JAWAHAR VIDYA ...

JAWAHAR VIDYA MANDIR
SHYAMALI, RANCHI – 834002
जवाहरविद्यामंदिर, श्यामली, राँची -834002

Date: 06-02-2024

No. JVM/OT-07 /2023-24

INVITATION TO TENDER

Principal, JVM invites tender for the subject given below. Salient feature are given in the table and detail of scope of work and tender conditions are given in the 'invitation to tender' dated 06-02-2024 enclosed herewith (Total pages 58)

Sub: Tender for Improvement of Power System (Incomer) of JVM Shyamali

Salient Features of the Invitation to Tender:

1	Tender Enquiry No. & Date	No. JVM/OT-07 /2023-24 Date: 06-02-2024
2	Project Description	**Tender for Improvement of Power System (Incomer) of JVM Shyamali**
3	Date of floating of on-line Tender	06-02-2024
4	Last date & time of submission of tender document	21-02-2024 by 01.00 PM
5	Date & Time of Opening of Tender	On 21-02-2024 at 04.00 PM .
6	Validity of tender	08(Five) months from the date of opening of Techno-Commercial part of the tender document.
7	Project Completion Time	05 (Five) months from the date of issue of work order.
8	**Earnest Money Deposit**	**Rs. 10,000/- (Ten Thousand only)**
9	**Cost of the tender document**	**Rs. 2000/- (Two thousand only)**

06/02/2024

(SAMARJIT JANA)
PRINCIPAL

Samarjit Jana
Principal
Jawahar Vidya Mandir
Shyamali, Ranchi-2.
Aff. No.- 3430004 (66230)

ii). At least two completed similar works (as defined below) having value not less than **INR 18.4 Lakh** each

OR

III). At least three completed similar works (as defined below) having value not less than **INR 13.8 Lakh** each

In case bidder has executed work of larger value in a longer duration, portion of work executed during qualifying period of last seven years shall be considered. In case the work is in progress, value of work executed during the qualifying period shall be considered.

2.2 Documents to be submitted:

The bidder shall submit self-attested copy of the following document issued by client:

1. In support of above –mentioned experience , Tenderer shall submit self attested copy of work order / purchase order /Letter of award / contract agreement , along with corresponding self attasted copy of the following document.:.
   - ii) Completion Certificate from purchaser or,
   - iii) Performance Certificate from purchaser , or,
   - iv) Commissioning Certificate from purchaser.

The Tenderer shall possess and submit valid HT/LT Electrical contractor's license issued by the electrical licensing board of state of execution of HT/LT electrical contractor's license issued by electrical licensing board of any Indian state.

Tenderer not complying the above requirement shall not be considered for evaluation.

2.3 Financial Eligibility Criteria

2.3.1 The average annual financial turnover of the Bidder during last (3) three consecutive financial years ending 31st March 2023 shall not be less than Rs 1.0 crore.

The bidder shall submit self-attested copies of the following:

1. Copy of Audited Annual Financial Reports for last 3 (three) consecutive financial years ending 31st March 2023 (Balance Sheet and Profit & Loss Account).
2. Chartered Accountant's certificate with UDIN no., in Original, may be submitted to substantiate the above financial eligibility.
   The documents furnished by Bidders for establishing their financial eligibility should clearly indicate the details of the Membership No., Firm No. of the Chartered Accountant.

2.4Commercial:

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The bidder shall submit self-attested copies of the following:

1. Cover letter of Tender detailing list of contents in the bid document being submitted by the Bidder.
2. Un-priced Price schedule as per format enclosed with tender document indicating 'quoted' in price column.
3. Signed &Stamped copy of terms and conditions of the contract
4. Copy of GST Registration Certificate with valid GST registration no. and PAN details
5. Bidder must be registered in PF and ESIC, and also to submit proof of remittance proceedings last financial year.

2.5 Earnest Money Deposit:

All the tenders shall be accompanied by EMD (Earnest money deposit) of Rs. 10,000/- (Rs Ten thousand only) payable to **'Jawahar Vidya Mandir, Shyamali Ranchi'** in the form of demand draft.
Tenders received without EMD are liable to be rejected. EMD shall be refunded to successful bidder after execution of order and to unsuccessful bidder after finalization of work order.

2.6 Cost of the Tender:
The Bidder shall submit a non-refundable cost of the tender- **Rs.2000/- (Two thousand only)** in the form of a Demand draft drawn on any Nationalized/ Schedule Bank in favour of 'Jawahar Vidya Mandir, Shyamali Ranchi'.

PART B: Price Part

2.7 Price Schedule:

a. Bidder shall submit their Price bid strictly as per the Price Schedule Format- Annexure I provided along-with this bid document. Price submitted by Bidder in any other format shall render their offer invalid and shall not be considered for evaluation.

b. There shall be no change or addition/ deletion except for filling-up of the actual price/ rate in the Price part submitted in Part – B

C. Price part shall contain rate and cost against all items of BOQ and total cost indicating incidence of tax (rates), if any, as per enclosed price format without any terms & conditions.

d. Any change in Price Schedule format shall be notified through corrigendum/addendum and the same shall be considered for submission of price bid. In case Bidders have already submitted their bid before publishing of corrigendum/addendum related to change in price schedule format, the bidders are requested to re-submit price bid as per the changed Price Schedule format. Failure to re-submit the bid in such case may lead to auto rejection of the bid by the system.

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e. In case of Tie among lowest bidders, the L-1 bidder shall be decided through lottery among all the bidders whose quoted price is lowest. Decision of tendering authority shall be final & binding to all parties

IF A FIRM FILING TENDER DOES NOT FULFILS ALL OR ANY OF THE ABOVE ELIGIBILITY CRITERIA MENTIONED ABOVE, THE TENDER OF THE FIRM WILL NOT BE CONSIDERED.

3.0 PRICE:

The Tenderer shall quote for the items indicated above on for JVM, Shyamali, Ranchi basis. The quoted price shall be firm and binding and shall not be subject to any variation whatsoever on any account till completion of supply. All applicable taxes & duties shall be indicated separately. (Un-priced copy of Price Bid indicating "quoted" against each item should be submitted along with Techno-commercial bid).

4.0 TAXES & DUTIES: Except as otherwise specifically provided in the order, the Tenderer shall bear and pay all taxes, duties, levies as charges for the subject work.

5.0 VALIDITY OF RATES: The rate quoted by the Tenderer shall remain valid for a period of 8 (Eight) months from the date of opening of quotation.

6.0 TIME SCHEDULE:

7.1 The successful Tenderer shall be required to complete the job within 5 **(five) months** from the date of receipt of order.

7.2 In the event the supplied material is not conforming to the ordering specification and approved make/brand, the material so supplied will be rejected without paying any price/ compensation. The decision of JVM in this regard will be final.

8.0 PAYMENT TERMS(as per SCC):

8.1 The payment shall be released as R.A Bill against submission of bill with measurement basis Certified by Supervisor / Engineer in-charge of JVM Shyamali.

9.0 INSPECTION:

The inspection of materials shall be carried out by JVM after receipt of materials at construction site.

10.0 LIQUIDATED DAMAGES:

Time and date stipulated in the Contract for completion of delivery shall be deemed to be the important activity of the Contract. If, however, the Tenderer fails to fulfill the completion within the time schedule, or within such extended time schedule as may be further granted, the Tenderer shall be liable to pay as Liquidated Damages (LD) and by way of penalty a sum of 0.5% of the contract price per week of delay or part thereof, and such liquidated damages shall be limited to a maximum ceiling of 5% of the Contract Price

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11.0 ACCEPTANCE OF ORDER:

JVM is not bound to accept lowest or any tender or to assign reasons whatsoever for non-acceptance. JVM also reserves the right to cancel the tender without assigning any reason whatsoever.

12.0 EVALUATION OF TENDER:

Tenderer should quote for all the items as per enclosed price bid format (Annexure-I). Part offer or incomplete offer shall be liable to be rejected. Price of the techno-commercially eligible tenderer shall be evaluated on overall basis.

13.0 NO CLAIM OR COMPENSATION FOR SUBMISSION OF TENDER:

The Tenderer whose Tender is not accepted shall not be entitled to claim any costs, charges, expenses of and incidental to or incurred by him through or in connection with his submission of Tender, even though JVM may elect to withdraw the Invitation of Tender

14.0 TRANSIT INSURANCE:

Tenderer shall arrange transit insurance on his own and at his own cost for transportation of equipment to JVM, Ranchi.

15.0 NEGLIGENCE, DEFAULT AND RISK PURCHASE:

If the Tenderer fails to execute the work with due diligence or expedition or shall refuse or neglect to comply with any order given to him in writing by JVM in Contract, JVM may give notice in writing to the Tenderer calling upon him to make good the failure, neglect or contravention within such time as may be deemed reasonable and in default of the compliance with the said notice, JVM without prejudice to its rights under the Contract, may rescind or cancel the Contract holding the Tenderer liable for the damages that JVM may sustain in this regard.

16.0 SUSPENSION AND TERMINATION

16.1 JVM may at any time temporarily stop the work under the Contract or any part thereof by serving notice in writing to the Tenderer. Work so suspended shall be resumed by the Tenderer on receipt of instructions from JVM in writing. JVM will not be liable to the Tenderer for any damage or loss caused by such period of suspension of work.

16.2 JVM will be at liberty to terminate the Contract without prejudicing its right and affecting the obligations of the Tenderer by giving 15 days' notice in writing in the following events:

a) If the Tenderer fails to comply with the provision/provisions of the Contract.

b) If the Tenderer is involved in any action involving moral turpitude.

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AFF.NO.-3430004
SchoolNo.:-08055
Ph.:2411221,2411665

b) If the Tenderer is involved in any action involving moral turpitude.

17.0 ARBITRATION:

17.1 Any disputes, differences, whatsoever, arising between the parties, the arbitration shall be governed and regulated in all respect according to Laws of India.

17.2 The Arbitration proceedings in case of other Indian companies shall be regulated and governed by Indian Arbitration and Conciliation Act 1996, or such modification thereof.

17.3 The venue of arbitration proceeding shall be Ranchi.

17.4 Work under this Order shall be continued by the Tenderer during the arbitration proceedings, unless otherwise directed in writing by PURCHASER or unless matter is such that the work cannot possibly be continued until the decision of the arbitrator is obtained.

The tenderers are requested to confirm acceptance of all terms & conditions as per tender enquiry.

06/02/24

(SAMARJIT JANA)
PRINCIPAL

Samarjit Jana
Principal
Jawahar Vidya Mandir
Shyamali, Ranchi-2.
Aff. No.- 3430004 (66230)

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CONTENTS

Rev. No.	PREPARED	CHECKED	APPROVED
0			
	Md Mobinul Islam AGM (Elect-Power)	A.Chakraborty General Manager (Elect-Power)	H.K.Mondal Sr.General Manager (I/C) (Elect-Power)

Jaya 06/02/2024

01 INTRODUCTION

1.1 GENERAL

JVM Shyamali Colony is Located in Doranda and lies in the Ranchi District of Jharkhand.

To meet the overall energy requirement of JVM, Shyamali, power is received at 415V level from TACD, MECON through Single point near gate No-1.To meet the redundancy for school LT switchboard has been considered with two incomers, one from LT substation-1 & LT substation-4 of TACD.

