



THE M.P. STATE AGRO INDUSTRIES DEVELOPMENT CORPORATION LTD.
PANCHANAN, 3RD FLOOR, MALVIYA NAGAR, BHOPAL-462003
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website : www.mpstateagro.nic.in - CIN No. U01119MP1969SGC001055

मुख्या / मार्केटिंग / Gem-Portal-79 / 2024-25 / 2489

दिनांक : 08.10.2024

प्रति,

क्षेत्रीय प्रबंधक (समस्त),
जिला प्रबंधक (समस्त),

विषय : जेम पोर्टल से सोलर हाईमास्ट लाईट के व्यवसाय के संबंध में।

जिला कार्यालयों द्वारा मुख्यालय से जारी SOP के संदर्भ में विगत वर्षों से जेम पोर्टल के माध्यम से सोलर हाईमास्ट तथा सोलर स्ट्रीट लाईट का व्यवसाय किया जा रहा है, जिसकी दरें एवं स्पेसिफिकेशन भिन्न-भिन्न रहते हैं। दरें एवं स्पेसिफिकेशन में एकरूपता लाने के लिए तथा कार्य की बेहतर गुणवत्ता को दृष्टिगत मुख्यालय स्तर से ही कार्यपालन यंत्री, लोक निर्माण विभाग (ई. एण्ड एम.) भोपाल से निम्नानुसार तकनीकी मापदण्ड, ड्राईंग डिजाईन, स्पेसिफिकेशन तैयार कर प्राक्कलन की तकनीकी स्वीकृति प्राप्त की गयी :-

क्र०	सोलर हाईमास्ट लाईट का विवरण	दरें (समस्त कर एवं निगम मार्जिन सहित)
01.	Installation of 4 No. 25W LED Lights on 7m High mast.	Rs. 271889.00
02.	Installation of 6 No. 40W LED Lights on 9m High mast.	Rs. 386839.00
03.	Installation of 6 No. 40W LED Lights with 500 Watt Solar Wind Hybrid System on 9m High mast.	Rs. 485912.00

अतः सोलर हाईमास्ट लाईट का जेम पोर्टल से व्यवसाय हेतु स्पेसिफिकेशन, ड्राईंग तथा तकनीकी स्वीकृति प्राप्त उपरोक्त प्राक्कलन की प्रति संलग्न प्रस्तुत कर लेख है कि जिला योजना शाखा द्वारा चाहे जाने पर उपरोक्त मॉडल के लिये ही प्राक्कलन सहित दरें उपलब्ध करायी जाए एवं उक्त अनुसार ही कार्य किया जावे। साथ ही मुख्यालय द्वारा जेम पोर्टल पर व्यवसाय हेतु जारी एस.ओ.पी. एवं समय-समय पर जारी दिशा-निर्देशों का पूर्णतः पालन किया जावे। वर्तमान में जिन सोलर हाईमास्ट लाईट की प्रशासकीय स्वीकृति (A.S.) जारी की जा चुकी है तथा कार्यादेश जारी नहीं किया गया है, उनके लिए कलेक्टर महोदय (जिला योजना) से संपर्क कर उपरोक्त विस्तृत तकनीकी प्राक्कलन प्रस्तुत कर संशोधित प्रशासकीय स्वीकृति हेतु अनुरोध किया जावे।

जेम पोर्टल पर सोलर हाईमास्ट लाईट की बिड़ जारी करते समय आपके द्वारा निर्धारित किये जाने वाले शर्तों में निम्नानुसार शर्तें अवश्य शामिल किया जावे :-

01. प्रदायकर्ता एनएसआईसी/एमएसएमई में सोलर उर्जा विद्युतीकरण हेतु पंजीकृत हो।
02. प्रदायक को सोलर हाईमास्ट लाईट/सोलर स्ट्रीट लाईट कार्य हेतु एक वर्ष का अनुभव हो।

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03. प्रदायकर्ता का म.प्र. में सर्विस सेंटर होना चाहिये। प्रदायकर्ता से सर्विस सेंटर का पूर्ण पता एवं संपर्ककर्ता का नाम, मोबाईल नम्बर आदि जानकारी भी ली जावे।
04. बिड़ में सोलर हाई मास्ट/सोलर स्ट्रीट लाईट का 05 वर्ष मेन्टेनेंस की शर्त रखी जावे।
05. अंतिम भुगतान के पूर्व प्रदायकर्ता से आदेशित राशि की 3 प्रतिशत के समतुल्य राशि की बैंक गारण्टी संधारण अवधि हेतु प्राप्त की जावे। इसका पांचवा हिस्सा प्रत्येक वर्ष के अंत में संतोषजनक संधारण के उपरांत ही जारी किया जावे।

