / concerned authorities for cutting of trees, shifting of utilities and removal of encroachments etc. and making the site unencumbered from the project construction area required for completion of work. This will include initial and frequent follow-up meetings / actions / discussions with each involved service provider / concerned authorities. The contractor will not be entitled for any additional compensation for delay in cutting of trees, shifting of utilities and removal of encroachments by the service provider / concerned authorities. Payment for cutting of trees and shifting of utilities as required by the concerned department shall be made by the Employer. The entire cut material will be property of the contractor and no cost of such material shall be recovered from the contractor which shall be appropriately considered by the contractor in hisbid.

ii. Drawings scheduling the affected encumbrances such as trees and services like water pipes, sewers, oil pipelines, cables, gas ducts, electricity lines, accessories, telephone poles and OFC cables etc. included in the contract document shall be verified by the contractor for accuracy of scope.

iii. The Employer will make payments to the respective service provider / authorities for cutting of trees and shifting of utilities, wherever required. The contractor will obtain necessary approval from such Authorities after payments by the Employer and also in cases where payments are not required to be made for such shifting. The Employer will also write to all concerned departments/ service provider organization for expediting and facilitating cutting of trees, shifting of utilities and removal of encroachment etc.

iv. Any services affected by the Works must be temporarily supported by the Contractor who must also take all measures reasonably required by the various bodies to protect their services and property during the progress of the Works. It shall be deemed to be part of the Contract and no extra payment shall be made for the same.

v. The Contractor may be required to carry out certain works for and on behalf of the various bodies and he shall also provide, with the prior approval of the Engineer, such assistance to the various bodies as may be authorized by the Engineer.

16. Supply of Coloured Record Photographs

The Contractor shall, at his own cost, arrange to take colour photographs at various stages / facets of the work including interesting and novel features of the work as directed by the USCL officials and supply two copies of colour record photographs mounted in the albums including negatives with specification and these shall be kept by Employer.

17. Public Awareness / Information Display

The Contractor shall, at his own cost, arrange to provide, erect and maintain necessary display boards/ banners etc as directed by USCL officials at selected points of project site giving such information as considered necessary for public awareness/ information.

18. Completion Drawings

The contractor is required to submit the completion drawings (As built Drawings) for the work done by him. However, the completion drawings for works done and covered underground, it is essential to prepare the completion drawing as soon as the work is done and before backfilling.

The drawings have to be prepared in digital format in AUTO-CAD, it is therefore made mandatory that the completion drawings of the cross section of road with all utilities, Road Plan, Inspection Chambers, Rainwater Catch pit, L-section of road etc, shall be submitted along with the running account bills for all the works carried out during the period.

The completion drawing should provide adequate data to enable finding the exact location of the system in ground at a later date by any other new person. It should also provide the data related to material, class and size of the line, its depth in ground, Invert Levels and levels in the manholes. The details will be provided from Chainage-wise and the plan layout of the roads along with Cross section and L-section on the reference map should be updated and submitted along with the bill. Two hard copies of the drawings will also be submitted along with the softcopy.

19. Execution of work according to Time Schedule

i. The Bidder shall include in his bid, a detailed construction programme of executing the project, describing broadly the technology and construction methodology major components of the project including traffic diversion plan, deployment of machinery, submission of drawings and design. The programme shall be supplemented with Master Control Network. The employer reserves the right to request for change in Master Control Network after discussions with the successful bidder. Mutually agreed Master Control Network shall form part of the Contract.

ii. The Contractor has to start construction works in the fronts available at particular road site. This shall be planned in close consultation with the Engineer-In-Charge and in coordination with the concerned authorities / departments / local groups.

iii. The Works shall be executed and performed in accordance with the Master Control Network (Work Programme) which shall clearly indicate the interlinking / interdependencies of all the works of the Contract.

iv. The Programme shall be reviewed jointly by the Employer/ Engineer and the Contractor, at least once in a month where-in the hold ups/delays, if any, in the progress of Works, with reference to the agreed Schedule shall be given Special Attention. Necessary modifications (updating / Revisions) of the Programme, within the overall Time for Completion, shall be carried out by mutual agreement between the Employer/ Engineer and the Contractor.

20. Working Procedure

i. The Contractor shall be required to adopt a Working Procedure based on the following:

ii. Protection of properties along the project roads and their activities / operations such that these suffer minimum (if any) adverse effects as a result of construction activities.

iii. Observe all local requirements related to work and traffic restrictions (for example, transportation of material during particular times of a day or week, use of manual labour / smaller vehicles for carriage of material to / from narrow lanes) as may be specified by USCL from timeto time.

iv. Avoid disruption of any public utility network and promptly restore the same in case of any unavoidable disruption at his own cost and time without causing any discomfort to people as well as businesses.

v. Provide for all temporary arrangements essential to allow normal operations / living conditions for people as well as businesses.

21. Material Storage

All materials shall be stored as per IS:4082 and nothing extra will be paid on this account.

22. The electrical connection charges shall be borne by the authority.

23. Warranties/Guaranties

(a) The Warranties/ Guaranties shall be applicable as per Guarantee Clausein Specifications. The Contractor's liability in respect of any complaints/defect and/or claims shall be limited to the furnished and installation of replacement parts free of any charge to the extent that such replacement are attributable to or arise from faulty workmanship of materials or design in the manufacture of the equipment, or wear and tear during normal use, provided that the defects are brought to the notice of the contractor within the warranty/ Guarantee period.

(b) During the warranty period, the bidder shall warrant that the goods supplied under the contract are new, unused, of the most recent version/models and incorporate all recent improvements in design and materials unless provided otherwise in the contract. The bidder further warrants that the goods supplied under this contract shall have no defects arising from design, materials or workmanship.

(c) Authority or designated representatives of the bidder shall promptly notify the Contractor in writing of any claims arising under this warranty. Upon receipt of such notice, the Contractor shall, within the warranty period and with all reasonable speed replace the defective products, without costs to Authority and within time specified and acceptable to Authority.

(d) If the Contractor, having been notified, fails to remedy the defect(s) within the period specified in the Contract, the Authority may proceed to take such reasonable remedial action as may be necessary, at the Contractor's risk and expense and without prejudice to any other rights, which Contractor may have against the bidder under the contract.

(e) During the comprehensive warranty period, the Successful Bidder shall provide free of cost all product(s), within 14 days of their failure and should carry out delivery and make operational the same at no additional cost to Authority. The Contractor shall be responsible for warranty and maintenance services from licensors/ manufactures of items/products etc. supplied. The proposed products / equipment / goods shall achieve parameters delineated in the technical specification/requirement. The Contractor shall ensure the maintenance of the acceptance criterion/standards in respect of the products / equipment's / goods during the warranty and maintenance period.

(f) If the Contractor desires, the replaced products can be taken over by them for disposal as they deem fit within period of one month from the date of replacement. At the expiry of this period, no claim whatsoever shall be on the USCL. The decision of the USCL in regard to contractor's liability and the amount, if any, payable under this warranty shall be final and conclusive.

24. Defect Liability Period

a. Any work intimated to the contractor to complete in the defect liability period (DLP) as per contract data, the contractor shall rectify the defects and intimate the Employer in writing. If the contractor fails to rectify the defects within 7 days of the intimation of the Employer or Employer representative. The Employer shall complete the work at the risk and cost of the contractor. The cost of the work done shall be recovered from contractor'sbill or from the performance security as the case may be.

b. The Employer shall be entitled to an extension of the defect and liability period up to the period for which the rectification of the works delayed by the contractor.

SECTION 4

29.Bill of Quantities (BOQ)

Attached Separately

SECTION 5

30.AGREEMENT FORM

AGREEMENT

This agreement, made on the _____ day of _____ between: _____ (name and address of Employer) (hereinafter called "the Employer) 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 Bid by the Contractor for the execution and completion of such Works and the remedying of any defects therein, at a cost of Rs.....

NOW THIS AGREEMENT WITNESSED as follows:

1. In this Agreement, words and expression shall have the same meaning 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 the defects wherein 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 ready and construed as part of this Agreement viz.

   i. Letter of Acceptance
   ii. Contractor's Bid
   iii. Condition of Contract: General and Special -
   iv. Contract Data
   v. - Bid Data
   vi. Drawings
   vii. Bill of Quantities and
   viii. Any other documents listed in the Contract Data as forming part of the Contract.

In witnessed where of the parties there to have caused this Agreement to be executed the day and year first before written.

The Common Seal of _____ was hereunto affixed in the presence of:

Signed, Sealed and Delivered by the said _____ in the presence of:

Binding Signature of Employer _____

Binding Signature of Contractor _____

31. FORM OF BANK GUARANTEE

Performance Security/Additional Performance Security

The Executive Director,
UJJAIN SMART CITY LTD.
Room No 16, Mela Office, Kothi Road,
Ujjain, Pin Code 456010
Madhya Pradesh
e-mail: ujjainsmartcity@gmail.com

WHEREAS:

(A) _____[name and address of contractor] (hereinafter called the "**Contractor**") and Ujjain Smart City Ltd., Room No 16, Mela Office, Kothi Road, Ujjain, Pin Code 456010 G-5 & 6, (hereinafter called the **"Authority")** have entered into an agreement (hereinafter called the "**Agreement**") for the construction of the **[Project Name]** in Ujjain the State of Madhya Pradesh on Percentage Rate basis, subject to and in accordance with the provisions of the Agreement

(B) The Agreement requires the Contractor to furnish a Performance Security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the {Completion Period/ Defects Liability Period and Maintenance Period} (as defined in the Agreement) in a sum of Rs….. cr. (Rupees ……..….. crore) (the "**GuaranteeAmount**").

(C) We, …….. through our branch at ……. (the "**Bank**") have agreed to furnish this bank guarantee (*hereinafter called the* **"Guarantee**") by way of PerformanceSecurity.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor's obligations during the {Completion Period/ Defects Liability Period and Maintenance Period} under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the

Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specifiedtherein.

2. A letter from the Authority, under the hand of an officer not below the rank of General Manager in the National Highways Authority of India, that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under thisGuarantee.

4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under thisGuarantee.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfilment and/ or performance of all or any of the obligations of the Contractor contained in the Agreement or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any suchlaw.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfilment, compliance and/or performance of all or any of the obligations of the Contractor under theAgreement.

Notwithstandinganythingcontainedhereinbefore,theliabilityoftheBankunder this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

7. The Guarantee shall cease to be in force and effect on _____. Unless a demand or claim under this Guarantee is made in writing before expiry of the Guarantee, the Bank shall be discharged from its liabilitieshereunder.

8. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of theBank.

9. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

10. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

11. This guarantee shall also be operatable at our…… …….. Branch at Ujjain, from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the saidinvocation.

Signed and sealed this ……. day of …….., 20…… at ……..
SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:
(Signature)

(Name)
(Designation)
(Code Number)
(Address)
NOTES:

(i) The bank guarantee should contain the name, designation and code number of the officer(s) signing theguarantee.

(ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuingbranch.

Volume III:

32.Scope of Work

A. The brief description of scope of work is as follows -

a) Construction of Diving Pool (25m. x 20m), Warm up Pool (25m x 13 m), Leisure Pool (approximately 23m x15m, size varies as per design) including all plumbing, pumping, filtration facilities, and electrical works complete, open-air public competition viewing stands with toilets, construction of a club house type facility that would comprise of a restaurant, gymnasium, meeting rooms, indoor play area, spa with sauna, massage rooms, Jacuzzi, etc., changing rooms with showers, Administration/Office area, central corridors, courtyards,restoration of existing structuresetc. including all MEP works, external development that includes landscaping, state-of-the-art outdoor playing courts such as Badminton/Basketball, Tennis courts, etc. with 7m high protective fencing, connecting and service roads with side drains, compound wall, parking facilities, etc.

b) Under this tender, scope of work of contactor includes construction and maintenance of the Tendered works for Period of Five years as per agreement. The contractor shall also be responsible for preparation of shop drawings and as built drawings (completion drawings) of the project work.

c) Performance and fulfilment of all other obligations of the Contractor in accordance with the provisions of this Agreement and matters incidental there to or necessary for the performance of any or all of the obligations of the Contractor under thisAgreement.

d) If due to any unavoidable circumstances, it needs to shift the location of project partly or fully, thecontractorshallcarryouttheworkpartlyorfullyatanotheralternative locationwithoutanyextra claim. The expenditure towards preliminary activities if carried out by the contractor shall be reimbursed by USCL. (Actual expenditure or payment shown in Schedule of Payment-pre-construction activities-as per stage of work carried out by the contractor or whichever is less).

e) Scope of work contained in the paragraphs mentioned below is only indicative and not exhaustive. In addition, the contractor shall be responsible for executing all items required for completing the work as per direction of Engineer-in-charge. The price quoted shall include all the items and covers

all details as may be required to meet the purpose and intents of thecontract.

f) The scope of work is not limited only as mentioned in above paras, but also include to address anyexigencygeneratedduringtenderedworkexecutionandnoextracostshallbepaidforthesame.

g) It is inthescopeofthesuccessfulbiddertocarefullyread, study,andunderstandfullytherelevant drawings of the all the project components. In case of any confusion, he or his representative can clear doubts relating to specifications of prescribed works, dimensions of drawings or any project relatedworks.It is alsointhescopeofthesuccessfulbidder tobringintothenoticeoftheEngineer in charge of the client or his representative any ambiguity in project related drawings or related matter for its rectification well before or during the commencement of thework.

h) Afterthecompletionoftheprojectwork,thesuccessfulbiddershallhavetoprepare andsubmit'As Built Drawings' depicting the exact construction carried out on site, in soft andhardcopies.

i) Statutory and other charges for getting various required approvals shall be in scope of Successful bidder

B. The scope of work also includes construction and completion of thefollowing:

i. Site survey, clearance, demolition works, earthworks, temporary works, fixing of TBMs, traffic diversion, barricading the construction site, utility shifting, and all ancillary works deemed necessary for the carrying out of temporary & permanentconstructionworks.

ii. Widening/re-cambering/raising/millingdown&overlayingofexistingcarriageways, flexible/ rigid pavement at grade road intersections & accesses to adjoining developments if any.

iii. Tree cutting (if any) as indicated inthedrawings and/or as per the directions of Engineer-in-charge.

iv. Construction of Utility ducts, cross drains as per approveddrawing.

v. Installing RPM, making permanent road markings along the road edge, road centre line & as per IRC guidelines, bus stop marking, cycle track marking, construction of medians & speed breakers, & junction improvements as per the drawings & in accordance with the Employer's requirements and to the satisfaction of the Engineerincharge.

vi. Construction of footpaths, kerbs, railings, vehicular impact guardrails and other road related facilities as per the guidelines of IRC in accordance with the Employer's requirements and to the satisfaction of the Engineer incharge.

vii. Supply and installation of new traffic signage, directional signage, street name signs &re-settingofsuchexistingsigns&otherroadsignstoberetained,inclusiveof support & foundation as per Employers Requirement.

viii. Supply and installation of new Electric poles and light fittings as per approved Drawings and as per EmployersRequirement.

ix. Allotherworksandservicesancillaryorrelatedtothefullcompletionoftheworksin accordance with the Employer 'srequirements.

x. Arrangement of water for carrying hydrostatic tests of swimming pools shall be the responsibility of the contractor and nothing extra will be paid on this account.

TheContractorshallascertain,determineandverifythelocationsofallutilityservicesinthe vicinity of the Works, and co-ordinate with utility agencies for the diversion of affected servicesandthelayingofnewservices.TheContractorshallsupportandprotectservicesthat neednotbedivertedorpendingdiversionandremoveallabandonedservices.Contractorshall be responsible for relocation, reconstruction, reconfiguration of driveways, site accesses, temporaryandpermanentdrains,pipeconduits,andnecessaryconnectionsforpubliclighting and traffic lighting, earth works, turfing, environmental assessments, necessary safety measures and protection works, sewer lines, etc. if any affected by theproject work.

In case any permission is required, or any exigency generated relating to government clearances,duringprojectexecutionphase,theContractorwillhavetotaketheresponsibility for the same including the submissions to relevant government authorities / technical departments for obtaining all necessary clearances/approvals. The Client will render all necessary administrative support to the Contractor in thesame.

The Contractor shall co-ordinate and interfaces his works with that of all other contractors, subcontractors, utility services, statutory authorities, etc. and achieve the completion of the Works to the satisfaction of theEngineer

The Contractor shall verify the proposed road reserve, cadastral boundary and contract boundary and all dimensions on Site prior to submission of Tender. The Contractor is responsible for clarifying any discrepancy between the Drawings and actual condition on Site.

The Contractor shall make good all works including road surfaces, drains, concrete works, gratings, kerbs, pavements, turfing, railing, fence, boundary wall, etc. affected or damaged during the course of construction, to the satisfaction of the Engineer. The costs of making good all these defects shall be borne solely by the Contractor and deemed included in his Contract Sum

All works specified shall include the provision of all labor, tools, equipment, material, traffic control, transport and everything else necessary for the satisfactory completion of the Work by the Contractor to the satisfaction of theEngineer.

Construction management and the quality of the works shall comply with the drawings, specification and employer'srequirement.

C. Guidelines with regard to use of materials in the work:

i. The contractor shall produce samples of the materials for approval of the Engineer in charge (EIC). The materials of the makes, out of the above as approved by the EIC shall be used on the work.

ii. In respect of materials for which makes are not specified, the make/brand will be decided by the EIC.

iii. Before bulk purchase of quantities of materials, it is the responsibility of the Contractor to get the samplesofmaterials approved fromconsultantand EIC or his representative.

iv. All cost towards the testing shall be borne by the contractor

v. For allthematerialofapprovedbrandsnecessarytestingas per IRC/BISstandardsshallbe done bythe agency. It is assumed that the quoted rates are inclusive of the cost of necessary testing also and noextra payment shall be paid forthat.

D. OPERATION AND MAINTENANCE

The contractor will do the operation and maintenance of the Diving Pool, Warm up Pool and Leisure Pool for 5 years. The operation and maintenance shall include the following:

i. Operating, cleaning, maintaining and ensuring safety measures of

swimming pools.

ii. Manpower to run the each swimming pool like pool Manager/Supervisor, coach/instructors/trainers, life guards, pool cleaners/section sweepers and plant operator.Two security guards round the clock throughout the maintenance period.

iii. The contractor has to maintain all the required registers, visitors book etc and same shall be submitted for checking to the authorized representative

iv. Maintenance of equipment's and machines including consumable items.

v. Chemicals required for maintenance of swimming pool(as per guidelines issued by FINA/Swimming Federation of India) and all other safety equipment like life jackets, swimming rings etc as instructed and approved. After dosing, the parameters should be rechecked and a record of residual chlorine and pH should be maintained in the logbook. The water quality in the pool shall be maintained as per standards issued by BIS.

vi. Housekeeping of the area, which includes cleanliness of the overall campus area including washrooms, sauna bath/Jaccuzzi, tennis court, badminton courts etc along with required consumables etc.

vii. Water shall be supplied by authority /UMC.

viii. Operation and maintenance shall not include the metered electricity charges. This shall be paid by the authority.

ix. Operation and maintenance charge shall be paid monthly on pro-rata basis as the rate quoted by the contractor for that particular year.

ANNEXURE – E

(Refer clause 2 of Section 2-ITB & Clause 10 of GCC) SPECIFICATIONS

33.SPECIFICATIONS

CIVIL WORKS

The works in General shall be carried out as per latest MP-UADD Specifications, (updated with corrections slips issued up to last date of submission of tender) unless otherwise specified in the nomenclature of the individual item or in the particular specifications of concerned items of works.

For items not covered under MP-UADD specifications with correction slips or those specifications that are not given in the technical specifications appended or not incorporated in the nomenclature of the individual item, all Civil, Electrical and Plumbing works shall be done as per following specifications or as per approval of Engineer-in-charge:

1. MP UADD Specification
2. MP PWD Department Specifications,
3. National Building Code (NBC) Standards
4. IRC Specifications
5. UTIPEC Road Design Specifications
6. CPWD Specifications
7. MoRTH Specifications as per 5th revision
8. CPHEEO Manuals (W/S and Sewerage & Drainage)

i. All the works shall be executed as per the approved drawings / designs. The patterns shown in the tender drawings can be modified as per the site requirements by the Engineer- in-charge and nothing extra whatsoever shall be payable over and above the quoted rates.
ii. Material should be of the best approved quality obtainable and they shall comply with the respective Indian Standard Specifications. Samples of all materials shall be got approved before placing order and the approved sample shall be deposited with the Client/Engineer In-Charge.
iii. Only ISI mark 43 grade Ordinary Portland Cement of relevant I.S. specifications shall be used for the work. Any lot of cement brought to site by the contractor would be permitted to be used in the work only after the satisfactory results are received, of the requisite tests under the supervision of the Engineer-In-Charge or his authorized representative.
iv. Crushing Unit and Batching plant- The crushing unit should be capable of producing particles which are equi-dimensional or cubicle in shape conforming to the grading requirement. For this purpose, typical two stage crusher configuration of jaw primary crusher and a cone secondary crusher will be obligatory. In the batching plant, as per the applicable specifications, the aggregates shall pass through screening unit to separate them into different sized fractions and deposit them on bins as per specifications.
v. GSB & CRM: Disintegrated rock (Moorum) for the items of GSB and Crusher Run Macadam shall not be used by the Contractor.
vi. The contractor shall submit test certificate in the Performa prescribed / approved by B.I.S. from the manufacturer for every batch of steel brought to the work site.
vii. The surface regularity of the completed sub-grade, sub-base, base course and widening of surfaces in longitudinal and transverse direction shall be within the tolerance limit indicated in Table 900-1, Clause 902.
viii. The provisions of general / special conditions of contract, those specified elsewhere in the Bid-Document, as well as execution drawings and notes, or other specifications appended in Tender Document or issued in writing by the Employer shall form part of the technical specifications of this work.
ix. General specifications on type, material, construction and quality of HDPE pipe ducts meant for laying of various utility services of power supply and telecom (OFC) services, specifications shall be referred from the documents as above from serial no. 1 to 8:

SPECIFICATION FOR STORM WATER DRAINAGE

All specifications for storm water drainage shall be followed by:

1. CPHEEO manual sewerage and drainage, MoUD, GoI published in Nov. 2013

2. MP PWD specifications on sewerage and drainage

3. MP UADD specifications on sewerage and drainage SPECIFICATION FOR WATER SUPPLY LINE

All specifications for water supply shall be followed by:

1. CPHEEO manual on water supply MoUD, GoI published in Year 1999

2. MP PWD specifications on water supply

3. MP UADD specifications on water supply

4. BIS Standards on water supply

TECHNICAL SECIFICATIONS OF ELECTRICAL WORKS

Internal & External Electrification

1. Point Wiring

a. Method and type of wiring shall be fully described and measured separately, it shall be classified according to the size and types of cables used.

b. Concealed conduit work and surface conduit work shall also be classified and described separately the former shall include embedding the conduit and allied fitting in walls, floors etc. during constructions or cutting chases, or both and making good as necessary.

c. Point wiring shall include all work necessary in complete wiring of a switch circuit of any length from the tapping point on the distribution circuit to the following via a switch:

   a. Ceiling rose or connector (in case of ceiling and exhaust fan points or stiff pendent).
   b. Ceiling rose (in case of pendent points except stiff pendent points).
   c. Lamp holder (in case of wall brackets, batten points bulk head fittings and similar other fittings).
   d. Call bell or Buzzer (in this case the words “Via the switch” shall be read as “Via the bell push or ceiling rose” as the case may be.
   e. Upto Electric Clock outlet.
   f. Upto Socket outlet.

i. When there is only one point on the distribution circuit (one way), the same shall be measured in two parts i.e. one as circuit wiring according to the definition of the circuit wiring and the other as “Points” according to the above definition for “Points”.

ii. The following shall be deemed to be included in the Point Wiring.

a. Rigid steel conduit/rigid PVC non-metallic conduit/HDPE conduit/casing and capping as the case may be, accessories for the same and wiring cables from controlling switch or any other type of switch to the point including earth wire.
b. Switch and ceiling rose or connector or batten holder with special and suitable round block for neatly housing the connector as required.
c. In case of wall brackets, bulk head fitting and similar fittings, cable as required upto the Lamp Holder
d. Bushed conduit or porcelain tubing when cables pass through wall etc.
e. All PVC/Metal blocks switch boards and boxes sunk or surface type, with suitable covering, i.e. (Phenolic laminated sheet, modular plate with base frame) including those frames required for mounting fan regulator but excluding those under the distribution board and main control switch, but as specified in schedule of items in this SOR, the boxes and covering shall be included.
f. All fixing accessories such as clips, nails, screws, phil plug, rawl plug etc. as required.
g. Joint for junction boxes and connecting the same as required.
h. Connections to ceiling rose or connector, socket outlet, lamp holder, fan regulator etc.
i. Socket outlets as specified.
j. Inter connection wiring between points on the same circuits in same switch box or from another.
k. connector as required for looping of wiring for two or more wires wherever required.
l. Pendants, if provided shall be paid extra.

iii. The mechanical protection to the wiring coming within 1.5 Mtr. from floor level upto switch board shall be deemed to have been included in the item of work. Method of installation and making good the damages shall be described in the specification.

iv. The common bare earth continuity conductor as specified in the schedule of items shall be included in point/circuit wiring or fixing and drawing of all items and green colour PVC insulated Multi strand FR copper wire as earth wire. However, Switch Board with sheet - modular or non-modular type included in the rates of point wiring and switch boards should be selected so as to accommodate atleast similar one switch & socket in future.