2.0 INTENT OF SPECIFICATION

2.1 This specification has been prepared keeping in view the latest technological developments and state of the art technology in the field of power distribution. This specification covers 415V LT Switchboard, LT cables, Earthing, LT Feeder Pillar, Fire Extinguishers etc. on turnkey basis as per the scope of work enumerated in the subsequent chapters of this specification.

2.2 The intent of this specification is to make the Bidder appraise of his involvement / commitment for this package to enable him to submit a detailed comprehensive offer as specified in this document. The Bidder has submitted his offer on the information contained in this specification and other clauses hereto.

2.3 The Bidder has studied the specification along with other related tender documents and satisfied himself thoroughly regarding suitability of the plant and equipment as well as auxiliary or associated facilities, specified in the tender document and take full responsibility for guaranteed operation of the equipment with respect to output, reliable working as well as ease of operation, safety, inspection and maintenance including replacement with minimum down time. Contractor shall

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note, that the job is to be carried out on a turnkey basis.

2.4 All equipment / systems shall be complete in all respect and any equipment or accessories not specifically covered in the technical specification but essential for proper design and operation of the system within the battery limit shall be deemed included in the scope of the Bidder.

2.5 The Bidder has satisfied himself before submission of the offer, the nature and location of work place, kind of equipment, facilities, services, etc. needed during performance of work, general and local conditions as well as all other matters which can, in any way, affect the work covered in this specification. The Bidder has visited the site to study the existing equipment layout, and schemes and ascertain local conditions, site conditions, existing structures and other obstructions etc prevailing at site if any. The bidder has understood the scope of work involved under the scope of work of this specification before submitting the offer

2.6 The bidder shall be responsible for co-ordinating the supplies covered in the different parts of this Specification from different sources and execute the contract within agreed time schedule.

All equipment / components shall be selected from the list of Preferred Makes forming part of tender. In case make of some item is not listed in the Preferred make list, prior approval from client/ consultant shall be obtained before finalization of vendor and submission of drawings for the equipment.

2.7 All the equipment and supplies shall be suitable for the tropical climatic conditions prevailing at Ranchi, Jharkhand.

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2.8 The time allowed to Contractor for commissioning of the facilities covered under this package is **05 (Months)** months from the date as stated in the contract.

3.0 **SCOPE OF WORK**

3.1 The Scope of work shall cover equipment & system design, detailed engineering, construction/ manufacture, assembly, testing, inspection at works, packing, supply, transportation, transit insurance, site loading & unloading, storage and handling at site, erection, testing and commissioning of complete LT power distribution equipment, on turnkey basis as described in the specification and handing over the system in 'Ready to switch on' condition to the purchaser.

3.2 Design, engineering, supply, erection testing & commissioning of Civil & structural, earthing, fire Extinguisher as per the scope described in this specification shall be in scope of the Bidder.

3.3 **The Contractor's scope of work for electrical system shall necessarily include (but not limited to) the following:-**

1) Two incoming source is envisaged for school incoming power supply. 2 runs of 3.5CX150 sqmm cables from Substation-1 and 2 runs of 3.5CX 150 sqmm cables from substation-4.

2) Supply of cables from Substation-1 and Substation -4 to JVM shyamali School. **(The laying of cables from Substation-1 & 4 shall be done by TACD),** however termination at Substation-1 & 4 and jointings if any shall be in the scope of bidder. The laying of cables from boundary wall to proposed LT switchboard shall be in the scope of the bidder.

3) **Substation- 4:** Termination of 2 runs of 3.5CX 150 sqmm cable in Existing LT board of TACD.

4) **Substation -1 :**

a) Disconnecting and dismantling of Existing LT board at substation-1 and shift the panel to specified location inside substation.

b) Supply, erection, testing & commissioning of new LT board with Incoming feeder- 1000 Amp, outgoing feeders - 3 Nos 400A MCCB, 3 Nos 250A MCCB.

c) Reconnecting all existing cables to new supplied LT Switch board.

d) Termination of incomer cables to JVM shyamali (2 runs, 3.5CX 150 sqmm LT Power cable.)

5) **AT JVM SHYAMALI**

a) Supply, erection, testing & commissioning of 415V LT switchboard as per Single line diagram.

b) LT switchboard shall be located outdoor beside DG set and the same shall be installed on Brick pedestal with RCC LT Board foundation of height 500mm from ground level with trench provision in between. The pedestal shall be plastered and painted with weather proof paint. After installation of LT board, balance part of the trench shall be covered with 6mm thick chequerd plate, painted black. Pedestial shall be 1000 mm front projected around LT board. Structural shed with foundations for Complete DG set area having 12mtrX7mtr approx. shall be provided with rain shed with TATA/ JINDAL make colour quoted sheet of green colour and GI pipe support painted. Galvanized Chain link fencing covering complete 12mtrX7mtr shall be provided with gate (1.5 mtr height). Radium strip shall be provided all around the shed. Danger board fitted on the chain link fencing by nut bolts and clips.

c) Supply and installation of complete illumination equipment, for the shed such as, control gear, luminaries, lamps and all accessories. This will include LED tube light fittings, outdoor lights, switchboard and wiring in

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painted GI conduit.

d) Interconnection of two DG set to LT Switchboard as per SLD.

e) Auto changeover facility shall be provided for existing 62kVA DG set and shall be connected to LT switchboard.

f) New cable laying from LT switchboard to -

i) Chemistry lab area PDB.

ii) Secondary building PDB.

iii) +2 building PDB.

iv) New Sports Complex.

v) Golden Jublee Block PDB.

g) Termination of Existing Cables

i) Nursery Area PDB.

ii) Principal gate PDB.

iii) Auditorium PDB.

h) Supply and installation of earth pit for LT Switchboard area. Interconnection with GI strips (50 x 6 GI Strip). All pits shall also be interconnected with each other below ground level with GI strips.

i) All termination kits are in the scope of supply of tenderer's.

j) Supply and laying of LT power cable from LT Switchboard to different PDBs. Cable size is 3.5CX 120 sqmm.

k) Supply, installation, testing, commissioning of two Nos (2) Power Distribution Board . This board shall be provided with 160 A MCCB as incomer (36kA for 1 sec) and 6 nos. of 32 A TPN MCB and 6 Nos of 63A TPN MCB as outgoing feeders Type C Curve with complete wiring. This board shall conform to IS 8623 -1 &3 ,IEC 61439 -1 & 3 ,IK 09 with double door, IP 43 , 1.6MM CRCA sheet, RAL 7003, powder coated

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complete with 100A insulated phase bus-bars , neutral bars with shrouds, earth bars , sticking saddles , cement spill protector , color-coded interconnecting wire set , cable ties , blanking plates and circuit identification labels.

l) The Scope includes disconnection of existing cables and reconnecting of all outgoing cables with proper lugs and glands. Dismantling of existing panel and removing the panel in desired location is also in the scope of bidder.

m) Supply, erection, testing & commissioning of feeder pillar of rating mentioned in the TS & SLD.(incomer 63 Amp MCCB and outgoing 8 Nos 20 A DP MCB.(Outdoor duty- IP-64). Fixing of Feeder pillar at desired location including civil work for fixing.The Feeder Pillar shall be covered by chain link fencing with angle fixing. The fencing shall be 500 mm from all side of Feeder Pillar. The height shall be 500 mm above top of feeder pillar and covered from top. The chain link fencing shall be provided with one gate with lock and key arrangement.The Fencing shall be galvanized and double coating painted dark green.

n) Supply & Laying of 1.1 kV,3.5C X 50 sqmm for feeder pillar.

o) Supply, erection, testing & commissioning of LED Post top light (Havells model number RUBYMINIPT15WLED830PSYMTOPC for boundary wall along with mounting pole of suitable length, it includes fitting on each pillar by fixing pole and again plastering/concreting and painting with similar colour as existing for the fixed part.Quantity = 50 Nos.

p) Connection of Post light from nearby feeder pillar by 2.5 sqmm copper conductor cable outdoor duty type in PVC conduit along the boundary wall (loop in loop out).

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q) Supply and fixing of 25 mm medium duty PVC conduits along with necessary accessories along the boundary wall .Necessary, fixing of conduits with accessories such as GI Box, solid bends /couplers /iron stapples / saddles / screws.Flexible conduit as required shall also be provided.

r) LED glow signboard mentioning "Power House, JVM Shyamali" supported with pole at the entry gate of chain link fencing.

s) Supply and installation of portable Dry chemical powder type extinguisher shall be of 6 kg capacity conforming to IS:2171.

t) Miscellaneous items i.e. Danger board, caution board, shock treatment chart,first aid box, LT rubber mat- 2mtrs , rubber hand gloves- 2 set, earth discharge rod, and other safety appliances .

u) Supply & Erection of HDPE/Hume pipes for crossings and as required as per site condition size (dia 100mm).

v) Supply and installation of Portable Dry chemical powder type extinguisher shall be of 6 kg capacity conforming to IS:2171.(Two numbers for each substation).

w) The shutdown period for any feeder shall be provided after school hours and school holidays. Within next school opening time the power need to be restored in the feeder. For longer shutdown, bidder will have to make necessary temporary arrangement for feeding power from other sources available.

x) Base frame/ base channel/ base plate, if required, for all switchboards shall be included in the scope.

y) Supply and erection of Earthing arrangement of the equipment installed by the bidder shall be in their scope of work. The two point earthing shall be

connected to the nearest earthing point.

z) Supply of LT Power cables, cable termination kits etc. laying and termination of all associated power and control cables within battery limits. All the power cables between the equipment supplied by the contractor is in the scope of the contractor.

aa) Excavation and back filling for laying of LT Cables underground. Installation of Cable shall be as per specified in the technical specification

bb) Erection accessories and consumables as applicable till handing over of the system to the client.

cc) Safety items like hand gloves, shock treatment charts, rubber mats, danger/caution boards etc. in sufficient quantity as per statutory norms/ standards at each substations.

dd) Scope of Miscellaneous Activities: Following miscellaneous works shall also be included in the scope of Contractor;

i) Identification labels shall be provided on all equipments. All labels shall be engraved on plastic (Black letters with white background) and all text shall be in English language.

ii) For installation work at site, the Contractor shall be fully responsible for arranging the supply of required tools and tackles, welding sets, pipe bending machine, cable crimping tools, gangs, scaffoldings, ladders, temporary water and power connections.

iii) All erection accessories such as clamps brackets, bolts, nuts, screws, markers, ferrules, lugs and glands and other hardware necessary for erection work, shall be included in the scope of work and shall be arranged by the Contractor.

ee) The quantities of equipment, cables, cable terminations, straight through

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joints, cable supporting structures, earthing and erection materials etc, indicated in the BOQ as lot/set shall be provided as per actual requirement in accordance with the approved detail engineering drawings.

ff) All equipment shall strictly conform to the specification, except where any deviations have been explicitly spelt out, specifically discussed and mutually agreed upon between the Contractor and the purchaser.

3.4 Battery Limit

Beginning from LT Switchboard at Substation-1 and Substation – 4 upto termination of LT cable to different PDBs at JVM Shyamali.

