

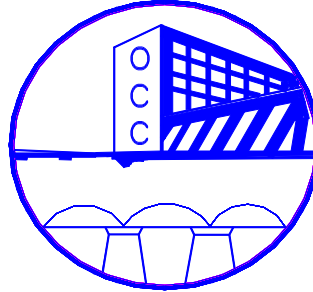
# **ODISHA CONSTRUCTION CORPORATION LIMITED**

(A GOVT. OF ODISHA UNDERTAKING)

**MANJORE GATE WORKS PROJECT**

**CENTRAL WORKSHOP, RASULGARH**

**BHUBANESWAR-751010**



DESIGNED TO EXCEL

## **TENDER DOCUMENT**

**Tender Call Notice No.OCC/MGWP/06/2018-19 dated 15.02.2019**

### **Name of work:**

**Supply of electrical items, its transportation, fabrication erection and electrical installation, commissioning & testing of 25 Ton gantry crane to operate stoplogs of spillway with all electrical arrangements for its hoists and long travels of Manjore Irrigation Project, Athamalik, Dist. Angul”.**

**(This tender document contains 23 (Twenty three) sheets including this cover page)**

Signature of the “Tenderer or his/their power of attorney holder with name, date and seal

Senior Manager (Mech.),OCCL  
Manjore Gate Works Project,

# Particulars of Tender document issue

## **ODISHA CONSTRUCTION CORPORATION LIMITED**

(A GOVT. OF ODISHA UNDERTAKING)  
**MANJORE GATE WORKS PROJECT**  
**CENTRAL WORKSHOP, RASULGARH**  
**BHUBANESWAR -751010**

**Date of issue of tender document .....**

**Tender Call Notice No.OCC/MGWP/06/2018-19      dated 15.02.2019**

**Issued in favour of :**  
**(Full name & address)**

**Telephone No. – Land line :**

**Mobile :**

**Valid Registration no of SSI/Proprietorship:**

**Vide Money receipt No.:**

**Dated :**

**Issued by**

**(Stamp and signature of issuing officer)**

**Cost of tender paper :**  
**(Non-refundable)**

**Rs. 6000/- + GST @ 12% Rs. 720/- = Rs. 6720/-**  
**(Rupees Six thousand seven hundred twenty) only by hand /**  
**& Postal / Courier charges of Rs.100/- = Rs.6820 /-**  
**(Rupees Six thousand eight hundred twenty) only by**  
**Registered Post /Speed Post / Courier**

**Signature of the “Tenderer or his/their power**  
**of attorney holder with name, date and seal**

**Senior Manager (Mech.),OCCL**  
**Manjore Gate Works Project,**

**OFFICE OF THE SENIOR MANAGER (MECH.),  
ODISHA CONSTRUCTION CORPORATION LIMITED,  
(A GOVT. OF ODISHA UNDERTAKING)  
MANJORE GATE WORKS PROJECT,  
CENTRAL WORKSHOP, RASULGARH  
BHUBANESWAR-751010**

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**TENDER CALL NOTICE NO. OCC/ MGWP/06/2018-19 dated 15.02.2019**

1. On behalf of M/s. Odisha Construction Corporation Ltd, (“OCCL”), Senior Manager (Mech.), Manjore Gate Works Project, Central Workshop, Rasulgarh, Bhubaneswar-10 invites sealed Tenders from the interested reputed Electrical Contractors enlisted in OCCL having LT / HT license with relevant experience on L.T. erection and installation work for the following items / works.

Sl. No.	Description of Items/works	E.M.D.	Cost of document + 12 % GST in Rs.	Period of work	Class of tenderer
1	Supply of electrical items, its transportation, fabrication erection and electrical installation, commissioning & testing of 25 Ton gantry crane to operate stoplogs of spillway with all electrical arrangements for its hoists and long travels of Manjore Irrigation Project, Athamalik, Dist. Angul	1(One)% of the quoted value	6720/-	30 (Thirty) days	Electrical Contractor enlisted in OCCL having LT / HT license

2. The tender documents may be purchased from Office of the Senior Manager (Mech.), OCCL, Manjore Gate Works Project, Central Workshop, Rasulgarh, Bhubaneswar-10 during office hours from **16.02.2019** to **23.02.2019** except Sundays and holidays (up to **1.00 PM of 23.02.2019**) on payment of non-refundable cost of tender document as indicated in the table above in shape of Cash / Demand Draft drawn on any Nationalized / Scheduled Bank payable at Bhubaneswar only in favour of “**Odisha Construction Corporation Ltd. - Project Account**”.
3. The tender document may be downloaded from Corporation’s website at [www.odishaconstruction.com](http://www.odishaconstruction.com) or from Govt. of Odisha website [www.odisha.gov.in](http://www.odisha.gov.in) and non-refundable cost of tender document amounting to Rs. **6720** /- (Rupees Six thousand Seven Hundred Twenty) only inclusive of GST @ 12% in shape of Account Payee Demand Draft drawn on any Nationalised/ Scheduled Bank payable at Bhubaneswar on in favour of **Odisha Construction corporation Ltd.- Project Account** may be deposited along with the tender. Interested tenderers may obtain further information, if any, from the undersigned.
4. The tenders must be accompanied with Earnest Money Deposit @ **1%** of total quoted basic value excluding (GST, packing & forwarding and transportation etc.) in any one of the forms specified in the tender document drawn on any Nationalised / Scheduled Bank payable at Bhubaneswar only in favour of M/s. Odisha Construction Corporation Ltd.-Project Account and should be valid for 90 (Ninety) days from the date of opening of tenders.

Signature of the “Tenderer or his/their power of attorney holder with name, date and seal

Senior Manager (Mech.),OCCL  
Manjore Gate Works Project,

The tenders will be received in the Office of the Senior Manager (Mech.), OCCL, Manjore Gate Works Project, Central Workshop, Rasulgarh, Bhubaneswar-10 up to **3.00 PM of 23.02.2019** and will be opened on the same day and same venue i.e. on **23.02.2019** at **4.00 PM** in the Office of the Senior Manager (Mech.),OCCL, Manjore Gate Works Project, Central Workshop, Rasulgarh, Bhubaneswar-10 in the presence of the tenderers or their authorized representative(s), if they so desires. If there will be a public holiday on the last date of sale of tender document and receipt & opening of the tenders specified above, the tender document will be sold and tenders will be received and opened on the next working day at the same time and venue. Tenders received without EMD/in-sufficient EMD will be out rightly rejected and EMD of the unsuccessful tenders will be released only finalization of the tender.

