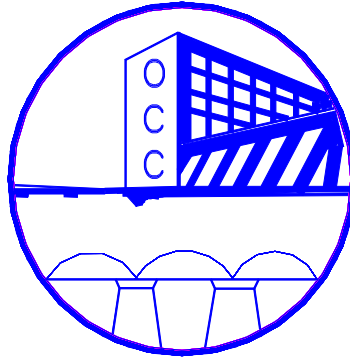


**ODISHA CONSTRUCTION CORPORATION LTD.**  
**(A GOVERNMENT OF ODISHA UNDERTAKING)**  
**CENTRAL WORKSHOP,**  
**RASULGARH,**  
**BHUBANESWAR – 751010 (ODISHA)**



**TENDER DOCUMENT**  
**(TWO BID SYSTEM)**

**Tender Call Notice No. OCC/CWS/PROC./DEP-02/86/18-19 dated 21.02.2019**

**Name of work :**

**SUPPLY, INSTALLATION, TESTING, COMMISSIONING WITH COMPLETE AUTOMATION OF SPILLWAY AND HEAD REGULATOR GATES CONTROLLED THROUGH CENTRALIZED REMOTE CONTROL & IMPLEMENTATION OF REAL TIME MANAGEMENT SYSTEM OF DEO IRRIGATION PROJECT**

**(This tender document contains 103 (Hundred Three) pages including this cover page)**

**ODISHA CONSTRUCTION CORPORATION LTD.**  
**(A GOVERNMENT OF ODISHA UNDERTAKING)**  
**CENTRAL WORKSHOP,**  
**RASULGARH,**  
**BHUBANESWAR – 751010 (ODISHA)**

Tender call notice No. OCC/CWS/PROC./DEP-02/86/18-19 dated 21.02.2019

Tender for the work “Supply, installation, testing, commissioning with complete automation of Spillway and Head Regulator gates controlled through centralized remote control & implementation of real time management system of Deo irrigation project”

Sealed tenders in conformity with terms, conditions and technical specifications in tender document are invited from reputed Instrumentation / Automation Panels (RTUs & PLCs) manufacturers only for “Supply, installation, testing, commissioning with complete automation of Spillway and Head Regulator gates controlled through centralized remote control & implementation of real time management system of Deo irrigation project”. For details of tender Call Notice, please visit our website [odishaconstruction.com](http://odishaconstruction.com) or Government of Odisha website [odishagov.nic.in](http://odishagov.nic.in). The last date of submission of tender is up to **03:00 PM on 30.03.2019** and the tender will be opened on the same day at **04:00PM**.

**Sd/-**  
**General Manager(Mech.)**  
**Central Workshop,**  
**Rasulgarh, Bhubaneswar**

# C O N T E N T

Sl.No.	Particulars	Page No.
<b>A</b>	<b>Section – I : Instructions to Bidders</b>	
01.	Description of Work	05
02.	Tender Document	05
03.	Eligibility and Qualification Criteria	05
04.	Site Visit	06
05.	Clarification of Bidding Documents	06
06.	Amendment to bidding documents	06
07.	Earnest Money	07
08.	Rates & Prices	07
09.	Validity	07
10.	Submission of Tender	08
11.	Opening of Tender	09
12.	Evaluation of Tender	09
13.	Award of Contract	09
14.	Jurisdiction	10
15.	Secrecy of Contract	10
16.	General	10
17.	Authority to sign	11
18.	Proforma ( 1 – 17)	13-37
<b>B.</b>	<b>Section – II : General Conditions of Contract</b>	
01.	Definition	38
	Clauses of Contract	
01.	Initial Security Deposit	39
02.	Security Deposit	39
03.	Compensation for delay	39
04.	Time and Extension for delay	40
05.	Contractor's Liability for Compensation	41
06.	Sublet / Insolvency	41
07.	Execution of the work	41
08.	Settlements of Disputes by Arbitration	41
09.	Contractor to indemnify Govt. against Patent Rights	42
10.	Action where no Specification are specified	42
11.	Subcontracting	42
12.	Insurance	42
13.	Measurement of work done	43
14.	Payment on running bills	44
15.	Payment of final bill	45
16.	Materials supplied by owner	45
17.	Payment of advances/ recovery	45
18.	Work to be executed	46
19.	Deviations/ Variations	46
20.	Levy/ Taxes	46
21.	Contractor not allowed tendering	47
22.	Gazetted Engineer to work	47
23.	Model Rules for the Protection of Health and Sanitary arrangements for workers	47

<b>Sl.No.</b>	<b>Particulars</b>	<b>Page No.</b>
<b>C.</b>	<b>Section – III : Special Conditions of Contract</b>	
01.	Object & limits of Supply and installation	73
02.	Contractor's Obligations	73
03.	Owner/ Client's Obligations	77
04.	Guarantees for Equipments & Work	77
05.	Quality Control	77
06.	Handing over of system	78
<b>D.</b>	<b>Section – IV : Technical Specifications.</b>	
01.	Computer, UPS & Printer	79
02.	UPS	79
03.	Jet Printer	79
04.	Water Level Sensor	80
05.	Gate Measurement Sensor	80
06.	Radio Modem	81
07.	Master PLC Panel	81
08.	Field PLC/RTU Panel	82
09.	Barrage/ Dam Monitoring	86
10.	Wiring/ Cabling	89
11.	SCADA system	90
12.	Spare parts	91
13.	Schedule of Work	92
14.	Drawing Submission	93
15.	Technical responsiveness	93
16.	Delivery	93
17.	Training	93
18.	Warranty Period	94
<b>E.</b>	<b>Section – VI : Price Bid</b>	95-103

# **INSTRUCTIONS TO BIDDERS**

## **1. Description of Work**

OCCL invites sealed tenders for “Supply, installation, testing, commissioning with complete automation of spillway and head regulator gates controlled through centralized remote control & implementation of real time management system of Deo Irrigation Project”

## **2. Tender Document**

2.1. The work shall be carried out according to the conditions stipulated in the following set of tender documents along with Addendum/Corrigendum issued from time to time, if any.

2.2. In addition to the above, the OPWD Specifications latest with up-to-date correction slips will also be applicable.

2.3. The tender document may be downloaded from OCCL website [www.odishaconstruction.com](http://www.odishaconstruction.com) or Govt. of Odisha website [www.odishagov.nic.in](http://www.odishagov.nic.in) and non-refundable cost of tender document amounting to Rs 11200/- (Rupees eleven thousand two hundred) only inclusive of CGST @ 6% & SGST @ 6% in shape of Account Payee Demand Draft drawn on any nationalized/scheduled bank payable at Bhubaneswar only in favour of Odisha Construction Corporation Ltd.- Project Account, may be deposited along with the tender. OCCL will not be responsible for missing of any page while downloading.

2.4. There is no provision of direct sale of Tender Document in this office.

2.5. Tender documents downloaded from OCCL website [www.odishaconstruction.com](http://www.odishaconstruction.com), shall be considered valid for participating in the tender process. In such case the tenderer shall deposit cost of tender document as prescribed in para 2.3. During the scrutiny of downloaded tender document, if any modification/correction etc is noticed as compared to the original documents posted on the website, the bid submitted by such a tenderer is liable to be rejected.

2.6. The cost of the tender documents is non-refundable and the tender form is nontransferable.

2.7. The completion period for the work is **07 (seven) calendar months** in all respect, from the date of issue of letter of award.

## **3. Eligibility & Qualification Criteria**

The offer of only those applicants will be considered who would satisfy the following conditions:-

3.1 The Bidding Company must have been registered as a manufacturer of Instrumentation / Automation Panels (RTUs & PLCs)

3.2 The Bidder company must have successfully completed (not less than 80% of contract value) as a prime Bidder, at least one similar work of Automation and Instrumentation work with SCADA in Irrigation sector of value not less than Rs.2.00 crore during last 5 years.

3.3 The Bidding Company in its own name should have an average Annual Financial Turnover of Rs.5.0 crore per year in last Five Years preceding from the date of this Tender Notice and should submit the attested copies of Audited Balance Sheet along with Profit & Loss

Statement and Auditor's Report duly certified by the Bidder and Chartered Accountant. Interested bidder may visit the site of work before submitting the offer.

- 3.4 Certified Bidder must have ISO 9001:2000, ISO: 14001:2004 and ISO 27001:2013, failing which bids shall not be accepted.
- 3.5 Must have technical proficient staffs with not less than five years of Electrical & Automation Works. List of staff/ manpower to be submitted by the bidder in Proforma 3.
- 3.6 The Bidder should furnish a brief write-up, backed with adequate data, explaining his available capacity and experience (both technical and commercial) for the manufacture and supply of the required equipment within the specified time of completion after the meeting all their current commitments.
- 3.7 The Bidding Company will submit a Solvency Certificate in accordance with Proforma-2 for minimum of Rs.5.0 crore from the schedule Bank in India issued not earlier than 6 months preceding from the last date of tender.
- 3.8 The bidder company must have GST registration certificate and will submit the last updated GST payment slip.
- 3.9 The bidder company will submit the PAN details.
- 3.10 The bidder will submit copy of valid labour license, valid EPF registration certificate issued by Provident Fund Authority, valid ESI registration issued by competent authorities.
- 3.11 The bidder will submit Copy of document indicating residential address.

#### **4. Site Visit**

The bidder is advised to visit and examine the site of works and its surroundings and obtain for himself on his own responsibility all information that may be necessary for preparing the bid and entering into the Contract. The costs of any such visits shall be entirely at the bidder's own expense.

#### **5. Clarification of Bidding Documents**

A prospective bidder requiring any clarification of the bidding documents, drawings, specifications, etc may notify at the following address in writing or by e-mail / fax/in person on or before 15.03.2019 during official hour prior to submission of the tender.

**The General Manager,  
Odisha Construction Corporation Ltd. (Government of Odisha Undertaking)  
Central Workshop, Rasulgarh, Bhubaneswar-751010 (Odisha)  
Phone : 0674 – 2580106,  
Fax : 0674 – 2587321,  
Email Id : [gmocclcws@yahoo.co.in](mailto:gmocclcws@yahoo.co.in), [theooccltd@odishaconstruction.com](mailto:theooccltd@odishaconstruction.com)**

#### **6. Amendment to bidding documents**

At any time prior to the last date for submission of bids, the OWNER or the Engineer on his behalf may for any reason modify the bidding documents by an amendment.

The amendment in the form of an addendum / corrigendum will be uploaded in our official website.

## 7. Earnest Money

- 7.1 The bidders are required to deposit the **Earnest Money deposit @1%** of total quoted value along with their Bid for this particular work. The Earnest Money must only be made in Crossed Demand Draft or Pay order in favour of “**Odisha Construction Corporation Ltd.-Project Account**” payable at **Bhubaneswar drawn on any Nationalised / Scheduled Bank in India or in the form of Bank Guarantee from any Nationalised / Scheduled Bank in India in accordance with Proforma - 15.**
- 7.2 Earnest Money will not be accepted in any form other than those mentioned in Clause 7.1 above.
- 7.3 The Price Bid of the bidder who has not submitted the Earnest Money along with the First envelope in accordance with Clause 7.1 above shall not be opened and the tender will be rejected by OCCL.
- 7.4 The Earnest Money of the unsuccessful bidders will be discharged/returned within 30 days after the Award of the Contract to the successful bidder. The Earnest Money of the successful bidder may be returned by OCCL after receipt of Performance Guarantee from them.
- 7.5 No interest shall be paid on the Earnest Money.

## 8. Rates and Prices

8.1 The prices quoted by the Bidder shall be in INR (Indian Rupee) and fixed for the contemplated completion period and shall not be subject to any escalation due to any account in this period. Prices shall also remain firm in case of variation of quantities, change in location of equipments within limits specified in Technical Specifications and actual completion period. The Price will be excluded of all Taxes & Duties as applicable for this project.

In no case the vendor/contractor can claim price escalation.

8.2 The Contract shall cover the entire scope of works described in General Conditions of contract, Special Conditions of Contract and Technical Specifications of Bid which includes supply and erection of all equipment for completing the respective part in full and testing and commissioning the same for Performance and Guarantee and rendering it operational to the satisfaction of the Owner/Engineer.

8.3 The bidder should quote their rates in figures as well as in words. **In case of discrepancy between the unit rates quoted in figures and in words, the unit rates quoted in words shall prevail.**

8.4 The amount for each item should be worked out and the requisite totals given. In case of discrepancy between the unit rate and the total amount derived from multiplication of unit rate and the quantity, the unit rate as quoted will govern and the total amount will be corrected.

8.5 All rates shall be quoted only on the proper form of the tender and each page of the Bill of Quantities shall be signed. Any cutting or over-writing shall be initialled.

8.6 **While quoting the rates the word "Only" should be written closely, following the amount and it should not be written in the next line.**

## 9. Validity

9.1 Tenders shall remain valid and open for acceptance for a period of **6 months from the date of opening of tenders.** Should the bidder fail to keep the tender open for acceptance as stated above or if the bidder withdraws his tender before the expiry of the said period or

makes any modifications in the terms and conditions of the tender which are not acceptable then OCCL without prejudice to any other right or remedy shall be at liberty to forfeit his Earnest Money.

9.2 In exceptional circumstances, prior to expiry of the original validity period, OCCL may request the bidders for a specified extension in the period of validity. The request and the responses thereto shall be made in writing. A bidder agreeing to the request will neither be required nor be permitted to modify his tender.

## **10. Submission of Tender**

Tenders complete in all respects shall be received in the Registered Office of the General Manager(Mech), Central Workshop, Odisha Construction Corporation Ltd., (Government Of Odisha Undertaking), Rasulgarh, Bhubaneswar-751010 (Odisha) **upto 03:00 PM Hours on 30.03.2019**

The bidders shall seal the tender in Two envelopes duly marking the envelopes as under:-

a. **First Envelope** shall be marked "**Techno-Commercial Bid**" along with the following details over the envelope.

- i. Cost of Tender Paper for Rs. \_\_\_\_\_
- ii. EMD for Rs \_\_\_\_\_
- iii. Tender for " \_\_\_\_\_ (Name of work) \_\_\_\_\_ "
- iv. Reference No. " \_\_\_\_\_ (Tender No.) \_\_\_\_\_ "
- v. Project " \_\_\_\_\_ (Name of Project) \_\_\_\_\_ "
- vi. The words: "Do not open before \_\_\_\_\_ (Time and Date) \_\_\_\_\_ "
- vii Name and address of the Bidder " \_\_\_\_\_ "

b. **Second Envelope** marked as "**Price Bid**" for:

- i. Tender for " \_\_\_\_\_ (Name of work) \_\_\_\_\_ "
- ii. Reference No. " \_\_\_\_\_ (Tender No.) \_\_\_\_\_ "
- iii. Project " \_\_\_\_\_ (Name of Project) \_\_\_\_\_ "
- iv. Name and address of the Bidder " \_\_\_\_\_ ."

The bidder shall seal both the envelopes in an outer envelope duly marked as "**Techno-Commercial and Price Bid**" for --- -- --- --- --- -- (Name of Work), Tender No.----- and words "Do not open before ----- (Time and Date) ----- " .

The outer envelope shall be addressed to OCCL at the following address:-

**The General Manager(Mech),  
Central Workshop,  
Odisha Construction Corporation Ltd.,  
(Government of Odisha Undertaking)  
Regd. Office : Rasulgarh,  
Bhubaneswar-751 010 (Odisha)**

No tender shall be accepted, unless it is properly sealed.

Any tender received by OCCL after the deadline for submission of the tenders prescribed by OCCL in the Tender Notice, will be rejected and returned unopened to the bidder. Any tender for which Earnest Money is received after the dead line for the submission of tender prescribed by OCCL in the Tender Notice, will be rejected and returned unopened to the bidder.



## **11. Opening of Tenders**

The first packet (First envelope) shall contain the **Techno-Commercial Bid, Tender Paper cost, Earnest Money Deposit** and **all the Pre-Qualification Documents** required as per **Clause 3 "Eligibility & Qualification Requirements"** of Instructions to Bidders of Tender Document.

The Second Packet shall contain only the **Price Bid** duly sealed and clearly marked in bold letters as "**Price Bid**".

The first Packet shall be opened on **30.03.2019 at 16.00 Hours in the presence of Bidders, who will participate in this tender, if so they desire.**

**The bidders on opening the technical bid will be requested for submitting Power Point presentation for the quoted project at the venue to be intimated to them through mail/Post.**

The Second Packet, comprising of the Price bid of only those bidders, who have qualified in the technical bid, shall be opened after pre-qualification of the bidders. The date of opening of Price Bid document shall be intimated to the pre-qualified bidders through mail / post after due verification of Technical bid. The price bid of the bidders who have not qualified in the technical bid shall be returned unopened.

## **12. Evaluation of Tender**

The tenders will be evaluated in accordance with the criteria given in clause 3 above. Tenders containing any condition including conditional rebate/rebates are liable to be rejected (conditional tender will be rejected).

**The tenders submitted by the bidders who do not meet the Qualifications Requirements stipulated in the Tender Documents or whose Price Bids or rates which are valid for a period less than validity period from the date of opening of tenders, will be rejected. Earnest money of the tenders containing the above mentioned restricted validity of Price Bids or rates is liable to be forfeited.**

Canvassing in connection with tender are strictly prohibited and the tenders submitted by the bidders who resort to canvassing will be liable to rejection.

## **13. Award of Contract**

OCCL will award the contract to the bidder who meets the eligibility criteria for qualification mentioned in Clause 3 above and who has offered the lowest Evaluated Bid Price provided further that the bidder has the capability and resources to carry out the contract effectively. The tenders of the bidders, who have not been found to meet the qualification criteria on the basis of the documents submitted to OCCL, will be rejected.

Prior to the expiry of the period of Bid validity prescribed by OCCL, OCCL will notify the successful bidder by mail / fax to be confirmed in writing by Registered letter that his/ their tender has been accepted.

After evaluation of all tender documents and getting approval from competent authority, **Letter of Intent (LOI) shall be issued in favour of the successful bidder. On receipt of LOI, the successful bidder has to submit design & drawing for the aforesaid project within 30(Thirty) days from the date of issue of LOI. This letter hereinafter called the Letter of Award shall constitute the formation of contract. Letter of Award can only be issued after getting approval for the Design & Drawing from the Client.**

The bidder whose tender is accepted shall be required to submit stamp papers of appropriate value in his name for payment of stamp duty as per the provision of Indian Stamp Act within 7 days of the date of issue of Letter of Award and shall be required to appear at the office of OCCL in person, or through a duly authorized representative to execute the contract agreement within 15 days after receipt of the notice for signing the Contract Agreement. No payments shall be released to the Contractor until the agreement is signed. Failure to do so shall also constitute a breach of the agreement effected by the acceptance of the tender in which case the Letter of Award for the contract can also be cancelled and the Earnest Money accompanying the tender is also liable to be forfeited by OCCL.

#### **14. Court's Jurisdiction**

Any suit or application, arising out of any dispute or difference on account of this tender or any matter in relation to the Award of the contract or for the enforcement of Arbitration clause under the Contract, shall be filed in a Competent Court at **Bhubaneswar, India** only and no other court of any other District of the country shall have any jurisdiction in the matter. **It is to be noted that in all cases, if any, OCCL should be made as First Respondent.**

#### **15. Secrecy of Contract Documents**

The Contract is confidential and must be strictly confined to the Contractor's own use (except so far as confidential disclosure to sub-contractors or suppliers if necessary) and for the purpose of the contract.

#### **16. General**

- I. The contractor's operations and proceeding in connection with the works shall at all times be conducted during the continuance of contract in accordance with the laws, ordinance, rules and regulations for the time being in force and the contractors shall further observe and comply with the bye laws and regulations of the Government of India and State Government and of Municipal and other authorities having jurisdiction over area involved in connection with the works or site and over operations such as those as carried out by the contractor(s) and shall give all notices required by such bye-laws and regulations. The hospital and medical regulations in force for the time being shall also be complied with by the contractor/contractors and his/their workmen.
- II. No Engineer of Gazetted rank or other Gazetted Officer employed in Engineering or Administrative duties in any Department of the Government of India is allowed to work as a Contractor for a period of two years immediately after his retirement from Government service without the previous permission of the Government of India. This contract is liable to be cancelled if either the Contractor or any of his employees is found at any time to be such a person who had not obtained the permission of the Government of India as aforesaid before submission of the tender or engagement in the contractor's service.
- III. Should a contractor have a relative employed in Managerial capacity in OCCL or in the case of partnership firm or company incorporated under the Indian Company Law, should a partner or relative of the partner or a shareholder be employed in responsible capacity in OCCL, the authority inviting tenders shall be informed of the fact at the time of submission of

tenders, failing which the tender may be rejected. If such fact is suppressed at the time of tendering and comes to light at any time there

- IV. after the acceptance of tender the contract may be rescinded.
- V. Site for execution of the work will be made available as soon as the work is awarded.