4.0 PROJECT PARTICULARS

Elevation above sea level	Below 1000 meters
Climate	Tropical & humid
Temperature conditions (for equipment design)	
Maximum	45degree C
Relative humidity	95% non condensing (not occurring simultaneously with max temp)

Maximum ambient temperature and relative humidity are not likely to occur simultaneously.

4.1 SYSTEM DATA

System Voltages	415V,
System Earthing	
415 V	Solidly Earthed
Voltage variations	
415 V	+10%, -15%
Rated Frequency	50 Hz
Frequency variation	± 3%
Auxiliary Supply	240V AC +10% and -15%

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5.0 INSTRUCTION TO THE BIDDERS

5.1 General

Before submitting the offer Bidder had visited the site and obtain necessary information regarding existing substations, etc in which modification has to be carried out. **Considering the brown field natures of work, Bidder has to undertake detailed site visit of various facilities where he has to work and has to understand scope of work & provisions before submitting their offer. Bidder has to submit a certificate to this effect along with the offer.**

5.2 Codes, Standards & Regulations

The design, manufacture, erection and testing of the equipment and materials to be supplied shall comply with latest revisions of relevant Indian Standards.

In addition to the Indian Electricity Rules, Statutory requirements of Central Govt. and State Government of Jharkhand shall also be complied with. In the absence of the IS, IEC Publication shall be followed.

5.3 Delivery

The Contractor has furnished the bar charts indicating starting and completion dates of each activity, such as engineering, preparation of drawings, manufacture, delivery, erection, testing and commissioning etc. for each switchyard.

The completion period of the project is limited to 5 months.

5.4 Drawings, Data and Documents

.01 The Contractor has furnished following documents/ information alongwith the offer. General description of equipment offered specifying the important features, make, technical parameters, materials of construction, etc. to enable the owner to have proper understanding of the equipment offered and its operation.

a) Technical literature, catalogue and publications

b) Single line diagram

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c) Typical general arrangement and foundation details

.02 The Contractor shall submit a list of all drawings and documents he proposes to submit within two weeks of LOI. The list will be approved by purchaser/ consultant and may be modified if necessary. Each drawing/ documents in the list shall be identified with a serial number, description and scheduled date of submission to meet the implementation schedule of the project.

.03 **For Approval**

a) Equipment layout plan and sections.

b) Single line diagram with rating of all equipment, cable sizes and details of protection and metering.

c) General arrangement of equipment with plan, front view and sectional views, comprehensive bill of material with description, quantity, make and type.

d) Schematic drawing of different feeders, control, alarm, indications, interlocking and other schematics.

e) GA drawing for erection accessories like cable trays, supporting structures etc.

f) Civil assignment drawings with load data for design of civil foundation for different equipment. After approval of civil assignment drawings civil engineering by the Contractor shall start.

g) Installation drawings of all equipment with layout of equipment, cables, and earthing network.

h) Guaranteed technical particular of all electrical equipment

i) External connection diagram

j) Cable laying layout drawing and cable list.

.04 **For reference**

a) Inter panel wiring and terminal block arrangement

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b) Wiring terminal plan drawings with cable connections.

c) Cable layout drawings along with cable channels, overhead support structure (as applicable), incoming cable route etc.

d) Detailed technical catalogue of all equipment

e) Operation and maintenance manual

f) Copy of reference standard (IS, IEC, BS etc) as applicable shall be provided if desired by purchaser / consultant.

5.5 Supervision of Erection, Testing & Commissioning

On completion of the installation but before energisation of the system, all installation shall be physically checked and properly tested. The Contractor under the supervision of equipment manufacturer shall conduct these checks and tests in presence of CLIENT. The Bidder shall furnish the final status and test results. Any defect observed during such check and the Bidder free of cost shall rectify tests within contract completion period before commissioning of the system.

5.6 Painting

All equipment / components / accessories, which are intended to be painted, shall be thoroughly cleaned of rust, scales, grease, etc. and be painted with two coats of proper undercoat. This shall be followed by two coats of finishing paint of the colour specified/approved by the purchaser. The Contractor free of cost shall make damage to the painting suffered during transit good before the purchaser finally accepts the equipment.

5.7 Spares

5.7.1 Commissioning Spares

The Contractor has included in his scope commissioning spares as required for commissioning of all equipment and for their efficient operation till issue of

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commissioning certificate and also demonstration of satisfactory performance. These items of commissioning spares shall be dispatched along with the main equipment.

5.8 **Tools and Tackles**

The Contractor has included in his scope of supply special tools tackles and accessories for normal operation and maintenance of the system under the scope of the Contractor. Special instruments required for testing, fault diagnostics, repair and maintenance shall also be included. A list for the above items along with unit price shall be submitted along with the offer.

5.9 **Tests and Inspection**

Routine tests shall be carried out on LT Power Cable and LT Switchboard at manufacturer's works as per appropriate IS/ IEC regulations. The Contractor shall submit the test report before getting dispatch clearance by the CLIENT. No equipment shall be dispatched to site without a provisional certificate of acceptance issued by the inspector of CLIENT. Inspection and test shall be carried out at the place of manufacture as well as on receipt of the equipment at site. Inspection and tests do not relieve the Bidder of his contractual obligations regarding performance of the equipment at site/in-actual use.

Functional and Composite Testing

Tests as per the following generalized list shall be conducted on equipment after erection from point of view of completeness in the presence of purchaser/consultant:

- Visual inspection of total system
- Checking of continuity of power and control cables.

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- Checking of insulation resistance for inter-connected links or cables.
- Calibration of meters by secondary injection or by primary injection
- Checking of protective schemes
- Setting of relays, and the checking of their operation with one lower and one higher setting.
- Checking of control scheme of breakers, etc. as per approved drawings and as per actual requirement.
- Checking of alarm scheme by simulation of faults.
- Checking of name plate data of complete system
- Verification of earthing resistance.
- Checking of cable terminations and laying, dressing cable numbering etc.
- Checking for safe accessibility of components.

Equipment wise detailed list has been enclosed in the technical specification.

- The material received at Purchaser store will be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection.
- Supplier shall stand guarantee for five years from the date of supply towards design, materials, workmanship and quality of process/manufacturing of items under this contract.
- Supplier shall ensure that all the equipment covered under this specification shall be prepared for transport in a manner so as to protect the equipment from damage in transit.

5.10 Compliance with rules, regulations, and obtaining statutory approval

All equipment/materials shall be installed in accordance with the requirements of

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relevant standards, Indian electricity Rules, Indian Electricity Act, 2003. It is the responsibility of the Contractor to see that the electrical installation supplied and erected by him shall be to the entire satisfaction of Chief Electrical Inspector, Central Electricity Authority or CEIG or any other statutory body having jurisdiction in the area and to the owner/ consultant.

The responsibility for obtaining all statutory approvals for the installation to be carried out rests entirely with the Bidder. It shall be the responsibility of the Bidder to prepare and submit all necessary drawings, calculations, test certificates and relevant details (other than those given by the owner) to the Electrical Inspector and obtain prior approval for commencing the work and for the complete installation work done.

The Purchaser shall extend contractor all assistance in this regard, such as submission of application etc. The owner on submission of documentary evidence shall reimburse the inspection fee for statutory approvals.

5.11 Guarantee

The successful bidder shall take the full responsibility of guaranteed operation, performance of each supplied & erected equipment/items, and the bidder shall rectify the overall system.Any defects/failure during guarantee period. The guarantee period shall be twelve months from the integrated commissioning of the system.

5.13 Construction Power and Construction water

For construction power supply, 415V source shall be provided by the purchaser as per requirement within a distance of 100 meters from the work front. Contractor shall have to make their own arrangement for feeding to their various loads. This shall include required power and control cables, and breakers, etc. Complete maintenance of construction power feeder shall be in the scope of the contractor.

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Construction water shall also be provided within Shyamali campus. Bidder shall make necessary arrangement for distribution of water to the work front.

5.14 Safety

All equipment shall be complete with approved safety devices wherever a potential hazard exists and with provision for safe access of personnel to and around equipment for operational and maintenance functions.

The design shall include not only those usually furnished with elements of machinery but also the additional covers, stairways, ladders, steel structural platforms for operator's control panels, handrails, partitions etc. which are necessary for safe operation of the plant. In addition, maintenance platform, wherever required, shall be included in the design.

All danger and caution notice boards shall be in Hindi and English.

The Contractor must take sufficient care in moving his construction parts and equipment from one place to another so that those may not cause any damage to the property of the Purchaser particularly to the overhead and underground cables and other service lines.

When the work is carried out at night or in the obscure day light, adequate arrangements for flood lighting in the working area shall be made by the Contractor at his own cost and get it approved by the purchaser. The safely postures/regulations for the prevention of accidents shall be displayed by the Contractor at appropriate places. Notices and warning signs shall be displayed for all sources of dangers. All electrical drives and equipment must be equipped with safety devices. The safety provisions shall conform to the recognized standards, safety codes and statutory regulations. All safety measures as required to be adopted as per the statutory regulations and the safety rules of the plant shall be strictly followed by the Contractor during the execution of the

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Contract.

Adequate number of first aid boxes as defined in the State Factory Rules shall be provided and maintained at all the work sites.

5.15 Contractor's License

The Contractor or its sub-contractor shall possess a valid and competent contractor license of specified voltages issued or recognized by the electrical licensing authorities of the Govt. of Jharkhand. The License shall be suitable for carrying out electrical installation work of the type and magnitude covered in this document, in the state of Jharkhand. Copy of the license shall be made available to the Client/ Consultant for verifications during the execution of contract. The Contractor and/or agency to be deployed by him for installation, testing & commissioning shall possess valid electrical supervisory certificate of competency for the same voltage class issued or recognized by the Government of Jharkand. The license shall be submitted for verification, if called for, before start of installation work.

5.16 List of Preferred Makes

The list of preferred makes for various equipment is given in this TS/BOQ. Equipment should be procured from one of the makes against particular equipment. For the equipment for which make has not been specified in this TS, approval shall be taken from client before submission of the drawing itself.

5.17 Definition of commissioning for the system

After completion of site test, issuance of preliminary acceptance certificate (PAC) and compliance of the observations made during the preliminary acceptance test, commissioning of the complete system shall be done. Contractor shall obtain

approval for the electrical inspector for the complete installation before undertaking commissioning of the system. Under the commissioning, complete system under the scope of the contractor shall be energized and all the available loads shall be fed from the new system. The facility shall be considered commissioned after uninterrupted energization and feeding power to available load for 72 hours for the complete system under the scope of the contractor. In case of any tripping, the test shall be repeated for 72 hours.

6.0 TECHNICAL SPECIFICATION OF EQUIPMENT

6.1 LT SwitchBoard:

- 415V, 3 phase, 4 wire, 50 kA (short time rating for 1 sec.)
- Board shall be single front, metal clad, front matched dust and vermin proof, fully compartmentalized and extensible on both sides,
- Degree of protection for enclosure IP 52 or better for indoor installation, and IP55 for outdoor part.
- Shall have base channel of size ISMC 75.
- Sheet steel shall be CRCA of minimum 2.0 mm thickness.
- Shall have isolated busbar chamber for main busbar at the top, running through out the length of the board. Chamber shall have removable cover.
- Cable alley shall have sufficient space for aluminium power cables and bottom cable chamber shall be left free completely isolated from the vertical busbars.
- Busbars shall have same cross section through out the length. Rating of the neutral busbar shall be 50% of the main busbar. Earth bus bar shall run in bottom chamber throughout the length of the panel.

