

# VOLUME - IA

Technical Conditions of Contract (TCC)  
“Hiring of site establishment” services

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FOR

IOCL Paradip-Standby SRU (525TPD) Train  
project

BHARAT HEAVY ELECTRICALS LIMITED



|                                                                                                                                                                                                                                 |                                                                                                                                                                                                   |             |                                                                  |            |
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|                                                                                                                                                | <b>Technical Conditions Of Contract (TCC)</b><br><b>PROJECT ENGINEERING &amp; SYSTEMS</b><br><b>DIVISION</b><br><b>HYDERABAD</b>                                                                  |             | Ref No: HY/PE&SD/SC-<br>Projects/TCC/2020-21/<br>SE/ IOCL-SRU/01 |            |
|                                                                                                                                                                                                                                 |                                                                                                                                                                                                   |             | Rev. No.                                                         | 01         |
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|                                                                                                                                                                                                                                 |                                                                                                                                                                                                   |             |                                                                  |            |
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|                                                                                                                                                                                                                                 |                                                                                                                                                                                                   |             |                                                                  | 28.09.2022 |
|                                                                                                                                                                                                                                 | Yash Pal Singh                                                                                                                                                                                    | D Nagaraju  | K Ravi Kumar                                                     |            |

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## Chapter I- Project Information

| 1.0 Project Details |                                   |   |                                                                  |
|---------------------|-----------------------------------|---|------------------------------------------------------------------|
| 1                   | Customer                          | : | IOCL, Paradip, Odisha                                            |
| 2                   | Project Information               | : | IOCL Paradip-Standby SRU (525TPD) Train project                  |
| 3                   | Location                          | : | Paradip, Odisha                                                  |
| 4                   | Address Detail                    | : | IOCL, Paradip, Jagatsinghpur District, Odisha, India             |
| 5                   | Nearest Railway Station           | : | Paradip Railway Station                                          |
| 6                   | Road Approach                     | : | 118KM from Bhubaneswar via Cuttack and NH 53                     |
| 7                   | Nearest Air Port                  | : | Biju Patnaik Airport, Bhubaneswar, Odisha, 125KM                 |
| 11                  | Ambient Air Temperature (Average) | : | a) Maximum : 39 <sup>0</sup> C<br>b) Minimum : 16 <sup>0</sup> C |
| 12                  | Average Relative Humidity         | : | 71 %                                                             |
| 13                  | Climatic Condition                | : | Tropical Climate                                                 |

**Bidder is advised to visit the project site and appraise himself about the local conditions and infrastructure available in the area for fulfilling their commitments under the contract. BHEL will not admit any claims whatsoever on account of Contractor’s non-familiarization of local conditions.**

## Chapter II- Scope of Work

### 2.0 SCOPE OF WORK

**2.2 Transport services for BHEL Personnel round the clock:** Contractor shall provide transport services to BHEL Personnel as specified below:

- 1) 7 seaters AC vehicle shall be deployed and should have standard tools, first aid kit and stepney.
- 2) Not all the vehicles mentioned shall be engaged at once at the start of the contract. Vehicles shall be engaged progressively as per the directions and instructions of BHEL site engineer.
- 3) One vehicle shall be running up to 75KM per day.
- 4) The vehicle will be maintained clean both inside & outside on a daily basis.
- 5) The contractor shall pay all applicable taxes and duties.
- 6) In case of vehicle breakdown, an alternative vehicle shall be arranged within four hours.
- 7) Operation hour shall be decided by site representative based on requirement.
- 8) The contractor shall provide, valid registration certificate, insurance, pollution of the vehicle and also the driver should be insured.(valid during the tenure of the contract).
- 9) All expenses towards salary of drivers, repair & maintenance, engine oil, damages due to accident, comprehensive insurance, road tax, or any other renewals, etc. shall have to be met by owner of vehicle.
- 10) The drivers so deployed must have valid driving license. Drivers so employed should not be under the influence of liquor or intoxicated during the duty hours.
- 11) Refusal to perform duty by drivers will be treated as non –deployment of the vehicle for that particular day and deduction at the rate of three times as per day rental charges will be recovered.
- 12) In case of misbehavior by the drivers, the contractor has to take immediate action and the decision of BHEL’s representative in this regard will be final and binding.
- 13) The drive/contractor representative will meet BHEL’s representative regularly to get instruction regarding the deployment of the vehicle.
- 14) Should the vehicle deployed meet with an accident, no claim on account of damage to the vehicle or the persons travelling in such vehicle including the employees of the contractor, drivers, cleaner of the vehicle shall be entertained by the company.
- 15) Should the vehicle deployed by the contractor meet with an accident due to reasons attributable to the contractor or his employees and cause damage to the persons/property of the company, the contractor shall liable to make good such losses in the manner as prescribed by the company.
- 16) The company shall further be entitled to recover the amount so paid by way of compensation under the previously mentioned act or under any other deducting the sum from bill or from any other sum due to him.

### 2.3 Catering Services to BHEL Employees:

- 1) Services in scope of this contract shall include cooking and serving of breakfast, lunch and dinner to BHEL employees as per directions and instruction given by BHEL site engineer. Place of cooking and serving shall be provided by BHEL.
- 2) Cook cum caretaker and helper should be skilled in preparing all kind Indian food.

- 3) Cleaning of utensils and cooking premises shall be the responsibility of bidder.
- 4) All the utensils (Cooking and serving) shall be supplied in new condition. No old items shall be accepted.
- 5) One (1) Gas cylinder should always be on standby (Reserve).
- 6) Refrigerator supplied by the contractor shall be of new condition.
- 7) Bidder has to ensure quality and hygiene of food.
- 8) All the cooking ration supply shall be in the scope of BHEL.
- 9) Decision of BHEL’s site representative shall be final in case of any dispute.
- 10) Items shall be supplied in perfect working condition. All the services and materials within the scope of this contract shall have to be supplied within seven days of issue of work order.
- 11) Maintenance and repair of materials shall be in the scope of bidder.

**2.4 “Construction Power Distribution Arrangement” Services:** Purpose of this work is to establish (Build, operate, maintain, dismantle after contract completion and removal from site) construction power supply distribution boards, interconnection of distribution boards with customer’s compact substation (CSS) through underground cabling, earthing of all equipment and associated civil works as per technical specifications:

Brief Scope of work under this tender consists of following:

1. Supply, installation, testing, commissioning, O&M, dismantling after project completion and removal from site of 415V 63A Feeder Pillar as per technical specification
2. Supply, installation, testing, commissioning, O&M, dismantling after project completion and removal from site of 415V 125A Feeder Pillar as per technical specification
3. Supply, installation, testing, commissioning, O&M, dismantling after project completion and removal from site of 415V 250A Feeder Pillar as per technical specification
4. Supply, installation, testing, commissioning, O&M, dismantling after project completion and removal from site of LT Power Cable & Its Accessories as per technical specification
5. Supply, installation, testing, commissioning, O&M, dismantling after project completion and removal from site of Earthing Material & Its Accessories as per technical specification
6. Civil Works as per technical specification

**Chapter III- Facilities in the scope of Bidder/BHEL**

| S. No.       | Description<br><b>PART I</b>                                                                                   | Scope / to be taken care by |        | Remarks                                                   |
|--------------|----------------------------------------------------------------------------------------------------------------|-----------------------------|--------|-----------------------------------------------------------|
|              |                                                                                                                | BHEL                        | Bidder |                                                           |
| <b>3.1</b>   | <b>ESTABLISHMENT</b>                                                                                           |                             |        |                                                           |
| <b>3.1.1</b> | <b>FOR CONSTRUCTION PURPOSE:</b>                                                                               |                             |        |                                                           |
| a            | Open space for office (as per availability)                                                                    |                             |        | Location shall be finalized after joint survey with IOCL. |
| b            | Open space for storage (as per availability)                                                                   |                             |        | NA                                                        |
| c            | Construction of bidder’s office, canteen and storage building including supply of materials and other services |                             | Yes    |                                                           |
| d            | Bidder’s all office equipment, office / store / canteen consumables                                            |                             | Yes    |                                                           |
| e            | Canteen facilities for the bidder’s staff, supervisors and engineers etc                                       |                             | Yes    |                                                           |
| f            | Firefighting equipment like buckets, extinguishers etc                                                         |                             | Yes    |                                                           |
| g            | Fencing of storage area, office, canteen etc of the bidder                                                     |                             | Yes    |                                                           |
| <b>3.1.2</b> | <b>FOR LIVING PURPOSES OF THE BIDDER</b>                                                                       |                             |        |                                                           |
| a            | Open space for labour colony (as per availability)                                                             |                             | Yes    | Bidder has to take care.                                  |
| b            | Labour Colony with internal roads, sanitation, complying with statutory requirements.                          |                             | Yes    |                                                           |
| <b>3.2.0</b> | <b>ELECTRICITY</b>                                                                                             |                             |        |                                                           |
| <b>3.2.1</b> | <b>Electricity For construction purposes of Voltage 415/440 V</b>                                              |                             |        |                                                           |
| a            | Single point source                                                                                            |                             | Yes    | NA                                                        |
| b            | Further distribution including all materials, Energy Meter, Protection devices and its service                 |                             | Yes    |                                                           |
| c            | Duties and deposits including statutory clearances if applicable                                               |                             | Yes    |                                                           |

