

**PROPOSED BOQ FOR SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 235 KWp SOLAR POWER PLANT & ALLIED WORKS AND 5 YEARS COMPREHENSIVE AMC AT SBI LOCAL HEAD OFFICE, BHOPAL.**

**PART-'B' (PRICE BID)**

IT. No.	Description of Items ( For one first year all maintenance terms, conditions is applicable without AMC cost under defect liability period)	Total Qty.	Unit	Rates	Amount
1	<b>PV MODULE :</b> Supplying, Installation, Testing and commissioning of Solar Photovoltaic Modules 540Wp with 144, Half-cut, Mono PERC crystalline Cells having RFID tag ,+3% Tolrance and Module Must be qualify Model no IEC 61215/IS14286, IEC 61701/IS 61701. Output Cable Shall be 1200mm length. Make:- Adani Solar / Tata Power Solar / Vikram Solar /Waree/Saatvik Green Energy/ Renewsys and as approved by Bank Architect/Bank Engineer before finalization.	436	Nos		
2	<b>INVERTER ( ON-GRID SOLAR STRING INVERTER ) :</b> Supplying, Installation, Testing and commissioning of On-grid Solar String Inverter 415V, 3Ph, 50Hz with data and weather monitoring facility through Web portal and compliance to Latest IEC standards and having FRT feature. IP:65 Transformer less with MPPT, minimum efficiency of 98%				
	a. String Inverter 50 kWp WITH DC & AC SPD AND FUSE. Make:- Sungrow/Growatt/Polycab or equivalent MNRE ALMM approved and as approved by Bank Architect/Bank Engineer before finalization.	4	Nos		
3	<b>AC COMBINER BOX (ACCB)</b> Supplying, unloading, storing , testing and commissioning AC Combiner box with all required connections. Make:- GEESYS / Accu-Panel Energy Pvt. Ltd. / Scops Energy pvt. Ltd. / Green Field solar solution pvt. Ltd.	4	Nos		
4	Supplying, unloading, storing , testing and commissioning of following size of XLPE insulated and PVC sheathed aluminum / copper conductor armoured power cable of 1.1 / 1.5 KV grade ISI Marked confirming to IS:17098(Part-I)1988 in existing RCC/ HUME/ METAL/DWC/ masnory open duct loose / loop/waste for connection etc. induding suitable size of lugs and Glands complete as reqd.				
	<b>DC SOLAR CABLE :</b> 1C x 4.0 sqmm flexible annealed Tin copper conductor multistrended cross linked Zero Helaogen Low somke insulation and sheathing heat resistive and UV resistive solar DC Cable TUV certified Solar cable.	2500	Mtrs		
	<b>AC CABLE</b>				
	a. 4 Core, 16 sq. mm XLPE Aluminium. Cable.	100	Mtrs		

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	b. 3.5 Core, 25 sq. mm XLPE Aluminium. Cable.	200	Mtrs		
	c. 3.5 Core, 300 sq. mm XLPE Aluminium. Cable.	60	Mtrs		

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5	Supplying and drawing following sizes of FRLS PVC insulated copper conductor, single core cable in medium class PVC conduit along with accessories in surface / recess complete as required ( for earthing Wire colour Green )				
	a. 1 x 2.5 sq mm	200	Mtrs		
	b. 1 x 6.0 sq mm	100	Mtrs		
	c. 1 x 70 sq mm	30	Mtrs		
6	<b>CONNECTOR MC4 :</b> Supplying, Installation, Testing & commissioning MC4 Connector Suitable for 400Wp Module(Pair) for Polycrystalline	220	Nos		
7	<b>HDPE PIPE :</b> Supplying and laying of approved make HDPE pipe as per IS:4984 and IS:14333 with latest amendment for installation of submersible pump with necessary connection, socket/couplings, tees, etc. as required (PE-63 & working pressure 6 kgf/sq cm)				
	a. 40 mm Outer Dia.	100	Mtrs		
8	<b>Hot Dipped Galvanized Iron Cable Tray :</b> A. Supplying and installing following size of perforated Hot Dipped Galvanised Iron cable tray (Galvanisation thickness not less than 50 microns) with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with G.I. suspenders including G.I. bolts & nuts, etc.as required.				
	a. 100 mm width X 50 mm depth X 1.6 mm thickness	100	Mtrs		
	b. 150 mm width X 50 mm depth X 1.6 mm thickness	40	Mtrs		