- Shall have moulded case circuit breaker triple pole, air break type with independent manual quick make and quick break type. MCCB shall be capable of breaking rated current at .3 pf at rated voltage. MCCB shall withstand the fault current envisaged for 415V system.
- All feeders shall have ON/OFF lamps and 96 sq.mm size ammeter.
- Incomers of board and outgoing shall be MCCBs with E/F protection .

LT Switchboard	
Nominal system voltage	415 V
Standard	IEC - 61439
System earthing	Neutral solidly earthed
Short time rating	50 KA for 1 Sec.
Control supply	240V AC
Configuration	As per IS
Colour code	R Y B
Busbar rating	As per SLD
Enclosure	IP-4X or better
Circuit Breakers	
Symmetrical breaking current	50 kA
Making capacity	105 kA
Short time rating (for 1 second)	50 kA
Rating for incomers and buscouplers	As per SLD
Rating for outgoing	As per SLD
Termination	
Incomer	Armoured aluminium cables
Outgoing	Armoured aluminium cables
Finish paint	Powder coated Brilliant green, shade 221 as per IS-5
Feeder Arrangement	

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Incomer & buscoupler (	MCCB
Outgoings	MCCB
Feeder requirement	As per SLD

6.2 CABLES-FRLS

6.2.1 General Requirement

a) The Contractor shall supply all power and control cables as required for connecting various electrical equipment under the scope of the contractor, as per approved cable schedule and instruction of site–in-charge, for completion of work. The scope of supply shall be limited for all types of cables between equipment / component covered under Contractor's scope of supply.

b) The cables shall be suitable for laying in trays, trenches, ducts and conduits and for underground-buried installation with backfill and possibility of flooding by water and chemicals.

c) Outer sheath of all PVC and XLPE FRLS cables shall be black in colour and suitable chemicals shall be added into the PVC compound of the outer sheath to protect the cable against rodent and termite attack.

d) Sequential marking of the length of the cable in meters and ISI marking shall be provided on the outer sheath of the cable at every one meter. The embossing / engraving shall be legible and indelible.

e) The overall diameter of the cables shall be strictly as per the values declared in the technical information furnished along with bids subject to the maximum tolerance applicable as per IS 1554 / IS 7098.

f) PVC / Rubber end caps shall be supplied free of cost for each drum with a minimum of eight per thousand meter length. In addition, ends of the cables shall be properly sealed with caps to avoid ingress of water during transportation and storage.

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g) The cables used in installations under the jurisdiction of Director General of Mines and Safety shall be of copper conductor only.

h) The insulation and sheath materials will be resistant to oil, alkali and will be tough enough to withstand the mechanical stresses during installation.

i) To protect the cable against rodent and termite attack suitable chemicals will be added into the PVC compound of the outer sheath for all cables.

j) Standard drum length for all types of power and control cables shall be offered.

k) ISI marking at every meter of cable length shall be provided.

l) For all cables, a minimum extra length of 2 meters will be left before jointing / termination.

6.2.2 **LT Power and Control Cable**

a) All power and control cables for use on medium voltage systems shall be heavy duty type, 1100 V grade with copper conductor, PVC insulated, PVC inner sheathed, armoured and overall PVC outer sheathed.

b) The conductor shall be stranded and the conductor material shall confirm to IS-8130.

c) The core insulation shall be with PVC compound applied over the conductor by extrusion and shall conform to the requirements of Type 'A' as per IS:5831. The thickness of insulation shall be as per IS:1554. Control cables having 5 cores and above shall be identified with prominent and indelible number on the outer surface of the insulation. Colour of the numbers shall contrast with the colour of insulation with a spacing of maximum 50 mm between two consecutive numbers. Colour coding for cables upto 4 cores may be provided as per Indian standard.

d) The inner sheath shall be extruded PVC compound conforming to the requirements of Type ST-1 PVC compound as per IS:5831. The thickness of inner sheath shall be as per IS:1554.

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e) The armouring shall be by single layer round galvanised steel wires. Requirement and methods of tests for armour material and uniformity of galvanisation shall be as per IS-3975 and IS-10810 (Part 41). The dimensions of armour shall be as per IS-1554.

f) The outer sheath for the cables shall be of excluded PVC compound conforming to the requirements of types ST-1 compound as per IS 5831. The thickness of outer sheath shall be as per IS:1554.

6.2.2.1 LT Power Cable:FRLS

Sl. No.	Parameter	Description
1	Voltage Grade	1.1 kV grade
2	Duty type	Heavy duty
3	No. of cores	- 3.5 / 4 core cables shall be used for motor feeders. - For other consumers or for power supply to other panel 4 core (upto conductor size of 50 sq.mm) or 3.5 core (for conductor size beyond 50 sq.mm) cables shall be used.
4	Reference standard	IS:8130 – 1984 IS:5831 – 1984 IS:3975 -1988 IS:1554, part - 1, 1988 IS:3961 (Part-II) - 1967. IS:7098 Part-I & II IEC-60502
5	Conductor type	- Pain aluminium conductor. - All power cables of size 10 sq.mm and above shall have standard sector shaped (sm) or compact circular stranded (rm/V) or circular stranded (rm) aluminum conductors as applicable. - The conductors will be H2 or H4 grade. - The solid conductor shall be class - 1 and

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		the stranded conductor will be class - 2. - The conductors shall be solid for conductor of nominal area upto and including 6 sq. mm. and stranded beyond 6 sq. mm. Conductors of nominal area less than 25 sq. mm. shall be circular or shaped. Cables with reduced neutral conductor shall have sizes as per Table 1 of IS 1554 (Part-1) - 1988.
6	Insulation type	- XLPE insulation - The insulation compound shall be conforming to IS:7098 (Part I) - 1988.
7	Inner sheath	- For armoured / unarmoured cables a tough inner sheath of heat resisting PVC compound (wrapped / extruded as per size) ,Type ST2 as per IS 5831 . - Black in colour .
8	Armour	- Galvanised steel wire armour shall be used for 3Cx10 sq.mm / 4Cx6 sq.mm cable. - Galvanised flat steel wires (strips) armour shall be used for bigger size cables. - Single core armoured cables are provided with non-magnetic armour consisting of hard drawn flat or round aluminium wires.
9	Outer sheath	- For armoured / unarmoured cables a tough outer sheath of heat resisting PVC compound (Type ST2 as per IS 5831) . - Black in colour . **FRLS**
10	Miscellaneous	- Minimum cross - sectional area of the power cable shall be 6 sq.mm in case of aluminium conductor and 2.5 sq.mm in case of copper conductor. - Power cables shall be selected from core sizes of 6, 10, 16, 25, 50, 70, 120, 150, 240 & 300 sq.mm (Aluminium conductor).
11	Temp. rise	Shall be limited to 90 deg.C.
12	Core identification	- Cable identification will be provided by embossing on the outer sheath the following: • Manufacturer's name & trade mark

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		• Voltage grade • Year of manufacture • Type of insulation - R,Y,B for phases . - Black for neutral (fourth core)

6.3 MOULDED CASE CIRCUIT BREAKER (MCCB)

1.0	Reference standard	IS : 13947 (Part-2) : 1993
2.0	Rated Current	As specified in SLD
4.0	Short circuit rating	50 kA (Minimum) (Ics =Icu).
5.0	Service Short circuit breaking capacity (Ics)	100% of rated ultimate short circuit breaking capacity (Icu)
6.0	Operating handle	Yes
7.0	Safety Door interlock	Door interlock Padlocking in ON/OFF position
8.0	Withstand capability	Rated short time with-stand current (Icw) will be 12 times maximum rated operational current for 1 sec.
9.0	Utilisation category	AC23B
10.0	Electrical features	- S/C , O/C, E/F protection for power supply feeders & crane trolley line feeder MCCB's. - Features to minimise the let-through energy (I2t) in the event of short circuit on load side. - Complete with continuous electronic / microprocessor based adjustable thermal and magnetic releases. - MCCB's for motor feeders shall be of motor

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		duty class with magnetic trip only . Overload protection shall be through electronic overload relays .
11.0	Auxiliary contacts	1 NO + 1 NC Alarm contacts.
12.0	Miscellaneous	Can be used in load side or line side vice versa. Shunt trip coil .

6.4 **CABLE JOINT/TERMINATION ACCESSORIES**

The cable accessories shall include end termination kits, straight through joints and also any special tool and tackles and accessories required for making the joints/terminations.

The straight through joint/termination arrangement shall be complete with all fittings and consumables. The joint shall have electrical and mechanical withstand capability, same as that of the associated cable. The straight through joint shall be provided with metallic casing

The straight through/ end termination kit shall be of heat shrinkable type / cold shrinkable type.

The termination kits/straight through joints shall have the following features:

- Electrical stress control to be provided at the cable insulation shield terminus.
- An external leakage insulation to be provided between the cable conductors and ground.
- Adequate protection to be provided at the end of the cables against the entrance of the moisture and, provision to maintain the constant pressure in the cable.

6.5 EARTHING PIT

Construction of Earth pits with necessary excavation, providing and fixing of earth

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electrode with GI pipe and funnel, providing and filling of soil enhancement material, construction of earth pit chambers, Providing earth pit cover, painting of earth pit covers, measurement of earth pit resistance and connecting the earth pit to earth grid/equipments conforming to IS- 3043.The job includes providing of 50 mm diameter NB class B, GI pipe of 3 meters length. GI Earthing strip of 300 mm (Length) x 6 mm (Thickness) x50 mm (Width) bent to the shape of the pipe and welded at 75 mm from top portion of GI earth electrode. Tapped holes of 10 mm diameter shall be provided on the GI earthing strip for connecting earthing strips to the earth electrode. Funnel with a mesh shall be provided on the top portion of the earth electrode for watering purpose. GI earthing strip welded to the earth electrode at the top shall have hot dip galvanized coating of not less than 10 microns thickness. The job includes filling up of the earth pit with earth enhancement materials after placing the earth electrode in the excavated earth pit. Earth enhancement materials shall be watered and rammed as tight as possible for shall be carried out proper bonding of the electrode with the adjacent soil. Earth enhancement material shall be filled 300 mm in diameter, around electrode The job includes providing RCC covers on the top portion of the earth pit chamber with suitable handle for lifting arrangement. A base frame of suitable dimensions shall be fixed to the top portion of the earth pit chamber to accommodate earth pit cover. Complete arrangement shall be at ground level. The RCC +-cover shall be inscribed with "JVM Earth Pit -PSI".All hardware (nut, bolt & washer etc.), used for connection/joints except where welding is done, shall be made of stainless steel (SS). Joints and tapings in the main earth loop shall be made in such a way that reliable and good electrical connections are permanently ensured. All welded joints shall be suitably protected by applying red oxide paint and bitumen. The earth strip should be laid in at about depth of 300 mm from ground level and to be connected to equipments and earth grid at the installations.