| S. No. | Description<br><b>PART I</b>                                                                    | Scope / to be taken care by |        | Remarks                                                                                                                   |
|--------|-------------------------------------------------------------------------------------------------|-----------------------------|--------|---------------------------------------------------------------------------------------------------------------------------|
|        |                                                                                                 | BHEL                        | Bidder |                                                                                                                           |
| 3.2.2  | <b>Electricity for the office, stores, canteen etc of the bidder</b>                            |                             |        | Electricity shall be provided by IOCL at one point on chargeable basis. Further distribution shall be done by contractor. |
| a      | Single point source                                                                             |                             | Yes    |                                                                                                                           |
| b      | Further distribution including all materials, Energy Meter, Protection devices and its service  |                             | Yes    |                                                                                                                           |
| c      | Duties and deposits including statutory clearances if applicable                                |                             | Yes    |                                                                                                                           |
| 3.2.3  | <b>Electricity for living accommodation of the bidder’s staff, engineers, supervisors etc</b>   |                             | Yes    | .                                                                                                                         |
| a      | Single point source                                                                             |                             | Yes    |                                                                                                                           |
| b      | Further distribution including all materials, Energy Meter, Protection devices and its service  |                             | Yes    |                                                                                                                           |
| c      | Duties and deposits including statutory clearances if applicable                                |                             | Yes    |                                                                                                                           |
| 3.3.0  | <b>WATER SUPPLY</b>                                                                             |                             |        |                                                                                                                           |
| 3.3.1  | <b>For construction purposes</b>                                                                |                             |        | Water shall be provided by IOCL at one point on chargeable basis. Further distribution shall be done by contractor.       |
| a      | Making the water available at single point                                                      |                             | Yes    |                                                                                                                           |
| b      | Further distribution as per the requirement of work including supply of materials and execution |                             | Yes    |                                                                                                                           |
| 3.3.2  | <b><u>Water supply for bidder’s office, stores, canteen etc</u></b>                             |                             |        |                                                                                                                           |
| a      | Making the water available at single point                                                      |                             | Yes    |                                                                                                                           |

| S. No.       | Description                                                                                           | Scope / to be taken care by |        | Remarks                  |
|--------------|-------------------------------------------------------------------------------------------------------|-----------------------------|--------|--------------------------|
|              |                                                                                                       | BHEL                        | Bidder |                          |
|              | <b>PART I</b>                                                                                         |                             |        |                          |
| b            | Further distribution as per the requirement of work including supply of materials and execution       |                             | Yes    |                          |
| <b>3.3.3</b> | <b><u>Water supply for Living Purpose</u></b>                                                         |                             |        | Bidder has to take care. |
| a            | Making the water available at single point                                                            |                             | Yes    |                          |
| b            | Further distribution as per the requirement of work including supply of materials and execution       |                             | Yes    |                          |
| <b>3.4.0</b> | <b>LIGHTING</b>                                                                                       |                             |        |                          |
| a            | For construction work (supply of all the necessary materials)<br><br>1. At bidder's office/ area      |                             | Yes    |                          |
| b            | For construction work (execution of the lighting work/ arrangements)<br><br>1. At bidders office/area |                             | Yes    |                          |
| c            | Providing the necessary consumables like bulbs, switches, etc during the course of project work       |                             | Yes    |                          |
| d            | Lighting for the living purposes of the bidder at the colony / quarters                               |                             | Yes    |                          |
| <b>3.5.0</b> | <b>COMMUNICATION FACILITIES FOR SITE OPERATIONS OF THE BIDDER</b>                                     |                             |        | Bidder has to take care  |
| a            | Téléphone, fax, internet, e-mail etc.                                                                 |                             | Yes    |                          |
| <b>3.6.0</b> | <b>COMPRESSED AIR wherever required for the work</b>                                                  |                             | Yes    | Bidder has to take care  |
| <b>3.7.0</b> | <b>Demobilization of all the above facilities</b>                                                     |                             | Yes    | Bidder has to take care  |
| <b>3.8.0</b> | <b>TRANSPORTATION</b>                                                                                 |                             |        | Bidder has to take care  |
| a            | For site personnel of the bidder                                                                      |                             | Yes    |                          |

| S.<br>No. | Description<br><br><b>PART I</b>                                                                                      | Scope / to be taken<br>care by |        | Remarks |
|-----------|-----------------------------------------------------------------------------------------------------------------------|--------------------------------|--------|---------|
|           |                                                                                                                       | BHEL                           | Bidder |         |
| b         | For bidder’s equipment and consumables (T&P, Consumables etc)                                                         |                                | Yes    |         |
| 3.9       | <b>Work Permits, gate pass etc. from customer for inward and outward movement of manpower, machinery and material</b> |                                | Yes    |         |

## **Chapter IV-Time Schedule**

### **4.1 Time Schedule**

#### **4.1.1**

The site office establishment services for this project shall be completed within 11 (Eleven) months from the date of commencement of site work.

#### **4.1.2**

During the total period of contract, the contractor has to carry out the activities in a phased manner as required by BHEL.

#### **4.1.3**

The Material Handling work shall be commenced as may be stipulated in the letter of intent and shall be deemed as completed in all respect only when the project is completed and the decision of BHEL in this regard shall be final and binding of the contractor.

#### **4.1.4**

Overall project schedule for this Project shall be as mutually agreed between BHEL & bidder.

### **4.2 Commencement of Contract Period**

The date of commencement of contract period shall be within one week of issue of LOI or from date of the mutually agreed date between the bidder and BHEL engineer to start the work. In case of discrepancy, the decision of BHEL engineer will be final.

Commencement of services pertaining to line item A and B may vary and decision for the same shall be based on sole discretion of BHEL. Contractor shall mobilize the resources accordingly.

### **4.3 Mobilization for material Handling & Associate works.**

#### **4.3.1**

Vendor shall reach at site & deploy all the minimum T&P's, Consumable, and Manpower along with Bidder's site establishment as per directions of Construction Manager/ Project Manager of BHEL

#### **4.3.2**

In order to meet above schedule in general, and any other intermediate targets set, to meet customer / project schedule requirements, contractor shall arrange & augment all necessary resources from time to time on the instructions of BHEL.

### **4.4 CONTRACT PERIOD**

The contract period for completion of entire work under scope shall be **11 (Eleven) months** from the —COMMENCEMENT OF CONTRACT PERIOD as specified earlier for completion of the entire work under this package.

#### **4.5 GUARANTEE PERIOD**

The guarantee period of twelve months shall commence from the date of completion of all works as certified by the BHEL site engineer.

#### **4.6 PROTECTION OF WORK**

The contractor shall have total responsibility for protecting his works until it is taken over by the Employer. No claim will be entertained by the Employer or the representative of the Employer for any damage or loss to the Contractor’s works and the Contractor shall be responsible for complete restoration of the damaged works to original conditions to comply with the specification and drawings. Should any such damage to the Contractor’s Works occur because of other party not being under his supervision or control, the Contractor shall make his claim directly with the party concerned.

If disagreement, conflict, or dispute develops between the Contractor and the other party or parties concerned regarding the responsibility for damage to the Contractor’s Works the same shall be rectified. The Contractor shall not cause any delay in the repair of such damaged Works because of any delay in the resolution of such disputes. The Contractor shall proceed to repair the Work immediately and no cause thereof will be assigned pending resolution of such disputes.

#### **4.7 Important Milestones**

4.7.1 Establishment of Construction power distribution arrangement shall be completed within 30 Days from the date of commencement of work.

4.7.2 Supply and installation of one time site office services, shall be completed within 21 Days from the date of commencement of work.

## **Chapter V- DG Specification**

### **Technical Spec for DG Set-Silent DG**

#### **Diesel Engine**

New Kirloskar /CUMMINS/or any other reputed brands with silent version, cabling to the load to be included. 3 cylinder, inline, 4 stroke cycle, water cooled natural aspirated, developing rated power at 1500 RPM under NTP condition of BS:5514. The engine shall be provided with electrical starting arrangement & shall give the rated electrical output at 0.8 pf, 415V at the alternator terminal.