5. Intending tenderers are required to furnish the following along with their tenders.
  - (i) Copy of valid ESI registration & GSTIN registration issued by competent authorities.
  - (ii) Copy of valid labour license.
  - (iii) Copy of valid LT / HT license from ELBO / Electrical competent authorities.
  - (iv) Copy of valid registration certificate with Employees Provident Fund Authority.
  - (v) Copy of valid Service Tax registration issued by competent authorities.
  - (vi) Copy of PAN card
  - (vii) Copy of document indicating residential address
  - (viii) Copies of documents on credentials and proofs in support of successful execution of similar nature and magnitude earlier.
  - (ix) Undertaking in prescribed format available in the tender document.
  - (x) Details of Earnest Money Deposit (EMD) in prescribed format available in the tender document.
  - (xi) Complete tender documents duly filled-in and signed on each page by the tenderer or his/their power of attorney holder with date, full name, designation and official seal.
  - (xii) Valid enlisted certificate issued by OCC Ltd. should be furnished.
6. The Job-Worker registered under NSIC / MSME for participation in tender / quotation are not entitled for exemption from payment of EMD / Security Deposit / Tender paper cost / quotation paper cost as per provision exist in O.P.W.D code and amended by Govt. of Odisha, Department of Water Resources.
7. The authority reserves absolute right to accept or reject any or all tenders without assigning any reason thereof.
8. The intending bidder(s) is / are to quote their rates in the enclosed blank price schedule format.
9. The successful bidder shall have to execute the work as per scope of work, relevant drawings, technical specifications, terms and conditions of agreement.
10. Quantity may increase or decrease as per requirement during execution of work at site as per direction of Engineer-in-charge.
11. The tenderer should furnish detailed rate analysis of the work enclosing price list of materials to be supplied with make & authorisations of reputed manufacturers for the work along with the tender.
12. The validity of offer should be for a period of **120**(One hundred twenty)days from the date of opening of tenders.OCC Ltd. may be asked further extension of validity if required without any price rise.
13. Any dispute arising out of this tender or order thereof is to be settled in proper court under the jurisdiction of Odisha High Court at Cuttack or Courts at Bhubaneswar only under the jurisdiction of Odisha High Court.

Signature of the "Tenderer or his/their power of attorney holder with name, date and seal

Senior Manager (Mech.),OCCL  
Manjore Gate Works Project,

## EMD and document deposit particulars

### DETAILS OF EARNEST MONEY DEPOSIT (EMD) AND DOCUMENTS SUBMITTED ALONG WITH TENDER

1. EMD amount ▪ \_\_\_\_\_ (Rupees \_\_\_\_\_) only vide  
A/C Payee D.D. / B.C./ Pay Order No. \_\_\_\_\_  
Dated \_\_\_\_\_ issued by \_\_\_\_\_  
Bank, \_\_\_\_\_ Branch \_\_\_\_\_
  
2. VAT / Sales Tax Clearance Certificate
  
3. P.A.N. card
  
4. Names of relations in O.C.C. Ltd.
  
5. Money receipt No. \_\_\_\_\_ Dated \_\_\_\_\_ issued by  
\_\_\_\_\_ for Rs. \_\_\_\_\_ (Rupees  
\_\_\_\_\_) only in support of purchase of  
tender schedule.
  
6. Any other documents.

Full signature of "Tenderer" with date and seal.

Signature of the "Tenderer or his/their power  
of attorney holder with name, date and seal

Senior Manager (Mech.), OCCL  
Manjore Gate Works Project,

## UNDERTAKING OF TENDERER

I / We Sri

(In case of the firm, the name of the proprietor / head of the firm along with the designation & name of firm should be mentioned)

S/O: Sri \_\_\_\_\_, Permanent resident of  
Vill /Street: \_\_\_\_\_, P.O: \_\_\_\_\_, P.S: \_\_\_\_\_  
Via: \_\_\_\_\_, Dist: \_\_\_\_\_, State: \_\_\_\_\_  
PIN: \_\_\_\_\_

declare that I / We have thoroughly gone through the tender document and I / We know the sites of works. I / We agree to work at rates quoted by me / us or at settled rates and abide by the terms and conditions of the tender document.

Full signature of "Tenderer" with date and seal  
Present address for correspondence

:

Signature of the "Tenderer or his/their power of attorney holder with name, date and seal

Senior Manager (Mech.), OCCL  
Manjore Gate Works Project,

## **SCOPE OF WORK FOR ELECTRICAL CONTRACTOR**

- 1) The contractor has to supply the main panel 1 (one) No. made out of 16 SWG thick CRCA sheet metal cubical with slanting roof fixed on M.S. Angle frame work outdoor floor mounted type, duly acid treated for de-rusting with powder coating having minimum paint thickness of 50 micron having hinged door with provision for cable/conduit entry (3.5C 35 sqmm AI PVC APVC 1 no. incoming & 4C 6 sqmm AI PVC APVC 2 nos. outgoing), earthing studs , one set of 250 Amp. TPN Cu Bus bar with complete wiring by accommodating the following list of materials including trial & testing as per the direction of Engineer-in-Charge.
- 2) The master control panel should be as per technical specification (copy enclosed).
- 3) The tenderer has to supply all switch gears, contactors and reversible starters of reputed manufacturer like L & T, Havells, BCH, Simens or any other ISI marked.
- 4) The tenderer has to supply the power cables of reputed make (KEI / Havells / Polycab / any other reputed make) certificates as per IS code and as per enclosed price schedule.
- 5) Electricity shall be supplied by OCCL at single point.
- 6) Welding machine required for erection of cable tray shall be supplied by the Corporation.
- 7) All the materials will be inspected by Engineer-in-Charge / or his authorized representative before despatch on prior intimation.
- 8) Crane for erection of master control equipment on Gantry crane will be supplied by OCCL.

Signature of the “Tenderer or his/their power of attorney holder with name, date and seal

Senior Manager (Mech.),OCCL  
Manjore Gate Works Project,

## GENERAL TERMS AND CONDITIONS

### 1. DEFINITIONS:

- i) “CORPORATION” means “ODISHA CONSTRUCTION CORPORATION LTD, (“OCCL” in short)” with registered office at Unit – VIII, Gopabandhu Nagar, Bhubaneswar-751012 (Odisha) represented through its Managing Director or any other officer as designated by the “Corporation” from time to time.
- ii) “ENGINEER-IN-CHARGE” means the qualified Engineer deployed by the “Corporation” at work site for the work including the Senior Manager (Mech.) / Manager / Asst. Manager (Elect.), “OCCL”.
- iii) “CONTRACTOR” means the person / firm / organization i.e. reputed Electrical Contractor enlisted in OCC Ltd. having LT license / Registered Electrical Firm having relevant experience on L.T. erection and installation work, subsequent technical person, machinery, materials etc. have been awarded by OCCL to execute the work satisfactorily as per scope indicated herein within stipulated period.