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6.6 THREE PHASE NET METER

- Single Metering unit for Bi-directional Energy Measurement with Separate Energy Registration for import & export
- Net Energy calculation for Power credits
- Designed & Developed, as per IS 13779, IS 14697
- Open Communication Protocol - DLMS as per IS 15959
- AMR compatible unit for local and remote communication
- Internal Battery Back up to Display Meter Data in power off event
- History of energy consumption for Billing months

6.7 FEEDER PILLAR

a) The design and layout of pillar box shall be compact and convenient to provide ease of termination of cables and operation of fuse bases. It shall be designed for termination of cables and operation of fusebase shall be from the front end.
The Feeder Pillar enclosure shall provide a degree of protection not less than IP-65 in accordance with IS-2147.

b) The enclosure shall be suitable for Outdoor installation. The enclosure shall be made from cold rolled sheet steel of thickness 3.15 mm and shall be suitable to withstand rough usage and weather.

c) Panels shall be rigid free standing & floor mounting type and comprise of structural frames enclosed completely with specially selected smooth finished cold rolled sheet steel of thickness not less than 3.15 mm for weight bearing members of the panels such as front sheet and door frames, sides, door top and bottom portions.

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The Angle structure for Leg 75x75x6mm.

d) All joints to be made flush type and all edges shall be bent at right angles and rounded. All structural members shall be bolted or welded together. The doors, removable covers and panels shall be sealed with gasket all round with neoprene gaskets. Ventilating louvers if provided shall have screens and filters. Cable gland plate, fitted on the bottom of panel shall be connected to earthing of panel.

e) The enclosure shall be sized to facilitate easy maintenance at minimum height of 300 mm above FFL.

f) The top of pillar shall be fitted with a sloping canopy, the design of which shall be such that rainwater shall not accumulate on the top.

g) It shall have overhang and facia of min. 100mm. 2 nos. lifting lugs of same material shall be provided.

h) Three nos. heavy duty hinges shall be provided for each door such that they are not visible from outside and hence not removable. The hinge shall be of such construction that the door can be swung open by not less than 150°. The door shall be fitted with integral handle, flushed with the surface of the door.

i) Rated short time fault current 50 kA for 1 sec.

j) The door shall have three point locking arrangement. Special type tamper proof heavy-duty built-in inter-lock with appropriate key shall be provided. Locking system with handle up & down arrangement shall be provided on front side of the doors. The door shall be provided with pad-locking facility also.

k) The Pillar shall be provided with removable split type base plate fitted with rubber grommets for cable entryto facilitate cable jointing.

l) Proper support shall be provided for holding I/C & O/G cables. These, cable support arrangement shall be provided to take the load of the cable.

m) The Busbar of all phases and neutral shall be provided with colour coded heat shrinkable insulation sleeves. Phase barriers shall be provided between the

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Busbars and all Busbars shall be in two equal sections with removable link.

n) Cable termination arrangement shall be from bottom and suitable for external cables of type and sizes as mentioned in the specification.

o) The design of pillar box shall ensure there is no possibility of the operator experience a shock during normal operation. Insulated barriers shall be provided wherever necessary so as to ensure that no accidental contact with live parts inside the pillar box is possible.

p) The Pillar-box shall be provided with an Aluminium Earth bus at the bottom, suitable for the rated short time current of the pillar. The earth bus shall provide Earthing to all the components inside the pillar and the metallic enclosure including the armour of the cables. The earth bus shall be internally connected to two separate earth terminals located outside, on either side of the pillar. The Busbar shall not be visible or removable from the outside of the cubicle. Door Earthing shall also be provided with bolted lugs at both ends. The neutral shall be insulated from the earth.

q) The paint on the pillar box shall have good colour retention properties and shall be weather and UV resistant. All sheet steelwork shall be phosphated in accordance with IS: 6005 "Code of practice for phospating iron and steel". Oil, grease, dirt and swart shall be thoroughly removed by emulsion cleaning. Rust and scale shall be removed by pickling with dilute acid followed by washing with running water rinsing with slightly alkaline hot water and drying. After phospating, thorough rinsing to be carried out with clean water followed by final rinsing with diluter dichromate solution.After that the powder spray with spray gun to be used and to put into the oven for drying in 200deg.C. for 40min

r) The pillar box shall be provided with durable and legible Aluminium nameplates containing all technical parameters and manufacturing details. The pillar box shall be provided with a plate 'Danger' mark for 430V AC as per IS

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s) All routine, acceptable & type tests shall be carried out in accordance with the relevant IS/IEC.

t) The material received at Purchaser store will be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection.

u) Supplier shall stand guarantee for five years from the date of supply towards design, materials, workmanship and quality of process/manufacturing of items under this contract.

v) Supplier shall ensure that all the equipment covered under this specification shall be prepared for transport in a manner so as to protect the equipment from damage in transit.

7.0 INSTALLATION GUIDELINES

7.1 Installation of equipment

- All the electrical installations shall conform to the Indian Electricity Act, Indian Electricity Rules, and regulations in force in the state of Uttar Pradesh by Electrical Inspectorate.
- All the items required as per electrical inspectorate shall be included in the scope of work. These shall be installed by duly licensed and authorized personnel only.
- The mechanical and other installation shall conform to the applicable Acts and Rules of corresponding Inspectorate and other relevant authorities, if any.
- All the works under this contract, including the installation of the equipment, shall be got inspected and approved by the relevant statutory authorities like Electrical Inspectorate etc.

7.2 Erection and Commissioning Tools & Tackles

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- The Contractor shall provide all tools/tackles jigs and fixtures, winches, alignment tools, welding sets, testing kits, testing meters/instruments, breaker handling devices, all consumable items, mobile cranes and construction equipment as required to install the work complete in all respects, and shall necessarily include (but not be limited to) bolts, nuts, rivets, welding rods, shims, wedges, packing sheets, packing compounds, oil, flushing oil, protective greases and oils, all materials required for proper installation and protection of individual equipment in storage and during erection, testing and commissioning.
- This shall also cover proper alignment, tac welding, tagging, laying, marking of, and connection of cables, fabrication supply and installation of all support structures for installation of various electrical equipment and cables.
- Provision of cable glands, ferrules, cable lugs, tags, sealing kits (for HT cables) shall be arranged.
- Supply and installation of first aid boxes, shock treatment charts, rubber mats, and key board etc.
- Erection, testing and commissioning of various equipment shall be done strictly as per manufacturer's instructions.
- Contractor shall submit proposed test procedure to the purchaser for approval well in advance and shall not commence testing until approval is conveyed.
- All plant and equipment the painting of which has been damaged during transportation/erection or by corrosion shall be given two coats of paint after removal of scales rust oil, etc.
- All iron framework erected shall be provided with the under coat of primer and one topcoat of finish paint.
- Cables shall be laid in conduits upto 1 meters height above the floor in case of vertical run to avoid mechanical damage.

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- Approved type of danger boards, boards inscribing 'ISOLATED', 'DO NOT CLOSE, MEN AT WORK' in English, Hindi and Local languages shall be provided in sufficient numbers.
- Special care shall be taken to make the enclosed equipment protected against entry of rats, lizard, and creeping reptiles which may create electrical short circuits.

7.3 Cable Installation

7.3.1 Mode of cable installation

Cable shall be laid buried (in excavated trench). Digging and refilling of cable trenches, required erection accessories shall be in the scope of work of the contractor.

7.3.2 Cable Markers

Approved cable markers of reinforced concrete shall be provided and fixed to mark each and every diversion of all buried cable routes. A marker shall also be placed every 30 meters along straight portions of each route. A concrete cable marker shall also be provided and fixed to mark the position of every buried joints.

7.3.3 Cable fixing

Cable shall be fixed to cable racks or cable trays or run on cleats or in conduits, which shall be fixed to concrete brick work or steel structure as required for proper support of the cables, easy accessibility and neatness of appearance.

All necessary frame works and fixings for the support of cables and accessories shall be supplied and fixed by the electrical Contractor.

Openings in walls and floors if not already provided shall be made by the contractor without any commercial implications. The openings shall be properly sealed, after drawing the cables.

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7.3.4 Fixing to concrete and brick work

The cable supporting material shall be fixed to concrete and brickwork by the use of rawl bolts and rawl plugs. Fibre plugs shall not be used.

7.3.5 Cables in conduits

Cable conduits, pipes shall be provided to protect the cables, where the cables rise through holes at ground level.

Maximum cross section areas of cable passing through conduit shall not exceed 60% of cross section of conduit.

After the cable has been drawn in the conduit, the same shall be sealed by approved means. In addition to the required number, at least 20% or minimum 2 No. spare pipes/conduits shall be laid.

7.3.6 Cable terminations

The cables shall be terminated in accordance with the relevant diagrams. The cable cores from the sealing box or gland to the terminals of the apparatus shall be neatly arranged, and shall be of sufficient length to prevent the development of tension or local pressure on the insulation. They shall be suitably supported as required.

7.3.7 Identification and Marking

Each end of each core of every control cable shall be fitted with tight ferrules of approved make and shall be of white inflammable plastic insulation material, having the marking engraved in black to correspond with the relevant diagram. Where the ends of one conductor have different markings each end shall also have white ferrules engraved in red with the remote marking.

The cores of each power cable other than distribution cable shall be identified in accordance with the relevant diagram by means of labels secured to each core.

Distinguishing labels of non-corrodible material marked in accordance with the

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cable numbers of the cabling diagram shall be permanently attached to each end of every cable. The phase or polarity of each power cable core at the cable ends shall be identified as follows:

AC system Phases - Red, yellow and blue painted discs

Neutral - Black painted disc

7.3.8 **Connection to terminals**

Power cable connections shall be made with tinned copper cable lugs of approved type and material taking into account the bimetallic actions along with double compression glands.

All control circuit connections shall be made with the bare conductor with the use of rose courtenay type washers, crimped lugs, etc. The ends of all stranded conductors shall be twisted tightly together. Solid or stranded conductor shall be connected to terminal studs by taking one complete turn around the stud between the flat washers. Connections to an easy burring terminal shall be made with a straight and conductor. The end termination and straight joints shall be supplied in kit form. The kit shall include all insulating and sealing material apart from conductors fittings and consumable item. Necessary devices required for termination and joints shall be provided.

7.3.9 **Buried Cable Trench**

In case of cable run directly buried in ground the following installation guidelines to be followed :

Installation of cable directly buried in ground shall generally conform to the requirements given in IS: 1255-1983.

Cable buried in trenches shall be laid on 200mm of riddled sand and covered with 200mm of riddled sand. RCC slabs of 75 mm thickness shall be provided for

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covering trenches . The minimum trench depth shall normally be 1.2 m & thickness of top cover RCC slab of 75 mm. If the trench is to cross railway tracks/roads/drains/under ground pipes or any load bearing area the cables shall be taken through suitable G.I. pipes. 25% spare pipes for the above shall be provided, for future use.

7.3.10 **Other requirements**

Cables leaving the ground/floor shall be protected up to 1 m height by G.I pipes wherever required.

Gap left by cables entering or leaving the conduits shall be sealed with non-hardening silicon compounds.

All necessary frame works and fixing for the support of cables and accessories shall be supplied. Cable shall be suitably protected against heat, and mechanical damages.