### **17. Authority to sign**

- I. If the Applicant is an individual, he should sign above his full type written name and current address.
- II. If the Applicant is a proprietary firm, the Proprietor should sign above his full type written name and the full name of his firm with its current address.
- III. If the Applicant is a firm in partnership, the documents should be signed by all partners of the firm above their full type written names and current addresses. Alternatively the documents should be signed by a partner holding Power of Attorney for the firm in the format at Proforma - 14.
- IV. If the Applicant is a limited Company, or a corporation, the Documents shall be signed by a duly authorized person holding Power of Attorney for signing the documents in the format at Proforma -14.
- V. The Bidders should submit the following documents (in addition to other documents, required as per other clauses): -
  - a)
    - i) Letter of Submission of Tender as per **Proforma-8**
    - ii) Earnest Money in proper form as per **Clause 7.0**
    - iii) Letter of Acceptance as per **Proforma - 9.**
  - b) Attested Copies of Affidavit for Sole Proprietorship / Partnership Deed / Memorandum and Articles of Association along with the details pertaining to place of registration, principal place of business of the firm etc.
  - c) Written Power of Attorney of the Signatory of the Tender on behalf of the Bidder. The signature of the person for signing the tender document should be attested in the power of Attorney.
  - d) The set of Tender Document is required to be submitted duly signed on each page as token of having read the conditions.
- VI. Even though the Bidders meet the above qualifying criteria, they are liable to be disqualified, if
  - a. They have made misleading or false representation in the forms, statements and attachments submitted in proof of the qualification requirements.
  - b. They have records of poor performance such as abandoning the work, not properly completing the contract, litigation history or financial failures etc.
  - c. Their business banned by any Central/State Govt. Department/Public Sector Undertakings or Enterprises of Central/State Govt.
  - d. Not submitted all the supporting documents or not furnished the relevant details as

per the prescribed form at **Proforma-5**.

A declaration to the above should be submitted on the non-judicial stamp paper of Rs.20/- duly attested by Notary/Magistrate as per format given in **Proforma-5**.

- VII. If photo copies / attested copies of any documents mentioned above, are being submitted by the Bidder, these should be attested by the bidders and that these documents are still required to be submitted even if these have been submitted earlier by the Bidder along with any other tender or for pre-qualification tender.
- VIII. In case of failure to submit the required document along with the Bid, same submitted by Bidder is liable to be rejected. The Bidder has to attach all the documents and mention the Annexures at which the relevant document is enclosed.
- IX. Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they conceal any information required to be furnished as per the tender conditions or make misleading or false representations in the forms, statements, and attachments submitted in proof of the Qualification Requirements

## LIST OF GATE AUTOMATION PROJECT COMPLETED FOR LAST FIVE YEARS

S.No	Clients Name Address & Contact No.	Scope of Work	Agreement/ Letter of Award No.	Contract Value (Rs In Lacs)		Location	Date of Start	Date of Completion	
				Awarded	Actual			As per LOA	Actual

## RECORD OF GATE AUTOMATION PROJECT UNDER OPERATION &amp; MAINTENANCE

S.No	Clients Name Address & Contact No.	Location	Type of Ropeway	Brief Technical Details of Automation System	Date of Commissioning	Date of Commencement of Operation & Maintenance	Performance Record & Remarks

This is to certify that Automation System operated & maintained by self have not met with any fatal accident.

## SEAL AND SIGNATURE OF THE BIDDER

## Note:

- In support of having completed above works attach self attested copies of the completion certificate from the owner/client indicating the name of work, the description of work done by the bidder, date of start, date of completion, value of contract and value of material supplied free of cost by client.
- Information must be furnished for works carried out by the bidder in his own name as a prime contractor or proportionate share as member of a joint Venture. In the latter case details of contract value including extent of financial participation by partners in that work should be furnished.

**SOLVENCY CERTIFICATE**

(On the letter head of Bank)

This is to certify that to the best of our knowledge and information, M/s \_\_\_\_\_  
\_\_\_\_\_ having their registered office at \_\_\_\_\_  
\_\_\_\_\_ a customer of our bank is a reputed Company with a good financial standing and  
can be treated as solvent to the extent of Rs. \_\_\_\_\_.

This certificate is issued without any guarantee or risk and responsibility on the Bank or any of its  
officers

Sd/-

**Name of the Bank/Branch Name, address &**

**Seal of the Bank/Branch**

**CERTIFICATE CONFIRMING THE AVAILABILITY OF STAFF/MANPOWER**

This is to certify that I/We shall deploy the essential staff/manpower as specified in the tender, if I/We am/are awarded the work of \_\_\_\_\_ (name of work) as per the details indicated below I/We agree that the staff/manpower indicated below is the minimum essential for the project execution and in addition to these, other staff/manpower necessary to complete the work successfully and in time, shall also be deployed by me/us.

Position	Name	Years of Experience (general)	Years of Experience in Proposed Position (Automation System)

**SEAL AND SIGNATURE OF THE BIDDER**

**CERTIFICATE CONFIRMING THE AVAILABILITY OF MACHINERY AND EQUIPMENT**

This is to certify that I/We shall deploy the essential machinery and equipment required for the work, if I/We am/are awarded the work of \_\_\_\_\_ (name of work) as per the details indicated below. I/We agree that the equipment indicated below is the minimum essential for the project execution and in addition to these, other machinery and equipment necessary to complete the work successfully and in time, shall also be deployed by me/us

Item of Equipment	Make and Age (Years)	Condition (new, good, poor)	Owned

**SEAL AND SIGNATURE OF THE BIDDER**



**PROFORMA FOR SUBMISSION OF PAST CONTRACTUAL PERFORMANCE**

(Affidavit on non-judicial stamp paper of Rs 20/- duly attested by Notary/Magistrate)

This is to certify that We, M/s \_\_\_\_\_, in submission of this offer,

- i) Have not made any misleading or false representation in the forms, statements and attachments in proof of the qualification requirements;
- ii) Do not have records of poor performance such as abandoning the work, not properly completing the contract, litigation history, financial failures or fatal accident in self operated Automation System etc.
- iii) Business has never been banned with us by any Central/State Govt. Departments/Public Sector Undertakings or Enterprises of Central/State Govt.
- iv) Have submitted all the supporting documents and furnished the relevant details as per the prescribed format.
- v) The information and documents submitted with the tender by me/us are correct and I/we am/are fully responsible for the correctness of the information and documents submitted by me/us.

**SIGNATURE AND SEAL OF THE BIDDER**

**DATA REQUIREMENT REGARDING CONSORTIUM/JOINT VENTURE PROPOSED**

Information pertaining to consortium/Joint venture proposed to be engaged by BIDDER. Generally such information shall include the following but not limited to:

- a) Joint Venture/Consortium Agreement in case of Consortium/Joint venture bidder
- b) Authorisation of One partner as Lead Partner (Proforma 7)
- c) Extent of participation of each firm with detailed break up of work to be executed by him/them
- c) Technical background of joint venture/partner/consortium firms proposed
- d) Experience on Automation job
- e) Financial background of each partner
- f) Organizational set up
- g) Other relevant details which emphasizes suitability of the concerned parties for the job to be performed by them towards execution of the contract.

**SEAL & SIGNATURE OF THE LEADER BIDDER**

**FORMAT FOR POWER OF ATTORNEY FOR APPOINTING THE LEAD MEMBER**  
[On Requisite Stamp Paper]

KNOW ALL MEN by these presents that we, [name of the company], a company incorporated under, having its Registered Office at [Address of the Company] (Hereinafter referred to as Company)

WHEREAS the Company along with \_\_\_\_\_ and \_\_\_\_\_ (give name and registered office address) is forming a joint venture/ consortium to submit a Technical and Financial Bid in response to the Tender for the \_\_\_\_\_  
\_(Name of Work) \_\_\_\_\_ issued by OCC Ltd and is desirous of appointing an attorney for the purpose thereof.

Whereas the Company deems it expedient to appoint M/s \_\_\_\_\_  
(name of Company, registered office address) as the Attorney of the Company.

NOW KNOW YE ALL BY THESE PRESENTS, that \_\_\_\_\_ [name of company] do hereby nominate, constitute and appoint [name the lead member of company] as its true and lawful Attorney to do and execute all or any of the following acts, deeds and things for the Company in its name and on its behalf, that is to say:

- a. To act as the Lead Member of the Joint Venture/ Consortium for the Purposes of the Project.
- b. In such capacity, to act as the Company's official representative for submitting the Technical and Financial bid for the Project and other relevant documents in connection therewith.
- c. To sign all papers for bids, offers, Project documents, necessary documents, papers, applications, representations and correspondence necessary and proper for the purpose aforesaid;
- d. To tender documents, receive and make inquiries, make the necessary corrections and clarifications to the Project documents, as may be necessary
- e. To sign and execute contracts relating to the Project including variation and modification thereto
- f. To represent the Company at meetings, discussions, negotiations and presentations with Owner, Competent Authorities and other Project related entities;
- g. To receive notices, instructions and information for and on behalf of the Company;
- h. To execute the Contract Agreement for and on behalf of the company
- i. To do all such acts, deeds and things in the name and on behalf of the Company as necessary for the purpose aforesaid.

AND the Company hereby covenant with the said Attorney to ratify and confirm all and whatever the attorney may lawfully do or cause to be done by virtue of these presents.

IN WITNESS WHEREOF the Company puts its hand and seal to this Power of Attorney on this [day, month & year]

The common seal of [name of the company] was here unto affixed pursuant to a resolution passed at the meeting of Committee of Directors held on \_\_\_ day \_\_\_\_\_ of, (Year) \_\_\_ \_\_\_\_\_ in the presence of [name & designation of the person] and countersigned by [name & designation of the person] of the company of [name of the company]

The common seal of [name of the company) [Name & designation of the person]

**LETTER OF SUBMISSION OF TENDER  
(To be typed by Contractor on his letter head)**

From:

To:

Name of the Work: \_\_\_\_\_

Ref: Tender No. \_\_\_\_\_

Dear Sirs,

- 1 Having examined the Conditions of Contract, Specifications, incorporated in the tender document for the execution of the above named works, and having visited and examined the site of the said works, I/We the undersigned, offer to execute, complete and maintain the whole of the said works in conformity with the said conditions of contract, specifications, Bill of Quantities/Price bid etc. for the sum as indicated in the Bill of Quantities/Price bid or such other sum as may be ascertained in accordance with the said conditions.
- 2 Should this tender be accepted I/we undertake to commence the work within 10 (Ten) days of issue of the Letter of Award for the work and further undertake to complete and deliver the whole of the works comprised in the contract within 07 (Seven) calendar months from the date of issue of Letter of Award or handover clear project land and receipt of all statutory clearances whichever is later.
- 3 I/We agree to abide by this tender for a period of 6 months from the date of opening of the bid/or such extended period as may be mutually agreed as prescribed in clause 7.0 of the Instruction to Bidders and it shall remain binding upon us and may be accepted at any time before the expiry of that period.
4. A sum of Rs. \_\_\_\_\_ towards earnest money in the form of \_\_\_\_\_ in terms of clause 7 of the Instructions to bidders, is enclosed herewith.
5. Unless and until an agreement is prepared and executed, this tender together with your written acceptance thereof, shall constitute a binding Contract between us.
6. We understand that you are not bound to accept the lowest or any tender you may receive.
7. Name of the partners of the firm authorized to sign  
 \_\_\_\_\_  
 \_\_\_\_\_

**or**

Name of person having power of attorney to sign the contract (Certified true copy of the Power of Attorney should be attached)

**8. Correspondence address of Contractor:-**

(The bidder should write his address and other details below at which the correspondence shall be made regarding this tender. In case of any change in the address provided below contractor has to inform OCCL immediately).

- a) Correspondence Address: \_\_\_\_\_
- b) Telephone No (along with STD Code): \_\_\_\_\_
- c) Fax/Email ID: \_\_\_\_\_
- d) Name of Contact Person: \_\_\_\_\_

All the correspondence shall be made by OCCL at the above provided address / phone / Fax numbers only.

Yours faithfully,

**SIGNATURE(S) OF THE BIDDER(S)**

Permanent address \_\_\_\_\_

Local address \_\_\_\_\_

Note: The Bidder is to fill up the blanks in the above form before signing and submitting the tender.

**ACCEPTANCE LETTER****(To be typed by Contractor on his letter head)**

Dated. \_\_\_\_\_

To. \_\_\_\_\_

\_\_\_\_\_

Sir,

Sub: **No-counter Conditional Acceptance of Tender Conditions**

Ref : Tender No \_\_\_\_\_

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

1. I have read and examined all the conditions in the tender document for the work of Automation of Spillway and Head regulator gates controlled through centralized remote control & implementation of real time management system of Deo Irrigation Project and we hereby unconditionally accept the tender conditions in entirety for the above work.
2. **I/We hereby submit our tender and undertake to keep our tender valid for a period of 6 (Six) months from the date of opening of tender.**
3. I/We undertake to execute the above items strictly in accordance with the requirements and particulars/specifications stipulated in the tender documents.
4. I/we hereby further undertake that during the said period:-I/we shall not vary/alter or revoke my/our tender during the validity period of tender. I/we have quoted for the complete tender.
5. I/we undertake to abide by the terms and conditions as stipulated in your tender documents and as amended thereafter.
6. I/we have not enclosed any conditions/deviations to conditions of tender in the Price Bid.
7. I/we agree that in case of any condition found to be quoted by us in the Price bid my/our tender will be rejected and my/our earnest money is liable to be forfeited.
8. This undertaking is in consideration of OCCL agreeing to open my tender, consider and evaluate the same for the purpose of award of work in terms of provisions of tender documents. Should this tender be accepted, I/we also agree to abide by, fulfill, and comply with all the terms, conditions and provisions of the above mentioned tender documents.

I hereby submit Earnest Money deposit of Rs. \_\_\_\_\_ through Bank Draft/Pay Order No. \_\_\_\_\_.

Signature along with Seal of the company

(Duly authorised to sign the Tender on behalf of the Contractor)

---

Signature of tenderer or his/their  
power of attorney holder with date,  
full name, designation and official seal

General Manager(Mech.) ,OCCL,  
Central Workshop, Rasulgarh,  
Bhubaneswar – 751010 (Odisha) Page 23

Name \_\_\_\_\_

Designation \_\_\_\_\_

Name of the Company \_\_\_\_\_

Date & Postal address \_\_\_\_\_

WITNESS

Signature \_\_\_\_\_

Date \_\_\_\_\_

Name and address

Telephone No.

Fax No./ Email ID:



**CONTRACT AGREEMENT  
AUTOMATION OF SPILLWAY GATES CONTROLLED THROUGH CENTRALIZED  
REMOTE CONTROL & IMPLEMENTATION OF REAL TIME MANAGEMENT SYSTEM  
OF DEO IRRIGATION PROJECT**

CONTRACT AGREEMENT FOR THE WORK OF \_\_\_\_\_  
dated \_\_\_\_\_ (day) \_\_\_\_\_ (month) \_\_\_\_\_ (year) \_\_\_\_\_  
\_\_\_\_\_ (in words) between M/s \_\_\_\_\_,  
having registered office at \_\_\_\_\_  
\_\_\_\_\_

hereinafter called the "CONTRACTOR" (which term shall unless excluded by or repugnant to the subject or context include its successors and permitted assignees) of the one part and the Odisha Construction Corporation Ltd., Bhubaneswar having Central office at Bhubaneswar, India, acting through its Managing Director and includes his successors and assigns, hereinafter called "Owner".

WHEREAS the Owner is desirous that certain works should be executed viz. Automation of Spillway and Head regulator gates controlled through centralized remote control & implementation of real time management system of Deo Irrigation Project on turnkey basis and has by Letter of Acceptance dated \_\_\_\_\_ accepted a tender submitted by the contractor for the execution & completion of such works.

Now THIS AGREEMENT WITNESSETH as follows:

1. In this agreement words and expressions shall have the same meaning as are respectively assigned to them in the conditions of contract hereinafter referred to.
2. The following documents in conjunction with Addendum/ Corrigendum to Tender Documents shall be deemed to form and be read and construed as part of the agreement viz:
  - a) This Form of Agreement.
  - b) The Letter of Acceptance.
  - c) The Priced Bid (Vol. 2).
  - d) The Technical Specifications.( Vol 1)
  - e) The Special Conditions of Contract (Vol. 1)
  - f) The General Conditions of Contract (Vol. 1)
  - g) The Instructions to Bidders (Vol. 1)
3. The aforesaid documents shall be taken as complementary and mutually explanatory of one another, but in the case of ambiguities or discrepancies, shall take precedence in the order set out above.

4. In consideration of the payment to be made by the Owner to the contractor as hereinafter mentioned, the contractor hereby covenants with the Owner to execute, complete and maintain the works in conformity in all respects within the provisions of the contract.
5. The Owner thereby covenants to pay to the contractor in consideration of the execution, completion of the works at contract price at the time and in the manner prescribed by the contract.
6. The several parts of the agreement has been read and fully understood.

In WITNESS whereof the parties hereto have caused their respective common seals to be hereinto affixed (or have herewith set their respective hands and seals) the day and year first above written.

SIGNED, SEALED AND DELIVERED BY

For and on behalf of  
OWNER

For and on behalf of  
CONTRACTOR

Signature  
Name  
Designation

Signature  
Name  
Designation

Witness

1. Signature  
Name  
Address

Signature  
Name  
Address

2. Signature  
Name  
Address

Signature  
Name  
Address

**FORM OF BANK GUARANTEE TOWARDS SECURITY DEPOSIT**

(ON NON -JUDICIAL PAPER OF APAROPRIATE VALUE IN THE  
NAME OF THE BANK)

To:

The Managing Director,  
Odisha Construction Corporation Ltd.,  
(Government Of Odisha Undertaking)  
Regd. Office : Unit-VIII, Gopabandhu Nagar,  
Bhubaneswar-751 012

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

Dear Sir(s)

1. In consideration of Odisha Construction Corporation Ltd.. (Hereinafter called OCC) representing through its The Managing Director having the Central Office at Bhubaneswar, Odisha, India having agreed to exempt M/s. \_\_\_\_\_ hereinafter called "the said Contractor(s)" from the demand, under the terms and conditions of an agreement No. \_\_\_\_\_ dated \_\_\_\_\_ made between OCC, Bhubaneswar and the Contractor for \_\_\_\_\_ (name of work) (hereinafter called "the said agreement"), of security deposit for the due fulfillment by the said Contractor(s) of the terms and conditions contained in the said Agreement, on production of a Bank Guarantee for Rs. \_\_\_\_\_ only, we (hereinafter referred to as the bank) at the request of M/s. \_\_\_\_\_ (Contractor(s)) do hereby undertake to pay to the OCC an amount not exceeding Rs. \_\_\_\_\_ only against any loss or damage caused to or suffered or would be caused to or suffered by the OCC by reason of any breach by the said Contractor(s) of any of the terms & conditions contained in the said agreement.
2. We, \_\_\_\_\_ do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the OCC stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the OCC by reason of breach by the said contractor(s) of any of the terms & conditions contained in the said agreement or by reason of the contractor(s) failure to perform the said agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only).
3. We, undertake to pay to the OCC any money so demanded notwithstanding any dispute or dispute raised by the contractor(s)/ Supplier(s) in any suit or proceeding pending before any court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

4. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under the contractor(s)/supplier(s)/shall have no claim against us for making such payment.
  
5. We, \_\_\_\_\_ (name of the bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the OCC under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till The Managing Director, OCC., certified that the terms and conditions of the said agreement have fully and properly carried out by the said contractor(s) and accordingly discharges this guarantee is made on us in writing on or before \_\_\_\_\_, we shall be discharged from all liability under this guarantee thereafter.
  
6. We, \_\_\_\_\_ (name of the bank) further agree with the OCC that the OCC shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by the OCC against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said contractor(s) or for any forbearance, act or omission on the part of the OCC or any indulgence by the OCC to the said contractor(s) or any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.
  
7. This guarantee will not be discharged due to the change in the constitution of the Bank or the contractor(s) /Supplier(s).
  
8. We, \_\_\_\_\_ (name of the bank) lastly undertake not to revoke this guarantee during its currency except with the previous consent of the OCC in writing.
  
9. Notwithstanding anything contained herein above our liability under this guarantee shall:
  - a. be limited to a sum of Rs. \_\_\_\_\_ only).
  - b. stand completely discharged and all your rights under this guarantee shall stand extinguished if no claim or demand made upon us in writing on or before \_\_\_\_\_.

For \_\_\_\_\_

(indicate the name of bank)

Bank Guarantee No. \_\_\_\_\_

Date \_\_\_\_\_

**INDEMNITY BOND**

Name of the work- (On Non-Judicial Stamp paper of appropriate value)

KNOW all men by these presents that I/we \_\_\_\_\_ (Name of Contractor with address) \_\_\_\_\_ do hereby execute Indemnity Bond in favour of \_\_\_\_\_

(1) Odisha Construction Corporation Ltd.(OCC), Bhubaneswar, Odisha

THIS DEED WITNESSETH AS FOLLOWS:

I/we \_\_\_\_\_ (Name of Contractor) hereby do indemnify and save harmless OCC, Bhubaneswar from:

- 1) Any third party claims, civil or criminal complaints/liabilities site mishaps and other accidents or disputes and/or damages occurring or arising out of any mishaps at the site due to faulty work, negligence, faulty construction and/or for violating any law, rules and regulations in force, for the time being while executing/executed civil, electrical & mechanical works by me/us.
- 2) Any damages, loss or expenses due to or resulting from any negligence or breach of duty on the part of me/us or any sub contractors/s if any, servants or agents.
- 3) Any claims by an employee of mine/ours or of sub-contractors if any, under the workman compensation act and employers' Liability act,1939 or any other law rules and regulations in force for the time being and any acts replacing and/or amending the same or any of the same as may be in force at the time and under any law in respect of injuries to persons or property arising out of and in the course of execution of the contract work and/or arising out of and in the course of employment of any workman/employee.
- 4) Any act or omission of mine/ours or sub-contractor/s if any, our/their servants or agent which may involve any loss, damage, liability, civil or criminal action.