उपरोक्त निर्देशों का कड़ाई से पालन किया जावे।

कार्य की बेहतर गुणवत्ता के दृष्टिगत प्राक्कलन के महत्वपूर्ण आईटम के संबंध में सुझाव स्वरूप प्रमुख मेक एवं वांछित प्रमाणीकरण तथा स्टैंडर्ड चार्ट भी संलग्न है जिसे बिडिंग प्रक्रिया में शामिल किये जाने का सुझाव है। सोलर स्ट्रीट लाईट के स्पेसिफिकेशन, ड्राईंग एवं प्राक्कलन भी तकनीकी स्वीकृति उपरांत शीघ्र भेजे जा रहे हैं तब तक सोलर स्ट्रीट लाईट के व्यवसाय से संबंधित कोई कार्य न किया जावे।

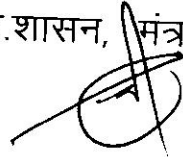
संलग्न : उपरोक्तानुसार कुल पृष्ठ-27

प्रतिलिपि :- 2490
09-10-24

 09/10/24
प्रबंध संचालक

01. माननीय अध्यक्ष महोदय, म.प्र. राज्य कृषि उद्योग विकास निगम, भोपाल।

02. प्रमुख सचिव, उद्यानिकी एवं खाद्य प्रसंस्करण विभाग, म.प्र.शासन, मंत्रालय, भोपाल।

 09/10/24
प्रबंध संचालक

Technical Report

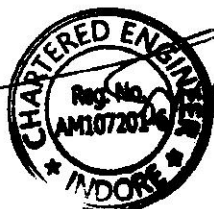
- 1 Name of the work Estimate for Installation of 4 No 25W LED lights on 7m High mast
- 2 Amount of Estimate ₹ 2,71,889
- 3 Department MP AGRO Industries development Corporation Limited MP
- 4 Provision Provision has been made for installation of 25Wx4 LED light on 7 m high mast, fully charged by solar PV modules.
- 5 Rate As per current MPPWD SOR in force 01.01.2024
- 6 Specification The work will be carried out as per MPPWD (E/M) specifications

Chartered
Mechanical Engineer

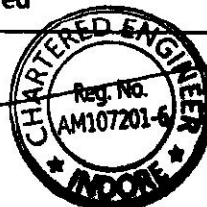


Estimate for Installation of 4 No 25W LED lights on 7m High mast

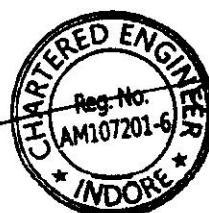
S.no	SOR ITEM No	SOR	Description of item	Quantity	Unit	Rate	Amount
1	Non SOR	PV module	Supply and installation of 110 Wp MNRE approved polycrystalline half cut PV module protected with toughened glass, open circuit voltage 21.4V minimum, conforming to IEC 61215 and IEC 61370, having terminal box as per standard practice and condition performance warranty min 25 yrs. Module efficiency must be more than 20%.	4	Each	6000	24000
2	Non SOR	Battery	Supply and installation of 12V 36 Ah capacity Lithium ferro Phosphate battery BIS approved having output voltage as 12.8 V and suitable battery management system for cell balancing, over charge and over temperature protection DOD 80% life cycle 2000	4	Each	9990	39960
4	Non SOR	Charge controller	Supply and installation inside the control panel ,Solar charge controller type PWM/ MPPT type as per EN 51530 . Charge controller rating 15A.Module rating 110Wp @ 16.4 V plus minus 2V.Open circuit voltage >21V, Vmp 16.4 V	1	Each	18500	18500
5	Non SOR	Polygonal high mast	Supply and installation of 7m polygonal high mast in single section of 3 mm thickness made from hot dip galvanized and suitable for wind speed 70 km per hour with 100 mm top and 200 mm bottom . Baseplate 350x350x16 mm. foundation bolt J type 750 x750 x 24 mm ,approximate weight 198 kg capable of supporting GI structure for solar panel luminiary carriage and battery.The high mast should be equipped with winch mechanism for	1	Each	39243	39243
6	Non SOR	Inverter	Supply and installation of pure sine wave inverter of capacity more than 400VA 12V output	1	Each	8590	8590
7	Non SOR	LDR	Supply and fixing of AC Auto day/Night on off photocell sensor LDR switch for lighting waterproof IP 65 20A	4	Each	1299	5196
8	29.6	Multi core flexible cables	Supply and fixing of multi core round FRLSH PVC insulated copper (flexible) conductor & PVC sheathed cables 1100Volts as per IS:694 1990 of approved make				
	29.6.5	Three core 4.0 sq.mm.	(56/0.3 mm) Three core 4.0 sq.mm.	40	Metre	132	5280