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9	<p><b>SPECIAL PIPE EARTHING :</b></p> <p>Boring / Excavation of Pit for Earth Station - 200 mm dia, 60 Meter deep.</p> <p>a. S/F of G.I. B class pipe 100 mm dia duly welded at joints - 55 Meter in bore.</p> <p>b. Supply and fixing of chemrod electrode of size 50 mm dia, 3 meter long.</p> <p>c. Supply and Welding clamp of 50 mm x 6 mm for G.I.Strip connections on the pipe.</p> <p>d. Supply and pouring mixture of bentonite power with black cotton soil in the bore around the pipe.</p> <p>e. Supplying and laying in position 19 mm dia, 0.5 mtrs G.I. 'B' class pipe for watering with reducer/funnel with mesh.</p>	6	Nos		
10	Providing & fixing 25 mm x 5 mm G.I. strip on surface or in recess for connection etc. as required	250	Mtrs		
11	<p><b>LIGHTNING ARRESTOR :</b></p> <p>Supplying and installing of ESE TYPE 107 Meter radius with down conductor, counter 5 meter GI Pole supporting rope and tie with hook and fastner Level-III.</p>	2	Nos		
12	<p><b>MODULE WASHING SYSTEM :</b></p> <p>Supplying and installing of following Items with bend, Tee, reducer, couplers etc complete as required</p> <p>a. 230V, 1Ø, 1 hp pump</p> <p>b. C-PVC pipe 15 mm.</p> <p>c. C-PVC pipe 20 mm.</p> <p>d. C-PVC pipe 25 mm.</p>				
	a. 230V, 1Ø, 1 hp pump	1	Nos		
	b. C-PVC pipe 15 mm.	500	Mtrs		
	c. C-PVC pipe 20 mm.	500	Mtrs		
	d. C-PVC pipe 25 mm.	50	Mtrs		
13	Water Flexible Pipe 0.5 Inch(Heavy Duity Pipe), WITH SUPPORING NOVE. Sample approved by Engg. In-Charge.	300	Mtrs		
14	Supplying and installing of Tape valve, with sliding nove and flexible pipe grip. As per directed by Engg. In-Charge.	40	Nos		

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15	<b>4 Pair shielded twisted pair (STP) :</b> <b>( For Communication )</b> Supplying and drawing 4 pair shielded twisted pair (STP), 0.5 mm PVC insulated copper conductor un-armoured Cat-6 computer cable FRLS in 20/25 mm medium class PVC conduit / casing-n-capping with ferrules etc as required.	150	Mtrs		
16	<b>RJ-45 computer jack (2Module) :</b> Supply, installation testing and commissioning RJ - 45 computer jack cat 6 with shutter modular (2 Module)	20	Nos		
17	<b>Painting(ENAMEL PAINT) :</b> Supplying and painting of the structure / stand / supports etc with Green / Black enamel paint complete as required. Including 3-Coats or more Red-Oxide as per directed by Engg. In-Charge.	1	Job		
18	<b>ELECTRICAL PANEL :</b> Supplying, installation, testing and commissioning of indoor type , sectionalised, compartmentalized, extensible cubicle type MV Panel board of suitable size fabricated from CRCA sheet of 2 mm thick for frame work, enclosure and doors, 3 mm thick for gland plates with stiffers where required, having vibration free structure chemically treated with seven tank process before painting for surface treatment and powder coated,aluminum busbar of high conductivity with DMC / SMC busbar supports suitable for 3 Phase 415 V 50 Hz AC supply with short circuit withstand capacity of 31 MVA for 1 Sec. fabrication shall be done in transportable sections,bottom base channel of MS section not less than 100mmx 50mm x 5mm thick,entire panel shall have a common copper earth bar of size 25mm x 5mm at the rear with 2 Nos. earth stud, i/c providing and fixing the following switchgear mounted thereon complete with gaskets and interconnections, connection as per specification complete as required.( The board shall be dust & vermin proof with suitable degree of IP protection ) ( The depth of Panel should not be less than 0.45 Mtr.) NOTE : All switchgears Ics shall be equal to 100% Icu.  <b>A. INCOMING SWITCHGEARS :</b> 400 Amp.50 KA, FP MCCB with Microprocessor based release with integral overload, short circuit and earth fault protection & 1 No. 3 Ph Multi function meter class 0.5 with RS 485 port, and should have measure V,A,F,pf,Power, Energy, run & On hours, with CT's.of suitable size and capacity.				