IN WITNESS WHEREOF THE \_\_\_\_\_

HAS SET HIS/THEIR HANDS ON THIS DAY OF \_\_\_\_\_

SIGNED AND DELIVERED BY THE AFORESAID \_\_\_\_\_

IN THE PRESENCE OF WITNESS:

1 \_\_\_\_\_

2 \_\_\_\_\_

**FORMAT FOR POWER OF ATTORNEY FROM THE LEAD MEMBER  
APPOINTING DESIGNATED PERSON  
[On Requisite Stamp Paper]**

KNOW ALL MEN by these presents that we, [Name of the company], a company incorporated under the Companies Act, \_ \_ \_ \_ \_ , having its Registered Office at [Address of the Company] \_ \_ \_ \_ \_ (hereinafter referred to as Company):

WHEREAS the Company has been authorized by \_ \_ \_ \_ \_ and \_ \_ \_ \_ \_ (give names and registered office addresses), vide its respective Power of Attorney, to act as the Lead Member of the Consortium/ Joint Venture bidding for the Project.

WHEREAS in response to the tender for \_ \_ \_ \_ \_ (Name of Work) \_ \_ \_ \_ \_ , the Company is submitting a Technical and Financial Bid on behalf of the Consortium/ Joint Venture for the Design, Finance, Construction, Operation and Maintenance of the \_ \_ \_ \_ \_ (Name of Work) to the \_ \_ \_ \_ \_ (Client) and is desirous of appointing an attorney for the purpose thereof.

Whereas the Company deems it expedient to appoint Mr. \_ \_ \_ \_ \_ son of \_ \_ \_ \_ \_ resident of \_ \_ \_ \_ \_ , holding the post of \_ \_ \_ \_ \_ as the Attorney of the Company.

NOW KNOW YE ALL BY THESE PRESENTS, that \_ \_ \_ \_ \_ [name of the lead member company] do hereby nominate, constitute and appoint [name & designation of the person] as its true and lawful Attorney so long as he is in the employment of the Company to do and execute all or any of the following acts, deeds and things for the Company in its name and on its behalf, that is to say:

- a. To act as the Company's official representative for submitting the Technical and Financial Bid for the said Project and other relevant documents in connection therewith.
- b. To sign all papers for all bids, offers, project documents, necessary documents, papers, applications, representations and correspondence necessary and proper for the purpose aforesaid;
- c. To tender documents, receive and make inquiries, make the necessary corrections and clarifications to the Project documents, as may be necessary
- d. To sign and execute contracts relating to the Project, including variation and modification thereto
- e. To do all such acts, deeds and things in the name on behalf of the company as necessary for the purpose aforesaid.

The common seal of [name of the company] was here unto affixed pursuant to a resolution passed at the meeting of Committee of Directors held on \_ \_ \_ \_ \_ day \_ \_ \_ \_ \_ of \_ \_ \_ \_ \_ , in the presence of [name & designation of the person] and countersigned by [name & designation of the person] of the company of [name of the company]

The common seal of [name of the company)

[Name & designation of the person]

**FORMAT FOR POWER OF ATTORNEY TO AUTHORISED SIGNATORY  
POWER OF ATTORNEY**

(To be executed on non-judicial stamp paper of the appropriate value in accordance with relevant Stamp Act. The stamp paper to be in the name of the firm/company who is issuing the Power of Attorney).

We, M/s \_\_\_\_\_ (name of the firm/company with address of the registered office) hereby constitute, appoint and authorize Mr / Ms \_\_\_\_\_ (name and residential address) who is presently employed with us and holding the position of \_\_\_\_\_ as our attorney, to do in our name and on our behalf all or any of the acts, deeds or things necessary or incidental to our bid for the work \_\_\_\_\_ (name of work) including signing and submission of applicable proposals, participating in the meetings, responding to queries, submission of information / documents and generally to represent us in all the dealings with OCCL or any other Government/Agency or any person, in connection with the works until culmination of the process of bidding till the Contract Agreement is entered into with OCCL and thereafter till the expiry of the Contract Agreement.

We hereby agree to ratify all acts, deeds and things lawfully done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us.

(Add in the case of a Consortium/Joint Venture)

Our firm is a Member / Lead Member of the Consortium of \_\_\_\_\_ , \_\_\_\_\_ and \_\_\_\_\_.

Dated this the Day of \_\_\_\_\_

(Signature and name of authorized signatory)

(Signature and name in block letters of all the remaining partners of the firm, Signatory for the Company)

Signature of the Power of Attorney Holder

**Witness 1:**

**Witness 2:**

**Name:**

**Name:**

**Address:**

**Address:**

**Occupation:**

**Occupation:**

**FORM OF BANK GUARANTEE TOWARDS BID SECURITY**

(ON NON -JUDICIAL PAPER OF APAROPRIATE VALUE IN THE NAME OF THE BANK)

To:  
 The Managing Director  
 Odisha Construction Corporation Limited  
 Rasulgarh, Bhubaneswar

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

Dear Sir(s)

1. Know all men by these present that we \_\_\_\_\_ (Name of Bank) of India, having our registered office at \_\_\_\_\_ (hereinafter called "The Bank") are bound unto Odisha Construction Corporation Limited (hereinafter called OCCL) representing through its The Managing Director having Central Office at Unit-VIII, Gopabandhu Nagar, at Bhubaneswar, Odisha, India in sum of Rs. \_\_\_\_\_ for which payment well and truly to be made to OCCL , the Bank bind himself, his successors and assigns by these presents.
2. Whereas \_\_\_\_\_ ( Name of Tenderer) (hereinafter called " The Tenderer") has submitted his tender against No \_\_\_\_\_ for Automation of Spillway and Head regulator gates controlled through centralized remote control & implementation of real time management system of Deo Irrigation Project (hereinafter called "The Tender").
3. Whereas the Tenderer is required to furnish a Bank Guarantee for the sum of Rs \_\_\_\_\_ (Amount in figures and words) as EMD/Bid Security against the tenderer offer's as aforesaid.
4. And Whereas \_\_\_\_\_(Name of Bank) have, at the request of Tenderer, agreed to give this guarantee as hereinafter contained.

We further agree as follows:

- (i) That OCCL may without affecting this guarantee grant time or other indulgence to or negotiate further with the tenderer in regard to the conditions contained in the said tender and thereby modify these conditions or add thereto any further conditions as may be mutually agreed upon between OCCL and the Tenderer.
- (ii) That the guarantee herein before contained shall not be affected by any change in constitution of our Bank or in the constitution of the Tenderer.
- (iii) That this guarantee commences from the date hereof and shall remain in force till:

---

Signature of tenderer or his/their  
 power of attorney holder with date,  
 full name, designation and official seal

---

General Manager(Mech.) ,OCCL,  
 Central Workshop, Rasulgarh,  
 Bhubaneswar – 751010 (Odisha) Page 32



- a. The Tenderer, in case his tender is accepted by the Employer, executes a formal agreement after furnishing the performance Security on Scheduled Commercial Banks or
  - b. Fifty six days after the date of validity or the extended date of validity of the Tender, as the case may be; whichever is earlier.
- (iv) That the expression "The Tenderer" and "The Bank" herein used shall, unless such an(interpretation is repugnant to the subject or context, include their respective successors and assigns.

THE CONDITIONS of this obligation are:

- (i) if the Tenderer withdraws his Tender during the period of Tender validity specified in the Form of Tender, or
- (ii) if the Tenderer refuses to accept the corrections of errors in his Tender, or
- (iii) if the Tenderer having been notified of the acceptance of his Tender by the Employer during the period of tender validity:
  - a. fails or refuse to furnish the Performance Security and/or
  - b. fails or refuses to enter into a Contract within the time limit specified in the tender

5. We, \_\_\_\_\_ do hereby undertake to pay to OCCL up to the amount upon receipt of his first written demand, without OCCL having to substantiate his demand provided that in his demand OCCL will note that the amount claimed by him is due to him owing to the occurrence of any one or more of the conditions (i), (ii), (iii) a or (iii) b mentioned above, specifying the occurred condition or conditions.

Signature of Authorized official of the Bank

For \_\_\_\_\_

(indicate the name of bank)

Bank Guarantee No. \_\_\_\_\_

Date \_\_\_\_\_

PERFORMANCE GUARANTEE

To,
The Managing Director
Odisha Construction Corporation Limited
Bhubaneswar

Dear Sir,

M/s \_\_\_\_\_ have taken tender for the work of \_\_\_\_\_
\_\_\_\_\_ at the tender condition of contract provide that
the contractor shall pay a sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_
\_\_\_\_\_ only) as security deposit as performance guarantee in
the form therein mentioned. The form of payment of security deposit include guarantee executed
by Scheduled Bank, undertaking full responsibility indemnify OCCL in case of default. The said
\_\_\_\_\_ has approached us and at their request and in consideration of
their promises we Bank of \_\_\_\_\_ having its head
office
\_\_\_\_\_
at have agreed to give such guarantee as hereinafter mentioned.

1. We, \_\_\_\_\_ hereby agreed and undertake that if in your opinion
any default is made by \_\_\_\_\_ in performing any of the terms
and or conditions of the agreement or if in your opinion he commits any breach of the contract or
there is any demand by you against M/s \_\_\_\_\_
\_\_\_\_\_ then on notice to us by you we will on demand
and without reference to M/s \_\_\_\_\_ immediately pay to you, in any
manner in which you may direct, the said amount of Rs. \_\_\_\_\_
\_\_\_\_\_ (Rupees \_\_\_\_\_ only) or such portion thereof as may
be demanded by you not exceeding the said sum and as you may be from time to time required.
Our liability to pay is not dependent or conditional on your proceeding against the contractor and
we shall be liable to pay the aforesaid amount as and when demanded by you merely on a claim
being raised by you and even before any legal proceedings are taken against the contractor.

2. You will have full liberty without reference to us and without effecting this guarantee,
postpone for any time or from time to time the exercise of the powers and rights conferred on
you under the contract with the said M/s. \_\_\_\_\_
\_\_\_\_\_ and to endorse or to forbear from
endorsing any power or rights or by reason of time being given to the said M/s
\_\_\_\_\_ which under law relating to the sureties would but for the provisions have the
effect releasing us.

3. The guarantee herein contained shall not be determined or affected by the liquidation or
winding up, dissolution or charge of constitution or insolvency of the said M/s \_\_\_\_\_
\_\_\_\_\_ but shall in all respects and for all purpose be binding and operative until
payment of all money due to you in respect of such liability or liabilities.

4. Our liability under this guarantee is restricted to Rs \_\_\_\_\_ (Rupees \_\_\_\_\_ only). Our guarantee shall remain in force until \_\_\_\_\_ unless a suit or action to enforce a claim under Guarantee is filed against us within six months from \_\_\_\_\_ (which is date of expiry of guarantee) all your rights under the said guarantee shall be forfeited and we shall be relieved and discharged from all liabilities thereunder.

5. We have power to issue this guarantee in your favour under memorandum and articles of association and the undersigned has full power to do under the power of attorney dated \_\_\_\_\_ granted to him by the Bank. NOTWITHSTANDING ANYTHING herein before contained, OUR liability under the guarantee is restricted to Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only).

Our guarantee shall remain in force until dated unless a suit or action to enforce a claim under the guarantee is filed against us within six months from the expiry date, all your rights under said guarantee shall be forfeited and we shall be released and discharged from all liabilities, thereunder.

FOR BANK OF

\_\_\_\_\_  
Chief Manager and Constituted Attorney

Dated: \_\_\_\_\_

**GENERAL POWER OF ATTORNEY**

To all to whom these presents shall come,. We, M/s \_\_\_\_\_  
 \_\_\_\_\_ and others, represented by its  
 Managing Partner, \_\_\_\_\_ son of Sh. \_\_\_\_\_  
 \_\_\_\_\_ aged about \_\_\_\_\_ residing at \_\_\_\_\_  
 \_\_\_\_\_ send greetings:-

Whereas our firm has been allotted works by \_\_\_\_\_ In  
 the execution of work \_\_\_\_\_  
 \_\_\_\_\_

Whereas we M/s \_\_\_\_\_  
 \_\_\_\_\_ have authorized \_\_\_\_\_  
 \_\_\_\_\_ aged \_\_\_\_\_ son of \_\_\_\_\_  
 resident of \_\_\_\_\_ to execute the said works  
 and for that purpose are desirous to appoint, nominate and constitute Shri \_\_\_\_\_  
 \_\_\_\_\_ to do the following acts, things and deeds in our name and  
 on our behalf, that is to say:-

1. To act as our Official representative for the works under execution in terms of the work orders, to sign and execute agreements, work orders.
2. To receive stores materials for the execution of works, from \_\_\_\_\_
3. To submit every month and to take or cause to be taken the requisite measurements for the purpose of having the same verified and to sign the Measurement Books in token of acceptance of the measurements made by the officers/officials and recording if any, his protest to the measurements and recoveries and the other and to submit claims thereof.
4. And to receive payments by cheque and also in cash and pass valid receipts to **OCCL**, in respect of the work executed by the Company.
5. And to authorize delegate powers for any specific purposes i.e. to draw stores, sign measurement books etc., on behalf of the firm during his absence or when he could not attend personally.

And we hereby agree to ratify and confirm all the acts, deeds and things done by him lawfully in connection with the work and the above acts, deeds and things done by the said attorney \_\_\_\_\_ shall be deemed to have been done by the firm.

In Witness hereof, I \_\_\_\_\_ Managing Director  
M/s \_\_\_\_\_ as authorised in the partnership  
deed, have executed these presents and common seal of the firm has been affixed on this \_\_\_\_\_  
\_\_\_\_\_ day of \_\_\_\_\_ .

Witness: 1. \_\_\_\_\_  
2. \_\_\_\_\_

Specimen signature of General Power of Attorney Holder

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

# GENERAL TERMS AND CONDITIONS

## 1. Definition

The "**Contract**" means the documents forming the tender and acceptance thereof and the formal agreement executed between **OCCL** (OWNER) and the contractor, together with the documents referred to therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by the Owner and all these documents taken together shall be deemed to form one contract and shall be complementary to one another.

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

- a) The **Employer/Owner** shall mean Odisha Construction Corporation Limited, Bhubaneswar (**OCCL**) who is the **Employer/Owner** for the works.
- b) The **'Contractor'** shall mean the individual, firm or company, whether incorporated or not, undertaking the works and shall include the legal representatives of such individual or the persons composing such firm or company or the successors of such firm or company and the permitted assignees of such individual or firm or firms or company.
- c) The expression **'Works'** or **'Work'** shall unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent and whether original, altered, substituted or additional.
- d) The **'Site'** shall mean the land and/or other places on, into or through which work is to be executed under the contract or any adjacent land, path or street through which work is to be executed under the contract or any adjacent land, path or street which may be allotted or used for the purpose of carrying out the contract.
- e) The **'Owner'/'Engineer'** means the Managing Director/ General Manager (Mech./Civil)/Senior Manager (Mech./Civil)/Manager(Mech./Civil)/Asst. Manager(Mech./Civil), OCCL who shall be in-charge of execution of the work.
- f) **'Competent Authority / Accepting Authority'** shall mean the authority in consultation & duly authorized to act as such by OWNER for and on behalf of OCCL or authority in OCCL.
- g) **'Excepted Risk'** are risks due to riots (other than those on account of contractor's employees), war (whether declared or not), invasion, act of foreign enemies, hostilities, Civil war, rebellions, revolution, insurrection, military or usurped power, any acts of Government damages from aircraft, acts of God such as earthquake, lightning and unprecedented floods, avalanche and other causes over which the contractor has no control and accepted as such by the Accepting Authority.
- h) **'Tendered Value'** means the value of the entire work as stipulated in the letter of award.
- i) **'Contract Value'** means the value of the entire work as stipulated in the Letter of Award subject to such additions thereto or deductions there from as may be made under the provision hereinafter contained.
- j) **'Specifications'** means the specifications referred to in the Tender and any modifications thereof or additions thereto as may from time to time be furnished or approved in writing by the Owner.

- k) **'Market Rate'** shall be the rate as decided by the Owner on the basis of the cost of materials and labour at the site where the work is to be executed plus the percentage to cover all overheads and profits.
- l) **'Schedule(s)'** referred to in these conditions shall mean the relevant schedule(s) annexed to the tender papers or the standard schedule of rates of the government with the amendments thereto issued up to the date of receipt of the tender.
- m) **'Drawings'** means the drawings referred to in the contract and any modification of such drawings approved in writing by the Owner and such other drawings as may from time to time be furnished or approved in writing by the Owner.
- n) **'Month'** shall mean the English Calendar month
- o) **'Commissioning'** shall mean pressing into the service for use of the installation plant(s), equipment(s), on any other section or sub - Section of pertaining to the work of the contractor i.e. total Automation system after successful testing and trial runs up to the satisfaction of Engineer/ Owner for safe operation and use by public.
- p) **'Commercial Operation'** shall mean the successful operation of a system or subsystems for revenue earning purpose.

Where the context so requires, words imparting the singular only also include the plural and vice-versa.

Any reference to masculine gender shall whenever required include feminine gender and vice-versa.

## **2. Clauses of Contract**

### **2.1 Initial Security Deposit**

The contractor shall provide OWNER with an Initial Security Deposit for the due and faithful performance of the contract for a sum equal to 2% (Two percent) of the accepted tendered amount. After receipt of full ISD, the EMD received along with the tender would be returned. If the bidder desires, so the EMD can be converted to ISD & the balance amount of ISD need to be deposited by the successful bidder. If the bidder does not deposit such ISD within the stipulated time, EMD would be forfeited.

### **2.2 Security Deposit**

The Contractor shall permit the Owner / Client at the time of making any payment to him for work done under the Contract to deduct an amount of 5% of the gross amount of each running bill as a Security Deposit and this Deposit / Retention amount may be withdrawn when it becomes Rs.10.00 lakh same can be withdrawn against submission of equivalent amount of Bank Guarantee issued by a Scheduled Commercial Bank. The Security Deposit / Bank Guarantee will be released after the guarantee period of the project.

### **2.3 Compensation for Delay**

If the contractor fails to maintain the required progress or to complete the work and clear the site on or before the contract or extended date of completion, without justification in support of the cause of delay, he may be called upon without prejudice to any other right or remedy available under the law to OWNER on account of such breach, to pay as compensation an amount calculated at the rates stipulated below or such smaller amount as the competent authority in OWNER (whose decision in writing shall be final and binding) may decide on the amount of contract value of the work for every completed day/week (as applicable) that the progress remains below that specified in Clause 2.4 or that the work remains incomplete. This will also apply to items or group of items for which a separate period of completion has been specified.

The decision of Owner shall be final and binding on the contractor under this clause. Completion period (as @ 0.50% of the contract value per month originally stipulated) exceeding of delay to be computed on per day basis 3 months provided always that the total amount of compensation for delay to be paid under this condition shall not exceed 5% of the contract value of the work on the contract value of items of work for which separate period of completion is originally given.

The amount of compensation may be adjusted or set-off against any sum payable to the Contractor under this or any other Contract with Owner.

## **2.4 Time and Extension for Delay**

The time allowed for execution of the Works as specified in the Notice Inviting Tender, shall be the essence of the Contract. The execution of the works shall commence from the 10<sup>th</sup> day of issue of Letter of Award of the work to the contractor. The date of commencement of work refers to date of receipt of Forest, Environment & other Clearance or handing over of site without any encumbrances, whichever is later. If the Contractor commits default in commencing the execution of the work within 10 days of the date of issuance of written orders to commence the work/issue of Letter of Award, OWNER shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the earnest money absolutely.

Within 15 days of the date of issue of the Letter of Award, the Contractor shall submit a Time and Progress Chart and get it approved by ENGINEER-IN-CHARGE. The Chart shall be prepared in direct relation to the time stated in the Contract documents for completion of items of the works. It shall indicate the forecast of the dates of commencement and completion of various trades of sections of the work and may be amended as necessary by agreement between the Owner and the Contractor within the limitations of time imposed in the Contract documents, and further to ensure good progress during the execution of the work, the contractor shall in all cases in which the time allowed for any work, exceeds one month (save for special jobs for which a separate programme has been agreed upon) complete 1/8<sup>th</sup> of the whole of work before 1/4<sup>th</sup> of the whole time allowed in the contract has elapsed, 3/8<sup>th</sup> of the work before one half of such time has elapsed and 3/4<sup>th</sup> of the work before 3/4<sup>th</sup> of such time has elapsed.

If the works be delayed by:

- i) Force Majeure, or
- ii) Abnormally bad weather, or
- iii) Serious loss or damage by fire, or
- iv) Civil commotion, local commotion of workmen, strike or lockout, affecting any of the trades employed on the work, or
- v) Any other cause which, in the absolute discretion of the competent authority is beyond the Contractor's control
- vi) Delay on the part of other contractors or tradesman engaged by Engineer- in-charge in executing work not forming part of the contract then upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the Owner but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Owner to proceed with the works.

Request for extension of time, to be eligible for consideration, shall be made by the Contractor in writing within fourteen days of the happening of the event causing delay on the prescribed form. The Contractor may also, if practicable, indicate in such a request the period for which extension is desired.

In any such case the competent authority in OWNER may give a fair and reasonable extension of time for completion of work. Such extension shall be communicated to the contractor by OWNER in writing within 3 months of date of receipt of such request. Non-accepting by the contractor for extension of time shall not be a bar for giving a fair and reasonable extension by the OWNER without prejudice to any other right/remedy available to OWNER and this shall be binding on the contractor.



## **2.5 Contractor liable for Damages, defects during maintenance period**

Defect Liability Period shall be 12 (twelve) months from the date of Commission of the Automation System.