9	27.8	MCB 'C' Series, 240/415V, 50 Cycle, 10kA/15kA	Supply of ISI marked and accepted standard of miniature circuit breaker (MCB) of 'C' series with short circuit indication, suitable for 240/415 Volts, 50 Cycle, 10 kA/15 kA Value AC supply conforming to IS : 8828 : 1996, IEC : 60898 : 2002 & 60947-2 but without enclosures :-				
	27.8.1	Single pole	Single pole				
	27.8.1.2	MCB SP 6A to 32A, 10kA	MCB SP 6Amp to 32Amp 10kA rating	4	Each	263	1052
	27.8.2	Double Pole	Double pole				
	27.8.2.2	MCB DP 6A to 32A, 10kA	MCB DP 6Amp to 32Amp 10kA rating	1	Each	887	887
10	27.11	SPN MCB DB	Supply of approved make powder coated sheet steel encloser SPN MCB DB inclusive of busbar, neutral bar, earth bar, connection copper wire not less than 16 sq.mm & two earth terminals etc. complete as per IS:13032(exclusive of MCB & isolator)-				
	27.11.5	8 Way double door	8 Way double door IP 43 protection	1	Each	2127	2127
11	28.4	Fixing of MCB/MCCB /Isolator, (labour only)	Fixing of MCB/MCCB/Isolator in sheet steel enclosure as required as per accepted practice, including mounting on busbar and cable connection etc. complete (labour only)				
	28.4.1	MCB/Isolator SP/DP	MCB/Isolator SP/DP	5	Each	22	110
12	31.12	Street light with high power LED system	Supply and fixing street light with high power LED of 3 to 6 W each on existing bracket assembled on single MCPCB, system lumens output with efficacy > 120 lm/W. luminaire having color temp upto 6500K & 50000 burning hrs. life with minimum @ L 70, The colour rendering index of LED light should be more than 70. Luminaire comprises of driver, PF > 0.95 & surge protection 10KV. Housing made of pressure die cast aluminium with heat resistant flat glass/Lens type, IP65 protection. Submission LM 79-08/IS16106 (2012), IEC60598, IEC61347i/c connection wire, testing etc. to complete the job.				
	31.12.2	24-25W	24Watt to 25Watt, color temp 3000-6500k as required.	4	Each	2737	10948
13	37.1	With G.I. earth pipe	Earthing with G.I. earth pipe 4.5 metre long and 40 mm dia with masonry encloser in cement mortar, cover plate having locking arrangement on the top etc. (but without charcoal or coke and salt) complete as required	3	Each	3312	9936