#### **Alternator**

Single bearing alternator suitable for operation generating on required KVA rating at 1500 RPM, 415 Volts, 0.8 pf(lag) suitable for 50 Hz ,3 phase, 4 wired system, confirming to BS5000/IS 4722. The Alternator is brushless type, screen protected, revolving field, self-excited, self-generated through an AVR. The alternator should have the following feature

±1.0% Voltage regulation (max) in static conditions

IP: 23 protections with insulation class H

Permissible overload of 10% for one Hr in 12 Hours of operation

## **Chapter VI- Scope of Monthly Site Office Services**

**As per price bid format.**

**Note:**

1. In case of any short supply of service (s) of any item, BHEL reserves the right to get that done at risk & cost of contractor. Actual cost of that service and 5% administrative charges shall be deducted from contractor’s respective RA bills.

### Chapter VII: Schedule of Quantities-Catering Services

| Sl No | Item Description                                                                                                                                                       |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | Providing services of Cook cum care taker-1 No (Including food cost of cook)                                                                                           |
| 2     | Providing services of Helper-1 Nos (Including food cost of helper)                                                                                                     |
| 3     | Providing cooking utensils, vessels, crockeries and cutleries and appliances for 10 person                                                                             |
| 4     | Providing, service and maintenance of Cooking gas stove with gas connection (Two cylinder) including refilling of cylinders every month (Or as required)               |
| 5     | Providing, service, maintenance of refrigerator, 220Litre, Single door                                                                                                 |
| 6     | Providing dining table (3" X 6") with 6 Chairs-1 set                                                                                                                   |
| 7     | Providing, service and maintenance of RO/Aqua guard Water purifier, 8 Liter                                                                                            |
| 8     | Providing services of ‘cleaning the cooking and serving premises’ including supply consumables for cleaning (Broom, harpic, detergent, cleaning clothes, brushes etc.) |

**Note:**

1. In case of any short supply of service (s) of any item, BHEL reserves the right to get that done at risk & cost of contractor. Actual cost of that service and 5% administrative charges shall be deducted from contractor’s respective RA bills.

## **Chapter VIII- General**

### **1.0 GENERAL**

- 1.1 All the work shall be carried out as per the instructions of BHEL engineer. BHEL engineer’s decision regarding the correctness of the work and method of working shall be final and binding on the Bidder.
- 1.2 The Bidder shall at his cost perform any services, tests etc, although not specified but nevertheless required for the completion of work.
- 1.3 If any portion of the work is found to be defective in workmanship or not conforming to BHEL requirements ,the Contractor shall re-do the work at his cost failing which the work will be got done by BHEL at the cost and risk of the contractor.
- 1.3 The terminal points as decided by BHEL shall be final and binding on the Contractor.
- 1.4 All tools and tackles, fixtures, equipment, materials, manpower, supervisors/ engineers, consumables etc. required for this scope of work shall be provided by the Contractor. All expenditure including taxes and incidentals in this connection will have to be borne by him unless otherwise specified in the relevant clause.
- 1.5 The contractor shall make adequate security arrangements including employment of security personnel and ensure protection from theft, fire, pilferage, damage and loss of materials/equipment kept under bidder custody.
- 1.6 All equipment shall be handled very carefully to prevent any damage or loss. No bare wire ropes, slings etc, shall be used for handling of the equipment without the specific permission of the engineer.
- 1.7 Contractor shall ensure proper housekeeping and remove all scrap materials periodically from various work area covered in the scope and deposit the same at the place earmarked for this purpose. In case of contractor’s failure to do the same, BHEL reserves the right to remove scrap at contractor's cost and risk.
- 1.8 Access to site for inspection by BHEL and customer engineers shall be made available by the contractor at all times.
- 1.9 Contractor shall mobilize sufficient quantity of sleepers for stacking of materials in his custody.
- 1.10 Site Inspection: The owner/employer / BHEL or his authorized agents may inspect various stages of work during the period of contract awarded to him. The contractor shall make necessary arrangements for such inspection and carryout the rectification pointed out by the owner/employer without any extra cost. No cost whatsoever for such duplication of inspection/work will be entertained.

- 1.11 Filed Quality Assurance Formats: It is the responsibility of the contractor to collect and fill up relevant FQA Log sheets and present the same to BHEL after carrying out the necessary checks as per the log sheets and obtaining the signature of BHEL/Customer in token of their acceptance. Monthly Running Bill Payment to the contractor will be linked with the submission of these log sheets.
- 1.12 The contractor agrees to indemnify the company against all claims and losses arising as a liability under the Payment of Wages Act, Employees Provident Fund & Miscellaneous Provisions Act, Industrial Disputes Act, Employees State Insurance Act, Contract Labour (Regulation and Abolition) Act, Workmen’s Compensation Act, Arbitration Act, Minimum Wages Act, Inter State Migration Act, etc. or criminal law in force so far as they relate to security personnel employed by the contractor for the company.
- 1.13 Income Tax or any other statutory dues liable to be paid by the contractor shall be recovered from the bills of the contractor for which TDS certificate will be issued by BHEL.
- 1.14 With regard to the interpretation of the terms and conditions of this contract, the decision of the Head of the Region/BHEL PE&SD shall be final.
- 1.15 Any dispute arising out of this contract shall be within the jurisdiction of the Court of Hyderabad only.
- 1.16 Any addition/ deletion on the scope of work and terms and conditions under this contract shall be implemented based on mutual discussions between the “company” and the “contractor”.
- 1.17 Letter of Award No ----- issued by BHEL/PE&SD, Hyderabad (including the enclosures) shall form the integral part of this agreement.
- 1.18 In witness hereof the parties have respectively set their signature in the presence of:

- I. All vehicles/ electrical motors devices shall have to be provision of fire extinguisher/muffler facilities etc.
- II. Contractor shall provide FIRST AID / emergency medical facilities and maintain these facilities throughout the contract period & extension period (if any) as scope of work.
- III. For any items or class of work not specified herein but required for total completion of work, the same shall be carried out as per BHEL requirement. However, payment of these items/class of work shall be regulated on the basis of rate arrived by the following method:
  - 1) Based on unit rate of items in the rate schedule.
  - 2) Wherever any item rate for similar type of work or nearby item rate does not exist in the rate schedule, rate will be worked out on the basis of work element or from fundamentals of estimation.

## **Chapter IX- Manpower Requirement**

### **1 MANPOWER REQUIREMENT FOR MATERIAL HANDLING SHALL AS FOLLOWS:**

- 1.1 The Site in charge of contractor shall be provided with PCs and good communication facilities like telephone, fax, email etc. at the cost and expense of the contractor. Lack of communication facilities shall not be an excuse for extension of completion date.
- 1.2 All instructions from BHEL/Customer shall be directed to the contractor through the Site in-charge and he shall be responsible for all the contractor’s activities at site. The contractor shall name his authorized representative prior to or immediately on commencement of operations at site
- 1.3 The Site In charge shall be present at site during all normal working hours and his contact address after normal working hours shall be made available to BHEL so that if any emergency arises, the presence of the contractor’s site Representative at site can be called for.
- 1.4 The contractor shall not change the site Representative without the consent of BHEL. Should BHEL require the replacement of the contractor’s site Representative for justifiable reasons (including inadequate progress of work) the contractor shall ensure that replacement is made as soon as possible and work is not allowed to suffer delay on this account.
- 1.5 The contractor shall provide to the satisfaction of BHEL sufficient and qualified staff for the execution of works. If and whenever any of the contractor’s staff is found guilty of any misconduct or be incompetent or insufficiently qualified in the performance of his duties the contractor shall remove them from site as directed by Site Engineer.
- 1.6 The contractor shall ensure that all his supervisor’s staff and workmen conduct themselves in a proper manner. They shall all be persons who are familiar with and skilled at the jobs allocated to them. Any misconduct / inefficiency noted on the part of the contractor’s personnel shall be brought to the attention of the contractor’s site representative who shall immediately take such action as necessary including the removal of such misconducting / inefficient persons, if so required by the Engineer-in-Charge.
- 1.7 The contractor shall ensure that replacement for such persons removed from site is provided immediately and the work is not allowed to suffer delay on that account.

## **Chapter X- Documentation**

### **1 DOCUMENTATION**

1.1 The following information shall be furnished within one weeks of award of contract for purchaser’s approval

- a) Mobilization Plan
- b) Detailed organization chart
- c) Details of T&P available with contractors with document proofs.

1.2 The following information shall be furnished after testing and inspection:

- d) Revalidation of Test certificates of various T&P’s, if certificates are found to be invalid or any discrepancies/abnormalities observed in T&P’s during execution.