d. Wiring points shall be classified as follows:

a. Short points-not exceeding 3 Mtr. in length.
b. Medium points-exceeding 3 Mtr. but not exceeding 6 Mtr. in length.
c. Long point-exceeding 6 Mtr. but not exceeding 10 Mtr. in length.
d. Extra Long Point-I:- Exceeding 10 Mtr. but not exceeding 15 Mtr. in length.

e. Extra Long Point-II Exceeding 15 Mtr. but not exceeding 20 Mtr. in length.
f. Extra Long Point-III:- Exceeding 20 Mtr.in length as required.

i. The terms length per point in point wiring in the case of fan points, light points and socket outlet hall mean the distance between the switch and ceiling rose/connector or back plate or lamp holder or socket outlet point depending upon the fitting measured along the run of wiring irrespective of the number of wires in the run, separate measurement may be made where the switches and socket outlet points are located on the same board.

ii. In the case of boards with socket outlet point only, the length shall mean the distance between the socket outlet and the tapping point of live wire on the nearest switch board or junction box, as the case may be.

iii. Any junction box provided for extending the wiring beyond the point referred to shall not be treated as the nearest tapping point.

iv. Light point controlled by two, two-way switches shall be measured as two points from fitting to switches on either side and classified according to the length.

v. In case of point with more than one light point controlled by the same switch such points shall be measured in parts i.e. from the switch to the first light point classified as one point and for the subsequent point, the distance from the fitting to fitting shall be measured along the run of wiring classified and treated as equivalent to half the point so derived.

vi. In case of call bell/buzzer points, with single call bell/buzzer, controlled by more than one push, the length of point shall be measured in parts, i.e. from the call bell/buzzer to one of the nearest push classified as one point and for the other pushes, the distance from each push to the call bell shall be measured along the run of wiring classified and treated as equivalent to half the point so derived.

vii. Where more than one call bell/buzzer points as controlled by the same push, the length of the points shall be measured as in 1.4.5.

viii. Same Board socket outlet point means sockets and switches are provided on same board, if another sockets outlet is provided in adjacent switch board upto conduit length of 0.3M away shall be considered on same board. If length of conduits is above 0.3m (i.e. adjacent switch board is away above 0.3m) the point shall be considered as separate socket point.

ix. M.S. Boxes will be embedded in wall of all types of wiring.

x. Any wiring should be carried out as per ISI/IS/BIS (emended upto date)

xi. Wiring in PVC casing capping should be used in regular/for maintenance work.

e. The agency carrying out the work shall certify that the work has been carried out as per statutory or other regulations in force and prescribed specifications.

i. The materials and labour involved shall be described and it shall be stated that the materials used are of approved make and as per list attached to the agreement/NIT etc.

ii. Cutting through walls and floors lifting up floor boards and refixing cutting out plaster and making good all the work disturbed, notching or drilling holes through joists etc. shall be deemed to be included with the item of work.

iii. The work shall be strictly carried out is accordance with the detailed layout plan of Electrical installation unless otherwise necessary to be altered due to site conditions during the course of execution.

iv. Completion plans for the installation carried out shall be furnished.

v. Measurement – Tolerances for areas and cubic contents are applicable only for Civil Works associated with the electrical work:

vi. Dimension shall be measured to the nearest 0.05 M.

vii. Areas shall be worked out in the nearest 0.01 Sqm.

viii. Cubic contents shall be worked out to the 0.01 Cum.

ix. The material is to be used as per "List of standard list of electrical material "annexed herewith. However, the competent authority of UADD may further issue the list of electrical material of new Make/model keeping in view the quality and the required specification. In case of non-availability of material as specified in the „List of Approved material" in any particulars are at any point of item, the Engineer-in-Charge may permit the use of material of the different equivalent make/model after taking permission from Higher Autority.

x. The rates given are for finished complete work. All material, labour, wastage, royalties, lease rent, scaffolding, temporary work, T&P hire charges, breakage, making good any damage to wall, surface, fitting etc. to original finish, transportation, replacement of any defective material, theft pilferage, insurance, variation in market rates etc. are included in the rates, unless specified otherwise. Removal of rubbish, dismantled material, cleaning of work/site is also included in the rates. Rectification of work due to defective/inappropriate materials and or workmanship.

xi. In case of contradiction/conflict in the provisions of this SSR and UADD specifications, the former will prevail. In situations, where the provisions are not provided or silent in this SSR the provisions of UADD specification shall apply. However, decision of competent authority for Technical sanction shall be final and binding.

2. CIRCUIT WIRING

a. Circuit wiring is to be done in 2.5 sqmm cable. The rate of the earth wire of green colour of 2.5 sqmm copper Multi strand FR to be run inside the same conduit shall be payable separately as per actual measurements. Similarly, green colour earth wire of design size for sub-main shall run inside the same conduit and shall be paid separately. Separate conduit shall be used for point, circuit and sub-main wiring.

b. In case of exclusive socket outlet points with switch & socket the length of point shall be the distance between the socket outlet and the tapping point of live wire in the nearest distribution or sub distribution board and hence no separate measurement need be taken for circuit wiring or for earth continuity conductor.

c. Except as described above different types of wiring shall be measured separately and given in running meters. The length shall be the actual length of wiring installed and the number and size of cables shall be stated.

d. The length of sub mains, circuit wiring or any other type of wiring on linear basis shall include all lengths from end to end of casing and capping, conduits as the case may be exclusive of inter connections inside the switch board etc. The increase on account of division or slackness shall not be included in the measurements.

e. Modular accessories, and (non-modular), have been given accordingly.

f. The rewirable based SFUs and fuses are to be used.

g. MCB DBs of double door of sheet metal only are to be used and are included. MCBs of “C” curve type are to be used and rates have been accordingly provided.

h. Energy saver ceiling fans confirming to IS: 374 (update) with amended upto date are to be used. Provision for step type electronic regulator has been made and payable separately.

i. In addition to conventional energy saver CFL fitting and lamps are introduce.

j. Only Copper conductor (ICPCI approved) multi-strand cable with PVC Insulated Fire Retardant (FR) having minimum oxygen index value 29% is to be used.

k. Fixing and drawing of all items and green colour PVC insulated Multi strand FR copper wire as earth wire. However, Switch Board with sheet-modular or non-modular type is not included in the rates of point wiring and shall be paid separately and switch boards should be selected so as to accommodate atleast similar one switch & socket in future.

l. Fire extinguishers required for panel/sub-stations have also included.

3. CABLES

Cables shall be classified according to their voltage, materials, size and type of insulation armouring etc. Each type of cable shall be described and measured separately.

a. The length measured shall be actual length fixed or laid including connections upto switch for all cables other than paper insulated, lead covered cables and upto the entry point of cable end box of PILC cables.

b. The method of laying and the type of jointing shall be fully described.

c. Cables shall be described and given in running meters. Terminal and joint boxes of various type shall be enumerated and measured separately according to their type and size.

d. The mechanical protection for cables laid in walls or floor or underground shall be measured

e. Manholes shall be described and enumerated separately.

4. EARTHING'

a. The object of an earthing system is to provide as nearly as possible a system of conductors at a uniform potential and as nearly zero or absolute earth potential as possible. The purpose of this is to ensure that in general all parts of apparatus other than live parts shall be at earth potential as well as to ensure that persons coming in contact with it shall be at earth potential at all times,

b. System Earthing '

i. Earthing associated with current carrying conductor is normally essential to the security of the system and is generally known as system earthing.

c. Equipment Earthing'

i. Earthing of non-current carrying metal work and conductor is essential to the safety of human life, of animals and or property and is generally known as equipment earthing.
As far as possible all earth connections shall be visible for inspection and shall be carefully made; if they are poorly made or inadequate the purposed for which they are intended, loss of life and property or serious personal injury may result. Earthing shall conform to the follow specifications. For other details not covered in this specification IS : 3043 – 1987 shall be referred to.

For checking the efficiency of earthing, the following tests are done.

a. The earth resistance of each electrode shall be measured.
b. Earth resistance of earthing grid shall be measured.
c. All electrodes shall be connected to the grid and the earth resistance of the entire earthing system shall be measured.

These tests shall preferably be done during the summer months.

5. Safety measures shall be followed as per IS Code 4770-1991 and IS 5424 - 1969 (Update)
6. Work shall be carried out by License holder Electrican/wireman registered from licensesing board.
7. The items and rates taken in this SCHEDULE OF RATES are for finished items of work covering all materials, required labour, wastage, temporary work, tools, plants, overhead charges, lead and lifts, transportation, cleaning of obstacles if any, required to complete the work unless otherwise specified.
8. The rates mentioned in the SCHEDULE OF RATES are inclusive of all taxes and duties.
9. For technical specification, the I.E. rules 1956, Indian Electricity Act 1910, relevant IS codes with upto date amendments and Technical Specification (if enclosed) will be applicable unless otherwise specified.
10. While taking the measurement of overhead line conductor, 3% sag will be added in straight length.
11. The Tender form will be issued to the contractors having "A" class electrical contractor"s valid license from M.P. Electrical Licensing Board, Govt. of M.P., and registered in appropriate category of M.P. departments as per N.I.T. conditions, unless otherwise specified.
12. The layout plan for External electrification shall be got approved from concerning authority of UADD and will be supplied to the contractor for execution.
13. All materials, fitting appliances etc. used in installation work shall be as per approved list of Deptt.
14. All materials will be confirming to relevant IS specifications wherever they exist.
15. Before inviting the tenders following special condition be added in notice inviting tender drafts:
    a. The contractor will be responsible for submitting the guarantee certificates for a period of 24 months from the date of charging and handing over of installation to the Deptt. for Transformer, Circuit breaker and other equipment and accessories.
    b. The contractor shall submit the bill of purchase of materials, Test Certificate etc. and Excise gate passes (wherever required) before making payment.
    c. The contractor shall be responsible for arranging inspections of authorities of Electricity Board, Electrical Licenising Board and other local bodies, getting approval of layouts, drawings, installation from them and to submit the required document, charging certificate etc. to MP UADD.
    d. No final payment will be made till the lines are handed over to the deptt.
    e. 5% of cost of transformer and VCBs will be kept in miscellaneous deposits till the same is taken over by MP Electricity Board/Depositor. In addition to above 2% of

total cost of work will be kept in Misc. deposit till the lines are taken over by the deptt.

f. The contractor will be responsible for taking shutdown required from MPEB for execution and commissioning of work at his own risk & cost.
g. The rate quoted shall be deemed to be inclusive of all taxes, duties including service tax if any.
h. Income Tax, Commercial Tax, VAT, Labour Welfare etc. shall be deducted from the bill of contractors as per rules.
i. The contractor shall make his own arrangements of water supply, site office, store and electricity at site for execution of work.
j. The contractor shall be responsible for a period of 24 months for any loss/theft, if caused to the lines, sub-station and other materials from the date of charging and handing over the lines to the UADD.
k. Transformer VCBs and associated items will be inspected/tested as per IS specification by M.C. before dispatch of materials at works. The above items will be accepted subject to the above qualifying.

16. The labour rates adopted for preparation of S.O.R. are inclusive of provision for weekend holiday.
17. Rates payable for any work to be done departmentally then rates should be reduced by (contractor profit percentage 10% + T & P charge 2%) i.c. 100x12/115 = 10.434%
18. Wiring, Control Switch gear/Bus bar, MCCB's, Isolators and fixing

a. General

a. Rates include all lead and lift, for all materials, for all items, unless otherwise specified.
b. The provision of scaffolding or ladder or any tools and plants required-shall be deemed to be included in the items, unless otherwise stated.
c. Excavation for poles, underground cables, concreting in foundations, painting of poles, struts etc, shall be measured separately.
d. Cutting through walls and floors, lifting up floor boards and re-fixing, cutting out plaster and making good all the work disturbed, notching or drilling holes through joists, etc., shall be deemed to be included with the item of work.

b. Point Wiring: -

a. Concealed conduit work shall include embedding the conduit and allied fittings in walls, floors etc., during construction or cutting chases, or both and making goods and necessary.
b. The work shall be strictly carried out in accordance with the detailed layout plan of electrical installation, unless otherwise necessary to be altered due to site conditions during the course of execution.
c. Completion plans for the installation carried out shall be furnished.

d. Point wiring shall include all work necessary to complete wiring of a switch circuit of any length from the tapping point on the distribution circuit to the following Via the switch:
   i. Ceiling rose or connector (in case of ceiling and exhaust fan points or stiff pendant);
   ii. Ceiling rose (in the case of pendant point except stiff pendant points);
   iii. Socket outlet (in. the case of socket outlet points);
   iv. Lamp holder (in the case of wall bracket(s), button points, bulb head fittings and similar other fittings.
   v. Call bell or buzzer (in this case the words „Via the switch‟ shall be read as „via the bell push or ceiling rose as the case may be‟)
   vi. Upto electric clock outlet.
e. Switches,
   i. When measured separately from point wiring, the switches shall be described stating the type and rated capacity. Cover plates, if any, shall be included with the item.
   ii. Switch plug combination, comprising socket outlet, switch and plug shall be described, and the type and rated capacity shall be stated.
f. When there is only one point on the distribution circuit (one way) the same shall be measured in two parts, one circuit wiring according to the definition of the circuit wiring and the other points according to the above definition for points.
g. The following shall be deemed to be included in the point wiring: -
   i. Switch and ceiling rose of connector with special and suitable round block for neatly housing the connector as required;
   ii. In the case of wall brackets, bulkhead fittings and similar fittings, cable as required up to the lamp holder;
   iii. Bushed conduit or porcelain tubing when cables pass through walls etc.;
   iv. Earth wire from 3-pin socket point to the common earth including connections to the earth pin of 3- pin socket outlet except the earth wire from the first tapping point of live wire to the sub-distribution board;
   v. All wood or metal blocks, boards and boxes, sunk or surface type, with suitable covering, including those required, for mounting fan regulator but excluding those under the distribution board and main control switch
   vi. All fixing accessories such as clips, nails, screws, phil plugs, rawl plugs, wooden plugs etc. as required.
   vii. Joint for junction boxes and connecting the same as required and
   viii. Connections to ceiling rose or connector, socket outlet, lamp holder, switch fan regulator, etc.
h. The mechanical protection provided to the wiring coming within 1.5 m. from floor level or up to switchboard shall be deemed to have been included in the item of work. Method of installation and making good the damages shall be described in the specification.
i. Wiring points shall be classified as follows: -
   i. Short points not exceeding 3 m. in length.

ii. Medium points exceeding 3 m. but not exceeding 6 m. in length.
iii. Medium points exceeding 3 m. but not exceeding 6 m. in length.

'……....."

Special points of length exceeding 10m in length as required.

j. The terms "Length per point" in point wiring in the case of fan points, light points and socket outlets shall mean the distance between the switch and ceiling rose, connector or back plate, lamp holder or socket-outlet point depending upon the fitting measurement along the run of wiring irrespective of the number of wires in the run. Separate measurement may be made where the switches and socket outlet points are located on the same board.
k. In case of boards with socket-outlet point only, the length shall mean the distance between the socket- outlet and the tapping point of live wire on the nearest switch board or junction box, as the case may be.
l. Any junction box provided for extending the wiring beyond the point referred to, shall not be treated as the nearest tapping point.
m. Special-points such as staircase lighting, group control, etc., shall be specified separately and so measured.
n. A light point controlled by two, Two-way switches shall be measured as two points from the fittings to switches on either side and classified according to the “length”. Any extra light point in the same circuit shall be considered as given below in (n)
o. In case of points with more than one light point controlled by the same switch, such points shall be measured in parts; i.e. from the switch to the first light point classified as one point and for the subsequent point, the distance from the fitting to fitting shall be measured along the run of wiring classified and treated as equivalent to half the point so derived.
p. In case of call-bell/buzzer controlled by more than one push, the length of point shall be measured in
q. Where more than one call-bell/buzzer points are controlled by the same push, the length of the

c. Circuit Wiring: -

a. Length of wiring from the distribution board of sub-distribution board up to the tapping point of the first point, that is, up to first switch board shall be considered as circuit wiring the length of circuit wiring with two wires shall be measured from the distribution or sub-distribution board to the first switch board in the circuit irrespective of whether the neutral conductor goes into the switch box or not. The earth wire from the distribution or sub-distribution board up to the first tapping point shall be measured separately.
b. In case of exclusive socket outlet circuits such as wiring points for power plugs, the length of points

c. The lengths of sub-main, circuit wiring or any other type of wiring on linear basis shall include all

d. Cables –

a. Cables shall be classified according to their voltage, materials, size and type of insulation, armouring, etc. Each type of cable shall be described and measured separately.
b. The length measured shall be actual length fixed or laid including connections up to switch for all cables other than paper-insulated, lead-covered cables and up to the entry point of cables en-box of PILC cables.
c. Cables shall be described and given in running Meters. Terminal and joints boxes of various types shall be enumerated and measured separately according to their size and type.
d. The mechanical protection for cables on walls or floors or underground shall be measured separately
e. Manholes shall be described and enumerated separately.

e. Power wiring shall be done in steel conduit system.

The following Indian Standards may be referred to: -

S.No	Standards	Title Codes of Practice/ Guide
1.	IS:732-1989	Code of practice for electrical wiring installation
2.	IS:4648-1968	Guide for electrical layout in residential buildings.
3.	IS:8061-1976	Code of practice for design, installation and maintenance of service lines upto and including 650 V.
4.	IS:8884-1978	Code of practice for installation of electric bells and call system
5.	IS:5578-1985	Guide for marking of insulated conductor
6.	IS:11353-1985	Guide for uniform system of marking and identification of conductors and apparatus terminals
7.	IS:5728-1970	Guide for short circuit calculations
8.	IS:7752 (Part-1)-1975	Guide for improvement of power factor in consumer installation Low and medium supply voltage
9.	IS:10118(Part-1)-1982	Code of practice for selection, installation and maintenance of switch gear and control gear General.
10.	IS:10118(Part-2)-1982	Code of practice for selection, installation and maintenance of switch gear and control gear selection
11.	IS:10118(Part-3)-1982	Code of practice for selection, installation and maintenance of switch gear and control gear installation

12.	IS:10118(Part-4)-1982	Code of practice for selection, installation and maintenance of switch gear and control gear maintenance
13.	IS:5216(Part-1)-1982	Guide for safety procedures and practices in electrical work General
14.	IS:4237-1983	General requirements for switch gear and control gear for voltages not exceeding 1000 V AC or 1200 V DC.
15.	IS:6875(Part-1)-1973	Control switches (switching devices control and auxiliary circuits including contractor relays) for voltages upto and including 100 VAC and 1200 V DC: General requirements and tests.
16.	IS:6875(Part-2)-1973	Control switches (switching devices for control and auxiliary circuits including contactor relays) for voltages upto and including 1000 V AC and 1200 V DC: Part 2 Push button and related control switches (Amendment 2).
17.	IS:6875(Part-3)-1983	Control switches (switching devices for control and auxiliary circuits including contactor relays) for voltages upto and including 1000 V AC and 1200 V DC: Rotary control switches.
18.	IS:2675-1983	Enclosed distribution fuse boards and cutouts for voltages not exceeding 1000V.
19.	IS:8828-1978	Miniature air break circuit breakers for voltages not exceeding 1000 volt.
20.	IS:13032-1991	Miniature circuit breaker boards for voltages upto and including 1000 volts AC.
21.	IS:12610-1988	Residual current operated circuit breakers
22.	IS:2516(Part-1/Sec.1 1985)	Circuit breakers: Requirements and test voltages not exceeding 1000 V AC or 1200 V DC.
23.	IS:8623(Part1)-1977	Factory built assemblies of switch gear and control gear for voltages upto and including 1000 V AC and 1200 V DC: General requirements.
24.	IS:8623(Part-2)-1980	Factory built assemblies of switch-gear and control gear for voltages upto and including 100 V AC and 1200 V DC: Particular requirements for bus bar trunking system (bus ways)
25.	IS:694-1990	PVC insulated cables for working voltages upto and including 1100 V/
26.	IS:3964(Part-2)-1968	Recommended current ratings for cables PVC insulated light duty cables.
27.	IS:1289(Part-	Flexible cables for lifts and other flexible connections: Elastomer

	1)-1984	insulated cables.
28.	IS:9537(Part-1)-1980	Conduits for electrical installations: General requirements
29.	IS:9537(Part-2)-1981	Conduits for electrical installations: Rigid steel conduits
30.	IS:3480-1966	Flexible steel conduits for electrical wiring
31.	IS:2667-1988	Fittings for rigid steel conduits for electrical wiring
32.	IS:3837-1976	Accessories for rigid steel conduits for electrical wiring
33.	IS:9537(Part-4)-1983	Conduits for electrical installation: Pliable self-recovering conduits for insulating materials.
34.	IS:6946-1973	Flexible (pliable) non-metallic conduits for electrical installations
35.	IS:3419-1989	Fittings for rigid non-metallic conduits
36.	IS:5133(Part-1)-1969	Boxes for enclosure of electrical accessories: Steel and cast-iron boxes
37.	IS:5133(Part-2)-1969	Boxes for enclosure of electrical accessories: Boxes made of insulating materials.
38.	IS:2412-1975	Like clips for electrical wiring
39.	IS:371-1979	Ceiling roses
40.	IS:3854-1988	Switches for domestic and similar purposes.
41.	IS:4615-1968	Switch socket outlets (non-interlocking type)
42.	IS:4160-1967	Interlocking switch socket outlet
43.	IS:1293-1988	Plugs and socket outlets of rated voltage upto and including 250 volts and rated current upto and including 16 Amperes
44.	IS:2551-1982	Danger notice plates
45.	IS:2448 (Part-1)-1963	Adhesive insulating tapes for electric purposes: Tapes with cotton textile subtraction.
46.	IS:4770-1991	Rubber gloves for electrical purposes
47.	IS:5424-1969	Rubber mats for electrical purposes. (xv)

Note: - The above IS Codes shall be applicable with latest amendments if any.

FIRE EXTINGUISHERS

Fire extinguisher shall be installed in easily accessible locations with the brackets fixed to the wall by suitable anchor fasteners.

Each appliance shall be provided with an inspection card indicating the date of inspection, testing, change of charge and other relevant data.

All appliances shall be fixed in a true workmanlike manner truly vertical and at correct locations. Distribution / installation of fire extinguisher to be in accordance to IS: 2190.

ABC TYPE DRY POWDER EXTINGUISHER

a) The Extinguisher shall be filled with ABC grade 40, Mono Ammonium Phosphate 40% from any approved manufacturer.
b) The capacity of the extinguisher when filled with Dry Chemical Powder (First filling) as per IS 4308, Part II, shall be 5 Kg +/-2% or 10 Kg +/- 3%.
c) The extinguishers should be position /Installed as per IS: 2190 – 1992.
d) It shall be operated upright, with a squeeze grip valve to control discharge. The plunger neck shall have a safety clip, fitted with a pin, to prevent accidental discharge. It shall be pressurized with Dry Nitrogen, as expellant. The Nitrogen to be charged at a pressure of 15 Kg/cm2
e) Body shall be of mild steel conforming to relevant IS Standards. The neck ring shall be also mild steel and welded to the body. The discharge valve body shall be forged brass or leaded bronze, while the spindle, spring and siphon tube shall be of brass. The nozzle shall be of brass, while the hose shall be braided nylon. The body shall be cylindrical in shape, with the dish and dome welded to it. Sufficient space for Nitrogen gas shall be provided inside the body, above the powder filling.
f) The Neck Ring shall be externally threaded - the threading portion being 1.6 cm. The filler opening in the neck ring shall not less than 50 mm. Discharge nozzle shall be screwed to the hose. The design of the nozzle shall meet the performance requirement, so as to discharge at least 85% of contents up to a throw of 4 mtrs, continuously, at least for 15 seconds. The hose, forming part of discharge nozzle, shall be 500 mm long, with 10 mm dia internally for 5 Kg capacity and 12 mm for 10 Kg capacity. It shall have a pressure gauge fitted to the valve assembly or the cylinder to indicate pressure available inside. The extinguisher shall be treated with anti-corrosive paint, and it shall be labelled with words ABC 2.5 cm long, within a triangle of 5 cm on each face. The extinguisher body and valve assembly shall withstand internal pressure of 30 Kg/cm2 for a minimum period of 2 minutes. The pressure gauge shall be imported and suited for the purpose.

CARBON DIOXIDE EXTINGUISHER

The Carbon Dioxide Extinguisher shall be as per IS: 2878

The body shall be constructed of seamless tube conforming to IS: 7285 and having a convex dome and flat base. Its dia shall be maximum 140 mm, and the overall height shall not exceed 720 mm.

The discharge mechanism shall be through a control valve conforming to IS: 3224. The internal syphon tube shall be of copper aluminum conforming to relevant specifications.

Hose Pipe shall be high pressure braided Rubber hose with a minimum burst pressure of 140 Kg/cm2 and shall be approximately 1.0 meter in length having internal dia. of 10 mm. The discharge horn shall be of high quality unbreakable plastic with gradually expanding shape, to convert liquid carbon dioxide into gas form. The hand grip of Discharge horn shall be insulated with Rubber of appropriate thickness.

The gas shall be conforming to IS: 307 and shall be stored at about 85 Kg/cm2. The expansion ratio between stored liquid carbon dioxide to expanded gas shall be 1:9 times and the total discharge time (effective) shall be minimum 10 secs and maximum 25 secs.

The extinguisher shall fulfill the following test pressures:

- Cylinder: 236 Kg/cm2
- Control Valve: 125 Kg/cm2
- Burst Pressure of Hose: 140 Kg/cm2 minimums

It shall be an Upright type. The cylinder, including the control valve and high-pressure Discharge Hose must comply with relevant Statutory Regulations, and be approved by Chief Controller of Explosives, Nagpur and also bear IS marking.

