

**REQUEST FOR PROPOSAL  
FOR  
SCADA FOR WATER SUPPLY  
SYSTEM IN ABD AREA OF  
KANPUR CITY  
(INCLUDING COMPREHENSIVE ANNUAL  
MAINTENANCE CONTRACT OF 5 YEARS)**



**ISSUED BY THE**

**KANPUR SMART CITY LIMITED**

Kanpur Nagar Nigam, Motijheel

Kanpur – 208002

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## KEY DATES

Kanpur Smart City Limited invites Percentage Rate Bids through E-Tendering from the Bidders fulfilling the Eligibility Criteria specified hereunder for Supply, Installation, Testing and Commissioning of SCADA system including Civil, E&M works for Water Supply System in ABD area of Kanpur City including Comprehensive Annual Maintenance Contract of 5 Years.

### **Bid Information**

<b>Sl. No.</b>	<b>Events</b>	<b>Duration</b>
<b>1</b>	RfP publishing Date	From 14 June, 2019
<b>2</b>	Cost of Bidding Document	The bidder shall have to submit <b>Rs.20,000/- (Rupees Ten Thousands only)</b> (Non Refundable) through a Demand Draft in favour of 'Chief Executive Officer, Kanpur Smart City Limited' payable at Kanpur.
<b>3</b>	Nature of Contract	Percentage Rate
<b>4</b>	Method of Selection	<b>Quality and Cost Based Selection (QCBS) Method</b> <ul style="list-style-type: none"><li>• Technical Weightage : 70%</li><li>• Financial Weightage : 30%</li></ul>
<b>5</b>	Pre-Bid Meeting Date, Time & Venue	<b>24 June 2019</b> at 04:00 PM at Conference Hall, Nagar Nigam Mukhyalay, 1st Floor, Moti Jheel, Kanpur.
<b>6</b>	Last Date for submission of Bid (Online)	<b>12 July 2019</b> at 03:30 PM
<b>7</b>	Last Date for submission of Bid (Hardcopy)	<b>12 July 2019</b> at 4:00 PM at Kanpur Smart City Limited, 3 <sup>rd</sup> Floor, Kanpur Nagar Nigam Mukhyalaya, Motijheel, Kanpur
<b>8</b>	Date & time for opening of Technical Bid	<b>12 July 2019</b> at 4:30 PM
<b>9</b>	Validity of Bid	180 days from the last date of online submission of bid.
<b>10</b>	Bid Security (EMD)	<b>Rs. 60,00,000/- (INR Sixty Lakh only)</b> in the form of BG / FDR / TDR from any Scheduled /Nationalized Bank.
<b>11</b>	Date time and place of opening of Financial Bid	To be informed later.
<b>12</b>	Address for communication	Chief Executive Officer, KSCL, Nagar Nigam Mukhyalay, Motijheel, Kanpur – 208002

## **DISCLAIMER**

The information contained in this Request for Proposal (RFP) document or subsequently provided to Bidders, whether verbally or in documentary form by or on behalf of Kanpur Smart City Limited or any of its employees, is provided to Bidders on the terms and conditions set out in this RFP document and any other terms and conditions subject to which such information is provided.

This RFP document is not an Agreement and is not an offer or invitation to any other party. The purpose of this RFP document is to provide the Bidders with information to assist the formulation of their Proposal submission. This RFP document does not purport to contain all the information each Bidder may require. This RFP document may not be appropriate for all persons and it is not possible for KSCL and their employees to consider the investment objectives, financial situation and particular needs of each Bidder. Certain Bidders may have a better knowledge of the proposed Project than others. Each recipient must conduct its own analysis of the information contained in this RFP document or to correct any inaccuracies therein that may appear in this RFP document and is advised to carry out its own investigation into the proposed Project, the legislative and regulatory regimes which applies thereto and by and all matters pertinent to the proposed Project and to seek its own professional advice on the legal, financial, regulatory and taxation consequences of entering into any agreement or arrangement relating to the proposed Project.

KSCL and their employees make no representation or warranty and shall incur no liability under the Law of Contract, Tort, the Principles of Restitution or unjust enrichment or otherwise for any loss, expense or damage, accuracy, reliability or completeness of the RFP document, which may arise from or be incurred or suffered in connection with anything contained in this RFP, any matter deemed to form part of this RFP document, the award of the Project, the information and any other information supplied by or on behalf KSCL or their employees, any consultants or otherwise arising in any way from the selection process for the Project.

KSCL may in its absolute discretion, but without being under any obligation to do so, can amend or supplement the information/clauses/articles in this RFP document. The information that KSCL is in a position to furnish is limited to this RFP and the information available at the contact addresses mentioned herein along with any amendments/ clarifications thereon. This RFP and the information contained herein are confidential and for use only by the person to whom it is issued. It may not be copied or distributed by the recipient to third parties (other than in confidence to the recipient's professional advisor). In the event that the recipient does not continue with the involvement in the project in accordance with RFP the information contained in the RFP shall not be divulged to any other party. The information contained in the RFP must be kept confidential. Mere submission of a responsive Bid/ Proposal does not ensure selection of the bidder as Concessionaire.

## Instructions for Online Bid Submission

- i. Instructions to the Bidders to submit the bids online through the Central Public Procurement Portal for e Procurement at [www.etender.up.nic.in](http://www.etender.up.nic.in)
- ii. Possession of valid Digital Signature Certificate (DSC) and enrolment/registration of the contractors/bidders on the e-Procurement/e-tender portal are prerequisite for e-tendering.
- iii. Bidder should register for the enrolment in the e-Procurement site using the “Online Bidder Enrolment” option available on the home page. Portal enrolment is generally free of charge. During enrolment/registration, the bidders should provide only valid and true information including valid email id. All the correspondence shall be made directly with the contractors/bidders through email id as registered.
- iv. Bidder need to login to the site through their user ID/ password chosen during enrolment/registration.
  - v. Then the Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by SIFY/TCS/ nCode/ eMudra or any other Certifying Authority recognized by Controller of Certifying Authorities (CCA) India on eToken/Smart Card, should be registered.
  - vi. The registered DSC only should be used by the bidder in the transactions and should ensure safety of the same.
  - vii. Contractor/Bidder may go through the tenders published on the site and Download the tender documents/schedules for the tenders.
- viii. After Downloading/getting the tender document/schedules, the Bidder should go through them carefully and then submit the documents as required, otherwise bid will be rejected.
- ix. Any clarifications may be sought online through the tender site, through the contact details or during pre-bid meeting, if any. Bidder should take into account the corrigendum, if any published before submitting the bids online.
- x. Bidder may log in to the site through the secured login by the user id/password chosen during enrolment/registration and then by submitting the password of the e-Token/Smartcard to access DSC.
- xi. Bidder may select the tender in which he/she is interested in by using the search option and then move it to the ‘my tenders’ folder.
- xii. From my tender folder, he may select the tender to view all the details uploaded there.
- xiii. It shall be deemed that the bidder has read and understood all the terms and conditions before submitting the offer. Bidder should go through the tender schedules carefully and upload the documents as asked; otherwise, the incomplete bid shall stand rejected.
- xiv. Bidder should get ready the bid documents to be submitted as indicated in the tender document/schedule in advance and ordinarily it shall be in PDF/xls/rar/jpg/dwf formats. If there is more than one document, all may be clubbed together and provided in the requested format. Bid documents may be scanned with 100 dpi with black and white option. It is advisable that each document to be uploaded through online for the tenders should be less than 2 MB. If any document is more than 2MB, it can be reduced through zip/rar and the same, if permitted may be uploaded. The file size being less than 1 MB the transaction uploading time will be very fast.
- xv. The Bidders can update well in advance, the documents such as certificates, annual report details etc., under “My Space option” and these can be selected as per tender requirements and then send along with bid documents during bid submission. This will facilitate the bid submission process faster by reducing upload time of bids.
- xvi. Bidder should submit the Tender Fee/ EMD as specified in the tender. The hard copy should be posted/couriered/given in person to the Tender Inviting Authority, within bid submission due date and time as indicated in the tender. Scanned copy of the instrument should be uploaded as part of the offer.

- xvii. While submitting the bids online, the bidder shall read the terms and conditions and may accept the same to proceed further to submit the bid packets.
- xviii. The bidder has to select the payment option as online to pay the Tender FEE/ EMD as applicable and enter details of the instruments.
- xix. The details of the DD/any other accepted instrument, physically delivered, should tally with the details available in the scanned copy and the data entered during bid submission time, otherwise submitted bid shall not be acceptable or liable for rejection.
- xx. The bidder has to digitally sign and upload the required bid documents one by one as indicated. The very act of using DSC for Downloading the bids and uploading their offers shall be deemed to be a confirmation that they have duly read, understood and agreed with all clauses of the bid document including General Conditions of Contract (GCC) without any exception.
- xxi. The bidder has to upload the relevant files required as indicated in the cover content.
- xxii. In case of any irrelevant files, the bid may be rejected.
- xxiii. If the price bid format is provided in a spread sheet file like BoQ\_XXXX.xls, the rates offered should be entered in the allotted space only and uploaded after filling the relevant columns. The Priced-bid/BOQ template shall not be modified/replaced by the bidder; else the bid submitted is liable to be rejected for the tender.
- xxiv. The bidders are advised to submit the bids through online e-tendering system to the Tender Inviting Authority well before the bid submission due date and time (as per Server System Clock). The Authority shall not be held responsible for any delay or the difficulties faced during the submission of bids online by the bidders.
- xxv. After the bid submission (i.e. after Clicking “Freeze Bid Submission” in the portal), the acknowledgement number indicated by the system should be printed by the bidder and kept as a record of evidence for online submission of bid for the particular tender and also be used as entry pass to participate in the bid opening.
- xxvi. The time settings fixed in the server side and displayed at the top of the tender site, shall remain valid for all actions of requesting, bid submission, bid opening etc., in the e-Tender system. The bidders should follow such time during bid submission.
- xxvii. All the data being entered by the bidders would be encrypted using Public Key Infrastructure (PKI) encryption techniques to ensure the secrecy of the data. The data entered is not retrievable by unauthorized persons during the bid submission and until the time of bid opening by any person.
- xxviii. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid openers’ public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.
- xxix. The confidentiality of the bids is maintained with the use of Secured Socket Layer (SSL) 128 bit encryption technology. Data storage encryption of sensitive fields is done.
- xxx. The bidder should logout of the tendering system using the normal logout option available at the top right hand corner and not by selecting the (X) exit option in the browser.
- xxxi. For any queries regarding e-Tendering process, the bidders may contact at address as provided in the tender document. Also, for any further queries, the bidders are advised to send a mail to – **[ksclkanpur@gmail.com](mailto:ksclkanpur@gmail.com) and Mob no. +91-7081802663 (Nodal Officer, Kanpur Smart City Ltd. Ms. Pooja Tripathi)**
- xxxii. In the Percentage Rate BOQ sheet, enter the following details,
- Enter your Name in the field of Bidder Name
  - Click the ‘Select’ option in the bottom of the E column and set the percentage rate as either excess/less over the estimated rate According to your wish.
  - Enter the rate in percentage at the F column
  - Check the total and click validate.
  - Once the validations are successful save the BOQ file in the same
  - Name as given and upload the BOQ.
  - Otherwise correct the error found and then validate and upload.

**DETAILED INVITATION FOR BIDS (IFB)**  
**NATIONAL COMPETITIVE BIDDING**

1. The Chief Executive Officer, Kanpur Smart City Limited, Kanpur invites fresh bids from Class-I/II Contractors registered with UP Jal Nigam/ PWD / CPWD / National or State level Government Department for the works as detailed below
2. Prices quoted should be net inclusive of all taxes, duties, levies etc. but excluding of GST, must be in Indian Rupees and shall remain valid for 180 (one hundred and eighty) days from the closing date of bid.
3. Details may be downloaded from the e-procurement website [www.etender.up.nic.in](http://www.etender.up.nic.in) and the official website of KSCL, [www.kanpursmartcity.in](http://www.kanpursmartcity.in)
4. Bid must be accompanied by a security of the amount as specified in the Bid Document payable at Kanpur and drawn in favour of the Employer. Bid security will have to be in any of the form as specified in the bidding document and shall have to be valid for at least 45 days beyond the validity of bids. Bid must also accompany a non-refundable bid document fee as specified in the bidding documents in the form of Demand Draft/Banker's Cheque on any nationalized/schedule bank payable at Kanpur in favor of the Employer. Bids received without non-refundable document fee will be rejected.
5. Any Contractor whose work under KNN/KSCL has been rescinded due to any reason or having litigation with KNN/KSCL is also not eligible for this bidding process.
6. Other details can be seen in the detailed bid document.

<b>Sl. No.</b>	<b>Name of the Work</b>	<b>Bid Security (Rs in Lakhs)</b>	<b>Project Cost (Rs. In Cr.)</b>	<b>Period of Completion</b>
1	Supply, Installation, Testing and Commissioning of SCADA system including Civil, E&M Revamping Works and New works for Water Supply System in ABD area of Kanpur City. Comprehensive Annual Maintenance Contract of 5 Years at the End of Defect Liability Period.	<b>60.00</b>	<b>23.35</b>	<b>270 Days</b>

## Contents

Bid Information.....	2
DISCLAIMER.....	3
Instructions for Online Bid Submission.....	4
DETAILED INVITATION FOR BIDS (IFB).....	6
<b>A. General .....</b>	<b>13</b>
1. Scope of Bid .....	13
2. Source of Funds.....	13
3. Eligible Bidders .....	13
4. Qualification of the Bidder .....	14
4.4A Financial & Technical Requirements .....	15
4.4B Physical Qualifications: .....	15
4.4 C Each bidder should further demonstrate: .....	15
4.4D Technical personnel, Qualifications and Experience: .....	16
4.5 Available Bid Capacity.....	17
4.6 Disqualification.....	20
5. One Bid per Bidder .....	20
6. Cost of Bidding .....	20
7. Site visit .....	20
<b>B. Bidding Documents.....</b>	<b>20</b>
8. Content of Bidding Documents .....	20
9. Clarification of Bidding Documents .....	20
10. Amendment of Bidding Documents .....	21
<b>C. Preparation of Bids.....</b>	<b>22</b>
11. Language of the Bid .....	22
12. Documents comprising the Bid .....	22
“Technical Bid” .....	22
“Financial Bid” .....	22
13. Bid Prices .....	23
14. Currencies of Bid and Payment.....	24
15. Bid Validity .....	24
16. Bid Security .....	24
17. Alternative Proposals by Bidders.....	25
18. Format and Signing of Bid .....	25
<b>D. Submission of Bids .....</b>	<b>26</b>
19. Sealing and Marking of Bids .....	26
20. Deadline for Submission of the Bids .....	26
21. Late Bids.....	26
22. Modification and Withdrawal of Bids .....	26
<b>E. Bid Opening and Evaluation .....</b>	<b>27</b>

23. Bid Opening.....	27
Evaluation Process .....	27
Evaluation of Pre-Qualification Proposal.....	28
Evaluation of Technical Proposal .....	28
Technical Evaluation Criteria.....	29
Eligible Goods and Services, and OEM Criteria .....	30
24 Process to Be Confidential .....	31
25 Clarification of Bids .....	31
26 Examination of Bids and Determination of Responsiveness .....	32
27 Correction of Errors.....	32
28 Evaluation and Comparison of Bids .....	33
F. Award of Contract.....	33
29 Award Criteria .....	33
30 Employer's Right to accept any Bid and to reject any or all Bids .....	34
31 Notification of Award and Signing of Agreement .....	34
32 Performance Security.....	34
33 Advance Payments and Security.....	35
34 Adjudicator .....	35
35 Fraud and Corruption:.....	35
SECTION 2:.....	37
FORMS OF BID, QUALIFICATION INFORMATION.....	37
AND LETTER OF ACCEPTANCE .....	37
Contractor's Bid .....	38
Qualification Information.....	39
SAMPLE FORMAT FOR EVIDENCE OF ACCESS TO OR AVAILABILITY OF CREDIT FACILITIES .....	42
SECTION 3:.....	37
A. General.....	48
1. Definitions .....	48
2. Interpretation.....	50
3. Language and Law.....	51
4. Engineer's Decisions.....	51
5. Delegation.....	51
6. Communications.....	51
7. Subcontracting.....	51
8. Other Contractors .....	51
9. Personnel.....	51
10. Employer's and Contractor's Risks.....	52
11. Employer's Risks .....	52
12. Contractor's Risks .....	52
13. Insurance .....	52
14. Site Investigation Reports.....	53

15. Queries about the Contract Data .....	53
16. Contractor to Construct the Works .....	54
17. The Works to Be Completed by the Intended Completion Date .....	54
18. Approval by the Engineer .....	54
19. Safety .....	54
20. Discoveries .....	54
21. Possession of the Site .....	55
22. Access to the Site .....	55
23. Instructions .....	55
B. Time Control .....	55
24. Program .....	55
25. Extension of the Intended Completion Date .....	56
26. Delays Ordered by the Engineer .....	56
27. Management Meetings .....	56
28. Early Warning .....	56
C. Quality Control .....	57
29. Identifying Defects .....	57
30. Tests .....	57
31. Correction of Defects .....	57
32. Uncorrected Defects .....	58
33. Bill of Quantities .....	58
D. Cost Control .....	58
34. Changes in the Quantities .....	58
35. Variations .....	58
36. Payments for Variations .....	58
37. Cash flow forecasts .....	59
38. Milestone Schedule & Payment Certificates .....	59
39. Payments .....	61
40. Compensation Events .....	62
41. Tax .....	63
42. Currencies .....	63
43. Price Adjustment .....	63
44. Retention .....	64
45. Liquidated Damages .....	64
46. Advance Payment .....	64
47. Securities .....	65
48. Cost of Repairs .....	65
E. Finishing the Contract .....	65
49. Completion .....	65
50. Taking Over .....	65
51. Final Account .....	65

52. Operating and Maintenance Manuals.....	66
53. Termination .....	66
54. Payment upon Termination.....	67
55. Property .....	67
56. Release from Performance .....	68
57. Fraud & Corruption.....	68
F. Special Conditions of Contract.....	69
1. LABOUR: .....	69
2. COMPLIANCE WITH LABOUR REGULATIONS: .....	69
SALIENT FEATURES OF SOME MAJOR LABOUR LAWS .....	70
3. SUB-CONTRACTING (GCC Clause 7).....	73
4. ARBITRATION.....	74
5. PROTECTION OF ENVIRONMENT: .....	75
6. LIQUIDATED DAMAGES: .....	76
7. PRIORITY OF DOCUMENTS: .....	76
8. Safety & Welfare Provisions for labour to be employed by the Contractor .....	77
SECTION 4: CONTRACT DATA.....	85
CONTRACT DATA .....	86
SECTION 5: SCOPE OF WORK, TECHNICAL SPECIFICATIONS & BOQ.....	89
5.1 Scope & Objectives of the Project.....	90
5.2 Technical Specification for Instrumentation & Automation Works .....	114
5.3 Technical Specification for Electrical / Mechanical Works .....	114
5.4 Technical Specification for Civil & Structural Works . .....	114
BILL OF QUANTITIES .....	116
1 - Raw Water Sump near WTPs at Ganga Barrage (Instrument works) .....	117
2 - Raw Water Sump near WTPs at Ganga Barrage (E/M works) .....	117
3 – 200MLD WTP-1 (Filter Beds) maintained by M/s Ramky (Instrument Works).....	118
4 – 200MLD WTP-1 (Filter Beds) maintained by M/s Ramky (E/M & Civil Works).....	118
5 – 200MLD WTP-2 (Filter Beds) maintained by M/s Geo Miller (Instrument Works) .....	118
5 – 200MLD WTP-2 (Filter Beds) maintained by M/s Geo Miller (E/M & Civil Works) .....	119
6 – 200MLD WTP-3 (Filter Beds) RM Lohia maintained by M/s Geo-Miller (Instrument Works) .....	119
8 – Clear Water Sump at 3-Nos. WTPs near Ganga Barrage (Instrument Works) .....	120
9 – Clear Water Sump at 3-Nos. WTPs near Ganga Barrage (E/M Works) .....	120
10 – Raw Water Sump at 280 MLD WTP near Benajhabar Water Works (Instrument Works) .....	121
11 – Raw Water Sump at 280 MLD WTP near Benajhabar Water Works (E/M Works).....	121
12 – 200 MLD WTP (Filter Beds) at Benajhabar Water Works (Instrument works).....	121
13 – 200 MLD WTP (Filter Beds) at Benajhabar Water Works (E/M, Civil works).....	122
14 – 80 MLD WTP (Filter Beds) at Benajhabar Water Works (Instrument Works) .....	122
14 – 80 MLD WTP (Filter Beds) at Benajhabar Water Works (E/M, Civil Works).....	123
15–280 MLD Clear Water Sump at Benajhabar Water Works (Instrument Works) .....	123
16–280 MLD Clear Water Sump at Benajhabar Water Works & Other Works (E/M Works /Civil Works).....	124

17-SCADA System – New LCS Works at Benajhabar Water Works.....	124
18 – 210 MLD Raw Water Pumping Station at Bhaironghat (Instrument Works).....	125
19 – 210 MLD Raw Water Pumping Station at Bhaironghat (E/M Works).....	125
20 – 100 MLD Raw Water Pumping Station at Panki near Armapur Estate (Instrument Works).....	125
20 – 100 MLD Raw Water Pumping Station at Panki near Armapur Estate (E/M, Civil Works).....	125
21–CW-17 Zonal Pumping Station at Mohan Lal Park, Bhaironghat (Instrument Works).....	126
22–CW-17 Zonal Pumping Station at Mohan Lal Park, Bhaironghat (E/M Works).....	126
23 – CW-28 Zonal Pumping Station at Tikonia Park, Parvati Bangla Road (Instrument Works).....	126
24 – CW-28 Zonal Pumping Station at Tikonia Park, Parvati Bangla Road (E/M Works).....	126
25 – CW-29 Zonal Pumping Station at Kaushik Park, Civil Lines (Instrument Works).....	127
25 – CW-29 Zonal Pumping Station at Kaushik Park, Civil Lines (E/M Works).....	127
26 - Pressure Transmitters for Leak Detection on Feeder Mains (Instrument Works).....	127
27 - Central SCADA System at Jal Kal Vibhag Office Building at Benajhabar .....	127
<b>SECTION 6: FORMS OF BID AND SECURITIES.....</b>	<b>128</b>
Form of Bid .....	129
Forms of Securities.....	130
BID SECURITY (BANK GUARANTEE).....	131
<b>SECTION-7: Operation &amp; Maintenance.....</b>	<b>135</b>

## **SECTION 1: INSTRUCTIONS TO BIDDERS (ITB)**

## **A. General**

### **1. Scope of Bid**

The Chief Executive Officer, Kanpur Smart City Limited, Kanpur, (referred to as Employer in these documents) invites bids for the Supply, Installation, Testing and Commissioning of SCADA system including Civil, E&M works for Water Supply System in ABD area of Kanpur City (as defined in these documents and referred to as "the works") detailed in the table given in IFB. The bidders shall submit bids for all of the works detailed in the table given in IFB.

- 1.1 The successful bidder will be expected to complete the works in all respect by the intended completion date specified in the Contract data.

### **2. Source of Funds**

- 2.1 The project is executed under Smart City Mission Fund.

### **3. Eligible Bidders**

- 3.1 The Bidder for participation in the Selection Process, should be a SCADA System provider & System integrator (SI) who may be either a single entity or a group of entities (maximum three called the "Consortium"), coming together to execute the project. All the entities of the Consortium should be registered as class I/class II contractor in U.P. Jal Nigam / PWD / CPWD / National or State level Government Departments. At least one entity or the single entity should be experienced in Civil Works. At least one entity or the single entity should be experienced in E&M works.
- 3.2 All bidders shall provide in Section 2, Forms of Bid and Qualification Information, a statement that the Bidder is not associated, nor has been associated in the past, directly or indirectly, with the Consultant or any other entity that has prepared the design, specifications, and other documents for the Project or being proposed as Project Manager for the Contract. A firm that has been engaged by the Employer to provide consulting services for the preparation or supervision of the works, and any of its affiliates, shall not be eligible to bid.
- 3.3 Government-owned enterprises in the Employer's country may only participate if they are legally and financially autonomous, operate under commercial law and are not a dependent agency of the Employer.
- 3.4 Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by any Government Departments / PSU in accordance with sub-clause 35.1 of ITB.
- 3.5 Any bidder who is an Advocate and Registered with any State Bar Council Shall not be allowed to participate in the bidding. If it is established that the contractor is registered with the state bar council, his bid shall be automatically cancelled.

