



**PROJECT INFORMATION & SITE-SPECIFIC  
DATA FOR TRACKER SYSTEM FOR  
DEVELOPMENT OF 1000 MW (2 X 300MW+ 2 X  
200MW) GRID CONNECTED SOLAR PV  
PROJECTS AT BIKANER, RAJASTHAN**

PISSD- BIKANER

Rev No: 00

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Revision  
details: 00

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## 1.0 INTRODUCTION

This project information & Site-Specific data for the project is supplementary information to the technical specification PS-439-1426 (latest Revision). The details given in this section will supersede over any information written elsewhere in the specification, if contradicts otherwise read in conjugation.

## 2.0 PROJECT INFORMATION:

Name of the Project	Development of 1000MW (2x300MW+2x200MW) grid connected solar PV projects at Bikaner, Rajasthan
Plant Capacity	Blocks-VI and Block-VII: 300 MW for each of the blocks/projects at ISTS Point of Interconnection. Blocks-VIII and Block-IX: 200 MW for each of the blocks/projects at ISTS Point of Interconnection.
Location of Site	Kalasar/Kelan, Bikaner, Rajasthan
Nearest Town	Bikaner (55 kms)
Nearest Highway/Major Road	Suratgarh - Chattargarh - Bikaner Road
Nearest Railways Station	Bikaner Junction (55 km)
Nearest Commercial Airport	Bikaner Airport, Bikaner -- 45 kms Jodhpur International Airport – 280 kms
Indicative Coordinate	28°23'23.90"N, 73°16'31.60"E

## 3.0 AREA AVAILABILITY: As per Vicinity Map

Land will be provided by End Customer on “as is where is basis” (Approx. 5 acres/MW). Bidder is requested to make detailed site visit and access the requirement of work. The details are given for preliminary information only. Land will be, in general level with an average slope of 10% and local slope of up to 15%. Hence, Bidder has to design the tracker system for up to average of 10% of ground slope, (15%) local along North-South direction. For Area Auto Cad Drawing and KMZ File, please put an e-mail to [vijayk.choudhary@bhel.in](mailto:vijayk.choudhary@bhel.in) / [palanikumar@bhel.in](mailto:palanikumar@bhel.in) mentioning tender reference.

## 4.0 SITE SPECIFIC TECHNICAL DATA:

Corrosive category	Non-coastal (Minimum C3)
PV Module	Min. 600 Wp Bifacial



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PV Module Characteristic*	2384 mm x 1134mm 33.8 kg (weight) 15.85 A (Isc) 14.97 A (Imp) Bifacial gain of 5% to be considered over and above Isc value mentioned above for component and cable sizing
PV Module Hole distance*	For 600Wp 400 mm / 1400 mm(long edge) 1082 to 1099 mm (short edge)
No. of Module/String	28 Nos.
Additional Parameters*	Bifaciality factor – 80% Rear Shading factor - 5% Rear mismatch factor – 10%
Minimum Pitch	<b>6.0 m</b> for all Plots Considering minimum <b>600 Wp</b> Modules
Thermal Loss Factor (Uc, Uv)	Uc-29 Watts/m <sup>2</sup> -K Uv-0.0 Watts/m <sup>2</sup> -K
Tracker	1P Single axis E-W Tracker
Design Clearance for Tracker	The minimum design clearance (at the highest tilt angle) between the lower edge of the modules and the developed ground level shall be 400 mm for Single Axis Tracker based system. Minimum 400 mm clearance to be maintain at module edge with maximum angle.
Rainfall	Heaviest rainfall in one hour (in mm): 48.8 mm Or As per Nearest city / town (as mentioned in Appendix-A of IRC:SP:13-2004.)
Seismic data & design criteria	Seismic Zone 5, Provisions of IS 1893 (Part 1) shall be followed.
Basic Wind Speed for Design	47 M/s.
Design Wind Pressure, min, Pd	890 N/m <sup>2</sup>
Comprehensive AMC	10 Years from Project COD
Tentative DC Capacity of the Project*	<b>2 x 390 MWp + 2 x 260 MWp</b>

**Bidder to submit tentative array layout & Basic proposed design including Type of tables, Bill of Material, design loads, pile reactions etc. for the project in line technical specification & details given in this document along with offer. Electrical Equipment like PCUs, Transformers, HT Panel are to be placed in between arrays. 19 Nos of IR rooms each consists of 1 No of 17.6 MVA Inverter transformer + 4 PCU+1 HT PANEL for 300 MW. The approx. Size of the block shall be 35 M X 35 M. Bidder to prepare array layout considering the same.**



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\* Above Block DC capacity is considering DC:AC ratio 1.3 and nominal module Wp of 600 Wp. Even in case of change in nominal Wp of supplied PV module, the number of PV modules for erection shall remain same as calculated above and the DC capacity of the project shall be revised accordingly.