The Extinguisher including components shall be IS marked.

SIGNAGES

Signages shall be of sign board type made out of 3mm thick "Opaque" PVC foam board with computer cut, PVC non-reflective self-adhesive vinyl painted foam board, complete with mirror fasteners.

ICT COMPONENTS

Specification of ICT components

CCTV SYSTEM – SURVEILLANCE MANAGEMENT SYSTEM

GENERAL

SECTION INCLUDES

This Section includes Supply, Engineering, Installation and Commissioning of CCTV System as shown on the drawings and as specified in this section and Bill of Quantity.

All systems and components shall have been thoroughly tested and proven in actual use.

All systems and components shall be provided with a one-day turnaround repair express and 24-hour parts replacement. The repair and parts express shall be guaranteed by the manufacturer on warranty and non-warranty items.

CCTV system comprising of colour cameras for the areas, as shown in drawings.

Specifications included in this section are indicative and considered as minimum, equipment & software that shall be delivered at the time of implementing the project shall be the latest versions available in the market.

ENVIRONMENTAL REQUIREMENTS

All equipment installed shall not require readjustments of controls, realignment, software reloading or reconfiguring when operating under the following conditions:

The control areas indicated on drawing shall be air-conditioned.

Equipment installed outside shall be capable to operate at their nominal performances under the following environmental conditions:

- Maximum ambient temperature: 50-degree C
- Minimum ambient temperature: 5-degree C
- Average maximum temperature: 43-degree C
- Average minimum temperature: 15-degree C
- Temperature due to direct sun exposure: 85-degree C
- Maximum relative humidity : 100%
- Maximum wind speed: 60km/H
- Maximum rainfall l:100mm

BID SUBMITTALS

Please provide the following documentation along with the bid indicating on the submission as “Technical Submission”.

Manufacturers’ Catalogue Data:

- CCTV Cameras
- CCTV Camera Lenses
- CCTV Camera Enclosures and Mounts
- Digital Video Recorder Hardware and Software
- Recording Hard Disk
- Monitors
- Wires/cables

Submit Compliance statement against each clause. Provide manufacturers’ specification sheets for each type of equipment to show compliance with the project specification. For each type of equipment highlight each compliance item and reference each item to the relevant specification paragraph number. Submit sufficient manufacturers’ information to allow verification of compliance by the reviewer. Equipment and software for which specification compliance data shall be submitted include but not limited to the following:

- CCTV Camera
- CCD Chip Details
- Horizontal and Vertical Resolution
- Lux Level
- Any other technological advances
- CCTV Camera Lenses
- F Stop
- Focal length
- Auto Iris
- Network Video Recorder
- Recording and Viewing Resolution
- Recording and Viewing Frame Rates
- Hard Disk Sizing Sheets to match the specification

- UPS back up details
- Drawings
- System schematics
- Statements:
- Contractors' qualifications
- Training: Prior to award, submit statements for approval to the reviewing authority.

CONTRACT SUBMITTALS

Please provide the following documentation during construction phase indicating on the submission as "Technical Submission".

Engineering Submissions

➢ List of shop drawings with symbols and abbreviations used on shop drawings

- Equipment Components List: Submit the equipment list as shown on system schematic. List the following:
    - Schematic component name
    - Description
    - Manufacturer of equipment
    - Equipment part numbers
    - Ratings
    - Installation diagrams of field devices
    - Wiring: Wiring diagram for each device
- Training: Submit schedule, syllabus, and training materials in accordance with the Client's requirement and shall be subject for approval.

Service Organization:

- Qualified service organization list that shall include the names and telephone numbers of organizations qualified to service the CCTV System.
- Contractor Certification: Provide certification that the installation of the control system is complete, and the technical requirements of this section have been met.

Operations and Maintenance Manual:

- CCTV Hardware Manufacturers' Manuals
- Digital Video Recorder Manual
- Operator's Manual
- As-Built Drawings

QUALITY ASSURANCE

The following association and organization shall be referred to with respect to standards as they apply to the materials and equipment provided under this Section.

Electronics Industries Association (EIA): Publications and Engineering Publications.

Single Source Responsibility: Components and accessories shall be product of single manufacturer to the maximum extent.

One-week training program must be provided for the selected personnel by supplier/manufacturer representative so that they can manage and maintain the system efficiently.

WARRANTY

Submit written guarantee signed by the contractor, manufacturer for the period of 5 years from the date of substantial completion. The guarantee shall cover the repair and replacement of defective materials and workmanship as directed by the Engineer In-Charge.

PRODUCTS

CCTV SYSTEM

- Fixed Indoor Dome Colour Cameras (Ceiling Mount)
- Cameras shall be installed at fixed positions as shown in drawings.
- Cameras will have at least the following characteristics:
- 540-600 TV lines of horizontal resolution.
- Excellent signal-to-noise ratio of 50dB.
- Minimum scene illumination of 0.7 lux
- Internal synchronization with line-lock.
- BLC covers various light conditions.
- Built in auto-iris and vari-focal lens 3-8mm
- No interference from magnetic or electronic fields
- Operating voltage: 12VAC/DC
- Power Consumption: 4 Watt
- IP-67

All cameras facing bright light (as indicated in the drawings) shall be provided with Super Dynamic feature to compensate the bright light entering the camera.

Fixed Indoor Mini Dome Colour Cameras (Inside Lift)

- Cameras will have at least the following characteristics:
- 600 TV lines of horizontal resolution.
- Built in auto-iris and 3.6mm Fixed Focal Lens
- Inbuilt UTP Transmitter
- Excellent signal-to-noise ratio of 50dB.
- Minimum scene illumination of 0.7 lux
- Internal synchronization with line-lock.
- BLC covers various light conditions.
- No interference from magnetic or electronic fields
- Operating voltage: 12VAC/DC

Dimensions to aesthetically matching the lift interiors

Fixed Outdoor Colour Cameras/Bullet Camera (Wall Mount)

- Cameras shall be installed at fixed positions as shown in drawings.
- Cameras will have at least the following characteristics:
- 450 TV lines of horizontal resolution.
- Excellent signal-to-noise ratio of 50dB.
- High sensitivity with a minimum scene illumination of 0.8lux
- Internal synchronization with line-lock.
- BLC covers various light conditions.
- Accepts CS and C mount lenses without adaptor.
- Accepts 2 types of auto iris lenses (DC servo type and VIDEO servo type).
- No interference from magnetic or electronic fields
- Operating voltage: DC 12

Lenses

- Focal length: Provide vari-focal lens (3-8mm)
- Auto Iris
- C/CS mount
- Lenses shall be approved.

The environmental camera enclosure shall be IP65 rated with heater and blower designed specifically for use with medium and smaller format cameras and fixed focal length or motorized zoom lenses in moderate climate conditions with all accessories which may be required for a complete environmental camera enclosure. The enclosure/mounting shall have feed through cable management.

Outdoor Pan, Tilt and Zoom d/n. Dome Colour Cameras

The outdoor CCTV camera dome drive system shall consist of a discreet, miniature camera dome; variable speed/high speed pan and tilt drive unit with continuous 360 deg rotation; high resolution, 1/4", color, CCD camera; 22X optical with additional 10X digital for outdoor PTZ Domes and 18X Optical with additional 10X digital zoom for Indoor PTZ domes, auto focusing, motorized zoom lens; integral receiver/driver; and plenum-rated, quick-install back box assembly. The outdoor domes shall be IP65 rated with vandal proof outdoor enclosure, inbuilt feed through cable management. It should be capable of wall or pendant mount based on the camera location.

The variable speed/high speed pan and tilt drive unit shall meet or exceed the following design and performance specifications:

- The pan and tilt drive unit shall be capable of 360 deg continuous pan rotation and a vertical unobstructed tilt of +2 to –92 deg.
- The pan and tilt drive unit shall pan under manual control from a creep speed of 0.8 to 90 deg per second and pan at 240 deg per second. Tilt operation shall range from 0.8 to 45 deg per second.
- The pan and tilt drive unit shall provide programmable limit stops for manual panning, auto/random scanning, and frame scanning.
- Shall support a minimum of 64 pre-sets.

The high resolution, color CCD camera shall meet or succeed the following design and performance specifications:

- The color CCD camera Capable of Day & Night operation shall be a 1/4" interline transfer imager meeting PAL signal format specifications.
- The camera shall be 2:1 interlace, with AC line lock that is phase adjustable through on-screen programming.
- The image sensor shall have a total pixel array of 811 (H) x 508 (V) and an effective pixel array of 768 (H) x 494 (V).
- The camera shall provide a horizontal resolution of 600 TV lines.
- Three alternative white balance control mode: ATW/AWC/MANUAL(3200K PRESET, 5600K PRESET, R, B gain control)
- The camera shall have automatic iris control with manual and programmable override.

- The camera shall have automatic gain control with programmable override.
- The camera and lens package shall provide a color image with a sensitivity of 0.02 lux at signal level of 50 IRE, gain high.
- The camera shall have a signal-to-noise ratio of >50 dB.

The motorized zoom lens shall meet or exceed the following design and performance specifications:

- The motorized zoom lens shall be 22 X optical zoom with an additional 10X digital zoom (220X total zoom) for Outdoor cameras and 18X Optical with an additional 10X digital Zoom for Indoor Cameras
- The lens shall feature automatic focus with manual and programmable override.

PTZ Camera:

- 1/1.9" HD CMOS sensor 2MP(1920*1080) Full HD 23X Optical Zoom Ultra-low illumination 120db True WDR Smart Tracking
- Smart Detection
- EIS (Electronic Image Stabilization)
- Defog
- 200m IR distance
- Optional wiper(-W)
- Hi-PoE / 24VAC power supply

Monitors:

- Monitors will have the following characteristics.
- PAL Standard
- Screen size: 32"
- Color LCD monitors with minimum 400cd/m2 brightness
- Wall mount
- High immunity to external electrical and magnetic interference
- Power: 230V 60Hz
- Controls shall include brightness, contrast, vertical and horizontal hold.

Network Video recorder & Transmission System

The Network Video Recording and Transmission System shall include, as a minimum, the following features/functions/specifications:

- The Network Video Recording and Transmission System must be protected by the most extensive support services in the industry, including Customer Service, Pre-Sales Applications Assistance, After-Sales Technical Assistance, access to Technical Online Support, and Online Training using web conferencing.
- The Network Video Recording and Transmission System and its components shall be thoroughly tested before shipping from the manufacturer's facility
- The Network Video Recording and Transmission System shall utilize the same user interface, regardless of platform, offering compatibility across the entire series.
- The Network Video Recording and Transmission System shall consist of three (3) major components:

Network Video Recording

Video Management Software (VMS)

The Digital Recorder shall include, as a minimum, the following features/functions/specifications:

The Network Video Recording shall be compatible with Local Area Networks (LAN) such as Ethernet.

The Network Video Recording shall be optimized and designed for Microsoft Windows® Embedded XP, offering unparalleled stability, security, and ease of use, and shall allow the user to fully create and edit all network settings available with Windows Embedded XP.

The Network Video Recording shall come preconfigured with a DHCP enabled IP address and subnet mask to allow for installation in many IP settings without the need to reconfigure TCP/IP settings.

The Network Video Recording shall be available with sixteen (16) BNC composite video inputs. All models must include corresponding BNC looping video outputs, with selectable termination via a dip-switch setting. The factory default setting of the dip-switches shall be termination on.

The Fourty Five (45) input Network Video Recording shall offer recording options of 100, 200, or 400 ips, with real-time live video viewing, each with 25 ips per camera The Digital Recorder shall utilize MPEG4 image compression and offer the following resolutions available on a per camera basis: Intel Xeon Hex Core Processor 2.2GHz, 8MB Cache 16GB DDR4

360x288 (PAL), with an average file size of 2~5k per image.

720x288 (PAL), with an average file size of 4~8k per image.

720x576 (PAL), with an average file size of 7~11k per image.

The Network Video Recording shall allow the user to adjust the resolution, quality, sensitivity, and number of images per second each camera will record. These adjustments shall be configurable per video input.

The specialist installer is responsible to configure the HDD of the DVR to achieve Days of recording at 6fps at 2CIF resolution and quality. As instructed by Engineer Incharge. Network Video Recording must be housed in a high-performance, metal case. The case shall be no higher than four (4) rack units (4U) and be designed to fit into a 19" EIA rack.

The Network Video Recording shall have 1TB of system memory, and the processor shall be a minimum of an Intel® Pentium or higher. An internal 10/100 Network Interface Card (NIC) and a 64 MB video card shall be standard.

The Network Video Recording shall have the ability to easily backup important video to an internal or external media location, or an attached network storage device. The unit must not stop recording during the backup process.

The operator shall be able to monitor the status of the recording process by viewing a backup progress bar displayed on the main display screen. The backup progress bar must automatically disappear from the main screen when the backup function has been completed successfully. The unit must feature a "Scheduled Backup" option, allowing the operator to schedule the backup of video by date and time.

A DVD R/RW recordable drive must be available from the manufacturer of the Network Video Recording allowing for up to 8+ Gigabytes of video data to be stored on each DVD.

The Network Video Recording shall include a minimum of the following rear-panel connectors:

- BNC Connectors for Camera Inputs and Looping Outputs
- 75-Ohm termination dip-switches
- Sensor/Alarm Inputs
- Control Outputs
- 110V/220V auto-switching power-supply
- PS/2 Mouse Input
- PS/2 Keyboard Input
- USB Ports
- DB9 Serial Input
- LPT Parallel Printer Port
- Audio Line In

- Audio Microphone In
- S-Video Output
- SVGA Monitor Output
- RS-422/485 Interface (with RX, TX, and Operation LED's)
- RCA Video Out
- RCA Audio Inputs
- RJ-45 Network Jack (with Activity and Link LED's)

All Network Video Recording shall include the following components from the manufacturer:

- PS/2 Mouse
- PS/2 Keyboard
- DVR Repair Disc
- Remote Video Software Disc
- Power Adapter
- PTZ Adapter
- Rack mount attachments with screws
- DVR key
- User Manual

The Network Video Recording shall support two monitor outputs. One spot monitor and a normal monitor output for multi-screen viewing.

The Network Video Recording shall come pre-configured for fast and seamless integration with IT infrastructures. (Provide for a LAN to connect to a Management PC) The unit must offer the following network setup options:

- The ability to enable or disable access to the digital recorder from remote locations.
- A designated time-out period that the connection will be terminated after unsuccessful user attempts to connect to the digital recorder.
- An Emergency port used to connect with the Alarm Monitor Software.
- A primary port used to connect to remote software.
- An Image port used to transfer video to the remote software.
- A Search port used to transfer search information to the remote software.

- The ability to enable or disable access by the Web Viewer Software, allowing a user to view live video using a Microsoft Internet Explorer browser.
- The ability to adjust the resolution setting when sending video to remote clients.
- The ability to throttle the bandwidth of the digital recorder to ensure that images and system messages are delivered as quickly as possible within the capabilities of the network's available bandwidth.
- The ability to define the modem and PPP information to dial to a remote client when an Alarm Event is activated.
- The ability to view the IP configuration of the digital recorder.

The Network Video Recording must include an Alarm log to record and display information pertaining to alarm events, an Event log to record and display information pertaining to user logins, digital recorder reboots, and other related information, and a System log to record/display hardware information pertaining to scan disks, system recording successes and failures, and other related information. The user shall have the ability to export the log information in one (1) week increments.

The Network Video Recording shall include a User Management Console, which allows the user to create, edit, and delete user accounts. Each account can be assigned different privileges that limit the usage of the system.

The Network Video Recording shall include a hidden camera feature, which allows an administrator to hide certain cameras from a user. The camera must still be recorded, but the user will not be able to view the cameras in live or search mode.

The Network Video Recording shall allow the user to view the following system information:

- Video format of the digital recorder (PAL/NTSC).
- Software version of the digital recorder.
- The user specified unique identification name used by other software to connect to the Network Video Recording.
- The serial number of the Network Video Recording.
- A user specified contact number.
- Network Video Recording manufacturer's technical support number.
- A note space for the user to type in any details about the system.
- A Gigabit 10/100/1000 network interface adapter shall be available from the manufacturer.
- The input digital recorder shall include sensor inputs, for use with devices such as motion detectors, glass breakage alarms, door and window sensors, etc., and the inputs must be configurable via software for Normally Open (NO) or Normally

Closed (NC). The operator shall have the option of displaying a sensor status bar on the main display screen, and when the operator places the mouse pointer directly over a sensor, the associated sensor title must be displayed on the screen.

- During power-up, the digital recorder shall run a series of self-tests, and display messages as the various hardware and software sub-systems are activated. After power-up, the digital recorder's software must load automatically and display the main screen.
- The camera status for each camera shall be displayed next to the camera number (or name) in the video display area. The information must include:
- Camera number and custom name.
- Recording status, which must show whether a camera is currently being recorded, whether a camera that has been set up for motion only recording is currently being recorded, or whether a camera is NOT currently being recorded.
- Special recording status, which must indicate whether a camera's associated sensor has been activated, and/or when the user activates the instant recording option for the selected camera.

The Network Video Recording shall allow for user definable, descriptive camera names of up to fourteen (14) alpha-numeric characters. The font size must be adjustable, and the option to bold the characters must be available.

To optimize the clarity and detail of recorded video, the Network Video Recording shall have the ability to adjust each video input's brightness, contrast, and hue. The user must be able to easily return the video settings to the system's default, either individually or all at once, with a simple mouse click.

The Network Video Recording shall incorporate advanced video motion detection, including the ability to create five (5) motion detection regions, with adjustable sensitivity, per video input, utilizing "click and drag" of the system mouse. Each region must be resizable by dragging the sides and/or corners, and the operator shall have the ability to move each region anywhere within the setup area. The user must be able to easily remove all motion regions from the setup area with a simple mouse click.

When motion occurs in programmed detection region, a colored box shall be displayed on the main screen around the region where the motion occurred.

The Network Video Recording shall include the option of displaying the associated video full screen upon a motion or sensor event and enabling an audio alarm. The audio alarm shall be either a default beep, or a custom created sound file (.wav), unique to the application. The sound file shall be played through speakers attached to the digital recorder.

The Network Video Recording shall include the ability for pre-alarm and post-alarm recording, which must record video for a specified time before and/or aftera motion or sensor alarm has occurred. The time period must be selectable from one (1) to sixty (60) seconds.

The Network Video Recording shall include intensive recording, which allows the programmer to increase the pictures per second of any camera when a sensor or motion alarm event occurs.

The Network Video Recording must include a video loss alarm function to allow an alarm event to occur when a camera loses signal for any reason (e.g. power failure, cable being cut, camera damage, etc…). When a video loss event occurs, the operator shall have the option to enable an alarm beep utilizing the internal speaker of the digital recorder, and/or activate an alarm output.

To increase the amount of pertinent video that is saved by the digital recorder, and to keep it for a longer period of time, the operator must have the ability to utilize recording schedules. For general installations, pre- defined schedules with basic configurations shall be standard. Up to thirty- two (32) user-definable recording schedules to maximize the recording efficiency of the digital recorder must also be available. Schedules may be defined by the following:

- Day of Week.
- Time of Day
- Camera Number
- None, Continuous, Sensor Input, or Motion Recording
- Relay Output(s) Activation

Each of the Network Video Recording detailed customized schedules shall allow the operator to “link” camera(s) and relay output(s) activation to particular sensor input(s). The schedules can be activated by date/time, motion alarms, and/or sensor inputs. Advanced options must also be available that allows the user to send alarm events, either motion or sensor activated, to the remote emergency agent software or the video management software.

Instant recording must be available to manually start a camera recording, superseding the current schedule. This recording shall be started with a simple double right-click of the mouse on the desired video image, and the label “INSTANT” shall be placed on the upper right corner of the video. When this manual recording is activated, it must automatically flag the specific video so that an index search can be performed at a later date for easy retrieval.

The digital recorder shall have the ability to export single images in the JPG file format, save video clips in the AVI format, or output to a VCR using the S-Video port. A digital signature must be attached to every JPG and AVI file exported by the unit for use with the bundled Digital Verifier application. This function must be unique to the unit and its verification software and shall not interfere with viewing files using other applications.

The digital recorder shall incorporate an internal RS-422/RS-485 adapter, with the ability to control multiple pan/tilt/zoom (PTZ) cameras. Depending on the model, control must include

multiple pan, tilt, zoom, and focus speeds, iris control (including return to auto-iris), focus control (including return to auto-focus), programming presets, and viewing presets. When an operator places the mouse pointer directly over a preset, the associated preset title must be displayed on the screen.

The digital recorder shall support most of the feature set and programming functions of the speed domes from different manufacturers.

The digital recorder shall include on-screen play controls to playback the recorded video frame by frame (either forward or reverse) or play at normal speed (either forward or reverse). An on-screen hour/minute slide control bar must also be available to allow the operator to select the hour and minute of the desired video. The slide bar must be controlled either by clicking and dragging the slider or using the wheel on the manufacturer supplied mouse.

The digital recorder shall offer on-screen brightness controls to brighten up an image to get more detail, zoom controls to allow the user to digitally zoom in on an image, and speed controls to increase or decrease the playback speed. When recording images with extensive motion using 720x480 resolution, the unit shall offer the option of interweaving two frames to create a smooth detailed image, alleviating the “digital blur” that can interfere with the quality of the video when recording high speed moving images. This feature shall be activated with a simple mouse click.

The digital recorder shall include a time synchronization option, allowing a single channel of video to playback in real-time.

The digital recorder must allow the operator to specify a region on an image and perform a search based upon any motion that had occurred in that region. To indicate the progress of the search being performed, a status bar shall be displayed on the screen. The search results must be displayed in a separate column, listed by date and time. A simple double-click on any one of the search results shall retrieve the associated segment of video.

The digital recorder should integrate with the access control software in such a way that it should be able to play the recorded video corresponding to the alarm event by clicking the alarm transaction in the access control software.

The digital recorder shall incorporate advanced hardware watchdog circuitry for unsurpassed system reliability.

Cat-6 Cables

Stranded Bare Copper (7 x 32 AWG), HDPE (CMI-75E) Nominal Wall Thickness: 0.178mm, Min. Thickness: 0.153mm

Please submit samples for approval prior to execution.

Electrical Power Requirements

A. The Digital Recorder must have the following electrical specifications: Power Requirement: 240 VAC (50/60Hz), 10/7A

Environmental Conditions

The Digital Recorder shall be designed to meet the following environmental conditions:

- Operating Temperature:40° - 104° F (5° - 40° C) non-condensing
- Emissions: FCC Part 15, Subpart B, Class A
- EN55022 + A1: 1995 and A2: 1997 EN61000-3-2, EN61000-3-3
- Immunity: EN55024:1998 + A1:2001 and A2:2003
- Safety: UL, cUL 60950-1:2003
- IEC/EN 60950-1:2001
- CB report and certificate

EXECUTION

INSTALLATION

The complete security system shall be installed by the equipment manufacturers approved licensed supplier.

All cables to be enclosed in conduit.

All necessary power supplies to cameras by Contractor.

Provide all necessary power to control desk to feed all equipment. All power supplies to be from essential distribution boards.

Include initial database set up and six (6) days training in the operation and management of the system by the security manufacturers to the Owner designated staff and to the approval of the Engineer In Charge.

The Digital Recording and Transmission system must be installed, programmed, and tested in accordance with the manufacturer's instructions.

All necessary back boxes, racks, connectors, supports, conduit, cable, and wire must be furnished and installed to provide a complete and reliable Digital Recording and Transmission system installation. Exact location of all boxes, conduit, and wiring runs shall be presented to the Owner for approval in advance of any installation.

All conduit, cable, and wire shall be installed parallel and square with building lines, including raised floor areas. Conduit fill shall not exceed forty percent (40%). All wires shall be gathered and tied up to create an orderly installation.

MAINTENANCE AND WARRANTY

Provide Five Year operation warranty as minimum for cameras, DVRs and Monitors.

The vendor should be able to provide hardware maintenance and spare parts support if required. Spare parts shall be available for at least 10 years starting from system full operation start-up.

TRAINING

The vendor either at vendor's premises or on site should provide standard training on all aspects of the system (operation, engineering, etc.).

The training shall be for minimum of two days and shall cover all aspects of system operation and maintenance.

A detail training schedule to be handed on award of contract.

REFERENCES

- Canadian ICES-003
- Consultative Committee for International Radio (CCIR)
- Conformity for Europe (CE)
- Electronic Industry Association (EIA)
- Federal Communications Commission (FCC)
- Motion Photographic Experts Group (MPEG)
- National Television System Committee (NTSC)
- Phase Alternation by Line (PAL)
- Underwriters Laboratories Inc. (UL)

TECHNICAL SPECIFICATIONS PLUMBING WORK

MATERIALS

GENERAL:

All materials shall be of the best-approved quality obtainable and unless otherwise specified they shall conform to the respective Bureau of Indian Standard specifications.

Samples of all materials shall be got approved before placing order and the approved samples shall be deposited with the Employer.

In case of non – availability of materials in metric size, the nearest size in FPS units shall be provided with prior approval of the Employer / Consultants for which neither extra will be paid nor any rebate shall be recovered.

If directed / found necessary, materials shall be tested in any testing laboratory selected by the Employer and the Contractor shall produce the test results to the Consultant for his

scrutiny and approval. The entire charges for original as well as repeated tests shall be borne by the Contractor. If required, the Contractor shall arrange to test portion of work at his own cost in order to prove the soundness of the same, to the Employer / Consultant or their representatives. The work or portion of work if found to be not satisfactory in the opinion of the Employer / Consultant or their representatives, Contractor shall pull down and re – do the same at his own cost. All defective materials shall be removed from the site immediately as ordered.