#### 4. Qualification of the Bidder

- 4.1 All bidders shall provide in Section 2, Forms of Bid and Qualification Information, a preliminary description of the proposed work method and schedule, including drawings and charts, as necessary.
- 4.2 In the event that Pre-qualification of potential bidders has been undertaken, only bids from prequalified bidders will be considered and only qualified bidders bid will be open. These qualified bidders should submit with their bids any information updating their original prequalification applications or, alternatively, confirm in their bids that the originally submitted prequalification information remains essentially correct as of date of bid submission. The update or confirmation should be provided in Section 2.
- 4.3 If the Employer has not undertaken prequalification of potential bidders, all bidders shall include the following information and documents with their bids in Section 2:
- a) Copies of original documents defining the constitution or legal status, place of registration, and principal place of business; written power of attorney of the signatory of the Bid to commit the Bidder;
  - b) Proof of registration as class I/ Class II with UP Jal Nigam / PWD / CPWD / National or State level Government Departments with copy of photo ID proof (photocopy of driving license / PAN Card / bank passbook with photograph etc.
  - c) Total monetary value of SCADA system works performed during each of the last **five years** for the works (**To be certified by a Chartered Accountant**).
  - d) Experience in works of a **similar nature** and size for each of the last five years, and details of works under way or contractually committed; and clients who may be contacted for further information on those contracts.
  - e) Major items of construction equipment proposed to carry out the Contract;
  - f) Qualifications and experience of key site management and technical personnel proposed for the Contract;
  - g) Reports on the financial standing of the Bidder, such as **profit and loss statements** and auditor's reports for the past **five years**.
  - h) Evidence of access to line(s) of credit and availability of other financial Resources facilities (Minimum 15% of Contract value), certified by the Bankers (**Not more than 3 months old**);
  - i) Undertaking that the bidder will be able to invest a minimum cash of 10% of contract value of work, during implementation of the work.

- j) Authority to seek references from the Bidder's bankers;
- k) Information regarding any litigation pending in any court of law or arbitration resulting from contracts executed by the Bidder in the last five years or currently under execution. The information shall include the names of the parties concerned, the disputed amount, cause of litigation, and matter in dispute.
- l) The proposed methodology and program of construction including Environmental Management Plan backed with equipment, materials and manpower planning and deployment, duly supported with broad calculations and quality control procedures proposed to be adopted, justifying their capability of execution and completion of the work as per technical specifications within the stipulated period of completion as per milestones. *(Not mandatory for works up to Rs 10 Lakhs)*

#### **4.4A Financial & Technical Requirements**

**To qualify for award of the contract, each bidder in its name should have in the last five years i.e. 2018-2019, 2017-18, 2016-17, 2015-16 and 2014-15,**

- a) Average Annual financial turnover (in all Classes of Supply, Installation, Testing and Commissioning of SCADA systems including Civil, E&M works) during the last 3 years, ending 31<sup>st</sup> March of the previous financial year, should be at least 30% of the estimated cost.
- b) Satisfactorily completed at least **one similar work** of value not less than 80% of the estimated package value or **two similar works** of value not less than 40% of the estimated package value or **three similar works** of value not less than 30% of the estimated package value. The bidder shall provide completion certificate to substantiate the experience from client.

\*Similar Work: Supply, Installation, Testing and Commissioning of SCADA system.

#### **4.4B Physical Qualifications: Deleted**

#### **4.4 C Each bidder should further demonstrate:**

Availability (either owned or leased or by procurement against mobilization advances) of the following key and critical equipment for this work. (Not applicable for works up to Rs 10.00 Lakhs. However, availability of equipment / machineries would be preferred).

Sl. No.	Equipment Type and Characteristics	Minimum Capacity	Max. Age of Equipment (years)	Minimum Number Required
1	Loader cum excavator type JCB / Proclainer	1 cum bucket size	5	1
2	Water tanker	6 KL	5	1
3	Generator	125 KVA	5	1
4	Leveling Instrument		5	1
5	Water spraying Pumps for curing, cleaning etc.			1
6	Weigh Batching Type Mobile Concrete Mix Batching Plant			1
7	Special Tools and Tackles as required for fixing of various Instruments, analyzers, E/M equipment. <b>(Hilti or Equivalent)</b>		10	5 SETS

The contractor shall furnish this information on a non-judicial stamp paper of Rs 100/- only.

Based on the studies, carried out by the Engineer the minimum suggested major equipment to attain the completion of works in accordance with the prescribed construction schedule are shown in the above list.

#### **4.4D Technical personnel, Qualifications and Experience:**

##### **A. Technical Personnel are:**

Sl. No.	Designation of the person / Nos.	Qualification	Whether working in field or office	Experience of execution of similar works
1	Project Manager (1 Nos)	B.E. Instrument/ECE/EEE	Field (fulltime)	10 Years
2	Project Engineer (2 Nos)	B.E. Civil	Field (fulltime)	8 Years
3	Site Engineer (3 Nos.)	Diploma Electrical / Mechanical	Field (fulltime)	5 Years
4	Site Supervisor (2 Nos)	ITI or Diploma Civil	Field (fulltime)	3 Years
5	Site Supervisor (2 Nos)	ITI or Diploma Electrical / Mechanical	Field (fulltime)	3 Years

To qualify for a package of contracts made up of this contract for which bids are invited in the IFB, the bidder must demonstrate having experience and resources sufficient to meet the aggregate of the qualifying criteria for all the contracts in question.

#### 4.5 Available Bid Capacity

Bidders who meet the minimum qualification criteria will be qualified only if their available bid capacity (combined bid capacity in case of consortium) is more than the total bid value. The available bid capacity will be calculated as under: (Not mandatory for works up to Rs 10 Lakhs)

$$\text{Assessed Available Bid capacity} = (A * N * 2 - B)$$

Where

A = Maximum value of Instrument/Electronics/Information technology related works executed in any one year during the last five years (updated to 2018-19 price level) taking into account the completed as well as works in progress.

N = Number of years prescribed for completion of the works for which bids are invited.

B = Value, at 2018-19 price level, of existing commitments and on-going works to be completed during the period of completion of the works for which bids are invited.

**Note:**

- i) The statements showing the value of existing commitments and on-going works as well as the stipulated period of completion remaining for each of the works listed should be countersigned by the Engineer in charge, not below the rank of an Executive Engineer or equivalent.
- ii) Updating factors for updating work value of single SCADA or similar Project executed during last five years:

<u>Year before</u>	<u>Multiplying Factor</u>
One	1.1
Two	1.21
Three	1.33
Four	1.46
Five	1.61

**4.5.1** The Sole Bidder or the prime bidder (in case of consortium) must be registered under any State's/UT's Commercial Tax Act / GST or Central Tax Act which must be quoted in the bid. The bidder must have paid all applicable State's/UT's Commercial Tax Act / GST or Central Tax Act till year 2018-2019. Self-attested documentary proof is to be submitted. If not applicable submit affidavit in Rupees 100/- Non-judicial stamp paper. The bidder should have valid ESIC registration Certificate. A certified copy must be submitted. If not applicable submit affidavit in Rupees 100/- Non-judicial stamp paper.

The bidder should be registered with the Commissioner, Provident Fund and should submit copy of the registration along with the Technical bid.

In case the bidder has less than 20 persons in his employment, he shall submit an affidavit to this effect in lieu of such registration.

**4.5.2** Bidder should possess **valid ISO** Certification for Quality in Supply / Erection / Construction & Management.

**4.5.3 Technical Compliance Matrix**

Sl. No.	Functional Feature /Requirement	Compliance (Y/N)	Remarks	Page No.
1	<p><b>Consortium:</b></p> <p>(a) Consortium is allowed upto 3 Partners i.e. Lead bidder + 2 partners</p> <p>(b) The members of the consortium shall enter into a Memorandum of Understanding (MoU) for the purpose of submitting the proposal and designate one of the members as the Prime/ lead bidder. The bid shall be submitted by the lead bidder only, who shall also be the majority stakeholder in the consortium.</p> <p>(c) MoU / Letter of Association amongst Consortium members must be furnished with the Technical bid along with agreement between Consortium member defining their roles and responsibility for this project only</p> <p>(d) Power of Attorney for Lead Member of Consortium (prime bidder) should be signed by consortium partner(s).</p>			
2	Sole Bidder or all the entities of the Consortium should be registered with UP Jal Nigam/Class I State PWD / CPWD /National or Other State level Government Departments.) Documentary proof to be attached.			
3	<b>Financial &amp; Technical Requirements as per Clause 4.4A (a) &amp; (b)</b>			
4	The sole bidder (or at least one consortium partner, if in consortia) or OEM should have successfully implemented complete integrated software solutions like SCADA and automation systems as defined in <b>Clause 4.4B</b> . MAF from OEM is required.			
5	The sole bidder (including all members of the consortia) shall not be under a declaration of ineligibility for corrupt or fraudulent practices and should not be black listed by any State Government, Central Government or any other Public Sector undertaking on the date of Bid Submission. An undertaking to this effect should be submitted by the sole bidder (Lead bidder, in case of consortia) on its letter head.			
6	The sole Bidder (Prime bidder in case of consortium) should be authorized by OEM for IT			

Sl. No.	Functional Feature /Requirement	Compliance (Y/N)	Remarks	Page No.
	and non- IT equipment (in respect of each product and its services) to quote against this tender. The MAF (Manufacturer's/ OEM Authorization Form) should be submitted by the prime bidder, in case of a consortium			
7	The consortium must be a registered under any State's/UT's Commercial Tax Act / GST or Central Tax Act which must be quoted in the bid. The bidder must have paid all applicable State's/UT's Commercial Tax Act / GST or Central Tax Act till year 2018-2019. Self-attested documentary proof is to be submitted.			
8	The lead bidder should submit valid letter from the OEMs confirming following: (a) Authorization letter from OEM/Technology partner mentioning the support for 5 years including Spares, Software upgrades, after "Go-live" (b) Technology partner letter confirming Products quoted are not end-of-life/ end of sale for a period of 01 Year from the date of submission of the bid			
9	The Lead bidder/ consortium must provide a list of places where such systems have been installed and/or are being maintained by him with their configuration and with the references, Work order or purchase order copies etc. The bidder is required to provide assurance to arrange for a demo at such place in case the tender evaluation committee needs to evaluate the performance of the Installation.			
10	Bidders are advised to study all instructions, forms, terms, requirements and other information in the RFP documents carefully. Submission of bid shall be deemed to be done after careful study and examination of the RFP document with full understanding of its implications.			
11	The response to this RFP should be full and complete in all respects. Failure to furnish all information required by the RFP documents or submission of a proposal not substantially response to the RFP documents in every respect will be at the bidder's risk and may result in rejection of its proposal and forfeiture of the bid EMD. The decision of the CEO, KSCL, and Kanpur in this regard is final and binding on all bidders.			

## **4.6 Disqualification**

Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have:

- made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or
- Record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc.; and/or
- participated in the previous bidding for the same work and had quoted unreasonably high bid prices and could not furnish rational justification to the employer.
- has not duly filled up the formats given in Qualification Information [1.3.1, 1.3.2, 1.4 A & B]

In case, the qualification information is not duly filled as per the prescribed formats, the bid shall be summarily rejected.

## **5. One Bid per Bidder**

5.1 Each bidder shall submit only one bid for one contract. A bidder who submits or participates in more than one Bid (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the Bidder's participation to be disqualified.

## **6. Cost of Bidding**

6.1 The bidder shall bear all costs associated with the preparation and submission of his Bid and the Employer will in no case be responsible and liable for those costs.

## **7. Site visit**

7.1 The Bidder, at the Bidder's own responsibility and risk is encouraged to visit and examine the Site of Works and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.

## **B. Bidding Documents**

### **8. Content of Bidding Documents**

8.1 The set of bidding documents comprises the documents listed in the table below and addenda issued in accordance with Clause 10:

1. Invitation for Bids
2. Bidding Documents comprising:
  - i. Section 1: Instructions to Bidders

- ii. Section 2: Forms of Bid and Qualification Information
- iii. Section 3: Conditions of Contract
- iv. Section 4: Contract Data
- v. Section 5: Technical Specifications
- vi Section 6: Forms of Securities

## 8.2 Deleted

8.3 The bidder is expected to examine carefully all instructions, conditions of contract, contract data, forms, terms and specifications, bill of quantities, forms and drawings in the Bid Document. Failure to comply with the requirements of Bid Documents shall be at the bidder's own risk. Pursuant to clause 25 hereof, bids, which are not substantially responsive to the requirements of the Bid Documents, shall be rejected.

## 9. Clarification of Bidding Documents

9.1 A prospective bidder requiring any clarification of the bidding documents may notify the Employer in writing at the Employer's address indicated in the invitation to bid. The Employer will respond to any request for clarification which he received earlier than 15 days prior to the deadline for submission of bids. Copies of the Employer's response will be forwarded to all purchasers of the bidding documents, including a description of the enquiry but without identifying its source.

9.2 **Pre-bid meeting:** The purpose of the Pre-Bid Meeting will be to clarify and discuss issues with respect to the Project, the RFP document or any other related issues. The Bidder or his authorized representative is invited to attend a Pre-Bid Meeting, which shall take place at the venue specified in the Factsheet. It is preferable to attend the Pre-Bid Meeting. Subsequent to the date of the Pre- Bid Meeting, KSCL may not respond to questions or inquiries from any Bidder who has not attended the Pre-Bid Meeting. The Bidders designated representatives are invited to attend the Pre-Bid Meeting at their own cost, to be held on the date and time as specified in Factsheet.

## 10. Amendment of Bidding Documents

10.1 Before the deadline for submission of bids, the Employer may modify the bidding documents by issuing addenda.

10.2 Any addendum thus issued shall be part of the bidding documents and shall be communicated in writing to all the purchasers of the bidding documents. Prospective bidders shall acknowledge receipt of each addendum in writing to the Employer.

10.3 To give prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer shall extend as necessary the deadline for submission of bids, in accordance with Sub-Clause 20.2 below.

## C. Preparation of Bids

### 11. Language of the Bid

11.1 All documents relating to the bid shall be in the English language.

### 12. Documents comprising the Bid

12.1 The bid to be submitted by the bidder (refer Clause 8) shall be in two separate parts:

**Part-I shall be named "Technical Bid" and shall comprise**

- i. Bid security in the form (refer Clause 16) Specified in section 6 and non-refundable cost of bid document.
- ii. Technical Proposal Content (as per format given below).
- ii. Qualification Information and supporting documents as specified in Section 2.
- iii. Certificates, undertakings, affidavits as specified in Section 2.
- iv. Undertaking that the bid shall remain valid for the period specified in Clause 15.1

**Part-II shall be named "Financial Bid" and shall be done through  
– ONLINE SUBMISSION ONLY.**

Each part will be separately sealed and marked in accordance with the sealing and Marking Instructions in Clause 19.

The bidder shall prepare **two sets** of the bid, marking them "**Original**" and "**copy**" respectively.

### 12.2 Technical Proposal Content

- (i) The Technical Bid, besides the other requirements of the Tender, shall comprise of the following (not limited to):
  - a) Technical Bid Covering Letter
  - b) Compliance for Technical Evaluation criteria
  - c) General information about the Bidder
  - d) Technical Solution
  - e) Specifications of the Physical Components
  - f) Specifications of the IT Components
  - g) Unpriced Bill of Materials (BOM) mentioning the make and model as per format provided.
  - h) Manpower Details
- (ii) Technical Proposal shall not in, anyway contain the financial proposal. The Procuring entity shall reserve the right to cancel the proposal in such event.
- (iii) BEC will review the technical bids of the bidders for determining whether the technical proposals are substantially responsive to the conditions of the RfP at the initial stage. Bids that are not

substantially responsive are liable to be rejected.

- (iv) Bidders' technical solutions proposed in the bid document will be evaluated as per the requirements and guidelines specified in the RFP and technical evaluation criteria as mentioned below in this section of the RFP.
- (v) Each Technical Proposal shall be assigned a technical score out of a maximum of 100 points.
- (vi) The Bidders are required to submit all required documentation in support of the evaluation criteria specified (e.g. Detailed Project citations and copy of work order, client contact information for verification, and all others components) as required for technical evaluation.
- (vii) Bidders bidding for this contract together with other contracts stated in the IFB to form a package will so indicate in the bid together with any discounts offered for the award of more than one contract.

### **13. Bid Prices**

13.1 The contract shall be for the whole works as described in Sub-Clause 1.1 based on the price on the Form of Bid submitted by the Bidder.

13.2 The Bidder must quote his **bid percentage price in Section-2 (Contractor's Bid Form) both in figure and words, which is to be duly signed by the bidder.**

13.3 A Financial Bid without any mention of bid Percentage in the Contractor's Bid Form shall be treated as **Non-Responsive** and shall not be considered for evaluation. If the price bid format is provided in a spread sheet file like BoQ\_XXXX.xls, the Percentage rates offered should be entered in the allotted space only and uploaded after filling the relevant columns. The Priced-bid/BOQ template shall not be modified/replaced by the bidder; else the bid submitted is liable to be rejected for the tender.

13.4 All duties, taxes, and other levies payable by the contractor under the contract, or for any other cause shall be included in the rates, prices and total Bid Price submitted by the Bidder.

13.5 The percentage rates and prices quoted by the bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of Clause 43 of the Conditions of Contract.

13.6 ***Abnormally low or high rates shall not be taken into consideration and shall be summarily rejected without assigning any reason thereof. Discounts offered after filling up the rates of the items shall not be taken into consideration and rates inserted against each item shall prevail.***

## **14. Currencies of Bid and Payment**

14.1 The unit rates and the prices shall be quoted by the bidder entirely in Indian Rupees.

## **15. Bid Validity**

15.1 Bids shall remain valid for a period not less than **180 days** after the deadline date for bid submission specified in Clause 20. A bid valid for a shorter period **shall be rejected by the Employer as non-responsive.**

15.2 In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the bidders may extend the period of validity for a specified additional period. The request and the bidders' responses shall be made in writing or by cable. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request will not be required or permitted to modify his bid except as provided in 15.3 herein-after, but will be required to extend the validity of his bid security for a period of the extension, and in compliance with Clause 16 in all respects.

15.3 In the case of contracts in which the Contract Price is fixed (not subject to price adjustment), in the event that the purchaser requests and the Bidder agrees to an extension of the validity period, the contract price, if the Bidder is selected for award shall be the bid price corrected as follows :

The price shall be increased by the factor 0.12% for each week or part of a week that has elapsed from the expiration of the initial bid validity to the date of issue of letter of acceptance to the successful Bidder.

15.4 Bid evaluation will be based on the bid prices without taking into consideration the above correction.

## **16. Bid Security**

16.1 The Bidder shall furnish, as part of his Bid, a Bid security in the amount as shown in column 4 of the table of IFB for this particular work. This bid security shall be in favour of the Employer, and may be in one of the following forms:

- A bank guarantee issued by a nationalized / scheduled bank located in India; or
- TDR / FDR pledged in favour of the Employer, payable at Kanpur.

16.2 Bank guarantees / TDR / FDR issued as surety for the bid shall be valid for at least 45 days beyond the validity of bids.

16.3 Any bid not accompanied by an acceptable Bid Security and not secured as indicated in Sub-Clauses 16.1 and 16.2 above shall be rejected by the Employer as non-responsive.

16.4 The Bid Security of unsuccessful bidders will be returned smoothly after the

agreement is entered with the successful bidder.

16.5 The Bid Security of the successful bidder will be discharged when the bidder has signed the Agreement and furnished the required Performance Security.

16.6 The Bid Security may be forfeited

- a) if the Bidder withdraws the Bid after Bid opening during the period of Bid validity;
- b) if the Bidder does not accept the correction of the Bid Price, pursuant to Clause 27; or
- c) In the case of a successful Bidder, if the Bidder fails within the specified time limit to
- d) Sign the Agreement; or (ii) Furnish the required Performance Security.

### **17. Alternative Proposals by Bidders**

17.1 Bidders shall submit offers that comply with the requirements of the bidding documents, including the basic technical design as indicated in the drawing and specifications. **Alternative bid will not** be considered.

### **18. Format and Signing of Bid**

18.1 The Bidder shall prepare one original and one copy of the documents comprising the bid as described below in Clause 12 of these *Instruction to Bidders*, bound with the volume containing the "Technical Bid" and the "Financial Bid" in separate parts and clearly marked "**ORIGINAL**" and "**COPY**" as appropriate. In the event of discrepancy between them, the original shall prevail. **All documents to be submitted should be in proper format & done by at least spiral binding.**

18.2 The original and copy of the Bid shall be typed or written in indelible ink and shall be signed (in **Blue Ink** only) by a person or persons duly authorized to sign on behalf of the Bidder, pursuant to Sub-Clauses 4.3. All pages of the bid where entries or amendments have been made shall be initialed by the person or persons signing the bid. **Each and every signature must be dated. Full Name of the bidder shall be mentioned at least in the Contractor's Bid Form.**

18.3 The Bid shall contain no alterations or additions, except those to comply with instructions issued by the Employer, or as necessary to correct errors made by the bidder, in which case such corrections shall be initialed by the person or persons signing the bid.

18.4 The Bidder shall furnish information as described in the Form of Bid on commissions or gratuities, if any, paid or to be paid to agents relating to this Bid, and to contract execution if the Bidder is awarded the contract.

## **D. Submission of Bids**

### **19. Sealing and Marking of Bids**

19.1 The Bidder shall seal the original and copy of the Bid in separate envelopes, duly marking the envelopes as “**ORIGINAL**” and “**COPY**”. These two envelopes (called as inner envelopes) shall then be put inside one outer envelope. Each set of the inner envelopes marked “ORIGINAL” and “COPY” shall contain within separate sealed envelopes marked as “Technical Bid” with additional markings as follows:

Original or Copy, as the case may be

Bid to be opened as per the schedule mentioned in factsheet

The contents of Technical and Financial Bid will be as specified in Clause 12.

19.2 The envelopes containing Technical Bids shall

a) Be addressed to the Employer

b) Bear the identifications as indicated in Appendix.

19.3 In addition to the identification required in Sub-Clause 19.1 and 19.2, each of the envelopes shall indicate the name and address of the bidder to enable the bid to be returned unopened in case if it is declared late, pursuant to Clause 21, or the Evaluation Committee declares the Bid as non-responsive pursuant to Clause 23.

19.4 If the outer envelope is not sealed and marked as above, the Employer will assume no responsibility for the misplacement or premature opening of the bid.

### **20. Deadline for Submission of the Bids**

20.1 Bids must be received by the Employer at the address specified above no later than the date specified in the factsheet. In the event of the specified date for the submission of bids declared a holiday for the Employer, the Bids will be received up to the appointed time on the next working day.

20.2 The Employer may extend the deadline for submission of bids by issuing amendment in accordance with Clause 10, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will then be subject to the new deadline.

### **21. Late Bids**

21.1 Any Bid received by the Employer after the deadline prescribed in Clause 20 will be returned unopened to the bidder.

### **22. Modification and Withdrawal of Bids**

22.1 Bidders may withdraw their bids by giving notice in writing before the

deadline prescribed in Clause 20.

22.2 Each Bidder's withdrawal notice shall be prepared, sealed, marked, and delivered in accordance with Clause 18 & 19, with the outer and inner envelopes additionally marked "**WITHDRAWAL**", as appropriate.

22.3 **Deleted**

22.4 Withdrawal of a Bid between the deadline for submission of bids and the expiration of the original period of bid validity specified in Clause 15.1 above or as extended pursuant to Clause 15.2 may result in the forfeiture of the Bid security pursuant to Clause 16.

22.5 **Deleted**

## **E. Bid Opening and Evaluation**

### **23. Bid Opening**

23.1 The Employer will open all the Bids received (except those received late), in presence of the Bidders or their representatives who choose to attend at time, date and the place specified in IFB in the manner specified in Clause 20 and 23.3. In the event of specified date of Bid opening being declared a holiday on the date of receipt of the bids as specified the bids will be received and opened on the next working day at the same time and venue.