8.0 SITE TESTS AND CHECKS

8.1 General

All the equipment shall be tested at site to know their condition and to prove suitability for required performance before commissioning

The list of tests indicated to be conducted, and all required equipment/instrument shall have to be arranged by the Contractor. Any other test, which is considered necessary by the manufacturer of the equipment, Contractor or mentioned in commissioning manual, shall have to be conducted at site.

In addition to the tests on individual equipment, some tests / checks are to be conducted / observed from overall system point of view to develop confidence for charging of the system / equipment. Such checks are highlighted under miscellaneous tests but these shall not be limited to as indicated, and shall be finalized with consultation of client before charging of the system.

All checks and tests shall be conducted in the presence of client's representative

and test results shall be submitted in three copies to client and one copy to Electrical Inspector. Test results shall be filled in proper Performa.
After clearance from Electrical Inspector system / equipment shall be charged in step by step method.

Based on the test results clear cut observation shall be indicated by testing engineer with regard to suitability for charging of the equipment or reasons for not charging are to be brought out by the Contractor.

8.2 MISCELLANEOUS

1. Checking of continuity of the system
2. Checking of phase sequence from overhead line to consumer end
3. Checking for safe accessibility of all operating points
4. Check for availability of emergency lighting
5. Check for availability of control/aux. supply
6. Ensure availability of first aid box, fire-fighting equipments, earth discharge rods, rubber mats, rubber glove
7. Check for safe movement of operators from yard to control room/switchgear basement/tunnel etc. w.r.t proper illumination, escape light, uncovered openings, provision of hand railings in stairs etc.
8. Check for proper covering of cable channels.
9. Placement of shock treatment chart, danger boards, provision of boards indicating 'Man on Work, Do not switch ON', 'Do not switch OFF', 'EARTHED' etc.
10. Provision of route map for underground cable network.
11. Check for proper dressing of cables, mechanical protection of cables, placement of cable markers.
12. Check for sealing of all cable openings including conduit opening with fire

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resistance material.

13. Check for sealing of all openings at bottom of electrical panels.

10. Phase sequence, continuity, I.R and H.V. tests of power cables (HT&LT) and control cables as applicable after installation at plant site.

11. All type of testing related to AC/ Ventilation system, fire fighting system, FDA system, water supply facilities and switchyard civil/ structural works.

Note: The tests specified above are indicative & minimum only.

9.0 LIST OF SPARES

9.1 COMMISSIONING SPARES

Note:

1) Any other items required during commissioning shall also be in the scope of the Contractor.
2) The above commissioning spares shall be ordered along with the main equipment and shall be supplied to site along with the main equipment.
3) The Contractor shall use the above commissioning spares during commissioning.
4) After completion of commissioning, the Contractor shall replenish the used spares and handover the spares to the purchaser as per the above list during handing over of the system.

10.0 PROJECT SCHEDULE & PROGRESS MONITORING

10.1 The overall schedule for completion of the project shall be 5 **months** from **Zero date**, which shall be reckoned as Effective date of contract for the contract. **Zero date and commissioning mentioned above and as shown in the schedule shall be same as defined in the technical and commercial part of the specification.**

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11.0 LIST OF PREFERRED MAKES

Sr. No.	Item / Component description	Preferred make
1.	415V LT Switchboard/Feeder Pillar	ABB, BCH, C&S, HAVELLS, IEE PROJECTS, L&T, MARINE ELECTRICAL, MEDITRON, PCE PROJECTS PVT. LTD, SCHNEIDER, SEN & SINGH ENGINEERS, SIEMENS,AC POWER SYSTEM,ADVANCE PANEL & SWITCHGEARS, M.K.ENGINEERS, TRAANSRECT INDUSTRIES, ISHANI ELECTRONICS
2.	Main Distribution Board (PDB)	Le grand, L & T, Havells, C & S, ABB, SCHNEIDER, SIEMENS.
3.	Moulded Case Circuit Breakers (MCCB)	SIEMENS / ABB / L&T / GE POWER / SCHNEIDER
4.	Indicating meters Analogue	AE/ IMP /MECO/ RISHAV
5.	Indicating lamps (LED type)	SIEMENS/ RAAS CONTROLS/ L&T
6.	Control/Selector switches	RACOM / SALZER / SCHNIEDER
7.	Numeric relay	Siemens, ABB, Schneider, GE, SEL
8.	LED Indication lamps, push buttons and selector switch	Schneider, Siemens, ABB, L&T
9.	Multifunction meters/ Energy meter	Satec, ABB, Schneider, Secure, Siemens, Rishav
10.	Annunciation window and hooter	Minilec Vaishno Esbee, Alan
11.	HT cable termination/Jointing kit	Reychem, 3M
12.	LT Power and Control cables	Universal, KEC, Polycab, KEI, Gloster Havells, GemsCab
13.	Lugs and glands	Dowell, Jainson, Comet
14.	Wires	RR Kabel, KEC, KEI, Havells, Polycab, Finolex, V GUARD.
15.	Conduits	Polycab, Anchor, AKG
16.	LED lamps	Bajaj, Havells, Crompton, Philips, Halonix
16.	MCB/ELCB/RCBO	Le grand, L & T, Havells, C & S, ABB, SCHNEIDER, SIEMENS.

***Prior approval shall be taken for makes not mentioned in the make list.**

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ANNEXURE-1

BOQ : SUPPLY

Item no.	Description	Unit	Qty.	Unit Rate	Total
Note : Supply of all items as listed below shall be in accordance with Single Line Diagram (SLD no. MEC/11/E4/91C7/LT/SLD/001) & Technical Specification (TS no. MEC/11/E4/91C7/LT/TS-1)					
1	LT Switch board (LTB-1) with Incoming feeder- 1000 Amp ACB ; Outgoing feeders - 3 Nos 400A MCCB, 3 Nos 250A MCCB and other items/instruments	Set	1		
2	LT switch board (LTB-2) with 2 nos. Incomers 400A MCCBs, 1 no. Buscoupler 400 A MCCB, Outgoing - 5 Nos 250 A MCCBs, 4 Nos 160A MCCBs, 4 Nos 125A MCCBs, 7 Nos 63A TPN MCBs and other items/instruments	Set	1		
3	Power Distribution Board (PDB-1 & PDB-2) each comprising of 160 A MCCB as incomer and 6 nos. of 32 A TPN MCB and 6 Nos of 63A TPN MCB as outgoing feeders and other items/instruments	Set	2		
4	1.1 kV,3.5C X 150 sqmm Al, FRLS cable	mtrs	1500		
5	1.1 kV,3.5C X 120 sqmm Al, FRLS cable	mtrs	700		
6	1.1 kV,3.5C X 50 sqmm Al, FRLS cable	mtrs	700		
7	End termination Kit for 1.1 kV,3.5C X 150 sqmm Al FRLS Cable	Set	10		
8	Jointing kit for 1.1 kV,3.5C X 150 sqmm Al FRLS Cable	Set	5		
9	End termination Kit for 1.1 kV,3.5C X 120 sqmm Al FRLS Cable	Set	10		
10	Jointing kit for 1.1 kV,3.5C X 120 sqmm Al FRLS Cable	Set	5		
11	Termination kit for 1.1 kV,3.5C X 50 sqmm Al FRLS cable	Set	10		
12	Jointing kit for 1.1 kV,3.5C X 50 sqmm Al FRLS Cable	Set	5		

13	Supply of requisite AMF panel, associated instruments/equipment to incorporate and implement Auto Changeover scheme in existing DG set of 62 kVA capacity (Make of existing DG set is Ashok Leyland)	Set	1		
14	Three Phase Net meter [with summator and comparator for Indicating the differential (+/-) values]	No	1		
15	Earth pits including supply of all earthing materials as per latest IS.	Set	10		
16	8 SWG GI Wire for earthing	mtrs	150		
17	50X 6 GI flat for earthing	mtrs	50		
18	1.1 kV, 1C x 2.5 sqmm Cu, FRLS Cable (outdoor duty type) for Post light wiring.	mtrs	1000		
19	1.1 kV, 1C x 1 sqmm Cu FRLS Cable (outdoor duty type, black colour) for Post light wiring/earthing	mtrs	500		
20	Complete illumination, both indoor and outdoor, of Shed comprising of lamps, control gear, luminaries, wires, conduits and all accessories. For indoor illumination, Six numbers 18 W LED tubelight, One number of switchboard with required numbers of switches with socket shall be provided. For outdoor illumination of shed, Street light type LED fittings 40W - 4 Nos shall be provided . Also all accessories like facilities for hanging all the light fittings, and associated wiring shall be provided by the bidder.	lot	1		
21	Outdoor type feeder pillar. Incomer 63 Amp MCCB and outgoing 8 Nos 20 A DP MCB. Outdoor duty IP-64.	No	4		
22	LED Post top light (Make : Havells ; Model : RUBYMINIPT15WLED830PSYMTOPC) for boundary wall along with mounting pole and mounting accessiories.	Set	50		
23	100 Dia HDPE/Hume pipes for road crossings	mtrs	100		
24	25 mm medium duty PVC conduits along with necessary accessories (for use along the boundary wall)	mtrs	500		

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25	LED glow signboard mentioning "Power House , JVM Shyamali" supported with pole at the entry gate of Shed /Chain link fencing.	set	1		
26	Portable Dry chemical powder type extinguisher shall be of 6 kg capacity conforming to IS:2171.	No	6		
27	Danger board, caution board, shock treatment chart,first aid box, LT rubber mat- 2mtrs , rubber hand gloves- 2 set, earth discharge rod, and other safety appliances .	set	1		
28	Steel Structures including supply of raw materials and inclusive of supply of bolts,nuts,washer,electrodes,jigs,fixtures and other consumables including all tools, tackles and labour and application of two coat primer paint and one coat of finishing paints.	kgs	4000		
29	TATA/ JINDAL make colour quoted sheet	sqm	80		
30	Galvanised Chain link fencing of height 1.5 mtrs with gate for entry and exit with locking arrangement covering the area (12 mtr X 8 mtr) with supporting angles as required in between. Radium strip shall be provided all around the shed. 5 Nos Danger board fitted on the chain link fencing by nut bolts and clips. Please Note that one side of 12 mtr is wall, so three side fencing shall be provided.	lot	1		
	NOTE : Unit rate for all items shall be provided for any addition or deletion of scope				

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BOQ : ERECTION , TESTING & COMMISSIONING