It shall be obligatory for the contractor to furnish certificates, if so demanded by the Employer

/ Consultant from manufacturer or the material supplier, that the work has been carried out by using their material and installed / fixed as per their recommendations.

GENERAL:

Equipment offered for supply and installation shall include the following:

All minor items and incidental work, equipment accessories and materials may not be specifically mentioned but are required for the proper completion of the installatios in accordance with the true intent and meaning of this specification.

All necessary safety devices for the protection of personnel against injury and the protection of plant and equipment against damage including relief valves, belt guards, fan inlet and / or discharge guards, safety railing effective earthing of electrical components, electrical interlocks, warning lights and alarms.

Readily accessible, dust-proof including facilities on all moving parts and equipment including provision for cleaning all lubricating lines and bearings and charging same with the correct lubricants after installation but prior to testing and commissioning.

Clearly visible and robust manufacturer's name-plates permanently fitted each and every item of equipment and showing the manufacturer's name, type and/or model number, serial number, and all essential operating data such as speed, capacity, voltage, current draw, etc.

The contractor also shall allow provision for the inspection of all plant and equipment by the manufacturer or his licensed representative, at least twice during the course of the installation.

WATER SUPPLY:

All pipe used for toilet internals, kitchen internal and external piping, ring main pipe (for cold water application only) shall be of chlorinated polyvinyl chloride (CPVC), made as per ASTM–D 2846 from 15 mm dia to 100mm dia. All CPVC pipes shall be of Flow Guard make. They shall be sound with good surface finish, mechanical strength and capacity. They shall be of the diameter (nominal bore) as specified in the items specification / as directed by the consultants, nominal bore, of the pipes for which they are intended.

PIPE FITTINGS:

The fittings shall be of CPVC and brass with female screwed ends as called for in the specification complying with all the appropriate requirements given in para A.1.1 or as specified. The fitting shall be designated by the respective nominal bores of the pipes for which they are intended.

The fittings where the taps, stop cock, mixer fitting, are intended to be fixed, shall be of brass body and shall have screw threads at the ends / female threads or fittings shall be parallel and male threads (except on running nipples and collars of unions) shall be tapered. Unions shall be provided at regular intervals in the pipelines for easy Maintenance / Repair / Replacement of pipes.

CUTTING:

CPVC pipes shall be cut with a wheel – Type plastic tubing cutter, a hacksaw or other fine-toothed hand or power saws. Use of ratchet cutters shall be permitted provided blades are sharpened regularly. A miter box should be used to ensure a square cut when using a saw. CPVC pipes shall be cut as squarely as possible to provide optimal bonding area within the joint. If any indication of damage or cracking is evident at the tubing end, the pipe shall be cut off at least 2 inches (5cm) beyond any visible crack.

The pipes shall be cleaned of all foreign matter before being laid. In jointing the pipes, the inside of the socket and the screwed end of the pipes shall be oiled and rubbed over with white lead and a few turns of locklite wrapped round the screwed in the socket, tee etc., with the pipe wrench. Care should be taken that all pipes and fittings are properly jointed so as to take the joints completely watertight and pipes are kept at all time free from dust and dirtduring the fixing. Burr from the joint shall be removed after screwing. After laying, the open ends of the pipes shall be temporally plugged to prevent access of water, soil or any other foreign matter.

Any threads exposed after jointing shall be painted or in the case of underground piping thickly coated with approved anticorrosive paint to prevent corrosion / wrapped with 4 mm thick pipe kote pipe running below ground level shall be laid at a minimum depth 600mm.

DEBURRING / BEVELING:

Burrs and filings can prevent proper contact between tube and fitting during assembly and should be removed from the outside and inside of the tubing. A chamfering tool is preferred but a pocketknife or files are suitable for this purpose. A slight bevel on the end of the tubing will ease entry of the tubing into the fitting socket and minimize the chances of pushing solvent cement to the bottom of the joint.

PRIMER / CLEANER APPLICATION:

Primer or cleaner shall be applied for preparing the bonding area for the addition of cement and subsequent assembly. A proper applicator shall only be used. A dauber or natural bristle paint brush approximately ½ the size of the tubing diameter shall be appropriate. Apply

primer to both the outside of the tubing end and in the fitting socket. Primer should not be allowed to puddle in the fitting.

SOLVENT CEMENT APPLICATION:

FOR MAKING JOINT ONLY CPVC CEMENT OR AN ALL – PURPOSE CEMENT

CONFIRMING TO ASTM F- 493 SHALL ONLY BE USED. When the primed pipe and fitting surfaces are dry, apply a thin coat inside the fitting socket.

LAYING AND JOINTING:

The pipes and fittings shall be inspected at site before use, to ascertain that they confirm to the specification given in parA1.1. The defective pipe shall be rejected. Where the pipes have to be cut or jointed the ends shall be carefully filed, so that no obstruction to bore is offered. The jointing to be dry fit checked. A thick coat of solvent cement shall be applied to the outer surface of the socket by mean of a brush. Solvent cement shall be of approved and of good quality ASTM – F493. The pipe shall be then inserted in to the fitting and turned 90 degrees to ensure even distribution of solvent cement with in the joint. Excess solvent cement shall be wiped off. Properly align the fitting. Hold the assembly for approximately 10 seconds, allowing the joint to set – up. An even bead of cement should evident around the joint. If this bead is not continuous around the socket edge, it may indicate that insufficient cement was applied. In this case, remake the joint to avoid potential leaks. Wipe excess cement from the tubing and surfaces for an attractive professional appearance. Clamps / pipe hooks a required size shall be used for clamping the pipe to the walls.

SET AND CURE TIMES:

Solvent cement set and cure times are a function of pipe size, temperature, and relative humidity. Curing time is shorter for drier environments, smaller size, and higher temperatures. Refer to the following table for minimum cure time after the last joint has been made of before pressure testing can begin.

Special care should be exercised when assembling Flow Guard systems in extremely low temperature (below 40 C) or extremely high temperature (above 380 C). In extremely hot temperatures, care should be taken to ensure both surfaces to be jointed are still wet with cement when putting them together.

TESTING:

Once an installation is completed and cured per these recommendations, the systems should be hydrostatically pressure tested. 10bar (150 PSI) for Five hour is recommended. When pressure testing, the system should be filled with water and all air bled from the highest and farthest points in the run. If a leak is found, the joint must be cut out and discarded. A new section should be installed using couplings. During sub – freezing temperatures, water should be blown out of the lines after testing to eliminate potential damage from freezing.

HANDLING AND STORAGE:

Flow Guard CPVC is a tough, corrosion resistant material, but it does not have the mechanical strength of metal. Reasonable care should be exercised in handling CPVC pipes and fittings. They should not be dropped, stepped on, or have objects thrown on them. If improper handling or heavy impact results in cracks, splits, or gouges, the damaged section shall be discarded. Flow Guard tubing should be covered with a non-transparent material when stored outdoors for long periods of time.

HANGERS AND SUPPORTS:

For vertical runs supports shall be provided a at each floor level, plus a mid – story guide. For horizontal runs, supports shall be provided at three-foot (90-cm) intervals for diameters of one inch and below and at four-foot (1.2 m) intervals for larger sizes. Piping should not be anchored tightly to supports, but rather secured with smooth straps or hangers that allow for movement caused by expansion and contraction. Most hangers designed for metal pipe are suitable for Flow Guard. Hangers shall not have rough or sharp edges which come in contact with the tubing.

HORIZONTIAL AND VERTICAL SUPPORT:

A typical Cold-water distribution system operating at 260-300 C supports shall be provided for horizontal lines at every 3'(90cm) for sizes ½" – 1", and every 4' (120 cm) on sizes larger than 1". However, the following spacing shall be used at water temperatures indicated.

Internal Work:

Generally, the galvanized iron pipes and fittings shall run in the wall chase inside the toilets and kitchen but on the surface in the service ducts. For exposed pipes, the clamps fixing shall be done by means of steel / GI angle brackets and clamps, keeping the pipes about 2.5cm to 5.0cm clear of the wall. When it is concealed, the pipe chasing may be adopted with groove cutting machine. For pipes fixed in the ducts or recesses etc., provide sufficient space to work on the pipes with the usual tools. The pipe shall not ordinarily be buried for short distances provided adequate protection is given against damage and shall be fixed at a place a pipe is passing through a wall or floor to allow freedom for expansion and contraction and other movements. In the case, the pipes is embedded in floors it should be painted with anti – corrosive bitumastic of approved quality and pipe shall be wrapped in burlap or hessain based bitumen pipe coat of 4mm thickness with overlap of minimum 25mm. The wrapping shall be made to fit tightly over the pipe and where wrapping with a new overlap the old pipe and where wrapping one joint it shall be tied with MS wire or nylon thread. Where pipes are encased with in chases made in the wall, they shall be fixed to the wall with MS clamps MS hooks at every 2 m c/c as to prevent movement before filling in grouting and making good the chase.

External Works:

The galvanized iron pipes and fittings in external work shall be laid in neatly excavated trenches. The widths and depths of the trenches for different diameters of the pipes shall be as

given in the table below and shall be deep enough to have a clear cover of atleast 600mm above the top of pipes.

At joints the trench, width shall be widened wherever it is necessary. The work of excavation and refilling shall be done true to line and gradient by watering and consolidating the excavated soil in layers.

The pipes shall be painted with two coats of anticorrosive bitumastic paint of approved quality followed by wrapping with burlap or hessain based bitumen pipe kote of 4mm thickness with overlap of minimum 25mm. The pipes shall be laid on a layer of 7.5cm sand and filled with excavated earth. The supplies earth shall be disposed off as directed. The filling shall be done after testing & rectifying leakages and after final passing of work by the plumbing management Consultant.

When the excavation is done in rock the bottom shall be cut deep enough to permit the pipes to be laid on a sand cushion of minimum 7.5cm. in case of bigger diameter pipes where the pressure is very high thrust blocks of cement concrete 1:2:4 (1 cement :2 coarse sand: 4 graded stone aggregate of 20 nominal size) shall be constructed on all bends to transmit the hydraulic thrust without impairing the ground and spreading it over a sufficient area, as directed by the plumbing management Consultant.

Testing the joints:

After laying and jointing, the pipes and fittings shall be inspected under working conditions of pressure and flow. Any joint found leaking shall be redone and all leaking pipes removed and replaced without extra cost to Owner. The pipes and fittings after they are laid shall be tested

to hydraulic pressure of 10kg / sq.cm. (100 meter or double the designed working pressures whichever is more). The pipes shall be slowly and carefully charged with water allowing all air to escape and avoiding all shock or water hammer. The draw off takes and stopcocks shall be then closed and specified hydraulic pressure shall be applied gradually. Pressure gauge observations shall be made for atleast 24 hrs. The pipes and fittings should be tested in section as the work of laying proceeds, keeping the joints exposed for inspection during the testing.

Measurements:

The lengths shall be measured in running meter correct to a cm for the finished work, which shall include GI pipes and sockets, GI fittings such as bends, tees, elbows, reducers, crosses, plugs, sockets, nipples and nuts, but exclude brass or gunmetal taps (cocks), valves, lead connection pipes and shower rose. The length shall be taken along the central line of the pipefitting. All pipes and fittings shall be classified according to their diameter of the internal bore. The pipe shall be described as including all cuttings and wastage. In case of fittings of unequal bore, the largest bore shall be measured.

Digging and refilling of trenches shall be measured separately or clubbed with main item as called for in the item specification/tender bill of quantities.

Internal work:

The rate of internal work shall include the cost of labour and material involved in all the operations described above except in para A.1.7. The rate shall include the cost of chasing, cutting holes in walls and floors making good the same including clearing of the debris. Insulation of pipes for hot water supply will be paid separately as extra item.

The grove cutting shall be covered with GI mesh of "ARPITHA" make before grouting

External work:

The rate of external work shall include the cost of labour and materials involved in all the operations described above except in para A.1.5. The rate shall exclude excavation of trenches, rates include painting of pipe and wrapping with 6mm thick pipe kote and refilling all-round the pipes.

Water supply and waste Fittings: (General)

The brass or gunmetal fitting shall be heavy quality and approved manufacture and pattern with screwed or flanged ends as specified. The fittings shall in all respects comply with the Indian standard specifications No. I.S. 778 – 1984 (Fourth revision) and I.S. 781 – 1984 (Second revision). The standard size of brass or gunmetal fittings shall be designated by the nominal bore of the pipe outlet to which the fittings are attached. A sample of each kind of fittings shall be got approved from the Consultants / Employer and all supplies should be made according to the approved samples.

All cast fittings shall be sound and free from laps, blowholes and filings. Both internal and external surfaces shall be clean, smooth and free from sand etc. Burning, plugging, stopping or patching of the casting shall not be permissible. The bodies, bonnets, spindles and other parts shall be truly machined so that when assembled the parts shall axial, parallel and cylindrical with surfaces smoothly finished. The area of the water – way of the fittings shall be less than the area of the nominal bore.

The fittings shall be fully examined and cleared of all foreign matters before being fixed. The fittings shall be fitted in the line in a workman – like manner. The joints and fittings shall be leak – proof when tested to a pressure of 10kg / sq.cm. as described in para above and the defective fittings and joints shall be replaced or redone, without any extra cost.

Regulations and Standards:

All equipment supply erection testing and commissioning shall comply with the requirements of Indian standards and code of practices given below as amended up to 30 may 2002. All equipment and material being supplied by the contractor shall meet the requirements of IS.

Tariff advisory committee's regulation (fire insurance) electrical inspectorate and Indian Electricity rule other Codes / publications as given below:

PRESSURE REDUCING VALVE SET:

Each pressure-reducing valve set shall be complete with pressure reducing or pressure regulating valve, isolating valve, pressure relief valve on outlet and filter on inlet.

Each pressure reducing valve shall contain loading neoprene diaphragm and a full floating, self-aligning, ignition resistant seat and shall be of the single stage, pressure reduction type with provision for manually adjusting the delivery pressure. The valve shall fail safe to the low pressure.

Valve shall be capable of operating at the maintaining automatically the respective delivery pressure and flow rates as indicated and shall not be liable to creep. Valve shall also be capable of maintaining the pre – set down stream pressure under static condition.

The filter on each inlet to a pressure-reducing valve shall be of replaceable porous sintered metal type.

PRESSURE RELIEF VALVES:

Each pressure relief valve shall be of the fully enclosed type and fitted with hand easing gear.

Each pressure relief valve in a pressure reducing station shall have a flow capacity equal to that of the pressure-reducing valve.

Pressure relief valves in locations other than reducing stations shall have flow capacities equal to that of the associated equipment.

PRESSURE GAUGE:

The pressure gauge shall be constructed of die cast aluminum and enameled. It shall be weather proof with an IP 55 enclosure. It shall be a stainless bourden tube type pressure gauge with a scale range from 0 to 16 kg / cm square and shall be constructed as per IS: 3524. Each Pressure gauge shall have a siphon tube connection. The shut off arrangement shall be by ball valve.

DRAWINGS:

a. Contract drawings duly signed by Architect / Consultant are diagrammatic but shall be followed as closely as actual construction permits. Any deviations made shall be in conformity with the architectural and other services drawings and with the prior approval of Architect.
b. Architectural drawings shall take precedence over services drawings in regard to all dimensions.
c. Contractor shall verify all dimensions at site and bring to the notices of Engineer-in-charge / Consultant discrepancies if any Engineer-in-charge‘s decision in this respect shall be final.
d. Large size details and manufactures’ dimensions for materials to be incorporated shall take precedence over small-scale drawings.

WORK TO BE CARRIED OUT BY LICENCED PERSONS / FIRMS:

All service installations namely water supply plumbing drainage and sewerage electrical fire detection and fire protection works shall be carried out by technically competent persons holding valid license to carry out their respective trade at the site and having a minimum experience of five years in their relevant trades.

DRILLING, CUTTING, ETC.:

All cutting and drilling of walls or other elements of the building for the proper entry / installation of pipes, and other equipment shall be carried out using electrically operated tools, only. Manual drilling, cutting, chiseling, etc shall be cut or chased with the written permission of the project engineer.

LIST OF BUREAUX OF INDIAN STANDARDS CODES:

GENERAL:

SP: 6 (1)	Structural Steel sections
IS: 27 IS: 325 IS: 554	Pig Lead Three phase induction Motors Dimensions for pipe threads where pressure tight joints are required on the threads.
IS: 694	PVC insulated cables for working voltages unto & including 1 100 V.
IS: 779	Specification for water meters (domestic type).
IS: 782	Specification for caulking lead.
IS: 800	Code of practice for general construction in steel
IS: 1068	Electroplated coatings of nickel plus chromium and copper plus nickel plus chromium.
IS: 1172	Code of Basic requirements for water supply drainage and sanitation.
IS: 1367(part1)	Technical supply conditions for threaded steel fasteners: part 1 Introduction and general information.
IS: 1367(part2)	Technical supply conditions for threaded steel fasteners: part 2 product grades and tolerances.
IS: 1554(part1	PVC insulated (heavy duty) electric cables: part 1 for working voltages unto and including 1 100 V.
IS: 1554(part2)	PVC insulated (heavy duty) electric cables: part 2 for working voltages from 3.3 KV up to and including 11 KV.
IS: 1726	Specification for cast iron manhole covers and frames.
IS: 1742	Code of practice for building drainage.
IS: 2064	Code of practice selection, installation and maintenance of sanitary appliance.
IS: 2065	Code of practice for water supply in buildings.
IS: 2104	Specification for water meter for boxes (domestic type)
IS: 2373	Specification for cater meter (bulk type)
IS: 2379	Color code for identification of pipelines

IS: 2527	Code of practice for fixing rainwater gutters and down pipes for roof drainage.
IS: 2629	Recommended practice for hot dip galvanizing on iron and steel.
IS: 3114	Code of practice for laying of cast iron pipes
IS: 4111(Part–1)	Code of Practice for ancillary structures in sewerage system: part 1 manhole.
IS: 4127	Code practice for laying glazed stoneware pipes.
IS: 4853	Recommended practice for radiographic inspection of fusion welded butt joints in steel pipes.
IS: 5329	Code of practice for sanitary pipe work above ground for buildings.
IS: 5455	Cast iron steps for manholes.
IS: 6159	Recommended practice for design and fabrication of material, prior to galvaninizing.
IS: 7558	Code of practice for domestic hot water installations.
IS: 8321	Glossary of terms applicable to plumbing work.
IS: 8419(part- 1)	Requirements for water filtration equipment: Part 1 filtration medium sand and gravel.
IS: 8419 (part-2)	Requirements for water filtration equipment: part 2 under drainage system.
IS: 9668	Code of practice for provision and maintenance of water supplies and firefighting.
IS: 9842	Preformed fibrous pipe installation.
IS: 9912	Coal tar-based coating materials and suitable primer for protecting iron and steel pipelines.
IS: 10221	Code of practice for coating and wrapping of underground mild steel pipe lines.
IS: 10446	Glossary of terms relating to water supply and sanitation.
IS: 11149	Rubber Gaskets.
IS: 11790	Code of Practice for preparation of butt – welding ends for pipes, valves, flanges and fittings.
IS: 12183 (part – 1)	Code of practice for plumbing in multistoried buildings: part 1 water supply
IS: 12251	Code of practice of drainage of building basements.
IS: 5572	Code of practice for sanitary pipe work.
BS: 6700	Specification for design, installation, testing and maintenance of servicessupplying water for domestic use within buildings and their cartilages.
BS:8301	Code of practice for building drainage.
BSEN: 274	Sanitary tap were, waste fittings for basins, bidets and baths. General technical specifications.

PIPES AND FITTINGS:

IS: 458	Specification for per cast concrete pipes (with and without

	reinforcement)
IS: 651	Salt glazed stone ware pipes and fittings
IS: 1239 (part –1)	Mild steel tubes, tubular and other wrought steel fittings part 1 mild steeltubes.
IS: 1239(part-2)	Mild steel tubes, tubular and other wrought steel fittings part 1 mild steeltubes.
IS: 1536	Centrifugally cast (spun) iron pressure pipes for water, gas and sewage.
IS: 1537	Vertically cast iron pressure pipes for water, gas and sewage.
IS: 1538	Vertically cast iron pressure pipes for water, gas and sewage.
IS: 1729	Sand cast iron spigot and socket soil, waste and ventilating pipes, fittings andaccessories.
IS: 1879	Malleable cast iron pipe fittings.
IS: 1978	Line pipe.
IS: 1979	High test line pipe
IS: 2501	Copper tubes for general engineering purposes.
IS: 2643 (part –1)	Dimensions for pipe threads for fastening purposes Part 1 basic profile anddimensions.
IS: 2643(part - 2)	Dimensions for pipe threads for fastening purposes Part 2 Tolerances.
IS: 2643(part-3)	Dimensions for pipe threads for fastening purposes Part 3 limits of sizes.
IS: 3468	Pipe nuts
IS: 3589	Seamless or electrically welded steel pipes for water, gas and sewage (168.3 mm to 2032 mm outside diameter).
IS: 3989	Centrifugally cast (sun) iron spigot and socket soil, waste and ventilating pipes, fittings and accessories.
IS: 4346	Specifications for washers for use with fittings for water services.
IS: 4711	Methods for sampling steel pipes, tubes and fittings.
IS: 6392	Steel pipe flanges
IS: 6418	Cast iron and malleable cast iron flanges for general engineering purposes.
IS: 7181	Specification for horizontally cast-iron double flanged pipe for water gas and sewage.

VALVES:

IS: 778	Specification for copper alloy gage, globe and check valves for water works purposes.
IS: 780	Specification for sluice valves for water works purposed (50 mm to 300 mm size).
IS: 1703	Specification copper alloy float valves (horizontal plunger type) for water supply fittings.
IS: 2906	Specification for surface valves for water works purposes (350 mm to 1200 mm size)
IS: 3950	Specification for surface boxes for sluice valves.

IS: 5312(part-)	Specification for swing check type reflux (non return) valves part 1 muilti door pattern.
IS: 5312(part-)	Specification for swing check type reflux (non return) valves part 1 muilti door pattern.
IS:12992(part-1)	Safety relief valves, spring loaded design.
IS: 13095	Butterfly valves for general purposes.

SANITARY FITTINGS:

IS: 771(part to 3)	Specification for glazed fire clay sanitary appliances.
IS: 744	Specification for flushing cistern for water closets and urinal (other than plastic cistern)
IS: 775	Specification for cast iron brackets and supports for wash basins and sinks
IS: 781	Specification for cast copper alloy screw down bib taps and stop valves for water services.
IS: 1700	Specification for drinking fountains.
IS: 2548 (part –2)	Specification for plastic seats and covers for water closets part 1 thermo set seats and covers.
IS: 2556 (part -1)	Specification for vitreous sanitary appliances (vitreous china) part 1 general requirement.
IS: 2556 (part -2)	Specification for vitreous sanitary appliances (vitreous china) part 2 specific requirements of wash – down water closets.
IS: 2556 (part -3)	Specification for vitreous sanitary appliances (vitreous china) part 3 specific requirements of squatting pans.
IS: 2556 (part -4)	Specification for vitreous sanitary appliances (vitreous china) part 2 specific requirements of washbasins.
IS: 2556 (part 6 Sec 2)	Specification for vitreous sanitary appliances (vitreous china) part 3specific requirements of urinals, section 2 half stall urinals.
IS: 2556 (part 6 Sec 4)	Specification for vitreous sanitary appliances (vitreous china) part 4 specific requirements of urinals, section 4 partition slabs.
IS: 2556 (part 6 Sec 5)	Specification for vitreous sanitary appliances (vitreous china) part 5 specific requirements of urinals, section 5waste fittings.
IS: 2556 (part 6 Sec 6)	Specification for vitreous sanitary appliances (vitreous china) part 6 specific requirements of urinals, section 6 water spreaders for half stall urinals.
IS: 2556 (part -7)	Specification for vitreous sanitary appliances (vitreous china) part 7 specific requirements of half round channels.
IS: 2556 (part -8)	Specification for vitreous sanitary appliances (vitreous china) part 8 specific requirements of siphoning wash down water closets.
2556 (part -7)	Specification for vitreous sanitary appliances (vitreous china)

	part 11 specific requirements of shower rose.
IS: 2556 (part - 12)	Specification for vitreous sanitary appliances (vitreous china) part 12 specific requirements of floor traps.
IS: 2556 (part - 15)	Specification for vitreous sanitary appliances (vitreous china) part 15 specific requirements of universal water closet.
IS: 2692	Specification for ferrule for water services.
IS: 2717	Glossary of terms relating to vitreous enamel ware and ceramic metal system.
IS: 2963	Specifications for waste plug and its accessories for sinks and wash basins.
IS: 3311	Specification for waste plug and its accessories for sinks and wash basins.
IS: 5961	Specification for cast iron gratings for drainage purposes.
IS: 6249	Specification for gel-coated glass fiber reinforced polyester resin bath tubs.
IS: 6411	Specification for gel-coated glass fiber reinforced polyester resin bath tubs.
IS: 8931	Specification for copper alloy fancy single taps, combination tap assembly and stop valves for water services.
IS: 9758	Specification for flush valves and fitting for water closets and urinals.

WATER QUALITY TOLERANCE:

IS: 3025 (part 1to 44)	Method of sampling and test (physical and chemical) for water and waste water.
IS: 4764	Tolerance limits for sewages effluents discharged into island surface waters. `
IS: 10500	Drinking water

PUMPS AND VESSELS:

IS: 1520	Specification for horizontal centrifugal pumps for clear cold fresh water.
IS: 2002	Steel plates for pressure vessels for intermediate and high temperature service including boilers.
IS: 2825	Code of unfired pressure vessels.
IS: 4648(part -1)	Code of practice for lining of vessels and equipment for chemical processes part 1 Rubber lining.
IS: 5600	Specification for sewage and drainage pumps.
IS: 8034	Specification for submersible pump sets for clear, cold, fresh water.
IS: 8418	Specification for horizontal centrifugal self-priming pumps.