If the contractor or his working people or servants shall break, deface, injure or destroy any part of building in which they may be working, or any building, road, road curb, fence, enclosure, water pipe, cables, drains, electric or telephone post or wire, trees, grass or grassland, or cultivated ground contiguous to the premises on which the work or any part is being executed, or if any damage shall happen to the work while in progress, from any cause whatever or if any defect, shrinkage or other faults appear in the work **within Twelve months** after commissioning or otherwise of its completion shall have been given by the Owner as aforesaid arising out of defect or improper materials or workmanship the contractor shall upon receipt of a notice in writing on that behalf make the same good at his own expense or in default the Owner cause the same to be made good by other workmen and deduct the expense from any sums that may be due or at any time thereafter may become due to the contractor, or from his Financial guarantee for performance or the proceeds of sale thereof or of a sufficient portion thereof. Financial guarantee for performance of the contractor shall not be refunded before the expiry of **Twelve months** after commissioning or otherwise, of completion of work, or till the final bill has been prepared and passed whichever is later.

In case the contractor fails to take aforesaid action within 15 days the OWNER shall have right to get the defective portion of work rectified or re-done at the risk and cost of the contractor and recover the amount from Financial guarantee for performance of the contractor. The determination of amount shall be final and binding on the contractor but it shall not exceed 5% of the contract value.

## **2.6 Work not to be sublet. Action in case of insolvency**

The contract shall not be assigned or sublet without the written approval of the Owner. And if the contractor shall assign or sublet his contract, or attempt to do so, or become insolvent or commence any insolvency proceedings or make any composition with his creditors or attempt to do so, or if any bribe, gratuity, gift, loan perquisite, reward or advantage pecuniary or otherwise, shall either directly or indirectly, be given, promised or offered by the contractor, or any of his servants or agent to any public officer or person in the employ of OWNER in any way relating to his office or employment, or if any such officer or person shall become in any way directly or indirectly interested in the contract, the Owner on behalf of OWNER shall have power to adopt any of the courses specified in Clause 3 hereof as he may deem best suited to the interest of OWNER and in the event of any of these courses being adopted the consequences specified in the said Clause 3 shall ensue.

## **2.7 Execution of the work**

All works to be executed under the contract shall be executed under the direction and subject to the approval in all respects of the Owner who shall be entitled to direct at what point or points and in what manner they are to be commenced, and from time to time carried on.

## **2.8 Settlements of Disputes by Arbitration**

All questions and disputes of any kind whatsoever between the parties hereto arising out of or in connection with the contract or execution of the works, whether during the execution of the works or after cancellation, termination, determination, completion of abandonment or any dispute which cannot be settled by mutual discussion, the same will be settled by arbitration. One Arbitrator shall be appointed by each party and these two Arbitrators shall appoint an Umpire as provided under conciliation and Arbitration Ordinance, 1996.

The Jurisdiction of the Tender shall be the State of Odisha with the High Court at Cuttack.

## **2.9 Contractor to indemnify Govt. against Patent Rights**

The contractor shall fully indemnify and keep indemnified OWNER against any action, claim or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract. In the event of any claims made under or action brought against OWNER in respect of any such matters as aforesaid the contractor shall be immediately notified thereof and the contractor shall be at liberty, at his own expense, to settle any dispute or to conduct any litigation that may arise there from, provided that the contractor shall not be liable to indemnify OWNER if the infringement of the patent or design or any alleged patent or design right is the direct result of an order passed by the Owner in this behalf.

## **2.10 Action where no Specification are specified**

In the case of any class of work for which there is no such specifications as mentioned in the tender, such work shall be carried out in accordance with the Bureau of Indian Standards Specifications. In case there is no such specifications in Bureau of Indian Standards, the work shall be carried out as per manufacturers specifications, if not available then as per District Specifications. In case there are no such specifications as required above, the work shall be carried out in all respects in accordance with the instructions and requirements of the Owner.

## **2.11 Subcontracting**

The contractor may subcontract with the approval of the Owner upto the ceiling specified in Contract data, but may not assign the contract without the approval of the Employer in writing. Subcontracting shall not alter the Contractor's obligations.

The owner should satisfy himself before recommending to the Employer whether:

- a) The circumstances warrant such sub-contracting and
- b) The Sub-Contractor so proposed for the work possesses the experience, qualifications and equipment necessary for the job proposed to be entrusted to him in proportion to the quantum of works to be sub-contracted.

If the payments are proposed to be made directly to that sub-contractor, this should be subject to specific authorization by the prime contractor so that his arrangement does not alter the contractor's liability or obligations under that contract.

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-contracting is already named in the contract,
- b) The provision for labour or labour component and
- c) The purchase of materials which are in accordance with the standards specified in the contract.

## **2.12 Insurance**

The contractor shall provide, in the joint names of the Employer/Owner and the Contractor, insurance cover from the Start date to the end of Defects Liability Period, in the amounts and deductibles stated in the tender for the following events:

- 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 of death

Policies and certificates for insurance shall be delivered by the Contractor to the Owner/ Employer for approval before the Start date. All such insurances shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.

If the Contractor does not provide any of the policies and certificates required, the Owner may effect the insurance which the Contractor should have provided and recover the premiums the Employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt. due.

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

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

### **2.13 Measurement of work done**

- a) Owner shall, except as otherwise provided, ascertain and determine by measurement the value in accordance with contract of work done. All measurements of all items having financial value shall be entered in Measurement Book and/or level field book so that a complete record is obtained of all works performed under the contract.
- b) All measurements and levels shall be taken jointly by the Owner or his authorized representative and by the contractor or his authorized representative from time to time during the progress of the work and such measurements shall be signed and dated by the Owner and the contractor or their representatives in token of their acceptance. If the contractor objects to any of the measurements recorded, a note shall be made to that effect with reason and signed by both the parties.
- c) If for any reason the contractor or his authorized representative is not available and the work of recording measurements is suspended by the Engineer-in-Charge or his representative, the Owner and the Department shall not entertain any claim from contractor for any loss or damages on this account. If the contractor or his authorized representative does not remain present at the time of such measurements after the contractor or his authorized representative has been given a notice in writing three (3) days in advance or fails to countersign or to record objection within a week from the date of the measurement, then such measurements recorded in his absence by the Owner or his representative shall be deemed to be accepted by the Contractor.
- d) The contractor shall, without extra charge, provide all assistance with every appliance, labour and other things necessary for measurements and recording levels.

- e) Except where any general or detailed description of the work expressly shows to the contrary, measurements shall be taken in accordance with the procedure set forth in the specifications notwithstanding any provision in the relevant Standard Method or measurement or any general or local custom. In the case of items which are not covered by specifications, measurements shall be taken in accordance with the relevant standard method or measurement issued by the Bureau of Indian Standards and if for any item no such standard is available then a mutually agreed method shall be followed.
- f) The contractor shall give not less than seven days' notice to the Owner or his authorized representative in charge of the work before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof be taken before the same is covered up or placed beyond the reach of measurement and shall not cover up and place beyond reach of measurement any work without consent in writing of the Owner or his authorized representative in charge of the work who shall within the aforesaid period of seven days inspect the work, and if any work shall be covered up or placed beyond the reach of measurements without such notice having been given or the Owner's consent being obtained in writing the same shall be uncovered at the Contractor's expense, or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.
- g) Owner or his authorized representative may cause either themselves or through another officer of the department to check the measurements recorded jointly or otherwise as aforesaid and all provisions stipulated herein above shall be applicable to such checking of measurements or levels.
- h) It is also a term of this contract that recording of measurements of any item of work in the measurement book and/or its payment in the interim, on account or final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates nor shall it relieve the contractor from liabilities from any over measurement or defects noticed till completion of the defects liability period.

**2.14 Payment on intermediate certificate / running bills to be regarded as advance.**

- a) The interim or running account bills shall be submitted by the contractor for the work executed in triplicate on or before the date of every month fixed for the same by the Owner. The Owner shall arrange to have the bill verified by taking or causing to be taken, where necessary, the requisite measurements of the work. In the event of the failure of the contractor to submit the bills, Owner shall prepare or cause to be prepared such bill. Payment on account of amount admissible shall be considered entitled by way of interim payment at such rates as decided by the Owner. The admissible amount shall be paid by OWNER within 30 days after the day of the presentation of the bill by the contractor to the Owner along with the account of dismantled materials, if any.
- b) All such interim payments shall be regarded as payment by way of advances against final payment only and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be rejected, removed, taken away and reconstructed or re-erected. Any certificate given by the Owner relating to the work done or materials delivered forming

part of such payment, may be modified or corrected by any subsequent such certificate(s) or by the final certificate and shall not by itself be conclusive evidence that any work or materials to which it relates is/are in accordance with the contract and specifications. Any such interim payment, or any part thereof shall not in any respect conclude, determine or affect in any way powers of the Owner under the contract or any of such payments be treated as final settlement and adjustment of accounts or in any way vary or affect the contract.

- c) Pending consideration of extension of date of completion, interim payments shall continue to be made as herein provided without prejudice to the right of the department to take action under the terms of this contract for delay in the completion of work, if the extension of date of completion is not granted by the competent authority.

## **2.15 Payment of final bill**

The final bill shall be submitted by the contractor in the same manner as specified in interim bills within three months of physical completion of the work or within one month of the date of the final certificate of completion furnished by the Owner whichever is earlier. Further claims shall neither be made by the contractor nor admissible for payment after submission of the final bill and these shall be deemed to have been waived and extinguished. Payments of those items of the bill in respect of which there is no dispute and of items in dispute, for quantities and rates as approved by Owner, will, as far as possible be made within 3 months, the period being reckoned from the date of receipt of the bill by the Owner, complete with account of materials issued by the Department and dismantled materials.

## **2.16 Materials supplied by OWNER**

The OWNER will not supply or procure for the Contractor materials of any description including cement and steel and the contractor shall make his own arrangements thereof at his own cost.

## **2.17 Payment of Advances and Recovery**

### **(i) Mobilization Advance**

Mobilization advance not exceeding 15% of the tendered value may be given, if requested by the contractor in writing within 15 days of the order to commence the work. In such a case the contractor shall execute a Bank Guarantee Bond from Nationalized/Scheduled bank as specified by the OWNER for the full amount of such advance to be released.

### **(ii) Interest & Recovery**

The mobilization advance in (i) above shall bear no interest and recovery of such sums advance shall be made by the deduction from the contractor's bill commencing after first 10% at the gross value of works executed and paid, on pro-rata percentage basis to the gross value of work billed in such a way that the entire advance is recovered by the time 90% of the gross value of contract is executed.

- (iii) If the circumstances are considered reasonable by the OWNER, the period mentioned in sub clause (ii) above for request by the contractor in writing for grant of mobilization advance may be extended in the discretion of the OWNER.
- (iv) The said bank guarantee for advance shall be made for the full amount and valid for the contract period plus 3 months, and be kept renewed from time to time to cover the balance amount and likely period of complete recovery.

**2.18 Work to be executed in Accordance with Specifications, Drawings, Orders etc.**

The contractor shall execute the whole and every part of the work in the most substantial and workmanlike manner both as regards materials and otherwise in every respect in strict accordance with the specifications. The contractor shall also conform exactly, fully and faithfully to the design, drawings and instructions in writing in respect of the work signed by the Owner and the contractor shall be furnished free of charge one copy of the contract documents together with specifications, designs, drawings and instructions as are not included in the standard specifications of Central Public Works Department or in any Bureau of India Standard or any other, published standard or code or, Schedule of Rates or any other printed publication referred to elsewhere in the contract.

The contractor shall comply with the provisions of the contract and with the care and diligence execute and maintain the works and provide all labour and materials, tools and plants including for measurements and supervision of all works, structural plans and other things of temporary or permanent nature required for such execution and maintenance in so far as the necessity for providing these, is specified or is reasonably inferred from the contract. The Contractor shall take full responsibility for adequacy, suitability and safety of all the works and methods of construction.

**2.19 Deviations/Variations Extent and Pricing**

The owner shall have power

- (i) to make alteration in, omissions from, additions to, or substitutions for the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work, and
- (ii) to omit a part of the works in case of non-availability of a portion of the site or for any other reasons and the contractor shall be bound to carry out the works in accordance with any instructions given to him in writing signed by the Owner and such alterations omissions, additions or substitutions shall form part of the contract as if originally provided therein and any altered, additional or substituted work which the contractor may be directed to do in the manner specified above as part of the works, shall be carried out by the contractor on the same conditions in all respects including price on which he agreed to do the main work and nothing extra shall be admissible.

**2.20 Levy/Taxes**

All taxes and duties in accordance with the Laws / Rules / Regulations laid down by Central or State Government will be extra to be paid by the Owner at actual.

After submission of Bid if any new tax, levy & duty is imposed or increased in existing tax, levy duty by the State / Central Government the same shall be paid by the Owner at actual.

## **2.21 If relation working in OWNER then the Contractor not allowed tendering**

The contractor shall not be permitted to tender for works in Owner in any case of his near relative is posted as an officer in any capacity in Owner. He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any officer in the Owner. Any breach of this condition by the contractor would render his contract liable to be terminated.

NOTE: By the term "near relatives" is meant wife, husband, parents and grand parents, children and grand children, brothers and sisters, uncles, aunts and cousins and their corresponding in-laws.

## **2.22 No Gazetted Engineer to work as Contractor within two years of retirement**

No engineer of gazetted rank or other gazetted officer employed in engineering or administrative duties in an engineering department of the Government of India shall work as a contractor or employee of a contractor for a period of two years after his retirement from government service without the previous permission of Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found at any time to be such a person who had not obtained the permission of Government of India as aforesaid, before submission of the tender or engagement in the contractor's service, as the case may be.

## **3 MODEL RULES FOR THE PROTECTION OF HEALTH AND SANITARY ARRANGEMENTS FOR WORKERS EMPLOYED BY ITS CONTRACTORS**

### **1. APPLICATION**

These Rules shall apply to all buildings and constructions works in charge of **OWNER** in which twenty (20) more workers are ordinarily employed or are proposed to be employed in any day during the period during which the contract work is in progress.

### **2. DEFINITION**

Work place means a place where twenty (20) or more workers are ordinarily employed in connection with construction work on any day during the period during which the contract work is in progress.

### **3. FIRST-AID FACILITIES**

- i) At every work place there shall be provided and maintained, so as to be easily accessible during working hours, first-aid boxes at the rate of not less than one box for 150 contract labour or part thereof ordinarily employed.
- ii) The first-aid box shall be distinctly marked with a red cross on white background and shall contain the following equipment:-
  - a) For work places in which the contract labour employed does not exceed 50 -

Each first aid box shall contain the following equipment:-

- 6 small sterilized dressings.
- 4 medium size sterilized dressings
- 3 large size sterilized dressings.
- 3 large sterilized burn dressings

- 1 (30 ml) bottle containing a two per cent alcoholic solution of iodine.
- 1 (30 ml) bottle containing salvolatile having the dose and mode of administration indicated on the label.
- 1 snake-bite lancet (30 gms) bottle of potassium permanganate crystals.
- 1 pair scissors.
- 1 copy of the first-aid leaflet issued by the Director General, Factor Advise Service and Labour Institutes, Government of India.
- 1 bottle containing 100 tablets (each of 5 gms) of aspirin.
- Ointment for burns.
- A bottle of suitable surgical antiseptic solution.

b) For work places in which the contract labour exceed 50. Each first aid box shall contain the following equipments:-

1. 12 small sterilized dressings.
2. 6 medium size sterilized dressings.
3. 6 large size sterilized dressings.
4. 6 large size sterilized burn dressings.
5. 6 (15 gms) packets sterilized cotton wool.
6. 1 (60 ml) bottle containing a two per cent alcoholic solution of iodine.
7. 1 (60 ml) bottle containing salvolatile having the does and mode of administration indicated on the label.
8. 1 rolls of adhesive plaster.
9. 1 snake-bite lancet.
10. 1 (30 gms) bottle of potassium permanganate crystals.
11. 1 pair scissors.
12. 1 copy of the first-aid leaflet issued by the Director General, Factor Advise Service and Labour Institutes, Government of India.
13. 1 bottle containing 100 tablets (each of 5 Gms) of aspirin.
14. Ointment for burns.
15. A bottle of suitable surgical antiseptic solution.

- iii) Adequate arrangements shall be made for immediate recoupment of the equipment when necessary.
- iv) Nothing except the prescribed contents shall be kept in the First-aid box.
- v) The First-aid box shall be kept in charge of a responsible person who shall always be readily available during the working hours of the work place.
- vi) A person in charge of the First-aid box shall be a person trained in First-aid treatment, in the work places where the number of contract labour employed is 150 or more.
- vii) In work places where the number of contract labour employed is 500 or more and hospital facilities are not available within easy distance from the works First-aid posts shall be established and run by a trained compounder. The compounder shall be on duty and shall be available at all labours when the workers are at work.
- viii) When work places are situated in places which are not towns or cities, a suitable motor transport shall be kept readily available to carry injured person or persons suddenly taken ill to the nearest hospital.

#### 4. DRINKING WATER

- i) In every work place there shall be provided and maintained suitable places easily accessible to labour, a sufficient supply of cold water fit for drinking.



- ii) Where drinking water is obtained from an intermittent public water supply, each work place shall be provided with storage where such drinking water shall be stored.
- iii) Every water supply or storage shall be at a distance of not less than 50 ft. from any latrine drain or other source of pollution. Where water has to be drawn from an existing well which is within such proximity of latrine, drain or any other source of pollution, 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 and water proof.
- iv) 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.

## **5. WASHING FACILITIES**

- i) In every work place adequate and suitable facilities for washing shall be provided and maintained for the use of contract labour employed therein.
- ii) Separate and adequate cleaning facilities shall be provided for the use of male and female workers.  
Such facilities shall be conveniently accessible and shall be kept in clean and hygienic condition.

## **6. LATRINES AND URINALS**

- i) Latrines shall be provided in every work place on the following scale namely:-
  - a) Where female are employed there shall be at least one latrine for every 25 females.
  - b) Where males are employed there shall be at least one latrine for every 25 males.

Provided that where the number of males or females exceeds 100, it shall be sufficient if there is one latrine for 25 males or females or females as the case may be up to the first 100 and one for every 50 thereafter.

- ii) Every latrine shall be under cover and so partitioned off as to secure privacy and shall have a proper door and fastenings.
- iii) Construction of latrines: The inside walls shall be constructed of masonry or some suitable heat resisting non absorbent materials and shall be cement washed inside and outside at least once a year. Latrines shall not be of a standard lower than bore hole system.
- iv)
  - a) Where workers of both sexes are employed, there shall be displayed outside each block of latrine and urinal, a notice in the language understood by the majority of the workers "For Men only" or "For Women only" as the case may be.
  - b) The notice shall also bear the figure of a man or of a woman, as the case may be.

- v) There shall be at least one urinal for male workers upto 50 and one for female workers up to 50 employed at a time provided that where the number of male or female workmen, as the case may be exceeds 500, it shall be sufficient if there is one urinal for every 50 males or females up to the first 500 and one for every 100 or part thereafter.
- vi) a) The latrines and urinals shall be adequately lighted and shall be maintained in clean and sanitary conditions at all times.  
  
b) Latrines and urinals other than those connected with a flush sewage system shall comply with the requirements of Public Health Authorities.
- vii) Water shall be provided by means of tap or otherwise so as to be conveniently accessible in or near the latrines and urinals.
- viii) Disposal of excreta: - Unless otherwise arranged for by the local sanitary authority, arrangements for proper disposal of excreta by incineration at the work place shall be made by means of suitable incinerator. Alternately excreta may be disposed of by putting a layer of night soil 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 to manure).
- ix) The contractor shall at his own expense, carry out all instructions issued to him by the Engineer-in-Charge to effect proper disposal of night soil and other conservancy work in respect of the contractors workmen of any charges which may be levied by Municipal or Cantonment Authority for execution of such on his behalf..

## **7. PROVISION OF SHELTER DURING REST**

At every place there shall be provided, free of cost, four suitable sheds, two for meals and the other two for rest separately for the use of men and women labour. The height of each shelter shall not be less than 3 meters (10 ft.) from the floor level to the lowest part of the roof. These shall be kept clean and the space provided shall be on the basis of 0.6 sq.m. (6 sft.) per head.

Provided that the Engineer-in-Charge may permit subject to his satisfaction, a portion of the building under construction or other alternative accommodation to be used for the purpose.

## **8. CRECHES**

- i) At every work place, at which 20 or more women worker are ordinarily employed, there shall be provided two rooms of reasonable dimensions for the use of their children under at the age of 6 years. One room shall be used as a play-room for the children and other as their bedroom. The rooms shall be constructed with specification as per clause 19H (ii) a, b & c.
- ii) The rooms shall be provided with suitable and sufficient openings for light and ventilation. There shall be adequate provisions of sweepers to keep the place clean.
- iii) The contractor shall supply adequate number of toys and games in the play room and sufficient number of cots and beddings in the bedroom.

- iv) The contractor shall provide one ayah to look after the children in the creche when the number of women workers does not exceed 50 and two when the number of women workers exceeds 50.
- v) The use of the rooms earmarked as creches shall be restricted to children, their attendants and mothers of the children.

## 9. CANTEENS

- (i) In every work place where the work regarding the employment of contract labour is likely to continue for six months and where in contract labour numbering one hundred or more is ordinarily employed, an adequate canteen shall be provided by the contractor for the use of such contract labour.
- ii) The canteen shall be maintained by the contractor in an efficient manner.
- iii) The canteen shall consist of at least a dining hall, kitchen store room pantry and washing places separately for workers and utensils.
- iv) The canteen shall be sufficient lighted at all times when any person has access to it.
- v) The floor shall be made of smooth and impervious materials and inside wall shall be lime washed or colour washed at least once in each year.
- vi) The premise of the canteen shall be maintained in a clean and sanitary condition.
- vii) Waste water shall be carried away in suitable covered drains and shall not be allowed to accumulate so as to cause a nuisance.
- viii) Suitable arrangements shall be made for the collection and disposal of garbage.
- ix) The dining hall shall accommodate at a time 30 per cent of the contract labour working at a time.
- x) The floor area of the dining hall, excluding the area occupied by the service counter and any furniture except tables and chairs shall not be less than one square meter (10 sft) per diner to be accommodated as prescribed in Sub Rule 9.
- xi) a) A portion of the dining hall and service counter shall be partitioned off and reserved for women workers in proportion to their number.  
b) Washing places for women shall be separate and screened to secure privacy.
- xii) Sufficient tables stools, chair or benches shall be available for the number of diners to be accommodated as prescribed in sub Rule-9.
- xiii) a) (1) There shall be provided and maintained sufficient utensils, crockery, furniture and any other equipment necessary for the efficient running of the canteen.  
(2) The furniture utensils and other equipment shall be maintained in a clean and hygienic condition.  
b) (1) Suitable clean clothes for the employees serving in the canteen shall be provided and maintained.