## Chapter XI- Termination

### 5 **TERMINATION:**

Notwithstanding anything contained herein the contract may be terminated with due notice of one month on either side.

WITNESS

(with full address)

- 1.
- 2.

Signature of the Contractor

(To be signed by a person holding valid  
Power of Attorney of the Company)

WITNESS

- 1.
- 2.

For and on behalf of  
BHARAT HEAVY ELECTRICALS LIMITED

## **Chapter XII: Obligations of the Contractors**

1.1 The contractor shall fully comply with the following enactments:

- (a) Contract Labour (R & A) Act, 1970 and rules formed therein under Central Rules.
- (b) Minimum Wages Act 1948 (Wage Rates not less than that notified by State Labour Department / Central Labour Dept., / BHEL whichever is higher from time to time).
- (c) Payment of Wages Act.
- (d) ESI Act, 1948
- (e) EPF Act, 1952
- (f) Employees’ Compensation Act, 1923.
- (g) Provisions of Factories Act 1948 & Rules thereof
- (h) The inter-state migrant workmen (regulation of employment and conditions of service) Act, 1979
- (i) Payment of Bonus Act, 1965
- (j) Payment of Gratuity Act, 1972

1.2 The contractor shall obtain License from the Assistant Labour Commissioner (Central), or appropriate government if he engages twenty or more workmen.

1.3 The Contractor shall produce the following Registers and forms before commencement of work, for verification by the Executing Officer.

- (a) Form XII - Register of contractors
- (b) Form XIII - Register of workmen employed by contractor (Rule 75)
- (c) Form XIV - Employment card issued by contractor (Rule 76)
- (d) Form XVI - Muster Roll (Rule 78(1)(a)(i))
- (e) Form XVII - Register of wages (Rule 78(1)(a)(i))
- (f) Form XVIII - Register of wages-cum Muster Roll (in case of weekly payment)
- (g) Form XIX - Wage Slip (Rule 78(b))
- (h) Form XX - Register of deduction for damages or loss (Rule 78(1)(a)(ii))
- (i) Form XXI - Register of files(Rule 78(1)(a)(ii))
- (j) Form XXII - Register of advances(Rule 78(1)(a)(ii))
- (k) Form XXIII - Register of overtime(Rule 78(1)(a)(iii))
- (l) Form XXIV - Return to be sent by the contractor to licensing officer (Rule 82(1))

1.4 The contractor shall make himself or his representative (supervisor) available at the work spot every day during execution of work, for effective supervision.

1.5 The contractor shall attend to all inspections notified/conducted by the Human Resource department, Labour department, P.F. authorities, Inspector of Factories, ESI inspectors, or any other such authorities.

1.6 Non-compliance of any provisions under the act/rule/instructions/guidelines shall make the contractor liable for penal action including termination of contract.

1.7 Contractor shall furnish in a separate letter his place of residence and postal address. The delivery at the above named place or posting in a Post Box regularly maintained by the Post and Telegraph Department or sending letters registered for acknowledgement of any notice, letter or other communication to the contractor shall be deemed sufficient service there upon he contractor. Change in address shall come into force at any time by an instrument executed by the contractor and delivered to the BHEL official who has signed the contract.

1.8 The contractor must satisfy himself by personal study thoroughly the scope of proposed work in detail and all conditions affecting the work before entering into the contract. There shall not be at any time, dispute/complaint of any nature regarding scope of work and interpretation of specifications or any misunderstanding with regard to nature or omission of the work to be done nor shall any application for compensation in terms of time and money shall be accepted by BHEL regarding the above.

1.9 Contractor shall in his absence keep competent agent constantly on the works and any directions or explanations given by the "Contract Executing Officer" or his representative to such agent shall be held to have been given to the contractor himself.

1.10 Contractor on the advice of BHEL officials shall immediately remove any person employed by him, who may in the opinion of the BHEL official, is incompetent or involves himself in misconduct. Such persons shall not be again employed on the works without written permission of the BHEL official.

1.11 The contractor shall give all notices required by the Acts, regulation, bye laws, Legal Acts and pay all fees in connection therewith unless and otherwise arranged and decided in writing with BHEL. He shall also ensure that no attachments are made against materials or work forming part of or for the use of the contractor. In all such cases, contractor shall protect and indemnify BHEL against any claim or liability arising from or based on the violation of any such laws, ordinances, regulations, orders, decrees or attachment either by himself or by his employees.

1.12 It shall be contractor's sole responsibility to protect the public and his employees against

accident from any cause and provide required safety equipment and shall indemnify BHEL against any claims for damages for injury to the person or property resulting from any such accidents and shall, where the provisions of the Employees Compensation Act and Public Liability Act as applicable, take steps to properly insure against any claims thereunder.

1.13 In the event of any accident in respect of which compensation may become payable under the Employees Compensation Act, VIII of 1923 whether by the contractor or by BHEL as Principal Employer, it

shall be lawful for BHEL to retain out of monies due and payable to the contractor such sum or sums of money as may, in the opinion of BHEL shall be final in regard to all matter arising in this clause.

1.14 No work shall be done on Sundays or on other declared Holidays of BHEL without the written permission of BHEL officer in charge of the work. The contractor shall comply with the provisions of the Factories Act 1948 if the same are applicable. No contract labour shall be engaged on any National Holidays.

1.15 The contractor shall keep his work place clean and safe to avoid injuries to men and damage to finished products / equipment.

1.16 On the occurrence of an accident, which results in the death of any of the workmen employed by the contractor or which is so serious as to be likely to result in the death of any such workmen, the contractor shall within 24 hours of the happening of such an accident intimate in writing to the BHEL official in charge of the work.

1.17 The contractor shall indemnify BHEL against all losses or damages sustained by BHEL resulting directly or indirectly from his failure to give intimation in the manner aforesaid including the penalties or dues if any and become payable by BHEL, as a consequence of failure, BHEL to give notice under the Employees Compensation Act 1923 or otherwise confirm to the provisions of the said Act in regard to such accident.

1.18 The contractor shall ensure adherence to all statutory requirements applicable to BHEL.

1.19 The contractor shall ensure abidance by all the labour laws especially including Contract labour (R&A) Act 1970, Payment of Wages Act 1936, Employees Compensation Act 1923, Minimum Wages Act 1948, ESI Act 1948, Payment of Bonus Act 1965, and Provident Fund Misc. Prov. Act 1952, as amended from time to time.

1.20 The contractor shall comply with provisions of Provident Fund Misc. Prov. Act 1952 through PF code allotted to him / her.

1.21 Notwithstanding the above clause, in case of any financial loss incurred by company on account of contravention of the Provident Fund regulations or any regulations of rule touching the same by the contractor, the contractor shall submit an undertaking to indemnify the company to the extent of the loss incurred by the company.

1.22 The contractor should engage only those laborers whose age is 18 (eighteen) years or more.

1.23 The contractor shall not resort to subcontracting under any circumstances without prior permission of BHEL. If found sub-contracting at a later date, BHEL reserves the right to take whatever action it deems fit, including cancellation of the Contract.

1.24 The contractor shall provide the required safety equipment to the labors engaged by him / her.

1.25 Contractor shall issue "Employment Card" as per statute to all labour and supervisors covered under the job work contract.

1.26 The contractor shall be responsible to settle any grievances of the labour deployed by him / her within two weeks.

**Chapter XIII: HSE (Health, Safety, Environment) and PPE (personal Protective Equipment)  
Guidelines**

1. Contractor shall follow all the HSE guidelines as mentioned chapter IX off SCC and IOCL (Annexure-1).
2. In case of any dispute/ contradiction, IOCL HSE rules and guidelines shall prevail.

## **Chapter XIV- Statutory Regulation**

**6.1 BUILDING & OTHER CONSTRUCTION WORKERS (REGULATION OF EMPLOYMENT AND CONDITIONS OF SERVICE) ACT, 1996 (BOCW Act) AND RULES OF 1998 READ WITH BUILDING & OTHER CONSTRUCTION WORKERS CESS Act, 1996 & CESS RULES, 1998 and**

**INTER-STATE MIGRANT WORKMEN ACT, 1979 (IN CASE BIDDER ENGAGE MANPOWER FROM OTHER STATE)**

In case any portion of work involves execution through building or construction workers and/or inter-state migrant workers, then compliance to the above titled Acts as applicable shall be ensured by the contractor and contractor shall obtain license and deposit the cess under the Act. In the circumstances, it may be ensured as under:-

It shall be the sole responsibility of the contractor in the capacity of employer to forthwith (within a period of 15 days from the award of work) apply for a license to the Competent Authority under the BOCW Act and/or ISMW Act as applicable and obtain proper certificate thereof by specifying the scope of its work. It shall also be responsibility of the contractor to furnish a copy of such certificate of license / permission to BHEL within a period of one month from the date of award of contract.