### 2. AGREEMENT:

The “Contractor” shall enter into an agreement with the “Engineer-in-Charge” in the format on requisite value of stamp paper prescribed for the purpose by the “Corporation” within a stipulated period to be specified by the “Engineer-in-Charge” failing which the EMD and ISD shall be forfeited. The work may be awarded in favour of some other agency at the discretion of the “Corporation”.

### 3. CONDITIONS FOR SUPPLY ITEMS.

- i) The tender shall quote their rates **F.O.R. Odisha Construction Corporation Ltd., Manjore Irrigation project, Athamalik, Dist. Angul** inclusive of all levies, duties, transportation, transit insurance etc. Applicable taxes as per GST shall be indicated separately besides basic price strictly in the space provided in price schedule format.
- ii) The material should be guaranteed against any manufacturing defects for a period of one year from the date of operation/ supply whichever is earlier. Materials if found defective within the guarantee period, the same shall have to be replaced free of cost by the supplier.
- iii) Materials to be supplied shall be strictly as per proper specification & applicable make should be clearly mentioned against each item. In case of any doubt on the item the tenderer/supplier may contact the undersigned for confirmation before quoting rate.
- iv) The validity of the offer should be for a period of **120 (One hundred) days** from the date of opening of the tender.
- v) The complete order shall have to be executed within **30 (Thirty) days** from the date of issue of the work order failing which the order is liable for cancellation. In case of any delay in supply of material beyond the delivery schedule whatever may be the reason, supplier shall be liable to pay L.D. @ 0.5% (half percent) of the total work value of delay or part thereof subject to a maximum of 5% (five percent) of the total work value.
- vi) Manufacturer shall have to provide circuit diagram of each assembled unit for reference of the purchaser.

### 4. RATE:

The rate quoted by the tenderer is to be indicated in Rupees, which shall be valid for the full period of execution or till completion of work whichever is later. No escalation or price variation in whatsoever form shall be entertained. The rates quoted by the tenderer should be firm for the entire period of execution. The tenderer shall quote the rates to complete the works as per specifications inclusive of all transportation, handling, loading, unloading, lift, de-lift, taxes, duties, levies, incidental expenses etc. that will be applicable on the work to be executed by him. No claim in this regard in whatsoever form shall be entertained.

Signature of the “Tenderer or his/their power of attorney holder with name, date and seal

Senior Manager (Mech.),OCCL  
Manjore Gate Works Project,



5. **PAYMENT TERMS:**

- i) No advance, price escalation and price adjustment shall be paid for the work. The rates shall remain firm throughout the agreement period.
- ii) The payment to the “**Contractor**” shall be limited to the measurements taken and accepted by the client. The “**Contractor**” cannot raise any dispute over the measurements allowed by the “**Engineer-in-Charge**” for the purpose of payment.
- iii) The Contractor will bear the full cost of rectification or replacement of works required as per direction of “**Client**” or “**Engineer-in-Charge**”.
- iv) 60% of value towards cost of materials shall be made within 30(thirty) days after receipt, verification and acceptance of the complete materials along with bill, test certificate, guarantee certificate and other documents. 30% towards cost of materials and 90% value towards transportation and erection, electrical installation, testing and commissioning shall be made within 30(thirty) days after successful erection, electrical installation, testing & commissioning. Balance 10% of total work cost shall be released within 60(sixty) days against receipt of Performance Bank Guarantee (PBG) for 10% value of total work cost(basic) valid for 18(eighteen) months from the date of successful erection, electrical installation, testing & commissioning. In absence of PBG, balance 10% value of total work cost shall be released after 18 months of successful erection, electrical installation, testing & commissioning.

6. **INCOME TAX, GST ETC. :**

Income Tax at the prevailing rate from time to time will be deducted from each bill of the “**Contractor**” and shall be deposited with Income Tax Authorities. The **Contractor** will have to produce tax invoice against each bill for payment.

7) **RETURN OF PLANT, MACHINERY, EQUIPMENTS, TOOLS, TACKLES, MATERIALS, CONSUMABLES ETC.:**

The plants, machinery, equipments etc. of the “**Corporation**” are to be returned by the “**Contractor**” in good working condition after completion of the work/termination of the contract by the “**Corporation**”. The “**Corporation**” may hire plants, machinery, equipments, etc. from the owner as well as outside for use in work. The same are also to be returned by the “**Contractor**” in acceptable good working condition with original fittings after completion of the work/termination of the contract by the “**Corporation**”.

Any damage to/ by the plants, machinery, equipments etc. during use by the “**Contractor**” shall be booked to the “**Contractor**” for recovery from his bills.

8) **MEASUREMENT OF WORK:**

The quantity of work executed shall be measured and payment shall be made on completion of work or on termination of the agreement, when final measurement will be made and account will be adjusted accordingly. The decision of the “**Engineer-in-Charge**” regarding the rates, progress, measurement and quality of the work shall be final and binding on the “**Contractor**”.

9) **ELECTRICITY**

Electricity if required for execution of work shall be provided by the Corporation and/or owner free of charges at one point only from where the contractor shall arrange further distribution with his own materials and labour.

10) **PAYMENT TO WORKMEN:**

The “**Contractor**” should maintain job register and payment rolls of their workmen and get those checked by the “**Engineer-in-Charge**” or his authorized representative from time to time. The payment to the workers/ supervisory staff shall be made by the “**Contractor**” in the presence of the owner and/or “**Engineer-in-Charge**” or his authorized representative as a token of disbursement. The copies of paid pay roll shall be submitted to the “**Engineer-in-Charge**” within a period of 7 (Seven) days from the date of payment failing which no further payment to the “**Contractor**” shall be released.