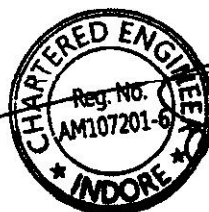


14	37.2	Add extra for using salt and charcoal/coke for pipe earth electrode	Add extra for using salt and charcoal/coke for pipe earth electrode as required including excavation & refilling				
	37.2.1	Excavation	Excavation 4.5 m by manual labour	3	Each	1942	5826
15	37.22	18mm dia 500mm long bright nickel plated GI tube	Providing and fixing of lightning conductor finial made of 18mm dia 500mm long bright nickel plated GI tube tapered having single prong at top with bright nickel plated GI base M10 for connection and intersection of flat or round conductor including holes, clamp complete as required.	1	Each	1285	1285
16	37.8	G.I. wire conductor earth electrode	Supply and laying 4.87mm 6 SWG G.I. wire at 0.5 metre below ground level as conductor earth electrode including jointing etc. as required.	10	Metre	25	250
17	37.10.	25x6 mm G.I. strip	Supply and laying 25mm X 6mm G.I. strip at 0.5 metre below ground level/surface as strip earth electrode including jointing etc. as required.	10	Metre	147	1470
18	29.27	LT panel	Supply, fixing, testing & commissioning wall/floor mounted LT panel primer coated with powder coated paint & provided with required gasket for dust/vermin proof with degree of protection IP42 suitable for 415Volt 3 phase, 50 Hz, 4 wire system fabricated out of CRCA sheet upto 2 mm thick (1.6 mm for doors) duly compartmentalized for incomer, bus section, outgoing, cable alleys & CT, PT Ampere Metre, Volt Metre, selector switches, frequency Metre, phase indicating lamp, Energy Metre complete including cost of busbar supports, detachable cable gland plates, 2 earthing terminals, internal wiring & fixing of separately supplied MCBs, MCCBs, ACB, panel mounted changeover switch/SFUs, etc. as required but excluding cost of busbar strips, Ampere Metre, Volt Metre, selector switch as per approved design & specification	40	Kg	397	15880
			Part A- 100x40x40cm size of control panel Part B-25x100x40 cm size of battery box				



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19	42.42	Angle/channel/flat iron fitting for overhead line & sub-station etc.	Supply, fabrication and erection of angle/channel/flat iron fitting for overhead line & sub-station etc such as 'D' bracket, cross arms, top clamp, 'V' cross arms, back/support clamp or other similar work etc. including nut bolts of required size, making holes, fabrication, welding, cutting, etc. and painting with one coat of red oxide paint & two coat of aluminium paint as required as per specification.	50	Kg.	105	5280
			Civil work based on SOR MPPWD Vol 1 in force from 01.01.2024				
20	2.6		Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5m in width as well as 10 sqm on plan) including dressing of sides and ramming of bottom disposal of excavated earth, lead up to 50m and lift up to 1.5m, disposed earth to be levelled and neatly dressed. (No extra lift is payable if work is done by mechanical means) All kinds of soil				
			All kinds of soil				
			Foundation				
			Total Earthwork in excavation of Foundation	8.650	Cum	147.00	1271.55
			Plain Cement Concrete in Foundation				
21	4.1		Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All works upto plinth level.				
	4.1.1		With 20mm nominal size graded stone aggregate.				
	4.1.1.3		M-15 - Grade Concrete				
			PCC in foundation				
			Total PCC	0.290	Cum	4471.00	1296.59
			RCC up to plinth:-				
22	5.1		Providing and laying in position specified grade of reinforced cement concrete (with 20mm nominal size graded stone aggregate) excluding the cost of centering shuttering, finishing and reinforcement - All work up to plinth level.				
	5.1.1		M-20 Grade Concrete				
			RCC in foundation				
			Column				
			Total Cost of RCC	2.880	Cum	3474.00	10005.12
			Reinforcement				