- (2) A service counter, if provided, shall have top of smooth and impervious material.
  - (3) Suitable facilities including an adequate supply of hot water shall be provided for the cleaning of utensils and equipments.
- 
- xiv) The food stuffs and other items to be served in the canteen shall be in conformity with the normal habits of the contract labour.
  - xv) The charges for food stuffs, beverages and any other items served in the canteen shall be based on 'No Profit, No Loss' and shall be conspicuously displayed in the canteen.
  - xvi) In arriving at the price of foodstuffs, and other article served in the canteen, the following items shall not be taken into consideration as expenditure namely:
    - a) The rent of land and building,
    - b) The depreciation and maintenance charges for the building and equipments provided for the canteen.
    - c) The cost of purchase, repairs and replacements of equipment including furniture, crockery, cutlery and utensils.
    - d) The water charges and other charges incurred for lighting and ventilation.
  - e) The interest and amounts spent on the provision and maintenance of equipments provided for the canteen.
  - xvii) The accounts pertaining to the canteen shall be audited once every 12 months by registered accountants and auditors.

## **10. ANTI-MALARIAL PRECAUTIONS**

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

- 11. The above rules shall be incorporated in the contracts and in notices inviting tenders and shall form an integral part of the contracts.

## **12. AMENDMENTS**

Government may, from time to time, add to or amend these rules and issue directions - it may consider necessary for the purpose of removing any difficulty which may arise in the administration thereof.

## **CONTRACTOR'S LABOUR REGULATIONS**

### **1. SHORT TITLE**

These regulations may be called the **OWNER** Contractors Labour Regulations.

## 2. DEFINITIONS

**Workman means** any person employed by **OWNER** or its contractor directly or indirectly through a subcontractor with or without the knowledge of **OWNER** to do any skilled, semiskilled or unskilled manual, supervisory, technical or clerical work for hire or reward, whether the terms of employment are expressed or implied but does not include any person :-

- a) ho is employed mainly in a managerial or administrative capacity: or
  - b) **Who** being employed in a supervisory capacity draws wages exceeding five hundred rupees per mensem or exercises either by the nature of the duties attached to the office or by reason of powers vested in him, functions mainly of managerial nature : or
  - c) **Who** is an out worker that it to say, person to whom any article or materials are given out by or on behalf of the principal employers to be made up cleaned, washed, altered, ornamental finished, repaired adopted or otherwise processed for sale for the purpose of the trade or business of the principal employers and the process is to be carried out either in the home of the out worker or in some other premises, not being premises under the control and management of the principal employer.
- ii) **Fair Wages** means wages whether for time or piece work fixed and notified under the provisions of the Minimum Wages Act from time to time.
  - iii) **Contractors** shall include every person who undertakes to produce a given result other than a mere supply of goods or articles of manufacture through contract labour or who supplies contract labour for any work and includes a sub-contractor.
  - iv) **Wages** shall have the same meaning as defined in the Payment of Wages Act.
3. i) Normally working hours of an adult employee should not exceed 9 hours a day and in case of child 4 1/2 hours a day. The working day shall be so arranged that inclusive of interval for rest, if any, it shall not spread over more than 12 hours on any day.
  - ii) When an adult worker is made to work for more than 9 hours on any day or for more than 48 hours in any week, he shall be paid over time for the extra hours put in by him at double the ordinary rate of wages. Children shall not be made to work extra hours.
  - iii)a) Every worker shall be given a weekly holiday normally on a Sunday in accordance with the provisions of the Minimum Wages (Central) Rules 1960 as amended from time to time irrespective of whether such worker is governed by the Minimum Wages Act or not.
  - b) Where the minimum wages prescribed by the Government under the Minimum Wages Act are not inclusive of the wages for the weekly day of rest, the worker shall be entitled to rest day wages at the rate applicable to the next preceding day, provided he has worked under the same contractor for a continuous period of not less than 6 days.
  - c) Where a contractor is permitted by the Engineer-in-Chief to allow a worker to work on a normal weekly holiday, he shall grant a substituted holiday to him for the whole day on one of the five days immediately before or after the normal weekly holiday and pay wages to such worker for the work performed on the normal weekly holiday at overtime rate.

#### 4. DISPLAY OF NOTICE REGARDING WAGES ETC.

The Contractor shall before he commences his work on contract, display and correctly maintain and continue to display and correctly maintain in a clear and legible condition in conspicuous places on the work, notices in English and in the local Indian languages spoken by the majority of the workers giving the minimum rates of wages fixed under the Minimum Wages Act, the actual wages being paid, the hours of work for which such wage are earned, wages period, dates of payments of wages and other relevant information as per Appendix 'III'.

#### 5 PAYMENT OF WAGES

- i) The contractor shall fix wages periods in respect of which wages shall be payable.
- ii) No wage period shall exceed one month.
- iii) The wages of every person employed as contract labour in an establishment or by a contractor where less than one thousand such persons are employed shall be paid before their expiry of seventh day and in other cases before the expiry of tenth day after the last day of the wage period in respect of which the wages are payable.
- iv) Where the employment of any worker is terminated by or on behalf of the contractor the wages earned by him shall be paid before the expiry of the second working day from the date on which his employment is terminated.
- v) All payment of wages shall be made on a working day at the work premises and during the working time and on a date notified in advance and in case the work is completed before the expiry of the wage period, final payment shall be made from within 48 hours of the last working day.
- vi) Wages due to every worker shall be paid to him direct or to other person authorised by him on his behalf.
- vii) All wages shall be paid in current coin or currency or in both.
- viii) Wages shall be paid without any deductions of any kind except those specified by the Central Government by general or special order in this behalf or permissible under the Payment of Wages Act 1956.
- ix) A notice showing the wages period and the place and time of disbursement of wages shall be displayed at the place of work and a copy sent by the contractor to the Engineer-in-Chief under acknowledgment. It shall be the duty of the contractor to ensure the disbursement of wages in the presence of any other authorized representative of the Engineer-in-Charge who will be required to be present at the place and time of disbursement of wages by the contractor to workmen.
- xi) The contractor shall obtain from any authorized representative of the Engineer-in-Chief as the case may be, a certificate under his signature at the end of the entries in the register of Wages" or the "Wage-cum-Muster Roll" as the case may be in the following form :

"Certified that the amount shown in column No.....has been paid to the workman concerned in my presence on..... at

## 6. FINES AND DEDUCTIONS WHICH MAY BE MADE FROM WAGES

- (i) The wages of a worker shall be paid to him without any deduction of any kind except the following:-
- a) Fines.
  - b) Deductions for the absence from duty i.e. from the place or the places where by the terms of his employment he is required to work. The amount of deduction shall be in proportion to the period for which he was absent.
  - c) Deduction for damage to or loss of goods expressly entrusted to the employed person for custody, or for loss of money or any other deduction which he is required to account, where such damage or loss is directly attributable to his neglect or default.
  - d) Deduction for recovery of advances or for adjustment of overpayment of wages, advances granted shall be entered in a register.
  - e) Any other deduction which the Central Government may from time to time allow.
- (ii) No fines should be imposed on any worker save in respect of such acts and omissions on his part as have been approved by the Chief Labour Commissioner.

Note: An approved list of Acts and Omissions for which fines can be imposed is enclosed at Appendix-I.

- (iii) No fine shall be imposed on a worker and no deduction for damage or loss shall be made from his wages until the worker has been given an opportunity of showing cause against such fines or deductions.

## 7. LABOUR RECORDS

- (i) The contractor shall maintain a **Register of persons employed** on work on contract in Form XIII of the CL (R&A) Central Rules 1971 (Appendix-IV).  
The contractor shall maintain a **Muster Roll** register in respect of all workmen employed by him on the work under Contract in Form XVI of the CL (R&A) Rules 1971 (Appendix-V).
- (iii) The contractor shall maintain a **Wage Register** in respect of all workmen employed by him on the work under contract in Form XVII of the CL (R&A) Rules 1971 (Appendix-VI).
- (iv) **Register of accident - The** contractor shall maintain a register of accidents in such form as may be convenient at the work place but the same shall include the following particulars:
- (a) Full particulars of the labourers who met with accident,
  - (b) Rate of wages,
  - (c) Sex,
  - (d) Age,
  - (e) Nature of accident and cause of accident,
  - (f) Time and date of accident,
  - (g) Date and time when admitted in Hospital,
  - (i) Period of treatment and result of treatment,

- (j) Percentage of loss of earning capacity and disability as assessed by Medical Officer.
  - (k) Claim required to be paid under Workmen's Compensation Act,
  - (l) Date of payment of compensation,
  - (m) Amount paid with details of the person to whom the same was paid.
  - (n) Authority by whom the compensation was assessed, and
  - (o) Remarks.
- (v) The contractor shall maintain a **Register of Fines** in the Form XII of the CL (R&A) Rules 1971 (Appendix-XI).

The contractor shall display in a good condition and in a conspicuous place of work the approved list of acts and omissions for which fines can be imposed (Appendix-X).

- (vi) The contractor shall maintain a **Register of deductions** for damage or loss in Form XX of the CL (R&A) rules 1971 (Appendix-XII).
- The contractor shall maintain a **Register of Advances** in Form XXIII of the CL (R&A) rules 1971 (Appendix-XI II).
- (viii) The contractor shall maintain a **Register of Overtime** in Form XXIII of the CL (R&A) rules 1971 (Appendix-XIV).

## 8. ATTENDANCE CARD-CUM-WAGE SLIP

- (i) The contractor shall issue an **Attendance card-cum-wage slip** to each workman employed by him in the specimen form at (Appendix- VII).
- (ii) The card shall be valid for each wage period.
- (iii) The contractor shall mark the attendance of each workman on the card twice each day, once at the commencement of the day and again after the rest interval, before he actually starts work.
- (iv) The card shall remain in possession of the worker during the wage period under reference.
- (v) The contractor shall complete the wage slip portion on the reverse of the card at least a day prior to the disbursement of wages in respect of the wage period under reference.
- (vi) The contractor shall obtain the signature or thumb impression of the worker on the wage slip at the time of disbursement of wages and retain the card with himself.

## 9. EMPLOYMENT CARD

The Contractor shall issue an **Employment Card** in Form XIV of the CL (R&A) Central Rules 1971 to each worker within three days of the employment of the worker (Appendix-VIII).



## 10. SERVICE CERTIFICATE

On termination of employment for any reason whatsoever the contractor shall issue to the workman whose services have been terminated, a **service certificate** in Form XV of the CL(R&A) Central rules 1971 (Appendix-IX).

## 11. PRESERVATION OF LABOUR RECORDS

All records required to be maintained under Regulations Nos. 6 & 7 shall be preserved in original for a period of three years from the date of last entries made in them and shall be made available for inspection by the Engineer-in-Charge or Labour Officer or any other officers authorised by the Ministry of Urban Development in this behalf.

## 12. POWER OF LABOUR OFFICER TO MAKE INVESTIGATIONS OR ENQUIRY

The Labour Officer or any person authorised by Central Government on their behalf shall have power to make enquiries with a view to ascertaining and enforcing due and proper observance of Fair Wage Clauses and the Provisions of these Regulations. He shall investigate into any complaint regarding the default made by the contractor or subcontractor in regard to such provision.

## 13. REPORT OF LABOUR OFFICER

The Labour Officer or other persons authorised as aforesaid shall submit a report of result of his investigation or enquiry to the **OWNER** indicating the extent, if any, to which the default has been committed with a note that necessary deductions from the contractor's bill be made and the wages and other dues be paid to the labourers concerned. In case an appeal is made by the contractor under Clause 12 of these regulations, actual payment to labourers will be made by the **OWNER** after given his decision on such appeal.

- (i) The **OWNER** shall arrange payments to the labour concerned within 45 days from the receipt of the report from the Labour Officer.

## 14. APPEAL AGAINST THE DECISION OF LABOUR OFFICER

Any person aggrieved by the decision and recommendations of the Labour Officer or other person so authorised may appeal against such decision to the **OWNER** within 30 days from the date of decision, forwarding simultaneously a copy of his appeal to the **OWNER** but subject to such appeal, the decision of the officer shall be final and binding upon the contractor.

## 15. PROHIBITION REGARDING REPRESENTATION THROUGH LAWYER

- (i) A workman shall be entitled to be represented in any investigation or enquiry under these regulations by:
  - (a) An officer of a registered trade union of which he is a member.
  - (b) An officer of a federation of trade unions to which the trade union referred to in clause (a) is affiliated.
  - (c) Where the employer is not a member of any registered trade union, by an officer of a registered trade union, connected with the industry in which the worker is employer or by any other workman employed in the industry in which the worker is employed.

- ii) An employer shall be entitled to be represented in any investigation or enquiry under these regulations by:
  - (a) An officer of an association of employers of which hi is a member.  
An officer of a federation of associations of employers to which association referred to in clause (a) is affiliated.
  - (b) Where the employer is not a member of any association of employers, by an officer of association of employer connected with the industry in which the employer is engaged or by any other employer engaged in the industry in which the employer is engaged.
- iii) No party shall be entitled to be represented by a legal practitioner in any investigation or enquiry under these regulations.

## **16. INSPECTION OF BOOKS AND SLIPS**

The contractor shall allow inspection of all the prescribed labour records to any of his workers or to his agent at a convenient time and place after due notice is received or to the Labour Officer or any other person, authorised by the Government on his behalf.

## **17. SUBMISSIONS OF RETURNS**

The contractor shall submit periodical returns as may be specified from time to time.

## **18. AMENDMENTS**

The Central Government may from time to time add to or amend the regulations and on any question as to the application/interpretation or effect of those regulations the decision of the **OWNER** shall be final.

**REGISTER OF MATERNITY BENEFITS**

(Clause 19F of the Condition of Contract) Name and

Name and Address of the Contractor(s) \_\_\_\_\_

Name and location of the work: \_\_\_\_\_

Name of the Employee	Father's / Husband's Name	Nature of Employment	Period of Actual Appointment	Date on which notice of confinement given
1	2	3	4	5

**Date on which Maternity Leave Commenced and Ended**

Date of Miscarriage	In Case of Delivery		In case of Miscarriage	
	Commenced	Ended	Commenced	Ended
6	7	8	9	10

**Leave pay paid to Employee**

In case of Delivery		In case of Miscarriage		Remarks
Rate of Leave Pay	Amount Paid	Rate of Leave Pay	Amount Paid	Remarks
11	12	13	14	15

**SPECIMEN FORM OF THE REGISTER REGARDING  
MATERNITY BENEFIT ADMISSIBLE TO THE CONTRACTOR'S  
LABOUR**

Name of the work		Name of the Contractor	
1	Name of the woman and her husband's name		
2	Designation		
3	Date of appointment		
4	Date with months & years in which she is employed		
5	Date of discharge/dismissal if any		
6	Date of production of certificates in respect of pregnancy		
7	Date on which the woman informs about the expected delivery		
8	Date of delivery/miscarriage/death		
9	Date of production of certificate in respect of delivery/miscarriage		
10	Date with the amount of Maternity/death benefit paid in Advance of expected delivery.		
11	Date with the amount of subsequent payment of maternity benefit		
12	Name of the person nominated by the woman to receive the payment of the maternity benefit of after her death		
13	If the woman dies, the date of her death, the name of the person to whom maternity benefit amount was paid, the month thereof and the date of payment. Signature of the contractor authenticating entries in the register.		
14	Remarks column for the use of Inspecting Officer.		

## LABOUR BOARD

Name of Contractor	
Address of Contractor	
Name and address of Principal Employer	
Name of Labour Enforcement Officer	
Address of Labour Enforcement Officer	
Date	

Sl. No.	Category	Minimum Wage Fixed	Actual Paid	Wage	Number Present	Remarks

Weekly holiday	
Wage period	
Date of payment of wages	
Working hours	
Rest Interval	

## REGISTER OF WORKMEN BY CONTRACTOR

Name and address of Contractor	
Name and address of Establishment in / under which contract is carried on	
Name and Location of Work	
Name and Address of Principal Employer	

S No	Name and Signature of Worker	Age and Sex	Father's / Husband's Name	Nature of Employment / Designation	Permanent Home address of Workmen	Local Address	Date of commencement of Employment	Signature or Thumb Impression of Workmen	Date of Termination of Employment	Reasons for Termination	Remarks
1	2	3	4	5	6	7	8	9	10	11	12

## Form XVI [Schedule 78 (2) (a)]

## SPECIMEN PROFORMA MUSTER ROLL

Name and address of Contractor			
Name and address of Establishment in / under which contract is carried on			
Name and Location of Work			
Name and Address of Principal Employer		For the month or Fortnight	

Sl No	Name of Workman	Father's / Husband's Name	Sex	Date			Remarks		
				1	2	3		4	5
1	2	3	4						

## Form XVI [Schedule 78 (2)(d)]

## SPECIMEN PROFORMA FOR REGISTER OF WAGES

Name and address of Contractor			
Name and address of Establishment in / under which contract is carried on			
Name of work and Location of Work		Is carried on	
Name and Address of Principal Employer		Wage Period : Monthly/ Fortnightly	

SI No	Name of Workman	SI No in the Register of Workman	Designation and Nature of work done	No of days worked	Units of work done	Daily rate of Wages / Piece rate	Basic Wages	Dearness Allowance	Overtime	Other Cash Payment ( nature of payment to be indicated)	Total	Deductions if any (indicate nature)	Net Amount Paid	Signature or Thumb Impression of Workman	Initial of Contractor or his representative
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Signature of tenderer or his/their  
power of attorney holder with date,  
full name, designation and official seal

General Manager(Mech.) ,OCCL,  
Central Workshop, Rasulgarh,  
Bhubaneswar – 751010 (Odisha) Page 64



**SPECIMEN PROFORMA FOR WAGE CARD**

Name and Address of Contractor		Date of Issue	
Nature and Location of Work		Designation	
Name of Workman		Month / Fortnight	
Rate of Wages			

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	

Morning \_\_\_\_\_ Rate \_\_\_\_\_  
 Evening \_\_\_\_\_ Amount \_\_\_\_\_  
 Initial \_\_\_\_\_

Received from \_\_\_\_\_ the sum of Rs. \_\_\_\_\_ on account of my wages.  
 Signature \_\_\_\_\_

*This card is valid for month from the date of issue*

**Form XIX[See Rule 78(2)9b]**

**SPECIMEN PROFORMA FOR WAGES SLIP**

Name and Address of Contractor \_\_\_\_\_

Name and Father's / Husband's name of workman \_\_\_\_\_

Name and location of the work \_\_\_\_\_

For the week/fortnight/month ending \_\_\_\_\_

Number of days worked \_\_\_\_\_

Number of units worked in case piece rate workers \_\_\_\_\_

Rate of daily wages / Piece rate \_\_\_\_\_

Amount of Overtime wages \_\_\_\_\_

Gross wages payable \_\_\_\_\_

Deduction, if any \_\_\_\_\_

Net Amount of wages aid \_\_\_\_\_

\_\_\_\_\_ Initials of the contractor or his representative

**FORM XIV  
(See Rule 76)**

**SPECIMEN PROFORMA FOR EMPLOYMENT CARD**

Name and Address of Contractor	
Name and address of establishment in / under which contract is carried on	
Name of work and location of work	
Name and address of principal employer	
Number of days worked	
SI No in the register of workman employed	
Nature of employment / designation	
Wage rate (with particulars of unit in case of piece work)	
Wage period	
Tenure of employment	
Remarks	

\_\_\_\_\_  
Signature of Contractor

**Form XV  
(See Rule 77)**

**SPECIMEN PROFORMA FOR SERVICE CERTIFICATE**

Name and Address of establishment in/under which contract is carried on	
Nature and Location of Work	
Name and Address of Principal Employer	
Name and address of workman	
Age or date of birth	
Identification works	
Father's/Husband's name	

SI No	Total Period for which Employed		Nature of Work Done	Rate of Wage (with particulars of unit in case of pieces work)	Remarks
	From	To			
1	2	3	4	5	6

## LIST OF ACT & OMISSIONS FOR WHICH FINES CAN BE IMPOSED

In accordance with rule 5(d) of the Contractor's Labour Regulations to be displayed prominently at the site of work in both English and local language.

- Willful insubordination or disobedience, whether alone or in combination with other.
- Theft, fraud or dishonesty in connection with the contractors beside a business or property of the Employer.
- Taking or giving bribes or any illegal gratifications.
- Habitual late attendance.
- Drunkenness fighting, riotous or disorderly or indifferent behavior.
- Habitual negligence.
- Smoking near or around the area where combustible or other materials are locked.
- Habitual indiscipline.
- Causing damage to work in the progress or to property of the Employer or of the Contractor. Sleeping on duty.
- Malingering or slowing done work.
- Giving of false information regarding name, age, father's name etc.
- Habitual loss of wage cards supplied by the employers.
- Un authorized use of employer's property of manufacture or making of unauthorized articles at the work place.
- Bad workmanship in construction and maintenance be skilled workers which is not approved by the Deptt. and for which the contractors are compelled to undertake rectifications.
- Making false complains and/or misleading statements.
- Engaging on trade within the premises of the establishment.
- Any unauthorized divulgence of business affairs of the employers.
- Collection or canvassing for the collection of any money within the premises of an establishment unless authorized by the employer.
- Holding meeting inside the premises without previous sanction of the employers.
- Threatening or intimidating any workmen or employer during the working hours within the premises.