Water supply Fittings:

All water supply fittings (including mixer fittings accessories) shall be brass / copper, heavy chromium plated, of the make and design specified. The fittings shall be cast fittings of screw type, machined and threaded properly for fixing to the supply pipes.

The plating shall conform to Indian standard specification IS 4827 –1968 electroplated coating of nickel and chromium on copper alloys.

The fittings shall be supplied complete with chromium plated matching flanges, nuts and extension pieces of required lengths. Metallic washers where required shall also be of chromium plated brass. All bib cocks and stop cocks shall conform to Indian standard specifications IS: 781 – 1984 (second revision) bib taps and stop valves for water services, sand cast brass screw – down (revised) pillar cocks to IS: 8934 – 1978 – pillar taps, mixing fitting to IS: 1701 – 1960 mixing valves for ablutionary and domestic purpose. Both filler, shower arm, rose spout and other fittings shall match the supply fittings in construction, performance and appearance.

All fixing accessories and screws shall be similar to fittings with all exposed parts chromium plated. All washers shall conform to Indian standard specification IS: 4326 – 1967 washers for water taps for cold water services.

Waste Fittings:

All waste fittings (waste, chain, pop-up, over-flow) shall be brass / copper, heavy chromium plated of the make and design specified and match the supply fittings. They shall confirm to Indian Standard specification IS: 2963 – 1964 waste fittings for wash basins and sinks, non-ferrous.

Bottle Traps:

Bottle traps (for wash basins, sinks, urinals, etc.,) shall be deep seal (minimum 6cm. seal) cast brass bottle traps, heavy chromium plated. All bottle traps shall be provided with suitable cleaning eye, extension piece, flare nuts – all chromium plated. Bottle traps shall be of approved make and design. Waste coupling for washbasins shall be 40mm, for sinks 50mm, for urinal.

Wall Flange:

Wall flange / caps shall be provided on all walls, floors, columns, etc., wherever supply and disposal of pipes pierce through them. These wall caps shall be chromium-plated brass snugly fitting. The receiving pipes shall be large enough to cover the punctures properly.

Floor Traps:

Floor traps shall be of PVC of the size required, of approved design incorporating a deep seal (6cm. minimum) and venting device unless otherwise indicated. All PVC floor traps in general

/unless otherwise specified, shall be of moulded type only. However, floor traps of sizes as mentioned in the BOQ and that are not available in moulded type, shall be of fabricated type. Samples of these fabricated floor traps including other PVC fabricated fittings to be got plumbing management Consultant. The traps shall be supplied with cast iron / PVC cap with collar capable of receiving a grating.

Lawn Hydrants:

Lawn hydrants shall be 20mm, unless otherwise indicated. All hydrants shall provide with lever-operated ball valves that is screwed faucet to receive hosepipes. Lawn hydrants shall be of approved make and design. Where called for lawn hydrants shall be located in brick masonry chambers of appropriate size as per specification given herein after.

VALVES AND APPURTENANCES:

Ball Float Valves:

The ball valve shall be of high-pressure type and shall be of sizes as specified. The normal size of a ball valve shall be that corresponding to the size of the pipe to which it is fixed. The ball valve shall be of brass or gun metal as specified and the float of copper sheet. The minimum thickness of copper sheet used for making the float shall be 0.45mm for float exceeding 115mm dia. The body of the high-pressure ball valve when assembled in working conditions with the float immersed to not more than half of its volume shall remain closed against a test pressure of 3.5kg / sq.cm.

The ball valve shall generally conform to IS specification No.1703: 1977 (Second revision). The weight of ball cock and the size of the ball cock shall be as per IS specification.

Brass full way Valve:

Full way valve is a valve with suitable means of connection for insertion in a pipeline for controlling or stopping the flow. The valve shall be of brass fitted with a cast iron wheel and shall be of gunmetal gate valve type opening full way of the size as specified. The valve shall be of best quality approved by the Consultants \ Architects.

Gun-metal full way valve with wheel:

These shall be of the gunmetal fitting with wheel and shall be of gate valve type opening full way and of the size as per specification. These shall generally conform to I.S. 780-1984 (Sixth Revision).

Butterfly/Ball Valves:

Valves up to 40 mm dia and below shall be Nickel plated brass body heavy stainless-steel ball, lever operated, tested to 20Kg/sq.cm with female screwed ends. All ball valves shall be of full-bore type.

Valves from 50mm up to 150mm dia shall be of cast of iron body butterfly valves lever operated with flange ends. Valves shall carry IS certification mark.

All valves shall be approved by consultants before they are used on work.

All globe and check valves shall have working parts suitable for hot and cold water, as required. Valves shall be tagged with permanent label under hand wheel indicating type or duty.

Foot Valves:

Provide cast iron body with brass disc and strainer of approved quality, wherever shown.

A.2.6. "Y" STRAINERS:

''Y'' strainers up to 50mm shall be of gunmetal and above 50mm shall be of cast iron body. Strainers shall incorporate a removable bronze screen with mm (1/8'') perforations and a permanent magnet. Strainers shall be provided with flanges at both inlet and outlet. They shall be designed to enable blowing out of accumulated dirt and facilitate dirt and facilitate removal and replacement of the screen without disconnection of the main pipe.

Pressure Reducing Valves:

Pressure reducing valves shall be of "Hawk "make bronze pivot operated spring-loaded valves for reducing pressure as required suitable for specified dia of pipe.

Sluice Valves:

The sluice valves are used in a pipeline for controlling or stopping flow of water. They shall be of specified size and class and shall be of inside non – raising screw type spindle with either double flange or double sockets ends and cap or hand – wheel.

These shall in all respects comply with the Indian Standard specification IS. 780 – 1984 for Valves up to and including 300mm, size and No. BDC (429) p2 for valves above 300mm, size. Calls – I sluice valves are used for maximum working pressure of 10kg / cm2, (100-meter head) and class – II sluice valves for 15kg / cm2 (150 meter head).

The body, domes, covers, wedge gate and stuffing box shall be of good quality cast iron, the spindle of bronze the nut and valves seats of leaded tin bronze. The bodies, spindles and other parts shall be truly machined with surfaces smoothly finished. The area of the waterway of the fitting shall be not less than the area equal to the nominal bore of the pipe. The valve wheel shall be marked with an arrow to show the direction of turn for closing the valves.

The valve shall be fully examined and cleared of all foreign matter before being fixed. The fixing of the valve shall be done by means of bolts, nuts, and 3mm rubber insertions or chemically treated compressed fiber board of 1.5mm thick minimum thickness and of weight not less than 0.183gm per sq.cm with the flanges of spigot and the socketed tail pieces drilled, to the same specification in the case of S & S pipe and with flanges in case of flanged

pipes. The tailpieces shall conform to IS. 1938 – 1960. These shall be jointed to the pipes line by means of lead caulked joints.

Appurtenances:

The other appurtenances of pipeline are mentioned below:

Air Valves:

These are placed at every summit in the pipeline to permit the escape of air when the main is filled and afterwards, if any air carried out in to the mains. These are also placed on long stretches of nearly level main.

Scour Valves:

These are placed at the bottom of all depressions for emptying the main of letting out the sediment.

Reflux /Non-return Valves:

These are fixed so as to open in the direction of flow but automatically close if the water flows back. They are used to diminish the damage done by the escape of water due to a burst or prevent damage to impellers of pumps.

Fixing water meter and stopcock in C.P.V.C / GI pipeline: Materials – pipefittings as described in material section. Cutting GI pipeline:

The GI line shall be cut to the required length at the position where the meter and stopcock are required to be fixed. The ends of the pipe shall then be threaded unions shall be provided in the pipe assembly for fixing water meter.

Fixing meter and stopcock:

The meter and stopcock shall be fixed in position by means of connecting pipes, GI jam nut and socket etc., The stopcock shall be fixed near the inlet of the water. The paper disc inserted in the ripples of the meter shall be removed and meter installed exactly horizontal or vertical in the flow line in the direction shown on by the arrow cast on the body of the meter.

Care shall be taken that the factory seal of the meter is not disturbed. Wherever the meter shall be fixed to a newly fitted pipeline, the pipeline shall have to be completely washed before fitting the meter. For this purpose a piece of pipe equal to the length of the meter shall be fitted in the proposed position of the meter in the new pipeline. The water shall be allowed to flow completely to wash the pipeline and then the meter installed as described above by replacing the connecting piece.

BALL VALVE:

The ball valve shall be of high-pressure class and shall be sizes as specified and directed.

The nominal size of ball valve shall be that corresponding to the size of the pipe to which it is fixed. The valve shall be of gunmetal as specified with standard polyurethane float. The float should be special in shape. The jointing of float shall be efficiently finished, lapped and soldered seam or brazing. Polyurethane floats shall be used as specified.

The ball valve shall generally confirm to IS. Specifications No.1703. The weight of ball cock and size of ball shall as per table given below:

Both high pressure and low-pressure ball valves are designed for use on mains having pressure of 17.kg/sq.cm.and above.

THRUST BLOCKS AND ANCHORAGE:

At all changes of directions or gradients, thrust blocks made of cement concrete M150 duly designed should be provided around the bends of the pipes made of GI or PVC or CI withstand dynamic and static forces likely to be developed due to water running the pipes. The thrust blocks shall be made after the joints are tested and found OK.

DRAINAGE (EXTERNAL WORKS)

Salt Glazed Stoneware Pipes:

All pipes with spigot and socket ends shall conform to IS 651 – 1992 (fourth revision) and shall be of grade `A' as specified. These shall be sound, free from visible defects such as fire cracks or hair cracks. The glaze of the pipes shall be free from crazing. The pipes shall give a sharp clear note / sound when struck with a light hammer. There shall be no broken blisters or chipping on the spigot or socket. The approximate thickness of 60cm long pipes shall be given in the table below:

The length of pipes shall be 60cm exclusive of the internal depth of the socket. The pipes shall be handled with sufficient care to avoid damage to them.

Trenches for SW stoneware pipes drain.

Unless otherwise mentioned the widths of trenches for various dia of stoneware pipes shall be as given in the table given below for depth upto 2.0m.

Wherever depth exceeds 2.0m, the width will be increased by 1.1m.

Laying of stoneware pipes:

All pipes shall be laid on a bed of 15cm cement concrete of 1:4:8 using ¾" graded granite aggregates projecting on each side of the pipe to the width of the trench specified. The pipes with their crown level at 1.20m, depth and less from ground shall be covered with 15cm thick concrete above the Crown of the pipe ends sloped off to meet the outer edges of the concrete to give a minimum thickness of 15cm, all round the pipe. Pipes laid at a depth greater than 1.20m. at crown shall be concerted at the sides upto the level of the center of the pipe and sloped off from the edge to meet the pipe tangentially.

The pipes shall be carefully laid to the alignments, levels and gradients shown on the plans and sections. Great care shall be taken to prevent sand etc., from entering the pipes. pipes between two manholes shall be laid truly in a straight line without vertical or horizontal undulation the pipes shall be laid with socket up the gradient.

If the excavation has been carried too low, the desired levels shall be made up with concrete 1:5:10 (1cement: 5 fine sand: 10 graded stone aggregate 40mm nominal size) for which no extra payment shall be made.

If the floor of the trench consists of rock or very hard ground that cannot easily be excavated to a smooth surface the pipe shall be laid on a leveling course of concrete as desired.

JOINTING:

Tarred gasket of hemp yard soaked in thick cement slurry shall first be placed round the spigot of each pipe and the spigot shall then be slipped home well into the socket of the previously laid. The pipe shall then be adjusted and fixed in the correct position and the gasket caulked tightly home so as to fill not more than ¼th of the total depth of the socket.

The remainder of the socket shall be filled with stiff mixture of cement mortar in the proportion of 1:1 (1cement: 1 fine sand). When the socket is filled, a trowel fillet shall be formed round the joint with a trowel forming an angle of 45 degree with the barrel of the pipe. The joints shall be tested hydraulically as per para B.1.4 and no. Concreting for encasement shall be done. Unless pipes are jointed and tested after a day's work any extraneous material shall be removed from the inside of the pipe. The newly made joints shall be cured.

TESTING OF JOINTS: - IS 4127 - 1983

Hydraulic test: Stoneware pipe used for sewers shall be subjected to a test pressure of 3:0m or required head of water at the highest point of the section plugging the low end of the drain and the ends of the connection, if any and filling the system with top and a sufficient length of vertical pipe jointed to it so as to join with a connection to a hose ending in a funnel which could be raised or lowered till the required head is obtained and fixed suitably for observation.

During the test the required head is maintained for 30 minutes by adding water from a measuring vessel at 10 minutes interval and the average quantity added shall not exceed 1 litter per hour per 100m. Length per 10m dia of pipe

Where leakage will be visible the defective part of the work shall be removed and made good, at no extra cost.

Refilling of Trenches:

As described under water supply section. In case where pipes are not bedded on concrete, special care shall be taken in refilling trenches to cement the displacement and subsequent settlement at the surface resulting in uneven surfaces and dangers to foundations etc. The back-filling materials shall be packed by hand under and around the pipe and rammed with a

shovel and light tamper. This method of filling will be continued up to the top of pipe. The refilling shall rise evenly on both sides of the pipe continued up to 60m above the top of pipe so as not to disturb the pipe. No tapping/ramming should be done within 15cm, of the top of pipe. The remainder of the backfill sewers and 14 days for concrete sewers, unless local conditions or materials are suitable tapping / ramming shall become progressively heavier as the depth of the backfill increases.

Measurements:

The length of pipes shall be measured in running meter nearest to a centimeter as laid or fixed from inside of one manhole to the inside of the other manhole. The length shall be taken along the centerline of the pipes overall fittings such as bends, junctions etc., which shall not be measured separately. Excavation, shoring, timbering, backfilling in trenchers and cement concreting wherever required and is clubbed with the item. Excavation in hard rock will be paid separately on stack measurement basis after deducting voids.

Rates:

The rate shall include the cost of material and labour involved in all the operations described above.

Stoneware Gully Trap:

Gully traps shall conform to IS: 651 – 1980 (Fourth revision) these shall be sound, free from visible defects such as fire cracks or hair cracks. The glaze of the traps shall be free from crazing. They shall give a sharp clear note when struck with a light hammer. There shall be no broken blisters.

The size of the gully trap shall be as specified, and all dimensions will be as per drawing.

Each gully trap shall have one CI grating of square size corresponding to the dimensions of inlet of gully trap. It will also have a water tight CI cover with frame inside dimensions 300 x 300mm the frame and cover weight not less than 7kg and of sound and good casting and shall have truly square machined seating faces.

Excavation:

The excavation for gully traps shall be done true to dimensions and levels as indicated on plans or as directed by the Consultants / Architects.

Fixing:

The gully trap shall be fixed on cement concrete foundation 600 x 600cm square and not less then 10cm. Thick The mix for the concrete will be 1:5:10 (1 cement:5 fine sand: 10 graded stone aggregate 40m nominal size). The jointing of gully outlet to the branch drain shall be done similar to jointing of SW pipe.

Brick Masonry Chamber:

After fixing and testing gully and branch drain, a brick masonry chamber 300 x 300 (inside) in class B bricks in cement motor 1:5 (1 cement: 5 fine sand) shall be built with a 4.5" thick brick work round the gully trap from the top of the bed concert up to ground level. The space between the chamber walls and the trap shall be filled in with cement concrete 1: 5: 10 (1 cement: 5 fine sand: 10 graded stones aggregate 40mm nominal size). The upper portion of the chamber i.e. above the top level of the trap shall be plastered inside with water proof cement motor 1:3 (1 cement: 3 coarse sand) finished with a float in coat of neat cement. The corners and bottom of the chamber shall be rounded off as to slope towards the grating and form a hopper. CI cover with framed 300 x 300mm (inside) shall then be fixed on the top of the bricks masonry with cement concrete 1:2:4 (1 cement: 2 coarse sand: & 4 graded stone aggregated 20mm nominal size) and rendered smooth. The finished top of cover shall be left above the adjoining ` level so as to exclude the surface water from entering the gully trap

Cement Concrete pipes:

The pipes shall be with or without reinforcement as required and of the class as specified. These shall confirm to IS: 458 – 1971 (Second Revision) the reinforced cement concrete pipes shall be manufactured by centrifugal (Or spun process.

All pipes shall be true to shape, straight, perfectly sound and free from cracks and flaws. The external and internal surface of the pipes shall be smooth and hard. The pipes shall be free from defects resulting from imperfect grading of the aggregate, mixing or moulding. The pipes shall be RCC light duty, NP type.

Concrete used for the manufacture of reinforced concrete pipes and collars shall not be leaner than 1:2:4 (1cement: 2 coarse sand: 4 graded stone aggregate). The maximum size of aggregate should not exceed one third of the thickness of the pipe or 20m whichever is smaller. The reinforcement in the reinforced concrete pipe shall extend throughout the length of the pipe. The circumferential and longitudinal reinforcement shall be adequate to withstand the specified hydrostatic pressure and further bending stresses due to the weight of water when running full across the span equal to the length of pipe plus three times it's own weight.

Laying of pipes:

Loading, transporting and unloading of concrete pipes shall be done with care. Handing shall be such as to avoid impact. Gradual unloading by inclined plane or by chain block is recommended. All pipe sections and connections shall be inspected carefully before being laid. Broken or defective pipes or connections shall not be used. Pipes shall be lowered in to the trenches carefully. Mechanical appliances may not be used. Pipes shall be laid true to line and grade as specified. Laying of pipe shall proceed up grade of a slope. If the pipes have spigot and socket end shall face upstream. In the case of pipe with joints to be made with loose collars, the collars shall be slipped on before the next pipe is laid. Adequate and proper expansion joints shall be provided where directed. In case where the foundation conditions are unusual such as in the proximity or trees or holes, under exiting or proposed manholes etc, the pipe shall be encased all round in 15cm, thick cement concrete 1:5:10 (1 cement: 5 fine sand: 10 graded stone aggregate 40mm nominal size) or compacted sand or gravel.

In cases where the natural foundation is inadequate the pipes shall be laid either in concrete cradle supported on proper foundation or on any other suitably designed structure as specified. If a concrete cradle bedding is used the depth of concrete below the bottom of the pipe shall be at least ¼ th of the internal dia and shall extend up to the sides of the pipe at least to a distance of ¼ th of the outside diameter. For pipes 300mm, and over in dia.

The pipe shall be laid in this concrete bedding before the concrete has set. Pipes laid in trenches in earth shall be bedded evenly and firmly and as far up the haunches of the pipes as to stately transmit the load expected from back fill through the pipe to the bed. This shall be done either by excavating the bottom of the trench to fit the curve of the pipe to form an even bed. Necessary provision shall be made for joints wherever required.

When the pipe is laid in a trench in rock, hard clay, or other hard materials the space below the pipe shall be excavated and replaced with an equalizing bed of concrete, sand or compact earth. In no place shall pipe

Be laid directly on such hard material. When the pipes are laid completely above the ground the foundations shall be made even and sufficiently compacted to support the pipeline shall be supported on PCC sandal blocks. Similar arrangement shall be made to retain the pipeline in the proper alignment. Such as by shaping the top of the supports to fit the lower part of the pipe. The distance between the supports shall in no case exceed the length of the pipe. The pipe shall be supported as far as possible close to the joints. In no case shall the joint come in center of the span. Care shall be taken to see that superimposed loads greater than the total load equivalent to the weight of the pipe when running full shall not be permitted.

Jointing of Pipes:

Joints are generally of rigid type. When specified flexible type joints may also be provided.

Spigot and socket joint (rigid)

The spigot of each pipe shall be slipped home well into the socket of the pipe previously laid and adjusted in the correct position. The opening of the joint shall be filled with stiff mixture of cement motor in the proportion of 1:2 (1cement: 2 fine sand), which shall be rammed with caulking tool.

After a day's work any extraneous materials shall be removed from the inside of the pipe and the newly made joint shall be cured.

Collar joint (rigid):

The adjoining pipes shall be butted against each other and adjusted in correct position. The collar shall then be slipped over the joint, covering equally both the pipes. The annular space shall be filled with stiff mixture of cement mortar 1:2 (1cement: 2 find sand)

Which shall be reamed with caulking tool.

After a day's work any extraneous material shall be removed from the inside of the pipe and the newly made joint shall be cured.

The testing of joints, refilling of trenches:

The testing of joints, refilling of trenches for concrete pipe shall be similar to specification for stone ware pipes.

Manholes, Inspection Chambers, Gullies etc.:

Inspection Chambers:

Where depth of sewer is less than 1.5m, below outside rectangular made up/ finished level of paving, square inspection chambers shall be used having size as specified. Usual size are 600 x 600 x 900. These shall be constructed in the sewer line at such places and levels and dimensions as indicated on the drawing. Sizes specified shall be clear internal dimensions of the chamber.

Manholes:

Where depth of sewer exceeds 1.5m, with respect to outside made up ground / finished level of paving, circular/ conical manholes shall be provided. Various types and sizes of manholes are specified for different depths. Typical drawing of various types of manholes shall be supplied to the contractors. In the absence of such drawings the Manhole details as per IS-4111 (part – 1) to be followed.

Manholes and inspection chambers, which are provided on road or where heavy vehicular traffic is expected, are to be provided with 'heavy duty' C.I. airtight frame & cover. With double seal as per IS 1726 for those built on footpaths, carriage drives and cycle tracks, medium duty covers shall be provided. For locations within domestic premises or areas not subjected to wheel traffic loads they shall be provided with light duty covers.

Construction of manholes, Inspection chambers and gullies.

Excavation:

This shall be done to dimensions and levels on the drawing.

Bed Concrete:

Base of the manhole shall be constructed in P.C.C. 1:4:8. Using ¾" graded stones Thickness shall be 200mm upto 4.25m and 300mm for depths more than 4.25m or as specified by the consultants.

Brickwork:

Brickwork shall be in C.M. 1:4 constructed with class B wire cut bricks. Brick masonry in arches and arching over the pipe shall be in C.M. 1:3. Walls shall be generally built in 230mm thickness for inspection chambers and manhole upto a depth of 2.1m and 350mm for depth over 2:2.

Plastering:

Walls of manholes shall be plastered inside with 15mm thick cement plaster 1:3 using Water proof compound and finished smooth. Where ground water table is high, external surfaces of manholes shall also be plastered in C.M. 1:3.

Filleting:

75mm fillet shall be made with C.M. 1:3 all-round the external joint between the bed concrete and brick masonry wall of manhole.

Benching:

Channels and benching inside the manhole or inspection chamber shall be done in C.C. 1:3:6 and rendered smooth with cement. Depth of channel and benching shall be as per the table given below:

P.C.C. cap:

PCCM. 150 cap of 1:2:4 150mm thickness shall be provided on top of manholes for fixing the manhole frame.

Footrest:

Footrests shall be P.V.C runs weighing 3.5 kg. These shall be embedded 20cm deep in 20x20x10cm blocks of pcc 1:2:4. The blocks with P.V.C. foot rest placed on its center shall be cast in- situ along with masonry. Footrest shall be placed 300mm apart vertically and 375mm horizontally in staggered fashion.

Manhole frames and covers:

Approximate weights for various dimensions of frames and covers of various duties shall be as M.H. type and light duty single seal type).

The covers and frames shall be cleanly cast and shall be free from air and sand holes and from cold shuts. They shall be neatly dressed and carefully Trimmed. All castings shall be free from voids either due to shrinkage gas inclusion or other causes.

Covers shall have raised chequer design on the top surface to provide adequate non-slip grip. The cover shall be capable of easy opening and closing and it shall be fitted in the frame in a workman – like manner. Covers shall be gas and watertight. Size of the cover shall be the clear internal dimensions of frame. 2-1/2% variation in weights shall be permissible.

Covers and frames shall be coated with a black anticorrosive paint of bituminous composition. The coating shall be smooth and tenacious. It shall not flow at 63degree c. and shall not drip off at O degree c. the covers shall be so fixed as to be flushed with ground surface. After completion the manhole covers shall be sealed by mean of grease.

Testing:

Manhole, after it is raised above highest expected sub- soil water level in monsoon, shall be tested for water tightness. The mouths of all pipes entering the manhole shall be suitably plugged with brick masonry or wooden or any other type of plug. Manhole under test shall

then be filled with water upto general subsoil water level and the level observed for one hour. If the level does not drop to more than 50mm in one hour, it shall be deemed as water tight. During testing the pit around shall be kept free of water and contractor shall observe the places where leakage takes places and takes steps to correct the same. Filling earth around manholes shall be done after testing.

Drop connection:

In cases where branch pipes sewer enters the manhole of main pipe sewer at level higher than the main sewer by more than 600mm a drop connection should be provided as per typical drawing for drop connection.

For 150 and 250mm main line. The difference in level between the water line (peak-flow-level) and the invert level of branch line is less than 60cm., a drop connection may be provided within the manhole by giving ramp. If the difference in level is more than 60cm., the drop should be provided externally.

Excavation:

The excavation shall be done for the drop connections at the place where the branch line meets the manhole. The excavation shall be carried upto the bed concrete of the manhole and to the full width of the branch line.