It shall be the sole responsibility of the contractor as employer to ensure compliance of all the statutory obligations under these acts and rules including that of payment / deposit of cess as per the applicability under above referred Acts within a period of one month from the receipt of payment.

It shall be the responsibility of the sub-contractor to furnish the receipts / challans towards deposit of the cess together with the number, name and other details of beneficiaries (building/Inter-state Migrant workmen) engaged by the sub-contractor during the preceding month.

It shall be the absolute responsibility of the sub-contractor to make payment of all statutory payments & compensations to its workers including that is provided under the Workmen’s Compensation Act, 1923.

**Volume IA**  
**Part II**  
**Technical Specification**  
**(For Construction Power Distribution arrangement services)**

## Chapter-I: Technical specification for Electrical Works

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### ANNEXURES

| <b>SL. NO.</b> | <b>ANNEXURE NO.</b> | <b>DESCRIPTION</b>                                                           |
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| <b>1.0</b>     | Annexure-III        | Construction Power Supply Arrangement SLD, Dwg. No. PY-DL-3-M170-1101-01 R00 |

## 1.0 INTENT OF SPECIFICATION:

This specifications covers the design, manufacture, assembly, testing at manufacturer’s works, packing and transportation to site of Feeder Pillars Package for Construction Power, complete with all accessories, for efficient and trouble free safe operation.

It is not the intent to specify completely herein all details of the equipment; nevertheless, the equipment shall be complete and operative in all respects and shall confirm to the highest standard of engineering, design and workmanship.

## 2.0 SITE CONDITIONS:

| <b>Sl. No.</b> | <b>Description</b>                  | <b>Data</b>                                |
|----------------|-------------------------------------|--------------------------------------------|
| <b>1</b>       | Project                             | 525 TPD Standby SRU, IOCL                  |
| <b>2</b>       | Site Location                       | Paradip, Odisha                            |
| <b>3</b>       | Elevation Above MSL                 | Minimum 3.91 m above Indian Mean Sea Level |
| <b>4</b>       | Maximum Ambient Temperature         | 42.4°C                                     |
| <b>5</b>       | Minimum Ambient Temperature         | 11.3°C                                     |
| <b>6</b>       | Design Maximum Temperature          | 42.4°C                                     |
| <b>7</b>       | Design Minimum Temperature          | 11.3°C                                     |
| <b>8</b>       | Design Ambient Temperature          | 40°C                                       |
| <b>9</b>       | Relative Humidity (Average Monthly) | Maximum 95%, Minimum 55%                   |
| <b>10</b>      | Seismic Zone                        | Zone-III of Seismic Zoning Map of India    |

## 3.0 PURPOSE:

- 3.1 The Feeder Pillars under this enquiry are envisaged as part of construction power supply system of above project. The purpose of Feeder Pillars is distribution of power supply to various construction equipments required to carry out erection and commissioning of the above project.
- 3.2 Typical electrical loads that may be connected to the Feeder Pillars are grinding machines, welding machines, bending machines, drilling machines, dewatering pump sets, lighting etc.

## 4.0 SCOPE OF SUPPLY:

- 4.1 **Supply of Feeder Pillars.**
- 4.2 **Supply of Incoming side Power Cables for each Feeder Pillar.**

4.3 **Supply of Cable Glands and Lugs for Feeder Pillar end for all Incoming side Power Cables.**

4.4 **Supply of Above Ground Earthing Materials.**

## 5.0 **CODES AND STANDARDS:**

5.1 The equipment to be furnished under this specification shall be in accordance with the applicable section of the latest version of the following BIS standards unless otherwise specified:

| <b><i>Standard</i></b>            | <b><i>Description</i></b>                                                                                 |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b><i>IS 60947</i></b>            | LV Switchgear and controlgear                                                                             |
| <b><i>IS 60529</i></b>            | Degree of protection                                                                                      |
| <b><i>IS 8623, IS 61439</i></b>   | Factory built assemblies of switchgear & controlgear for voltages up to & including 1000 V AC & 1200 V DC |
| <b><i>IS 10118</i></b>            | Code of practice for installation & maintenance of switchgear                                             |
| <b><i>IS 5578 &amp; 11353</i></b> | Guide for uniform system of marking and identification of conductors and apparatus terminals              |
| <b><i>IS 13703</i></b>            | HRC cartridge fuses                                                                                       |
| <b><i>IS 4237</i></b>             | General Requirements for Switchgear and Control gear for Voltages not exceeding 1000 V                    |
| <b><i>IS 5</i></b>                | Colors for ready mixed Paints and Enamels                                                                 |
| <b><i>IS 6875</i></b>             | Switches and Push Buttons                                                                                 |
| <b><i>IS 8828</i></b>             | Miniature circuit breaker                                                                                 |
| <b><i>IS 2705</i></b>             | Current transformers                                                                                      |
| <b><i>IS 3231</i></b>             | Relays                                                                                                    |
| <b><i>IS 1248</i></b>             | Indicating instruments                                                                                    |
| <b><i>IS 8530</i></b>             | AC electricity meters                                                                                     |
| <b><i>IS 3202</i></b>             | Climate proofing of electrical equipment                                                                  |

|                |                                                                      |
|----------------|----------------------------------------------------------------------|
| <b>IS 6005</b> | Code of practice for Phosphating iron & steel                        |
| <b>IS 5082</b> | Wrought aluminium & aluminium alloys for electrical purposes         |
| <b>IS 694</b>  | PVC insulated cables for working voltages up to and including 1100 V |
| <b>IS</b>      |                                                                      |

- 5.2 The equipment shall also confirm to the provisions of Indian Electricity Rules and other statutory regulations currently in force in the country.
- 5.3 In case Indian Standards are not available for any equipment, Standards issued by the IEC/ BS/ VDE/ IEEE/ NEMA or equivalent agency shall be applicable.

#### **6.0 ORDER OF PRIORITY:**

- 6.1 In case of any contradictions between various referred Standards/ Specifications/ Data Sheets/ Statutory regulations/ enclosed annexures, the following sequence shall be followed as order of priority:
1. Statutory regulations
  2. This specification
  3. Codes and Standards
- 6.2 In case of further contradiction among above documents, it is bidder’s responsibility to highlight the same during bid stage itself. Else, BHEL’s decision shall be final during execution. The same shall be complied without any time/ cost implication to BHEL.

#### **7.0 GENERAL REQUIREMENTS:**

- 7.1 The offered equipment shall be brand new with state of art technology and proven field track record. No prototype equipment shall be offered.
- 7.2 Only major relays, meters and controls are indicated in the SLD. Any auxiliary relays, timers, switches, contactors, contacts, indications etc. as required while developing the control schematics and felt necessary for safe operation, even if these are not specifically mentioned, shall be supplied without any time and price implications.

## 8.0 TECHNICAL REQUIREMENTS:

### 8.1 Operating Conditions:

| <i>Sl. No.</i> | <i>Description</i> | <i>Data</i>                                                 |
|----------------|--------------------|-------------------------------------------------------------|
| <b>1</b>       | Voltage            | 415V $\pm$ 10%                                              |
| <b>2</b>       | No. of Phases      | 3-phase                                                     |
| <b>3</b>       | Frequency          | 50Hz $\pm$ 5 %                                              |
| <b>4</b>       | Fault Level        | As specified in SLD                                         |
| <b>5</b>       | System Earthing    | Solidly Earthed                                             |
| <b>6</b>       | Auxiliary Supply   | 240V $\pm$ 10%, 1-ph, 50Hz AC                               |
| <b>7</b>       | Control Supply     | 240V AC for Indication Lamps, ELR and other Control Circuit |

### 8.2 Feeder Pillars:

8.2.1 The Feeder Pillars of following ratings shall be supplied:

415V 63A Feeder Pillar - 1 no.  
 415V 125A Feeder Pillar - 1 no.  
 415V 250A Feeder Pillar - 1 no.

Feeder details are as per attached Annexure-III i.e. Construction Power Supply Arrangement SLD, Dwg. No. PY-DL-3-M170-1101-01 R00.

8.2.2 The Feeder Pillars shall be **Weatherproof** suitable for installation and satisfactory operation in **outdoor area**. The service conditions shall be considered as typical of a refinery/ petrochemical plant within a coastal environment. The atmosphere is to be considered saliferous, sulphurous and dusty.

8.2.3 All the equipment described in this specification is intended for continuous duty at the specified ratings under the specified ambient conditions.