23.2 Envelopes marked "**WITHDRAWAL**" shall be opened and read out first. Bids for which an acceptable notice of withdrawal has been submitted pursuant to Clause 22 shall not be opened.

23.3 Bid opening shall be carried out in two stages. Firstly, the envelopes containing "Technical Bid" shall be opened. The amount, form, and validity of the Bid security furnished with each bid will be announced. If the bid security furnished does not conform to the amount and validity period as specified in the Invitation for Bid (ref. Column 4 and paragraph 3), and has not been furnished in the form specified in Clause 16, the remaining technical bid and the sealed financial bid will be returned to the bidder.

"Financial Bids" of those bidders whose technical bids have been determined to be responsive and on evaluation fulfills the qualification criteria shall be opened on a subsequent date, which will be notified to such bidders.

23.4 The minutes of the Bid opening, including the information disclosed to those present in accordance with Clause 23.1, shall be prepared.

### **Evaluation Process**

23.5 A Bid Evaluation Committee (BEC) shall evaluate the responses of the

bidders. The decision of the BEC in the evaluation of responses to the tender document shall be final.

23.2 No correspondence shall be entertained outside the process of negotiation/discussion with the BEC.

23.3 The BEC may, at its sole discretion, ask for meetings with the Bidders to seek clarifications on their proposals and may visit bidder's site to validate the credentials/citations claimed by the bidder.

23.4 The BEC reserves the right to reject any or all proposals on the basis of any deviations.

23.5 Each of the responses shall be evaluated as per the criteria and requirements specified in this tender document. Inability to submit requisite supporting documents / documentary evidence, may lead to rejection.

#### **Evaluation of Pre-Qualification Proposal**

23.6 Procuring entity shall open "tender document fee and Earnest Money Deposit (EMD)". If the contents are as per requirements of the tender document and responsive to all the conditions set out in the RfP document then the bidder shall be deemed to have qualified the pre-qualification stage. Each of the Pre-Qualification condition mentioned in Section 4.5.3 of the tender document is mandatory. In case the bidder does not meet any condition, the bidder will be disqualified.

23.7 Response to the Pre-Qualification Requirements shall be evaluated in accordance with the requirements specified in this tender document and in the manner prescribed in Section 4.5.3 of the tender document.

#### **Evaluation of Technical Proposal**

The evaluation of the Technical Proposals will be carried out in the following manner:

23.8 Procuring entity will review the technical bids of the pre-qualified bidders only. Bids that are not substantially responsive are liable to be disqualified at procuring entity's discretion. Conditional Proposals shall be rejected outrightly.

23.9 Bidder's technical solutions proposed in the bid document will be evaluated as per the requirements and guidelines specified in the Annexures and technical evaluation criteria as mentioned in the tender document.

23.10 Bidders shall make the technical presentation and showcase proposed products/solutions to procuring entity as per the agenda mentioned in the tender document.

23.11 Each Technical Proposal shall be assigned a technical score out of a

maximum of 100 points (Refer Section 23.18 of the tender document). In order to qualify for the consideration of financial proposal, the Bidder must get equal to or more than overall technical score of 70 (Seventy) points.

23.12 The bidders are required to submit all required documents in support of the evaluation criteria specified (e.g. detailed project citations and copy of work order/completion certificate, client contact information for verification, and all other components) as required for technical evaluation.

23.13 At any time during the bid evaluation process, BEC may, at its discretion seek written clarifications from the bidders.

23.14 Procuring entity reserves the right to undertake a reference check of the past experience stated by the bidder. Any feedback received during the reference check shall be taken into account during the technical evaluation process.

23.15 The Financial Proposals of bidders who do not qualify technically shall be kept unopened.

23.16 Procuring entity reserves the right to accept or reject any or all bids without giving any reasons thereof.

23.17 Procuring entity shall inform to the technically shortlisted Bidders about the date and venue of the opening of the financial proposals.

### 23.18 Technical Evaluation Criteria

Sl. No.	Evaluation Criteria	Max Marks	Supporting Documents
<b>1</b>	<b>ORGANISATIONAL STRENGTH</b>	<b>20</b>	
1.1	Financial Capability – Annual Turnover – The lead bidder or the sole bidder should have an average annual turnover for the period FY 2014-2015, 2015-2016, 2016-17, 2017-18 and 2018-2019 of at least 30% of the Contract Value.	10	As documentary proof, attested copy of the Audited Balance Sheet is to be submitted. The Bidder also has to provide the CA certificate specifying the same.
1.2	Certification: <ul style="list-style-type: none"> <li>▪ISO 9001:2000 for quality management</li> <li>▪ISO 35.020 for IT General Aspects including equipment.</li> <li>▪ISO 35:080 for Software Including software development, documentation and use of Internet applications</li> </ul> Any 1 Certification = 4 Marks Any 2 Certification = 8 Marks All Certification = 10 Marks	10	Copies of the valid ISO Certificates to be attached

Sl. No.	Evaluation Criteria	Max Marks	Supporting Documents
<b>2</b>	<b>RELEVANT PAST EXPERIENCE</b>	<b>50</b>	
2.1	Supply, Installation, Testing & Commissioning of SCADA Master Control Stations, Local Controls, Sub-Local PLC Panels during last 05 Financial Years (completed works). <ul style="list-style-type: none"> <li>• 02 Complete System = 5 Marks</li> <li>• 03 Complete Systems = 10 Marks</li> <li>• 04 Complete Systems = 15 Marks</li> <li>• 05 Complete Systems = 20 Marks</li> </ul>	20	Copies of contract, work order, client certificates, etc.
2.2	Installation / Erection / Construction and Commissioning of Civil & E/M works year during last 05 Financial Years. (completed works) <ul style="list-style-type: none"> <li>• Rs. 8 Cr. (CV) = 10 Marks</li> <li>• Rs. 12 Cr. (CV) = 15 Marks</li> <li>• Rs.15 Cr. (CV) = 20 Marks</li> <li>• Rs.20 Cr. (CV) = 30 Marks</li> </ul>	30	Copies of contract, work order, client certificates, etc. These may be supported by a self-declaration stating the trainings provided and a brief outline content thereof.
<b>3</b>	<b>APPROACH &amp; METHODOLOGY</b>	<b>20</b>	<b>Understanding of the Solution as per the RFP and Functional architecture of the components proposed.</b>
3.1	Detailed Approach	5	Proposal submitted
3.2	Work Plan	5	Proposal submitted
3.3	Training Plan	5	Training plan submitted
3.4	Innovative Ideas in project execution	5	Documentation submitted
<b>4</b>	<b>TECHNICAL PRESENTATION</b>	<b>10</b>	
4.1	Technical Presentation shall cover: Plan for implementation of SCADA system, Content Software Presentation, Training & Hand hold Support Plan, O&M approach.	10	KSCL appointed panel (BEC) will evaluate the presentations.
<b>Total</b>		<b>100</b>	

# Bidder(s) will be called for the demonstration of the proposed system at KSCL.

# Marks shall be evaluated both the bidder for each and every criteria except financial capabilities.

# 50% minimum score to be eligible for financial bid opening.

### 23.19 Eligible Goods and Services, and OEM Criteria

- i. The Bidder should be authorized by OEM for IT and non- IT equipment (in respect of each product and its services) to quote against this tender. The
- ii. MAF (Manufacturer's/ OEM Authorization Form) should be submitted by the lead Bidder, in case of a consortium.
- iii. The bidder shall bear all the statutory levies like customs, insurance, freight, etc. applicable on the goods during their shipment from

- respective manufacturing/shipment site of the OEM to the port of landing.
- iv. All charges including transportation charges that may be applicable till the goods are delivered at the respective site of installation shall also be borne by the bidder.
  - v. The bidder should take a specific insurance policy from a Third party for the Project providing insurance coverage against loss of or damage to etc.
  - vi. The Bidder shall quote only one specific make and model from only one specific OEM, for each of the goods. Providing more than one option shall not be allowed and considered non-responsive. All goods quoted by the Bidder must be associated with item code and names and with printed literature describing configuration and functionality. Any deviation from the printed specifications should be clearly mentioned in the offer document by the Bidder.
  - vii. The OEM for each products or technology quoted should be in the business of that product or solution or technology for at least 3 (Three) years as on the date of release of the RFP.
  - viii. All the OEMs should have authorized presence in India either directly or through channel partner(s) as on the date of release of RFP.
  - ix. The OEM for all active components should give a declaration that products or technology quoted are neither end-of-sale nor end-of-life as on the date of installation and commissioning and are not end-of-support till the successful completion of O&M period of the project.
  - x. The bidder's proposed OEM should not have been blacklisted by any State /Central Government Department or Central /State PSUs as on bid submission date.
  - xi. Adequate supporting documents pertaining to the above points, along with a summary compliance table, should be submitted in the proposal by the Bidder.

## **24 Process to Be Confidential**

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

## **25 Clarification of Bids**

- 25.1 To assist in the examination, evaluation, and comparison of Bids, the Employer may, at his discretion, ask any Bidder for clarification of his Bid, including breakdowns of the unit rates. The request for clarification and the response shall be in writing or by cable, but no change in the price or substance of the Bid shall be sought, offered, or permitted except as

required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Bids in accordance with Clause 28.

25.2 Subject to sub-clause 25.1, no Bidder shall contact the Employer on any matter relating to its bid from the time of the bid opening to the time the contract is awarded. If the Bidder wishes to bring additional information to the notice of the Employer, it should do so in writing.

25.3 Any effort by the Bidder to influence the Employer in the Employer's bid evaluation, bid comparison or contract award decisions may result in the rejection of the Bidders' bid.

## **26 Examination of Bids and Determination of Responsiveness**

26.1 Prior to the detailed evaluation of Bids, the Employer will determine whether each Bid (a) meets the eligibility criteria defined in Clause 3; (b) has been properly signed; (c) is accompanied by the required securities and; (d) is substantially responsive to the requirements of the Bidding documents.

26.2 A substantially responsive Bid is one which conforms to all the terms, conditions, and specifications of the Bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the Bidding documents, the Employer's rights or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive Bids.

26.3 If a Bid is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.

## **27 Correction of Errors**

27.1 "Financial Bids", determined to be substantially responsive will be checked by the Employer as follows:

a) Where there is a discrepancy between the rates in figures and in words, the rate in words will govern; and

b) Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern.

27.2 The amount stated in the "Financial Bid" will be corrected by the Employer in accordance with the above procedure and the bid amount adjusted with the concurrence of the Bidder in the following manner:

a) If the Bid prices increases as a result of this correction, the amount

as stated in the bid will be the 'bid price' and the increase will be treated as rebate;

b) If the Bid price decreases as a result of this correction, the decreased amount as stated in the bid will be the 'bid price'.

27.3 Such adjusted bid price shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount the Bid will be rejected, and the Bid security may be forfeited in accordance with Sub-Clause 2.11.3).

## **28 Evaluation and Comparison of Bids**

The cost indicated in the Financial Proposal shall be deemed as final and reflecting the total cost of services and should be stated in INR only. Omissions, if any, in costing of any item shall not entitle the bidder to be compensated and the liability to fulfil its obligations as per the Terms of Reference within the total quoted price shall be that of the Bidder. The Bidder shall bear all taxes, duties, fees, levies and other charges imposed under the Law as applicable. The lowest Financial Proposal ( $F_M$ ) will be given a financial score ( $F_S$ ) of 100 points.

Financial Proposals will be determined using the following formula:

$$F_S = (F_M/F) * 100$$

**F<sub>S</sub>**: Financial Score

**F<sub>M</sub>**: Lowest Financial Proposal

**F**: Financial Bid of Bidder under consideration

Proposals will be finally being ranked in accordance with their combined Technical Score ( $T_S$ ) and Financial Score ( $F_S$ ):

$$B_S = T_S * 0.70 + F_S * 0.30$$

**B<sub>S</sub>**: Bid Score

**T<sub>S</sub>**: Technical Score

**F<sub>S</sub>**: Financial Score

## **F. Award of Contract**

### **29 Award Criteria**

33.1 Bidder achieving the highest combined technical and financial score will be declared as the successful bidder and will be issued the Letter of Intent (Lol).

33.2. If there is more than one bidder achieving (combined technical and financial score) the equal score, procuring entity reserves the right to select the Bidder(s) and that will be binding on all bidders.

### **30 Employer's Right to accept any Bid and to reject any or all Bids**

30.1 Notwithstanding Clause 31, the Employer reserves the right to accept or reject any Bid, and to cancel the Bidding process and reject all Bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Employer's action.

### **31 Notification of Award and Signing of Agreement**

31.1 The Bidder whose Bid has been accepted will be notified of the award by the Employer prior to expiration of the Bid validity period by cable, telex or facsimile confirmed by registered letter. This letter (hereinafter and in the *Conditions of Contract* called the "Letter of Acceptance") will state the sum that the Employer will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").

31.2 The notification of award will constitute the formation of the Contract, subject only to the furnishing of a performance security in accordance with the provisions of Clause 32.

31.3 The Agreement will incorporate all agreements between the Employer and the successful Bidder. It will be kept ready for signature of the successful bidder in the office of employer within 7 days following the notification of award along with the Letter of Acceptance.

31.4 Upon the furnishing by the successful Bidder of the Performance Security, the Employer will promptly notify the other Bidders that their Bids have been unsuccessful.

### **32 Performance Security**

32.1 Within 7 days of receipt of the Letter of Acceptance, the successful Bidder shall deliver to the Employer a Performance Security in any of the forms given below for an amount equivalent to **10%** of the Contract price plus additional security for unbalanced Bids in accordance with Clause 28.5 of ITB and Clause 47 of Conditions of Contract:

- A bank guarantee in the form given in Section 7; or
- TDR / FDR pledged in favour of the Employer payable at Kanpur.

32.2 The additional performance security for unbalanced Bids shall be **20%** of the difference of cost of the unbalanced items rounding off to the nearest thousand.

32.3 If the performance security is provided by the successful Bidder in the form of a Bank Guarantee or fixed deposit Receipts,, it shall be issued at the Bidder's option, by a Nationalized/Scheduled Indian bank located in

India and acceptable to the Employer.

32.4 Failure of the successful bidder to comply with the requirements of sub-clause 32.1 shall constitute a breach of contract, cause for annulment of the award, forfeiture of the bid security and any such other remedy the Employer may take under the contract, and the Employer shall resort to awarding the contract to the next ranked bidder.

### **33 Advance Payments and Security**

The mobilization advance can be maximum of 10% of the contract price, subject to a Bank Guarantee of 110% of the advance amount claimed.

### **34 Adjudicator**

34.1 The Employer may propose to appoint Adjudicator under the Contract, at a daily retainer fee to be announced plus daily allowances and reimbursable expenses. The Bidder shall bear part or full expenses for the adjudicator in case of a dispute requiring the appointment of the adjudicator.

### **35 Fraud and Corruption:**

35.1 It is the Employer's policy to require that bidders, suppliers, contractors and their agents (whether declared or not), sub-contractors, sub-consultants, service providers or suppliers, and any personnel thereof, observe the highest standard of ethics during the procurement and execution of contracts. In pursuance of this policy, the Employer:

- (a) Defines, for the purposes of this provision, the terms set forth below as follows:
  - (i) "Corrupt practice" is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
  - (ii) "Fraudulent practice" is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
  - (iii) "Collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party;
  - (iv) "Coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
  - (v) "Obstructive practice" is deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede an

investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation,

(vi) The Employer shall reject a proposal for award if it determines that the bidder recommended for award, or any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for the contract in question.

(vii) The Employer shall sanction a firm or individual, at any time, by publicly declaring such firm or individual ineligible, either indefinitely or for a stated period of time: (i) to be awarded contract; and (ii) to be a nominated<sup>7</sup> sub-contractor, consultant, supplier or services provider of an otherwise eligible firm being awarded contract;

35.2 Furthermore, Bidders shall be aware of the provision stated in sub-clause 28.2 and sub clause 57 of the Conditions of Contract.

**SECTION 2:**  
**FORMS OF BID, QUALIFICATION INFORMATION**  
**AND LETTER OF ACCEPTANCE**

**Table of Forms:**

- **CONTRACTOR'S BID**
- **QUALIFICATION INFORMATION**
- **LETTER OF ACCEPTANCE**
- **NOTICE TO PROCEED WITH THE WORK**
- **AGREEMENT FORM**

## Contractor's Bid

**Description of the Works:** \_\_\_\_\_

\_\_\_\_\_

To,

The Chief Executive Officer,  
Kanpur Smart City Limited,  
Kanpur.

Dear Sir,

Having examined the bidding documents including addendum, we offer to execute the Works described above in accordance with the Conditions of Contract, Specifications, and Drawings accompanying this Bid.

This Bid and your written acceptance of it shall constitute a binding contract between us. We understand that you are not bound to accept the lowest or any Bid you receive.

We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

We also undertake that, in competing for (and, if the award is made to us, in executing) the above contract, we will strictly observe the laws against fraud and corruption in force in India namely "Prevention of Corruption Act 1988".

We undertake, if our tender is accepted, to commence the Works as soon as is reasonably possible after the receipt of notice to commence, and to complete the whole of the Works comprised in the Contract within the time stated in the Appendix to Conditions of Contract.

We agree to abide by this tender, and it shall remain binding upon us.

We hereby confirm that this Bid complies with the Eligibility, Bid Validity and Bid Security required by the Bidding documents.

We understand that you are not bound to accept the lowest or any tender you may receive.

Yours faithfully,

Authorized Signature:

Name & Title of  
Signatory:

**Full Name of Bidder: (In Capitals only)** \_\_\_\_\_

Address:

## Qualification Information

The information to be filled in by the Bidder in the following pages will be used for purposes of post qualification as provided for in Clause 4 of the Instructions to Bidders. This information will not be incorporated in the Contract.

### 1. For Individual Bidders

#### 1.1 Constitution or legal status of Bidder **[Attach copy]**

Place of registration: \_\_\_\_\_

Principal place of business: \_\_\_\_\_

Power of attorney of signatory of Bid **[Attach]**

#### 1.2 Total value of SCADA SITC, Civil Engineering construction work, E & M works executed in Water supply / Sewerage Sectors and payments received in the last five years\*\* (*Attach certificates from Engineer-in-charge not below the rank of Executive Engineer*)

2014-2015	
2015-2016	
2016- 2017	
2017- 2018	
2018-2019	

#### 1.3.1 Work performed as prime contractor (in the same name) on works of a similar nature over the last five years i.e. 2014-2015 to 2018-2019

Name of Work	Name of Employer*	Description of Work	Contract No.	Value of Contract (Rs in Lakhs)	Date of Issue of Work Order	Stipulated period of Completion	Actual Date of Completion	Remark

(Use separate sheet using landscape orientation)

**1.3.2** Quantities of work executed as prime contractor (in the same name and style) in the last five years: \*\*

\* Attach certificate(s) from the Engineer(s)-in-Charge

@The item of work for which data is requested should tally with that specified in ITB clause 4.4A(c).

\*\* Immediately preceding the financial year in which bids are received.

**1.4** Information on Bid Capacity (works for which bids have been submitted and works which are yet to be completed) as on the date of this bid.

**(A)** Existing commitments and on-going works:

Name of Work	Place	Contract No & Date	Name & Address of Employer	Value of Contract (Rs in L)	Stipulated period of completion	Value of works remaining to be completed * (Rs in L)	Anticipated Date of completion

\* Attach certificate(s) from the Engineer(s)-in-Charge.

(Use separate sheet in landscape orientation)

**(B)** Works for which bids already submitted:

Name of work	Place	Name & Address of Employer	Estimated Value of Works (Rs in L)	Stipulated period of completion	Date when decision is expected	Remarks, if any

(Use separate sheet in landscape orientation)

**1.5** The following items of Contractor's Equipment are essential for carrying out the Works. The Bidder should list all the information requested below.

Refer also to Sub Clause 4.3 (e) of the Instructions to Bidders.

Sl. No.	Equipment Type and Characteristics	Minimum Capacity	Max. Age of Equipment (years)	Minimum Number Required
1	Loader cum excavator type JCB / Proclainer	1 cum bucket size	5	1
2	Water tanker	6 KL	5	1
3	Generator	125 KVA	5	1
4	Leveling Instrument		5	1
5	Water spraying Pumps for curing, cleaning etc.			1
6	Weigh Batching Type Mobile Concrete Mix Batching Plant			1
7	Special Tools and Tackles as required for fixing of various Instruments, analyzers, E/M equipment. <b>(Hilti or Equivalent)</b>		10	5 SETS

- 1.6** Qualifications and experience of key personnel proposed for administration and execution of the Contract. Attach biographical data. Refer also to Sub Clause 4.4 (D) of instructions to Bidders and Sub Clause 9.1 of the Conditions of Contract.
- 1.7** Financial reports for the last five years: balance sheets, profit and loss statements, auditors' reports (in case of contracts worth more than Rs 50.00 Lakhs), etc. and for contracts worth less than Rs 50.00 Lakhs, Financial reports for last three years. List them below and attach copies. *(Not mandatory for works up to Rs 10 Lakhs)*
- 1.8** Evidence of access to financial resources to meet the qualification requirements: cash in hand, lines of credit, etc. List them below and attach copies of support documents *[sample format attached]*.
- 1.9.** Name, address, and telephone, telex, and fax numbers of the Bidders' bankers who may provide references if contacted by the Employer.
- 1.10** Statement of compliance under the requirements of Sub Clause 3.2 of the instructions to Bidders.
- 
- 
- 1.11** Proposed work method and schedule. The Bidder should attach descriptions, drawings and charts as necessary to comply with the requirements of the Bidding documents. [Refer ITB Clause 4.1 and 4.3 (k)].

**SAMPLE FORMAT FOR EVIDENCE OF ACCESS TO OR AVAILABILITY OF CREDIT  
FACILITIES –\* CLAUSE 4.5 [B] [c] OF ITB**

BANK CERTIFICATE

This is to certify that M/s. .... is a reputed company with a good financial standing.

If the contract for the work is awarded to the above firm, we shall be able to provide overdraft/credit facilities to the extent of Rs. .... to meet their working capital requirements for executing the above contract.

Name of Bank

Senior Bank Manager

Address of the Bank

**LETTER OF ACCEPTANCE**  
(Letterhead of the Employer)

[date]

To:

---

[name and address of the Contractor]

Dear Sirs,

This is to notify you that your Bid dated \_\_\_\_\_ for execution of  
the \_\_\_\_\_  
[name of the contract and identification number, as given in the Instructions to  
Bidders] for the Contract Price of Rupees \_\_\_\_\_  
(\_) [amount in words and figures], as corrected and modified in accordance  
with the Instructions to Bidders<sup>1</sup> is hereby accepted by our Agency.

You are hereby requested to furnish Performance Security, plus additional  
security for unbalanced bids in terms of ITB clause 28.5, in the form detailed in  
Para 32.1 of ITB for an amount of Rs. \_\_\_\_\_ within 7 days of the receipt of  
this letter of acceptance valid up to 28 days from the date of expiry of Defects  
Liability Period i.e. up to .....and sign the contract, failing which action as  
stated in Para 32.4 of ITB will be taken.

Yours faithfully,

Authorized Signature

Name and Title of Signatory

Name of Agency

**ISSUE OF NOTICE TO PROCEED WITH THE WORK**

(Letterhead of the Employer)

To

\_\_\_\_\_ (name and address of the Contractor)

\_\_\_\_\_

\_\_\_\_\_

Dear Sirs:

Pursuant to your furnishing the requisite security as stipulated in ITB clause 32 and signing of the contract agreement for the construction of @ a Bid Price of Rs. \_\_\_\_\_

\_, you are hereby instructed to proceed with the execution of the said works in accordance with the contract documents.

Yours faithfully,

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

Day of \_\_\_\_\_ 2019,

## Agreement Form

This agreement made the \_\_\_\_\_ day of \_\_\_\_\_ 2019, between [name and address of Employer] (Hereinafter called "the Employer)" of the one part and [name and address of Contractor] (Hereinafter called "the Contractor") of the other part.

Whereas the Employer is desirous that the Contractor execute the [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 contract price of Rs.....