Signature of the “Tenderer or his/their power of attorney holder with name, date and seal

Senior Manager (Mech.),OCCL  
Manjore Gate Works Project,

- 11) **WORKMEN COMPENSATION:**  
In case of any loss due to accident arising during / in connection with execution of the contract, the “Contractor” will pay compensation to his workmen. The “Contractor” will be fully responsible for his workmen as per workmen’s compensation Act and Labour Laws in force during entire period of execution of contract. In case, the “Contractor” fails to do so, the “Corporation” may pay the same and recover the same from the bills / dues of the “Contractor”.
- 12) **INFORMATION OF WORKMEN:**  
The “Contractor” will make his own arrangements of labour and shall furnish all information of workmen employed by him like name, father’s name, full permanent address, sex and age to the “Engineer-in-Charge” along with the pay.
- 13) **STATUTORY REQUIREMENTS:**  
The “Contractor” shall comply all statutory requirements applicable at site of work such as Minimum Wage Act, Labour Act, Factory Act, Workmen’s Compensation Act, Provident Fund Rules, etc. A certificate to this effect shall be enclosed by the “Contractor” with each Running Account Bill for payment.
- 14) **MINIMUM AGE OF WORKMEN:**  
The “Contractor” shall not employ any person, who is below the age of 18 (Eighteen) years or unfit for the tendered items. The “Engineer-in-Charge” shall have right to decide, whether any labour employed by the “Contractor” is below the age of 18 (Eighteen) years or unfit and refuse to allow any labour, whom he decides to be below the age of 18 years or unfit for any other reason.
- 15) **LABOUR LICENCE:**  
The “Contractor” has to obtain valid labour license and maintain all records at his own cost as per the conditions laid down in the labour rules in vogue and amended from time to time.
- 16) **MINIMUM WAGES ACT:**  
The “Contractor” shall pay wages of each labour at the rate not less than the wages as per Minimum Wages Act in force and as may be amended from time to time. The “Engineer-in-Charge” has the right to enquire into and decide on any complaint of the labourers relating to non-payment or less payment of wages to them and his decision will be final and binding on the “Job-worker”.
- 17) **INSURANCE:**  
The workmen insurance shall be the responsibility of the “Contractor”. He shall produce the records in support of workmen insurance to the “Engineer-in-Charge” for check and record. Further the materials supplied and work executed shall be fully insured by supplier under compressive insurance policy covering all risk against loss or damaged incidental manufacturer or acquisition, transportation, storage execution and till acceptance/handing over of the completed work.
- 18) **IDLE LABOUR:**  
“OCCL” will not be held responsible for idle labourers of the “Contractor” for any reason, whatsoever and no claim on this account will be entertained.
- 19) **CLAIMS AND LIABILITIES:**  
All claims/liabilities etc. arising out of Explosives Act and Labour laws shall be borne by the “Contractor” and he shall keep the “Corporation” indemnified against them and also in case of injuries or death of labourer (s) resulting from accidents during the execution of the work. In case the “Corporation” will have to pay for any such claims under Workmen’s Compensation Act, the same shall be adjusted from the pending bills/dues of the “Contractor” or shall be recovered otherwise as per law from him.

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Senior Manager (Mech.),OCCL  
Manjore Gate Works Project,

- 20) **SAFETY:**  
The “Contractor” should abide by the safety laws and rules of statutory bodies, “Corporation” and owner as per direction of “Engineer-in-Charge” and Safety Officers inspecting from time to time.
- 21) **WATCH AND WARD:**  
The “Contractor” shall arrange watch and ward and safety of the site his materials, vehicles, equipments, etc. at his own cost. No accommodation will be provided by OCCL. The **Contractor** has to arrange accommodation for their working staff during execution of work as well as proper shed for storage of materials with safety precautions.
- 22) **AUTHORISED PERSON:**  
The “Contractor” may in writing authorize his power of attorney holder or any other person to draw materials, avail facilities, attend measurements etc. during the course of execution of work. All liabilities created by the authorized person of the “Contractor” by way of loss of materials drawn, amenities availed, unpaid wages created etc. shall be considered as the liabilities of the Job worker and such liabilities shall be made good by the “Contractor” or it shall be recovered from the bill/payment due to him.
- 23) **RESPONSIBILITY OF CONTRACTOR:**  
The work shall be completed by the “Contractor” in all respect within the stipulated period of completion and the responsibility of the “Contractor” shall cease only, when the items are fully accepted by the owner after erection at project site.
- 24) **REJECTION DUE TO BAD WORKMANSHIP:**  
The rejection due to bad workmanship shall be charged to the “Contractor” at a cost of rejected items plus 20 (Twenty) %.
- 25) **BREACH OF CONTRACT:**  
The ISD including EMD, SD and additional SD are liable to be forfeited in the event of breach of contract and the agreement shall be terminated. The dues of the “Corporation” including due of labourers/ workmen and other statutory payable liabilities payable by the “Corporation” as principal employer shall be cleared by the “**Contractor**”. The decision of the “Engineer-in-Charge” in this regard shall be final and binding on the “Contractor”. The amount remaining as outstanding against the “Contractor” after adjustment of his dues shall be payable by him to “OCCL”. If necessary, legal action may be taken for recovery of the dues of the “Corporation” including labour and statutory dues to be cleared by the “Corporation” as principal employer and “OCCL” reserves the right to recover the payable amount from the “Contractor” from works done by his under any other organization or from his properties.
- 26) **TERMINATION OF CONTRACT:**  
The “Engineer-in-Charge” may put an end to the agreement at his option at any time due to (a) Bad workmanship (b) Dis-proportionate progress (c) Non-compliance of labour rules or (d) Any other reason. The decision of the “Engineer-in-Charge” is final in this respect and no claim on this account will be entertained. “OCCL” also reserves the right to take exparte measurements, if the “Contractor” does not co-operate in taking final measurements after termination of contract.
- 27) **SITE VISIT:**  
The “Contractor”, interested to participate in the tender, should visit the site of work and get himself acquainted with site conditions and tendered work before submitting the tender.
- 28) **RIGHT OF THE “CORPORATION”:**  
The “Corporation” reserves the right to cancel a particular tender call or all tender calls without assigning any reason thereof. The offer of any tenderer or all may be cancelled without assigning any reason thereof. **The requirement shown in any tender call notice are only indicative and may vary.**

Signature of the “Tenderer or his/their power of attorney holder with name, date and seal

Senior Manager (Mech.),OCCL  
Manjore Gate Works Project,

29) **FORCE MEASURE:**

Neither party shall be liable to the other for any loss or damage occasioned by or arising out of acts of God such as unprecedented flood, volcanic eruption, earthquake or other convulsion of nature and other acts such as but not restricted to invasion, the act of foreign countries, hostilities, or war-like operations before or after declaration of war, rebellion, military or usurped power which prevent performance of the contract and which could not be foreseen or avoided by a prudent person.

30) **JURISDICTION:**

For all liabilities created under the various contractual obligations/impositions under this agreement, the “Contractor” undertakes not to raise any dispute or litigations in connection there with and shall make all endeavors to resolve all disputes amicably through conciliation and in all such cases, the decision of the Managing Director, “OCCL” shall be final and binding on the “Corporation” as well as on the “Contractor” failing which all such disputes arising out of the agreement shall be subject to jurisdiction of Hon’ble High Court of Odisha at Cuttack and their sub-ordinate courts at Bhubaneswar only. Both the parties agree by mutual consent that any dispute relating to this agreement is barred from arbitration.