Item no.	Description	Unit	Qty.	Unit Rate	Total
Note : Erection, Testing & Commissioing of all items as listed below shall be in accordance with Single Line Diagram (SLD no. MEC/11/E4/91C7/LT/SLD/001) & Technical Specification (TS no. MEC/11/E4/91C7/LT/TS-1)					
1	LT Switch board (LTB-1) with Incoming feeder- 1000 Amp ACB ; Outgoing feeders - 3 Nos 400A MCCB, 3 Nos 250A MCCB and other items/instruments	Set	1		
2	LT switch board (LTB-2) with 2 nos. Incomers 400A MCCBs, 1 no. Buscoupler 400 A MCCB, Outgoing - 5 Nos 250 A MCCBs, 4 Nos 160A MCCBs, 4 Nos 125A MCCBs, 7 Nos 63A TPN MCBs and other items/instruments	Set	1		
3	Power Distribution Board (PDB-1 & PDB-2) each comprising of 160 A MCCB as incomer and 6 nos. of 32 A TPN MCB and 6 Nos of 63A TPN MCB as outgoing feeders and other items/instruments	Set	2		
4	Laying of 1.1 kV,3.5C X 150 sqmm Al, FRLS cable (buried underground from JVM boundary to new LT Switchboard) [Note: Cable laying from outside source upto JVM will be by others)	mtrs	50		
5	Laying of 1.1 kV,3.5C X 120 sqmm Al, FRLS cable (buried underground from LT Swbd at JVM to different PDBs)	mtrs	700		
6	Laying of 1.1 kV,3.5C X 50 sqmm Al, FRLS cable (buried underground from LT Swbd at JVM to different Feeder Pillar)	mtrs	700		
7	Termination of 1.1 kV,3.5C X 150 sqmm Al FRLS Cable	Set	10		
8	Jointing of 1.1 kV,3.5C X 150 sqmm Al FRLS Cable	Set	5		
9	Termination of 1.1 kV,3.5C X 120 sqmm Al FRLS Cable	Set	10		
10	Jointing of 1.1 kV,3.5C X 120 sqmm Al FRLS Cable	Set	5		
11	Termination of 1.1 kV,3.5C X 50 sqmm Al FRLS cable	Set	10		

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12	Jointing of 1.1 kV,3.5C X 50 sqmm Al FRLS cable	Set	5		
13	ETC of requisite AMF panel, associated instruments/equipment to incorporate and implement Auto Changeover scheme in existing DG set of 62 kVA capacity (Make of existing DG set is Ashok Leyland)	Set	1		
14	Three Phase Net meter [with summator and comparator for Indicating the differential (+/-) values]	No	1		
15	Construction/Installation of Earth pits as per latest IS.	Set	5		
16	Laying, Connection of 8 SWG GI wire	mtrs	150		
17	Laying, Connection of 50X 6 GI flat	mtrs	50		
18	Laying and termination of 1.1 kV, 1C x 2.5 sqmm Cu, FRLS Cable (outdoor duty type) (for Post light wiring)	mtrs	1000		
19	Laying and termination of 1.1 kV, 1C x 1 sqmm Cu FRLS Cable (outdoor duty type, black colour) for Post light wiring/earthing	mtrs	500		
20	Complete illumination, both indoor and outdoor, of Shed comprising of lamps, control gear, luminaries, wires, conduits and all accessories. For indoor illumination, Six numbers 18 W LED tubelight, One number of switchboard with required numbers of switches with socket shall be provided. For outdoor illumination of shed, Street light type LED fittings 40W - 4 Nos shall be provided . Also all accessories like facilities for hanging all the light fittings, and associated wiring shall be provided by the bidder.	lot	1		
21	Outdoor type feeder pillar. Incomer 63 Amp MCCB and outgoing 8 Nos 20 A DP MCB. Outdoor duty IP-64.	No	4		
22	LED Post top light (Make : Havells ; Model : RUBYMINIPT15WLED830PSYMTOPC) for boundary wall along with mounting pole of suitable strength and mounting accessiories covering fitting on each pillar by fixing pole and re-plastering/concreting and painting with similar colour as of existing, for the fixed part	Set	50		

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23	100 Dia HDPE/Hume pipes for road crossings	mtrs	100		
24	25 mm medium duty PVC conduits along with necessary accessories (for use along the boundary wall) for LED post light connection (loop in loop out). Necessary fixing of conduits with accessories like GI box, solid bends/couplers/iron staples/saddles/screws	mtrs	500		
25	LED glow signboard mentioning "Power House , JVM Shyamali" supported with pole at the entry gate of Shed /Chain link fencing.	set	1		
26	Installation of Portable Dry chemical powder type extinguisher shall be of 6 kg capacity conforming to IS:2171.	No	6		
27	Danger board, caution board, shock treatment chart,first aid box, LT rubber mat- 2mtrs , rubber hand gloves- 2 set, earth discharge rod, and other safety appliances .	set	1		
28	Fabrication and erection/installation of fabricated Steel Structures including supply of raw materials, loading transportation and delivery at site including unloading of all steel structures, and inclusive of supply of bolts,nuts,washer,electrodes,jigs,fixtures and other consumables including all tools, tackles and labour and application of two coat primer paint and one coat of finishing paints.	kgs	4000		
29	Erection/fixing of TATA/ JINDAL make colour quoted sheet (Net laid area shall be measured for payments)	sqm	80		
30	Galvanised Chain link fencing of height 1.5 mtrs with gate for entry and exit with locking arrangement covering the area (12 mtr X 8 mtr) with supporting angles as required in between. Radium strip shall be provided all around the shed. 5 Nos Danger board fitted on the chain link fencing by nut bolts and clips. Please Note that one side of 12 mtr is	lot	1		
31	Disconnection of all existing LT Cables and subsequent re-termination of cables along with supply of kit for DG sets and reconnecting both DG set (125 kVA & 62 kVA) as per Single line diagram and Technical specification.	lot	1		
32	Dismantling & Disconnection of existing LT Switch board (LTB) at substation-1 and connection/re-connection of all feeders (existing as well as new), termination of incoming cable in newly installed LTB-1. Dismantled board shall be shifted/located elsewhere inside substation-1	Set	1		

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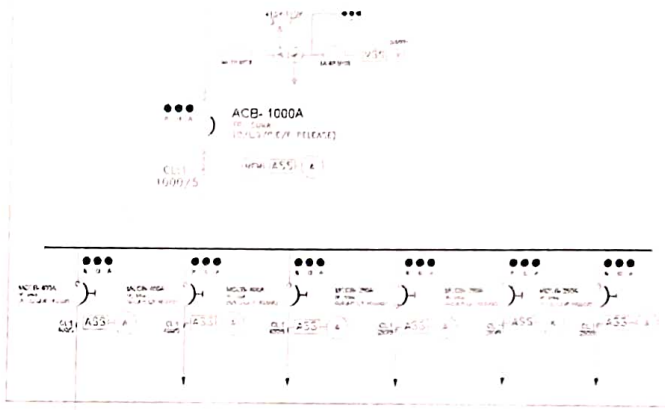
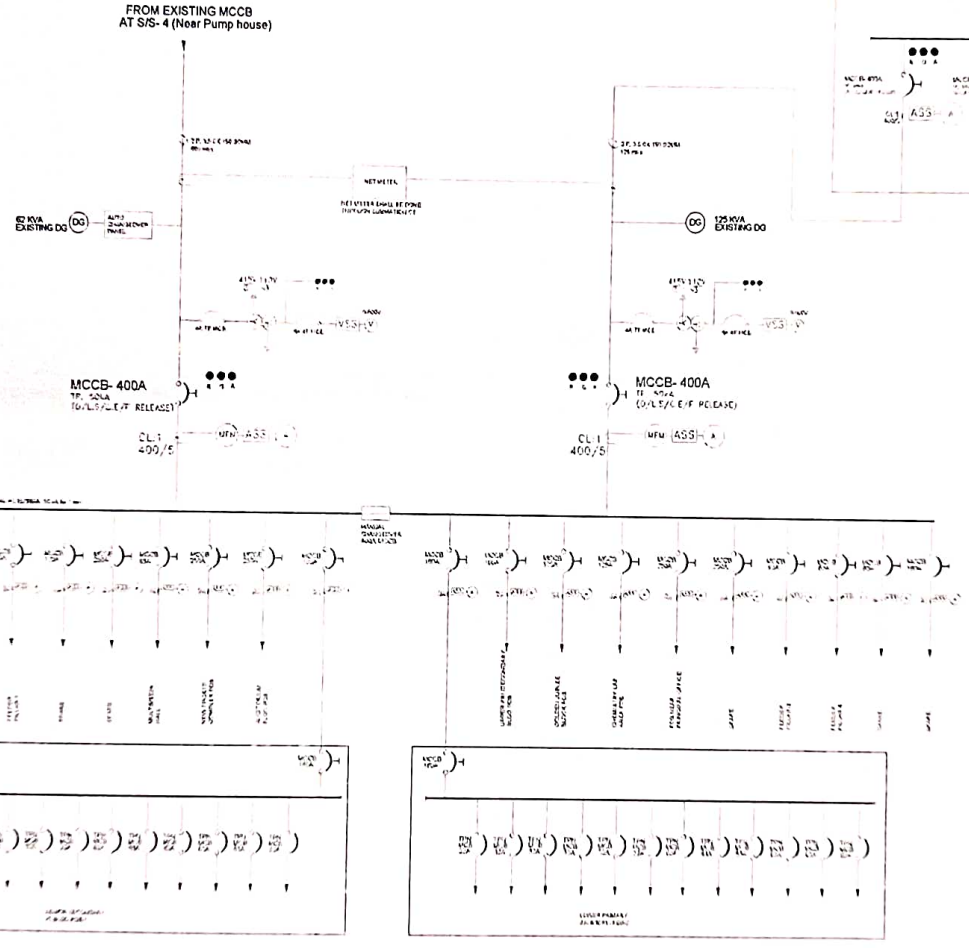
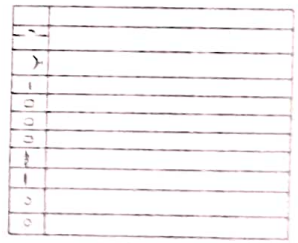
33	Earth work and PCC for fixing of structural shed at ground	lot	1		
34	Brick Pedstal with RCC for LT board foundationat 500mm height from ground level with trench in between. Pedsatal shall be plasetered and painted with weather proof paint. Balance part of trench shall be covered with 6mm thick chequered plate, painted black. Pedastal shall be projected 1000mm from front of LT board	lot	1		
	NOTE : Unit rate for all items shall be provided for any addition or deletion				

NEW LT BOARD AT SUBSTATION-1 (NEAR HOSPITAL)



FROM EXISTING MCCB
AT S/S- 4 (Near Pump house)