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement, words and expression shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to, and they shall be deemed to form and be read and construed as part of this Agreement.

2. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all aspects with the provisions of the Contract.

3. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying the defects wherein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

4. The following documents shall be deemed to form and be read and construed as part of this

Agreement, viz.:

i) Letter of acceptance;

ii) Notice to proceed with the works;

iii) Contractor's Bid;

iv) Contract Data;

v) Conditions of contract (including Special Conditions of Contract);

vi) Specifications;

vii) Drawings; and

viii) Any other document listed in the Contract Data as forming part of the contract. In witness whereof the parties thereto 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 \_\_\_\_\_

## **SECTION 3: CONDITIONS OF CONTRACT**

## Conditions of Contract

### A. General

#### 1. Definitions

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

**Bill of Quantities** means the priced and completed **Bill of Quantities** forming part of the Bid.

**Compensation Events** are those defined in Clause 44 hereunder.

The **Completion Date** is the date of completion of the Works as certified by the Engineer in accordance with Sub Clause 55.1.

The **Contract** is the contract between the Employer and the Contractor to execute, complete and maintain the Works. It consists of the documents listed in Clause 2.3 below.

The **Contract Data** defines the documents and other information which comprise the Contract.

The **Contractor** is a person or corporate body whose Bid to carry out the Works has been accepted by the Employer.

The **Contractor's Bid** is the completed Bidding document submitted by the Contractor to the Employer.

The **Contract Price** is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.

**Days** are calendar days; **months** are calendar months.

A **Defect** is any part of the Works not completed in accordance with the Contract.

The **Defects Liability Period** is the period named in the Contract Data and calculated from the Completion Date.

The **Employer** is the party who will employ the Contractor to carry out the Works.

The **KSCL Engineer** is the person named in the Contract Data (or any other competent person appointed and notified to the contractor to act in replacement of the Engineer) who is responsible for supervising the execution of the works and administering the Contract.

**Equipment** is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

The **Initial Contract Price** is the Contract Price listed in the Employer's Letter of Acceptance.

The **Intended Completion Date** is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the KSCL Engineer by issuing an extension of time.

**Materials** are all supplies, including consumables, used by the contractor for incorporation in the Works.

**Plant** is any integral part of the Works which is to have a mechanical, electrical, electronic or chemical or biological function.

The **Site** is the area defined as such in the Contract Data.

**Site Investigation Reports** are those which were included in the Bidding documents and are factual interpretative reports about the surface and sub-surface conditions at the site.

**Specification** means the Specification of the Works included in the Contract and any modification or addition made or approved by the KSCL Engineer.

The **Start Date** is given in the Contract Data. It is the date when the Contractor shall commence execution of the works. It does not necessarily coincide with any of the Site Possession Dates.

A **Subcontractor** is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract which includes work on the Site.

**Temporary Works** are works designed, constructed, installed, and removed by the Contractor which are needed for construction or installation of the Works.

A **Variation** is an instruction given by the KSCL Engineer which varies the Works.

The **Works** are what the Contract requires the Contractor to construct, install, and turn over to the Employer, as defined in the Contract Data.

## 2. Interpretation

2.1 In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The KSCL Engineer will provide instructions clarifying queries about the Conditions of Contract.

2.2 If sectional completion is specified in the Contract Data, references in the Conditions of Contract to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion date for the whole of the Works).

2.3 The documents forming the Contract shall be interpreted in the following order of priority:

- (1) Agreement
- (2) Letter of Acceptance, notice to proceed with the works
- (3) Contractor's Bid
- (4) Contract Data
- (5) Conditions of Contract including Special Conditions of Contract
- (6) Specifications
- (7) Drawings and
- (8) Any other document listed in the Contract Data as forming part of the Contract.

### **3. Language and Law**

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

### **4. Engineer's Decisions**

4.1 Except where otherwise specifically stated, the KSCL Engineer will decide contractual matters between the Employer and the Contractor in the role representing the Employer.

### **5. Delegation**

5.1 The KSCL Engineer may delegate any of his duties and responsibilities to other people except to the Adjudicator after notifying the Contractor and may cancel any delegation after notifying the Contractor.

### **6. Communications**

6.1 Communications between parties which are referred to in the conditions are effective only when in writing. A notice shall be effective only when it is delivered (in terms of Indian Contract Act).

### **7. Subcontracting**

7.1 The Contractor may subcontract with the approval of the KSCL Engineer but may not assign the Contract without the approval of the Employer in writing. Subcontracting does not alter the Contractor's obligations.

### **8. Other Contractors**

8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Employer between the dates given in the Schedule of Other Contractors. The Contractor shall as referred to in the Contract Data, also provide facilities and services for them as described in the Schedule. The employer may modify the schedule of other contractors and shall notify the contractor of any such modification.

### **9. Personnel**

9.1 The Contractor shall employ the key personnel named in the Schedule of Key Personnel as referred to in the Contract Data to

carry out the functions stated in the Schedule or other personnel approved by the KSCL Engineer. The KSCL Engineer will approve any proposed replacement of key personnel only if their qualifications, abilities, and relevant experience are substantially equal to or better than those of the personnel listed in the Schedule.

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

## **10. Employer's and Contractor's Risks**

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

## **11. Employer's Risks**

11.1 The Employer is responsible for the excepted risks which are (a) in so far as they directly affect the execution of the Works in the Employer's country, the risks of war, hostilities, invasion, act of foreign enemies, rebellion, revolution, insurrection or military or usurped power, civil war, riot commotion or disorder (unless restricted to the Contractor's employees), and contamination from any nuclear fuel or nuclear waste or radioactive toxic explosive, or (b) a cause due solely to the design of the Works, other than the Contractor's design.

## **12. Contractor's Risks**

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

## **13. Insurance**

13.1 The Contractor at his cost shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the date of completion, in the amounts and deductibles stated in the Contract Data for the following events which are due to the Contractor's risks:

- a) loss of or damage to the Works, Plant and Materials;
  - b) loss of or damage to Equipment;
  - c) loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract;
- and
- d) Personal injury or death.

13.2 Insurance policies and certificates for insurance shall be delivered by the Contractor to the Engineer for the Engineer's approval before the completion date/ Start Date. All such insurance shall provide for compensation to be payable in Indian Rupees to rectify the loss or damage incurred.

13.3 (a) The Contractor at his cost shall also provide, in the joint names of the Employer and the Contractor, insurance cover from the date of completion to the end of defect liability period, in the amounts and deductibles stated in the Contract Data for the following events which are due to the Contractor's risks: (a) Personal injury or death.

13.4 (b) Insurance policies and certificates for insurance shall be delivered by the Contractor to the Engineer for the Engineer's approval before the completion date/ start date. All such insurance shall provide for compensation to be payable in Indian Rupees.

13.5 Alterations to the terms of insurance shall not be made without the approval of the Engineer.

13.6 Both parties shall comply with any conditions of the insurance policies.

13.7 The bidder shall have a suitable insurance to cover all the risks that are likely to occur from the scope of works and services indicated in this project. The insurance shall cover KSCL, KSCL's Project Management Consultant staff, Users etc. Risks may include but are not limited to a) accidents b) Mal function of equipment/or machines c) casualties d) Safety e) Theft etc.

#### **14. Site Investigation Reports**

14.1 The Contractor, in preparing the Bid, shall rely on any site Investigation Reports referred to in the Contract Data, supplemented by any information available to the Bidder.

#### **15. Queries about the Contract Data**

15.1 The KSCL Engineer will clarify queries on the Contract Data.

## **16. Contractor to Construct the Works**

16.1 The Contractor shall construct and install the Works in accordance with the Specification and Drawings, and as per instructions of KSCL Engineer.

## **17. The Works to Be Completed by the Intended Completion Date**

17.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the program submitted by the Contractor, as updated with the approval of the KSCL Engineer, and complete them by the Intended Completion Date.

## **18. Approval by the Engineer**

18.1 The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the KSCL Engineer, who is to approve them if they comply with the Specifications and Drawings.

18.2 The Contractor shall be responsible for design of Temporary Works.

18.3 The KSCL Engineer's approval shall not alter the Contractor's responsibility for design of the Temporary Works.

18.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works where required.

18.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the KSCL Engineer before their use.

## **19. Safety**

19.1 The Contractor shall be responsible for the safety of all activities on the Site.

## **20. Discoveries**

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

## **21. Possession of the Site**

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

## **22. Access to the Site**

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

## **23. Instructions**

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

## **B. Time Control**

### **24. Program**

24.1 Within the time stated in the Contract Data the Contractor shall submit to the KSCL Engineer for approval a Program including Environmental Management Plan showing the general methods, arrangements, order, and timing for all the activities in the Works along with monthly cash flow forecast.

24.2 An update of the Program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work including any changes to the sequence of the activities.

24.3 The Contractor shall submit to the KSCL Engineer, for approval, an updated Program at intervals no longer than the period stated in the Contract Data. If the Contractor does not submit an updated Program within this period, the KSCL 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 Program has been submitted.

24.4 The KSCL Engineer's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the KSCL Engineer again at any time. A revised Program is to show the effect of Variations and Compensation Events.

## **25. Extension of the Intended Completion Date**

- 25.1 The KSCL Engineer in consultation with the Employer shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work and which would cause the Contractor to incur additional cost.
- 25.2 The KSCL Engineer in consultation with the Employer shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the KSCL Engineer for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.

## **26. Delays Ordered by the Engineer**

- 26.1 The KSCL Engineer may instruct the Contractor to delay the start or progress of any activity within the Works.

## **27. Management Meetings**

- 27.1 Either the KSCL Engineer or the Contractor may require the other to attend a management meeting. The business of a management meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with the early warning procedure.
- 27.2 The KSCL Engineer shall record the business of management meetings and is to provide copies of his record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken is to be decided by the KSCL Engineer either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.

## **28. Early Warning**

- 28.1 The Contractor is to warn the Engineer at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price or delay the execution of works. The KSCL Engineer may require the Contractor to provide an estimate of the expected effect of the

future event or circumstance on the Contract Price and Completion Date. The estimate is to be provided by the Contractor as soon as reasonably possible.

28.2 The Contractor shall cooperate with the KSCL Engineer in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the KSCL Engineer.

### **C. Quality Control**

#### **29. Identifying Defects**

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

29.2 The contractor shall permit the Employer's Technical auditor to check the contractor's work and notify the KSCL Engineer and Contractor of any defects that are found. Such a check shall not affect the Contractor's or the KSCL Engineer's responsibility as defined in the Contract Agreement.

#### **30. Tests**

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

#### **31. Correction of Defects**

31.1 The KSCL Engineer shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion and is defined in the Contract Data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.

31.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the KSCL Engineer's notice.

### **32. Uncorrected Defects**

32.1 If the Contractor has not corrected a Defect within the time specified in the KSCL Engineer's notice, the KSCL Engineer will assess the cost of having the Defect corrected, and the Contractor will pay this amount.

*Note: Where in certain cases, the technical specifications provide for acceptance of works within specified tolerance limits at reduced rates, KSCL Engineer will certify payments to Contractor accordingly.*

### **33. Bill of Quantities**

33.1 Attached in Section – 5 of this Document.

## **D Cost Control**

### **34. Changes in the Quantities**

34.1 If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than 25 percent, provided the change exceeds 1% of Initial Contract Price, the KSCL Engineer in consultation with the Employer shall adjust the rate to allow for the change.

34.2 Unless the Contractor and the Employer along with KSCL Engineer agree to the contrary the total value of all Change of Scope orders shall not exceed 10 (ten) per cent of the Contract Price.

34.3 If requested by the KSCL Engineer, the Contractor shall provide the KSCL Engineer with a detailed cost breakdown of any rate in the Bill of Quantities.

### **35. Variations**

35.1 All Variations shall be included in updated Programs produced by the Contractor.

### **36. Payments for Variations**

36.1 The Contractor shall provide the KSCL Engineer with a quotation (with breakdown of unit rates) for carrying out the Variation when requested to do so by the KSCL Engineer. The KSCL Engineer shall assess the quotation, which shall be given within seven days of the request or within any longer period stated by the KSCL Engineer/Employer and before the Variation is ordered.

36.2 If the work in the Variation corresponds with an item description in the Bill of Quantities and if, in the opinion of the KSCL Engineer/Employer, the quantity of work above the limit stated in Sub Clause 38.1 or the timing of its execution do not cause the cost

per unit of quantity to change, the rate in the bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in form of new rates for the relevant items of work.

36.3 If the Contractor's quotation is unreasonable (or if the contractor fails to provide the KSCL Engineer with a quotation within a reasonable time specified by the KSCL Engineer in accordance with Clause 40.1), the KSCL Engineer may order the Variation and make a change to the Contract Price which shall be based on KSCL Engineer's own forecast in consultation with the Employer of the effects of the Variation on the Contractor's costs.

36.4 If the KSCL Engineer decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.

36.5 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning.

**37. Cash flow forecasts**

37.1 When the Program is updated, the contractor is to provide the KSCL Engineer with an updated cash flow forecast.

**38. Milestone Schedule & Payment Certificates**

**MILESTONE SCHEDULE**

Sl. No.	Milestone Works Description	Tenure & Targets
1	<ul style="list-style-type: none"> <li>a) Overhauling and repairing of existing PLC panels at WTP-1, WTP-2 and WTP-3 at Ganga Barrage. (Instrument, Electrical &amp; Civil Works).</li> <li>b) Installation of new flow meters, level transmitters, actuators, analyzers and integration with existing Local Control Stations as per BOQ. (Instrument, Electrical Mechanical &amp; Civil Works)</li> <li>c) Installation of new Electrical Panels for 6.6KVA at WTP-1 &amp; WTP-2 Raw Water Pumping Station.</li> <li>d) Overhauling and automization of existing Chlorine and coagulant dosing systems. (Instrument, Electrical &amp; Civil Works)</li> </ul>	<p style="text-align: center;"><b>Physical Progress should be equal to Financial Equivalent of 30% of the Contract Value within 90 Days after Start date of Contract.</b></p> <p>Measurement Books (MB) for Civil Works and BOQ for Instrument/Electrical/Mech. Works.*            Completion certificates must be submitted for all the works mentioned in this milestone (Column 2) or as directed by Engineer-in-Charge so that the required physical progress is achieved as per this milestone.**</p>

Sl. No.	Milestone Works Description	Tenure & Targets
2	<p>a) Overhauling and repairing of existing Filter Beds at 200MLD WTP and 80MLD WTP at Benajhabar Water Works. (Instrument, Mechanical, Electrical &amp; Civil Works) as per BOQ.</p> <p>b) Installation of new flow meters, level transmitters, actuators, analyzers and setting up new PLC/HMI panels for each unit of the plant as per BOQ. (Instrument, Mechanical, Electrical &amp; Civil Works)</p> <p>c) Setting up new automatized Chlorine and coagulant dosing systems. (Instrument, Mechanical, Electrical &amp; Civil Works)</p> <p>d) Laying of 1000mm dia interconnecting Delivery Main within the plant at Benajhabar Water Works. (Civil Works) as per drawings.</p> <p>e) Setting up of new Local Control Station at existing Laboratory Building at Benajhabar Water Works with integration of all PLC/HMI panels in the plant.</p>	<p><b>Physical Progress should be equal to Financial Equivalent of 35% of the Contract Value within 180 Days after Start date of Contract.</b></p> <p>Work measurement shall be as per Measurement Books (MB) for Civil Works and BOQ for Instrument/Electrical/Mech. Works.* Completion certificates must be submitted for all the works mentioned in this milestone (Column 2) or as directed by Engineer-in-Charge so that the required physical progress is achieved as per this milestone.**</p>
3	<p>a) Installation of new flow meters, level transmitters, actuators, analyzers and setting up new PLC/HMI panels for Bhaironghat RWPS, RML-RWPS Armapur Estate, Zonal Pumping Stations at CW-17, CW-28, CW-29 and Integration of all the above PLC panels with the new LCS at Benajhabar water works as per BOQ. (Instrument, Mechanical, Electrical &amp; Civil Works).</p> <p>b) Construction of Inlet Channels / Outlet channel and Desilting Chamber at RML-RWPS near Armapur Estate as per BOQ / Drawings and direction of Engineer-in-Charge. (Mechanical, Electrical &amp; Civil Works).</p> <p>c) Setting up of New MCS at Jal Kal Office Building at Benajhabar and integration with LCS at Benajhabar water works and LCS at WTPs-1,2,3 near Ganga Barrage.</p> <p>d) Pressure Transmitters at various locations on feeder mains and integration with MCS. as per directions of Engineer-in-Charge.</p>	<p><b>Physical Progress should be equal to Financial Equivalent of 35% of the Contract Value within 270 Days after Start date of Contract.</b></p> <p>Work measurement shall be as per Measurement Books (MB).*</p> <p>Completion certificates must be submitted for all the works mentioned in this milestone (Column 2) or as directed by Engineer-in-Charge so that the required physical progress is achieved as per this milestone.**</p>

Sl. No.	Milestone Works Description	Tenure & Targets
4	At the End of defect liability period (1 Year) after complete Handover. Start Date of Defect Liability Period shall be after completion of all the works Specified in Milestones 1, 2 & 3 above.	<b>Half the Total Amount Retained in the monthly RA Bill Payments less adjustments, will be paid at the completion of works and Half at the end of satisfactory completion of Defect</b>

**\* Contractor shall submit the RA Bill of every month in the first week of succeeding month on actual work done along with certified Measurement Book (MB), Request for Inspection (RFI) and Test Reports, if any.**

**\* All Works must be prior approved and post approved by Jal Nigam (Kanpur), Jal Kal Vibhag, Nagar Nigam, Kanpur and KSCL Engineer-in-Charge.**

**\*\* Liquidity damages shall be levied for Delays beyond the Time Period Mentioned in Milestones.**

### **Payment Certificates**

38.1 The Contractor shall submit to the KSCL Engineer monthly statements of the estimated value of the work completed less the cumulative amount certified previously along with details of measurement of the quantity of works executed in Measurement Books as approved by the KSCL Engineer.

38.2 Deleted

38.3 The value of work executed shall be determined by the KSCL Engineer after due check measurement of the quantities claimed as executed by the contractor.

38.4 The value of work executed shall comprise the value of the quantities of the items in the Bill of Quantities completed.

38.5 The value of work executed shall include the valuation of Variations and Compensation Events.

38.6 The KSCL 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.

### **39. Payments**

39.1 Payments shall be adjusted for deductions for advance payments, retention, other recoveries in terms of the contract and taxes, at source, as applicable under the law. The Employer shall pay the Contractor the amounts certified by the KSCL Engineer within 28 days of the date of each certificate.

39.2 Deleted

39.3 Items of the Works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.

#### **40. Compensation Events**

40.1 The following are Compensation Events unless they are caused by the Contractor:

- (a) The Employer does not give access to a part of the Site by the Site Possession Date stated in the Contract Data.
- (b) The Employer modifies the schedule of other contractors in a way which affects the work of the contractor under the contract.
- (c) The KSCL Engineer orders a delay or does not issue drawings, specifications or instructions required for execution of works on time.
- (d) The KSCL Engineer instructs the Contractor to uncover or to carry out additional tests upon work which is then found to have no Defects.
- (e) The KSCL Engineer unreasonably does not approve for a subcontract to be let.
- (f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of Letter of Acceptance from the information issued to Bidders (including the Site Investigation Reports), from information available publicly and from a visual inspection of the Site.
- (g) The KSCL Engineer gives an instruction for dealing with an unforeseen condition, caused by the Employer, or additional work required for safety or other reasons.
- (h) Other contractors, public authorities, utilities or the Employer does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.
- (i) The advance payment is delayed.
- (j) The effect on the Contractor of any of the Employer's Risks.

(k) The KSCL Engineer unreasonably delays issuing a Certificate of Completion.

(l) Other Compensation Events listed in the Contract Data or mentioned in the Contract.

40.2 If a Compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Intended Completion Date shall be extended. The KSCL Engineer shall decide whether and by how much the Intended Completion Date shall be extended.

40.3 As soon as information demonstrating the effect of each Compensation Event upon the Contractor's forecast cost has been provided by the Contractor, it is to be assessed by the KSCL Engineer and the Intended Completion Date shall be extended accordingly. If the Contractor's forecast is deemed unreasonable, the KSCL Engineer shall adjust the Intended Completion Date based on KSCL Engineer's own forecast. The KSCL Engineer will assume that the Contractor will react competently and promptly to the event.

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

#### **41. Tax**

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

#### **42. Currencies**

42.1 All payments shall be made in Indian Rupees.

#### **43. Price Adjustment**

43.1 Contract price shall not be adjusted for increase or decrease in rates and price of labour, materials, fuels and lubricants during the tenure of the contract.

43.2 To the extent that full compensation for any rise or fall in costs to the contractor, 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.

#### **44. Retention**

- 44.1 The Employer shall retain from each monthly payment due to the Contractor the proportion stated in the Contract Data until Completion of the whole of the Works.
- 44.2 On Completion of the whole of the Works half the total amount retained is repaid to the Contractor and half when the Defects Liability Period has passed and the KSCL Engineer has certified that all Defects notified by the KSCL Engineer to the Contractor before the end of this period have been corrected.
- 44.3 On completion of the whole works, the contractor may substitute retention money (*balance half*) with an "on demand" Bank guarantee.

#### **45. Liquidated Damages**

- 45.1 The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the Contract Data for each day that the Completion Date is later than the Intended Completion Date (for the whole of the works or the milestone as stated in the contract data). The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages does not affect the Contractor's liabilities.
- 45.2 If the Intended Completion Date is extended after liquidated damages have been paid, the KSCL Engineer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall be paid interest on the overpayment calculated from the date of payment to the date of repayment at the rates specified in Sub Clause 43.1.

#### **46. Advance Payment**

- 46.1 The Employer shall make an interest bearing (@ PLR rate) Mobilization advance equal to 10 % of the contract value exclusive for mobilization expenses. The first instalment 5% shall be released 15 days after receiving and subject to receiving the Bank Guarantee of amount 10% of the requested amount:

- . The second instalment would be released after submission of receipt certificate by the Contractor for the first 5% advance already paid earlier.

46.4 **Secured Advance:** Deleted.

#### **47. Securities**

47.1 The Performance Security shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a bank or surety acceptable to the Employer, and denominated in Indian Rupees. The Performance Security shall be valid until a date 28 days from the date of expiry of Defects Liability Period and the additional security for unbalanced bids shall be valid until a date 28 days from the date of issue of the certificate of completion. The performance security of a joint venture shall be in the name of the joint venture.

#### **48. Cost of Repairs**

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

### **E Finishing the Contract**

#### **49. Completion**

49.1 The Contractor shall request the KSCL Engineer to issue a Certificate of Completion of the Works and the KSCL Engineer will do so upon deciding that the Work is completed.

#### **50. Taking Over**

50.1 The Employer shall take over the Site and the Works within seven days of the KSCL Engineer issuing a certificate of Completion.

#### **51. Final Account**

51.1 The Contractor shall supply to the KSCL Engineer a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The KSCL Engineer shall issue a Defect Liability Certificate and certify any final payment that is due to the Contractor within 56 days of receiving the Contractor's account if it is correct and complete. If it is not, the KSCL Engineer shall issue within 56 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is

still unsatisfactory after it has been resubmitted, the KSCL Engineer shall decide on the amount payable to the Contractor and issue a payment certificate, within 56 days of receiving the Contractor's revised account.

## **52. Operating and Maintenance Manuals**

52.1 If "as built" Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the Contract Data.

52.2 If the Contractor does not supply the Drawings and/or manuals by the dates stated in the Contract Data, or they do not receive the KSCL Engineer's approval, the KSCL Engineer shall withhold the amount stated in the Contract Data from payments due to the Contractor.

## **53. Termination**

53.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.

53.2 Fundamental breaches of Contract include, but shall not be limited to the following: (a) The Contractor stops work for 28 days when no stoppage of work is shown on the current program and the stoppage has not been authorized by the KSCL Engineer;

(b) The KSCL Engineer instructs the Contractor to delay the progress of the Works and the instruction is not withdrawn within 28 days;

(c) The Employer or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation;

(d) A payment certified by the KSCL Engineer is not paid by the Employer to the Contractor within 56 days of the date of the KSCL Engineer's certificate;

(e) The KSCL Engineer gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the KSCL Engineer;

(f) The Contractor does not maintain a security which is required;

(g) The Contractor has delayed the completion of works by the number of days for which the maximum amount of liquidated damages can be paid as defined in the Contract data; and

(h) If the Contractor, in the judgment of the Purchaser has engaged in fraud and corruption, as defined in GCC Clause 57, in competing for or in executing the Contract.