Laying:

At the end of branch sewer line stoneware shall be fixed to the line which shall be extended through the wall of the manhole by a horizontal place of Stoneware pipe to form an inspection or cleaning eye. The stoneware drop shall be connected to the tee at the top and the

stoneware bend at the bottom. The end shall be extended through the wall of the manhole by a piece of C.I. pipe, which shall discharge into the channel. Necessary channel shall be made with cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20mm. Nominal size) and finished smooth to connect the main channel. The joint between stoneware pipe and tee and stoneware branch line shall be made with cement mortar 1:1(1 cement: 1fine sand) as per para 2.1.3 for S.W. pipes. The exposed portion of the drop connection shall be encased all round with a single brickwork in C.M. 1:4 and pointed. The holes made in the walls of the manholes shall be made good with brickwork in cement mortar 1:4 (1cement: 4 fine sand) and plastered with cement mortar 1:3 (1wall. The excavated earth shall be backfield in the trench in level with the original ground level.

DRAINAGE (INTERNAL AND EXTERNAL WORKS)

Soil, waste, vent pipes and fittings Materials:

All soil, waste and vent pipes and fittings used within the toilets, shafts vertical run, basement ceiling – suspended run, shall be PVC pipes of SWR quality (4kg / sq. cm pressure rated) as per IS 13592 (latest revision). Pipe of higher Dia i.e. 160mm Dia. and above shall of

agricultural series (6kg / sq. cm pressure rated) made as per IS 4985.They shall be made of polyvinyl chloride (PVC) and shall be sound with good surface finish, mechanical strength and capacity. During manufacture only those additives may be added to produce the above characteristics. No additives shall be added separately or together in quantities sufficient to constitute a toxic hazard or impair its physical or welding properties of the pipe or impair its physical or chemical properties. All pipes shall be spigot and socket type (bell end type) OR rubber ring socket type.

Tolerances:

Tolerance on diameter and wall thickness shall be as per I.S 13592 and 4985.

Fittings:

All fitting shall be injection moulded socket fittings with or without inspection doors as specified and shall be in accordance with requirement of the relevant I.S 7834.

Pressure ratings and tolerances shall be as per I.S 13592 and 4985.

Laying and jointing:

Pipes shall be cut to length required including the portion to be inserted in the socket with a hacksaw. The pipe shall be cut square. Pipes and sockets shall be clean and dry, and burrs removed both inside and outside with a file. The surface to surfaces to be in contacted shall be roughened with emery paper, and dry fit checked.

A thick coat of solvent cement shall be applied to the outer surface of the pipe and a thin coat on the inside surface of the pipe and a thin coat on the inside surface of the socket by means of a brush. Solvent cement shall be of approved make and quality. The pipe shall then be inserted in the socket and turned for 90 degrees to ensure even distribution of solvent cement. Excess solvent cement shall be wiped off. Leak proof adhesives like FRP paste / M – seal to be applied. GI clamps of required size shall be used for clamping the pipes to the walls etc., pipe shall be clamped atleast two inch / 50mm away from the wall surface using GI clamps screwed to the PVC rawl plugs, not more than 1 meter apart.

Clean Outs:

At every bends, branches and where necessary suitable cleanouts shall be provided in to the piping system.

Connecting PVC pipes to CI pipes:

PVC collar ring shall be welded to the spigot end of the PVC pipe by means solvent cement. The spigot end of the pipe to be jointed shall then be inserted in to the socket and aligned. Tarred spun yarn shall be caulked in to the angular space between the spigot and socket up to height of 20mm.The remaining space shall be filled with C.M. 1:2 and well caulked using wooden caulking tool and finished off neatly. Joint shall be kept for 24Hours. Alternatively, if so directed by Architect, the following method may be adopted. The spigot end of the PVC

pipe should be jointed to a PVC collar using solvent cement as detailed in 7.3.1.The other end of the collar is then jointed to the socket of the CI pipe using solvent cement.

Connecting CI pipe to PVC pipes:

A connector socket shall be used for such connections, a rubber ring is to be placed over the spigot, which is then inserted in to the socket connector. Gentle, even heat is applied to the connector socket by means of a blowlamp. The connector socket will shrink making a watertight airtight joint.

Connecting PVC to GI pipes:

Standard threaded couplers shall be used for this purpose.

Miscellaneous Items:

Supports, pedestals and base for inspection chambers, gully traps and pipes shall be of GI or MS provided with water bar flange.

Pipes sleeves and inserts, etc., through RCC walls either external or internal shall be of GI or MS provided with water tight flange.

During installation open ends of pipes shall be plugged with wood out in to required shape or gunny bags and to be maintained free from dirt.

PVC waste pipes and fittings shall be of agricultural series of supreme / Prince make (4kg / sq. cm pressure rated) or equivalent with PVC unions, tailpiece reducers and connections to be provided between joints to either lead or CI pipes.

Separate Y Fitting are to provide for connecting Antisiphonage pipes through the soil stock.

The pipe Connection to the sewage or storm water collection chambers shall perfectly water tight.

The floor traps for toilet blocks shall be PVC with CP brass grating, bolted down design. The traps shall be provided with minimum water seals as per – IS - 5329

Where toilet slabs are sunk, the floor trap shall be of 110 x 75 heavy type PVC `P' trap, with CP brass grating, with rim type design.

Bathroom CP grating shall be of rim type design made out of heavy cast brass with the chromium plating of the best approved standard.

RAIN WATER PIPES AND FITTING:

All rain water and vent pipes and fittings used within the plumbing shafts vertical run, basement ceiling suspended run, shall be PVC pipes of SWR quality of pressure rating 4kg / sq. cm. They shall be made of polyvinyl chloride (PVC) and shall be sound with good surface finish, mechanical strength and capacity. During manufacture only those additives may be added to produce the above characteristics. No additives shall be added separately or together in quantities sufficient to constitute a toxic hazard, or impair the fabrication or welding

properties of the pipe or impair its physical or chemical properties. All pipes shall be spigot and socket type (bell and type).

Tolerances:

Tolerances on diameters and wall thickness shall be as per IS 4985.

Fittings:

All fitting shall be injection moulded socket fittings with or without inspection doors as specified and shall be in accordance with the requirements of the relevant IS 7834.

Pressure ratings and Tolerances shall be as per IS 4985.

Tolerances:

Tolerances on diameters and wall thickness shall be as per IS 4985.

Fitting:

All fitting shall be injection moulded socket fittings with or without inspection as specified and shall be in accordance with the requirements of the relevant IS 7834.

Pressure ratings and tolerance shall be as per IS 13592 and 4985.

Laying and jointing:

Pipes shall be cut to length required including the portion to be inserted in the socket with a hacksaw. The pipe shall be cut square. Pipes and sockets shall be clean and dry and burrs removed both inside and outside with a file. The surface to surfaces to be in contacted shall be roughened with emery paper, and dry fir checked.

A thick coat of solvent cement shall be applied to the outer surface of the pipe and a thin coat on the inside surface of the socket by means of a brush. Solvent cement shall be of approved make and quality. The pipe shall then be inserted in the socket and turned for 900 to ensure even distribution of cement. Excess cement shall be wiped off. GI clamps of required size shall be used for clamping the pipes to the walls etc., pipe shall be clamped atleast two inch away from the wall surface using GI clamps screwed to the MS Angle, not more than 1.5 meter apart.

Clean outs:

At every bend, branches and where necessary suitable cleanouts shall be provided in to the piping system.

Connecting PVC pipes to CI pipes:

PVC collar ring shall be welded to the spigot end of the PVC pipe by means solvent cement. The spigot end of the pipe to be jointed shall then be inserted in to the socket and aligned. Tarred spun yarn shall be caulked in to the angular space between the spigot and socket up to a height of 20mm.

The remaining space shall be filled with CM 1:2 and well caulked using wooden caulking tool and finished off neatly. Joint shall be kept for 24 hours. Alternatively, if so directed by Architect, the following method may be adopted.

The spigot end of the PVC pipe should be pointed to a PVC collar using solvent cement as detailed in 7.3.1. The other end of the collar is then jointed to the socket of the CI pipe using solvent cement.

Connecting CI pipe to PVC pipes:

A connector socket shall be used for such connections. A rubber ring is to be placed over the spigot, which is then inserted in to the socket connector. Gentle, even heat is applied to the connector socket by shrink making a watertight airtight joint.

Connecting PVC to GI pipes:

Standard threaded couplers shall be used for this purpose.

Rain water collection gratings:

The rain water collection grating at the terrace level shall be of PVC grating with PVC frame embedded on to the water proof surface. Waterproofing shall be done around the pipe, frame and grating to ensure the water tightness around the collection point. Adequate slope on the terrace level shall be provided for collecting all rainwater at the collection gratings.

The rain water collection detail at the balconies shall be done using PVC pipe bend installed concealed in the concrete slab and connected to the vertical main PVC rain water stack, at the collection point heavy brass CP frame with CP grating shall be provided. The CP frame shall be laid in the slab above the pipe with water seal joint all-round the frame.

Rain water / storm water, gullies / Chambers:

Storm water gullies shall be constructed for admitting storm water from the courtyard area. It is constructed of specified size and is provided with precast RCC or CI grating on top for admitting storm water run off into it. A typical drawing shall be provided giving all details of construction. For other details of construction refer specification for manholes and inspection chambers.

SANITARY FIXTURES AND FITTINGS:

Installation of fixtures and fittings:

All Plumbing and Sanitary Fixtures and Fittings should be first 1st (standard) quality and shall be stored in covered stores and handled carefully to prevent damage. The sanitary fittings shall be installed at the correct assigned positions as shown on the drawings and as directed by the Consultants / Architects and shall fully meet with the aesthetic and symmetrical requirements as demanded by the Consultant. Fixtures shall be installed by skilled workman with appropriate tools according to the trade. Manufacturer’s instructions shall be followed for the installation of the fixtures.

Fixtures in all toilets shall be standard height mounted rigid, plumb and true to alignment. The outlet of water closet pans and similar appliances shall be examined to ensure that outlet ends are abutting properly on the receiving pipes before making the joints. It shall be ensured that the receiving pipes are clear of obstruction. When fixtures are being mounted, attunement shall be other causes. A check shall be made to ensure that necessary anchoring devices have been provided for supporting water closets, lavatory has in sinks, flushing cisterns and other appliances. Where the built-in types of brackets are used, they shall be securely fixed to the walls and slabs by approved means. It shall be ensured that while fixing the fixtures and fittings, no tool marks or scratches are developed. All MS / Steel brackets and supports shall be painted.

Cutting, Patching repairing and making good:

Cutting, patching and repairing required for the installation and completion of the work specified in each division, including chasing, plastering masonry work, concrete work, etc. and making good shall be carried out by the contractor wherever required. Holes, which are over size, shall be refilled, so that a tight fit is obtained around the pipe or other passing through.Any damages to water proofed locations should not be patched up, without rectification by water proofing agency to ensure his guarantee.

Protection of Fixtures / Equipment:

Care shall be taken at all times, particularly after fixing to protect fixtures from damage. All offsets shall be temporarily plugged during progress of work to prevent obstruction. Fixtures shall be finally cleaned to the satisfaction of the consultants. Keep all pipes and conduit openings closed by means of plugs or caps to prevent the entrance of foreign mater. Protect all piping, conduit, fixtures, equipment or apparatus. Any such items damaged prior to final completion of work shall be restored to its original conditions or replaced at no expense to the Owner.

Accessibility:

The installation of valves, thermometers, cleanout fittings and other indicating equipment or specialties requiring frequent reading, adjustment, inspection, and accessibly located with reference to the finished buildings. Thermometers and gauges shall be installed so as to beeasily read from the floor clean out minimum distance of 600mm shall be available from any wall.

Equipment, material and workmanship:

Determine that each piece of equipment meets that detailed requirements of the contract documents and that it is suitable for the installation shown. Notify the Architect of any shortcomings found during the tendering period. Each piece of equipment furnished shall

meet all detailed requirements will not be acceptable, even though specified by name along with other manufacturers.

Where two or more units of same class of equipment are furnished use products of the same manufacture, component parts of entire system need not product of the same manufacturer but confirm to I.S.I standard. Furnished all materials and equipment, new and free from defects and of size, make type and quality here in specified or approved by the Employer / Architects. All shall be installed in a neat and workmanlike manner.

Sanitary fixtures and CP fittings (Owner's supply):

Unless otherwise specified the sanitary fixtures shall be of the following specifications:

SANITARY FIXTURES AND FITTINGS:

SCOPE:

a) Sanitary appliances and fixtures for toilets.

b) Chromium plated brass fittings.

c) Stainless steel sinks.

d) Accessories e.g. towel rods, toilet paper holders, soap dish, liquid soap dispensers, towel rails, coat hooks etc.

e) Hand driers, drinking water fountains etc.

Whether specifically mentioned or not the contractor shall provide for all appliances and fixtures all fixing devices, nuts, bolts, screws, hangers as required.

All exposed pipes within toilets and near appliances / fixtures shall be of chromium plated brass or copper unless otherwise specified.

GENERAL REQUIREMENT:

All appliances, fixtures and fittings shall be provided with all such accessories as are required to complete the item in working condition whether specifically mentioned or not in the schedule of quantities, Specifications, drawings. Accessories shall include proper fixing arrangements, brackets, nuts, bolts, washers, screws and required connection pieces.

The sanitary fixtures and fittings shall be installed at the correct assigned position as shown on the drawings and as directed by the architect / Owner's site representative and shall fully meet with the aesthetic and symmetrical requirements as demanded by the architect / interior designer.

All fixtures and accessories shall be fixed in accordance with a set pattern matching the tiles or interior finish as per architect requirements. Wherever necessary, the fittings shall be centered to dimensions and pattern as called for.

Fixing screws shall be half round head chromium plated (CP) brass screws, with CP brass washers unless otherwise specified.

Fixtures shall be installed by skilled workman with appropriate tools according to the best trade practice.

All appliances, fittings and fixtures shall be fixed in a neat workman like manner true to level and to heights shown on the drawings and in accordance with the manufacturers recommendations. Care shall be taken to fix all inlet and outlet pipes at correct positions. Faulty locations shall be made good and any damage to the finished floor, tiling, plaster, paint, insulations or terrace shall be made good by the contractor at his own cost. Fixtures shall be mounted rigid, plumb and true to alignment.

All materials shall be rust proofed: materials in direct contact shall be compatible to prevent electrolytic or chemical (bimetallic) corrosion.

Wall flanges shall be provided on all walls, floors, columns etc., wherever supply and disposal pipes pierce through them. These wall caps shall be or chromium plated brass fittings and the receiving pipes and shall be large enough to cover the punctures properly.

Sanitary appliances, subject to the type of appliance and specific requirements, shall be fixed in accordance with the relevant standards and the following:

Contractor shall during the entire period of installation and afterwards protect the appliances by providing suitable cover or any other protection so as absolutely prevent any damages to the appliances until handing over (the original protective wrapping shall be left in position for as long as possible).

2) The appliances shall be placed in correct position or marked out in order that pipe work can be fixed or partially fixed first.
3) The appliances shall be fixed in a manner such that it will facilitate subsequent removal if necessary.
4) The appliance shall be securely fixed. Manufacturer's brackets and fixing methods shall be used wherever possible. Compatible rust – proofed fixings shall be used. Fixing shall be done in a manner that minimize noise transmission.
5) Appliances shall not be bedded (e.g. WC pans, pedestal units) in thick strong mortar that could crack the unit e.g. ceramic unit).
6) Pipe connections shall be made with demountable unions. Pipe work shall not be fixed in a manner that it supports or partially supports and appliance.
7) Appliances shall be fixed true to level firmly fixed to anchor or supports provided by the manufacture and additional anchors or supports where necessary.

Size of sanitary fixtures given in the specification or in the schedule of quantities are for identification with reference to the catalogues of make considered. Dimensions of similar models of other makes may verywith in +/- 10% and the same shall be provided and no claim for extra payment shall be entertained no shall payment be deducted on this account.

The contractor shall fix all plumbing fittings such as water faucets, shower fittings, mixing valves etc in accordance with manufacturer's instructions and connect to piping system. The contractor shall supply all fixing materials such as screws rawl plugs, unions, collars and shade to match that of the appliances / fixture and the floor / wall to the extent possible.

SUPPORTING AND FIXING DEVICES:

The contractor shall provide all the necessary supporting and fixing devices to install the sanitary fixtures and fittings securely in position. The fixing devices shall be rigidly anchored into the building structure. The devices shall be rust resistant and shall be so fixed that they do not present an unsightly appearance in the final assembly. Where the location demands, the architect may instruct the contractor to provide chromium plater or other similarly finished fixing devices. In such circumstances the contractor shall arrange to supply the fixing devices and shall be installed complete with appropriate vibration isolating pads, washers and gaskets.

FINAL INSTALLATION:

The contractor shall install all sanitary fixtures and fittings in their final position in accordance with approved trial assemblies and as shown on drawings. The installation shall be complete with all supply and waste connections. The connection between building and piping system and the sanitary fixtures shall be through proper unions and flanges to facilitate removal/replacement of sanitary fixtures without disturbing the built-in piping system. All unions and flanges shall match in appearance with other exposed fittings.

Fixtures shall be mounted rigid. Plumb and to alignment. The outlets of water closet pans and similar appliances shall be examined to ensure that outlet ends are butting on the receiving pipes before making the joints it shall be ensured that the receiving pipes are clear of obstruction. When fixtures are being mounted. Attention shall be paid to the possibility of movement and settlement by other causes. Overflows shall be made to ensure that necessary anchoring devices have been provided for supporting water closets, washbasins, sinks and other appliances.

PROTECTION AGAINST DAMAGE:

The contractor shall take every precaution to protect all sanitary fixtures against damage, misuse, cracking, staining, breakage and pilferage by providing proper wrapping and locking arrangement till the completion of the installation. All the time of handing over, the contractor shall clean, disinfect and polish all the fixtures and fittings. Any fixtures and fittings found damaged, cracked chipped stained or scratched shall be removed and new fixtures and fittings free from defects shall be installed at his own cost to complete the work.

MEASUREMENT:

Rate for fixing only of sanitary fixtures accessories, CP fittings shall etc. include all items, and operations stated in the respective specifications and bill of quantities and nothing extra is payable.

Rates for all items under specifications para above shall be inclusive of cutting holes and chases and making good the same CP screws, nuts, bolts and any fixing arrangements required and recommended by manufacturers, testing and commissioning and making good to the satisfaction of the owner's site representative.

TESTING:

All appliances, fixtures and fittings shall be tested before and after installation. Water seals of all appliances shall be tested. The contractor shall block the ends of waste and ventilation pipes and shall conduct an air test.

WATER CLOSET:

Water closet shall be wash or siphonic wash down type floor or wall mounted set, as shown in the drawings, designed for low volume flushing from 5-7 liters of water, flushed by means of a porcelain flushing cistern or an exposed or concealed type (as detailed in the drawings or as directed by the owner's site representative) 32 mm size CP brass flush valve with regulator valve. Flush pipe / bend shall be connected to the WC by means of a suitable rubber adaptor. Wall hung WC shall be supported by CI floor mounted chair, which shall be fixed in a manner as approved by the owner's site representative.

Each WC set shall be provided with approved quality of seat, rubber buffers and chromium plated hinges, seat shall be so fixed that it remains absolutely stationary in vertical position with out falling down on the WC.

Each WC shall be provided with 110 mm dia (OD) PVC pan connector connecting the ceramic outlet of WC to P.V.C pipe.

Squatting type water closet – Orissa Pattern:

Squatting type water closed (WC) pan shall be of Orissa pattern of size as specified in schedule of quantities. Each WC pan shall be provided with a 100 mm dia cast iron or porcelain P or S traps with or without vent horn as directed by owner's site representative.

WC shall be flushed by means of concealed type or exposed type (as detailed in the drawings or as directed by the owner's site representative) 32 mm size CP brass flush valve with regulator valve.

URINALS:

Urinals shall be lipped type half shall with glazed vitreous china of size as called for in the bill of quantities.

Half shall urinals shall be provided with 15 mm dia CP spreader 32 mm dia CP domical waste and CP cast brass bottle trap with pipe and wall flange and shall be fixed to wall by CI brackets, CI wall clips and CP brass screws as recommended by manufacturer complete as directed by the owner's site representative.

Flushing for urinals shall be by means of no hand operation, infrared electric flush valve with complete kit of plumbing, electrical and electronic items, infrared photo cells, solenoid valve transformer an d electrical connection. The automatic flush sensor plate shall be flush and press fitted and be of height quality mirror polish finish. Each urinal shall be provided with one flush valve unit.

Flush pipes shall be C.P.V.C pipes concealed in wall chase but with chromium-plated bends at inlet and outlet.

Urinal Partitions:

Urinals partitions shall be white glazed vitreous china of size specified in the schedule of quantities.

Porcelain partitions shall be fixed at proper height with CP brass bolts, anchor fasteners and MS clips as recommended by the manufacturer and directed by the owner's site representative.

CISTERNS / FLUSH VALVE:

Low-level fishing cistern (exposed or concealed) shall be provided for WC in specified toilets. Contractor shall install cistern in accordance to the manufacturer's specification to the satisfaction of the owner site representative. Provision of flush valve shall be made for public / staff toilets.

WASH BASIN:

Washbasins shall be white glazed vitreous china of size. Shape and type specified in the schedule of Quantities.

Each basin shall be provided with painted MS angle or CI brackets and clips and the basin securely fixed to wall / counter slab. Placing of basins over the brackets without secure fixing shall not be accepted. The MS angle shall be provided with tow coats of red oxide primer and two coats of synthetic enamel paint of make brand and cooler as approved by the owner's site representative. The cost of fixing the basin shall be inclusive of supply and installation of bracelets as described above.

Each basin shall be provided with 32mm dia CP waste with overflow pop-up waste or rubber plug and CP brass chain as specified in the schedule of Quantities.

Each basin shall be provided with hot and water mixing fitting or as specified in the schedule of Quantities.

SINKS:

Sinks shall be stainless shall or any other material as specified in the schedule of Quantities. Each sink shall be provided with painted MS or CI brackets and clips and securely fixed. Counter top sinks shall be fixed with suitable painted angle iron brackets or clips as recommended by the manufacturer. Each sink shall be provided with 40mm dia CP waste and rubber plug with CP brass chain as given in the schedule of Quantities. The MS angle shall be provided two coats of red oxide primer and two coats of synthetic enamel paint of make. Brand and colour as approved by the owner's site representative.

Sanitary fit tings for sinks shall be deck mounted or wall mounted CP swivel faucets with or without hot and cold water mixing fittings as specified in the schedule of Quantities. Installation of fittings shall be measured and paid for separately.

LIQUID SOAP DISPENSER:

Liquid soap dispenser shall be wall/counter mounted suitable for dispensing liquid soaps. Lotions. Detergents. The cover shall lock to body with concealed locking arrangement, opened only be key provided.

Liquid soap dispenser body and shank shall be of high impact resistance material. The piston and spout shall be stainless steel with I liter capacity polyethylene container.

The valve shall operate with less than 2.27 Kg (5 ibs) of force.

MOCKUP AND TRIAL ASSEMBLY:

The installation of the sanitary fixtures and fittings shall be as per the shop drawings approved by the architect/consultant.

The contractor shall have to assemble at least one set of each type of sanitary and fittings in order to determine precisely the required supply and disposal connections, relevant instructions from manufacturers shall be followed as applicable. This trial assembly shall be developed to determine the location of puncture holes. Holes holding devices etc. which will

be required for final installation of all sanitary fixtures and fittings. The above assembly shall be subject to final approval by the architect/ interior designer.

The fixtures in the trial assembly can be re-used for final installation without any additional payments for fixing or dismantling of the fixtures.

Water closets: (European type) shall be of vitreous china of approved pattern, quality, capacity and colour. The closet shall be fixed with CP brass screws floor for floor mounted type and mounted MS brackets with bolts for wall mounted type and shall be provided with solid plastic seat and cover with chrome plated pillar brass hangers as specified.

Indian pattern closet shall be of similar quality and specified capacity as mentioned above. The pan shall be 580 x 440mm in size with `S' or `P' trap of the same material of the pan. The WC with the trap shall be fitted and fixed in position and built round soil with brick and cement to required level after all connections are made. The finished floor of the water closet shall be 15mm below the level of the room or passage in front of it.

Both types of closets should confirm to the requirements of I.S. 771 for glazed vitreous china sanitary appliances.

Where flush valves are specified for flushing purposes, it shall be of the best-approved quality procurable with CP control valves and CP flush pipe.

Mode of measurement:

All drainpipes shall be measured in linear lengths along the centreline of drainage line laid. Deductions shall be made for chambers and fitting lengths, etc. The rate shall include all works as specified in the respective items.

Stoneware or cast-iron gully, traps, bends and junctions, sewer traps etc. shall be measured in numbers as in above.

All GI pipes for water supply shall be measured in linear lengths along the center line completed including the fittings like collars, elbows, tees, hex nipples etc. the rate shall include cutting, threading, jointing, pressure testing etc. complete as specified in the respective items.

Same rate shall be applicable for pipes of same size and materials laid in building at any level or floor.

The rock cutting shall be measured in cu. m of the stacks of excavated rock. The deductions for voids being 50%of the stack measurement. Only the rock which is removed by chiseling or blasting etc., shall be measured for this item of work. Boulders shall not be considered as a rock. The excavated rock will be the owner's property.

All PVC pipes such as soil, waste, vent and rainwater shall be measured in linear lengths along the centerline, to nearest centimeter as completed including length over fittings. The rates shall include all joints and clamps etc. as specified in the respective items.

Plain cement concrete for supports and for encasement or bedding etc. shall be measured as specified in the respective items in the schedule of quantities.

All sanitary fittings and CP fixtures including CP extension pipe with brass screws shall be measured in numbers and the rates shall include all the work specified and described under item in the schedule of quantities.