### **TECHNICAL SPECIFICATION FOR GANTRY**

#### **SCOPE OF WORK:-**

1. Details circuit diagram with write up shall be furnished by the firm for approval by the purchase before manufacturing the equipment. The design of components such as resistance etc. with their make & rating shall be furnished.
2. Supply of control equipments in full as per specifications.
3. Erection of the equipments in gantry crane at site after shop test.
4. Complete wiring of the control equipments from the power supply point to the crane including supply of power cable, control cable & lighting cable to be used after approval of the purchaser. The firm has to furnish the detailed specifications of the cables to be used in the circuit.
5. Complete lighting of gantry crane. The permanent 220V lighting system on the gantry crane shall consist of 2 Nos. 1X50 Watt L.E.D. lighting units with reflectors to illuminate the area under the gantry crane and 1 No. 1X30 Watt C.F.L. in the operator’s cabin. The system shall be supplied from 400/440V crane power system through a 400/440 circuit breaker. One branch circuit shall be connected to 1 No. 1 X 30 Watt C.F.L. lights in the operator’s cabin. Another branch circuit shall be connected to lighting of hoist mechanism through flexible conduit with four 100W lighting units with reflector. The wiring shall be done in accordance with the Indian Electricity Rules. The 400/440V circuit breaker shall be provided with an overload tripping element for each pole.
6. Design standard IS:3177-1999 and its revision. IS:807-2006 & its revision and other relevant standards.

#### **TYPE OF OPERATION OF GANTRY CRANE:-**

1. Hoisting / lowering of a load of 25 Ton at a lifting speed 1.2m/min.
2. Travel of gantry crane with/without load at a speed of 8(eight)m/min in either direction.

Signature of the “Tenderer or his/their power of attorney holder with name, date and seal

Senior Manager (Mech.),OCCL  
Manjore Gate Works Project,

## **SPECIFICATIONS OF MOTOR OF GANTRY CRANE:-**

1. Hoist Motor: Three phase, 415V  $\pm$  10%, 50 Hz  $\pm$  3%, 12 KW (16 HP),730 rpm.  
crane duty slip ring motor to be operated in both direction of  
rotation – 8 poles 1 No.  
Frame size KS 200 L  
Rotor voltage 255 V  
Rotor current 28.6 Amp  
Starts per hour 150  
POT 3.5 FLT  
FLC 31.2 Amp  
Duty S 4, 40% CDF -150 Starts / hour with  
acceleration, braking and reversion  
Make MARATHON(Formerly ALSTOM)
  
2. Long travel motor Three phase, 415V  $\pm$  10%, 50 Hz, 4.5 KW (6 HP), 950 rpm.  
slip ring motor to be operated in both direction of  
rotation – 6 poles 2 Nos.  
Rotor voltage 115 V  
Rotor current 24 Amp  
Starts per hour 150  
POT 2.8 FLT  
FLC 10.4 Amp  
Duty S 4, 40% CDF -150 Starts / hour with  
acceleration, braking and reversion  
Make MARATHON(Formerly ALSTOM)

## **CONTROL EQUIPMENT:-**

Gantry crane electrical master control equipment shall be placed in operator's cabin. Operator shall control all the functions of the gantry crane from operator's cabin. All the controls for operation of hoist, and gantry crane travel mechanism shall be of fully magnetic, reversing with definite-time-limit type, equipped with overload relays, instantaneous over current, low voltage & single phase preventers etc. They shall be so designed that it will be possible to limit the vertical movement of hook with full rated lifting load when starting from stand still to within 10 mm from the pervious point. Hosit, and gantry crane travel motor controller shall have at least six speed control point in each direction of operation. The contacts of protection relays of motor shall be so wired that the operation of the relays will trip the motor primary contractors thus making it necessary to return all controls to the "OFF" position before the motor can be started again.

The instantaneous relays shall be adjusted between 200 to 300 % of the motor full load current. The power supply from the main connectors shall be protected by a 3 pole 400/440V A.C. totally enclosed, air circuit breakers equipped with three time relays, direct acting overload tripping element and shunt trip coil located in the operation cage for emergency tripping. A circuit breaker shall be provided to control and protect the control circuit for each motor and all control circuits shall be fused properly. An indicating lamp shall be provided to show that the control circuits is healthy. Voltmeter and ammeter shall be fixed in

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suitable locations in panel boxes in operator's cabin. All switches, contractors and relay shall be enclosed in suitable cabinets and placed in accessible locations to facilitate inspection and maintenance. All motor controls shall have master switches with vertical handles. Changes in speed in the lowering directions shall be under direct control of the operator and shall permit him to stop the motor without time delay from any position by the master switches. All resistors shall be non-breakable, corrosion resisting type and shall have a low temperature co-efficient. Wherever practicable, controller handle should move in the direction of the resultant load movement. Each controller shall be marked in a permanent manner to show the motion controlled & wherever practicable of the direction of movement. The notching for the controller handle in the "OFF" position shall be more positive than the notching in other position. The control lever shall be provided with stops and/or latches to ensure safety & facility of operation. The degree of protection for control panel shall be IP:55 as per IS:4691.

The contractors and the resistors shall comply with provisions of the relevant clauses of IS:3177-1999. They shall be of the non-breakable, corrosion resisting type with a low temperature co-efficient and shall be air cooled. The resistances shall be of stainless steel grid type. The rating of the resistors shall not be less than 5 min for short rating for time rated resistors. The minimum degree of protection for the resistors shall be IP:33.

The contractors and resistors shall be adequately protected to prevent accidental contact with live parts. Resistors shall be so arranged that they are easily accessible for adjustment, examination and replacement, care being taken to see that it is not affected by vibrations. All contractors and resistors shall be suitable for appropriate switching duty so as to suit stipulated motor duties.

The resistors shall be placed in well ventilated non-combustible cabinets which will not emit flames. The resistances for slip ring motors shall be properly designed for starting and speed control. The resistance shall be designed in such a manner that the starting torque developed by the motor shall be approximately equal to the pull out torque. Each main supply circuit breaker shall have an interrupting capacity of not less than 10,000 amperes at 400/440V. All switches, contractors, primary relays and preliminary circuits on controllers shall have a thermal capacity of 10,000 amperes for one second without injury. Control equipments shall be furnished with starters for hoist and gantry crane travel motors having control circuit with control voltage 110V. The control panels shall be suitably placed inside the operator's cabin. The control equipment shall be equipped with resistors, circuit breaker panel, hoist panel and gantry crane travel panel as specified. A main isolating switch shall be fitted in the cabin or adjacent to it capable of cutting off the supply for all power driven and associated equipment on the crane, except auxiliary connections such as warning lights, lighting, fan and heating circuits and communications circuits etc.