8.2.4 The equipment design shall be suitable to render satisfactory operation under the conditions prevailing at site, and the equipment shall operate satisfactorily under normal load and voltage variations. The design shall further include all necessary provisions ensuring the safety of the operating and maintenance personnel.

8.2.5 All equipments shall be capable of carrying their full load currents without undue heating.

8.2.6 Minimum degree of enclosure protection shall be **IP 55** for the Feeder Pillars. Additionally, GI/ FRP canopy shall be provided.

- 8.2.7 **The Feeder Pillars shall be of non-compartmentalized design.**
- 8.2.8 The doors and enclosure shall be made from 2.0 mm thick CRCA sheet steel while the gland plate shall be made from 3.0 mm thick CRCA sheet steel.
- 8.2.9 The Feeder Pillars shall be suitable for mounting on brick/ RCC pedestal and necessary hardware shall be provided for mounting.
- 8.2.10 Operating height for any component shall not exceed 1600 mm.
- 8.2.11 Continuous lifting angle or lifting hooks shall be provided to facilitate installation.
- 8.2.12 Close fitting, gasketed, hinged, lift-off doors shall be provided. The doors shall be provided with integral lock and master key.
- 8.2.13 The Feeder Pillars shall be vermin proof.
- 8.2.14 All potential free contacts including unused contacts shall be duly wired to the terminal block.
- 8.2.15 All incoming and outgoing connections will be by cables entering from bottom.
- 8.2.16 Removable gland plates shall be provided and adequate working clearance shall be ensured for the termination of cables.
- 8.2.17 The Feeder Pillar shall be provided with door switched lighting fixture, single phase 5/15A socket for power outlet and space heater with thermostatic control.
- 8.2.18 Bus bar conductors/ links shall be made of Aluminium. All connections shall be in accordance with the best modern practice.
- Adequate provisions must be made for the expansion and contraction of the bus bars conductors/ links and other bus bar connections with variation in temperature.
- Electrical clearances shall conform to applicable standards and shall not require cutting away of adjacent framework.
- 8.2.19 Ground bus with 50 x 6 mm Al shall be provided extending throughout the length. All metallic parts not forming part of the live circuits, all instrument transformer terminals to be earthed and other earthing terminals as well as all cable screens shall be connected to the earthing bar. Doors and movable parts shall be connected to the earth bus with flexible copper connections.
- Each end of this bus shall be drilled and provided with suitable bolts and nuts for connection to 50x6 GI strip.

- 8.2.20 Clearances in air of live parts shall be atleast 25.4 mm between live conductors and 19.4mm for phase-to-earth. However, clearances between terminals at components shall be as per applicable individual standards for components.

- 8.2.21 All instruments, control knobs and indicating lamps shall be flush mounted on the front side.

The meters shall be of standard size (atleast 72 x 72 mm). The front glasses shall be non-reflecting anti-glare type.

All instruments shall be dust and moisture-proof.

AC ammeters and voltmeters shall be analog/ digital type of not less than 1.5 accuracy class.

- 8.2.22 Moulded Case Circuit Breakers: MCCBs shall be of single break type having one pole per phase. These shall be of 2 or 3-pole type as required having adjustable thermal magnetic release for overload and short circuit protection, with "On-Trip-Off", indicating/ operating mechanism.

MCCBs shall be manually operated and shunt trip type.

- 8.2.23 CBCT and ELR: The CBCT and ELR shall be provided for earth fault currents of range 30mA-30A.

- 8.2.24 Terminal Blocks: All terminal blocks shall be mounted in an accessible position with the spacing between adjacent blocks not less than 100 mm and space between the bottom blocks and the cable gland plate being a minimum of 200 mm.

Sufficient terminals shall be provided to allow for the connection of all incoming and outgoing cables of sizes as mentioned in the attached SLD.

Terminal blocks shall be provided with mounting identification numbers and/or letters.

Terminals shall be of the channel mounting type and shall comprise a system of individual terminals so that terminal blocks can be formed for easy and convenient cabling.

Not more than two conductors shall be connected under one terminal clamp.

The live terminals shall be shrouded to avoid accidental contact.

Current transformer terminal blocks shall have provisions for short-circuiting and disconnecting.

Control circuits and power circuits shall be completely separated by use of divided or separate terminal blocks.

Atleast 10% spare terminals shall be provided.

- 8.2.25 Wiring: All secondary and control wiring shall be stranded copper; PVC insulated and shall not be smaller than 1.5 sq. mm with voltage rating 1.1 kV.

For current and potential transformer secondary circuits, the minimum cross section of the conductors shall not be less than 2.5 sq. mm with voltage rating 1.1 kV.

Larger size wiring shall be used where needed for the current carrying capacity requirements.

All connections shall be made with solder less lugs.

Wiring shall terminate at terminal blocks at one side only. Where tap connections are required, they shall be made on terminal blocks.

Splices or tee connections between terminal points are not acceptable. Wire runs shall be neatly dressed inside the panels or in wiring troughs.

8.2.26 Indicating and Signaling Lamps: Indication Lamps shall be of Clustered LED Type.

Each indicating and signaling lamp shall have a removable cap, which can be inscribed with wording and shall not be affected with the heat of the lamp.

Light bulbs shall be replaceable from the front of the panel.

8.2.27 Name Plates: The Feeder Pillars shall be provided with suitable nameplates, identifying the name of the panel. Each feeder shall be clearly identified with suitably located nameplates. Nameplates shall also be furnished for all feeder components, instruments, lamps etc.

Warning/ Danger labels shall be provided outside and inside the Feeder Pillars.

8.2.28 The Feeder Pillars shall be provided with epoxy based powder coated painting as per manufacturer standard. Paint shade shall be 632 of IS-5.

8.3 **Cables:**

8.3.1 **Incoming side Power Cables for each Feeder Pillar shall be supplied** as per sizes mentioned in attached SLD. The length requirement is mentioned below:

4C x 50 sq. mm Al XLPE Armoured Cable: **50 m**

4C x 120 sq. mm Al XLPE Armoured Cable: **150 m**

Above cable quantity is tentative. BOQ may vary by  $\pm 20\%$  during detailed engineering. Same shall be confirmed during drawings approval.

8.3.2 Cable shall be XLPE insulated. Armour shall be GI strip wire. Inner and outer sheath of the cables shall be of PVC FRLSH compound conforming to the requirements of type ST 2 compound of IS 5831.

8.3.3 **Outgoing Power Cables are not in the scope of this enquiry.**

**8.4 Cable Glands and Lugs:**

- 8.4.1 Cable Glands and Lugs shall be supplied for Feeder Pillar end for **incoming side power cables**.
- 8.4.2 Cable sizes for incoming side power cables shall be considered as mentioned in attached SLD.
- 8.4.3 Cable glands for 3-core cables shall be weatherproof double compression nickel plated brass type and Cable lugs shall be of tinned heavy duty copper/ aluminium.

**8.5 Above Ground Earthing Materials:**

- 8.5.1 50 x 6 GI Strip - 120 m (For above ground earthing of 63A, 125A, 250A feeder pillars to nearby riser).

**9.0 INSPECTION, TESTING AND ACCEPTANCE:**

- 9.1 The Manufacturer has to supply the equipments of best quality. The Manufacturer has to maintain quality control during manufacturing of equipments as per the approved Quality Assurance Plan.
- 9.2 Before raising inspection call, manufacturer shall submit all the internal test reports/ certificates for the equipment.
- 9.3 Inspection shall be as per the approved manufacturing quality assurance plan.
- 9.4 All routine and acceptance tests as per relevant IS/IEC standards and as per approved Quality Assurance Plan shall be carried out at manufacturer's works under his care and expense.
- 9.5 All equipments supplied by vendor shall have proven design and shall comply with the requirements of type tests prescribed in the relevant IEC/IS standard. For Feeder Pillars, suitable valid type test certificate for IP Class made on equipment of similar type and capacity shall be submitted during technical bid submission and these type test certificates shall not be older than 5 years from the date of bid submission. In case valid type test certificates are not available or are older than 5 years, vendor shall conduct these tests free of cost and submit the certificates before dispatch without any time and price implications to BHEL.

**10.0 DOCUMENTATION:**

**10.1 Documents to be submitted along with the technical bid/ offer:**

- 1. Deviation schedule (Refer Cl. No. 16.0 below)
- 2. Feeder Pillar-wise GA, dimensions and weights
- 3. Type test certificate for Feeder Pillars as per relevant standards not older than 5 years for IP Class made on equipment of similar type and capacity.

**4. Check List for Bid submission (Refer Cl. No. 17.0 below).**

Technical offer of the bidder will be evaluated only on the basis of deviation schedule and Price Format. Nature of Deviations shall only be of Design/ Manufacturing constraints and non-availability of items/ components/ makes in market.

