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A Mini Ratna Company

**FOR  
DESIGN, SUPPLY, ERECTION, COMMISSIONING  
AND TESTING  
OF  
GRID CONNECTED 6.25 MW (AC) SOLAR POWER PLANT  
HAVING FIVE YEARS O&M  
FOR  
CENTRAL COALFIELDS LIMITED, RANCHI**

**AT  
KATHARA AREA  
BOKARO, JHARKHAND, INDIA**

**VOLUME – II**

**[TECHNICAL, PLANS & DRAWINGS]**



**July, 2023**

**Central Mine Planning and Design Institute Ltd.  
(A Subsidiary of Coal India Ltd.)  
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**PROJECT SUMMARISED DATA**

<b>Sl. No.</b>	<b>Particulars</b>	<b>Description</b>
1.	Owner of Project / Land	Central Coalfields Limited
2.	Location	a) Jarandih Old OB dump site – 3 MW b) Behind Russian Colony site – 1.5 MW c) Old Regional Store site, Jarandih – 1.25 MW d) CPP Colony site – 0.5 MW
3.	Latitude-Longitude	a) 23°46'29.73"N & 85°53'50.77"E b) 23°45'56.79"N & 85°53'20.85"E c) 23°46'6.55"N & 85°54'57.14"E d) 23°45'41.20"N & 85°53'37.00"E
4.	Total Land Area Available (approx.)	8.6 Hectare
5.	Plant Capacity (AC)	6.25 MW
6.	DC Overloading (Minimum)	32.5 %
7.	PV Module (Min.)	535 Wp, Mono-PERC
8.	No. of modules	As per requirement
9.	Inverter	String Inverter as per Requirement
10.	Plant Life	25 Years
11.	Operation & Maintenance of Plant	5 Years
12.	Wind Speed	44 - 47 m/s
13.	Seismic Zone	Zone – III
14.	Average Annual Precipitation	49.1 mm
15.	Power Feeding Substation / Voltage and distance from substation	a) Jarandih Old OB dump – 11 kV side of 3 MVA, 11/3.3 kV Jarandih OCP substation (1.5 KM Approx.) b) Behind Russian Colony Site - 11 kV side of 33/11 kV Kathara Area Main substation (5 KM Approx.) c) Old Regional Store site 11 kV side of 11/3.3 kV transformer at Jarandih Siding (2 KM Approx.) d) CPP Colony site - 3.3 kV side of 3.3/0.415 kV transformer near CPP colony (0.5 KM Approx.)
16.	Nearest Highway	NH-114A
17.	Nearest Railway Station	Bokaro Thermal (BKRO)
18.	Nearest Domestic Airport	Ranchi Airport

## CHAPTER-I

### INTRODUCTION

#### 1.1 General

Central Coal Limited (CCL) has a number of projects, which are spread in the state of Jharkhand. Geological Coal Reserves in CCL command area are up to 300m & above depth. For administrative purpose, there are seven operating coalfields in the command area of CCL. The company operates around 62 coal projects which include underground and opencast mine. Out of 62 operative mines, around 40 mines are opencast mine and remaining UG mines. Additionally, 7 coal washeries, (5 Coking Coal and 2 Non-Coking Coal washeries) are running under administrative control of CCL.

#### 1.2 Locations and Connectivity

Proposed locations for the installation of ground mounted solar power plants are as below:

- a) Jarandih Old OB Dump Site – 3 MW (AC) – 23°46'29.73"N & 85°53'50.77"E
- b) Behind Russian Colony Site – 1.5 MW (AC) – 23°45'56.79"N & 85°53'20.85"E
- c) Old Regional Store, Jarandih Site – 1.25 MW (AC) – 23°46'6.55"N & 85°54'57.14"E
- d) CPP Colony Site – 0.5 MW (AC) - 23°45'41.20"N & 85°53'37.00"E

All above proposed sites are located in Bokaro district of Jharkhand. Kathara area of CCL is well connected through roads and rail. Nearest railway station is Bokaro Thermal (BKRO) situated at around 4.0 km from GM Office, Kathara area. The nearest junction railway station is Chandrapura (CRP) situated at about 32 km from Kathara.