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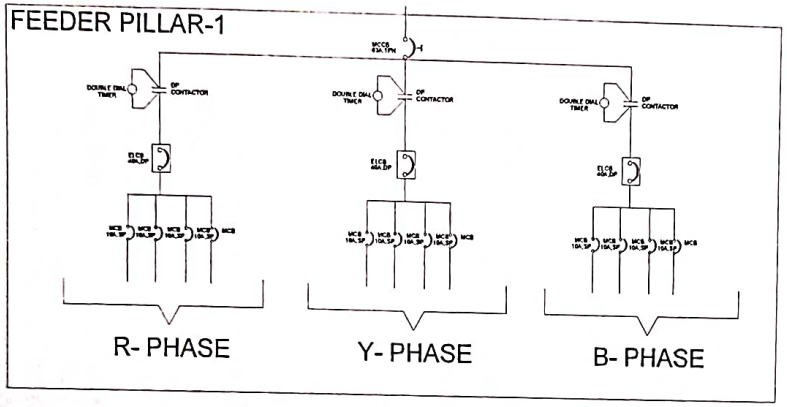
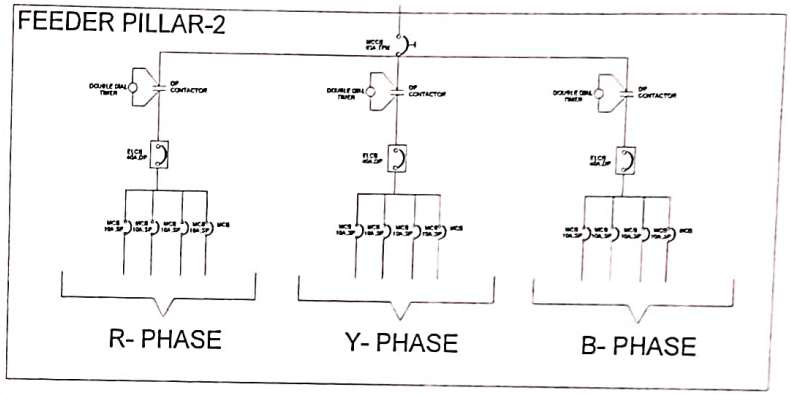
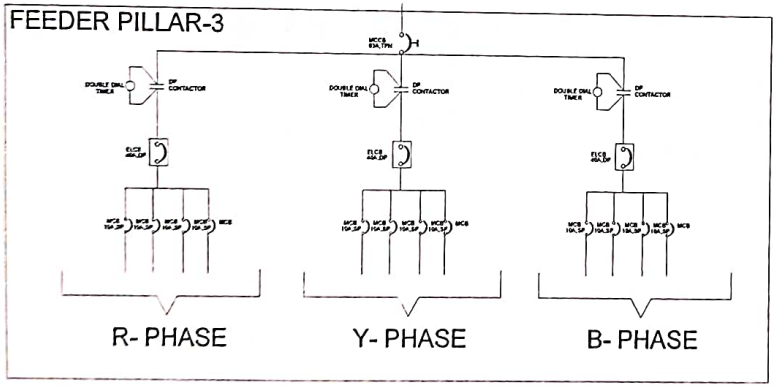
FEEDER PILLAR-1



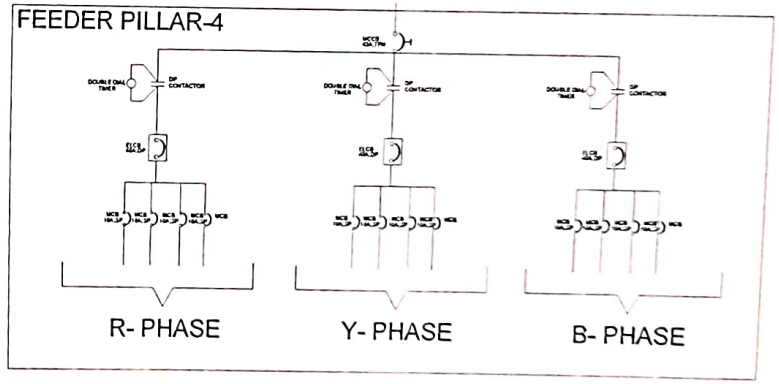
FEEDER PILLAR-2



FEEDER PILLAR-3



FEEDER PILLAR-4



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GENERAL CONDITION OF CONTRACT (G.C.C.)

1. scope of work shall include all workers, suppliers and services for completion of entire work .
2. The contractor shall have own site office, stores, godown as may required for carrying out the subject work.
3. Provision of all labours, skilled, semi-skilled, as may be required to complete the work.
4. Providing adequate tools, instruments, tackles, scaffolding etc. for completion of entire work.
5. Procurement of all the materials, as may be required for carrying out the work.
   Abide by statutory regulations, labours rules, safety codes during execution of work.
6. Abiding by all statutory obligations including ESI, EPF etc . during execution of work and shall submit all evidence in this respect such as ESI, EPF certificates and minimum wage certificate along with each and every bill.
7. Contractor shall make arrangement at his own cost for drawing and distributing water and power from single point each where water and power will be provided by JVM free of cost.
8. Undertaking all works including repairs and renovation work for completion to the satisfaction of JVM.
9. worker engaged by agency will not have any claim for payment employment in JVM. The age limit of worker shall be between 19 yrs. and 60 yrs.
10. Rate of wage shall not be less than the minimum wages plus prevailing percentage of EPF, FP, ESI, EDLI, Bonus etc. as required under the law.
11. Agency shall ensure fulfillment of al labour regulations/rules under the Labour Act and all other statutory requirement of Government of India and Government of Jharkhand.
12. Monthly bill based on actual deployment of worker shall be submitted by Agency statutory payment) viz. EPF, FP, ESI,EDLI, bonus etc.) including taxes payable if any.
13. Unit rates of all the items shall remain firm, fixed and binding on the contractor during entire period of execution of work and shall not be subjected to any variation whatsoever on any account.
14. This being a unit rate contract, the payment shall however be released against actual quotations of work however be released against actual quantities of work executed duly certified by the JVM.
15. Unless otherwise specified, measurement of work shall be carried out at site jointly by JVM & Contractor.
16. **Liquidated damages for non-fulfillment of completion schedule.** If the completion of work is delayed beyond the scheduled date for any reason other than due to force major condition or for those attributable to the contractor, then the contractor shall pay 1% per month of delay on total value of work up to a maximum of 5% of the final contract price.
17. The contractor shall not sublet/sub contract the whole or any part of work failing which the contract may be terminated.
18. No completion certificate shall be issued or shall be work be considered to be complete until the contractor removes from the site all scaffolding, surplus materials, rubbish etc.
19. **Maintenance Guarantee Period (defect liability period)**: The contractor guarantees that for a period of 6 (six) months commencing from the date of completion of contract. He shall undertake reconstruction rectification, replacement of all regular schedule work and any other work to make good the faulty work as stated under completion certificate for period of 06 (six) months from the date of issue of commissioning certificate.

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20. The contractor shall have a valid labour license and shall also maintain al records/ register/return/cards under state contract labour (R&A) rules act such as :-
    i) Register of workmen employed by contractor : Form - 9
    ii) Employment card : Form – 10
    iii) Muster roll : Form - 12
    iv) Register of wages-cum-muster roll : Form - 13
    v) Wage slip : Form – 15
    vi) Register of over time : Form – 19
    iii) Submission of Return in Form – 20

21. All materials supplied to the site shall be of good quality as per latest revision of CPWD specification. Any material not approved by the Engineer shall be removed from the site at his own cost by the Contractor.

22. The work carried at site as per latest edition of CPWD specification.

23. **Time schedule of contract** : Total time schedule of contract will be 5 (five) months from the date of placement of work order.

23. Any items not mentions in the BOQ but required for the completion of work shall be provided by the bidder on mutually agreed terms and conditions.

24. Further, JVM also reserves the right to cancel the tender without assigning any reasons for the same. In such event JVM shall return the Earnest money deposit.

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Special condition of contract (S.C.C.)

1. The changes in quantity may increase or decrease as given in BOQ and contractor should do the work as per direction/ requirement of site engineer/supervisor.
2. The work will be executed on firm item rates basis as quoted. The contractor will be issued with site order indicating various works to be taken up by the contractor.
3. Any defect found within the guarantee period shall have to be attended by the contractor at their own cost and risk.
4. The institutional building regulations of the safety code shall have to be strictly followed by the contractors.
5. The work is to be executed as per specifications mentioned in BOQ and direction of site engineer. **The quantity mention in BOQ is tentative, it may increase or decrease. The payment will be on actual measurement and consumption of items.**
6. Terms of payment: 95% value bill/tax invoice shall be paid within (15) fifteen days after completion of work on submission of correct and complete certified document as mentioned below. Contractor shall submit Bill in triplicate along with measurement sheet/ abstract of the quantity being executed by the contractor at site, Income Tax Registration no. (PAN) and GST regn. no. Invoice shall be raised per per GST rules

   Document to be submitted alongwith tax invoice:

   i. Measurement sheet duly signed by Contractor and certified by JVM site engineer/JVM representative and concerned engineer.
   ii. Abstract of measurement sheet and work done till previous bill, the running and cumulative quantities certified by JVM site representative and concerned engineer.
   iii. Documentary evidence towards payment of ESI, EPF etc. as per statute.
   iv. Abstract sheet for ESI & EPF
   v. Wage sheet
   vi. Undertaking that Contractor has complied with all statutory requirements as per Order during the period for which the progress payment has been claimed

   GST shall be released only on submission of related statutory GST return and deposition of GST to exchequer.

7. Work measurement sheet should be on printed form/letter head of the contractor duly signed and stamped by the contractor and certified by JVM site engineer.
8. T.D.S. will be affected from all payments as per prevailing rules.
9. 5% (five percent) work value shall be paid after completion of warranty period/ maintenance guarantee period (6 months)and submission of pre-receipted invoice and completion of all his contractual certified by JVM along with submission of following documents :-
   a) Completion certificate issued by JVM – original
   b) No dues certificate from JVM
   c) No claim/no demand certificate by the contractor – original
   d) Copies of all statutory documents to be provided by the contractor as required by JVM
10. JVM shall deduct taxes at source as per prevailing status from the payment to be made to the contractor. JVM shall deposit amount thus deducted with the concerned authorities and issue necessary certificates to the contractor to this effect.
11. General schematic tender drawings showing general arrangement of the building is enclosed, any further engineering drawings required for the execution of the work shall be prepared by the JVM

06/02/2024

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AFF.NO.-[illegible]
SCHOOL NO.-[illegible]
PH.:2411221,2411445

Dated: 06.02.2024

INVITATION TO TENDER

Sub: Sub: Tender for Improvement of Power System (Incomer) of JVM Shyamali

Sealed tenders are invited for award of **Improvement of Power System (Incomer) of JVM Shyamali,** as per the Technical Specification attached herewith , from experienced and eligible firms who have executed similar nature of work as per eligibility criteria and satisfying all the terms and conditions in this tender document.

1.0 Instructions to Tenderer:

1.1 Tenderers are advised to go through the entire documents completely before quoting for the tender.

1.2 Tenders are invited in a two bid system comprising of Part A- Techno-commercial Bid &Part B - Price Bid.

The 'Techno- commercial Bid' will be made and put in the first envelope containing the title **'Techno-Commercial Bid'**. This shall include full information as required in Techno Commercial Bid Declaration by the Bidder as per Annexure-I.

The 'Price Bid' will be made and put in the second envelope containing the title **'Price Bid'**. It shall include full information as required in price schedule format-

Both the bids shall be put in the third envelope which should be prominently super-scribed as **"Tender for Improvement of Power System (Incomer) of JVM Shyamali"**, and shall be submitted on or before **21.02. 2024** till **1.00 PM.**

The scheduled time for opening of tenders shall be 4.00 PM IST on 21-02-2024.

1.3 Tenders received after due date and time mentioned above, as well as those received without separate sealed envelopes as specified above will not be accepted.

1.4 Incomplete tender in any respect or conditional tender will not be accepted.

2.0 Eligibility Criteria

Part A: Techno- Commercial Bid

2.1 Technical Eligibility Criteria for the above work shall be as follows:

The Bidder, as sole bidder, should have experience of work comprising of design / engineering, manufacturing / supply, erection, testing / commissioning of any project involving minimum 0.415 KV or high voltage level switchgear panel and LT cables for any industry / Steel Plant/ Power Plant / Infrastructure sector / Electrical Utility sector of following magnitude during last seven years ending last day of month previous to the one in which tender is floated.

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