Panel dimensions are for fixing Purchaser’s tentative area layout.

Un-priced price format consists of various items required in this enquiry. All fields shall be quoted in this format only.

**Note:** No price implications shall be entertained for deviations withdrawn during the technical scrutiny. If any deviations are accepted by BHEL during technical scrutiny then also there will be no price implication. Hence, in no case there will be consideration of price implications.

**10.2 Offer is liable for rejection when**

- The offer is incomplete with respect to above clauses.
- The above documents are not submitted in BHEL’s formats.
- Any field is left blank in the Price format.
- Discrepancy is observed between Un-priced and Priced bid.

**10.3 Documents to be submitted after award of contract:**

1. GA, SLD, BoM and Schematic Drawings of Feeder Pillars
2. Power Cable Data Sheets
3. Cable Glands and Lugs BoM
4. Quality Plan
5. Catalogues/ O&M Manuals
6. Inspection Test Reports
7. Packing List

**11.0 GUARANTEE:**

11.1 The supplier shall be fully responsible in respect of design, selection of components, manufacture, and quality of workmanship and operation of all the equipments, accessories etc. supplied under this scope of contract up to the Guarantee period.

11.2 Guarantee period shall be as per the commercial terms and conditions of the NIT.

**12.0 PACKING AND DISPATCH:**

12.1 The equipment shall be properly packed for selected mode of transportation i.e. by ship/ rail or trailer. The panels shall be wrapped in polyethylene sheets before being placed in wooden cases

to prevent damage to the finish. Cases shall have skid bottoms for handling. Cases shall be suitable for lifting by cranes. Special precaution notations such as Fragile, This side up, center of gravity, weight, Owner’s particulars, Purchase order number etc. shall be clearly marked on the package together with other details as per purchase order.

- 12.2 The detailed packing list shall be furnished for BHEL's review and acceptance before seeking dispatch clearance. Vendor shall dispatch the Feeder Pillars generally with all components mounted. If, for reason of preventing transit damage or for any other reasons, the components/ items have to be packed separately and dispatched then such loose items have also to be listed in the packing list. The list shall have references duly tracing them to the respective packing box/ crate. If such loose items are not declared then it shall be deemed that there are no such loose items.
- 12.3 The equipment may be stored outdoors for long periods before installation. The packing should be suitable for outdoor storage in areas with heavy rains and high ambient temperature unless otherwise agreed.

### **13.0 SPECIAL CONDITIONS:**

- 13.1 Bidder should confirm that “after-sales service” facilities will be made available free of cost for proper commissioning/ maintenance of equipments offered. The vendor should depute their Technician/ Engineer at their cost for rectification of any defects during guarantee/ warranty period.

#### 14.0 LIST OF SUB-VENDORS:

| <b>Sl. No.</b> | <b>Item</b>                         | <b>Make/ Sub-Vendor</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1</b>       | Auxiliary Relays                    | ABB/ Alstom T&D/ Areva (now Schneider Electric)/ Easun Reyrolle/ Schneider Electric/ Jyoti/ Omran                                                                                                                                                                                                                                                                                                                                                                        |
| <b>2</b>       | Control Switches/ Selector Switches | Alstom T&D/ Hotline Switchgear & Controls/ Kaycee Industries/ L&T/ Reliable Electronic Components/ Siemens/ Switron Devices                                                                                                                                                                                                                                                                                                                                              |
| <b>3</b>       | Fuses                               | Cooper Bussman/ GE/ Havells/ L&T/ Novateur Electrical & Digital Systems/ Siemens                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>4</b>       | CT & PT                             | Controls & Switchgear/ Gilbert & Maxwell Electricals/ Kalpa/ Kappa/ L&T/ Narayan Powertech/ Pragati/ Precise/ Silkaans Electricals                                                                                                                                                                                                                                                                                                                                       |
| <b>5</b>       | MCB                                 | ABB/ C&S Electric/ Havells/ Novateur Electrical & Digital Systems/ Indiana Current Control/ Legrand/ Siemens/ Standard Electricals/ Schneider Electric                                                                                                                                                                                                                                                                                                                   |
| <b>6</b>       | MCCB                                | GE/ L&T/ Siemens/ Schneider Electric/ ABB/ Havells                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>7</b>       | Push Button & Indicating Lamps      | C&S Electric/ Essen Deinki/ Hotline Switchgear & Controls/ L&T/ Precifine Products/ Schneider Electric/ Shri Tulsi Switchgears/ Siemens/ Teknic                                                                                                                                                                                                                                                                                                                          |
| <b>8</b>       | Protection Relays                   | ABB/ Alstom/ Easun Reyrolle/ GE/ Schneider Electric/ Siemens                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>9</b>       | Power Cables                        | Govind Cable Industries/ Gupta Power Infrastructure Ltd./ Zenium Cables Limited/ Apar Industries Limited/ Elkay Telelinks Limited/ Suyog Electricals Ltd./ Torrent Power Limited (Cable Unit)/ Polycab India Limited/ Gemscab Industries Ltd./ Special Cables Pvt. Ltd./ Paramount Communications Ltd./ Delton Cables Limited/ KEI Industries Limited/ CMI Limited/ Cords Cable Industries Ltd./ KEC International Limited/ Thermo Cables Limited/ Universal Cables Ltd. |
| <b>10</b>      | Cable Glands                        | Flexpro Electricals Pvt. Ltd./ FCG Power Industries/ Kaysons Techno Equipments Pvt. Ltd./ Metal Craft Industries/ Prompt Engineering Works, Mumbai/ Flameproof Equipments Pvt. Ltd./ FCG Flameproof Control Gears/ Electromac Industries/ Braco Electricals India Pvt. Ltd./ Sigma Instruments Company                                                                                                                                                                   |
| <b>11</b>      | Cable Lugs                          | Automic Electric & Refrigeration Co/ Chetna Engineering Co./ Electromac Industries/ Braco Electricals India Pvt. Ltd./ Forward Engineering Industries/ Dowells Elektro Werke, Mumbai                                                                                                                                                                                                                                                                                     |
| <b>12</b>      | Earthing Material                   | Industrial Perforation (I) Pvt. Ltd./ Unitech Fabricators & Engineers/ Ratan Projects & Engg./ India Electricals Syndicate/ Premier Power Products/ Saral Industries/ Rajasthan Metal Smelting Co./ Anil Steels Pvt. Ltd./ Patny Systems Pvt. Ltd./ Reputed Make                                                                                                                                                                                                         |

## 15.0 DEVIATION SCHEDULE:

**ENQUIRY  
NO.**

**NAME OF BIDDER**

**ITEM**

**OFFER REF. NO.**

| <b>Sl. No.</b> | <b>Clause No. &amp; Spec. No.</b> | <b>Description as per Specification</b> | <b>Deviation Taken</b> | <b>Nature of Deviation</b> | <b>Remarks</b> |
|----------------|-----------------------------------|-----------------------------------------|------------------------|----------------------------|----------------|
| <b>1</b>       |                                   |                                         |                        |                            |                |
| <b>2</b>       |                                   |                                         |                        |                            |                |
| <b>3</b>       |                                   |                                         |                        |                            |                |
| <b>4</b>       |                                   |                                         |                        |                            |                |

### NOTES:

- Technical offer of the bidder will be evaluated only on the basis of Deviation Schedule. Deviation Schedule constitutes this sheet (with these Notes) duly signed and stamped.**
- Deviations, if any, shall be clearly brought out only in this format. Deviations mentioned/ taken elsewhere or in any other format will be ignored.
- Additional sheets in the same format can be attached by the vendor, if necessary.
- Nature of Deviations shall only be of Design/ Manufacturing constraints and non-availability of items/ components/ makes in market.
- No price implications shall be entertained for deviations withdrawn during the technical scrutiny. If any deviations are accepted by BHEL during technical scrutiny then also there will be no price implication. Hence, in no case there will be consideration of price implications.
- Reasons for the deviations shall be specified in the Remarks column.
- If there are no deviations from the specifications, bidder still has to submit the Deviation Schedule by writing “NO Deviations” in this format.
- If the “Deviation Schedule” is not submitted along with the offer, the bidder’s offer is likely to be rejected without any further interaction with the bidder.

9. Only the accepted deviations in conjunction with the original tender shall constitute the contract document for the award of job to the bidder.

**SIGNATURE OF BIDDER** \_\_\_\_\_

**NAME** \_\_\_\_\_

**DESIGNATION** \_\_\_\_\_

**DATE** \_\_\_\_\_

**COMPANY SEAL**

#### 16.0 CHECK LIST FOR BID SUBMISSION:

Check List for Bid Submission is provided below.