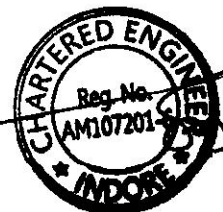
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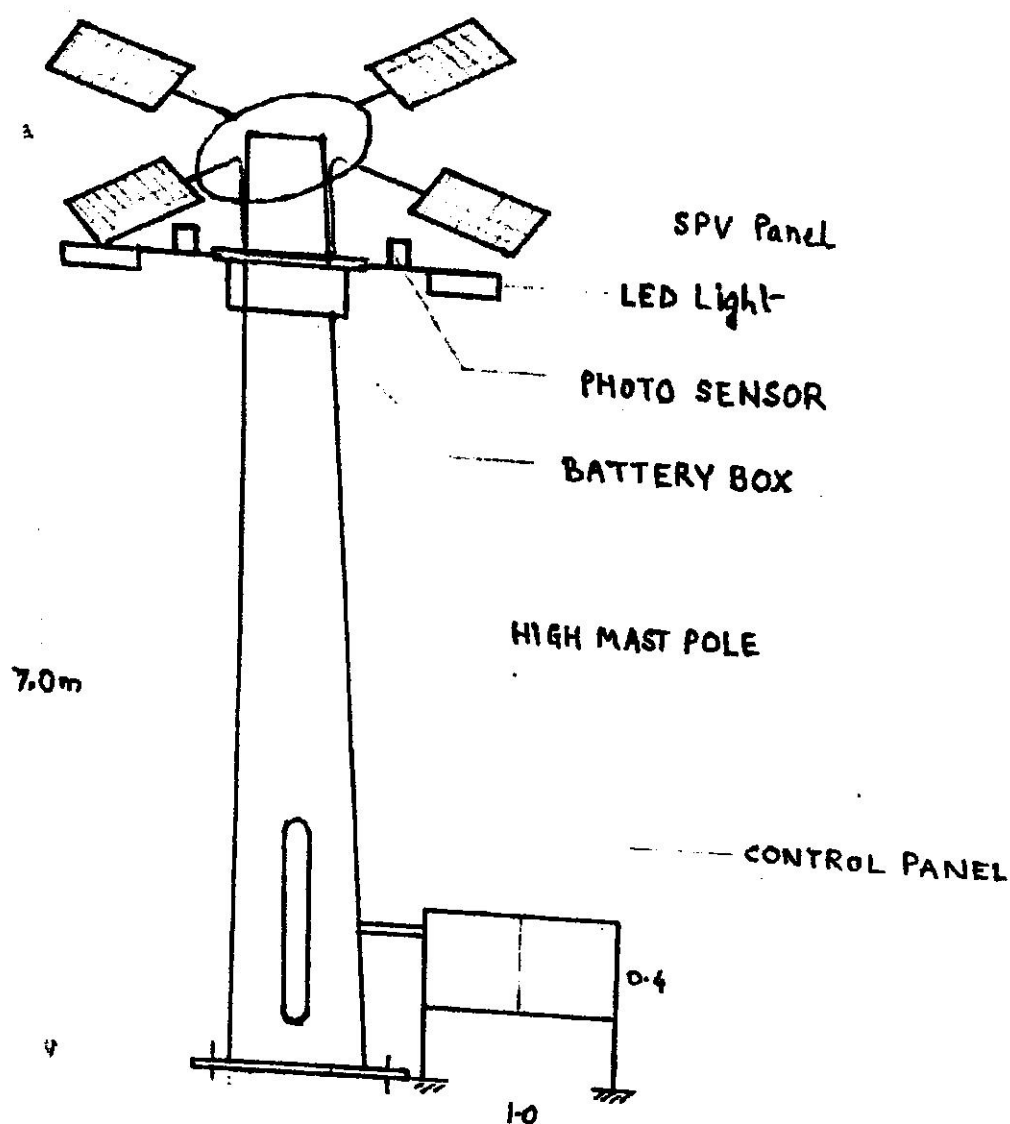
23	5.16		Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding including cost of binding wire all wastages and overlaps, couplers (overlaps shall be provided as per requirement of IS 13920 for ductile detailing IS 456 RCC Design & SP 34 Reinforcement detailing) etc. complete. (Note:-				
			Note:-				
			1. Spacer bars (chairs) shall be paid separately as shown in the drawing and as per direction of engineer in charge.				
			2. No extra payment shall be done for overlaps and/or couplers.				
			3. Couplers shall be conforming to IS code on "Reinforcement Couplers for Mechanical Splices of Bars for Concrete Reinforcement - Specification")				
24	5.16.6		TMT				
			Quantity of Steel as shown in drawing				
			Total Cost of Steel	160.00	Kg	80.00	12800.00
			Shuttering				
25	5.9		Centering and shuttering including strutting, propping etc. and removal of form for :				
	5.9.1		Foundations, footings, bases of columns, etc. for concrete upto plinth level				
			Footing				
			Column Base (Base of Mast)				
			Total Shuttering in foundation	10.98	Sqm	190.60	2092.79
			Filling				
26	2.24		Filling available excavated earth (excluding rock) in trenches plinth sides of foundations etc.in layers not exceeding 20 cm in Depth consolidating each deposited layer by ramming and watering lead up to 50 m and lift upto 1.5m				
			Total Excavation				
			Quantity of PCC				
			Quantity of RCC				
			Net Filling in foundation Trenches	5.480	Cum	95.00	520.60
Total							223777
Contingency and margin 3.5%							7832
Add GST 18%							40280
Net Total							271889

I/Section Est No. 15 ASCE 2024-25
 Amount of Rs. 2,23,777.60 only
 Under the Head 5443
 Date 03.10.24

Executive Engineer
 P.W.D. EM Dn.No.-1, Bh



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Schematic Drawing of 4x25W LED Lights
on 7mtr High Mast

Executive Engineer
P.W.D. & M. Division No. 1, Bhopal



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BASE PLATE
DETAIL

1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN
METER.