All gate valves, ball valves, non- return valves, sluice valves, pressure reducing valves etc. shall be measured in numbers, after excluding them from linear measurement

The diameters of pipes and fittings mentioned in the specifications are the inside nominal diameters in all cases except PVC pipes or unless otherwise specified.

MISCELLANEOUS WORKS:

HANGERS & SUPPORTS:

General:

Provide proper solid angle iron / channel section, supports for all pipe runs in the vertical ducts and run horizontally suspended from the slab, complete with clamps. Wherever insulation comes, to support pipe on the angle iron hangers / supports. For attachment in concrete, use `Dash' fasteners or Anchor plug type inserts or equivalent. Provide hangers within 900mm of all changes in direction of mains. A minimum of three hangers per expansion bends wherever shown in drawing. Provide all additional structural steel angles, channels or other members not specifically shown but are required for proper support.

Where necessary additional hangers to be provided to arrest water hammers of hydraulic resonance with proper rubber padding.

Space hangers as noted below, except on all soil pipes which shall have a hanger of multiple fittings. Sufficient hangers shall be provided to maintain proper slope without sagging. In case of angle suspended line

Provide floor stands, brackets or masonry piers etc. for all lines running under the floor or near walls for those lines can be properly supported or suspended from the walls or floors. Pipelines near concrete or masonry walls shall be supported by hangers carried from wall brackets. Hanging of any pipe from another is prohibited.

Cutting, Patching, Repairing & Making good:

Cutting, patching and repairing required for the proper installation and completion of the work specified in each division, including chasing, plastering, masonry work, concrete work, etc. and making good shall be carried out by the contractor wherever required. Holes which are cut oversize shall be refilled, so that a tight fit is obtained around the pipe or passing through. Any damages to water proofed location should not be patched up, without rectification by the water proofing agency (specialist contractor) to ensure his guarantee. Repair of waterproofing shall be borne by the sanitary contractor if the damage is done by sanitary contractor.

Equipment Protection:

Keep all pipe and conduit openings closed by means of plugs or caps to prevent the entrance of foreign matter. Protect all piping, conduit, fixtures, equipment or apparatus. Any such work shall be restored to its original condition or replaced at no expense to the owner.

Accessibility:

The installation of valves, thermometers, cleanout fittings and other indicating equipment or specialties requiring frequent reading, adjustment, shall be conveniently and accessibly located with reference to the finished buildings.

Thermometers and gauges shall be installed so as to be easily read from the floor. For floor cleanouts minimum distance of 600mm shall be available from any wall.

Cleaning, operation & Tests:

Plumbing equipment fixtures, piping etc. shall be free of stampings, making (except those required by codes) iron cutting and other foreign materials.

Cold and drinking water systems shall be cleaned thoroughly, filled and flushed with water.

The entire mechanical apparatus shall operate at full capacity without objectional noise or vibrations.

Test all plumbing systems in the presence of the site engineer / supervisor and the Architect as herein specified. Provided all equipment, materials and labour necessary for inspection

and tests. After repairs are made, repeat test until units / a system is found satisfactory, to the above authorities. Carry out tests prior to concealing, insulating or back filling over any piping. No exceptions will be made.

Test entire system of soil, wast and vent piping by water test after sealing all traps.

Water Test:

Test entire system or sections of system by closing all openings except the highest opening and filling system with water to the point of overflow. If the system is tested in sections, plug each opening except the highest opening of the section filled with water. Keep the water in system or in portion under test for atleast 45 minutes before inspection starts with test pressure / head of 10 kg / sq. cm lasting for two hours. The system must be tight at all joints.

All Water Piping:

Hydro – static test 10 kg / cm 2 or twice the working pressure whichever is higher. Without drop in pressure as for a duration of minimum two hours.

All tests on below ground lines shall be continued to backfill on such a line is completed to disclose any damages caused by back filling.

All system shall be tested in section as required to expedite the work of other trades and meet construction schedules and final test on completion.

On completion of the works, the following tests shall be performed to the satisfaction of the consultants / client's representative before issue of virtual completion certificate, if so required.

- Hydraulic Test
- Performance Test for fixtures
- Tests for anti syphonage system
- Pump rating and output
- Inspection of all units and fixtures.

The contractor shall arrange for similar tests during the progress of works to ensure that there are no defects in materials / workmanship in portions of work to be concealed or embededunder the floor or walls in ceiling and get this approved by the consultants. The under-floor pipe works shall not be closed without the approval of consultant.

Disinfection of piping System and Storage Tanks:

Before commissioning the water supply system, the contractor shall arrange to disinfect the entire system as described below. The filtered water storage tanks and pipe shall first be filled with water and thoroughly flushed out. The storage tanks shall be then filled with water again and disinfecting chemical containing chlorine added gradually, while tanks are being filled to ensure thorough mixing. Sufficient chemical shall be used to give the water. One part of

chlorine to one million parts of water. If ordinary bleaching powder is mixed to 1000 liter of water, the powder shall be mixed with water to a creamy consistency before being added to the water in the storage tank. If a proprietary brand of chemical is used, the proportion shall be as specified by the manufacturer. When the storage tank is full, the supply shall be stopped and all the taps on the distributing pipes opened successively, working progressively from storage tank. Each tape shall be closed when the water discharge begins to smell of chlorine.

The storage tank shall then be filled up with water from supply pipe and added with more disinfecting chemical in the recommend proportion. The storage tank and pipe shall then remain charged atleast for three hours. Finally, the tank and pipes shall be thoroughly flushed out before any water is used for domestic purpose.

PUMPS FOR DRAINAGE SYSTEM:

PUMPS:

Pumps shall be vertical, centrifugal, and multistage directly coupled to motor. Pumps shall be complete in S.S. impeller shall be hydraulically balanced and keyed to shaft. Pump shall be mounted on a concrete foundation, projecting at least 15 CM above finished floor level. The pumps base shall be set on a vibration elimination pad. The pump shall be lubricated in strict accordance with the manufacturer's instructions and shall be factory aligned prior to shipment. All motors and bases shall be painted with approved finish shop coat of paint. The pump shall be selected for the lowest operating noise level and shall be complete with flexible connections. Valves, and pressure gauges. The pumps shall include cost of foundation channel complete.

The contractor shall supply and install pumps of the type and performance as shown on the drawings, all duties of pumps given in the tender drawings shall be checked and where necessary corrected before ordering. All the parts of the pumps that are in contact with water e.g. shaft, impeller etc. shall be of stainless steel construction.

Pumps shall be so selected that the design duty point is within 5% of the maximum efficiency point. The pump casing so selected shall have ample space to take an impeller one size larger than that capable of performing the design duty.

The pump shall have a speed of not more than 1500 rpm. However, pumps of 2900 rpm with high efficiency and low noise motor can be selected and noise data submitted for approval. All pumps and motors shall be of minimum vibration and noise level during operation. Vibration isolators shall be provided for all pump sets.

Facilities shall be provided to prevent starting of pumps when the water tank is at low water level. An indicator for this low water level alarm shall be provided.

Facilities to select which pump to be duty pump and standby pump shall be provided and be interchangeable.

Leakage from pump gland shall be drained to the nearest floor waste.

Pump curves for all pumps offered shall be submitted: all curve indicating excessive shut-off head will not be approved.

Each pump shall be provided with a gate valve at suction and discharge, approved check valve at discharge, approved strainer at suction, flexible connections at pump suction and discharge, eccentric reducer at suction, concentric reducer at discharge, pressure gauges at suction and discharge, circulation relief valve and automatic air relief valve.

Appropriate neoprene vibration isolation mountings shall be provided for each pump sets.

VERTICAL MULTI-STAGE PUMPS:

Multi-stage pumps shall be of centrifugal type and arranged with shafts vertically installed. The impellers shall be of stainless steel mechanically balanced and keyed to shaft. Renewable guide rings to be provided in the casting, keyed to prevent rotation.

Pumps shall be driven by elevated in-line TEFC squirrel cage motors via extended vertical shafted complete with universal couplings.

The shafts shall be stainless steel. Stainless steel sleeves shall be provided to protect the shaft in the water space and through the sealing glands. The sleeves shall be keyed to prevent rotation and secured against axial movement.

The bearings shall be of ball or roller type protected against ingress of water, dirt and other matter.

Vertical multistage pumps shall have universal flanges. Intermediate bearing, support bearing shall be provided in the pump.

The shaft seal shall be easily serviceable and shall allow for correct adjustment and loading of the seal, Pump motors above 7.5. KW shall be equipped with a spacer coupling which allows changing of shaft seals without removing the motor. The pump motors shall be of class ‘’F’’ insulation and IP55 rating and shall be provided with built-in thermostats for protection against overheating.

SUMP PUMP:

SUBMERSIBLE:

These shall be fully submersible with a fully submersible motor. The pumps shall be provided with an automatic level controller and all interconnecting power and control cabling which shall cause the pumps to operate when the level in the sump rises to a preset level and stop when the preset low level is reached.

Pumps for drainage shall be single or multistage stage, single entry.

Pump shall be C.I. two vane open with a dynamically balanced impeller connected to a common shaft of the motor. The vane for sewage pump will be open type, while for drainage pump, etc it will be of semi open type. The MOC of the sump shall be in accordance to schedule of quantity.

Stuffing box shall be provided with mechanical seals.

Each pump shall be provided with a suitably rated induction motor suitable for 415 volts, 3 phases, 50 Hz A.C. power supply.

Each pump shall be provided with in built liquid level controller for operating the pump between predetermined levels.

The pumping set shall be for stationary application and shall be provided with pump connector unit. The delivery pipe shall be joined to the pump through a rubber diaphragm, and bend and guide pipe for easy installation.

Pump shall be provided with all accessories and devices necessary and required for the pump to make it a complete working system.

Sump pump shall be complete with level controllers / float switches, power and control switchgear, auto/off/manual switches, pumps priority selections and control and power cabling up to motor and controller/probes etc. (including earthling). Level controller shall be such that one pump starts on required level, 2nd pump cuts in at high level and alarms is given at extra high level. All level controllers / float switch shall be provided with remote level indications.

MOTOR DESIGN:

The pump motor shall be a squirrel cage induction, housed in air filled water-tight enclosure. Oil filled motors are acceptable. The stator windings shall be class ‘’F’’ insulation (155-degree C or 311 degree F) general usage and class ‘H’ insulation (180 degree C or 317-8 grade 2) for submersible type.

The stator shall be heat shrunk fitted the enclosure and shall not use bolts, pins or other fasteners that penetrate the stator enclosure. The starter shall be equipped with a thermal switch embedded in series in the coils of the stator windings to protect the stator from wheel.

The motors shall have designed for continuous running duty type at 415 volts, 3 phase, 50 Hz power supply and capable of sustaining a minimum of 20 starts/stops per hour.

Between stator housing and pump, a tanem seal arrangement will be provided with an oil barrier. Both seals run in oil, allowing dry running without seal damage, both seals shall be of the rubber bellows or metallic bellow type with positive drive between shaft and rotating seal face.

Chamber covers:

Covers shall be of size and duty as mentioned in bill of quantities, covers shall be of cast iron as per the details given in the drawing and shall be fixed on frame embedded in concrete.

CI steps shall be provided at two corners of the chamber.

All cast iron and MS items shall be painted with two coats of bitumastic paint. All cast iron and MS items shall be painted with two coats of bitumastic paint.

Cast iron manhole cover and frame:

The cast iron manhole cover and frame shall conform to IS: 1726 and the grade and types have been specified in the bill of quantities. The cover and frames shall be cleanly cast and they shall be free from air and sand holes and from cold shuts.

They shall be neatly dressed and carefully trimmed. All castings shall be free from voids whether due to shrinkage, gas inclusion or other causes. Covers shall have a raised checked design on the top surface to provide an adequate non – slip grip.

The sizes of covers specified shall be taken as the clear internal dimensions of the frame.

The covers and frames shall be coated with a black bituminous composition. The coating shall be smooth and tenacious. It shall not flow when exposed to a temperature of 630 C and shall not brittle as to chip off at a temperature of 00 C.

TESTING:

All rights of the sewer and drain shall be carefully tested for water tightness by means of water pressure maintained for not less than 60 minutes. Testing shall be carried out from manhole to manhole. All pipes shall be subject to a test pressure of 1.5, meter head of water. The test pressure will however, not exceed 6 meters head at any point. The pipes shall be plugged preferably with standard design plugs or with rubber plugs on both sides, the upper end shall, however, be connected to a pipe for filling with water and getting the required head poured at one time.

Sewer lines shall be tested for straightness by:

a) Inserting a smooth ball 12 mm less than the internal diameter of the pipe. In the absence of obstructions such as yarn or mortar projecting at the joints the ball shall roll down the invert of the pipe and emerge at the lower end.

b) Means of a mirror at one end a lamp at the other end. If the pipe is straight the full circle of light will be seen otherwise obstructions or deviations will be apparent.

c) The contractor shall give a smoke test to the drain and sewer at his own expense and charges, if directed by the owner's site representative.

d) A test register shall be maintained which shall be signed and dated by contractor and owner's site representative.

COMMISSIONING AND GUARANTEE

SCOPE OF WORK:

Work under this section shall be executed without any additional cost. The rates quoted in this tender shall be inclusive of the works given in this section.

Contractor shall provide all tools, equipment, metering and testing devices required for the purpose.

On award of work, contractor shall submit a detailed proposal giving methods of testing and gauging the performance of the equipment to be supplied and installed under this contract.

All tests shall be made in the presence of the architect or his representative or any inspecting authority. At least five working days' notice in writing shall be given to the inspecting parties before performing any test.

Water flow rates of all equipment and in pipe lines through valves shall be adjusted to design conditions. Complete results of adjustments shall be recorded and submitted.

Contractor shall ensure proper balancing of the hydraulic system and for the pipes / valves installed in his scope of work by regulating the flow rates in the pipeline by valve operation. The contractor shall also provide permanent tee connection (with plug) in water supply lines for ease of installing pressure gauge, temperature gauge and rotameters. Contractor shall also supply all required pressure gauge, temperature gauge and rotmeters for system commissioning and balancing. The balancing shall be to the satisfaction of consultant / project manager.

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

PRECOMMISSIONING:

On completion of the installation of all pumps, piping, valves, pipe connections, installation etc., the contractor shall proceed as follows:

a) Prior to start – up and hydraulic testing, the contractor shall clean the entire installation including all fitments and pipe work and the like after installation and keep them in a new condition. All pumping systems shall be flushed and drained at least once through to get rid of contaminating materials. All pipes shall be rodded to ensure clearance of debris, cleaning and flushing shall be carried out in sections as the installation becomes completed.

b) All strainers shall be inspected and cleaned out or replaced.

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

The pre – treatment chemical shall:

a. Remove oil, grease and foreign residue from the pipe work and fittings.
b. Pre – condition the metal surfaces to resist reaction with water or air.
c. Establish an initial protective film.

d. After pre – treatment, the system shall be drained and refilled with fresh water and left until the system is put in to operation.
Details and procedures of the pre – treatment shall be submitted to the architect for approval.

e. Check all clamps, supports and hangers provided for the pipes.

f. Check all the equipment, piping and valves coming under hot water system and operate each and every valve on the system to see if the valves are functioning properly. There after conduct and hydro test of the system as for (b) above.

g. Fill up pipes with water and apply hydrostatic pressure to the system as given in the relevant section of the specification. If any leakage is found, rectify the same and retest the pipes.

SPECIFICATIONS FOR STEAM AND SAUNA, CHILLER BATH

	SPECIFICATIONS FOR STEAM AND SAUNA , CHILLER BATH		
Sr	**ITEM DESCRIPTION**	**Unit**	**Quantity**
1	**Supply Installation Testing &Commissioning of STEAM BATH UNIT**	Nos	2
	Room Size : 2.50 M X 2.50 M X 2.2M		
	Capacity : 18.0 KW		
	One no steam non ibr tank unit in ss 304 (12 G) duly tested at 2.5Bar and thermal insulated with provision for level sensing probes to prevent the unit to run at low / high water level, provision for steam out let , drain out , immersion heater etc .		
	One no. Steam unit canopy enclosure in an SS 304 (16 G) canopy with provision for floor or wall mounted stand and provision required as per site.		
	Immersion heaters making the unit of the above said capacity		
	Steam Room Temperature sensor with sensor wire from room & up to control panel		
	Pressure switch, pressure guage and solenoid valve at water inlet		
	All electrical inbuilt control panel for having appropriate PCB ,mcb, contactor, relay , fuses and wiring , earthing provision		
	Digitally controlled feather touch operating control panel ,with cable from panel & up main control panel of unit		
	Booster pump of 0.25 HP capacity + Y type Hair Strainer + SS Ball Valve	Nos	2
	Plumbing piping's in 1" SS 304 (G-14) from the place of steam Unit to the inlet of Steam distribution pipe inside the room. (For Steam supply & Drain out insulated with Asbestos rope)	Nos	2
	Make - Indiginous		
Sr	**ITEM DESCRIPTION**	**Unit**	**Quantity**
3	**SITC of SAUNA BATH UNIT**	Nos	2
	Room Size : 3.5 M X 2.5 M X 2.43 M	.	
	Capacity : 18.0 KW		
	1 No sauna rock heater in stainless steel cabinet of 16 guage loaded with 10 kgs silica pebbbles for heat retention and Air Finned Heaters		

	Sauna cabin in imported pine wood (treated with anti-termite treatment) with sauna door , complete in all respect with 2 stage sitting benches, 2 No. room lamps, wood bucket & spoon		
	All insulation material needed in the room between wooden planks and concrete wall		
	Main control panel in 16 guagems powder coated with all electricals like PCB, contactors, MCB, fuses , colour coded wiring etc. of standard make like Siemens,Havells , L& T		
	Digital temperature controller capable of sensing inside temperature with external and internal isolation for safety of sauna wood. Supplied with heatproof wire between the sensor, heater and the control panel above sauna cabin. Make-		
	Digitally controlled feather touch operating control panel ,with cable from panel & up main control panel of unit		
	Make - Indiginous		
Sr	**ITEM DESCRIPTION**	**Unit**	**Quantity**
5	**SITC OF CHILLED SHOWER UNIT**	Nos	2
	Chilled shower unit inclusive of SS 304 / 14 G water storage tank of capacity 50 litres with double tank , Thermal insulated, SS canopy in 202 / 18 G , 3 HP compressor , Cu tubing, Level sensor, Flow switch, temperature controller , Gas charging , Floor Mounted Stand in SS 202 pipe , Inbuilt electrical control panel with MCB, Contactor, Fuses, colour coded wiring etc. complete in all respect		
	Make - Indiginous		
	Terms and Conditions:		
	The Scope of Work shall be to carry out complete Supply, Installation, Testing & Commissioning (SITC) of		
	Steam Unit, Sauna cabin and Chiller unit as per the drawing and space provided		
	The detailed Scope of Works shall include but shall not be limited to the following:		
	1. To carry out complete MEP works in sufficient details as per the schematic architecture plan and		
	Submit the same for Owner's review and approval.		
	2. Complete SITC of Valves, Plumbing Fixtures, Pumps, Lights, Control Panels, pumping system, GI,		
	SS and uPVC pipes & fittings, Filter, Cables & Conduits for Electrical & Plumbing and all other materials/		
	Equipment's necessary to complete the Works.		
	4. Prior to handing over Bidder shall provide proper training to Owner's personnel and also provide a		
	Training manual. Bidder shall provide minimum 1-year performance guarantee for the installed system.		
	Following Works are excluded from the Scope of the Bidder:		
	1. Execution of Civil Works in surrounding area RCC Foundation & Superstructure		
	2. Single Phase/ 3- Phase Power Supply. However, connection from the incoming power supply is in the		
	Scope of the Bidder.		
	3. Provision of water inlet & water outlet to the nearest drain.		
	4. The bidder will have to provide sld for control panel		
	Completion Period for the above works shall be as per following:		

	1. Submission of complete set of Drawings for steam, sauna , chiller		
	Within 3 weeks from the date of Order		
	2. Supply of all materials - Within 8 Weeks from the date of Order.		
	4. Complete SITC and handing over- Within 10 weeks from the date of Order.		
	5. Bidder shall provide Bill of Material for the entire system.		

Specifications for Six Seater Jacuzzi Pool Equipment Filter System

Supply Installation Testing &Commissioning of site constructed Six Seater Jacuzzi Pool Equipment Filter System

S.No	Make	Equipment Description	Qty
		Filtration Equipment	
1	Astral/ Hyward	Bobbin Wound Filter Dia 600 mm with clamp lid	1
2	Astral/ Hyward	Multiport Valve 1 1/2"	1
		Flow Fittings	
5	Astral/ Hyward	Mini Skimmer	4
6	Astral/ Hyward / Ion Exchange	Wall Inlets 50mm	2
7	Astral/ Hyward / Ion Exchange	Suction Inlet	1
8	Indiginous	Wall Conduit in ABS / UPVC / RPVC (2", 2.5",3" 4")	Set
9	Astral/ Hyward / Ion Exchange	Main Drain Grill 200 mm X 200 mm	4
		Under Water Light Illumination	
10	Aqua/Dazzle	LED Underwater Light 14W/12V in ABS	1
11	Astral/ Hyward	Cable Conduit	1
12	Astral/ Hyward / Ion Exchange	Junction Box in ABS	1
13	Indiginous	Power Supply 14W/12V with MS Powder coated Box	1
		Spa Fittings	
14	Astral/ Hyward	Massage Jets 2" (4 jets per seat)	24
15	Astral/ Hyward	Air Controller	6
16	Astral/ Hyward	Spa Drain in SS	1
17	Astral/ Hyward	Air Blower Nozzles	30
18	Cleancraft/Aqua	Spa Plastic Air Blower 2.2 Kw	1
19	Astral/ Hyward	Pneumatic Press Button	4
20	Astral/ Hyward	Pneumatic Switch	4
21	Astral/ Hyward	Spa Plastic Tube in meters	20
		Maintenance Accessories	
25	Astral/ Hyward / Ion Exchange	Flexible Vacuum Head -Wishbone Conn	1
26	Astral/ Hyward / Ion Exchange	Floating Vacuum Hose 1.5" 5 m	1
27	Astral/ Hyward	Curved Brush - SHARK	1

	/ Ion Exchange		
28	Astral/ Hyward / Ion Exchange	Telescopic Pole 2.4 - 4.8m Long -SHARK	1
29	Astral/ Hyward / Ion Exchange	Deep Leaf Net - SHARK	1
30	Indiginous	Test Kit (pH + Chlorine Testing)	1
		Pumps	
31	Astral/ Hyward	Self-Priming with Plastic Body + Hair Strainer Pump 1.0 HP MONO. - Filtration (1 No. W + 1 No SB)	2
32	Astral/ Hyward	CI Body pump with Pot type Hair Strainer 5 HP - Massage Pump (1 No. W + 1 No SB)	3
		Online Heater	
31	Astral/ Hyward	36 KW output/ 10 KW Input Heat pump for Online Heating with compressor unit , Cu tubing, Level sensor, Flow switch, temperature controller , Gas charging , Floor Mounted Stand in SS 202 pipe , Inbuilt electrical control panel with MCB, Contactor, Fuses, colour coded wiring etc. complete in all respect	1
		Associated Electrical & Plumbing for Jacuzzi	
31	Indiginous	6 Seater MS Format with Associated plumbing &Electrical work including all CPVc, UPVC pipes & fittings, All Control valves , electrical cabling from control panel to u/w light , pumps, heater etc complete inall respect as per the GFC drawing provided.	1
		ELCTRICAL CONTROL PANEL	
33		All electrical control panel for Jacuzzi system having appropriate PCB ,mcb, contactor, relay , fuses , Amete, Volt Meter , Selector Switch and wiring , earthing provision complete in all respect	1
		Associated Jacuzzi MS Format & Civil Work	
33		Associated civil work & MS format to hold Jacuzzi nozzles & plumbing work as per design opted along with glass mosaic tiling 3/4" x 3/4" in random mix , Top border in Granite stone complete in all respect	1

Terms and conditions:

Scope Of Work	Supply, Installation, commissioning of Jacuzzi equipment exactly as per above specification
Schedule of exclusion :	client has to provide the following

1. 3 Phase / Single Phase power with MCB inside pump room.
2. Make up water line to jacuzzi& Jacuzzi drain line
3. Drain out provision near jacuzzi

STATUTORY AUTHORITIES TESTS AND INSPECTIONS:

As and when notified in writing or instructed by the architect, the contractor shall submit shop drawing and attend all tests and inspections carried out by local fire authorities, water authority and other statutory authorities, and shall forth with execute free of charge any

rectification work ordered by the architect as a result of such tests and inspections where these indicate non – compliance with statutory regulations. Some of these tests may take place after the issue of practical completion of the main contract and the contractor shall make all allowances in this respect.

The contractor shall be responsible for the submission of all necessary forms and shop drawings to the statutory authorities, which shall conform in layout to the latest architectural plans submitted to and kept by these authorities.

Fixing screws shall be half round head chromium plated (CP) brass screws, with CP brass washers unless otherwise specified.

Fixtures shall be installed by skilled workman with appropriate tools according to the best trade practice.

All appliances, fittings and fixtures shall be fixed in a neat workman like manner true to level and to heights shown on the drawings and in accordance with the manufactures recommendations. Care shall be taken to fix all inlet and outlet pipes at correct positions. Faulty locations shall be made good and any damage to the finished floor, tiling, plaster, paint, insulation or terrace shall be made good by the contractor at his own cost. Fixtures shall be mounted rigid, plumb and true to alignment.

All materials shall be rustproof materials in direct or indirect contact shall be compatible to prevent electrolytic or chemical (bimetallic) corrosion.