IT. No.	Description of Items ( For one first year all maintenance terms, conditions is applicable without AMC cost under defect liability period)	Total Qty.	Unit	Rates	Amount
	<p><b>B. BUS - BAR :</b> 4 Nos. 500 Amp.Electrolytic grade Aluminum Bus Bars insulated with colored Heat Shrinkable PVC Sleeves &amp; duly supported on SMC/DMC molded supports.</p> <p><b>C. OUTGOING SWITCHGEARS :</b> a. 5 No. - 100 Amp. 25 KA, FP MCCB with Thermal magnetic trip unit.with A digital Ammeter with suitable CT's b. 1 No Surge Protection Device</p> <p>Note :- All MCCB's shall be provided with rotary operated mechanism.MCCB more than 100 A capacity, shall have spreader links and have out going terminals with bus bar to facilitate connections for more than one cables.</p>	1	No		
19	Providing, lisioning, installation, testing and comminnioning of system for Solar net metering and get connection from for the system from DISCOM. All the stautory permissions shall be taken before charging.	1	Job		
20	<p>Module Mounting Structure, Providing and fixing Hot Dip Galvanized 'C' type channel including all bolts, nuts, self tapping screws, fasteners shall be of stainless steel of grade SS 304 or hot dip galvanized, panel mounting clamps shall be of aluminium and must sustain the adverse climatic conditions. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts.</p> <p>3.5.The module mounting structures should have angle of inclination as per the site conditions to take maximum insolation and complete shadow-free operation during generation hours. However, to accommodate more capacity the angle of inclination may be reduced until the plant meets the specified performance ratio requirements</p>	10000	KG		

IT. No.	Description of Items ( For one first year all maintenance terms, conditions is applicable without AMC cost under defect liability period)	Total Qty.	Unit	Rates	Amount
21	Excavation for foundation of walls, column footings, pile caps, raft, foundations, plinth beams, steps, water tanks, cess pits, etc., in all types of soil including soft or hard moorum, boulders (upto 0.30 cum) shoring the sides wherever necessary, bailing out of water and keeping the foundation trenches and pits dry including back filling the pit or trenches by selected earth in layers not exceeding 25 cm., watered and consolidated, spreading the surplus material within plot and carting away the surplus materials out of site, all complete as directed depth of pit below paver lvl. 1.50 m. Note:- Barricade work including at all works. barricaded by tap and G.I. Sheet as per site required.	5	CUM.		
22	Providing and filling in plinth with hard muram/ hard copra under floors including watering ramming consolidating in layer not exceeding 20cm in depth & dressing complete.	8.5	CUM.		
23	Providing and laying P.C.C. 1:3:6 level ling course with 40 mm down gauge aggregate, in foundations, pits, raft material in the plinth and leap concrete etc. including required form work, consolidation, curing etc., complete.	3	CUM.		
24	Providing and Fixing R.C.C. Hume Pipe (NP2) 600mm Dia. Including required excavation, back filling, site cleaning, compaction & leveling, Base P.C.C approx. 60 to 75mm thk. Including required joint for collar provide, Level as per directed by Engg. In-Charge, Back filling etc.				
	450mm Dia.	10	RM		
	300mm Dia.	10	RM		
25	Providing and constructing brick masonry in cement mortar 1:6 with best quality locally available approved bricks in superstructure, at all height & levels, including striking joints, scaffolding, curing, etc. complete as directed.	12	CUM.		

IT. No.	Description of Items ( For one first year all maintenance terms, conditions is applicable without AMC cost under defect liability period)	Total Qty.	Unit	Rates	Amount
26	<p><b>INTERNAL PLASTERING</b> Providing and applying 12/15mm avg. thick smooth finish cement Plaster in cement mortar 1:4 to all internal walls, ceiling using fine sand . Rate includes providing chicken mesh/glass fiber mesh to all joints of RCC members with Brick walls (All Bricks Surfaces) in all positions in line, level &amp; plumb at all levels and heights with necessary scaffolding, cleaning of surfaces, raking out joints, roughening of surfaces ,curing etc complete as directed at site. NOTE:- Match line with existing plaster line.</p>	100	SQM.		
27	<p><b>External PLASTERING</b> Providing and applying 18/20mm avg. thick smooth finish cement Plaster in cement mortar 1:4 to all External walls, using fine sand ( locally available) and adding additives polypropylene fiber of approved quality in desired quantity per bag of cement as per manufacturers specifications direction. Rate includes providing chicken mesh/glass fiber mesh to all joints of RCC members with Brick walls (All Bricks Surfaces) in all positions in line, level &amp; plumb at all levels and heights with necessary scaffolding, cleaning of surfaces, raking out joints, roughening of surfaces ,curing(minimum 7 Days) etc complete as directed and as per site conditions. NOTE:- Match line with existing plaster line. No extra cost will be paid for extra thickness of plaster.</p>	120	SQM.		
28	<p><b>WEATHER COAT EXTERIOR EMULSION PAINT(APEX ULTIMA)-</b> Outer the Building surface area, Providing and applying two or more coats of Apex Ultima or equivalent make weather proof exterior emulsion paint of required shade after thoroughly brushing the surface free from Existing Cement mortar / Painting work and mortar dropping and other foreign matter, including one or two coats of exterior primer, applying two coats of Birla White putty, crack fill including preparing the surface even and sand papered smooth etc. complete as directed by Architects / Engineer-in-charge. Note:- Height of work approx. 9.50m from plinth level. Required scaffolding, safety belt etc. all safety parameter in contractor scope.</p>	120	SQM.		