53.3 When either party to the Contract gives notice of a breach of contract to the KSCL Engineer for a cause other than those listed under Sub Clause 53.2 above, the KSCL Engineer shall decide whether the breach is fundamental or not.

53.4 Notwithstanding the above, the Employer may terminate the Contract for convenience.

53.5 If the Contract is terminated the Contractor shall stop work immediately, make the Site safe and secure and leave the Site as soon as reasonably possible.

#### **54. Payment upon Termination**

54.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the KSCL Engineer shall issue a certificate for the value of the work done less advance payments received up to the date of the issue of the certificate, less other recoveries due in terms of the contract, less taxes due to be deducted at source as per applicable law and less the percentage to apply to the work not completed as indicated in the Contract Data. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor the difference shall be a debt payable to the Employer.

54.2 If the Contract is terminated at the Employer's convenience or because of a fundamental breach of Contract by the Employer, the KSCL 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.

#### **55. Property**

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

## **56. Release from Performance**

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

## **57. Fraud & Corruption**

57.1 If the Employer determines that the Contractor has engaged in corrupt, fraudulent, collusive coercive or obstructive practices, in competing for or in executing the Contract, then the Employer may, after giving 14 days notice to the Contractor, terminate the Contractor's employment under the Contract and expel him from the Site, and the provisions of Clause 53 shall apply. Should any employee of the Contractor be determined to have engaged in corrupt, fraudulent, collusive, coercive, or obstructive practice during the execution of the works, then that employee shall be removed in accordance with Clause 9 (Personnel). For the purposes of this Sub-Clause:

(i) "Corrupt practice" is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party\*;

(ii) "Fraudulent practice" is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation\*\*;

(iii) "Collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party#;

(iv) "Coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party\$;

(v) "Obstructive practice" is

(aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation

or from pursuing the investigation, or  
(bb) acts intended to materially impede the exercise of KSCL's  
inspection rights.

*\* For the purpose of this sub-paragraph, "another party" refers to a public official acting in relation to the procurement process or contract execution. In this context, "public official" includes KSCL staff and employees of other organizations taking or reviewing procurement decisions.*

*\*\* For the purpose of this sub-paragraph, "party" refers to a public official; the terms "benefit" and "Obligation" relate to the procurement process or contract execution; and the "act or omission" is intended to influence the procurement process or contract execution.*

*# For the purpose of this sub-paragraph, "parties" refers to participants in the procurement process (including public officials) attempting either themselves, or through another person or entity not participating in the procurement or selection process, to simulate competition or to establish bid prices at artificial, non-competitive levels, or are privy to each other's bid prices or other conditions.*

*§ For the purpose of this sub-paragraph, "party" refers to a participant in the procurement process or contract execution.*

## **F Special Conditions of Contract**

### **1. LABOUR:**

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

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

### **2. COMPLIANCE WITH LABOUR REGULATIONS:**

During continuance of the contract, the Contractor and his sub-contractors shall abide at all times by all existing labour enactments and rules made there under, regulations, notifications and bye laws of the

State or Central Government or local authority and any other labour law (including rules), regulations, bye laws that may be passed or notification that may be issued under any labour law in future either by the State or the Central Government or the local authority. Salient features of some of the major labour laws that are applicable to construction industry are given below. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made there under, regulations or notifications including amendments. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications/bye laws/Acts/Rules/regulations including amendments, if any, on the part of the Contractor, the KSCL Engineer/Employer shall have the right to deduct any money due to the Contractor including his amount of performance security. The Employer/KSCL 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.

#### **SALIENT FEATURES OF SOME MAJOR LABOUR LAWS APPLICABLE TO ESTABLISHMENTS ENGAGED IN BUILDING AND OTHER CONSTRUCTION WORK**

- a) Workmen Compensation Act 1923: The Act provides for compensation in case of injury by accident arising out of and during the course of employment.
- b) Payment of Gratuity Act 1972: Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years' service or more or on death the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.
- c) Employees P.F. and Miscellaneous Provision Act 1952 (*since amended*): The Act Provides for monthly contributions by the employer plus workers @ 10% or 8.33%. The benefits payable under the Act are:
  - (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 20 or more contract labour.
- f) Minimum Wages Act 1948: The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Buildings, Roads, and Runways are scheduled employments.
- g) Payment of Wages Act 1936: It lies down as to by what date the wages are to be paid, when it will be paid and what deductions can be made from the wages of the workers.
- h) Equal Remuneration Act 1979: The Act provides for payment of equal wages for work of equal nature to Male and Female workers and for not making discrimination against Female employees in the matters of transfers, training and promotions etc.
- i) Payment of Bonus Act 1965: The Act is applicable to all establishments employing 20 or more employees. The Act provides for payments of annual bonus subject to a minimum of 8.33% of wages and maximum of 20% of wages to employees drawing Rs.3500/-per month or less. The bonus to be paid to employees getting Rs.2500/- per month or above up to Rs.3500/- per month shall be worked out by taking wages as Rs.2500/-per month only. The Act does not apply to certain establishments. The newly set-up establishments are exempted for five years in certain circumstances. Some of the State Governments have reduced the employment size from 20 to 10 for the purpose of applicability of this Act.

- j) Industrial Disputes Act 1947: The Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.
- k) Industrial Employment (Standing Orders) Act 1946: It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and gets the same certified by the designated Authority.
- l) Trade Unions Act 1926: The Act lays down the procedure for registration of trade unions of workmen and employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.
- m) Child Labour (Prohibition & Regulation) Act 1986: The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of Child Labour is prohibited in Building and Construction Industry.
- n) Inter-State Migrant workmen's (Regulation of Employment & Conditions of Service) Act 1979: The Act is applicable to an establishment which employs 5 or more inter- state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter-State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, travelling expenses from home 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 10 or more workers are covered under this Act. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be modified by the Government. The Employer of the establishment is required to provide safety measures at the Building or construction work and other welfare measures, such as Canteens, First-Aid facilities, Ambulance, Housing

accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.

- p) Factories Act 1948: The Act lays down the procedure for approval at plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power engaged in manufacturing process.

### **3. SUB-CONTRACTING (GCC Clause 7)**

Please add the following as Clause 7.2:

The contractor shall not be required to obtain any consent from the employer for:

- a) The sub-contracting of any part of the Works for which the Sub-contractor is named in the contract;
- b) The provision of labour; and
- c) The purchase of materials which are in accordance with the standards specified in the Contract.

Beyond this if the contractor proposes sub-contracting any part of the work during execution of works, because of some unforeseen circumstances to enable him to complete the work as per terms of the contract; the KSCL Engineer will consider the following before according approval:

- The contractor shall not sub-contract the whole of the Works. The limit for sub- contracting shall be 25% of the Contract price. Proposal for sub-contracting shall contain detailed experience, equipment and personnel for sub-contractor along with items and quantities to be sub contracted.
- The contractor shall not sub-contract any part of the Work without prior consent of the KSCL Engineer. Any such consent shall not relieve the contractor from any liability or obligations under the contract and he shall be responsible for the acts, defaults and neglects of any subcontractor, his agents or workmen as fully as if they were the acts, defaults or neglects of

the contractor, his agents or workmen.

- The KSCL Engineer should satisfy whether (a) the circumstances warrant such sub- contracting; and (b) the sub-contractors so proposed for the Work possess the experience, qualifications and equipment necessary for the job proposed to be entrusted to them in proportion to the quantum of work to be sub-contracted.
- If payments are proposed to be made directly to that sub-contractor, this should be subject to specific authorization by the prime contractor so that this arrangement does not alter the contractor's liability or obligations under the contract.

**Note:**

*1. All bidders are expected to indicate clearly in the bid, if they proposed sub-contracting elements of the works amounting to more than 20 percent of the Bid Price. For each such proposal the qualification and the experience of the identified sub-contractor in the relevant field should be furnished along with the bid to enable the employer to satisfy himself about their qualifications before agreeing for such subcontracting and include it in the contract. In view of the above, normally no additional sub-contracting should arise during execution of the contract.*

*2. However, [a] sub-contracting for certain specialized elements of the work is not unusual and acceptable for carrying out the works more effectively; but vertical splitting of the works for subcontracting is not acceptable. [b] In any case, proposal for subcontracting in addition to what was specified in bid and stated in contract agreement will not be acceptable if the value of such additional sub-contracting exceeds 25% of value of work which was to be executed by Contractor without sub-contracting.*

*3. Assignment of the contract may be acceptable only under exceptional circumstances such as insolvencies/liquidation or merger of companies etc.*

**4. ARBITRATION**

The procedure for arbitration will be as follows:

- a) In case of Dispute or difference arising between the Employer and a domestic contractor relating to any matter arising out of or connected with this agreement, such disputes or difference shall be

settled in accordance with the Arbitration and Conciliation Act, 1996.

- b) Arbitration proceedings shall be held at Kanpur, India, and the language of the arbitration proceedings and that of all documents and communications between the parties shall be English.
  
- c) The disputes or differences arising shall be referred to a Sole Arbitrator. The Sole Arbitrator should be appointed by agreement between the parties; failing such agreement, by the appointing authority, namely the Indian Council of Arbitration.
  
- d) Performance under the contract shall continue during the arbitration proceedings and payments due to the contractor by the owners shall not be withheld, unless they are the subject matter of the arbitration proceedings.

#### **5. PROTECTION OF ENVIRONMENT:**

Add the following as GCC Clause 16.2:

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

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

The Water (Prevention and Control of Pollution) Act, 1974, this provides for the prevention and control of water pollution and the maintaining and restoring of wholesomeness of water.

'Pollution' means such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may, or is likely to, create a nuisance or render such water harmful or injurious to public

health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms.

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

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

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

#### **6. LIQUIDATED DAMAGES:**

Sub-clause 45: Please substitute the last sentence with the following:

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

#### **7. PRIORITY OF DOCUMENTS:**

Sub-clause 2.3: Please substitute sub paragraphs (a) to (j) with the following:

- a. Agreement,
- b. the Letter of Acceptance,

- c. Contractor's Bid,
- d. the addenda ( if any)
- e. Special Conditions of Contract
- f. Contact Data;
- g. General Conditions of Contract
- h. Specifications
- i. Part-II-Supplementary Technical Specifications including additional Technical Specifications.
- j. Part-I General Specifications
- k. Part-III- Environmental Management Plan
- l. Drawings
- m. Any other documents forming part of the Contract.

## **8. Safety & Welfare Provisions for labour to be employed by the Contractor**

All necessary personal safety equipment as considered adequate by the KSCL Engineer shall be available for use of persons employed on the Site and maintained in a condition suitable for immediate use; and the Contractor shall take adequate steps to ensure proper use of such equipment by those concerned.

### **1. Safety Provisions:**

The Contractor shall comply with all the precautions as required for the safety of the workmen.

- i. All workmen at site shall be provided with safety helmets and yellow/orange jackets. Workmen required on site during night hours shall be provided with fluorescent yellow jackets with reflective lopes.
- ii. Workers employed on mixing asphaltic materials, cement, lime mortars, concrete etc. shall be provided with protective footwear, protective goggles.
- iii. Those engaged in handling any material, which is injurious to the eyes, shall be provided with protective goggles protective goggles.
- iv. Those engaged in welding works shall be provided with welder's protective eye- shield.
- v. Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
- vi. Suitable scaffolds shall be provided for workmen for all work that cannot safely be done from the ground, or from solid construction except for such short period work as can be done safely from ladders. When a ladder is used, an extra labourer shall be engaged for holding the ladder and if the ladder is used for carrying materials as well, suitable foot-holds and hand-holds shall be provided on the ladder,

which shall be given an inclination not steeper than 1/4 to 1.

- vii. Scaffolding or staging more than 3.25 meters above the ground or floor, swung or suspended from an overhead support or erected with stationary support, shall have a guard rail properly attached, bolted, braced and otherwise secured at least 1 metre high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the support or structure.
- viii. Working platforms, gangways, and stairways shall be so constructed that they do not sag unduly or unequally, and if the height of any platform or gangway or stairway is more than 3.25 metres above ground level or floor level, it shall have closely spaced boards, have adequate width and be suitably provided with guard rails as described in (vii) above.
- ix. Every opening in the floor of a structure or in a working platform shall be provided with suitable means to prevent fall of persons or materials by providing suitable fencing or railing with a minimum height of one metre.
- x. Safe means of access and egress shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 metres in length. The width between side rails in a rung ladder shall in no case be less than 30 cm for ladders up to and including 3 metres in length. For longer ladders the width shall be increased at least 6 mm for each additional 30 cm of length. Spacing of steps shall be uniform and shall not exceed 30 cm.
- xi. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The Contractor shall provide all necessary fencing and lights to protect the public from accidents and shall be bound to bear the expenses of defending every suit, action or other proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and costs which may be awarded in any such suit, action or proceedings to any such person or which may with the consent of the Contractor be paid

to compromise any claim by any such person.

- xii. Excavation and Trenching: All trenches, 1.5 metres or more in depth shall at all times be supplied with at least one ladder for each 20 metres in length or fraction thereof. Ladders shall be extended from the bottom of the trench to at least 1 metre above the surface of the ground. The sides of a trench, which is 1.5metres or more in depth shall be stepped back to provide a suitable slope, or be securely held by timber bracing so as to avoid the danger of side collapse. Excavated material shall not be placed within 1.5 metres of the edge of any trench or half the depth of the trench, whichever is more. Excavation shall be made from the top to the bottom. Under no circumstances shall undermining or undercutting be done.
- xiii. When workers are employed in sewers and manholes, which are in use, the Contractor shall ensure that manhole covers are open and manholes are ventilated at least for an hour before workers are allowed to go into them. Manholes so open shall be cordoned off with suitable railing and provide warning signals or boards to prevent accidents to the public.
- xiv. Demolition: Before any demolition work is commenced and also during the process of the work:
  - a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.
  - b) No electric cable or apparatus, which is liable to be a source of danger other than a cable or apparatus used by operators, shall remain electrically charged:
  - c) All practical steps shall be taken to prevent danger to persons employed by the Employer, from risk of fire or explosion, or flooding. No floor, roof or other part of a building shall be so overloaded with debris or materials as to render it unsafe.
- xv. When work is performed near any place where there is risk of drowning all necessary equipment shall be provided and kept ready for use and all necessary steps taken for prompt first aid treatment of all injuries likely to be sustained during the course of the work.
- xvi. Use of hoisting machines and tackle including their attachments, anchorage and supports shall conform to the following:
  - (a) These shall be of good mechanical construction, sound material and adequate strength and free from patent defects and shall be kept in good working order be regularly inspected and properly maintained.

- (b) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from defects.
- (c) For every hoisting machine and every chain hook, shackle, swivel and pulley block used in hoisting, lowering or as means of suspension, safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with safe working load. In case of a hoisting machine or a variable safe working load, each safe working load and conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to in the paragraph above shall be loaded beyond safe working load except for the purpose of testing
- xvii. Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances shall be provided with efficient safeguards; hoisting appliances shall be provided with such means as will reduce the risk of accident during descent of load to the minimum. Adequate precautions shall be taken to reduce to the minimum risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations which are already energised, insulating mats, working apparel such as gloves, sleeves and boots, as may be necessary, shall be provided. Workers shall not wear any rings, watches and carry keys or other material which are good conductors of electricity.
- xviii. All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in a safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities shall be provided at or near places of work.
- xix. These safety provisions shall be brought to the notice of all concerned by displaying on a notice board at a prominent place at the work location. Persons responsible for ensuring compliance with the Safety Code shall be named therein by the Contractor.
- xx. To ensure effective enforcement of the rules and regulations relating to safety precautions, arrangements made by the Contractor shall be open to inspection by the KSCL Engineer or his Representative.

- xxi. Notwithstanding anything contained in condition (i) to (xv) above, the Contractor shall remain liable to comply with the provisions of all acts, rules, regulations and bylaws for the time being in force in India and applicable in this matter. The Contractor shall be responsible for observance, by his sub-contractors, of the foregoing provisions.

## **2. Labour Welfare Provisions:**

### **i. First Aid:**

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

### **ii. Accommodation for Labour:**

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

### **iii. Drinking Water:**

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

Where drinking water is obtained from an intermittent public water supply each workplace shall be provided with storage tanks where drinking water shall be stored.

Every water supply storage shall be at a distance of not less than 15 metres from any latrine, drain or other source of pollution. Where water has to be drawn from an existing well, which is within such proximity of any latrine, drain or any other source of pollution, the well shall be properly chlorinated before water is drawn from it for drinking. All such wells shall be entirely closed in and be provided with a trap door, which shall be dust proof and waterproof. A reliable pump shall be fitted to each covered well. The trap door shall be kept locked and opened only for cleaning or inspection, which shall be done at least once a month.

**iv. Washing and Bathing Places:**

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

**v. Scale of Accommodation in Latrines and Urinals:**

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

No. of Seats

- (a) Where number of persons does not exceed 50 - 2
- (b) Where number of persons exceed 50 but does not exceed 100 - 3
- (c) For additional persons per 100 or part thereof - 3

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

**vi. Latrines and Urinals:**

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

If women are employed, separate latrines and urinals, screened from those for men and marked in the vernacular in conspicuous letters "For women only", shall be provided. Those for men shall be similarly marked "For men only". A poster showing the figure of a man and a woman shall also be exhibited at the entrance to latrines for each sex. There shall be adequate supply of water, close to latrines and urinals.

**vii. Construction of Latrines:**

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

**viii. Disposal of Excreta:**

Unless otherwise arranged for by the local sanitary authority,

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

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

**ix. Provisions of shelters during rest:**

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

**x. Crèches:**

At a place where women are ordinarily employed, there shall be provided at least one hut for use of children under the age of 6 years belonging to such women. Huts shall not be constructed to a standard lower than that of thatched roof, mud floor and wall with wooden planks spread over mud floor and covered with matting.

Huts shall be provided with suitable and sufficient openings, for light and ventilation. There shall be adequate provision of sweepers to keep the places clean. There shall be a maidservant in attendance.

Sanitary utensils shall be provided to the satisfaction of local medical, health a municipal or cantonment authorities. Use of huts shall be restricted to children, their attendants and mothers of children.

**xi. Canteen:**

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

**xii. Planning, Setting and erection of above mentioned structures:**

Planning, setting and erection of the above mentioned structures shall be approved by the KSCL Engineer or his Representative and the whole of such temporary accommodation shall at all times during the progress of the Works be kept tidy and in a clean and sanitary condition to the satisfaction of the KSCL Engineer or his representative and at the Contractor's expense. The Contractor shall conform generally to sanitary requirements of local medical, health and municipal or cantonment authorities and at all times adopt such precautions as may be necessary to prevent soil pollution of the Site.

On completion of the Works, the whole of such temporary structures shall be cleared away, all rubbish burnt, excreta or other disposal pits or trenches filled in and effectively sealed off and the whole of the site left clean and tidy, at the Contractor's expense, to the entire satisfaction of the KSCL Engineer.

**xiii. Anti-malarial precautions:**

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

**xiv. Awareness and Education of HIV/AIDS**

The contractor shall provide/carryout HIV/AIDS awareness and training Program to its labour and management, at least twice per year during the construction period.

**xv. Child Labour Prohibition**

The contractor shall not employ Child Labour for any works or in any manner under the Contract at any time. In the event that the Contractor uses child labour, the Employer shall terminate the Contract.

**xvi. Amendments:**

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

## **SECTION 4: CONTRACT DATA**

## CONTRACT DATA

**Items marked "N/A" do not apply in this Contract.**

The following documents are also part of the Contract:

### **Clause Reference with respect to Section 3**

The **Employer** is:

Name: **Chief Executive Officer, Kanpur Smart City Limited** [1.1]

Address: **Nagar Nigam Mukhyalaya, Motijheel, Kanpur - 208002**

The Site is located at **Kanpur** [1.1]

The **Engineer** is [1.1]

Name: Shall be named later

Address: **Nagar Nigam Mukhyalaya, Motijheel, Kanpur - 208002**

Name of Authorized Representative: **The Nodal Officer, KSCL**

The Works consist of; SCADA Works, Other Items; and other items of works as may be required to be carried out for completing the works in accordance with the drawings and provisions of the Contract to ensure safety. (1.1)

The Start Date shall be the date of issue of notice to proceed with the work. [1.1]

The following documents also form part of the Contract: [2.3]

<b>Document</b>	<b>Description of the document</b>
Construction Methodology	Construction methodology in bid amended as per comments of employer given in letter of acceptance.

The language of the Contract documents is English [3]

The law which applies to the Contract is the laws of Union of India and Govt. of Uttar Pradesh [3.1]

Schedule of other contractors Nil [8.1]

Site investigation reports- As indicated in the drawings [14]

The intended completion date for the whole of the works shall be **270 days** from the date of commencement.

The Site Possession Dates shall be within seven days from the date of issue of Notice to Proceed with Work: [21]

The Employer may require suggesting the contractor to submit revised program in accordance with an agreeable alternate schedule of handing over of site for which no compensation events hold good.

The amount to be withheld for late submission of an updated Program shall be Rs. 5,000.00 per day [24]

The Defects Liability Period is **365 days** from the date of certification of completion of works. (Where sectional completion certificate is issued this will apply from those dates for those sections). [1.1, 31]

The currency of the Contract is Indian Rupees. [42]

The proportion of payments retained (retention money) shall be 5% from each bill subject to a maximum of 5 % of final contract price [44]

Amount of the liquidated damages per day for non-completion of the section/total work as per the completion date specified in 1.1 are as under: [45]

**For: Milestone -I: Rs.1000 per day**

**For: Milestone -II: Rs.5000 per day**

**For: Milestone -III: Rs.10000 per day**

**Milestone Schedule is mentioned in Clause No. 38.**

The maximum amount of liquidated damages for the whole of the works is ten percent of final contract price.

The mobilization advance can be maximum of 10% of the contract price, subject to a Bank Guarantee of 110% of the advance amount claimed. [33]

The Securities shall be for the following minimum amounts:

Performance Security for 10 per cent of contract price plus 20% of the unbalanced bid amount as additional security for unbalanced bids [*in terms of ITB Clause 32*].

The standard form of Performance Security acceptable to the Employer shall be an unconditional Bank Guarantee of the type as presented in Section 7 of the Bidding Documents or Call Deposit / Term Deposit in favor of the Employer, payable at Kanpur.

The following events shall also be fundamental breach of contract:

1. The Contractor has contravened Sub-clause 7 of GCC in reference to SCC and Clause 9.0 of GCC
2. The contractor does not adhere to the agreed construction program and agreed environmental management plan (Clause 24 of GCC) and also fails to take satisfactory remedial action as per agreements reached in the management meetings (Clause 27) for a period of 30 days.
3. The contractor fails to carry out of the instructions of KSCL Engineer within a reasonable time determined by the KSCL Engineer in accordance with GCC Clause 16.1 and 23.1.

The percentage to apply to the value of the work not completed representing the Employer's additional cost for completing the Works shall be **20** percent.

**SECTION 5: SCOPE OF WORK, TECHNICAL SPECIFICATIONS & BOQ**

### **5.1 Scope and objectives of the Project**

- 1 To provide RTU, PLC systems including sensors, flow meters, water level meters, analysers, actuators etc. at appropriate locations of Water Supply System including Intake locations, Outlets of the Raw Water Pumping Stations, Inlets / outlets to the Water Treatment Plants, Inlets / outlets of the Clear Water Pumping Stations, Inlets / Outlets of the Zonal Pumping Stations and as also within the WTPs in the Filter Beds, in Coagulant Dosing plants and Disinfection plants (for Chlorine dosing).
- 2 Each of the Units mentioned above will be programmed using appropriate technology like RTU/PLC as mentioned above, monitored and controlled at an individual & local level within the unit. The Hardware & Software required for above is to be provided by SCADA system supplier / vendor.
- 3 Similarly all the individual units should also be connected together and monitored / controlled at a central location, preferably in the Jal Kal Vibhag, Nagar Nigam building at Benajhabar, Kanpur. The Hardware & Software required for above is to be provided by SCADA system supplier / vendor.
- 4 Finally the SCADA so developed as above will have to be integrated with the Command & Control Centre being developed under the Kanpur Smart City Mission.