In this project, End Customer will supply the PV Module. End Customer will try to provide the exact PV Module characteristics including datasheet and other documents by 7 to 9 months after the award of LOA to Tracker Bidder. There might be slight changes in the dimensions, weight and Isc as per the actual PV Module compared to the inputs provided above. Tracker bidder to suitably design the Tracker system to consider such minor changes.

## 5.0 DELIVERY SCHEDULE:

### A. Design Submission & Approval:

BLOCK NOS.		VI	VII	VIII	IX
DC Capacity		390	390	260	260
From date of firm PO (In Months)					
1	Design & Approval of complete Tracker systems along with all its accessories, MMS including Foundation	1	1	1	1

### B. Supply (Progressively)

BLOCK NOS.		VI	VII	VIII	IX
DC Capacity		390	390	260	260
1	Tracker System & Module mounting arrangement along with all accessories, tools & Consumables and Mandatory Spares as per final BOQ of approved design. #	Minimum 50 MWp per Month starting after 1 Month from Manufacturing Clearance & all supplies to be completed within 8 Months of Manufacturing Clearance	Minimum 50 MWp per Month starting after 1 Month from Manufacturing Clearance & all supplies to be completed within 8 Months of Manufacturing Clearance	Minimum 35 MWp per Month starting after 1 Month from Manufacturing Clearance & all supplies to be completed within 8 Months of Manufacturing Clearance	Minimum 35 MWp per Month starting after 1 Month from Manufacturing Clearance & all supplies to be completed within 8 Months of Manufacturing Clearance



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**# Tracker System supplies to be made in complete sets of per MWp as per final BOQ of approved design.**

**C. Works and services (Progressively):**

BLOCK NOS.		VI	VII	VIII	IX
DC Capacity		390	390	260	260
After 2 months from Manufacturing Clearance					
1	Demonstration of erection methodology and supervision of erection during complete erection of Tracking system.	8	8	8	8
From Completion of Erection Works					
2	Commissioning, trial run and acceptance test of Tracking system.	2	2	2	2

**6.0 MANDATORY SPARES REQUIREMENT OF PROJECT:**

Following mandatory spares are required for this project:

Sr. No.	Item Description	Quantity of Spares w.r.to final BOQ of approved design.
1	Tracker motor	0.25% of total population for each type.
2	Battery pack (if applicable)	0.25% of total population for each type.
3	Control box (with all components including cards)	0.25% of total population for each type.
4	Bearings (if applicable)	0.25% of total population for each type.
5	All type of sensors	0.25% of total population for each type.
6	Driving mechanism	0.25% of total population for each type.

The BOQ of Mandatory spares shall also be submitted for approval to BHEL/End Customer with design documents.

**7.0 SPECIAL TECHNICAL CONDITIONS FOR PROJECT:**

**7.1. Painting of Steel Surfaces embedded in Concrete:**

For the portion of Steel surfaces completely embedded in Concrete as reinforcement or otherwise for foundation systems, the surface shall be prepared by Manual Cleaning and provided with Primer Coat of Chlorinated Rubber based Zinc Phosphate Primer of Minimum 50 Micron Dry Film Thickness (DFT). However, For proprietary member of



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tracker-based MMS, Bidders proposal w.r.t. corrosion protection would be accepted subject to OEM certification.

## **7.2.Foundation System:**

7.2.1. Top of concrete/ height of collar for MMS foundation shall be minimum 150 mm above Finish ground level. The proposed foundation system for MMS shall be based on findings/results of the approved geo technical investigation report.

Following kind of foundation may be provided:

1. Short pile foundation (Min. 300 mm dia.)
2. Rock anchor with concrete collar (Min. 700 sq.cm.)
3. Isolated, strip or raft foundation
4. Concrete ballast foundation

7.2.2. In desert areas where sand erosion is anticipated, depth of pile shall be increased beyond designed depth by minimum 300 mm or envisaged depth of erosion, whichever is higher.

7.2.3. Testing of piles and interpretation of pile load test results shall be carried out as per the stipulations of IS: 2911 (Part-4). Contractor shall obtain approval for the pile load test scheme before undertaking the pile load test.