IT. No.	Description of Items ( For one first year all maintenance terms, conditions is applicable without AMC cost under defect liability period)	Total Qty.	Unit	Rates	Amount
29	WALL PUTTY (BIRLA WHITE) Preparing wall surface by rubbing with sand paper, Removing all dirt, smoke, grease, loose plaster & Existing Paint, Putty remove as per Directed by Engg. In-Charge than after applying two or more coats of Birla white Putty to all internal walls duly rubbed with sandpaper to ensure smooth finished plain surface ready for applying plastic emulsion paint. The rate to include necessary scaffolding etc. complete as directed by the Bank.	100	SQM.		
30	APCOLIYE PREMIUM EMULSION FOR INTERNAL WALL Providing and applying two or more coats of approved quality Apcolite Premium Emulsion paint of approved manufacturer like Asian, Nerolac, ICI, Berger of approved colour, shade, and pattern to internal walls including necessary scaffolding etc. complete as directed by the Bank. Apcolite Premium Emulsion or Equivalent.	100	SQM.		
31	ALUMINIUM LOUVRED VENTILATOR-Providing and fixing colour anodised, aluminium ventilator with extruded built up section as per above specification of wall thickness not less than 1.5 mm and approve make glazed with 4 mm thick opaque glass louver 100mm wide. Provide provision of exhaust fan fixing frame, all work as per directed by Engg. In-Charge. Note:- G.I. mosquito net p/f outer face for louvred.	3	SQM.		

IT. No.	Description of Items ( For one first year all maintenance terms, conditions is applicable without AMC cost under defect liability period)	Total Qty.	Unit	Rates	Amount
32	<p>Fire rated M.S. Door Frame with Shutter:- DOOR SHUTTER::- 50dbA Metal Acoustic Doors shutter is 100 mm thick(61kg/m<sup>2</sup>) steel Fabricated with 1.2 nos 16SWG galvanized steel sheet double rebate Type sandwiching with proprietary Acoustic insulation materials in-between.</p> <p>Acoustic Infill: A combination of layers of plasterboard, mineral-fibre and rubberised sheet.</p> <p>Rubber Sheet + Mineral Wool + 12.5 Board + Mineral Wool + Board. DOOR FRAME : The door frames are manufactured from 16 SWG galvanized steel sheet pressed form to double rebate profile of size 150mm x 50mm. The door frame and door shutter are fitted with SS BALL BEARING HINGES (100 X 75 X 3MM) and are coated with one coat of fire and corrosion resistant primer Finish:</p> <p>2 Coats of Fire Retardant Primer 16 GAUGE Thick POWDER COATED SHEET BOTH FACES, POWDER COATED INCLUDING FRAME.</p> <p>Marquetry Pattern Hardware's:</p> <p>Hinges: SS 304 Ball Bearing Hinges Door Closer: Fire Rated Door Closer   Concealed Door Closer Panic Bar: Single Leaf panic Bar/ Double Leaf Panic</p>	2.6	SQM.		
33	<p>Providing and casting M-25 in Column, Parapet Column, Floor Beams(as per Design), Slab, beams/brackets in superstructure at all Height &amp; Level from plinth level. including sloping roof as per design &amp; drawings. Including form work, mechanical compaction by approved means and curing at all heights, complete in all respect &amp; concrete cube testing &amp; report submitting (Rate exclusive of reinforcement). Note:- Height of work upto 9.50 mtrs. from plinth level &amp; including concrete pump during casting.</p>	18	CUM.		