The number of protective drive devices shall be minimum 3 per motion in separate lines.

Adequate protection against short circuit shall be provided at each isolator positions. The circuit breaker of the main contractor shall be rated to carry at least the combined full load currents of motors for any two motions having largest power is auxiliary loads if any. MCCB should be provided in each isolating position.

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Cubicles and control panel enclosures shall be sheet steel with minimum thickness 1.8mm for base and top side and 1.6mm for other sides. The panels shall be of rigid self supporting construction and supplied with channel bases.

Cubicles shall be fitted with close fitting, gasket, hinge, lift of doors capable of being opened through 180 degrees. The doors shall be provided with integral lock and master key.

### **CABLES FOR CONTROL CIRCUIT:-**

Only copper cables shall be used for control circuits. Power and auxiliary multicore control cables, where provided, shall unless otherwise specified herein, be PVC insulated copper cable with the requirements of applicable standards. The cables and wires used in power and control circuits shall be insulated for 1100 voltage grade. Insulating bushings shall be installed where necessary to avoid chafing of wiring. All flexible cables should be multi-stranded copper. Single strand cable should not be used anywhere inside the crane. All cables exposed to direct heat radiation should be of special insulation or should be run in formed steel channel provided with resistant materials. Each conductor shall be individually identified at both ends through a system providing ready and permanent identification, utilizing slip on ferrules approved by the purchaser. All wiring connection shall be readily accessible and removable for tests or other purposes. Wiring between terminals of the various devices shall be point to point. Splices or tee connections between terminal points are not acceptable. Terminal blocks should be robust & segregated for power & control cables. The construction of TB is of such as to preclude possibility of cable connections getting loose due to vibration. Wire runs shall be neatly trunked inside the panels or in wiring troughs. Wherever possible, unused areas of the panels shall be kept free of wiring to facilitate the installation of future equipment. The cables shall be either armoured or enclosed throughout their length in galvanized trunking or conduit either flexible or rigid except where flexible un-armoured cables are essential.

### **STARTER :-**

Reversible contractor starter with overload protection enclosed in suitable housing made of non-combustible material shall be supplied for slip ring motors for hoist & gantry crane travel. Starter control voltage shall be 110V. The reversing contractors shall be interlocked both mechanically and electrically so that only one directional contractor can be in the closed position.

The starter shall have (3X3) Nos. of signal lamps for hoisting & gantry crane travel. The starter shall be outdoor type and should be able to operate in highly humid atmosphere.

### **LIMIT SWITCHES :-**

The limit switches shall be self resetting type or change over (Memory) type or snap action type as per the requirement of the motions of the crane. The degree of protection shall be IP:55. Limit switches shall be provided for following operations:

- 1) To limit the travel of gantry crane at both ends of the travel.
- 2) To limit the hoisting travel of the lifting beam.

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### **INTERLOCKING :-**

There shall be selector switches and shall be independent for hoist and gantry crane drive mechanism. Interlocking circuits must be incorporated in the main control circuit to avoid accidents etc. for above independent operations.

1. While hoisting or lowering the load, gantry crane travel motors shall not get electrical supply.
2. While the gantry crane is travelling in either direction, hoist motor shall not get electrical supply.

### **EARTHING :-**

The crane structure, motor frames and metal cases of all electrical equipment including metal conduit or cable guards shall be effectively connected i.e. complying with CEA (Measures relating to safety and electric supply) regulation 2010 and IS:3043.

The gantry crane wheels shall not be used as means of earthing. Equipments fed by flexible cables shall be earthed by means of spare care provided in the flexible cable.

### **WIRING :-**

All electrical wiring shall conform to latest revision of IS:1554 (Part-I) PVC insulated (Heavy duty) electric cables for working voltage up to and including 1100 volts.

### **CABIN FOR OPERATOR :-**

The tenderer shall provide the operator's desk inside the cabin from which operator can control all the operations of the crane. The cabin shall be well equipped with fan, lights and alarm gong which will be supplied by the tenderer. The floor of the cabin shall be covered by linodium over wooden base by the tenderer. All the wirings of the cabin shall be through flexible metal conduits.

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### **ADDITIONAL SPECIFICATION**

1. There shall be provision for 3 phase testing bench of suitable capacity for test loading all power contractors, overload relays and switches up to their full loading.
2. There shall be provisions for painting the panel in a time temperature controlled heating & drying chamber in order to ensure longer life of panel to work in a highly humid atmosphere.
3. The enclosure should be made for outdoor service conditions suitable for minimum IP-54/55 category and roofs shall be made a little slanting for rain water to fall easily without resting on it.
4. There shall be additional "INCH" control provision for negotiating smaller move of each motion. The motion of each "Master Control" shall be interlocked with respective "INCH" control for forward as well as reverse direction of motion. Also each motion shall be interlocked with the other whether operating in "INCH" or by master control switch mode.
5. There shall be a "FAIL SAFE" provision for control circuit to ensure that in the event of failure of power supply, the control circuit would remain de-energized after power is restored from the failure state. In this condition, the 'Master Control' has to be brought to 'OFF' state before initiating control for any motion. Whether actuated by 'INCH' or 'Master Control' there should be one indication of respective motion by corresponding LED.
6. The resistance shall be out of stainless steel and shall be of non-magnetic type. The resistance panel must be properly made in grid design and its insulation shall be made to withstand temperature rise up to 150 degree Celsius under natural cooling conditions.
7. In addition to the required rating of MCCB, there should be one 'Earth leakage' protection for protecting the life of operator from electrocution in the event of leakage current exceeding 100mA.