### **5.2 Units and Locations taken up for implementation of SCADA system**

- 1 WTP-1 Near Ganga Barrage maintained by M/s Ramky
- 2 WTP-2 Near Ganga Barrage maintained by M/s Geo Miller
- 3 WTP-3 (RML-WTP) Near Ganga Barrage maintained by M/s Geo Miller
- 4 Raw Water Pumping Station at Bhaironghat
- 5 Raw Water Pumping Station at Panki
- 6 WTP at Benajhabar Water Works
- 7 CW-17 Zonal Pumping Station at Mohanlal Park, Bhaironghat
- 8 CW-28 Zonal Pumping Station at Parmat, Parvati Bangla Road
- 9 CW-29 Zonal Pumping Station at Kaushik Park, Civil Lines

Even though all the above plants & units except in Serial No.8, 9, 10 are outside the ABD area we have included them as all the above units contribute to the water supply of whole of Kanpur City including City Service District of which ABD area is a part.

## 5.2 Inventory of Components / Instruments Required for SCADA system

Sl. No.	Description of Unit	Sub-Unit	Instruments / Software / Hardware required
1.	200MLD WTP-1 Near Ganga Barrage maintained by M/s Ramky	Raw Water Inlet	Level Meter
		Raw Water Pumps	Actuators (Repair only)
		WTP Inlet	Analyzers for PH and other Water Parametres
		Coagulant Dosing Unit	Coagulant Dosage Controller
		WTP Filter Beds	Level Meter, Flow Meter, Analyzer for PH
		Disinfection Unit	Chlorine Dosage Controller
		WTP Outlet	Flow Meter, Analyzers for PH and other Water Parametres including residual Chlorine
		WTP-1 LCS (Existing)	Software / Hardware for Monitoring / Controlling of the Plant running
2.	200MLD WTP-2 Near Ganga Barrage maintained by M/s Geo Miller	Raw Water Inlet	Level Meter
		Raw Water Pumps	Actuators (Repair only)
		WTP Inlet	Flow Meter, Analyzers for PH and other Water Parametres
		Coagulant Dosing Unit	Coagulant Dosage Controller
		WTP Filter Beds	Level Meter, Flow Meter, Analyzer for PH, Actuators for Valves
		Disinfection Unit	Chlorine Dosage Controller
		WTP Outlet	Flow Meter, Analyzers for PH and other Water Parametres including residual Chlorine
		WTP-2 LCS (Existing)	Software / Hardware for Monitoring / Controlling of the Plant running
3.	200MLD WTP-3 (RML-WTP) Near Ganga Barrage maintained by M/s Geo Miller	Raw Water Inlet	Level Meter
		Raw Water Pumps	Actuators (Repair only)
		WTP Inlet	Flow Meter, Analyzers for PH and other Water Parametres
		Coagulant Dosing Unit	Coagulant Dosage Controller
		WTP Filter Beds	Level Meter, Flow Meter, Analyzer for PH, Actuators for Valves
		Disinfection Unit	Chlorine Dosage Controller
		WTP Outlet	Flow Meter, Analyzers for PH and other Water Parametres including residual Chlorine

Sl. No.	Description of Unit	Sub-Unit	Instruments / Software / Hardware required
		WTP-3 LCS (Existing)	Software / Hardware for Monitoring / Controlling of the Plant running
4.	210MLD Raw Water Pumping Station at Bhaironghat	Intake Well	Level Meter, Flow Meter, Analyzers for PH and other Water Parametres
		Raw Water Pumps	Actuators
		Raw Water outlet & PLC/EMI panel	Flow Meter
5.	100MLD Raw Water Pumping Station at Panki	Intake Channel / Pipe	Level Meter, Flow Meter, Analyzers for PH and other Water Parametres
		Raw Water Pumps	Actuators
		Raw Water outlet	Flow Meter
		PLC/EMI panel	Software / Hardware for Monitoring / Controlling of the Plant running
6.	280MLD WTP @ Benajhabar Water Works	Raw Water Inlet	Flow Meter
		Raw Water Pumps	Actuators
		Raw Water outlet	Flow Meter
		WTP Inlet	Flow Meter, Analyzers for PH and other Water Parametres
		Coagulant Dosing Unit	Coagulant Dosage Controller
		WTP Filter Beds (8 Nos.)	Level Meter, Flow Meter, Analyzer for PH, Actuators for Valves
		Disinfection Unit	Chlorine Dosage Controller
		WTP Outlet	Flow Meter, Analyzers for PH and other Water Parametres including residual Chlorine
		LCS @ Benajhabar Water Works	Software / Hardware for Monitoring / Controlling of the Plant running
7.	CW-17 Zonal Pumping Station at Mohanlal Park, Bhaironghat	Outlet Pipes & Pumps	Flow Meter, Analyzers for PH and other Water Parametres & actuators for Valves
		PLC/EMI panel	Software / Hardware for Monitoring / Controlling of the Plant running
8.	CW-28 Zonal Pumping Station at Parmat, Parvati Bangla Road	Outlet Pipes & Pumps	Flow Meter, Analyzers for PH and other Water Parametres & actuators for Valves
		PLC/EMI panel	Software / Hardware for Monitoring / Controlling of the Plant running
9.	CW-29 Zonal Pumping Station at Kaushik Park, Civil Lines	Outlet Pipes & Pumps	Flow Meter, Analyzers for PH and other Water Parametres & actuators for Valves

Sl. No.	Description of Unit	Sub-Unit	Instruments / Software / Hardware required
		PLC/EMI panel	Software / Hardware for Monitoring / Controlling of the Plant running
10	Central Monitoring and Control Centre @ Jal Kal Vibhag Building at Benajhabar	-	Software / Hardware for Monitoring / Controlling of operations of all the above Units from 1-8
11	Integration with Command and Control Centre being setup at Nagar Nigam Mukhyalaya Building, Moti Jheel, Kanpur under Kanpur Smart City Mission	-	Software / Hardware for Integration with ICCC & Monitoring of the entire SCADA system for Water Supply at ICCC

### Technical Specifications:

#### Particular Technical Requirements – Instrumentation, Automation and Control System Works:

##### 1. General

This section outlines the particular requirements for the instrumentation, automation and control systems. Unless specified in this section to the contrary instrumentation Plant provided by the Contractor and workmanship shall comply with the General Instrumentation, Automation and Control Requirement Chapters of these Requirements.

##### 2. Scope and Battery Limits

The scope of instrumentation, control and automation (ICA) works shall comprise the design, manufacture, programming and configuration, off site testing, delivery to site, installation and erection, testing, commissioning, setting to work and provision of documentation for a complete supervisory, instrumentation, control and automation system including the interfaces required to provide monitoring and control for a safe and efficient operation of plant, equipment and system.

The Contractor shall submit and obtain approval of the instruments and the system from the employer before beginning the detailed control system design. The minimum scope of work shall include but not limited to:

## **At Various Locations as mentioned in the BOQ.**

Design, supply, install, test and commission a dual redundant control system. PLC, RTU & SCADA shall include but not limited to process controller including its central process units (CPUs), communication modules, input-output (I/O) modules, control networks, operator workstations with 32" LED display, engineering workstation with 60" LED display and printers.

This system shall be designed in order to control, operate and monitor the following:

1. Raw water reservoirs and pumping station
2. Treated Water reservoirs and Pumping stations
3. Field Instrumentation
4. Communication Network

Interface equipment to enable communication between field instruments, PLC's, RTU's, and SCC.

SCADA at WTP's, raw water Pumping stations and Water distribution pump stations.

The communication equipment required to achieve this interfacing complete with all required accessories shall be supplied under this contract.

5. Data Acquisition and processing

The data acquisition, processing and interfacing with the Master Control Centre of entire water supply scheme of smart city area is covered under this package.

6. System Console

Control room furniture(system console) include but not limited to control console for placing dual redundant workstations and two printer compartments, desk for one engineering workstation, ODMS workstation and printer compartment and chairs .The system console design shall be submitted to the Employer for prior approval.

The Contractor shall be responsible for the design of each instrumentation and plant monitoring system, including the selection and design of appropriate transducers (on approval by the Employer's representative), transmitters, signal conditioning devices, indicators, alarm system programmable devices, communications, cable system etc. The Contractor shall take account in his design of all installation and environmental conditions prevailing at the site.

## **1.0 Design Requirements for Instrumentation, Control, Automation and SCADA Systems**

The instrumentation, control, automation SCADA installations shall fully comply with design standards, regulations and the material and workmanship requirements of the Specification.

The electrical plant installations associated instrumentation control and automation systems shall also comply with and be tested in accordance with the latest edition of BS 7671 or equivalent Indian standards.

All equipment and materials incorporated in the system shall be selected, designed and rated to operate under the defined performance duties and specified site conditions and to maintain a high level of operational reliability.

The instrumentation control and monitoring system equipment and materials shall have an operational life of not less than 15 years, unless otherwise approved by the Engineer.

Design criteria for Instrumentation, Control, Automation and SCADA Systems

### 1. Instrumentation System

Electronic instruments shall utilize solid state electronic components, integrated circuits, microprocessors, etc., and shall be of proven design.

2. All instruments shall be suitable for continuous operation;
3. All digital outputs shall be volt free;
4. All instrumentation systems for use out of doors shall be protected to IP 65 for sensors and transmitters, while enclosures under submersible conditions shall be protected to IP68;
5. All analogue displays shall be of the digital type with no moving parts utilizing back lit liquid crystal diode technology;
6. For transmitting instruments, output signal shall be 4-20 mA DC linear having two wire system.
7. Unless otherwise stated, overall accuracy of all measurement systems shall be  $\pm 0.5\%$  of measured value, and repeatability shall be  $\pm 0.5\%$ .
8. After a power failure, when power supply resumes, the instruments and associated equipment shall start working automatically.

9. The instruments shall be designed to permit maximum interchangeability of parts and ease of access during inspection and maintenance.
10. The instruments shall be designed to work at extremes of the ambient conditions of temperature, humidity, and chlorine contamination that may prevail. The instruments shall be given enough protection against corrosion.
11. Lockable enclosure shall be provided for the field mounted instruments where ever required.
12. All field instruments, and cabinets / panel-mounted instruments shall have tag plates / name plates permanently attached to them.
13. The performance of all instruments shall be unaffected for the  $\pm 10\%$  variation in power supply voltage and  $\pm 5\%$  variation in frequency simultaneously.
14. All wetted parts of sensors shall be made out of non-corrosive material capable of working with chlorine content of 5ppm.
15. For all instruments (transmitting analogue signals) installed in the field, surge protection devices (SPDs) shall be provided at both ends of the connecting cable for the protection against static discharges / lightning and electromagnetic interference.
16. Pressure transmitters shall be provided with two valve manifold and a test port, so that in situ calibration can be carried out.
17. Two wire transmitters shall be provided with on-line test terminals.
18. The ranges of all instruments shall be suitable for the application in the process.
19. Instruments of similar type shall be of same make for appropriate inventory of spares, ease of maintenance and training.

## **2. PLC System**

PLC shall be provided as a Hot-Standby configuration to perform combinational and sequential logic functions, status monitoring and reporting functions with counter and timer facilities.

PLC Panel interrogation power supply should be fully redundant.

PLC shall comprise of necessary processors, input/output (I/O) modules, communication interface modules and man-machine interface (MMI) required to perform the desired functions. Each PLC shall have memory protected built in historical archiving/data logging of system alarms & events and process variables. Data logger shall be able to log data based on time or an event.

PLC shall have enough memory allocated to allow 200,000 time and data stamped discrete and /or analog values to be archived. The historical archive shall allow the oldest data to roll off the system as memory is used keeping the 200,000 most current data points available. Process point time stamping frequency shall be selectable within the configuration software. It shall be possible for the archived data to be exported in CSV format allowing use with standard spreadsheet and data software applications

PLC shall have the following attributes as a Hot-Standby configuration.

1. Carry out sequential logic implementation for operations of plant;
2. Carry out computation and interfacing for data acquisition, data storage and retrieval;
3. It shall accept downloaded program from a programmer;
4. It shall have different functional modules to perform the desired functions;
5. It shall scan the inputs in time cycles and update the status of its outputs.

### **3. RTU System**

RTU shall be designed in accordance with this specification. The RTU shall be of proven design and suited for water supply and distribution SCADA applications.

RTU design should aim to minimize power consumption and heat generation. It should be designed to work in remote installation by being of robust physical construction with immunity to electrical noise.

The RTU shall be assembled from modular units, for example, power supply module, CPU and communications module, communication interface modules and modules for input/output purposes. I/O and serial cards shall be able to be arranged in the RTU rack in any order.

Modules shall be interconnected via a suitably robust plug and socket method. It shall not be necessary to unscrew individual wires/cables, both internal RTU wiring and I/O wiring, to replace faulty modules. The failure of one module will not affect the performance of any other module.

A marshalling terminal area shall be incorporated with each RTU to provide terminations for field cables. This area can be located in the RTU cubicle itself for an RTU replacement but for new locations there should be a separate marshalling cubicle. The RTU and marshalling cubicles shall normally be bolted together to form a 2-bay cubicle suite. A separation plate may be located between the cubicles.

The RTU and the cubicles shall be designed to accommodate the actual number of input/outputs, plus spare capacity.

### **3. SCADA System**

The SCADA shall be a fully dual redundant server integrated microprocessor based control and data acquisition system which will monitor, control, display, record and trend all assigned plant and water supply network inputs and outputs. The main process monitoring and control shall be by means of Visual Display Unit (min. 60 inch. LED monitor) based process operator workstations that shall be located in the central control room.

SCADA/HMI system shall be designed and implemented such that the failure of a central processor or HMI console does not inhibit continuous automatic control of the plant. In the event of such a failure, historical data shall be recoverable to a condition where a worst-case maximum of 15 minutes of historical data is lost.

Failure of a single outstation or communications to that outstation shall not affect control or operation of any other outstation, unless the failed outstation provides essential data to another outstation, in which case the non-failed outstations shall revert to a fail-safe mode.

Functional Design Specification (FDS, Sequence of Operation)

The Contractor shall propose the details of the sequence of operation for the water supply system, and pumping stations through careful study of the water supply scheme proposed. Further, the contractor shall be solely responsible to comply with any change/additional processes during the contractors design stages.

The Contractor shall submit a complete functional design specification (FDS) for approval by the Employer within 3 months of the award of the contract.

Functional design specification (FDS) for the SCADA system shall be combined with the FDS for instrumentation, control and automation to form a complete document and shall comply with the specification of the FDS for instrumentation, control and automation. This document shall serve as the primary mechanism by which the Employer may confirm that the Contractor possesses an accurate understanding of the system and its control requirements. The Contractor is encouraged to obtain any necessary clarifications and to suggest refinements to the control descriptions contained in this Specification.

The FDS shall include a detailed block diagram of the PLC, RTU & SCADA system with a description of the communications scheme to be provided. The FDS shall include operational details of the SCADA system which have an effect on plant operations, such as power failure response, communication failure response, and automatic shut-down and start-up of the system. The FDS shall include a description of the interface of the SCADA system with any existing or planned future DAC (Digital Access Carrier) equipment.

The Contractor shall submit a preliminary FDS and obtain approval before the system architecture design is finalized or detailed design takes place. The Contractor shall formally notify the Employer for approval of any amendments or additions to the approved FDS. The final FDS shall be submitted for approval before submission of the factory acceptance test definition documents. The Contractor should take note of the importance of this obligation.

The FDS shall comprise an overall description of the system, its functioning and control, and a detailed description of each section of the control system covering modes of operation, manual overrides, set-point and parameter selection and adjustment. The detailed description shall include a step-by-step control description which defines the function of each piece of equipment and each control action and interlock, including details of the program in each programmable item.

The FDS shall describe the 'fail-safe' features incorporated into the design for the event of failure of a plant item or system, or loss of an input signal affecting a control loop or process sequence. The FDS shall describe control actions taken and monitoring functions which remain available during a power failure, and any automatic controls or sequencing which take place during system start-up and shut-down.

The FDS shall be presented in a clear and precise manner and shall include figures or drawings where appropriate.

### **Reference Standards**

Unless otherwise approved, instrumentation shall comply with relevant quality standards test procedures and codes of practice collectively referred to as Reference Standards including those listed in General Instrumentation, Automation and Control System in accordance with the requirements detailed elsewhere in this specification.

### **4.0 Specifications for online water quality monitoring systems**

This section covers the specification required for online water quality sensors to be provided under the contract. The system should be user friendly that

operates & analyze in minimum interval without any need of reagents, chemicals, consumables with low maintenance and calibration requirement. It should be capable of integration with the SCADA system.

Online multi-parametric pH, free Chlorine at various points of water distribution and the reservoirs.

The system proposed should have adequate channels to accommodate above measurements and should have capacity to display up to total 10 parameters to future-proof the system as it is not envisaged to upgrade the controller for next few years.

The system should have capability to accommodate any additional sensors viz. ORP, Dissolved Oxygen, Nitrite as may be required by the project authorities from time to time. Parameters will be monitored at different location as mentioned below:

Water quality monitoring station will contain the sensors and equipment to measure the below mentioned parameters.

1. pH
2. Residual Chlorine
3. Flow
4. Pressure
5. Multi-parameter Controller System Specifications:

It should be equipped with the following minimum features:

1. USB-interface for data transfer, upgrading firm ware etc.
2. Control unit with keys and toggle switch for the quick selection of software functions
3. With color graphic display with backlight
4. With integrated backup controller function
5. Input voltage 90 - 264 VAC 50/60Hz
6. Line power consumption approx. 25VA
7. Max. Power delivery 18Watt
8. Galvanically separated current outputs (0/4-20 mA) that can be assigned arbitrarily

9. MODBUS communication protocol for the data integration with PLC and SCADA
10. With Sensor ID recognition
11. High EMC interference immunity
12. Integrated lightning protection
13. Should have the latest features of highly advanced Multi parameter Controller having capability of handling at least 4 sensors in a single controller configuration and more as and when required.
14. Display should be with improved reading precision through special backlit graphic display
15. Easy User Intuitive operating keys: including keys for functions such as: Measurement, calibration, set/system settings, additional keys for: confirmation/switching menu O.K. (OK), Escape (ESC) etc.
16. Internal integrated Data logger with minimum data memory for up to 500,000+ data sets
17. The Controller should be able to power all the sensors and terminals or accessories attached to it without having to need any additional power sources in the system for increased protection against lightening and possible electromagnetic interference.
18. The system should start automatically after the power is reset to the system (in case of power failure).
19. The controller should be low power consuming with consumption of less than 5W.
20. Sensors connected to the system shall be automatically detected and initialized.
21. No extra system configuration should be needed for substitute / replacement sensors.
22. The system should have Service mode for cleaning / calibration / maintenance activities.
23. It should be possible to download the data via the USB interface an extremely fast data exchange to USB memory stick.
24. The system should be fully programmable with multiple levels of access control with help of Electronic-Key for data security and protection against non-authorized access to avoid any tampering or changes to the system configuration by unauthorized access.

25. The controller should store the sensor configurations and calibrations
26. The controller should have Logbook to record the data
27. The supplier should provide the firmware update free of cost as and when they are available for the life time of the system.
28. The system should have a status LED that gives reliable and fast information regarding function and status of system. And the Controller/controller should show a LED for diagnostic purposes on the front. This LED should show normal and malfunctions of the system at a glance.
29. Data Output to Control System: The System should have the capability to transmit the required 4-20 mA Analog Outputs as a minimum.
30. In addition to above, the system should have ability to output Profibus, Modbus/RS 485, RS 232, LAN, GPRS, GSM compatible signals in future with addition of respective module as and when required.
31. The system should be able to operate on AC Power (100-240AC)
32. Ambient Conditions Operating temperature: -4 °C ... +55°C
33. Storage temperature: -10 °C ... +65°C
34. Housing Material – Non corrosive e.g. Acrylonitrile-Styrene-Acrylo ester polymer or better.
35. Protection Rating IP 66 / equivalent to NEMA 4X for controller
36. Electromagnetic Compatibility: EN 61326, Class B; FCC Class A, EMC for indispensable operation
37. Integrated Lightning Protection: According to EN 61326 enhanced overvoltage protection for the entire system, implemented in each component

### **38. Sensor Specifications:**

#### **i) pH Sensor Specifications:**

1. Integrated temperature measurement and compensation should be provided in the pH sensor.
2. Sensor check function to detect broken glass of the pH electrode.
3. The pH sensor should have galvanically separated input.
4. Calibration history should be stored automatically in the sensor.
5. Sensor calibration can be done in the laboratory or field.

6. The pH combination electrodes should require very little maintenance and there should be no electrolyte placement.

**Technical Specifications:**

1. Measuring Range: pH – 4.00- 12.00 at least considering the wastewater environment
2. Signal Output–Digital
3. Sensor Check function should be available in the pH sensor.
4. Power Consumption: less than 0.5Watt
5. Temperature Sensor should be integrated in the pH sensor
6. Temp Compensation: -5 to +50 Deg C
7. Transient Voltage Protection should be integrated in the sensor
8. Sensor body: Stainless Steel or better
9. Protection type : IP 68 for both Sensor and Cable
10. Sensor Cable Length: 7meter

**ii) Residual Chlorine Analyzer specification:**

Module for measuring free chlorine in water at consumer end communicable with SCADA operation and controlling chlorination accordingly in an automatic manner as per:

1. Range: 0-10mg/l
2. Resolution: 0.01mg/l
3. pH-Range: pH6-8
4. Electrochemical principle
5. Temperature range: 5 -45°C Material:
6. PVC, Silicone, Polycarbonate

Maximal pressure: Armature with electrode: max. 1 bar overpressure

**iii) Level Sensor:**

Ultrasonic type level transmitters shall be microprocessor based and shall use digital signal processing technique for signal conditioning. The transmitter shall have facilities for storing the echo profile, manipulation of the echo profile to remove noise, multiple profile-averaging etc.

The transmitter shall have the capability to use statistical filtering techniques, wherever required, to compensate for rotating agitator blades or to suppress false signal due to heavy dust or fill- stream interference.

In very dusty applications or in silo/ bunker, etc. filling applications, high power and long range (i.e., low frequency) transducer shall be used to overcome the detrimental effect of the dust. This type of instrument shall not be used for level measurement in process medium consisting of particles of sizes (- 6 mm diameter).

Ultrasonic transmitter shall be have 4-20mA (24V DC loop powered) / Field bus compatible and possible to calibrate through hand held universal and field bus configurator also.

The sensor shall have in-built temperature sensor for ambient temperature compensation. Chemical compatibility of the sensor material with the process material shall be ensured, to avoid corrosion.

In applications, where material build-up on the sensor is expected, the transducer shall have suitable build- up compensation (i.e. repetitive, pulsating displacement at its face shall be used to remove the material build-up).

Ultrasonic transmitters shall be supplied along with necessary calibration software, noise suppression software, plug connector, cable, Profibus to RS232C modem etc. for calibration/noise suppression through laptop / desktop PC.

Adjustable mounting arrangement shall be provided for proper aiming of ultrasonic sensors. Suitable protection box for ultrasonic level sensor shall be provided.

Provision for the nitrogen purging facility in the ultrasonic sensor shall be provided for cleaning the buildup of the material.

Pipe insert of min. dia 200mm shall be available for mounting the level transmitter on top of the tanks. Necessary mounting brackets for mounting the level transmitter in the tank shall be provided.

Range: 0 to 15meters

Temperature: -20 to +60° C

Temperature compensation: Built-in -20 to +60°C

Spread: 3°,6°

Enclosure: IP 68 / NEMA 6P (submersible to 10 m / 30 ft. of water)

Measuring accuracy: Better than 0.2%

Analog output: Active 4-20mA galvanically isolated, max. loop resistance  
500 Ohms

Digital output: Two SPDT electromechanical relays. (Max 50V DC / 1A)

Transmitter Enclosure rating: IP 65 / NEMA4X

**iv). Electromagnetic flow meter:**

Selection of Electromagnetic flow meters shall be decided based on the following:

All magnetic flow meters shall be SMART type. Magnetic flow meters, which are to be installed in the control, alarm & interlocking circuits, shall have 4-20mA DC output (24V DC loop powered) / Profibus compatibility along with Data loggers and battery back-up.