IT. No.	Description of Items ( For one first year all maintenance terms, conditions is applicable without AMC cost under defect liability period)	Total Qty.	Unit	Rates	Amount
34	Providing, laying & fixing in position reinforcing steel and decoiling wherever necessary, conforming to Fe-500 grade steel of all diameter for reinforcement in all cast-in-situ reinforced concrete works at all levels and height and tying with 18 gauge annealed GI binding wire, providing and fixing cement cover blocks, all material and labour complete in all respects. (Only laid weight shall be measured including authorized laps. Cuts, wastages, pins & chairs shall not be measured for payment. Rate shall include rolling margin of 3% for reinforcement ). Reinforcement as per drawings including preparation of bar bending schedules and obtaining their approval from Owner/Engineer. NOTE : The rate shall include for cost of supplying binding wires, concrete cover blocks etc. Steel Dia upto 32mm	2200	KG		
35	<b>HELTI Chemical ReBaring in Existing R.C.C. Structure</b>				
	Providing and fixing at site chemical ReBaring make Hilti-HIT-RE-500 / HY-200R including proper drilling, Cleaning, chemical, equipments as required, manpower and pull test. Excluding reinforcement only, complete in all respect. Works as per directed by In-Charge. <b>NOTE:- ALL SAFTY EQUIPMENTS, SCAFFOLDING &amp; WORKING PLATFORM UP TO REQUIRED HEIGHT IN VENDOR SCOPE.</b>				
	<b>Dia. 32/28mm</b>	10	EACH		
	<b>Dia. 25mm</b>	10	EACH		
	<b>Dia. 20mm</b>	10	EACH		
36	PVC PIPES Supplying and fixing approved quality of rigid SWR(TYPE-B) PVC pipes(All Vertical Pipes on Wall SURFACES used PUSHFIT AND HORIZONTAL SURFACE USE SOLFIT PIPE AND FITTINGS) of Ashirvad make or equivalent , jointing the pipe and including required Fittings(Bend, Elbow, Y-shape with Door, Coller, Socket, etc.) with suitable solvent as per manufacturers specifications, laying the pipes under floor , ceiling or on the walls as per the required gradient including providing necessary support, clamps, scaffolding etc. conveying the materials to all floors making holes in masonry or concrete cutting the pipe to required length, testing to a head of 1.8 m for horizontal pipes and for vertical pipes by filling with water etc. complete including necessary scaffolding at all levels as required. Note:- Including Existing Pipe removing and placing as per directed by Engg. In-Charge.				

IT. No.	Description of Items ( For one first year all maintenance terms, conditions is applicable without AMC cost under defect liability period)	Total Qty.	Unit	Rates	Amount
	110 mm Dia.	12	RM		
	80 mm Dia.	12	RM		
37	Providing and laying FRP grating for man movement on existing frame, grating size approx. 1000mm x 2000mm x 30/40mm thk. including required support for grating (as per FRP material)As per given design. Including required fastners nut-bolt etc. all in vendor scope with loading unloading etc. Sample approved by site In-Charge or Architects.	130	SQM.		
38	75 mm thick cement concrete flooring with concrete hardener topping, under layer 40 mm thick cement concrete 1:2:4 (1 cement: 2 sand: 4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick cement hardener consisting of mix 1:2 (1 cement hardener mix: 2 graded stone aggregate 6 mm nominal size) by volume, hardening compound mixed @ 2 litre per 50kg of cement or as per manufacturers specifications. This includes cost of cement slurry and complete in all respect etc.	20	SQM.		
<b>Total Rs :</b>					
<b>AMOUNT OF PART - 'A'</b>					

IT. No.	Description of Items ( For one first year all maintenance terms, conditions is applicable without AMC cost under defect liability period)	Total Qty.	Unit	Rates	Amount
	<b>FULLY COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT (AMC)(PART- 'B') :-</b> Rates to be quoted by the Agency/contractor for fully comprehensive AMC inclusive of all (PV Module, Inverter, AC Combiner box, Connectors MC4, Electrical panels and equipments associated with above works, every year recharge etc. Excluding civil works) for next five years after the defect liability period of one year. <b>NOTE:- ONLY THESE ITEM NO. ARE NOT IN A SCOPE OF COMPREHENSIVE AMC. ITEM NO. 21 TO 36 &amp; 38</b>				
	<b>DESCRIPTION OF ITEMS</b>	<b>Amount (AMC as per Yearly)</b>	<b>Yearly AMC Amount</b>		
	For 1st Year amount without GST , fully comprehensive AMC of above Solar System after the Defect liability period of One year excluding civil works				
	For 2nd Year amount excuding civil works				
	For 3rd Year amount excluding civil works				
	For 4th Year amount excluding civil works				
	For 5th Year amount excluding civil works				
	<b>AMOUNT OF AMC (PART-'B')</b>				
	<b>GRAND TOTAL (PART-'A' + PART' B')</b>				

**GST to be paid additionally**