This Check List shall be followed for submitting the Bid documents. The Check List itself *shall be filled* by the Bidder in entirety and *mandatorily submitted* along with the Offer.

| <b>Sl. No.</b> | <b>Description</b>                                                                                                                                                                                     | <b>Bidder Confirmation</b> | <b>Comments/ Remarks</b> |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------|
| <b>1</b>       | Bidder has read <b>each</b> Clause of the Main Technical Specification ( <b>PY55431</b> ) and <b>all</b> its Annexures.                                                                                | <b>YES/ NO</b>             |                          |
| <b>2</b>       | Bidder has <b>explicitly provided</b> the nature and extent of Deviation against any Clause (referred above in Point 1) in the Deviation Schedule (i.e. as per Cl. No. 16.0 of Specification PY55431). | <b>YES/ NO</b>             |                          |
| <b>3</b>       | Bidder confirms that they have read the provisions of the Deviation Schedule and have included the Schedule in the Offer after agreeing to the said provisions.                                        | <b>YES/ NO</b>             |                          |
| <b>4</b>       | Any conflict between provisions of the Specification has been included by the Bidder in the Deviation Schedule itself.                                                                                 | <b>YES/ NO</b>             |                          |
| <b>5</b>       | Bidder confirms that Bill of materials (if furnished with the offer) is <b>only for information</b> . Bidder shall supply all the necessary materials to meet the                                      | <b>YES/ NO</b>             |                          |

|           |                                                                                                                                                                                                |                |  |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--|
|           | performance & technical requirements as per Specification PY55431 & its Annexures.                                                                                                             |                |  |
| <b>6</b>  | Bidder confirms that Prices for all items mentioned in the Price Format have been quoted; Unpriced and Priced Schedules included in the Techno-commercial Offer and Priced Offer respectively. | <b>YES/ NO</b> |  |
| <b>7</b>  | Bidder confirms that complete set of relevant test certificates have been included in the Offer.                                                                                               | <b>YES/ NO</b> |  |
| <b>8</b>  | Bidder confirms to the Sub-vendor List/ Make of component as per Cl. No. 14 of Specification PY55431.                                                                                          | <b>YES/ NO</b> |  |
| <b>9</b>  | Bidder confirms that all the documents as per Cl. No. 10.1 of Specification PY55431 have been included in the Offer.                                                                           | <b>YES/ NO</b> |  |
| <b>10</b> | Bidder confirms that all the documents shall be submitted during detailed engineering as per Cl. No. 10.3 of Specification PY55431.                                                            | <b>YES/ NO</b> |  |

**LIST OF MATERIAL CODES AS PER ENQUIRY**

| <b><i>Variant No.</i></b> | <b><i>Description</i></b>           | <b><i>Quantity</i></b> | <b><i>Material Code</i></b> |
|---------------------------|-------------------------------------|------------------------|-----------------------------|
| 1                         | 415V 63A Feeder Pillar              | 1 no.                  | PY9755431012                |
| 2                         | 415V 125A Feeder Pillar             | 1 no.                  | PY9755431020                |
| 3                         | 415V 250A Feeder Pillar             | 1 no.                  | PY9755431039                |
| 4                         | LT Power Cable & Its Accessories    | 1 set                  | PY9755431047                |
| 5                         | Earthing Material & Its Accessories | 1 set                  | PY9755431055                |

## **Chapter-II: Technical Specification for Civil Works**

### **SCOPE OF WORK**

**Civil work for mounting power feeder panel on brick masonry structure, paving adjacent area of power feeder panels, excavation of soil and burying cable, back filling with sand and soil from tape up point to feeder panels.**

#### **1.0 The work will involve:**

- i. Brick masonry foundation with plastering partially below ground and partially above ground (approx. 2m long, 1m height and 230mm width, three nos)
- ii. Paving with PCC (approx. area 12 SQM)
- iii. Feeder Panels installation (three nos, approx. weight 330kg each) on foundation and fixing with anchor fastener to keep feeder panels in position on foundation.
- iv. Trench (approx.. 120m long 0.7m deep and 0.3m width) excavation, back filling partly with sand, cable laying, and back filling with excavated soil.

#### **2.0 GENERAL**

- a) The scope of work will also include such other related works although they may not be specifically mentioned in the above paragraph and all such incidental items not specified but reasonably imply and necessary for completion of the job as a whole all as desired and as directed by the engineer.
- b) The detail scope of work covered above is not a comprehensive list of items of work involved. The detail scope of work may vary considerably depending on the actual construction requirements.

#### **3.0 ALSO INCLUDED IN THE SCOPE**

Unless otherwise specified, the work to be provided by the contractor for the items mentioned in the “Schedule of items”, shall include but not be limited to the following.

- a) Furnishing all labour, materials, supervision, construction plans, equipment, supplies, transport, to and from the site, fuel, electricity, compressed air, water, transit and storage insurance and all other incidental items and temporary works not shown on specified but reasonably implied or necessary for the proper completion, maintenance and handling over the works, except in accordance with the stipulations laid down in the contract documents and additional stipulations as may be provide by the engineer during the course of works.
- b) Furnishing samples of all materials required by the engineers for testing/inspection and approval for use in the works. The samples may be retained by the engineer for final incorporation in the works.
- c) Furnishing test reports for the products used or intended to be used, if called for the specifications or if so desired by the engineer.
- d) Giving all notices, paying all fees, taxes etc., in accordance with the general conditions of contract, that are required for all works including temporary works.
- e) Arranging manufacturer’s supervision for items of work done as per manufacturer’s specifications when so specified.
- f) Providing all incidental items not shown or specified but reasonably implied or necessary for the successful completion of the work in accordance with contract.

- g) On completion of work, all the temporary items etc. shall be dismantled and leveled and debris shall be removed as per instructions of BHEL by the contractor at his cost. In the event of his failure to do so, the expenditure towards clearance of the same will be recovered from the contractor. The decision of BHEL Engineer in this regard is final.

#### **4.0 WORK BY OTHERS**

No work under the specification will be provided by any agency other than the contractor unless specifically mentioned elsewhere in the contract.

#### **5.0 TECHNICAL SPECIFICATIONS FOR INFORMATION.**

| SL. NO. | DESCRIPTION                           | SPECIFICATION NUMBER | RE V | PAGES |
|---------|---------------------------------------|----------------------|------|-------|
| 1       | GENERAL SCOPE.                        | PEDC/STD.SPEC/001    | 0    | 4     |
| 2       | EARTHWORK INEXCAVATION & BACKFILLING. | PEDC/STD.SPEC/003    | 0    | 23    |
| 3       | CEMENT CONCRETE-PLAIN& REINFORCED.    | PEDC/STD.SPEC/004    | 0    | 56    |

**NOTE: Contractor has to make himself well conversant with the customer specification. In case of ambiguity between BHEL and customer specification, customer specification shall prevail.**

#### **6.0 PREAMBLE TO THE SCHEDULE OF QTS. (SOQ)**

- 1) Details of the items in this Schedule shall be read in conjunction with the corresponding BHEL specifications, drawings and other documents and shall have precedence over any contrary statement mentioned anywhere in this document.
- 2) The work shall be carried out as per construction drawings, specifications, the description of the items in this schedule and/or Engineer's instructions. The approximate dimension/data mentioned above may vary at a large extent during actual construction. Final drawings will be issued progressively during the execution of the work.
- 3) Items of work provided in this schedule but not covered in the specifications shall be executed strictly as per instructions of the Engineer.
- 4) Unless specifically mentioned otherwise in the contract, the bidder shall quote his rates for the finished items and shall provide for the complete cost towards fuel, tools, tackle, equipment, constructional plant, temporary works, labour materials, levies, taxes, transport, layout, repairs, rectification, maintenance till handing over, supervision, shops, establishments, services, temporary roads, revenue expenses, contingencies, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the works according to the contract.
- 5) The rate quoted shall be inclusive of cleaning the site of any vegetations, dressing and leveling etc., required for commencement of site activities. No separate payment will be made towards the same.

- 6) Engineers decision shall be final and binding on the contractors regarding clarification of items in this schedule with respect to the other section of the contract.
- 7) Incase of any discrepancy between item descriptions, relevant drawing and/ or specification clarification shall be sought at tender stage itself. Otherwise it shall be assumed that the bidder has quoted for the more stringent requirement.

## **7.0 HIERARCHY**

In case of any conflict/deviations amongst various documents, the order of precedence shall be as follows

- Statutory Regulations
- Items in Schedule of quantities
- IS/BS standards
- BHEL’s standard specification (with prior approval of Engineer-in-charge).