Bokaro district has a tropical climate with maximum summer temperatures soaring to 45-50°C and minimum winter temperatures falling to 8-12°C. Humidity is generally high with a maximum of around 95 % during the rainy season.

Total available land at the proposed locations is around 8.6 Ha, for installation of Solar power plant of 6.25 MW with additional DC overload capacity of 32.50% (minimum).

There are bushes and trees within the sites, which need to be cleared by the bidder for installation of PV Modules. Tree cutting permission, if required, shall be in the scope of CCL. However, uprooting, removal and transportation of trees and

bushes shall be in the scope of Bidder. Providing hindrance free land shall be in the scope of CCL.

This tender document is prepared for installation of 6.25 MW Solar Power Plant in Kathara Area of CCL for captive power consumption. This tender document pertains to design, supply, and construction, commissioning and testing and operation & maintenance (O&M) for a period of five years. However, any damage/breakage due to the natural calamities or unsocial elements/theft will not be in the scope of the Bidder.

The Bidder is advised to visit and examine the site of works (including capacity assessment) and its surroundings and satisfy himself with all the conditions and obtain for itself on its own responsibility all information that may be necessary for preparing the Bid and entering into a Contract for the required job. The costs of visiting the site shall be borne by the Bidder.

#### **DISCLAIMER**

Though adequate care has been taken while preparing the Bidding documents, the Bidders/Applicants shall satisfy themselves that the document is complete in all respects. Intimation of any discrepancy shall be given to this office immediately. If no intimation is received from any Bidder within the prescribed time from the date of notification of NIT/ Issue of the NIT documents, it shall be considered that the NIT documents are complete in all respects has been received by the Bidder.

Employer, reserves the right to modify, amend or supplement this NIT documents including all formats and Annexures.

While this bidding documents have been prepared in good faith, neither Employer or its authorized representatives nor their employees or advisors make any representation or warranty, express or implied, or accept any responsibility or liability, whatsoever, in respect of any statements or omissions herein, or the accuracy, completeness or reliability of information, and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of this bidding documents, even if any loss or damage is caused by any act or omission on their part.

## CHAPTER-II

### SCOPE OF WORK

#### 1.0 SCOPE OF WORK

The scope of the proposal includes the design, engineering, supply, construction, storage at site, associated civil works, services, permits, licenses, installation, insurance at all stages, erection, testing and commissioning including five (05) years Operation and Maintenance (O&M) from the date of Operational Acceptance of ground mounted 6.25 MW(AC) Solar Power Plant with minimum DC overloading of 32.5% completely covering the following activities and services in respect of all the equipment & works specified and covered under the specifications.

The satisfactory operation of the Solar Power Plant and its integration with the power evacuation system shall be included in the scope of work of the Contractor and shall not be limited to the following:

- a) Basic and detailed design Engineering including civil and other allied works of the plant including power evacuation system.
- b) Submission of engineering drawings, calculations, structural design calculations, Equipment layout, Civil structural/architectural Drawings, Performance & Guarantee Test procedure etc for approval / information.
- c) Operation & Maintenance/ instruction manuals, as built drawings and other required information.
- d) Providing training of Employer's personnel.
- e) Packing and transportation from the manufacturer's works to the site including customs clearance & port clearance, port charges, (if any).
- f) Reliability and Functional guarantee tests after successful completion of trial operation.
- g) Satisfactory completion of the contract.
- h) Supply of spares.
- i) Special tools and tackles if any required for maintenance of the plant.

#### 2.0 DESIGN AND ENGINEERING

- 2.1 The Contractor shall prepare the detailed design basis report along with relevant standards (with respective clause description) and PERT Chart. The Contractor shall submit a copy to Employer for review and approval prior to detail engineering.