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**OFFICE OF THE SENIOR MANAGER (MECH.)**  
**ODISHA CONSTRUCTION CORPORATION LIMITED**  
(A GOVT. OF ODISHA UNDERTAKING)  
**MANJORE GATE WORKS PROJECT,**  
**CENTRAL WORKSHOP, RASULGARH, BHUBANESWAR-751010**  
**PRICE SCHEDULE**

**For the work " Supply of electrical items, its transportation, fabrication erection and electrical installation, commissioning & testing of 25 Ton gantry crane to operate stoplogs of spillway with all electrical arrangements for its hoists and long travels of Manjore Irrigation Project, Athamalik, Dist. Angul" vide tender call notice No.OCC/MGWP/06/2018-19 dated 15.02.2019**

Sl.No.	Description of Items	Unit	Qty.	Rate per unit		Rate per unit after GST in Rs	Total amount	
				Basic rate in Rs.	GST in (%) / Rs.		In Rs	In words
<b>1</b>	Supply, delivery, installation, testing & Commissioning of main control panel floor mounted type distribution board made out of 2 mm thick CRCA sheet cubical fixed on M.S. Angle frame work duly acid treated for de-rusting primer with contractors, wiring, HRC fuses; Breakers Timer relay, Transformer, Contacts etc. Suitable for 25 Ton Gantry Crane having the motor capacity of 4.5 KW/6.00HP slip ring motor 2 Nos for long travel, 11.9KW/16.00HP slip ring motor 1 N. for main hoist including all switch gears & instruments as per direction of Engineer-in-charge. A) Transformer cu. wound 440V / 220V (25AMP) - 1 No B) MCCB (25KA) 160AMP TP - 1 No. C) Heavy duty rotary switch (63AMP) - 2 Nos. D) HRC fuse unit with HRC fuse (63 AMP) - 3 Nos. E) HRC fuse unit with HRC fuse (160 AMP) - 3 Nos. F) Actuator switch (R-2, Y2, B2) - 6 Nos. G) Neon lamp (220V, RYB) - 6 Nos. H) Ammeter (0-150 AMP) - 1 No. I) Voltmeter (0-500 V) - 1 No. J) Current Transformer (100/5 A) - 3 Nos. K) Selector Switch with Fuse - 2 Nos. L) Emergency stop switch (Paddle type) - 1 No. M) Stop switch on the desk - 2 Nos. N) Forwarded / Reverse / stop switch (R,Y B) - 9 Nos. O) 200 Amp. TPN Cu. bus Bar - 1 Set.							
A)	Cost of Materials	Set	1					
B)	Cost of Transportation materials to Manjore Gate Works Project site including packing, forwarding, transit insurance etc.	Set	1					
C)	Cost of erection, electrical installation, testing & Commissioning of materials Manjore Gate Works Project site.	Set	1					

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				Basic rate in Rs.	GST in (%) / Rs.		In Rs.	In words
2	Supply, delivery, installation, testing & Commissioning of SS punched grid type resistance box suitable for 25 Ton long travel TEFC 2 Nos. slip ring motor 4.5KW/6.00HP, 3 phase, 6 pole etc. as per the direction of Engineer-in-charge.							
A)	Cost of Materials	No.	02					
B)	Cost of Transportation materials to Manjore Gate Works Project site including packing, forwarding, transit insurance etc.	No.	02					
C)	Cost of erection, electrical installation, testing & Commissioning of materials Manjore Gate Works Project site.	No.	02					
3.	Supply, delivery, installation, testing & Commissioning of SS punched grid type resistance box suitable for 25 Ton hoist travel TEFC 1 No. slip ring motor 11.9KW/16.00HP, 3 phase, 8 pole etc. as per the direction of Engineer-in-charge.							
A)	Cost of Materials	No.	01					
B)	Cost of Transportation materials to Manjore Gate Works Project site including packing, forwarding, transit insurance etc..	No.	01					
C)	Cost of erection, electrical installation, testing & Commissioning of materials Manjore Gate Works Project site..	No.	01					
4.	Supply, delivery, installation, testing & commissioning of LT outdoor with slanting roof mounted type distribution boards made out of 2 mm thick CRCA sheet metal cubical fixed on M.S. Angle frame work of 25 Ton capacity gantry motor (11.9KW/16.00HP) outdoor panel primiered & painted with two coats of enamel paints of approved shade: IP-52 class of protection ,having hinged door having provision of cable / conduit entry and earthing studs as per specification mentioned below confirming to relevant ISS and as per special condition of contact making goods the damages caused complete as per the direction of Engineer-in charge. <b>Incoming</b> A) AC-3, 63 Amp TP Contactor - 3 Nos. <b>Outgoing</b> B) AC-3, 25 AMP Contactor - 5 Nos. C) OLR (18-28 AMP) - 2 Nos. Instrumentations as per required (Rated coil voltage 440V)							
A)	Cost of Materials	No.	01					

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Sl.No.	Description of Items	Unit	Qty.	Rate per unit		Rate per unit after GST in Rs	Total amount	
				Basic rate in Rs.	GST in (%) / Rs.		In Rs.	In words
B)	Cost of Transportation materials to Manjore Gate Works Project site including packing, forwarding, transit insurance etc.	No.	01					
C)	Cost of erection, electrical installation, testing & Commissioning of materials Manjore Gate Works Project site.	No.	01					
<b>5.</b>	Supply, delivery, installation, testing & commissioning of LT outdoor with slanting roof mounted type distribution boards made out of 2 mm thick CRCA sheet metal cubical fixed on M.S. Angle frame work of 25 Ton capacity long Travel motor (4.5KW/6.00HP) outdoor panel primiered & painted with two coats of enamel paints of approved shade: IP-52 class of protection, having hinged door having provision of cable / conduit entry and earthing studs as per specification mentioned below confirming to relevant ISS and as per special condition of contact making goods the damages caused complete as per the direction of Engineer-in charge. <b>Incoming</b> A) AC-3, 40 Amp TP Contactor - 3 Nos. <b>Outgoing</b> B) AC-3, 25 AMP Contactor - 5 Nos. C) OLR (10-22 AMP) - 2 Nos. Instrumentations as per required (Rated coil voltage 440V)							
A)	Cost of Materials	No.	01					
B)	Cost of Transportation materials to Manjore Gate Works Project site including packing, forwarding, transit insurance etc.	No.	01					
C)	Cost of erection, electrical installation, testing & Commissioning of materials Manjore Gate Works Project site.	No.	01					
<b>6.</b>	Supply, delivery, installation, testing & Commissioning of Master control with heavy duty reverse forward spring system suitable for 5-0-7 (5 steps & 7cams) 3 phase, AC 415 V, type MCMC 5/7 in the operator cabin etc. as per direction of Engineer-in-charge.							
A)	Cost of Materials	No.	02					
B)	Cost of Transportation materials to Manjore Gate Works Project site including packing, forwarding, transit insurance etc.	No.	02					
C)	Cost of erection, electrical installation, testing & Commissioning of materials Manjore Gate Works Project site.	No.	02					