2. CONCRETE GRADE SHALL BE M-20 &
REINFORCEMENT SHALL BE OF Fe-415

3. FOR F.C CONCRETE SHALL BE 1:1.5

4. MAXIMUM CLEAR COVER FOR CONCRETE
SHALL BE 25MM FOR PROTECT.

5. MAXIMUM LAP LENGTH OF BARS SHALL BE
300MM (UNLESS OTHERWISE STATED)

6. FOUNDATION SHOULD BE SET ON VIBRO SOIL
FILL & 8 C IS NOT ALLOWABLE AT SPECIFIED
FOUNDATION LEVEL. IT SHOULD BE TAKEN
DEEPER.

7. PLEASE VERIFY THE BOLT DETAIL'S BEFORE
CASTING THE FOUNDATION.

P. W. C. Film Division No. 1 Rhodaf

ALL DIMENSIONS ARE IN INCH

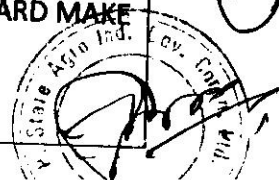


ALL THINGS ARE IN HIM

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LIST OF APPROVED MATERIAL

S.NO.	NAME OF ITEMS	SUGGESTIVE MAKE	CERTIFICATION BY/SUGGESTIVE STANDARD
1	SOLAR PV MODULE	WAAREE, LOOM, TATA OR EQUIVALENT	MNRE
2	SOLAR BATTERY	LITPAX OR EQUIVALENT	AS PER BIS
3	CHARGE CONTROLLER	AMIEI SMART, OR EQUIVALENT	MNRE AT
4	POLYGONAL/SERCULAR HIGH MAST	SURYA, UTKARSH, BAJAJ OR EQUIVALENT	BIS
5	INVERTER	LUMINOUS, EXIDE, MICROTEK OR EQUIVALENT	BIS
6	LDR SENSOR	EYSENSE OR EQUIVALENT	
7	F.R.LS (FIRE RATED LOW SMALL) COPPER CONDUCTOR	ANCHOR, HAVELLS, FINOLEX OR EQUIVALENT	BIS
8	MCB/ISOLATOR	HAVELLS, C&S, L&T, LEGENDS OR EQUIVALENT	BIS
9	SPN DB	HAVELLS, C&S OR EQUIVALENT	BIS
10	STREET LIGHT LED	PHILIPS, CROMPTON, WIPRO OR EQUIVALENT	BIS
11	G. I. PIPE	SWASTIK, SURYA OR EQUIVALENT	BIS
12	LIGHTING CONDUCTOR	AS PER STANDARD PRACTICE	BIS
13	G.I. WIRE	TATA, SAIL OR EQUIVALENT	BIS
14	G.I. STRIP	TATA, SAIL, OR EQUIVALENT	BIS
15	LT PANEL	FABRICATION ITEM	
16	HARDWARE	TATA, SAIL OR EQUIVALENT	BIS
17	STEEL FOR REINFORCEMENT	TATA, BANSAL, MOIRA OR EQUIVALENT	BIS
18	PERMANENT MEGNET GENERATOR MOTOR	STANDARD MAKE	STANDARD MAKE
19	WIND TURBINE	IYSERT, INVERTER, TULIP, IRIS OR EQUIVALENT	STANDARD MAKE



5100CH-2 1/23

Technical Report

1 Name of the work

Estimate for Installation of 6 No 40W LED lights
on 9m High mast

2 Amount of Estimate

₹ 3,86,839

3 Department

MP AGRO Industries development Corporation
Limited MP

4 Provision

Provision has been made for installation of
40Wx6 LED light on 9 m high mast, fully
charged by solar PV modules.