## Form XIII [Schedule 78 (2) (d)]

## SPECIMEN PROFORMA FOR REGISTER OF FINES

Name and Address of Contractor

Name and Address of establishment in/under  
which contract is carried on

Nature and location of work

Name and address of Principal Employer

Sl No	Name of Workman	Father's / Husband's Name	Designation and Nature of Employment	Act / Occasion for which fine imposed	Date of Offence	Whether workman showed cause against fine	Name of the person in whose presence explanation was heard	Wage period and wages payable	Amount of fine imposed	Date of which fine realized	Remarks
1	2	3	4	5	6	7	8	9	10	11	12

## REGISTER OF DEDUCTION FOR DAMAGE OR LOGS

Name and Address of Contractor

Name and Address of establishment in/under  
which contract is carried on

Nature and location of work

Name and address of Principal Employer

SI No	Name of Workman	Father's / Husband's Name	Designation and Nature of Employment	Particulars of Damage or loss	Date of Damage or Loss	Whether workman showed cause against	Name of the person in whose presence employee's explanation was heard	Amount of Deduction Imposed	No of Installments	Date of Recovery		Remarks
										First Installment	Last Installment	
1	2	3	4	5	6	7	8	9	10	11	12	13

## REGISTER OF ADVANCES

Name and Address of Contractor

Name and Address of establishment in/under  
which contract is carried on

Nature and location of work

Name and address of Principal Employer

Sl. No.	Name	Father's/ Husband's Name	Nature of employment/ Designation	Wage period and wages payable	Date of amount of advance	Purpose (s) for which advance made	No. of installments by which advance to	Date & amount of each installment repaid	Date on which last installment was repaid	Remarks
1	2	3	4	5	6	7	8	9	10	11

**REGISTER OF OVERTIME**

Name and Address of Contractor

Name and Address of establishment in/under which contact is carried on

Nature and location of work

Name and address of Principal Employer

1	2	3	4	5	6	7	8	9	10	11	12
SI. No.	Name of workman	Father's/ Husband's name	Sex	Designation/ nature of employment	Date on which	Total over time worked or production in case of piece rate	Normal rate of wages	Over time rate of wages	Over time of earnings	Rate on which overtime	Remarks
1											



# **SPECIAL CONDITIONS**

## **1. Object & limits of Supply and installation**

The broad objective of the project is monitoring and control of water flow through the Spillway gates, Left & Right Head Regulator gates of Deo Irrigation Project.

- All the gates are to be remotely lowered, raised & stopped whenever required.
- Water Level is to be monitored and recorded and discharge to be calculated.
- Real time remote control and Monitoring.
- Centralized control with manual override facility.
- User Friendly system.
- Ease of fault location and maintenance.
- System is self and remotely diagnostic.
- Power saving.
- 99.999% equipment uptime with online redundancy (hot standby).

Further, the gates are required to be operated remotely from MASTER CONTROL ROOM as per requirement and as per direction of Gate operating authority.

## **2. Contractor's Obligations**

To achieve this objective, an agency will be engaged for the following-

Automatic Control of 5 nos of Spillway (Radial type) gates, 2 nos of Right Head Regulator (Vertical type) gates & 1 No of Left Head Regulator (Vertical type) gate. Besides Automatic Control through Barrage/Dam Monitoring and Control , Manual operation of Gates from Master Control Room through Microprocessor Intelligent Controller at Superstructure and also through manually operated Hand Drive. Automation of the spillway gates and Head Regulator Gates by installing a suitable SCADA system with remote viewing facility and to view & control the parameters on line from the MCR.

### **2.1 The scope of Contractor shall be as follows:**

- a) The control system along-with SCADA Software shall be provided in the Master control room (MCR) and the information available at control room (MCR) should also be available on three client PCs which shall have licensed monitoring software installed in it having all features for real time monitoring of data from MCR. The Data provided in MCR should be displayed in complete explicit way and can be extracted in different formats it shall have capability of monitoring the real time data of MCR & trend analysis etc.
- b) The Job-Worker will provide all required technical / non-technical / skilled workmen for execution of the work with unloading, shifting of materials, fabricated, machined & assembled jobs transported to the work site / nearby accessible area and onward shifting to the sites of work.
- c) Also through web server, all reports (hourly, daily, weekly, monthly, quarterly, half yearly & yearly etc.) shall be available at any PC/Laptop and on mobile App located at any place through web with user name & password protection.
- d) The Contractor shall supply, install & commission all instruments, terminal boxes, cabling & conduits etc. necessary to make the tendered services complete and ready for operation even if these are not indicated explicitly in this document.
- e) He will provide all power cables from Master Control Facility to Hoist Motor Control Cubicle(s) MCC and MCC to each motor of Barrage & Head Regulator gates.

- f) He will provide Motor Raise/ Lower / Stop Controllers (both remote and manually) housed in sheet metal enclosures near each individual gate installations having interfacing with Master Control Facility on wireless radio communication with redundancy for operation for operation of all gates.
- g) He will provide Wireless line of sight/Non line of sight Radio Modem communication wherever required depending on the site condition with redundancy for controlling and monitoring Left and Right canal gates from master control facility.
- h) He has to provide Master Control Facility (MCF) i.e PC based intelligent motor control & monitoring through redundant wireless radio modem communication to left canal gate control, Right Canal Gate and Main dam Gate control system.
- i) He has to provide the MCF through SCADA with automated real time data management system for the following functions:
- Automatic Control of Barrage Bay & Head Regulator Gates of Deo Irrigation Project. Besides Automatic Control through Automatic Reservoir Monitoring and Control (ARMAC), provision for Manual operation of Gates shall be provided at site within RTU/PLC panel & through push buttons.
  - Monitoring of gate positions & various site operations & safety aspects of the Barrage structures via. CCTV system at MCR.
  - On Line Measurement & Display of water Level/discharge and real time inflow in SCADA system.
  - Recording of all the above parameters on line & storage of records for analysis.
  - Generation of customized reports as per the input of Engineer in Charge.
  - Reporting of all acquired/calculated variables on web pages for information sharing with all authorized personnel.
  - ADCP for calculation and display of total discharge through spillway gates will be provided by the department & it is bidder responsibility to provide the necessary rating curves & integrate the same in SCADA system.
- j) He will provide four industrial PC one no. each located at main dam other three operating as monitoring stations at EE, SE, CE.
- k) Individual Gate position is constantly monitored using gate position sensors, logged in the gate control console displayed and reported to MCF.
- l) Dam water level monitoring device with accessories comprising of Radar type non contact water level sensor and shaft Encoder type/ Intelligent or equivalent Gate position sensor. One such system at each of the following locations is to be provided i.e., Near Crest Gates and will be connected to master control facility to log water level data. To monitor the water level in canal two Radar type water level sensors along with required accessories shall be provided and shall be connected to Master Control Facility to log the water level data.
- m) Customized user friendly software for control, operation, monitoring and data logging. This Software will be loaded on PC at Master Control Facility.
- n) High resolution CC TV cameras with 360 swivel and capable of focusing 1.5' X 1.5' area in any direction should be installed to monitor all the gates.
- o) 7.5 KVA Solar Power system with 48 hours backup system for only SCADA system & Instrumentation in case failure of power for more than 4 hours.
- p) He will provide Rain gauge sensors, River gauge and flood forecasting software

- q) DG set 82.5KVA
- r) Comprehensive O & M for five years.
- s) Power back up for 48 Hrs for the system.
- t) The contractor shall provide the Maintenance Tracking Application for monitoring and tracking of the maintenance activities during warrantee and maintenance period.
- u) Supply of Maintenance spares, tools & tackles for five years trouble free operation of the Automation systems (**Un-Priced list to be furnished in Technical Bid**)

All the Equipment shall be standard-type from well-known manufacturers and proven in field for same applications. Decision of the Engineer-in-Charge regarding scope of work of the Contractor shall be final and bindings on him. The Contractor will execute the items in the price schedule for the work as per direction of Engineer-in-Charge or his authorized representative.

## 2.2 Design Criteria

The spillway operation shall be based on a strategy of balancing the Reservoir inflow and outflow by checking and comparing measurements taken at interval of 15 minutes. The specified measuring system shall provide the data(reservoir level, gate position and spillway discharge and inflow with forecasted inflow) to determine the three above mentioned parameters by the main computer in the MCR.

## 2.3 Equipment for Remote Control System

All the real-time data from all instruments specified above shall be provided and incorporated in the control system located at barrage control room.

The Operator station shall have Master PLC controller with firm ware based hot redundancy so that the failure of one of the controller shall not cause any discontinuity in the control system and shall ensure that no loss of data takes place during change over. The bidder shall also provide A3 size colour printer for printing various logs, instructions and reports.

At any time individual gates shall be allowed to be switched over from the automatic mode to local mode of operation, and vice versa, however the operation from the local panel cannot be overruled by the remote/automatic operation stage once the selector switch is set on the local position. Manually adjusted gates shall, when returned to automatic mode of operation, be adapted to their normal functioning in the automatic mode. The automatic system shall work independent of the number of available gates with the same characteristic. If all gates have been changed over to MANUAL, the master controller shall be reset so as to permit a smooth switching-over to MANUAL operation.

All the input display from field including water level of reservoir shall be displayed at the Screen. The system shall continuously monitor the Barrage level and depending upon this level it shall be able to calculate the input discharge in to the Barrage depending upon the profile made available by the user . In addition to this the gate opening of spillway gates should be displayed in the form of graphic display. The system shall be able to display the output discharge through spillway gates so that operation of spillway gates can be carried out in auto mode. Necessary inputs for using Software & ADCP to calculate the discharge through the spillway gates as well as through canals will be provided by the user department.

Formats for various reports & screen displays will be finalized during the detailed engineering stages and bidder shall submit their reporting and screen formats for prior approval from Engineer in charge along with Schematic & control methodology. The software supplied by the bidder should allow modifications at site without involvement of any other special software.

## 2.4 Control of the Barrage and Head Regulator Gates

### Input Parameters

SI No.	Description	Motor Rating	Quantity
1	Barrage Gate	15 Hp, 1000 RPM, 50Hz(Approx.)	5 Nos
2	Right HR Gate	2 Hp, 750 RPM, 50Hz(Approx.)	2 Nos
3	Left HR Gate	2 Hp, 750 RPM, 50Hz(Approx.)	1 No

### Dam Parameters

#### a) Spillway Gate

Item	Value
MWL/FRL	412 m
Sill Elevation	402.943m
Trunnion Elevation	405.795m
Bed level	388.5m
Top of pier	413.5m
Type of Gate	Radial(11.5m X 9.308m)
No of gates	5

#### b) Right Head Regulator Gate

Item	Value
MWL/FRL	412 m
Sill Elevation	397.400m
Top Seal Elevation	399.250m
Bed level	396.800m
TBL	415m
Type of Gate	Vertical Screw Hoist (1.3m X 1.8m)
No of gates	2

#### c) Left Head Regulator Gate

Item	Value
MWL/FRL	412 m
Sill Elevation	397.05m
Top Seal Elevation	399.30m
Bed level	397.05m
TBL	415m
Type of Gate	Vertical Screw Hoist (1.5m X 2.2m)
No of gates	1

Minimum Control Inputs:03 for each gate(RAISE, LOWER and STOP)

**Note:- In case of any problem with the control of the automated system, it should be possible to revert to the manual system of Gate immediately.**

- **Data Acquisition from Spillway Site**

The system will acquire the following parameters at specified intervals and store them in a data base. The parameters will be displayed in wide screen monitor.

- **Gate Position and Gate Status (Moving UP/Moving Down/Static) of the following:**

- a) Barrage Gates-05 Nos.
- b) Head Regulator Gates 03 Nos.(1 LHR & 2 RHR)

- **Video Surveillance System:**

6nos. of IR Bullet camera and 4 nos. of PTZ cameras and bullet cameras are to be provided for the surveillance purpose of the Spillway and HR gates. However, the quantity may vary depending as per the site requirement. The location of the each camera should be decided in consultation with Engineer-in-charge of the purchaser such that operation of each gate is clearly visible.

- **In general, while designing the SCADA system, the Bidder will conform to:**

- Use of state of the art and reliable technology suitable for 24x7 operations. Modular design and ease of maintenance.

It is mandatory that the Successful Bidder will submit a detailed description of the proposed system in each location complete with Block Diagram clearly indicating individual subsystems /units /instruments /sensors and their interconnections and how the proposed system will address the requirements referred in the technical specifications and features.

### **3. Owner/ Client's Obligations**

Suitable accommodation and necessary facilities like electricity, water etc. at site shall be provided by OCCL/ Client during execution of work.

Storage shed along with watch & ward for storage of electronic equipments at site shall be provided by OCCL/Client during automation of gates.

### **4. Guarantees for the Equipment and Work**

All items are warranted against any manufacturing defect / defects for a period of 12(Twelve) months from the date of Issuance of Final acceptance certificate from Engineer in Charge. This guarantee is against faulty workmanship and does not cover any damage due to accidents. The cost of replacement of defective parts during guarantee period as well service shall be borne by the contractor.

### **5. Quality Control**

#### **Quality Assurance**

- a) The Contractor shall institute Quality Assurance (QA) and Quality Control(QC) systems in accordance with Quality Assurance Plan to demonstrate compliance with the requirements of the Contract as approved by the Owner.
- b) Compliance with the QA/QC systems shall not relieve the Contractor of any of his duties obligations or responsibilities under the Contract.

## **Tests**

- a) The Contractor shall provide all apparatus, assistance, documents and other information, electricity, equipment, fuel, consumables, instruments, labour, materials and suitably qualified and experienced staff, as are necessary to carry out the specified tests efficiently.
- b) If the Engineer-in-charge 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.
- c) The Engineer-in-charge 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 Engineer-in-charge may instruct the Contractor to search for a Defect and to uncover and test any work that the Engineer-in-charge considers have a Defect.
- d) The contractor shall permit the Owner's Technical Auditor to check the contractor's work and notify the Engineer-in-charge and Contractor of any defects that are found. Such a check shall not affect the Contractor's or the Engineer-in-charge's as defined in the agreement.
- e) The Owner shall give a notice to the Contractor of any defects before the end of the Defects Liability Period, which begins at completion. The Defect Liability Period shall be extended for as long as Defects remain to be corrected.
- f) Every time notice of a defect is given, the Contractor shall correct the notified defect within the length of time specified by the Engineer-in-charge's notice.
- g) If the contractor has not corrected a Defect within the time specified in the Engineer-in-charge's notice, the Engineer-in-charge shall assess the cost of having the Defect corrected and the Contractor shall pay this amount.

## **6. Handing Over of the System**

The Contractor first complete all works satisfactorily as per the Scope of the Work and commission all the equipments after carrying out all adjustments/settings of the equipments and system as a whole. Before handing over the system, trial run and testing of the complete system meeting the design parameters including safety needs to be conducted by the contractor.

In case of any conflict, the decision of "Engineer-in-Charge" shall be final and binding on the "Contractor".

## TECHNICAL SPECIFICATIONS

### **COMPUTER, UPS & PRINTER:**

Computer shall be industrial grade PC with USB, RS232/RS485, Ethernet Ports, OS Windows 8 or higher compatible to SCADA System. Control Room shall have Master controller server with SCADA Software.

One Industrial grade computer required, with the Master Controller (PLC) placed at the Dam Control room. This Computer is expected to operate the SCADA software as well as all software required for the project. The computers shall be managed and operated by the successful bidder and his skilled trained experienced operators/engineers. The minimum specifications for the Industrial PC are given below. Specifications higher than specified shall be acceptable subject to availability at the time of supply.

Mother board AIMB 705G2 or higher, Processor Intel core i3, 7th generation, 2.0 GHz or higher; 8 GB Memory; 2 x 10/100/1000 Mbps (RJ-45); 2 x RS232; 1x RS232/ RS422/ RS485; 4 x USB2.0; 1 x D-SUB VGA port; 1 x PS/2 Mouse & 1 x keyboard interface; 2.5" x 1 TB SATA HDD; 15" Touch monitor with all accessories etc. complete.

### **UNINTERRUPTABLE POWER SUPPLY:**

For dam control room equipments, bidder shall provide a 7.5 KVA online UPS system with 4 Hours back up. UPS shall have minimum following specifications.

Make	:	Transtech /Emerson/ APC/ Equivalent
Type	:	On Line
Input	:	230 VAC +/- 15 %
Output	:	230 VAC +/- 1 %
Power factor	:	0.8 Lag
Power capacity	:	7.5 KVA/ 2.0 KVA
Frequency	:	50 Hz +/- 0.5 Hz.
Wave form	:	Pure sine wave
Total Harmonic Distortion	:	< 4 % on linear load
Inverter	:	IGBT based high freq PWM
Inverter efficiency	:	> 85 %
Duty	:	Continuous
Transfer time	:	Zero secs.
Battery Voltage	:	168 VDC
Battery Type	:	Sealed Maintenance Free
Protection	:	Out put high / Out put Low/ Out put Short Ckt/ Batt. Low Trip
Alarm	:	Battery Low
Indicators	:	Mains ON, Inverter ON, Battery Low, Fault
Metering	:	Out put voltage

### **BLACK & WHITE LASER JET PRINTER:**

A4 size black & white LaserJet printer shall be provided in the Dam control room for taking hard copies of reports/ trends. Printer shall have minimum following specifications.

Make	: HP/ CANON or equivalent
Paper size	: A4
Print Speed	: Up to 14 ppm (letter)
First page Out	: Less than 10 seconds
Resolution	: 1200 dbi effective output quality
Duty Cycle	: 5000 pages per month
Connectivity Interface	: Hi-speed USB 2.0 port Host – based printing
Languages & fonts	Ethernet
Power Supply	: Voltage – 220 -240 V ac 50 Hz. Approx. 335 W

### **RADAR WATER LEVEL SENSOR:**

A Non contact type radar water level shall be provided for measurement of water level in the reservoir as per technical specifications given under. Sensor shall be provided with all necessary mounting arrangements, safety enclosure required for installation. Location of the sensor shall be selected such that it can measure deepest level.

Sensor Type	: Microwave non contact Radar
Operationf frequency	: 27 Ghz
Input supply	: 12/24 VDC
Measuring Range	: 35 Mtr
Out Put	: 4-20mA / SDI 12/ RS 485 compatible with data logger / PLC
Accuracy	: +/- 3 mm or better
Resolution	: +/- 1 mm
Display	: Sensor should have local display with keys for programming
Antenna Type	: Horn Antenna
Beam angle	: less than 10 degree
Operating temperature	: -20 to 60oC
Storage temperature	: -30 to 80oC
Humidity	: 5 to 100%
Material	: Corrosion resistant metal ( Stainless Steel /Aluminum/ PVC)
Ingress Protection	: IP-67 or better
Manuals	: Full documentation & maintenance manual in English

### **GATE MEASUREMENT SENSOR:**

The gate position scanner should sense any modification in position of the gate even in power failure condition. The controller should have facility to interface the limit switches for the gate. The controller should display the status of gate i.e. moving up, moving down or gate steady along with the current position of the gate. The controller should have facility to program the maximum height of the gate. Necessary flexible couplings shall be used during installation while coupling the Shaft Encoder with Motor/ Gear Shaft. It shall have minimum specifications as follows.

Sensor Type	: Shaft Encoder type
Input supply	: 12/24 VDC
Measuring Range	: 20 Mtr
Output interface	: 4-20mA / SDI 12/ RS 485
Accuracy	: 0.025% FSO



Resolution	:	1 mm
Sensor ingress Protection	:	IP 65 or better
Display Read out	:	LCD display for digital read out
Operating temperature	:	-20 to 60oC
Storage temperature	:	-30 to 80oC
Humidity	:	5 to 100% RH
Material	:	Corrosion resistant metal ( Stainless Steel /Aluminum/ PVC)
Ingress Protection	:	IP-65 or better
Manuals	:	Full documentation & maintenance manual in English

## RADIO MODEM:

For wireless communications between master PLC and Slave PLC/RTU panel line of sight/ non line of sight redundant wireless radio modem shall be provided. Purpose of redundant radio is to provide redundancy in communication i.e. in case of failure of any of the radio other radio automatically comes in to operation without disturbing the functionality.

Proposed wireless radio modems shall work in license free band, and shall have minimum following specifications.