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				Basic rate in Rs.	GST in (%) / Rs.		In Rs.	In words
7.	Supply, delivery, installation, testing & Commissioning of 2 way shunt type limit switch 2 NO + 2 NC,415V, 3 phase, operation outdoor duty, Body made of MS sheet & aluminium casting, contacts made of silver, IP 44, thermal test current, 16 AMP for 25 Ton gantry crane long travel motion, type MCSLS as per direction of Engineer-in-charge.							
A)	Cost of Materials	No.	02					
B)	Cost of Transportation materials to Manjore Gate Works Project site including packing, forwarding, transit insurance etc.	No.	02					
C)	Cost of erection, electrical installation, testing & Commissioning of materials Manjore Gate Works Project site.	No.	02					
8.	Supply, delivery, installation, testing & Commissioning of 2 way rotary type limit switch 2 No + 2 NC. having the ratio of 48:1, 415 volts 3 phase, operation outdoor duty, body mode of M.S sheet & alluminium casting, contacts mode of silver, IP-44, Thermal test current 16Amp for 25 Ton Gantry crane hoist motion type MCSLSGR as per direction of Engineer-in-charge.							
A)	Cost of Materials	No.	02					
B)	Cost of Transportation materials to Manjore Gate Works Project site including packing, forwarding, transit insurance etc.	No.	02					
C)	Cost of erection, electrical installation, testing & Commissioning of materials Manjore Gate Works Project site.	No.	02					
9	Supply, delivery, laying of following size of PVC insulated PVC sheathed, GI round / strip armoured standard conductor power cable of 1100 volt grade confirming to IS:1554 / 1978 amended up to-date laid directly on the cable tray excluding cost of tray termination complete with making good the damages caused as required & as per direction of Engineer-in-Charge.							
A)	Cost of Materials							
i)	3.5 Core 35 Sqmm. Armoured AL Cable	Mtr.	100					
ii)	3 Core 6 Sqmm. Armoured Cu. Cable	Mtr.	100					
iii)	3 Core 4 Sqmm. Armoured Cu. Cable	Mtr.	100					
iv)	10 Core 2.5 Sqmm. Cu. Flexible Cable	Mtr.	80					
v)	2.5 Sqmm. Cu. multi core wire	Mtr.	90					
vi)	4 Sqmm. Cu. multi core wire	Mtr.	90					
vii)	6 Sqmm. Cu. multi core wire	Mtr.	50					
viii)	4 core 16 Sqmm. Cu. Copper trailing cable..	Mtr.	100					

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				Basic rate in Rs.	GST in (%) / Rs.		In Rs.	In words
B)	Cost of Transportation materials to Manjore Gate Works Project site including packing, forwarding, transit insurance etc.							
C)	Cost of erection, electrical installation, testing & Commissioning of materials at Manjore Gate Works Project site.							
10.	Supply, delivery, installation, testing & Commissioning of 450mm sweep wall mounted fan, suitable capacity of capacitor, solid state stepped fan regulator etc. including the cost of required material & cost of making connection from the suitable point outlet complete as required & as per the direction of Engineer-in-Charge							
A)	Cost of Materials	No.	01					
B)	Cost of Transportation materials to Manjore Gate Works Project site including packing, forwarding, transit insurance etc.	No.	01					
C)	Cost of erection, electrical installation, testing & Commissioning of materials at Manjore Gate Works Project site.	No.	01					
11.	Supply, delivery, installation, testing & Commissioning of 1x50 Watt LED street light fitting with LED bulbs & with all accessories including power factor improvement condenser & making connection including GI pipe for flexing with angles on the top of the Gantry & fixable cables from JB to fixtures as required & as per the direction of Engineer-in-Charge.							
A)	Cost of Materials	No.	02					
B)	Cost of Transportation materials to Manjore Gate Works Project site including packing, forwarding, transit insurance etc.	No.	02					
C)	Cost of erection, electrical installation, testing & Commissioning of materials at Manjore Gate Works Project site.	No.	02					
12.	Supply, delivery, installation, testing & Commissioning of CFL (Spiral) of required voltage not exceeding 35 Watt on a angle holder of point wiring complete as required & as per the direction of Engineer-in-Charge							
A)	Cost of Materials	No.	02					
B)	Cost of Transportation materials to Manjore Gate Works Project site including packing, forwarding, transit insurance etc.	No.	02					
C)	Cost of erection, electrical installation, testing & Commissioning of materials at Manjore Gate Works Project site.	No.	02					

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Sl.No.	Description of Items	Unit	Qty.	Rate per unit		Rate per unit after GST in Rs	Total amount	
				Basic rate in Rs.	GST in (%) / Rs.		In Rs.	In words
<b>13.</b>	Supply, delivery, installation, testing & Commissioning of 160 Amp. (25KA) MCCB in a CRCA metal box with all requisite connections and as per the direction of Engineer-in-Charge.							
A)	Cost of Materials	No.	01					
B)	Cost of Transportation materials to Manjore Gate Works Project site including packing, forwarding, transit insurance etc.	No.	01					
C)	Cost of erection, electrical installation, testing & Commissioning of materials at Manjore Gate Works Project site.	No.	01					
<b>14</b>	Supply, transportation & fitting of acrylic sheet in operator's cabin as per Direction of Engineer-in-Charge.							
A)	Cost of Materials	Sqm.	03					
B)	Cost of Transportation materials to Manjore Gate Works Project site including packing, forwarding, transit insurance etc.	Sqm.	03					
C)	Cost of erection, electrical installation, testing & Commissioning of materials at Manjore Gate Works Project site.	Sqm.	03					
<b>15</b>	The switch sockets shall be of heavy duty industrial type rated for 415V. 50 Hz, 63 Amps and suitable for structure mounted in outdoor exposed to sun; in an environment of 100% humidity. The interlocking arrangement shall be such that it is not possible to insert or withdraw the plug with the switch in "ON" position. The enclosures shall be of cast aluminium alloy 4600 as per BIS:617. The enclosure shall have looping-in and looping-out facilities for power cables of 3.5 C 35 Sqmm PVC A PVC cable and complete with 2 nos. double compression cable glands. Those socket outlets shall be located in the lower part of the enclosure and shall be provided with a threaded aluminium cover attached to the body with GI chain. The socket contacts shall be sunk and maintain satisfactory pressure with the plug. The sockets shall have four contacts i.e. three for phases and one for earthing. Two nos. external earthing terminals shall be provided. The plugs shall be such that they can be easily fitted into the socket outlets. Knurled Knob arrangement for screwing on the body of the socket and as per the direction of Engineer in charge.							
A)	Cost of Materials	No.	01					
B)	Cost of Transportation materials to Manjore Gate Works Project site including packing, forwarding, transit insurance etc.	No.	01					
C)	Cost of erection, electrical installation, testing & Commissioning of materials at Manjore Gate Works Project site.	No.	01					

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