7.3. Since the site is located in a desert area, sandstorms are common. Therefore, the dust-proof design should consider the deposition of sand particles on sensitive electronic equipment or sensors.

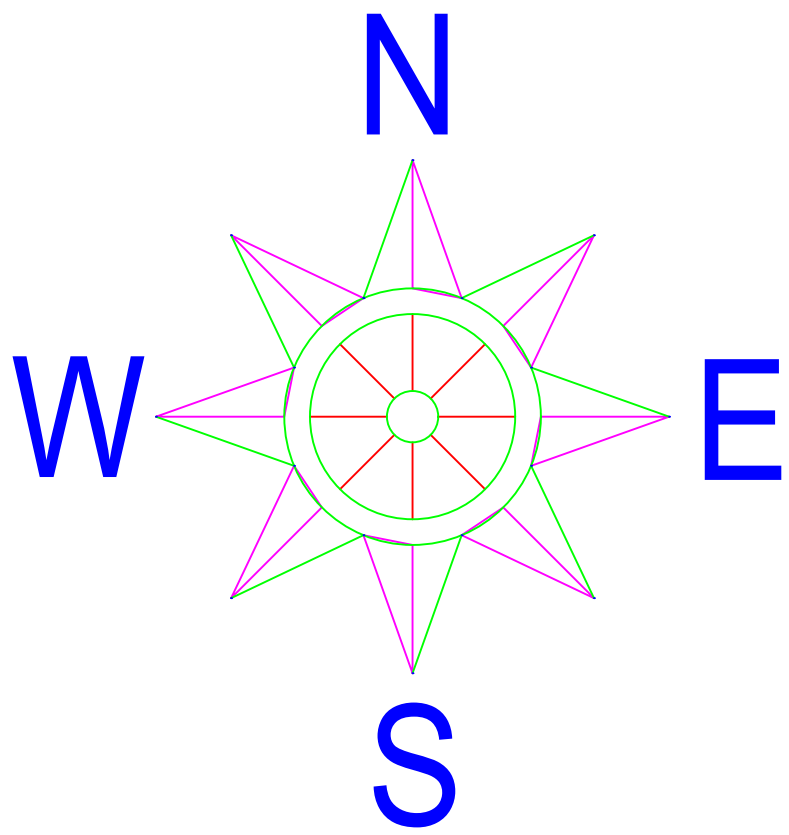
## **ENCLOSURES:**

1. Vicinity Map and Block Layout

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# Layout for 2 x 300 & 2 X 200 MW Bikaner



- General
  - The tender drawings shall be read in conjunction with the provision of Technical Specifications.
  - The details show in drawing are suggestive and for tender purpose only.
  - Land would be handed over to Bidders after leveling if required to arrive at an average 10% ground slope (15% local) along North-South direction as per provisions of tender. However, if required minor provisions w.r.t leveling shall be included in EPC Bidder scope only in local areas.
  - Leveling of land, if applicable would be done in parallel and would not be considered as obstruction to progress w.r.t Engg. Design, procurement and construction at site (where land is already in order).
  - The Boundary demarcation is for reference purpose only however the actual boundaries will be finalized based on the Layout finalization after detailed Engg.

- Reference Data for Project Site
  - Bidder shall conduct the topographical survey (optional) and Geo-technical investigation to finalize the Layout & Foundations as per the actual topography & Geo-technical Data.
  - Layout of Roads shown in the Tender drawings is for the reference purpose only. Bidders are advised to visit site so as to access the actual site approachability.
  - The land provided will be free from trees, obstructions.

- Site Specific Considerations
  - All Temporary facilities for project development during construction including any road construction, fencing, leveling etc. is in Bidder Scope.
  - All Internal Road & drains are deemed to be in Scope of Work of bidder.
  - All arrangements as necessary to take up the project construction work, are in bidder's scope as per provisions of Tender Documents.
  - Water and Construction power are under the scope of Bidder and hence are to be considered by bidder for the given projects, as per their respective requirements, while planning for the project site activities.
  - Location has been marked for area reserved for Solar Project. However, the actual location may vary to a some extent.
  - Location has been marked for area reserved for PSS. However, the actual location may vary to a some extent.