Type	:	Line of Sight
Input supply	:	10-30 VDC
Aerial range	:	Up to 1.5 KM with clear line of sight
Frequency band	:	5 GHz ( 4910- 5970 MHz)
Channel width	:	5/10/20/40 Khz
Ethernet interface	:	10/100/1000 base T Ethernet
Protocols used	:	IPV4/IPV6, UDP, TCP, ICMP, SNMPv2c, NTP, STP, IGMP, SSH
Network management	:	IPV4/IPV6/HTTPS/SNMPV2c/SSH
Transmit power range	:	-17 to 30 dBm
Antenna Peak gain	:	16 dBi
Environmental	:	IP55
Temperature	:	-30 to 60 degrees
Antenna Peak gain	:	16 dBi
Encryption	:	128 bit AES (CCMP mode)

## MASTER PLC PANEL:-

PLC at master station shall have hot swappable redundant central processing unit (CPU) and redundant power supply. The central controller shall be based on modular PLC. The central controller shall be of the same make as the controller in the Field PLC/RTU. The central controller shall have a colored HMI of 12" for indicating the diagnostic & other information. It should be possible to view detailed information by using buttons on the screen, to drill-down to the appropriate page. The Field PLC /RTU shall pass-on all the I/O information directly to the central controller, and shall act as a slave. PLC shall have at least 20% extra IOs. The controller should be able to communicate an open protocol such as Industrial Ethernet/ CC link etc. with minimum speed of 100 Mbps. The communication port should be integrated or seamlessly attached to the CPU. It should be possible to view, control, & troubleshoot the PLC without requiring any software, from any PC, using web based protocols. Data logs should be stored inside the CPU and should be downloadable in CSV format using a web browser. It should be

Signature of tenderer or his/their power of attorney holder with date, full name, designation and official seal

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possible to increase the I/O handling capacity of the PLC, without changing the CPU, by the addition of appropriate I/O cards. The central controller should have a non-volatile memory of at least 2 MB expandable up to 12 MB and should be tested for operation from -20 to 55 degrees Celsius. The central controller shall have high immunity to electro-magnetic interference according to IEC 61000-6-2 and vibrations according to EN 60068-2-6. The central PLC shall have necessary ports for interfacing with, GSM/GPRS modem, and other ancillary etc.

Master PLC panel shall be fabricated in CRCA sheet duly powder coated in approved shed with proper lock & key arrangement and appropriate gaskets along with necessary hardware like terminals, switches, wiring, relay boards, 24 VDC power supply, fan & Filter, Surge protection devices, isolation transformers etc. complete.

Master PLC shall have wired communication with Industrial PC for exchange of data & commands from the application software. Master PLC shall accept the commands from application software and send it to respective Field PLC/RTU for further action. Field PLC will operate the gates as per command received from the Master PLC and update instant feedback to master PLC.

Master PLC panel shall have facility to operate gates in Auto/ semi-auto / manual mode. In auto mode gates shall be automatically operated as per instructions received from Application software and in Manual mode gates shall be operated manually from Remote push buttons installed on the Master PLC panel. Master PLC panel shall have gate wise separate push buttons for raising & lowering of gates & gate opening display for operation ease during manual operation of gates from master control room in case of emergency.

Line of sight redundant radio modems as per system requirement shall be housed in master PLC panel for seamless communication between central controller & Field Panel/RTU.

## **FIELD PLC/ RTU PANEL:-**

PLC at field/slave station shall have central processing unit (CPU) and power supply with necessary I/O. The PLC controller shall be standalone in structure. The PLC controller shall be of the same make as the controller in the central PLC. The Field PLC /RTU shall pass-on all the I/O information directly to the central controller, and shall act as a slave. Field PLC shall have at least 20% extra I/Os. The controller should be able to communicate an open protocol such as Industrial Ethernet/ CC link etc. with minimum speed of 100 Mbps. The communication port should be integrated or seamlessly attached to the CPU. It should be possible to increase the I/O handling capacity of the PLC, without changing the CPU, by the addition of appropriate I/O cards. The controller should be tested for operation from -20 to 55 degrees Celsius. The controller shall have high immunity to electro-magnetic interference according to IEC 61000-6-2 and vibrations according to EN 60068-2-6. The PLC shall have necessary communication ports for interfacing with master PLC & radio modem. PLC shall have necessary I/O for interfacing the gate sensors and Radar water level sensors.

Line of sight redundant radio modems as per system requirement shall be housed in each field PLC/RTU panel for seamless communication between Field Panel/RTU & central controller.

Each Field PLC/ RTU panel shall have VFD starters rated for 3HP/ 5HP/10 HP / 15 HP and capable of operation at up to 55 degrees Celsius. The RTU equipment shall be housed in a properly sized, weather-proof panel.

Field PLC/ RTU panel shall be fabricated in CRCA sheet duly powder coated in approved shed with proper lock & key arrangement and appropriate gaskets along with VFD Starter panel,

necessary hardware like terminals, Pushbuttons, Selector switches, Emergency stop switch, wiring, relay boards, 24 VDC power supply, fan & Filter, Signal Isolators, Surge protection devices, SPP's, isolation transformers, Over load relays, Fuses, SFU's, etc. complete. Ratings of the equipments/ current carrying capacity of wires used shall be as per electrical standards. All cable ends shall be terminated with appropriate lugs and duly labeled for ease of maintenance.

Surge Protection Device shall be provided inside each Field PLC/ RTU shall as per the following, to safeguard against transient & lightning surges.

- Class B + C on mains input
- Class D, for 24 V DC Supply

Field PLC/RTU shall have facility for wired & wireless communication with Master PLC for exchange of data & commands from the application software. Wireless communication shall be redundant UHF radio based. In each panel Two Line of sight radios shall be provided in case of failure of priority radio other stand by radio shall comes in operation without affecting the system performance. Field PLC/RTU shall accept the commands from Master PLC and operate the gate accordingly. Field PLC will operate the gates as per command received from the Master PLC and update instant feedback to master PLC and further to Application software installed on Industrial PC.

Field PLC/ RTU panel shall have facility to operate gates in Remote / Local mode. In Remote mode gates shall be automatically operated as per instructions received from Application software through Master PLC. In Local mode gates shall be operated manually from Local push buttons installed on the Field PLC /RTU panel. Field PLC/RTU panel shall have gate wise separate selector switch for selection of Local/Remote mode, push buttons for raising & lowering of gates. Gate openings shall be locally displayed on field PLC panel for operational ease during local operation of gates from Field PLC/ RTU panel installed at Motor end.

Field PLC/ RTU panel shall be provided with emergency switch having interlocking with control circuit so that in case of emergency complete operation can be stopped by pressing single button. In addition to above gate inoperative/ under maintenance switch shall be provided for each gate on front panel so that in case of gate under maintenance signal can be taken to PLC and no gate operation shall be allowed from Master/ Field PLC unless gate under maintenance signal goes off.

Field PLC shall generate alarms in case of following

1. Gate fail
2. Gate over travel
3. Overload trip
4. Drive trip
5. Gate inoperative
6. Gate sensor not responding
7. Level sensor not responding
8. RTU door open
9. Communication fail

Alarms generated at field PLC/ RTU panel shall be transmitted to master PLC and Application software for necessary viewing & storage. Operator sitting in Master Control room shall take due care of these alarms for smooth functioning of the system.

## **Slave PLC/ RTU Panel inside Climatic Conditioning:**

The Slave PLC/RTU panel shall be fitted with a space heater mounted in the panel bottom with sufficient Space clearance. The heater shall be protected with the MCB along with auxiliary signaling contact. The panel shall be fitted with two cooling Fan's with adequate flow capacity with filters, and protection, for better control of internal temperature.

### **Analogue Inputs**

- Analogue inputs shall be capable of accepting current signals of, (4-20) mA, with over range capabilities and support for 2/4 wire communications
- All components used in measuring circuits that affect accuracy shall be of high stability and low temperature coefficient.
- A/D conversion shall be provided on each analogue module. The module scan cycle shall be rapid so as to satisfy the overall analogue response time specified to the master workstations.
- It shall be possible by means of the PLC/RTU configuring software, to modify the signal dead-band, so that fluctuating signals are not continuously reported to the Master Station.

### **Digital Inputs**

- Digital input modules shall be optically isolated. Digital filtering to suppress contact bounce shall be provided. In addition, software filtering of two successive cycles shall enable confirmation of state.
- To reduce data transmission, time tagging shall be selectively applied. Only some inputs shall be time tagged at the PLC/RTU, but other inputs shall be time tagged on arrival at the Master Station.

### **Digital Outputs**

- The digital output modules shall support isolated outputs in, latched and BCD mode. Individual LEDs will indicate the status of each output. The outputs shall be isolated to at least 500V dc. Controls transmitted between the control station and the PLC shall comprise a select, check-back, execute sequence (or other means of providing high message security). On receipt of a select message, the PLC shall prepare to operate the output relay, and then return confirmation of correct selection of the relay to the Control Station. This signal shall be obtained as far as possible and shall be generated locally, not derived from the incoming signal. On receipt of the execute command, the output relay shall operate and confirmation of execution shall be returned to the Control Station.
- Not more than one digital output shall be possible at a time. Selection of two or more contacts simultaneously or in quick succession without one having been completed, shall result in cancellation of both requests and return an alarm to the Master Station
- Software interlocking schemes shall be applied with reference to process requirements.

### **Automatic Restart**

- Upon Power interruption and /or communications failure, the PLC/RTU shall be arranged to restart automatically. This may be accomplished by retaining memory in non-volatile store.

### **PLC/RTU Panel:**

- Factory fabricated to requirements, lockable doors, dead-front, self-supporting
- Cabinets shall consist of a rigid self-supporting structure constructed of not lighter than 1.6 mm thick, cold rolled, stretcher leveled sheet steel, braced rigidly where required with structural members. Panels and doors shall be constructed of the same weight and type of material as the

housing. Housings, including doors and panels, shall show no evidence of warping, weaving, or distortion upon completion of installations.

- All cable entry in to the panel shall be from bottom using cable glands of adequate size.
- The panel shall be provided with forced fan cooling system as a standard
- internal panel layout must be designed considering proper approach to the PLC/RTU, instruments, relays, terminals and other accessories for maintenance
- The Cubicles should in sheet steel construction, free floor mounting with front and back access. The doors and side covers should be of 2- mm thick sheet and all load-bearing members are 2 mm thick.
- Arrange doors with minimum 105 degrees open position and with stops. Construct doors so that they neither weave nor warp; provide stiffening members where necessary to ensure rigidity.
- Provide ample duct space for adding and removing wiring from the top.
- Dimensions – As per site requirement & as approved by Engineer In charge.
- Lock System: Slam lock /Screw Fixed - with common key or unique key.
- The cabin shall be provided with power distribution units with sufficient number of sockets to provide power to equipment's hosted inside the cabin
- Provide channel base for mounting.

### **Equipment Arrangement:**

- Wiring ducts to provide easy access for inspection and maintenance.
- Design and arrange ducts and terminal blocks to accommodate bottom entry to cabinet for control, alarm, status, power, and instrumentation cables, as required.

### **Ground Bus**

- Panel shall be supplied with appropriate grounding stud for earthing

### **Nameplates**

- Engraved labels drilled for screw mounting with round head screws shall be provided.
- Provide nameplates for all equipment, instruments, power supplies, relays, circuit breakers, fuses and other devices furnished and mounted in the cabinet. Provide nameplates for each device on panel interior door.
- Submit size, type, and wording for AUTHORITY's approval. All nameplates shall be in English.

### **Terminal blocks**

- Terminal blocks for switchboard control wiring shall be DIN rail mounted screw clamp type.
- Make no more than two connections at each terminal point.
- Confine switchboard internal wiring to one side only of the terminal block. The other side shall be reserved for incoming leads.
- Ten percent of terminal points in each panel section shall have no connections and shall be designated as spare terminals.
- Form control wire bundles without sharp bends and support adequately.

### **INDICATING LAMPS**

- The indicating lamp assemblies shall be a heavy-duty type with color caps. Indicating lamps shall be suitable for AC/DC power supplies, utilizing long life incandescent type lamps.

### **LIGHTED PUSHBUTTONS**

- Each lighted pushbutton shall be mechanically interlocked, illuminated type. Lighted buttons shall be the recessed guarded type to preclude inadvertent operation. Gate control lighted pushbuttons shall be furnished with a flasher so the lamps will blink at a 1-second on and off rate when the maintained pushbutton is operated.

## **PUSHBUTTONS**

- Each unit shall be a maintained contact type. Pushbuttons shall be the recessed guarded type to preclude inadvertent operation.

## **RELAYS**

- **Auxiliary relays:** The auxiliary relays shall be in accordance with IS standards and shall be machine tool or industrial type. The relays shall have convertible contacts and shall be self-resetting. A minimum of two spare contacts shall be furnished on each relay.

## **SPECIAL TOOLS**

- The bidder shall furnish any special tools that may be required to allow proper connections of wiring to devices and all terminal blocks

## **SURFACE FINISH**

- Cabinet has to be nano-ceramic/epoxy powder coated with ral 7035 after proper pre-treatment as per the best industry practice, with thickness of 80 to 120 microns. shop inspection and testing

## **TEST PROCEDURE**

After the cabinets are completely assembled and wired, perform the following tests and procedures

- i. Dielectric test on all circuits in accordance with standard test requirements. Instruments or other devices that cannot withstand test voltage shall be disconnected.
- ii. Circuit continuity test to verify connections.
- iii. Functional tests of all control switches and indicating lamps.
- iv. Verify operation of Operator Interface Unit on cabinets.

## **VFD STARTERS PANELS**

- 3Phase VFD Starter panel shall consists of S.P.P, MCB, OLR, safety fuses, Pushbuttons, VFDs, and Main Switch. Equipments used in the panel shall be of Siemens / Schneider/L&T / Delta/ Mitsubishi/ Technique / Atonics make.
- The Employer reserves the right to reject any or all of such proposed manufacturers including manufacturers named above.

## **Barrage/ Dam Monitoring and Control Software:-**

Application software proposed shall be self intelligent and capable for automatic control operation of the Dam gates based on the inputs from the local sensors and pre-defined procedure included in the application software. Software shall perform operations of the Dam and canal gates as per the commands from the operator in Dam Control Room. Software shall always checks the parameters and commands received periodically as programmed. Application software shall be capable of generating various reports, alarms, trends, and event logs as per the employer's requirements. Proposed Software shall also capable to receive & display inputs from remote Hydro-meteorological stations installed in the catchment and shall have compatibility with flood forecasting module. Proposed software shall be proven in the field for similar application for not less than 3 years. Proposed software should not have any limitations for number of tags and Screens.

Remote Control system at Dam shall collect the data from various sensors like Gate position sensors, Level sensors, limit switches, etc. and transmit the same to Dam gate control software. Dam Gate control Software shall continuously monitor & display Levels, Gate openings, Inflow, Discharges through Spillway /HR gates, percentage Storage, Live storage, Gross Storage, Time to reach FRL & MWL. This historical data shall be continuously logged in

to database server for further analysis & display. Actual inflow reaching to the reservoir shall be calculated using area-capacity table for the reservoir and change in the level against time and discharge shall be electronically calculated using gate opening and upstream level.

At any time individual gates shall be allowed to be switched over from the automatic mode to manual mode of operation, and vice versa, however, the operation from the local panel cannot be overruled by the remote/automatic operation stage. Manually adjusted gates shall, when returned to automatic mode of operation, be adapted to their normal functioning in the automatic mode. The automatic system shall work independent of the number of available gates with the same characteristic. In the event of major changes in required size of opening, the gates shall be moved successively in steps. Step sizes shall be predefined in the application software. Necessary tolerance band should be provided to prevent continuous hunting of hoist.

Flood Forecasting Software provided by the contractor shall be capable of utilizing real time data received from hydro-mechanical stations.

### **Gate Operation Spillway:**

#### **Spillway gates shall be operated in following modes.**

##### ***Automatic Mode:***

The gates shall be operated automatically as per the demands of situation and pre-defined operation procedure for regulation of flood. The operation of gates shall be strictly as per the provided reservoir operation schedule and gate operation schedule by the competent authority. While operating spillway gates, situation in the river downstream of the dam shall be taken into consideration.

In the event, when any gate causes mechanical or electrical failure, an alarm shall be generated for non-functionality of the particular gate.

##### ***Semi-Automatic Mode:***

The facility shall be provided to operate gates as per the current instructions from the authorities by over-riding the automatic operation shall be provided in the dam gate control software. This option has following various modes of operation-

- Set level mode
- Gate openings mode
- Discharge mode

##### ***Set Level Mode:***

In this mode of operation, operator shall able to enter the particular reservoir water level to be maintained automatically and period for retaining the set level in the reservoir by releasing excess water. This operation is over-ride to the reservoir operation schedule set-out.

##### ***Gate openings mode:***

In this mode of operation, operator shall able to set opening for particular gate for defined time period and gate shall be adjusted to the desired gate opening. After expiry of the time period, gate shall be automatically set to its original position or as per the requirement of situation in automatic mode of operation.

##### ***Discharge mode:***

In this mode of operation the operator shall be able to set the discharge rate and quantum of water to be released or the discharge rate for the defined period and dam gate control software system shall calculate and adjust the opening of gates to let out the desired flow. After completion of time period the system shall automatically reposition the gate to its original position or as per the demands of situation in automatic mode.

##### ***Manual Mode:***

The spillway / Canal gates shall be operated in manual mode for flood / discharge regulation. In this case, the dam gate control software will act as monitoring system and operation shall be carried out by the engineer / operator at site. This facility shall be provided for regulation of

flood/canal discharges even when the some component of the remote control system is not functioning properly.

***Event log:***

Each and every event at the dam site shall be logged by the software system along with the password of the operator in encrypted form. The data collected from the field stations, calculated by the system shall also be logged in the system along with the date and time stamp at predefined time interval. This data shall be used to refine the operation and analysis.

**Canal Gate Operation:**

***Automatic Mode:***

The canal gates shall be operated automatically as per the demands of situation and pre-defined operation procedure for canal regulation. The operation of gates shall be strictly as per the gate operation schedule approved by the competent authorities. While operating gates, max discharge capacity of the channel shall be taken into consideration.

In the event, when any gate causes mechanical or electrical failure, an alarm shall be generated for non-functionality of the particular gate.

***Semi-Automatic Mode:***

The facility to operate gates as per the current instructions from the authorities by over-riding the automatic operation shall be provided in the control and monitoring software. This option shall have following various modes of operation-

Gate openings mode

Discharge mode

***Gate openings mode:***

In this mode of operation, operator shall be able set opening for particular gate for defined time period and gate shall be adjusted to the desired gate opening. After expiry of the time period, gate shall be automatically set to its original position or as per the requirement of situation in automatic mode of operation.

***Discharge mode:***

In this mode of operation the operator shall be able to set the discharge rate and quantum of water to be released or the discharge rate for the defined period and dam control software system shall calculate and adjust the opening of gates to let out the desired discharge. After completion of time period the system shall automatically reposition the gate to its original position or as per the demands of situation in automatic mode.

***Manual Mode:***

The canal gates shall be operated in manual mode for water distribution. In this case, the system software shall act as monitoring system and operation shall be carried out by the engineer / operator at site. This facility shall be provided for operation of gates even when the some component of the control system is not functioning properly.

***Event log:***

Each and every event at the site shall be logged by the dam gate control software system along with the password of the operator in encrypted form.

**Discharge Calculation**

The discharge rate per gate & total discharge is to be computed by electronic means. Water level measurement and measurement of the gate position serve as input variables for discharge calculations. Discharge shall be calculated using appropriate formulae provided by purchaser for discharge calculations.



### **Real time Inflow Calculation**

Inflow shall be calculated based on the rate of change of level against time. For inflow calculations area capacity curve shall be provided by purchaser. Water level measurement serves as input variables for inflow calculations.

## **WIRING/CABLING REQUIREMENTS**

The cabling system design criteria shall be as follows.

The term cable shall always include necessary type of connectors at both the ends for connecting between two equipment. The connectors shall be properly anchored with protective sheathing of the cable in such a way that the loads due to pulling and twisting shall be borne by the protective sheathing and the conductors shall not be subjected to any stress.

The connectors shall be so fixed on the individual components of the system that the metal/plastic connector shall always transfer the loads due to pulling and twisting directly to the protective body of the component and the internal interface cards/ connections shall not be subjected to any load.

Laying of necessary data and power supply cables for connecting various components and embedding them or protecting them with necessary conduits shall be carried out as per directions of engineer-in-charge.

Wherever the cables are to be laid indoors and the length of the individual cable run exceeds 1 meter, the cable shall be housed in a protective conduit made of electrical supply grade conduit of appropriate diameter and the conduit shall be fixed with the wall at a height not less than 1 meter above the floor surface. Whenever the indoor cable is required to cross the floor, it shall be housed in a HDPE /GI flexible conduits pipe of 25 mm internal diameter and the pipe shall be fixed to the floor with suitable protective covering to avoid tripping of personnel using the area or disturbance to the pipe due to such movement.

Wherever cables are to run through open ground including the public road and pathways, the cable shall be armored and shall be water ingress proof up to static water pressure of 5 kg/cm<sup>2</sup>. All joints made in cable shall also meet the water proofing criteria. In addition, the cable shall be protected by housing the same in 25 mm galvanized iron pipe embedded at a depth of not less than 0.5 meter below the ground surface with a warning brick on the same. A sketch of the cable layout with respect to the identifiable marks of the area shall be prepared and handed over to the Engineer-in-charge for each such cable run on completion of the work of cable laying operation.

The joints in the cable connecting between the sensor and data collection unit shall be avoided by measuring the appropriate length of the cable required and attaching the same in one piece. If the cable joints become necessary, prior permission of the Engineer-in-charge shall be obtained before executing the same. The joint fabricated through a splicing and jointing kit shall be stronger than the parent cable.

The cable carrying data and electrical power shall be housed separately in different conduits separated by adequate distance to prevent leakage currents. The data cables shall also be laid out in such a way that the data integrity is not compromised due to mutual interference.

# **SCADA SYSTEM FOR DAM AUTOMATION**

## **General**

The Dam/Barrage control room will have Industrial PC for monitoring & control applications. The Customized SCADA software will accept information sent by all the remote PLC/RTU, store the information in a data base, display the information in appropriate mimic displays, analyze past data and trends, will have the authentication feature by way of user name and password for operating the software; Updating of parameters of the PLC/RTU along with instrument can be done interactively from this software.

## **The development of software has to be customized with end user.**

The control room will have main PLC system with IOs, main SCADA system with PC, software, wireless radio modem & UPS etc.