Liner material shall be selected based on service. Generally, for liner material PTFE shall be used.

If gases are entrained in the liquid, meter shall be installed in vertical process line. While installation it shall be ensured that flow tube is always completely filled with liquid.

Straight length requirement of minimum 5D to 10D in the upstream and 2D to 3D in the downstream shall be provided for water services. However, for other services it shall be designed as per manufacturer's recommendation.

The tube material shall be SS 316, with PTFE liner and SS-316 Electrode. The coil housing should also be of SS-316.

Installation of electromagnetic flow meters shall be avoided near large conducting surface e.g. metal surfaces. (Large surface may interfere with magnetic field of instrument thus affecting accuracy).

Pulsed DC excitation shall be provided for field excitation of Electro Magnetic Flow Meter. Power

& signal circuits of magnetic flow meter shall be completely isolated from each other.

Minimum one no. of grounding ring for metallic pipelines and minimum two nos. of grounding rings for non-metallic pipelines shall be used for installing the magnetic flow meter.

Selection and sizing of electro-magnetic flow meters flow characteristics published by the manufacturers shall be followed. Allowable flow velocity shall

be considered based on the specific merit of the service, allowable pressure drop, and cost effectiveness and as per manufacturers recommendation, however the size of flow meter shall not be less than the size of conduit where it is proposed.

Accuracy of magnetic flow meter shall be  $\pm 0.3\%$  or better. Local display shall be calibrated in engineering unit.

A bypass line with isolation valves shall be provided for the magnetic flow meters so that magnetic flow meters can be cleaned on line.

Sensor & transmitter of magnetic flow meters shall be mounted separately.

Magnetic flow meter shall be provided with built-in auto zero facility for ensuring stable zero point. Separate earth pit shall be provided exclusively for earthing of magnetic flow meters. Preparation of such earth pits shall be governed by the general methodology as described in IS 3043, 1991 or relevant international standards.

Necessary calibration unit for checking the electronic unit of magnetic flow meter shall be provided. Enclosure class of magnetic flow meters shall be IP 68.

Pulsed DC excitation for better accuracy and measurement signal stability shall be used. Power & signal circuits of magnetic flow meters shall be completely isolated from each other.

While installation, it shall be ensured that flow tube is always completely filled with liquid and at no time the flow meter shall be empty.

Flow meter shall be provided with necessary ground ring, fasteners, gaskets, reducer / expander, matching flange including straight line pipes (Inlet run: 5D min & Outlet run: 3D min / as per manufacturer recommendation). Also spool pieces of length flange to flange for replacing the flow meters during maintenance shall be provided.

Pressure data logger capable of transferring data via GPRS/SMS communication. Input pressure range of 0

1. 20 bars, accuracy  $\pm 0.5\%$ , and repeatability  $\pm 0.1\%$ , with re-zero function for offsetting. Memory must be not less than 50,000 readings, and can be set in cyclic or start-stop (block). Logging interval can be set 1 second, 1 min, 15mins, 30mins, hourly etc. Capable to export data to comma-separated values (csv) file format or Excel spreadsheets. Software supports statistical data (average, maximum, mean and standard deviations). Ingress Protection rating of IP68, with minimum battery life of 5years.

Data loggers must be compatible with the Employer's telemetry software

Mounting: Flange

Materials Housing: Painted carbon or stainless steel

Liner: Hard rubber, soft rubber or PTFE

Electrode: Stainless steel 1.4571 Built- in grounding electrode: required

Accuracy: Better than  $\pm 0.25\%$

Temperature: 0 to 50° C

Enclosure: IP 67 (with gel potting IP 68)

Analog output: One active 4 - 20 mA, galvanic isolated (max. 800 K)

Digital output: One voltage-free, electromechanical relay (max. 50 V DC / 1 A)

One optically isolated (max. 50 V AC / V DC / 120 mA) Transmitter Enclosure rating: IP 67

Power supply: 24 V AC

Data logger: Display 160,000 logs with date, time, value and daily totals

### **Communication and Data Presentation/Display**

The controller should be interfaced with a GSM/GPRS communication modem to seamlessly transmit the data from remote plants to a central location over a pre-defined interval.

The communication to the system should be two way for ability to view settings and make changes to the configuration over the air, as and when required.

The data should be received at a central location and should be displayed there in real-time in graphical and tabular format. The software as a minimum should have ability to print reports, archive data and make it available for export as a CSV file. The system should also have facility to generate alarm when set points are exceeded.

### **Electric Actuator**

The actuators shall be suitable for use on a nominal volt phase Hz power supply and are to incorporate motor, integral reversing starter, local control facilities and terminals for remote control and indication connections housed within a self-contained, sealed enclosure.

In order to maintain the integrity of the enclosure, setting of the torque levels, position limits and configuration of the indication contacts etc. shall be carried out without the removal of any actuator covers over an Infrared interface. Sufficient commissioning tools shall be provided with the

actuators and must meet the enclosure protection and certification levels of the actuators. Commissioning tools shall not form an integral part of the actuator and must be removable for secure storage/authorized release. In addition, provision shall be made for the protection of configured actuator settings by a means independent of access to the commissioning tool.

The actuator shall include a device to ensure that the motor runs with the correct rotation for the required direction of valve travel irrespective of the connection sequence of the power supply.

Actuators shall be suitable for indoor and outdoor use. The actuator shall be capable of functioning in an ambient temperature ranging from 15 to 45 degree C, up to 100% relative humidity.

Actuators for hazardous area applications shall meet the area classification, gas group and surface temperature requirements specified in data sheet.

### **Actuator sizing**

The actuator shall be sized to guarantee valve closure at the specified differential pressure and temperature. The safety margin of motor power available for seating and unseating the valve shall be sufficient to ensure torque switch trip at maximum valve torque with the supply voltage 10% below nominal. For linear operating valves, the operating speed shall be such as to give valve closing and opening at approximately 10-12 inches per minute unless otherwise stated. For 90 type valves the operating time should be specified.

### **Enclosure**

Actuators shall be O-ring sealed, watertight to /IP68 7m for 72hrs, NEMA 4,6. The motor and all other internal electrical elements of the actuator shall be protected from ingress of moisture and dust when the terminal cover is removed for site for cabling, the terminal compartment having the same ingress protection rating as the actuator with the terminal cover removed. Enclosure must allow for temporary site storage without the need for electrical supply connection.

All external fasteners shall be zinc plated stainless steel. The use of un-plated stainless steel or steel fasteners is not permitted.

### **Motor**

The motor shall an integral part of the actuator, designed specifically for valve actuator applications. It shall be a low inertia high torque design, class F insulated with a class B temperature rise giving a time rating of 15 minutes at 40°C (104°F) at an average load of at least 33% of maximum valve torque. Temperature shall be limited by thermostats embedded in the motor end windings and integrated into its control. Electrical and mechanical

disconnection of the motor should be possible without draining the lubricant from the actuator gear-case.

### **Motor protection**

Protection shall be provided for the motor as follows:

1. Stall - the motor shall be de-energized within 8 seconds in the event of a stall when attempting to unseat a jammed valve.
2. Over temperature - thermostat will cause tripping of the motor.  
Auto-reset on cooling
3. Single phasing - lost phase protection.
4. Direction – phase rotation correction.

### **Gearing**

The actuator gearing shall be totally enclosed in an oil-filled gear-case suitable for operation at any angle. Grease lubrication is not permissible. All drive gearing and components must be of metal construction and incorporate a lost-motion hammer blow feature. For rising spindle valves the output shaft shall be hollow to accept a rising stem, and incorporate thrust bearings of the ball or roller type at the base of the actuator. The design should be such as to permit the opening of the gear-case for inspection or disassembled without releasing the stem thrust or taking the valve out of service. For 90 deg valves drive gearing shall be self-locking to prevent the valve back driving the actuator.

### **Hand operation**

A hand-wheel shall be provided for emergency operation, engaged when the motor is De-clutched by a lever or similar means, the drive being restored to power automatically by starting the motor. The hand-wheel or selection lever shall not move on restoration of motor drive. Provision shall be made for the hand/auto selection lever to be locked in both hand and auto positions. It should be possible to select hand operation while the actuator is running or start the actuator motor while the hand/auto selection lever is locked in hand without damage to the drive train.

Clockwise operation of the hand-wheel shall give closing movement of the valve unless otherwise stated in the data sheet. For linear valve types the actuator hand-wheel drive must be mechanically independent of the motor drive and should be such as to permit valve operation in a reasonable time with a manual force not exceeding 400N through stroke and 800N for seating/unseating of the valve.

## Drive bushing

The actuator shall be furnished with a drive bushing easily detachable for machining to suit the valve stem or gearbox. input shaft. Normally the drive bush shall be positioned in a detachable base of the actuator. Thrust bearings, when housed in a separate thrust base should be of the sealed for life type.

## Torque and turns limitation

Torque and turns limitation to be adjustable as follows:

1. Position setting range – multi-turn: 2.5 to 100,000 turns, with resolution to 15 deg. of actuator output.
  2. Position setting range – direct drive part turn actuator  $90\text{deg}\pm 10\text{deg}$  with resolution to 0.1deg Actuator output.
  3. Torque setting: 40% to 100% rated torque.

Measurement of torque shall be from direct measurement of force at the output of the actuator. Methods of determining torque-using data derived from the motor such as motor speed, current, flux etc. are not acceptable. A means for automatic “torque switch bypass” to inhibit torque off during valve unseating and “latching” to prevent torque Switch hammer under maintained or repeated control signals shall be provided.

The electrical circuit diagram of the actuator should not vary with valve type remaining identical regardless of whether the valve is to open or close on torque or position limit.

Remote valve position/actuator status indication.

Four contacts shall be provided which can be selected to indicate any position of the valve, Provision shall be made for the selection of a normally closed or open contact form. Contacts shall maintain and update position indication during hand wheel operation when all external power to the actuator is isolated.

The contacts shall be rated at 5A, 250V AC, 30V DC.

As an alternative to providing valve position any of the four above contacts shall be selectable to signal one of the following:

Valve opening, closing or moving

1. Thermostat tripped, lost phase
2. Motor tripped on torque in mid travel, motor stalled
3. Remote selected Actuator being operated by hand wheel

Provision shall be made in the design for an additional 4 contacts having the same functionality. Provision shall be made in the design for the addition of a

contactless transmitter to give a 4-20mA analogue signal corresponding to valve travel for remote indication when required. The transmitter will auto range to the set limits

#### Local position indication

The actuator display shall include a dedicated numeric/symbol digital position indicator displaying valve position from fully open to fully closed in 1% increments. Valve closed and open positions shall be indicated by symbols showing valve position in relation to the pipework to ensure that valve status is clearly interpreted. With main power on the display shall be backlit to enhance contrast at low light levels and shall be legible from a distance of at least 6 feet (2m).

Red, green, and yellow lights corresponding to open, closed, and intermediate valve positions shall be included on the actuator display when power is switched on. The digital display shall be maintained and updated during hand wheel operation when all power to the actuator is isolated.

In addition, the actuator display shall include a separate text display element with a minimum of 32 characters to display operational, alarm and configuration status.. The text display shall be selectable between English and Hindi. Provision shall be made to upload a different language without removal of any covers or using specialized tools not provided as standard with the actuator. Provision shall be made to orientate the actuator display through increments of 90degrees.

#### **Local torque Indication:**

The digital display shall be capable of indicating real time torque and valve position simultaneously, both being displayed in 1% increments of valve position and actuator rated torque. In addition torque shall also be displayed in horizontal bar graph form.

#### **Integral starter and transformer**

The reversing starter, control transformer and local controls shall be integral with the valve actuator suitably housed to prevent breathing and condensation. The starter shall be suitable for 60 starts per hour and of rating appropriate to motor size. The controls supply transformer shall be fed from two of the incoming three phases and incorporate overload protection. It shall have the necessary tapplings and be adequately rated to provide power for the following functions:

1. Energization of the contactor coils.
2. 24V DC output for remote controls.
3. Supply for all the internal electrical circuits.

## **Local controls**

The actuator shall incorporate local controls for Open, Close and Stop and a Local/Stop/Remote mode selector switch lockable in any one of the following three positions: local control only, stop (no electrical operation), remote control plus local stop only. It shall be possible to select maintained or non-maintained local control.

The local controls shall be arranged so that the direction of valve travel can be reversed without the necessity of stopping the actuator.

Provision shall be made to orientate the local controls through increments of 90 degree.

### Control facilities

The necessary control, wiring and terminals shall be provided in the actuator for the following functions:

Open and close external interlocks to inhibit local and remote valve opening and/or closing control. It shall be possible to configure the interlocks to be active in remote control only. Remote controls fed from an internal 24V DC supply and/or from an external supply between 20V and 120V AC or 20V and 60 V DC, to be suitable for any one or more of the following methods of control:

1. Open, Close and Stop control.
2. Open and Close maintained or "push to run" (inching) control.
3. Overriding Emergency Shut-down to close (or open) valve from a normally closed or open contact.
4. Two-wire control, energize to close (or open), de-energize to open (or close).

It shall be possible to reverse valve travel without the necessity of stopping the actuator. The motor starter shall be protected from excessive current surges during rapid travel reversal.

The internal circuits associated with the remote control and monitoring functions are to be designed to withstand simulated lightning impulses of up to 2kV.

Provision shall be made for operation by distributed control system utilizing the following network systems.

1. Modbus
2. Profibus
3. Foundation Field bus
4. Device Net
5. Pakscan

## **Monitoring facilities**

Facilities shall be provided for monitoring actuator operation and availability as follows: Monitor (availability) relay, having one change-over contact, the relay being energized from the control transformer will de-energize under any one or more the following conditions:

1. Loss of main or customer 24V DC power supply
2. Actuator control selected to local or stop
3. Motor thermostat tripped
4. Actuator internal fault

Where specified, provision shall be made for contacts to provide discreet indication of one or more of the following:

1. Remote selected
2. Thermostat-rip
3. Actuator fault

Actuator text display indication of the following status/alarms:

1. Closed Limit, open limit, moving open, moving closed, stopped
2. Torque trip closing, torque trip opening, stalled
3. ESD active, interlock active
4. Thermostat trip, phase lost, 24V supply lost, Local control failure
5. Configuration error, Position sensor failure, Torque sensor failure
6. Battery low, power loss inhibit Integral data logger to record and store the following operational data:
  7. Opening last /average torque against position
  8. Closing last /average torque against position
  9. Opening motor starts against position
  10. Closing motor starts against position
  11. Total open/closed operations
  12. Maximum recorded opening and closing torque values
13. Event recorder logging operational conditions (valve, control and actuator). The data logger shall record relevant time and date information for stored data.

Data logger data is to be accessed via non-intrusive IRDA communication. Sufficient standard intrinsically safe tools shall be provided for downloading data logger and actuator configuration files from the actuators and subsequent uploading to a PC. The actuator manufacturer shall supply PC software to enable data logger files to be viewed and analyzed.

## **Wiring and terminals**

Internal wiring shall be tropical grade PVC insulated stranded cable of appropriate size for the control and 3-phase power. Each wire shall be clearly identified at each end.

The terminals shall be embedded in a terminal block of high tracking resistance compound. The terminal compartment shall be separated from the inner electrical components of the actuator by means of a watertight seal and shall be provided with a minimum of 2 threaded cable entries with provision for a maximum of 4.

All wiring supplied as part of the actuator to be contained within the main enclosure for physical and environmental protection. External conduit connections between components are not acceptable.

A durable terminal identification card showing plan of terminals shall be provided attached to the inside of the terminal box cover indicating:

1. Serial number
2. External voltage values
3. Wiring diagram number
4. Terminal layout

The code card shall be suitable for the contractor to inscribe cable core identification alongside terminal numbers.

### **Specification for erection, testing and commissioning of electrical equipment and accessories**

This specification is intended to cover complete installed testing and commissioning of electrical equipment i.e. motor control centers, power control center, control panel, switch-gears, motor starters, actuators and pushbutton starter etc.

#### **Codes & Standards**

- 1) The installation, testing and commissioning of all electrical equipment shall comply with all currently applicable statues, regulation, fire insurance and safety codes in the locality where the works will be carried out. Nothing in this specification shall be construed to relieve vendor of his responsibility.
- 2) Unless otherwise specified, the work, materials and accessories shall conform to the latest applicable Indian, British or IEC standards, some of which are listed below:

IS 3072: installation and maintenance of switch gear.

. IS 990: installation and maintenance of induction motors.

. IS 3106: selection, installation and maintenance of fuses.

IS 4029: guide for testing three phase inducting motors

## **Civil Engineering Specifications**

The following Specifications, codes and standards, as well as their addenda, updating and reference standards shall be followed.

1. Relevant IRC & BIS Codes and Standard Practices
2. UP-PWD Specifications.
3. CPWD Specifications.
4. Technical Specifications mentioned in any part of this document.

The provisions of general / special conditions of contract, those specified in any portion of this bid document, as well as execution drawings and notes, or other specifications issued in writing by the Employer shall form part of the technical specifications of this work.

**BILL OF QUANTITIES**

### 1 - Raw Water Sump near WTPs at Ganga Barrage (Instrument works)

Sl. No.	Description	Qty. (Nos.)
1	Open Channel Level Transmitter - CE/UL Non-Contact RADAR (30 Meter), at Raw Water Inlet Channel	1
2	pH Analyzer 0-14 pH Single Channel Trans: 24 VDC, 2 wire, loop powered type Trans: 2" pipe/ wall mount type with 5mtr cable PP FTC with ½" sample inlet & drain connection	1
3	Turbidity Analyzer, NTU In Built Cleaning wiper for sensor Range : 0-500 NTU ; 100 to 230 VAC Trans: 2 " pipe / wall mount type PP FTC with ½" NPTF sample inlet & drain connection	1
4	Free Residual Chlorine, mg/l Range: 0-5 ppm; 100 to 240 VAC Membrane-free sensor / No electrolyte required. With manual pH compensation. No reagents or chemicals for measurement. Complete integrated system mounted on single metal plate with necessary flow thru chambers.	1
5	Upgradation of existing PLC panels to Collect the data of all existing instruments ( and 4 New analyzers) to Control the process & and send to / integrate with LCSs at respective WTP-1, WTP-2, WTP-3	3
6	Online UPS with battery bank ( 2kva, 1 hour backup)	3
7	GPRS Modem based wireless communication modem for RTU/PLC capable to gather and transmit data from remote site to control stations	3
8	Control Cabling for 4 New analyzers	3

### 2 - Raw Water Sump near WTPs at Ganga Barrage (E/M works)

Sl. No.	Description	Qty. (Nos.)
1	Repairing & Overhauling of existing PLC panels.	3
2	Panel for 6.6KV HT Motors along with RS - 485 port for SCADA communication. For WTP-1 & WTP-2 only	2
3	Auto-phase Reversal unit with in-built time delay & Enclosure conforming to IEC 60947-1 & IEC 60947-6(1) of rating 500 amp.	3

**3 - 200MLD WTP-1 (Filter Beds) maintained by M/s Ramky (Instrument Works)**

Sl. No	Description	Qty. (Nos.)
1	Automization of existing Coagulant Dosing System + 1 Turbidity Analyzer	1
2	Automization of existing Chlorine Dosing System + 1 Free-Residual Chlorine Analyzer	1
3	Upgradation of existing PLC panels to Collect the data of all existing instruments (and new pumps for Alum Dosing and Chlorine Dosing Pumps and 2 analyzers) to Control the process & and send to / integrate with LCS at WTP-1.	1
4	Online UPS with battery bank ( 2kva, 1 hour backup)	1
5	GPRS Modem based wireless communication modem for RTU/PLC capable to gather and transmit data from remote site to control stations	1
6	Control Cabling for (for Alum Dosing and Chlorine Dosing Pumps and 2 analyzers)	1

**4 - 200MLD WTP-1 (Filter Beds) maintained by M/s Ramky (E/M & Civil Works)**

Sl. No.	Description	Qty. (Nos.)
1	Repairing & Overhauling of existing PLC panels.	1
2	Auto-phase Reversal unit with in-built time delay & Enclosure conforming to IEC 60947-1 & IEC 60947-6(1) of rating 250 amp.	1
3	Repair of Existing Coagulant Dosing System including E/M & Civil Works as required	1
4	Repair of Existing Chlorine Dosing System including E/M & Civil Works as required	1

**5 - 200MLD WTP-2 (Filter Beds) maintained by M/s Geo Miller (Instrument Works)**

Sl. No	Description	Qty. (Nos.)
1	Automization of existing Coagulant Dosing System + 1 Turbidity Analyzer	1
2	Automization of existing Chlorine Dosing System + 1 Free-Residual Chlorine Analyzer	1
3	Upgradation of existing PLC panels to Collect the data of all existing instruments (and new pumps for Alum Dosing and Chlorine Dosing Pumps and 2 analyzers) to Control the process & and send to / integrate with LCS at WTP-1.	1
4	Online UPS with battery bank ( 2kva, 1 hour backup)	1
5	GPRS Modem based wireless communication modem for RTU/PLC capable to gather and transmit data from remote site to control stations	1
6	Control Cabling for (for Alum Dosing and Chlorine Dosing Pumps and 2 analyzers)	1

**5 - 200MLD WTP-2 (Filter Beds) maintained by M/s Geo Miller (E/M & Civil Works)**

Sl. No.	Description	Qty. (Nos.)
1	Repairing & Overhauling of existing PLC panels.	1
2	Auto-phase Reversal unit with in-built time delay & Enclosure conforming to IEC 60947-1 & IEC 60947-6(1) of rating 250 amp.	1
3	Repair of Existing Coagulant Dosing System including E/M & Civil Works as required	1
4	Repair of Existing Chlorine Dosing System including E/M & Civil Works as required	1

**6 - 200MLD WTP-3 (Filter Beds) RM Lohia maintained by M/s Geo-Miller (Instrument Works)**

Sl. No.	Description	Qty. (Nos.)
1	Automization of existing Coagulant Dosing System + 1 Turbidity Analyzer	1
2	Automization of existing Chlorine Dosing System + 1 Free-Residual Chlorine Analyzer	1
3	Upgradation of existing PLC panels to Collect the data of all existing instruments (and new pumps for Alum Dosing and Chlorine Dosing Pumps and 2 analyzers and 12 Outlet Valves of Settling tank) to Control the process & send to / integrate with LCS at WTP-3	1
4	Online UPS with battery bank ( 2kva, 1 hour backup)	1
5	GPRS Modem based wireless communication modem for RTU/PLC capable to gather and transmit data from remote site to control stations	1
6	Control Cabling for (for Alum Dosing and Chlorine Dosing Pumps and 2 analyzers and 12 outlet valves of Settling Tank)	1

**7-200MLD WTP-3 (Filter Beds) RM Lohia maintained by M/s Geo-Miller (E/M & Civil Works)**

Sl. No.	Description	Qty. (Nos.)
1	Repairing & Overhauling of existing PLC panels.	1
2	Auto-phase Reversal unit with in-built time delay & Enclosure conforming to IEC 60947-1 & IEC 60947-6(1) of rating 250 amp.	1
3	Repair of Existing Coagulant Dosing System including E/M & Civil Works as required	1
4	Repair of Existing Chlorine Dosing System including E/M & Civil Works as required	1
5	Electrical Actuators including Valves DN 600 at outlet of Settling Tank	12