FOR REFERENCE PURPOSE ONLY

Block-VI

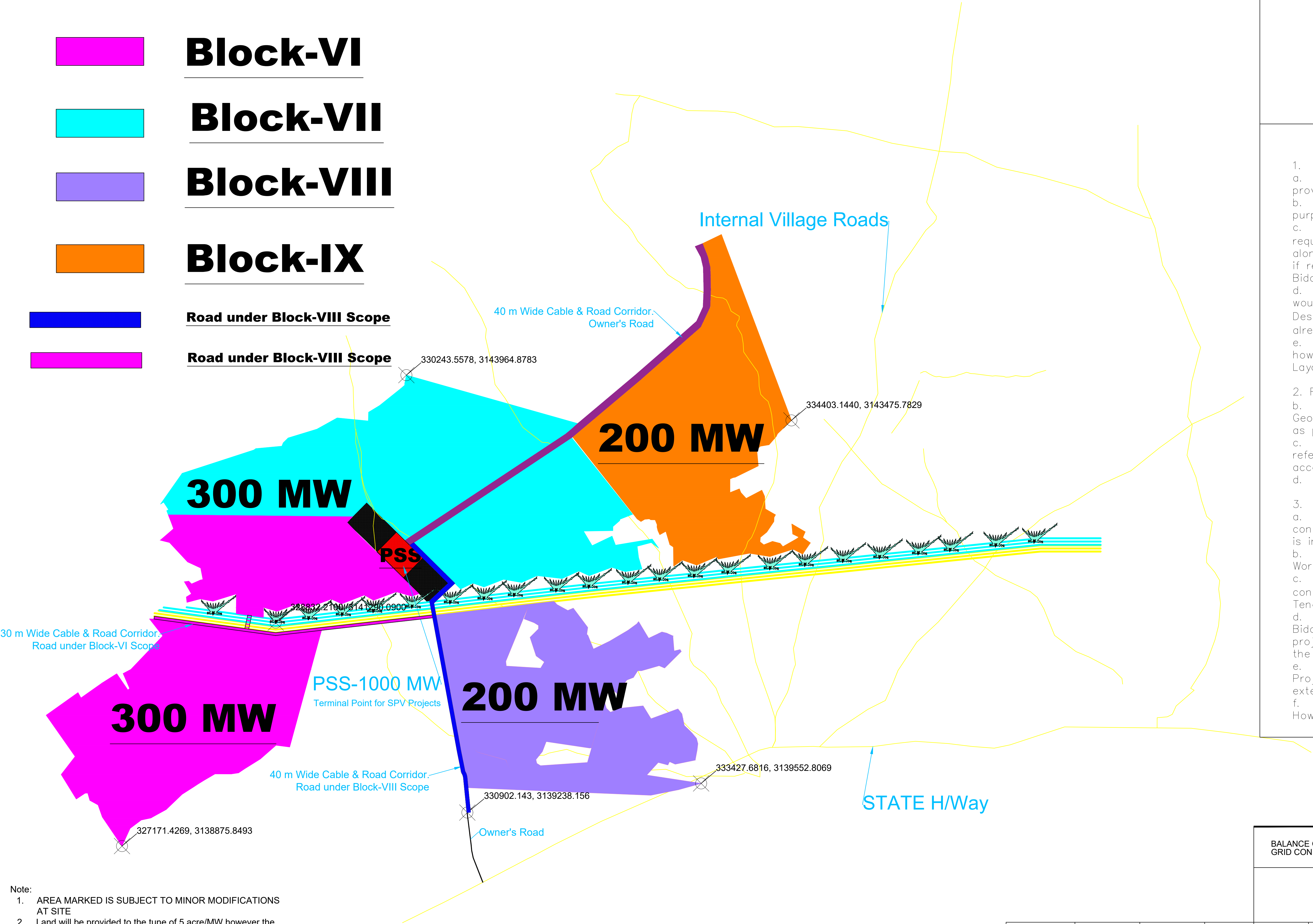
Block-VII

Block-VIII

Block-IX

Road under Block-VIII Scope

Road under Block-VIII Scope



- Note:
- AREA MARKED IS SUBJECT TO MINOR MODIFICATIONS AT SITE
  - Land will be provided to the tune of 5 acre/MW however the same may decrease marginally due to actual site conditions.

BALANCE OF SYSTEM (BOS) PACKAGE FOR DEVELOPMENT OF 1000MW (2x300MW+2x200MW)  
GRID CONNECTED SOLAR PV PROJECTS AT BIKANER, RAJASTHAN

Tender Drawing  
Viciniy Map cum Block Layout

PREPARED BY	CHECKED BY		APPROVED BY	DATE	SIZE	SCALE	DRG. NO.	R0
	CIVIL	ELE.		07.04.2025	A0	NTS	5800-004(BOS1)-POC-A-001	