The control system along-with SCADA Software shall be provided in the Dam control room and the information available at control room can be pass on to remote monitoring stations using GSM/GPRS/VSAT data communication network. The Data provided in Control room should be displayed in complete explicit way and can be extracted in different formats.

The local control and computing system for the gates shall be able to calculate the actual spillway & HR discharge depending on reservoir water level and gate opening.

A master controller shall define the required total gate opening. The positioner shall compare the required value with the total actual opening found by adding up the individual opening values, if the deviation of one or more gates from the required value is large enough, an 'Open'- or 'Close'- instruction shall be given to the respective gate(s). However to prevent hunting of hoist the deviation should be beyond the preselected tolerance band.

In a selection circuit the 'open'- instruction shall be transferred to that gate, which at the time of the comparison controls the smallest opening. Similarly, a 'close' - instruction shall be given to the gate controlling the largest opening.

For the gate selection, only the gates shall be considered, of which the mode selector switches are in the 'Automatic' position, and where no alarm signal has been received from, the 'open'- or 'close'- instruction shall remain with the selected gate, unless any of the following conditions is met:

- The required and actual openings agree and the positioner cancels the instruction, or
- The gate had previously reached its limit position, or,
- The max. Permissible deviation (pre-set difference in position between controlled gate and average of all gates available) has been reached previously.
- The selected gate is not in operating condition.

In the event of major changes in required size of opening, the gates shall be moved successively one step each, i.e. after re-setting all gates again agree within the pre-set margin in size of opening. After all available gates have reached their limit positions a corresponding signal shall be given.

At any time individual gates shall be allowed to be switched over from the automatic mode to manual mode of operation, and vice versa, however, the operation from the local panel cannot be overruled by the remote/automatic operation stage. Adjustments made manually are to be automatically compensated for with the other gates by the automatic control system.

Manually adjusted gates shall, when returned to automatic mode of operation, be adapted to their normal functioning in the automatic mode. The automatic system shall work independent of the number of available gates with the same characteristic. If all gates have been changed over to MANUAL, the master controller shall be reset so as to permit a smooth switching-over to AUTO operation.

The system is to be designed to monitor the duration of the instruction. The monitoring is to prevent, that an instruction is maintained over a period, that is longer than a pre-select e.g. in the event of a malfunction of a gate selected by the controller, if the monitoring system is actuated, the particular gate is to be cancelled from the group of gates available for selection.

Electronic attenuation is to be included to provide against unsteady level signals.

The system should be compatible with flood fore-casting system to be provided by the employer for the monsoon period.

### **Manufacturer**

Only CE/UL certified Sensors, RTU/PLC shall be used. The Remote Control system is to be sourced from a reputed designer cum manufacturer.

Following names are given as reference for PLC & SCADA system

- a) Allen Bradley/Rockwell
  - b) Mitsubishi
  - c) Siemens
  - d) Schneider electric
  - e) ABB
- Or equivalent

If the bidder proposes alternative sourcing from an equally reputed and expert Remote-Control System manufacturer, he can propose the same with complete details, references, lists of successful Remote-Control Systems supplied/installed for prior approval from Engineer-In- Charge before placement of order with any of the manufacturer.

The Employer reserves the right to reject any or all of such proposed manufacturers including manufacturers named above.

### **SPARE PARTS AND TOOLS**

All spare parts to be supplied shall be interchangeable with the corresponding parts of all the Works supplied under these Specifications and shall be of the same material and workmanship. They shall be replaceable without cutting or destruction of adjacent components. Before issue of the Taking-Over Certificate the spare parts shall be checked and tested at the Site by the Contractor In presence of the Engineer.

Acceptance of any spare parts will not take place before the Contractor has submitted the complete final detailed list of all spare parts and tools. All spare parts, tools and

materials shall be delivered in marked boxes of sufficient sturdy construction to withstand long term storage cum maintenance.

- a) Mandatory Spare Parts
- b) Recommended Spare Parts

## **SCHEDULE OF WORK AND PROGRESS REPORTS**

### **Schedule of Work**

The time and the date of completion of work as stipulated shall be deemed to be the essence of the contract. The Supplier shall submit a detailed programme for all the activities to perform the work as per the Contract. The schedule will be in the form of a detailed PERT network consisting of adequate number of activities covering various key phases of the works such as designs and drawings, procurement, manufacturing, shop assembly and shop painting. This network shall also indicate the interface facilities to be provided by the Purchaser, if any, and the dates by which such facilities are needed.

The Supplier shall so organize his resources and perform his work as to complete it not later than the date agreed to by him. The time for completion of the supplies contracted for, shall be reckoned from the date of award of supplies to the Supplier.

During the performance of the contract, if in the opinion of the Engineer-in-Charge proper progress is not maintained suitable changes shall be made in the schedule to ensure proper progress.

### **Progress Reports**

The above PERT network shall be reviewed and periodic reports shall be submitted by the Supplier as directed by the Engineer-in-Charge before initiating the procurement/fabrication, the Supplier shall submit a detailed list of items/materials to be bought out from outside agencies/fabricated at his or any other supplies. The list should be exhaustive and should serve as a check list for reviewing the progress from time to time. It shall be obligatory on the part of the Supplier to submit a detailed monthly report by 7th of every month (for the previous month) giving the progress of the following activities:

- a. Designs and Drawings of complete assembly for its prior approval by Engineer in charge, within one month of issue of letter of acceptance.
- b. Procurement of materials and bought out items
- c. Fabrication of various assemblies and sub-assemblies indicating detailed status of fabrication of critical items involved and expected date of completion.
- d. Stages of shop assembly.
- e. Shop testing
- f. Dispatch of materials.

## **DRAWING SUBMISSION**

The complete General Arrangement Drawing along-with each components drawing and complete architecture of SCADA shall be submitted within 30 days from the issue of letter of intent for its approval to Engineer-in-Charge. Failure in submitting drawing in stipulated time shall amount to breach of the Contract. The Contractor shall also submit brief architect of SCADA architecture in their Bid mandatorily.

## **TECHNICAL RESPONSIVENESS:**

Bidders are requested to confirm that all requirements of technical specifications have been met without any material deviation or reservation by submitting duly signed and stamped bid documents & in case of any deviation, it shall be clearly stated in deviation sheet failing which offer of the firm may consider unresponsive.

## **DELIVERY AND COMPLETION SCHEDULES**

The delivery and installation schedules are described in Schedule of Requirements. The maximum time period from the date of issue of Letter of Award to Final Acceptance is (07) seven months followed by (01) one year standard Warranty period and comprehensive annual operation & maintenance of 5 years after expiry of one year standard warranty period. The bidder must comply with the milestones indicated in the delivery schedule and schedule for installation and commissioning.

## **TRAINING COMPONENT**

### **Training Programme**

The Bidder is required to provide an extensive training programme for the system. The training set forth in the following paragraphs is a minimum requirement and the bidder should propose any additional training that he considers critical for long term success of the system operations.

The Bidder is expected to provide an outline or table indicating the contents of each of the required courses. The table shall describe the specific topics to be covered for each day of the training period.

The Bidder is responsible for the salaries of the training instructors and all training materials. The costs of travel, transportation and daily allowances for the trainees shall be borne by the Purchaser.

### **Training in General Operation**

Training shall be provided by the bidder in several phases. The training shall include both classroom and field trainings and will be continued during all five years. The bidder is required to have hydro-meteorological equipment specialists.

The training course will take place at Bhubneshwar or dam site *as decided by the Purchaser*. In case of formal training, the Purchaser will provide classroom and other logistics. The Bidder will facilitate the professional and the training materiel. On-the-job training will be provided by the Bidder in conjunction with the installation of hydro-meteorological stations and during the course of maintenance as required.

The Bidder shall prepare a training course plan and include the same in the Bid Document. These trainings will be repeated every year during warranty and annual maintenance periods for refreshing the trained staff and training additional staff.

## **AFTER SALES SERVICE LOCAL**

### **PARTNER**

The Bidder is required to be an Indian firm or Indian arm of an international firm so as to develop an in-country technical support base during and after the project implementation phase.

### **Warranty and O&M Period**

The Bidder shall be responsible for one year onsite warranty of all stations/ components after installation, commissioning & site acceptance and operational test, All associated cost shall be part of contract price and bid price for evaluation.

This warranty includes proper functioning of SCADA and the hardware and software components. Assistance and troubleshooting will be provided for all necessary maintenance, servicing, testing, and recalibration operations.

Warranty shall include free of cost repairs/ replacement of hardware and Software necessary to keep the system functional for the period of one year from Date of Issuance of Final acceptance certificate from Engineer in Charge

During warranty period bidder shall responsible for make the system operative if any problem / non functioning of the system arises due to manufacturing defects. Problem arises due to theft, vandalism, manual tampering, lightening, storm, fire or any natural disaster is not covered under warranty. In such case system shall be made operative with extra price implication mutually decided between purchaser & bidder.

Bidder shall provide a minimum one no. of Service engineer for up keeping of SCADA system at dam from commissioning stage till completion of 1 year warranty period followed by 05 years of Operation and Maintenance.

The Service Engineer shall have well versed with Operation and Maintenance aspects of SCADA systems.

**ODISHA CONSTRUCTION CORPORATION LTD.  
(A GOVT. OF ODISHA UNDERTAKING)  
CENTRAL WORKSHOP, RASULGARH,  
BHUBANESWAR-751010 (ODISHA)**

**Price schedule for the work: Supply, installation, testing, commissioning with complete automation of spillway and Head Regulator gates controlled through centralized remote control & implementation of real time management system of Deo Irrigation Project- vide tender call notice OCC/CWS/PROC./DEP-02/86/18-19 dated 21.02.2019**

Sl. No	Description of items	Quantity required in Unit	Rate per each unit				Total Amount for full quantity required in Rs.	
			Basic price including, unloading, loading, shifting, handling charges etc. as required in Rs per Unit	GST as applicable in Rs per Unit	Total in figures in Rs. per unit	Total in words in rupees per unit	In figures	In words
1	2	3	4	5	6	7	8	9
<b>A</b>	<b>Dam Automation System (Complete Automation with SCADA &amp; Electrification)</b>							
1	Supply, installation, testing and commissioning of Remote Raise / Lower / Stop electronic panel with line of site two radio modem (line of site type) for providing redundancy or equivalent along with auxiliary power supply with suitable electronic protections. Suitable for covered outdoor installations including Electronic contactor panel for Raise / Lower / Stop functions with following Specifications for 15HP/1000 RPM(approx.) motor for <b>spillway gates</b> . (a) Local / Remote selection under lock and key (b) Thermal Overload protection (c) Interface able to Radio Modem for transmission of status to Master Control Station (d) Contactors rated minimum 63 Amps (e) Max. Ambient Temperature 50 °C.	5 sets.						

Signature of tenderer or his/their power of attorney holder with date, full name, designation and official seal

General Manager(Mech.) ,OCCL,  
Central Workshop, Rasulgarh,  
Bhubaneswar – 751010 (Odisha)

Sl. No	Description of items	Quantity required in Unit	Rate per each unit				Total Amount for full quantity required in Rs.	
			Basic price including, unloading, loading, shifting, handling charges etc. as required in Rs. per Unit	GST as applicable in Rs. per Unit	Total in figures in Rs. per unit	Total in words in rupees per unit	In figures	In words
1	2	3	4	5	6	7	8	9
2	<p>Supply installation testing and commissioning of Remote Raise/ Lower/ Stop electronic panel with one no. micro PLC to communicate to the common line of site radio modem trans receiver or equivalent supporting 1 nos, Left Canal gate along with auxiliary power supply with suitable electronic protections and suitable length CAT6 cable along with redundant line of site modem panels supporting <b>left canal gates</b> with following specifications.</p> <p>Aerial Range : 1 Kms  Frequency: 5 GHz, 25 dBi  Channel Specing: 25 KHz.  User Protocol: Ethernet</p> <p>Suitable for covered outdoor installations including Electric contactor panel for Raise / Lower / Stop functions with following specifications for 2 HP / 750 RPM(approx.) motor on Left Canal Regulator Gates</p> <p>(a) Local / Remote selection under lock and key  (b) Thermal Overload protection  (c) Interface able to Radio Modem for transmission of status to Master Control Station  (d) Contactors rated minimum 40 Amps  (e) Max. Ambient Temperature 50 °C</p>	1 set						

Signature of tenderer or his/their power of attorney holder with date, full name, designation and official seal

General Manager(Mech.) ,OCCL,  
Central Workshop, Rasulgarh,  
Bhubaneswar – 751010 (Odisha)



Sl. No	Description of items	Quantity required in Unit	Rate per each unit				Total Amount for full quantity required in Rs.	
			Basic price including, unloading, loading, shifting, handling charges etc. as required in Rs. per Unit	GST as applicable in Rs. per Unit	Total in figures in Rs. per unit	Total in words in rupees per unit	In figures	In words
1	2	3	4	5	6	7	8	9
3	<p>Supply installation testing and commissioning of Remote Raise/ Lower/ Stop electronic panel with one no. micro PLC to communicate to the common line of site radio modem trans receiver or equivalent supporting 1 nos, Right canal gate along with auxillary power supply with suitable electronic protections and suitable length CAT6 cable along with common on line Redundant line of site modem panels supporting <b>right canal gates</b> with following specifications.</p> <p>Aerial Range : 1 Kms  Frequency: 5 GHz, 25 dBi  Channel Spacing: 25 KHz.  User Protocol: Ethernet</p> <p>Suitable for covered outdoor installations including Electric contactor panel for Raise / Lower / Stop functions with following specifications for 2 HP / 750 RPM (approx.) motor on Right Canal Regulator Gates</p> <p>(a) Local / Remote selection under lock and key  (b) Thermal Overload protection  (c) Interface able to Radio Modem for transmission of status to Master Control Station  (d) Contactors rated minimum 40 Amps  (e) Max. Ambient Temperature 50 °C</p>	2 sets						

Signature of tenderer or his/their power of attorney holder with date, full name, designation and official seal

General Manager(Mech.) ,OCCL,  
Central Workshop, Rasulgarh,  
Bhubaneswar – 751010 (Odisha)

Sl. No	Description of items	Quantity required in Unit	Rate per each unit				Total Amount for full quantity required in Rs.	
			Basic price including, unloading, loading, shifting, handling charges etc. as required in Rs. per Unit	GST as applicable in Rs. per Unit	Total in figures in Rs. per unit	Total in words in rupees per unit	In figures	In words
1	2	3	4	5	6	7	8	9
4	Supply, installation, testing and commissioning of online hot redundant line of site or equivalent. Base modem for communicating with Main Dam, Left & Right Canal Devices. The online redundant line of site panel for supporting right canal gates with following specification. Aerial Range : 1 Kms Frequency: 5 GHz, 25 dBi Channel Spacing: 25 KHz. User Protocol: Ethernet	1 set						
5	Supply, installation, testing and commissioning of non contact type Radar water level sensor meeting with industry emission frequency standard 26GHz and measurement range up to 35 meters.	2 Sets						
6	Supply, installation, testing and commissioning of <b>Spillway gate</b> position sensor including mounting & integration cost for above sensors on existing motors.	5 sets						
7	Supply installation testing and commissioning of gate <b>Left Head Regulator gate</b> position sensor including mounting & integration cost for above sensors on existing motors.	1 set						
8	Supply installation testing and commissioning of <b>Right Head Regulator</b> gate position sensor including mounting & integration cost for above sensors on existing motors.	2 sets						

Signature of tenderer or his/their power of attorney holder with date, full name, designation and official seal

General Manager(Mech.) ,OCCL,  
Central Workshop, Rasulgarh,  
Bhubaneswar – 751010 (Odisha)

Sl. No	Description of items	Quantity required in Unit	Rate per each unit				Total Amount for full quantity required in Rs.	
			Basic price including, unloading, loading, shifting, handling charges etc. as required in Rs. per Unit	GST as applicable in Rs. per Unit	Total in figures in Rs. per unit	Total in words in rupees per unit	In figures	In words
1	2	3	4	5	6	7	8	9
9	Supply, installation, testing and commissioning of Industrial PC with following specifications - 15" Touch Panel PC Intel i3 7 <sup>th</sup> generation, 2 GHz; 8 GB Memory; 2 x 10/100/1000 Mbps (RJ-45); 2 x RS232; 1x RS232/RS422/ RS485; 1 x RS232/ GPIO (8 channels TTL Level); 4 x USB2.0; 1 x D-SUB VGA port; 1 x PS/2 Mouse & 1 x keyboard interface; 2.5" x 500 GB SATA HDD or latest suitable version; for Engineering & Operator stations - along with required control room cabin modifications complete.	2 sets						
10	Supply, installation, testing and commissioning of Online Hot-Standby Redundant Programmable Logic Control System (PLC) for Master Control Facility real time data acquisition, remote monitoring and reporting along with GSM/ CDMA communication capability for transmission of data to remote stations complete.	1 set						
11	Supply installation, testing and commissioning of Application Software Thin Client windows based to support 4 operating / monitoring PC based stations complete.	1 set						
12	Supply, installation, testing and commissioning of Lightening Arrestor System- Area: 107 Mtr radius; Model: Ion Streamer 1.5 Mast Down Conductor, Strike counter eathing with BFC complete.	1 set						

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General Manager(Mech.) ,OCCL,  
Central Workshop, Rasulgarh,  
Bhubaneswar – 751010 (Odisha)

Sl. No	Description of items	Quantity required in Unit	Rate per each unit				Total Amount for full quantity required in Rs.	
			Basic price including, unloading, loading, shifting, handling charges etc. as required in Rs. per Unit	GST as applicable in Rs. per Unit	Total in figures in Rs. per unit	Total in words in rupees per unit	In figures	In words
1	2	3	4	5	6	7	8	9
13	Supply, installation, testing and commissioning of 500KVA 3 Phase Servo Stabilizer Oil cooled, Input Range 360 - 460 V; Output Range 415 ± 1% 50 Hz; Toriodal Variac Input Short Circuit & Overload Protection, Low voltage, High Voltage, Single Phasing Preventer protection, change over switch at input complete.	1 set						
14	Supply, Installation, Testing and commissioning of 1.5 TR capacity (Heat & Cool) high wall mounted indoor evaporator unit and outdoor condensing unit with Heat pump cordless remote control and hermetically sealed rotary compressor operating on R410A suitable for operation on 230V, 50 Hz, single phase AC supply, capable of performing cooling capacity 5.25 KW and above and heating capacity 5.28 KW and above running current in cooling mode less than 7.19 A and in heating mode less than 6.53 A Power consumption in cooling mode not more that 1635 W and in heating mode not more than 1490 W co-efficient of performance in cooling mode not less than 3.21 & in heating mode not less than 3.54, dehumidifying air circulating and filtering with cooling and condensing unit duly insulated and 3 core copper flexible chord of required length etc., with 2 years comprehensive warranty and 5 years warranty on compressor etc complete.	2 sets						

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1	2	3	4	5	6	7	8	9
15	Supply installation, testing and commissioning of 7.5 KVA , 180/192 V DC true online UPS system IGBT technology pure sign wave output, double conversion with auto and manual static by-pass switch single phase input / single phase output complete.	1 set						
16	Supply installation, testing and commissioning of 2 KVA , true online UPS system IGBT technology pure sign wave output, double conversion with auto and manual static by-pass switch single phase input / single phase output complete.	1 set						
17	Supply, installation, testing & commissioning of CCTV surveillance system comprises of 6 Nos of IR Bulet Cameras, 4 Nos of PTZ cameras, 16 Channel NVR, 30 Days storage, 55" LCD/LED display, Necessary cabling, Power supplies, Mounting accessories required for installation etc complete.	1 set						
18	Supply, Installation, testing & Commissioning of 7.5 KVA Solar power supply system with 48 Hours backup system for only SCADA System & Instrumentation in case of power failure for more than 4 Hours.	1 set						

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1	2	3	4	5	6	7	8	9
19	Supply, Installation, Testing & Commissioning of 82.5 KVA DG set 3 phase input 3 phase output with Auto mains failure Panel of any reputed make, including earthing etc. complete.	1 set						
20	Supply, Installation, Testing & Commissioning of Electrical distribution panel ( with 1 incoming feeder and 5 outgoing feeder) (63-100 Amp) for Distribution of electrical loads at dam site for SCADA system including necessary mounting arrangements, gland, etc. complete.	1 set						
<b>B</b>	<b>Rain-gauge &amp; flood forecasting software</b>							
1	Supply installation, testing & commissioning of Telemetry Rain-gauge station comprises of Tipping bucket type Rain-gauge sensor, data Logger, Solar power supply with 15 days battery backup, GSM/GPRS/VSAT data communication modem, Antenna etc complete.	2 sets						
2	Supply installation, testing & commissioning of Telemetry River gauging station comprises of radar Water Level sensor, data Logger, Solar power supply with 15 days battery backup, GSM/GPRS/VSAT data communication modem, Antenna etc complete.	2 sets						
3	Design, Supply, Installation & Interfacing of Flood forecasting software for catchment area up to 1200-1500 Sq KM etc complete.	1 set						

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1	2	3	4	5	6	7	8	9
<b>C</b>	<b>Construction of Control room</b>							
1	Control Room– Construction of Control Room in (carpet area 1400 Sq. Ft. on ground floor and first floor) with conference hall, verandah and all necessary amenities and furnishings. 3' wide Gallery with floor Tiles and Steel Railing shall be provided outside periphery of Control Room.	1 No						
<b>D</b>	<b>Warranty and O&amp;M</b>							
1	Comprehensive Annual Maintenance of the system for after expiry of one year standard warranty period.	5 years						
<b>E</b>	<b>Any other item required to be done to complete the turnkey job</b>	1 set						
<b>F</b>	<b>Supply of Maintenance spares for five years trouble free operation(List to be provided)</b>	1 set						

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