Wall flanges shall be provided on all walls, floors, columns etc. wherever supply and disposal pipes pierce through them. These wall caps shall be or chromium plated brass fittings and the receiving pipes and shall be large enough to cover the punctures properly.

Sanitary appliances, subject to the type of appliance and specific requirements, shall be fixed in accordance with the relevant standards and the following:

a) Contractor shall, during the entire period of installation and afterwards protect the appliances by providing suitable cover or any other protection so as to absolutely prevent any damage to the appliances until handing over (the original protective wrapping shall be left in position for as long as possible).

b) The appliances shall be placed in correct position or marked out in order that pipe work can be fixed or partially fixed first.

c) The appliance shall be fixed in a manner such that it will facilitate subsequent removal if necessary.

d) The appliance shall be securely fixed. Manufacturer's brackets and fixing methods shall be used wherever possible. Compatible rust – proofed fixings shall be used. Fixing shall be done in a manner that minimize noise transmission.

e) Appliances shall not be bedded (e.g. WC pans, pedestal units) in thick strong mortar that could crack the unit (e.g. ceramic unit)

f) Pipe connections shall be made with demountable unions. Pipe work shall not be fixed in a manner that it supports or partially supports and appliance.

The submission shall comply with the requirements set forth in the current codes of practice and circular letters of the statutory authorities. The shop drawings to be submitted shall be forwarded to the architect for checking before submission.

The contractor shall allow for at least two submissions of complete sets of shop drawings to the authorities, one to be made within six months after the award of the contract but not less than six weeks before the inspection. The architect may at his discretion instruct the contractor for additional submissions to the local authorities wherever necessary.

The contractor shall notify the architect at least seven days in advance of his application for local authority tests and inspections. On receipt of a confirmed date for test and inspection the contractor shall inform the architect without delay.

FINAL ACCEPTANCE TESTS:

Following commissioning and inspection of the entire installation, and prior to issue of the completion certificate, the contractor shall carry out final acceptance test in accordance with a programme to be agreed with the architect.

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

Where acceptance tests are required by the relevant authorities having jurisdiction, these tests shall be carried out by the contractor prior to the issue of completion certificate to the acceptance of the authorities.

REJECTION OF INSTALLATION / PLANT:

Any items of plant or system or component which fails to comply with the requirements of this specification in any respect whatsoever at any stage of manufacture, test, erection or on completion at site may be rejected by the architect either in whole or in part as he considers necessary / appropriate.

Adjustment and / or modification work as required by the architect so as to comply with the authority's requirements and the intent of the specification shall be carried out by the contractor at his own expense and to the satisfaction of the authority / architect.

After works have been accepted, the contractor may be required to carry out assist in carrying out additional performance tests as reasonably required by the architect / employer.

WARRANTY AND HANDOVER:

The contractor shall warrant that all plant, materials and equipment supplied, and all workmanship performed by him to be free from defects of whatsoever nature before handover to the owner.

HANDING OVER OF DOCUMENTS:

All testing and commissioning shall be done by the contractor to the entire satisfaction of the owner's site representative and all testing and commissioning documents shall be handed over to the owner's site representative.

The contractor shall also hand over all maintenance and operation manuals, all certificates and all other documentation as per the terms of the contract to the owner's site representative.

PIPE COLOUR CODE: Colour code to confirm to IS: 2379:1990

GUARANTEE CLAUSE		
Sr.No	**Scope of Work**	**Condition**
1	Electrical	The all Electrical Equipment, Packaged Substation, Cabling, Switchgears etc and Lighting Fixtures should be supplied with 5 years Guarantee against any manufacturing defect and failure at site. In case of any failure of complete fixture or LED module or driver or any other part of fixture, or equipment same shall be replaced within two days.
2	Fire Fighting	The contractor shall submit a Guarantee for all equipment's, materials and accessories supplied by him against manufacturing defects, malfunctioning or under capacity functioning. The form of Guarantee shall be approved by the Owner. The Guarantee shall be valid for a period of minimum Five Year from the date of commissioning and handing over. The Guarantee shall expressly include replacement of all defective, Non-Working or under capacity equipment. Owner May allow repair of certain equipment if the same is found to meet the requirement of efficient functioning of the system. The Guarantee shall include replacement of any equipment found to have capacity lesser than the rated capacity as accepted in the contract. The replacement equipment shall be approved by the Owner

3	ICT COMPONENTS	Submit written guarantee signed by the contractor, manufacturer for the period of 5 years from the date of substantial completion. The guarantee shall cover the repair and replacement of defective materials and workmanship as directed by the Engineer In-Charge. Provide Five Year Operation Guarantee as minimum for cameras, DVRs and Monitors. The vendor should be able to provide hardware maintenance and spare parts support if required. Spare parts shall be available for at least 10 years starting from system full operation start-up.
4	Plumbing	The contractor shall warrant up to 5 years from the date of Physical handover that all plant, materials and equipment supplied, and all workmanship performed by him to be free from defects of whatsoever nature before handover to the owner.

Annexure F

(Instruction of E-BIDDING)

34.PROCEDURE UNDER E-BIDDING

INSTRUCTIONS TO BIDDERS

(Note: RFP stands modified to the extent required for the purpose of these instructions. Words in capital and/or not defined in this document shall have the same meaning as in the subject Request for Proposal ("RFP")).

(a) E-Procurement Portal: An e-tendering portal of Government of Madhya Pradesh is in place for the process of e-tendering which can be accessed on https://mptenders.gov.in/.

The Government of Madhya Pradesh has successfully rolled out the e-procurement system through its website https://mptenders.gov.in/. Uploading of bids downloading, submission and opening may be done online through this site.

Eligible Bidders may submit their Bids online by enrolling with the above-mentioned website and paying for requisite fees/costs as required for respective bids as per terms and conditions of a bid and following terms and conditions of the e-procurement website. During the Bidding Process, Bidders are required to keep themselves updated about Bid related information as applicable from the e-procurement portal https://mptenders.gov.in/ or https://ujjainsmartcity.com/en/.

(b) Registration of Bidders On E-Procurement System:

All the Bidders are requested to register themselves on the e-procurement portal https://mptenders.gov.in/ as per applicable guidelines of the portal. For more details may contact through phone on 18002588684, through e-mail on eproc_helpdesk@mpsedc.com. The Bidders may also visit following office and submit their queries for redressal at M/s. Tata Consultancy Services, 5th floor, Corporate Block, DB Mall, Arera Hills, Bhopal, M.P., 462011. More information is available on the portal.

(c) Digital Certificate:

(i) The Bids submitted online should be signed electronically with a Class-III Digital Certificate to establish the identity of the bidder submitting the bid online. The bidders may obtain Class-III digital certificate issued by an approved Certifying Authority authorized by the Controller of Certifying Authorities, Government of India. A Class-III digital certificate is issued upon receipt of mandatory identity proofs along with an application. Only upon the receipt of the required documents, a digital certificate can be issued. For details please visit cca.gov.in.

It may take up to 7 (seven) working days or more as required for issuance of Class-III digital certificate; hence the bidders are advised to obtain the Certificate at the earliest. Those bidders who already have valid Class Ill digital certificate

need not obtain another digital certificate for the same. The bidders may obtain more information and the application form required to be submitted for the issuance of digital Certificate from cca.gov.in.

(ii) The digital certificate issued to the Authorized User of a Partnership firm / Private Limited Company / Public Limited Company and used for online biding will be considered as equivalent to a no-objection certificate / power of attorney to that user and the Authorised User of the Digital Certificate should be the same person as the Person in whose favour a Power of Attorney (PoA) for submitting the Bid has been issued by the Bidder. In case of Partnership firm, all the partners have to authorize a specific individual through PoA signed by all of the partners of the firm. In case of company form of Bidder's organisation, PoA should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s). The PoA in case of any type of Bidder, shall be in the format, as prescribed in the RFP.

Unless the digital certificate is revoked, it will be assumed to represent adequate authority of the specific individual to bid on behalf of the organization for online bids as per information Technology Act,2000. This Authorized User will be required to obtain a digital certificate. The digital signature executed through the use of Digital Certificate of this Authorized User will be binding on the firm. It shall be the responsibility of Management/Board/Partner(s)/Proprietor(s) of the concerned Bidder to inform the Certifying Authority, if the Authorized User changes, and apply for a fresh Digital Certificate for the new Authorized User.

(d) Enrollment: The Bidders can enroll themselves on the website https://mptenders.gov.in/ using the link "**New User"**. Possession of a valid Class II/III Digital signature certificate (DSC) is a pre-requisite for registration and participating in the Bid submission activities through this web site. Digital signature certificate can be obtained from the authorized certifying agencies, details of which are available in the web site https://mptenders.gov.in/ under the link "**Digital Certificate**".

The web site also has user manuals with detailed guidelines on enrollment and participation in the online bidding process. The user manuals can be downloaded for ready reference.

(e) Accessing/Purchasing of Bid Documents:

(iii) It is mandatory for all the Bidders to have Class-II/III Digital Signature Certificate with both Signing and Encryption Certificate (in the name of Authorised Representative who will sign the Bid) from any of the licensed Certifying Agency as mentioned in the website to participate in e-procurement. The Authorised Representative holding Power of Attorney shall only be the Digital signatory. In case authorized signatory holding Power of Attorney and Digital Signatory are not the same, the Bid shall be considered non-responsive.

(iv) The complete RFP/Bid Document can be viewed/downloaded by the Bidders from the e-procurement portal or from https://ujjainsmartcity.com/en/ free of cost without furnishing the payment particulars. The Bidders shall make payments towards cost of Bid Document, Portal Registration Fees, Portal Processing Fee for the Bid as applicable and furnish the payment receipt/acknowledgement document / details of same at the time of submission of Bid.

(v) To participate for Bidding, Bidders have to make payment through Rs.30,000/- (Rs. Thirty Thousand only) along with applicable GST towards fee for Bid document (non-refundable) to "Ujjain Smart City Limited" and e-procurement portal only in the online mode as specified in the Bidding portal.

(vi) Detailed Bid document can be downloaded from e-tender portal https://mptenders.gov.in/ or https://ujjainsmartcity.com/en/ as per date and time mentioned in NIT. The Amendments/Clarifications/Reply to Queries/Notices to the Bid document, if any, will be posted on the USCL website https://ujjainsmartcity.com/en/ or e-procurement portal https://mptenders.gov.in/ during the Bidding Period.

(f) Preparation and submission of Bids:

(i) Bids may be submitted online following the instruction appearing on the screen. For any clarification for submission of Bid, may contact the e-procurement portal authorities as mentioned in this document.

(ii) The following documents shall be prepared and scanned in different files in a manner that it should be clearly visible to the Authority's personnel and be free of alterations, changes etc. on any page/submission of the Bid. All pages of the Technical Bid and Financial Bid must be serially numbered and signed in indelible blue ink by the person authorised to sign the Bid on behalf of Bidder and uploaded during the on-line submission of Bid. The Bid Document, if not legible in full or part thereof, shall cause the Bid liable for non-consideration and rejection for the purposes of this Bid including evaluation as applicable. At any time during the Bidding Process, the Authority, at its discretion, may ask the Bidder(s) to submit clarifications/documents etc. in support of its claim for Bid and the Bidder(s) shall comply with this direction of the Authority as notified. The following documents shall also be submitted in 'ORIGINAL' to USCL by the prescribed date & time for submission of Bids.

- Bid Security for an amount of as per clause 1.2.4 in the prescribed form of Bank Guarantee.
- Payment receipt / acknowledgement document/details towards cost of Bid Document of Rs. 30,000/- along with applicable GST in favour of "Ujjain Smart City Limited," payable at Ujjain and fees of e-procurement Portal.
- Power of Attorney for signing of Bid;
- Power of Attorney for Lead Member of Joint Venture;

- Joint Bidding Agreement;
- Any other documents in original as required under the RFP.

(iii) The Bid (Financial Bid) should be submitted online only in the prescribed format given in the e-procurement portal. No other mode of submission is accepted.

(g) Modification/Substitution/Withdrawal of bids:

(i) The Bidder may modify, substitute or withdraw its e-bid after submission upto the Bid Due Date as per date and time mentioned din NIT. No Bid shall be modified, substituted or withdrawn by the Bidder after the Bid Due Date.

(ii) Any alteration/modification in the Bid or additional information supplied subsequent to the Bid Due Date, unless the same has been expressly sought for by the Authority, shall cause such Bids liable for rejection.

(iii) For modification of e-bid, Bidder has to detach its old bid from e-tendering portal and upload/resubmit digitally signed modified bid.

(iv) For withdrawal of Bid, Bidder can do so in e-procurement portal.

(v) It may specifically be noted that after withdrawal of a Bid for any reason, Bidder cannot re-submit its Bid again.

(h) Opening & Evaluation of bids:

(i) The Authority shall open on-line received Bids (Technical Bid), as per date and time mentioned in NIT, in the presence of the Bidders who choose to attend. The Authority will subsequently examine and evaluate the Bids in accordance with the provisions set out.

(ii) Prior to evaluation of Bids, the Authority shall determine whether each Bid is responsive to the requirements of this RFP.

(iii) 'Technical Bid' of non-responsive Bidders as per other terms and conditions of the RFP shall be liable for rejection and may not be opened.

(iv) 'Price Bid' of those Bidders who have not met, the Eligibility/Technical/Pre-Qualification/Special Eligibility Criteria, as per terms and conditions of the RFP, shall not be opened.

(v) The Bid shall be opened of those bidders only who submit originals as mentioned in Para-d (ii) of e-procurement procedure. The Bid submitted only on-line and not supported by original as required under this RFP shall not be opened and shall be declared non-responsive, if originals are not submitted as mentioned in Para-d (ii) of e-tendering procedure.

(i) Disclaimer: The Bidder must read all the instructions in the RFP and submit its Bid accordingly.

Section 6

35.LIST OF APPROVED BRANDS

The following are the recommended manufacturers of the major items. Where more than one manufacture is listed, the contractor is free to choose between them subject to meetingthe prescribed specifications. For additional items, the contractor is free to submit proposals for other manufactures from time to time and the same shall be effective after approval by the employer. The contactor may substitute alternate brand names for the major items given below provided that it demonstrates to the employer satisfaction that substitute is inevitable in the interest of the project and the alternative makes proposed by the contractor are substantially equivalent or superior to the one recommended hereunder:

For Electrical Works:-

1		Compact Packaged substation (CSS) :	Siemens /ABB / Schneider
2		(Note: HT and LT switchgear in the CSS should be of same make)	
3		Dry type transformer in CSS or stand alone:	Siemens/ ABB/ Schneider/ Raychem / Voltamp/ Crompton Greaves/Kirloskar
4		HT switchgear:	Siemens / ABB / Schneider / Lucy electric
5		LT switchgear:	Siemens / ABB / Schneider / Ligand / L&T/ C&S Electric.
6		HT and LT cables:	RPG / Ravin / CCI / Finolex / Havells/ Universal /KEI / Polycab / Gloster
7		HT Cable end termination and jointing Kits:	Raychem / 3M
8		Lighting fixtures	Philips / Bajaj / KeselecSchreder / Wipro / Havells /GE Lighting / Crompton Greaves / HPL / Disano / Neri/ TISVA/ LED LINEAR / HOMDEC / Trilux/Iguzzini/Bega or Any other national or multinational & internationally reputed brand with good presence in India, upon prior approval by ISCDL Engineer Incharge/Consulting engr.

9		Poles and brackets	Bajaj / Valmont / Transrail / KeselecShreder / HOMDEC
10		Wire	Polycab / Finolex / Havells / RR / Ravin/ RPG
11		Switchgear, timer, contactor etc for Street Lighting Switching Panel	L&T/ ABB/Siemens / Schneider MG /Legrand
12		Power factor Improvement Capacitors and APFC relays	EPCOS / Unistar/ Neptune / Shreem
13		Conduit Pipe	Polycab / Modi / AKG / Precision or Equivalent

For Fire Fighting Works

SR.NO.	ITEM	APPROVED MAKE
1	FIRE PUMPS	KIRLOSKAR BROS. LTD / MATHER & PLATT /Grundfos/Lubi
2	MOTOR	KEC / SIEMENS / CGL/ABB
3	DIESEL ENGINE	KEC / CUMMINS / GREVES
4	PIPES	JINDAL(HISSAR) / TATA / SURYA ROSHINI / ZENITH
5	G.I. FITTINGS	BHARAT FORGE / TUBE PRODUCTS / M.S. FITTINGS / SANJAY FORGE / VS BRAND
6	VALVES	AUDCO / LEADER / SANT / INTERVALVE / KEY STONE / BDK / FOURESS
7	NON RETURN VALVES	H.SARKAR / CRESENT / KALPANA / VENUS / HAWA
8	GATE VALVES (Screwed End)	LEADER / ZOLOTO / ITAP
9	BALL VALVES (Screwed End)	LEADER / ZOLOTO / ITAP
10	STRAINERS	GUJRAT OTO FILT / GRAND FRIX / TEL FLOW / JAYPEE
11	PRESSURE SWITCH	INDFOS / SWITZER / DELTA CONTROL
12	PRESSURE GUAGE	H. GURU / FIEBIG / PRICOL / BELLS CONTROL
13	ANTICORROSIVE MATERIAL	I W L / RUSTECH
14	HYDRANT VALVES	NEWAGE / WINCO / SHAHBOGILAL / MINIMAX / VIJAY

15	BRANCH PIPE WITH NOZZLE	NEWAGE / WINCO / SHAHBOGILAL / MINIMAX / VIJAY
16	FIRE HYDRANTS	MINIMAX / NEWAGE / SUKEN / SBJ
17	FIRE HOSE REEL	MINIMAX / SUPREME / DUTRON / SBJ /
18	FIRE HOSE, COUPLING BRANCH PIPE, NOZZLES, FIRE BRIGADE INLET	MINIMAX / NEWAGE / SUKEN / SBJ / WINCO / VIJAY
19	HOSE REEL	NEWAGE / SENJE / EVERSAFE / TYCO / KIDDE / MINIMAX
20	CP HOSE	INDIAN RAYON / NEWAGE
21	PVC HOSE FOR HOSE REEL	DUNLOP (Imported) / DUTRON
22	HOSE BOX / FIRE DUCT SHUTTERS	EVERSAFE / TYCO / KIDDE / MINIMAX
23	FLOW SWITCH	SYSTEM SENSOR / POTTER / SWITZER / LEVCON
24	AIR RELEASE VALVE	LEADER / BAJAJ / HAWA
25	SIREN / HOOTER	KHERAJ / EQUI.
26	SPRINKLERS	H.D. FIRE / TYCO / GRINNEL / VIKING / KIDDE
27	FIRE EXTINGUISHERS	MINIMEX / FIREX / VIJAY FIRE / NEWAGE / SAFEX
28	BATTERY	EXIDE
29	BATTERY CHARGER	SERVILINK
30	PRESSURE SWITCHES	SWITZER / INFOSS
31	PRESSURE GAUGE	BELLS / H GURU / FIBIG
32	ELCTRIC METERS	A.E.I. / MECO
33	MCB / MCCBS	SIEMENS / L&T / SCHNEIDER
34	SWITCHGEAR / SFUs	L & T / SIEMENS / B.C.H.
35	FRLS CABLES	GLOSTER / POLYCAB / FINOLEX / ASIAN / CCI / UNIVERSAL
36	FRLS WIRES	GLOSTER / POLYCAB / FINOLEX / ASIAN / CCI / UNIVERSAL
37	VOLT METER SELECT SWITCH	SALZER / L & T / KAYCEE
38	VOLTMETER (AC / DC)	MECO / AE
39	AMMETER (AC / DC)	MECO / AE
40	POWER CONTACTORS	ABB / SIEMENS / L & T / SCHNEIDER

41	AUTO / MANUAL SELECTOR	SALZER / L & T / KAYCEE
42	TIMERS	EAPL / AE
43	TERMINAL BLOCKS	ELMEX / WAGO
44	CURRENT TRANSFORMERS	KALPA / VOLTAMPS / KAPPA
45	OVER LOAD RELAY	L & T / SIEMENS
46	SINGLE PHASE PREVENTORS	MINILEC / AE
47	TOGGLE SWITCH	JAY / EQUI.
48	END TERMINATIONS	DOWEWLS / MULTI
49	FIRE EXTINGUISHERS	MINIMEX / FIREX / VIJAY FIRE / NEWAGE / SAFEX

For ICT Component

Sr. No.	DESCRIPTION	MAKE
1.	Relays	Alstom/ L & T/ ABB
2.	Current Transformers	A.E./ Indcoil/ Kappa/ Reco
3.	Voltage Transformers	Kappa / AE
4.	Rubber Matting	Kiran Rubber/ Korula Rubber
5.	L.T. XLPE Cables (FRLS or otherwise)	Finolex/ Asian/ Polycab/ KEI/Ravin Cables
6.	Selector Switches	L & T / Kaycee/ Siemens/ Cutler Hammer/ Sielzer
7.	Cable Sockets/ Lugs	Dowells
8.	Ammeter/Voltmeter/P.F. Meter (Analog)	Automatic Electric/ Rishab
9.	Indicating Lamps 22.5mm dia. (LED type)	Teknic/ Siemens/ Group Schneider/ L & T
10.	Digital Panel Meters	AE / Enercon/ Secure Meters/ Krykard
11.	Isolators	Siemens/ HH Elcon/ L&T
12.	Battery Charger	Excide/ Standard Batteries/ Sherene Electro Control/ Argo/ AE.
13.	Isolators	Siemens/ HH Elcon/ L&T
14.	Dual Energy Meters for all Small Users with pulse Output	Conzerv/ L Measuer
15.	Connectors/ Terminal Blocks	Elmex/ Essen
16.	Timers	C & S / L & T
17.	Push Buttons	Siemens
18.	Cat 5E 7 Cat 6E cables	D-Link/Beldon/Systemax
19.	PVC Insulated Copper Wires (including Panel Wires)	Finolex / Polycab/ RR/Ravin
20.	PVC conduit and accessories	ISI Marked
21.	Hot Dip G.I. Conduit	Diamond/ Precision/BEC

22.	Black Enameled M.S. Conduit	BEC/ NIC/ VIMCO
23.	Industrial sockets & plugs	MDS(Legrand) / Clipsal
24.	Storage Battery	Exide/ Standard/ AMCO/
25.	Floor Trunking System	MK Electric/ L.K. Pace / Profab
26.	Cable Glands	Comet/Dowells
27.	Push Buttons for Motor Control	Technik/ Siemens/ Group Schneider/ GE
28.	Cable Tray	Sadhana/ Profab/ Indiana
29.	SMF Battery	Yuasa / Global Yuasa / Hitachi / Exide Power safe / Panasonic / China Storage Battery (CSB)
30.	Fire Alarm System	Notifier / Morely / Johnson Control / Honeywell Edwards / Autronica / BOSCH/GST
31.	CCTV System	Hikvision/,Honeywell/Siemens/Axis/Bosch
32.	Public Address System	Philips / Ahuja / BOSCH/
33.	BMS Controllers	Siemens / Johnson Control / Honeywell / Schneider / L&T / Distech controls

For Plumbing Works

S. No.	Product	Manufacturer'S Name
1	P.V.C. pipes& Fittings	Finolex / Supreme / Prince / Ashirvad
2	RCC Hume Pipe	Jian Spun Pipe / Pragati / Dewan Spun pipe
3	Gun Metal Gate Valve / Non Return Valve	Audco / Sanders / Zoloto / Leader
4	Ball Valve	SANT / CIM/ SKS / RBM / & CATY / Zoloto
5	HDPE Tank	Sintex / Reno / Supreme
6	CP Fittings	Kohler / Jaquar / Roca / Cera
7	C.I. double acting air valve	Sant CIM . Tiemme / Arco
8	Water meter	Kent / SANT / Actaris
9	C.I. dirt box strainer	Emerald / Zoloto / Leader
10	Gully Trap Stoneware	Perfect / RK / Anand
11	S.W. intercepting trap	Perfect / RK / Anand
12	Unplasticised PVC pipe & Fittings	AKG / Supreme / Jain PVC Pipe / Prince
13	Unplasticised PVC SWR Pipe & Fittings	AKG / Supreme / Jain PVC Pipe / Prince
14	CP Fittings & Toilet Accessories	Kohler / Jaquar / AS / Cera
15	Vitreous China Sanitary ware	Kohler / Hindware / American Standard / Roca
16	Chlorinated Polyvinyl Chloride (CPVC) pipes & Fittings	Supreme / Astral / Ashirwad /

17	Submersible Openwell Pumps:	Kirloskar / Grundfos / Flowmore / Mather & Platt/ Lubi
18	Butterfly Valves	SANT / SKS / AIP / Zoloto
19	Pipe Support , Clamps	Chilly / Camry / Easy Flex
20	Pipe Protection for Water Supply Pipes	Pypkote / MakpolykoteCoaltek
21	Fasteners	Hilti / Fischer / Canon
22	SFRC Manhole Cover &Gratting	KK Manhole
23	CI Manhole Cover (IS: 1726-1991)	Neco / Crescent Foundry / Kapilansh
24	HDPEPipes& Fittings	Kissan / Finolex / Jain Irrigation
25	Reverse Osmosis System with Water Cooler	Eureka Forbes / Ion Exchange / Thermax
26	Reverse Osmosis Membranes	Toray / Film Tech / Cock / GE
27	Liquid Level Controllers	Honeywell / Johnson Control
28	Kitchen Sink	Frankee/ Jayna / Nirali

Cement and Steel

1	Reinforcement Steel	TATA, SAIL, JINDAL, Electrotherm, JSW, VISA, VIZAG
2	Cement	Ultratech, Birla, ACC, Ambuja, JP Cement, L&T, Vikram, JK, Grasim, Binani, India Cement