### 8 - Clear Water Sump at 3-Nos. WTPs near Ganga Barrage (Instrument Works)

Sl. No.	Description	Qty. (Nos.)
1	Open Channel Level Transmitter - CE/UL Non-Contact RADAR (10 Meter), at CWR	3
2	pH Analyzer 0-14 pH Single Channel Trans: 24 VDC, 2 wire, loop powered type Trans: 2" pipe/ wall mount type with 5 Mtr cable PP FTC with ½" sample inlet & drain connection	3
3	Turbidity Analyzer, NTU In Built Cleaning wiper for sensor Range : 0-500 NTU ; 100 to 230 VAC Trans: 2 " pipe / wall mount type PP FTC with ½" NPTF sample inlet & drain connection	3
4	Free Residual Chlorine, mg/l Range: 0-5 ppm; 100 to 240 VAC Membrane-free sensor / No electrolyte required. With manual pH compensation. No reagents or chemicals for measurement. Complete integrated system mounted on single metal plate with necessary flow thru chambers.	3
5	ORP analyzer (with Complete Specification) Single Channel Trans: 24 VDC, 2 wire, loop powered type Trans: 2" pipe/ wall mount type with 5 Mtr cable PP FTC with ½" sample inlet & drain connection	3
6	Upgradation of existing PLC panels to Collect the data of all existing instruments ( and 5 New analyzers) to Control the process & and send to / integrate with LCSs at respective WTP-1, WTP-2, WTP-3	3
7	Online UPS with battery bank ( 2kva, 1 hour backup)	3
8	GPRS Modem based wireless communication modem for RTU/PLC capable to gather and transmit data from remote site to control stations	3
9	Control Cabling for (for 5 analyzers)	6

### 9 - Clear Water Sump at 3-Nos. WTPs near Ganga Barrage (E/M Works)

Sl. No.	Description	Qty. (Nos.)
1	Repairing & Overhauling of existing PLC panels including actuators	3
2	Auto-phase Reversal unit with in-built time delay & Enclosure conforming to IEC 60947-1 & IEC 60947-6(1) of rating 250 amp.	3

**10 – Raw Water Sump at 280 MLD WTP near Benajhabar Water Works (Instrument Works)**

Sl. No.	Description	Qty. (Nos.)
1	Open Channel Flow Meter - CE/UL Non-Contact ultrasonic (10 Meter), at CWR	1
2	pH Analyzer 0-14 pH Single Channel Trans: 24 VDC, 2 wire, loop powered type Trans: 2" pipe/ wall mount type with 5 Mtr cable PP FTC with ½" sample inlet & drain connection	1
3	Turbidity Analyzer, NTU In Built Cleaning wiper for sensor Range : 0-500 NTU ; 100 to 230 VAC Trans: 2 "pipe / wall mount type PP FTC with ½" NPTF sample inlet & drain connection	1
4	Free Residual Chlorine, mg/l Range: 0-5 ppm; 100 to 240 VAC Membrane-free sensor / No electrolyte required. With manual pH compensation. No reagents or chemicals for measurement. Complete integrated system mounted on single metal plate with necessary flow thru chambers.	1
5	PLC+HMI Panel including Software and Hardware to Control the process & collect the data of all instrument (4 analyzers) and send to / integrate with new LCS at Laboratory Building.	1
6	Online UPS with battery bank ( 2kva, 1 hour backup)	1
7	GPRS Modem based wireless communication modem for RTU/PLC capable to gather and transmit data from remote site to control stations	1
8	Control Cabling for 4 analyzers	2

**11 – Raw Water Sump at 280 MLD WTP near Benajhabar Water Works (E/M Works)**

Sl. No.	Description	Qty. (Nos.)
1	Repairing & Overhauling of existing Electrical Wiring and Electricals panels.	1
2	Auto-phase Reversal unit with in-built time delay & Enclosure conforming to IEC 60947-1 & IEC 60947-6(1) of rating 250 amp.	1

**12 – 200 MLD WTP (Filter Beds) at Benajhabar Water Works (Instrument works)**

Sl. No.	Description	Qty. (Nos.)
1.	Automatic Coagulant Dosing System (New) + 1 Turbidity Analyzer	1
2.	Automatic Chlorine Dosing System (New) + 1 Free-Residual Chlorine Analyzer	1
3.	40 nos. NON Contact (0-10 Meter) Level Transmitters.	40
4.	Outlet Flow Meters 700 mm Dia Pipes	4

Sl. No.	Description	Qty. (Nos.)
5.	PLC+HMI Panels including Software and Hardware to Control the process & collect the data of all instrument (2 New Pumps and 2 New Dosing Automaton, and flow meters, all other Instruments, analyzers, Filter Bed Pumps / Valves, Back Wash Pumps, Blowers) and send to / integrate with new LCS at Laboratory Building.	13
6.	Online UPS with battery bank ( 2kva, 1 hour backup)	2
7.	Online UPS with battery bank ( 5kva, 1 hour backup)	1
8.	GPRS Modem based wireless communication modem for RTU/PLC capable to gather and transmit data from remote site to control stations	1
9.	Control Cabling for (2 New Pumps and 2 New Dosing Automaton, and flow meters, all other Instruments, analyzers, Filter Bed Pumps / Valves, Back Wash Pumps, Blowers)	1

### 13 – 200 MLD WTP (Filter Beds) at Benajhabar Water Works (E/M, Civil works)

Sl. No.	Description	Qty. (Nos.)
1.	Repairing & Overhauling of existing Electrical Wiring and Electrical panels.	1
2.	Auto-phase Reversal unit with in-built time delay & Enclosure conforming to IEC 60947-1 & IEC 60947-6(1) of rating 500 amp.	1
3.	Complete Revamping of 7-Nos. / 20-Nos. Filter Beds in respect of Civil, E/M and other Misc. Works.	7
4.	Electrical Actuators including Valves DN 500	20
5.	Electrical Actuators including Valves DN 350	20
6.	Electrical Actuators including Air Valves DN 150	20
7.	Electrical Actuator including Valves DN 600 at Inlet	20
8.	Electrical Actuator Including Valves DN 600 at Outlet	20
9.	Automatic Coagulant Dosing System (New) including E/M & Civil Works as reqd.	1
10.	Automatic Chlorine Dosing System (New) including E/M & Civil Works as reqd.	1

### 14 – 80 MLD WTP (Filter Beds) at Benajhabar Water Works (Instrument Works)

Sl. No.	Description	Qty. (Nos.)
1	20 nos. NON Contact (0-10 Meter) Level Transmitters	20
2	PLC+HMI Software and Hardware to Control the process & collect the data of all instrument (2 New Pumps and 2 New Dosing Automaton, and flow meters, all other Instruments, analyzers, Filter Bed Pumps / Valves, Back Wash Pumps, Blowers) and send to / integrate with new LCS at Laboratory Building.	7
3	Online UPS with battery bank ( 3kva, 1 hour backup)	2
4	GPRS Modem based wireless communication modem for RTU/PLC capable to gather and transmit data from remote site to control stations	1
5	Control Cabling for (2 New Pumps and 2 New Dosing Automaton, and flow meters, all other Instruments, analyzers, Filter Bed Pumps / Valves, Back Wash Pumps, Blowers)	1

**14 – 80 MLD WTP (Filter Beds) at Benajhabar Water Works (E/M, Civil Works)**

Sl. No.	Description	Qty. (Nos.)
1	Repairing & Overhauling of existing Electrical Wiring and Electrical panels.	1
2	Auto-phase Reversal unit with in-built time delay & Enclosure conforming to IEC 60947-1 & IEC 60947-6(1) of rating 500 amp.	1
3	Complete Revamping of 8-Nos. / 10-Nos. Filter Beds in respect of Civil, E/M and other Misc. Works.	8
4	Electrical Actuators including Wash Valves DN 300	10
5	Electrical Actuators including Outlet Valves DN 300	10
6	Electrical Actuators including Air Valves DN 150	10
7	Electrical Actuators including Gate Valves DN 450 at inlet	10
8	Electrical Actuators including Gate Valves DN 450 at outlet	10
9	Automatic Coagulant Dosing System (New) including E/M & Civil Works as reqd.	1
10	Automatic Chlorine Dosing System (New) including E/M & Civil Works as reqd.	1

**15–280 MLD Clear Water Sump at Benajhabar Water Works (Instrument Works)**

Sl. No.	Description	Qty. (Nos.)
1	Open Channel Level Transmitter - CE/UL Non-Contact (10 Meter), at CWR	1
2	pH Analyzer 0-14 pH Single Channel Trans: 24 VDC, 2 wire, loop powered type Trans: 2" pipe/ wall mount type with 5 mtr cable PP FTC with ½" sample inlet & drain connection	1
3	Turbidity Analyzer, NTU In Built Cleaning wiper for sensor Range : 0-500 NTU ; 100 to 230 VAC Trans: 2 " pipe / wall mount type PP FTC with ½" NPTF sample inlet & drain connection	1
4	Free Residual Chlorine, mg/l Range: 0-5ppm; 100 to 240 VAC Membrane-free sensor / No electrolyte required. With manual pH compensation. No reagents or chemicals for measurement. Complete integrated system mounted on single metal plate with necessary flow thru chambers.	1
5	ORP analyzer Single Channel Trans: 24 VDC, 2 wire, loop powered type Trans: 2" pipe/ wall mount type with 5 Mtr cable PP FTC with ½" sample inlet & drain connection	1
6	Outlet Flow Meter 1200 mm Dia Pipe (Revamping of Existing)	1

Sl. No.	Description	Qty. (Nos.)
7	PLC/EMI Panel including Software and Hardware to Control the process & collect the data of all instrument (9 Existing Pumps, outlet flow meter, 7 analyzers) and send to new LCS at Lab Building	2
8	Online UPS with battery bank ( 3kva, 1 hour backup)	1
9	GPRS Modem based wireless communication modem for RTU/PLC capable to gather and transmit data from remote site to control stations	1
10	Control Cabling for (9 Existing Pumps, outlet flow meter, 5 analyzers)	4

### 16-280 MLD Clear Water Sump at Benajhabar Water Works & Other Works (E/M Works & Civil Works)

Sl. No.	Description	Qty. (Nos.)
1	Repairing & Overhauling of existing Electrical Wiring and Electrical panels.	1
2	Auto-phase Reversal unit with in-built time delay & Enclosure conforming to IEC 60947-1 & IEC 60947-6(1) of rating 500 amp.	1
3	Laying of Interconnecting Delivery Main 1000mm Dia and misc. Civil works within the Benajhabar Water Works in the Campus	1

### 17-SCADA System - New LCS Works at Benajhabar Water Works

Sl. No.	Description	Qty. (Nos.)
1	Set up new Local Control Station at Lab Building. SCADA/ Automation Software and /or Hardware to Control the process & collect the data of all instruments, analyzers, Filter Bed Valves, Back Wash Pumps, Blowers) and send to new MCS at Jal Kal Vibhag Building including SCADA Client Server	1
2	RS Linx OEM (PLC SOFTWARE)	1
3	Database	1
4	Stratix5700, 8Cu, 2OFC --- ETHERNET SWITCH	1
5	Wireless Modem	1
6	Local Server with min core I3 4 GB RAM	1
7	Video Wall	1
8	A3 size Laser jet Color Printer	1
9	Online UPS with battery bank ( 5kva, 1 hour backup)	1
10	Ethernet Switch 24 Port	1
11	Engineering WS (Laptop)	1
12	Electrical & Civil Works as required for the above	1

**18 – 210 MLD Raw Water Pumping Station at Bhaironghat (Instrument Works)**

Sl. No.	Description	Qty. (Nos.)
1	Open Channel Level Transmitter-NON Contact (30 Meter), at Ganga Water Inlet Well	1
2	Outlet Flow Meters 750 mm Dia Pipes	3
3	PLC/EMI Panel including Software and Hardware to Control the process & collect the data of all instrument (6 Pumps / 11 Valves, 3 outlet flow meters, 1-analyser) and send to new LCS at Benajhabar Water Works	1
4	Online UPS with battery bank ( 5kva, 1 hour backup)	1
5	GPRS Modem based wireless communication modem for RTU/PLC capable to gather and transmit data from remote site to control stations	1
6	Control Cabling for (6 Pumps / 11 Valves, 3 outlet flow meters, 1-analyser,)	4

**19 – 210 MLD Raw Water Pumping Station at Bhaironghat (E/M Works)**

Sl. No.	Description	Qty. (Nos.)
1	Repairing & Overhauling of existing Electrical Wiring and Electrical panels.	1
2	Auto-phase Reversal unit with in-built time delay & Enclosure conforming to IEC 60947-1 & IEC 60947-6(1) of rating 500 amp.	1
3	Electrical Actuators with Valves DN 750	11

**20 – 100 MLD Raw Water Pumping Station at Panki near Armapur Estate (Instrument Works)**

Sl. No.	Description	Qty. (Nos.)
1	Open Channel -NON Contact Level Transmitter (10 Meter), at Raw Water Sump	1
2	Outlet Flow Meter for 1100 mm Dia Pipe	1
3	PLC/EMI Panel including Software and Hardware to Control the process & collect the data of all instrument (3 Pumps, 1 outlet flow meters, 1-analyser) and send to new LCS at Benajhabar Water Works	1
4	Online UPS with battery bank ( 2kva, 1 hour backup)	1
5	GPRS Modem based wireless communication modem for RTU/PLC capable to gather and transmit data from remote site to control stations	1
6	Control Cabling for (3 Pumps / Valves, 1 outlet flow meters, 1-analyser)	2
7	Pressure Transmitters for 3-Pumps	3

**20 – 100 MLD Raw Water Pumping Station at Panki near Armapur Estate (E/M, Civil Works)**

Sl. No.	Description	Qty. (Nos.)
1	Repairing & Overhauling of existing Electrical Wiring, Electrical panels, Substations, Starters	1
2	Auto-phase Reversal unit with in-built time delay & Enclosure conforming to IEC 60947-1 & IEC 60947-6(1) of rating 500 amp.	1
3	Associated civil works for erection of the Outlet Flow meter (dismantling of pipe and Thrust Block and providing additional length of pipe as required and reinstatement of the pipe)	1
4	Civil Works for Desilting including Diversion Works at Intake, Channels, Desilting Settling Tank, with Screw Mud Pumps etc. as per the direction of Jal Nigam, Jal Kal & KSCL Engineer-in-Charge.	1

**21-CW-17 Zonal Pumping Station at Mohan Lal Park, Bhaironghat (Instrument Works)**

Sl. No.	Description	Qty. (Nos.)
1	Open Channel Flow Meter-NON Contact RADAR(10 Meter), at Clear Water Reservoir	1
2	Outlet Flow Meter 450 mm Dia Pipe	1
3	PLC/EMI Panel including Software and Hardware to Control the process & collect the data of all instrument (4 Pumps / 9 Valves, 1 outlet flow meters, 1-analyser) and send to new LCS at Benajhabar Water Works	1
4	Online UPS with battery bank (3kva, 1 hour backup)	1
5	GPRS Modem based wireless communication modem for RTU/PLC capable to gather and transmit data from remote site to control stations	1
6	Control Cabling for (4 Pumps, 9 Valves, 1 outlet flow meters, 1-analyser)	2

**22-CW-17 Zonal Pumping Station at Mohan Lal Park, Bhaironghat (E/M Works)**

Sl. No.	Description	Qty. (Nos.)
1	Repairing & Overhauling of existing Electrical Wiring and Electrical panels.	1
2	Auto-phase Reversal unit with in-built time delay & Enclosure conforming to IEC 60947-1 & IEC 60947-6(1) of rating 500 amp.	1
3	Electrical Actuators with Valves 8-350dia	8
4	Electrical Actuator with Valve 1-450dia	1

**23 - CW-28 Zonal Pumping Station at Tikonia Park, Parvati Bangla Road (Instrument Works)**

Sl. No.	Description	Qty. (Nos.)
1	Open Channel Flow Meter-NON Contact RADAR(10 Meter), at Clear Water Reservoir	1
2	Outlet Flow Meter 300 mm Dia Pipe	1
3	PLC/EMI Panel including Software and Hardware to Control the process & collect the data of all instrument (3 Pumps / 9 Valves, 1 outlet flow meter, 1-analyser) and send to new LCS at Benajhabar Water Works	1
4	Online UPS with battery bank ( 2kva, 1 hour backup)	1
5	GPRS Modem based wireless communication modem for RTU/PLC capable to gather and transmit data from remote site to control stations	1
6	Control Cabling for (3 Pumps, 8 Valves, 1 outlet flow meters, 1-analyser)	2

**24 - CW-28 Zonal Pumping Station at Tikonia Park, Parvati Bangla Road (E/M Works)**

Sl. No.	Description	Qty. (Nos.)
1	Repairing & Overhauling of existing Electrical Wiring and Electrical panels.	1
2	Auto-phase Reversal unit with in-built time delay & Enclosure conforming to IEC 60947-1 & IEC 60947-6(1) of rating 500 amp.	1

## 25 - CW-29 Zonal Pumping Station at Kaushik Park, Civil Lines (Instrument Works)

Sl. No.	Description	Qty. (Nos.)
1	Open Channel Flow Meter-NON Contact RADAR(10 Meter), at Clear Water Reservoir	1
2	Outlet Flow Meter 450 mm Dia Pipe	1
3	PLC/EMI Panel including Software and Hardware to Control the process & collect the data of all instrument (3 Pumps / 4 Valves, 1 outlet flow meters, 1-analyser) and send to new LCS at Benajhabar Water Works	1
4	Online UPS with battery bank ( 2kva, 1 hour backup)	1
5	GPRS Modem based wireless communication modem for RTU/PLC capable to gather and transmit data from remote site to control stations	1
6	Control Cabling for (3 Pumps / 4 Valves, 1 outlet flow meters, 1-analyser)	2

## 25 - CW-29 Zonal Pumping Station at Kaushik Park, Civil Lines (E/M Works)

Sl. No.	Description	Qty. (Nos.)
1	Repairing & Overhauling of existing Electrical Wiring and Electrical panels.	1
2	Auto-phase Reversal unit with in-built time delay & Enclosure conforming to IEC 60947-1 & IEC 60947-6(1) of rating 500 amp.	1
3	Electrical Actuators with Valves 3-250dia	3
4	Electrical Actuator with Valve 1-300dia	1

## 26 - Pressure Transmitters for Leak Detection on Feeder Mains (Instrument Works)

Sl. No.	Description	Qty. (Nos.)
1	Provision for Pressure Transmitters on Feeder Mains at key locations and Junctions. At 50 Locations with Integration with Central Control Rooms using RTU / SCADA.	50

## 27 - Central SCADA System at Jal Kal Vibhag Office Building at Benajhabar

Description	Qty.
<b>Central SCADA System</b>	
Scada Software Server	1
Scada Software Client	1
RSLinx OEM (PLC SOFTWARE)	1
Database	1
Stratix5700, 8Cu, 2OFC --- ETHERNET SWITCH	1
Wireless Modem	1
<b>IT Hardware</b>	
Main Server with min core I3 4 GB RAM	4
Video Wall	1
A3 size Laser jet Color Printer	2
Online UPS with battery bank ( 5kva, 1 hour backup)	1
Ethernet Switch 24 Port	1
Engineering WS (Laptop)	1

## **SECTION 6: FORMS OF BID AND SECURITIES**

**Form of Bid**

Notes on Form of Bid: The Bidder shall fill in and submit this Bid form with the Bid.

----- (Date)

To

The Chief Executive Officer , KSCL, Kanpur.

Description of the work: -----

(a) I/We offer to execute the works described above and remedy any defects there in conformity with the conditions of contract, specifications, drawings, bill of quantities and addenda for

(b) For percentage rate **as quoted online in BOQ** percentage below/percentage above/at par with the rate entered in the Schedule of rate, as referred to in clause 13 of ITB.

1. We undertake to commence the works on receiving the notice to proceed with work in accordance with the contract documents.

2. This Bid your written acceptance of if shall constitute a binding contract between us. We understand that you are bound to accept the lowest or any Bid you receive.

We hereby confirm that this bid complies with the Bid validity and earnest money required by the bidding documents and specified in the Appendix to ITB.

Authorized Signature: - \_\_\_\_\_

Name and title of Signatory:- \_\_\_\_\_

Name of bidder: - \_\_\_\_\_

Authorized Address  
of Communication:- \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Telephone No(s): (Office):- \_\_\_\_\_

Mobile No: - \_\_\_\_\_

Facsimile (FAX) No: - \_\_\_\_\_

Electronic Mail Identification (E-mail ID):- \_\_\_\_\_

### **Forms of Securities**

Acceptable forms of securities are annexed. Bidders should not complete the Performance and Advance Payment Security forms at this time. Only the successful Bidder will be required to provide Performance and Advance Payment Securities in accordance with one of the forms, or in a similar form acceptable to the Employer.

**Annex I: Bid Security (Bank Guarantee)**

**Annex II: Performance Bank Guarantee**

**BID SECURITY (BANK GUARANTEE)**

WHEREAS, [name of Bidder] (hereinafter called "the Bidder")

has submitted his Bid dated \_\_\_\_\_ [date] for the

“ \_\_\_\_\_ ”

Package No. - \_\_\_\_\_ (Hereinafter called "the Bid").

KNOW ALL PEOPLE by these presents that We \_\_\_\_\_  
[name of bank] of \_\_\_\_\_ [name of country] having our registered  
office at \_\_\_\_\_ (Hereinafter called "the Bank") are bound unto  
Chief Executive Officer, Kanpur Smart City Limited, Motijheel, Kanpur – 208002,  
Uttar Pradesh (hereinafter called "the Employer") in the sum  
of \_\_\_\_\_ for which payment well and truly  
to be made to the said Employer the Bank binds itself, his successors and assigns  
by these presents.

SEALED with the Common Seal of the said Bank this day of. THE CONDITIONS  
of this obligation are:

- 1) If after Bid opening the Bidder withdraws his bid during the period of Bid  
validity specified in the Form of Bid; or
- 2) If the Bidder having been notified of the acceptance of his bid by the  
Employer during the period of Bid validity:
  - (a) Fails or refuses to execute the Form of Agreement in accordance with the  
Instructions to Bidders, if required; or
  - (b) Fails or refuses to furnish the Performance Security, in accordance  
with the Instruction to Bidders; or
  - (c) does not accept the correction of the Bid Price pursuant to Clause 27; we  
undertake to pay to the Employer up to the above amount upon receipt of  
his first written demand, without the Employer having to substantiate his  
demand, provided that in his demand the Employer will note that the amount  
claimed by him is due to him owing to the occurrence of one or any of the  
three conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including 2 days after the deadline

for submission of Bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this guarantee should reach the Bank not later than the above date.

DATE SIGNATURE OF THE BANK \_\_\_\_\_

WITNESS SEAL \_\_\_\_\_

\_\_\_\_\_

[Signature, name, and address]

<sup>1</sup> The Bidder should insert the amount of the guarantee in words and figures denominated in Indian Rupees. This figure should be the same as shown in Clause 16.1 of the Instructions to Bidders.

<sup>2</sup> 45 days after the end of the validity period of the Bid.

**PERFORMANCE BANK GUARANTEE**

To: *[Name of Employer]*

*[Address of Employer]*

**WHEREAS** \_\_\_\_\_  
*[Name and Address of Contractor]*

(Hereinafter called "the Contractor") has undertaken, in pursuance of  
Contract No. \_\_\_\_\_ Dated \_\_\_\_\_ to execute

\_\_\_\_\_  
*[Name of Contract and brief description of Works]*

(Hereinafter called "the Contract");

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

**AND WHEREAS** we have agreed to give the Contractor such a Bank Guarantee;  
**NOW THEREFORE** we hereby affirm that we are Guarantor and responsible to you, on behalf of the Contractor, upto a total of \_\_\_\_\_

*[Amount of Guarantee]*<sup>1</sup> \_\_\_\_\_ *[in words]*

such sums being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sums or sums within the limit of

\_\_\_\_\_ *[Amount of Guarantee]*<sup>1</sup> as aforesaid

without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

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

We further agree that no change or addition to or other modification of the

terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until ..... (i.e.) 28 days from the date of expiry of the Defects Liability Period.

Signature and seal of the guarantor\_\_\_\_\_

Name of Bank\_\_\_\_\_

Address\_\_\_\_\_

Date\_\_\_\_\_

<sup>1</sup> An amount shall be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract and denominated in Indian Rupees.

## **SECTION-7: Operation & Maintenance**

**O & M Costs of SCADA – Software, Hardware,  
Instruments, Analyzers, Services (Excluding Electricity Charges)  
(Considered at 4% of CV for SCADA – Software, Hardware,  
Instruments, Analyzers, Services and 8% Inflation per Year)**

At the End of	Amount in Rs.
First Year	5707238
Second Year	6163817
Third Year	6656923
Fourth Year	7189477
Fifth Year	7764635
<b>Total in Rs.</b>	<b>3,34,82,090</b>