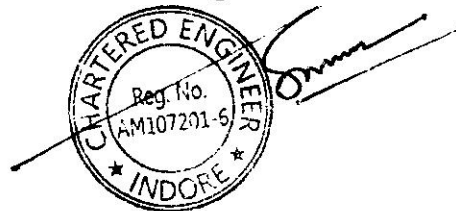
5 Rate

As per current MPPWD SOR in force
01.01.2024

6 Specification

The work will be carried out as per MPPWD
(E/M) specifications

Chartered
Mechanical Engineer

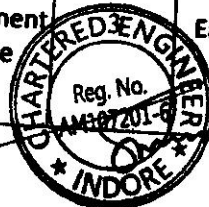


Estimate for Installation of 6 No 40W LED lights on 9m High mast

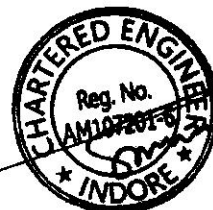
S.no	SOR ITEM No	SOR	Description of item	Quantity	Unit	Rate	Amount
1	Non SOR	PV module	Supply and installation of 150 Wp MNRE approved polycrystalline half cut PV module protected with toughened glass, open circuit voltage 21.4V minimum, conforming to IEC 61215 and IEC 61370, having terminal box as per standard practice and condition performance warranty min 25 yrs. Module efficiency must be more than 20%.	4	Each	7650	30600
2	Non SOR	Battery	Supply and installation of 12V 78 Ah capacity Lithium ferro Phosphate battery BIS approved having output voltage as 12.8 V and suitable battery management system for cell balancing, over charge and over temperature protection DOD 80% life cycle 2000	6	Each	14600	87600
4	Non SOR	Charge controller	Supply and installation inside the control panel ,Solar charge controller type PWM/ MPPT type as per EN 51530 . Charge controller rating 60A.Module rating 150Wp @ 16.4 V plus minus 2V.Open circuit voltage >21V, Vmp 16.4 V	1	Each	3800	3800
5	Non SOR	Polygonal high mast	Supply and installation of 9m polygonal high mast in single section of 3 mm thickness made from hot dip galvanized and suitable for wind speed 70 km per hour with 100 mm top and 200 mm bottom . Baseplate 350x350x16 mm. foundation bolt J type 750 x750 x 24 mm ,approximate weight 198 kg capable of supporting GI structure for solar panel luminiary carriage and battery.The high mast should be equipped with winch mechanism for lowering the panel and lights etc for maintenance purposes.	1	Each	61450	61450
6	Non SOR	Inverter	Supply and installation of pure sine wave inverter of capacity more than 400VA 12V output	1	Each	8590	8590
7	Non SOR	LDR	Supply and fixing of AC Auto day/Night on off photocell sensor LDR switch for lighting waterproof IP 65 20A	4	Each	1299	5196
8	29.6	Multi core flexible cables	Supply and fixing of multi core round FRLSH PVC insulated copper (flexible) conductor & PVC sheathed cables 1100Volts as per IS:694-1990 of approved make				
	29.6.5	Three core 4.0 sq.mm.	(56/0.3 mm) Three core 4.0 sq.mm.		Metre	132	7920



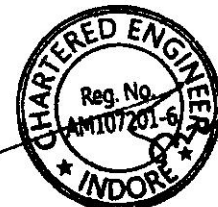
9	27.8	MCB 'C' Series, 240/415V, 50 Cycle, 10kA/15kA	Supply of ISI marked and accepted standard of miniature circuit breaker (MCB) of 'C' series with short circuit indication, suitable for 240/415 Volts, 50 Cycle, 10 kA/15 kA Value AC supply conforming to IS : 8828 : 1996, IEC : 60898 : 2002 & 60947-2 but without enclosures :-				
	27.8.1	Single pole	Single pole				
	27.8.1.2	MCB SP 6A to 32A, 10kA	MCB SP 6Amp to 32Amp 10kA rating	6	Each	263	1578
	27.8.2	Double Pole	Double pole				
	27.8.2.2	MCB DP 6A to 32A, 10kA	MCB DP 6Amp to 32Amp 10kA rating	1	Each	887	887
10	27.11	SPN MCB DB	Supply of approved make powder coated sheet steel encloser SPN MCB DB inclusive of busbar, neutral bar, earth bar, connection copper wire not less than 16 sq.mm & two earth terminals etc. complete as per IS:13032(exclusive of MCB & isolator)-				
	27.11.5	8 Way double door	8 Way double door IP 43 protection	1	Each	2127	2127
11	28.4	Fixing of MCB/MCCB /Isolator, (labour only)	Fixing of MCB/MCCB/Isolator in sheet steel enclosure as required as per accepted practice, including mounting on busbar and cable connection etc. complete (labour only)				
	28.4.1	MCB/Isolator SP/DP	MCB/Isolator SP/DP	7	Each	22	154
12	31.13	Street light with high power LED system	Supply and fixing street light with high power LED of 3 to 6 Watt each on existing bracket assembled on single MCPCB and additional unique peanut lens on each LED, system lumens output with efficacy > 120 lm/Watt. luminaire having color temp upto 6500K & 50000 hrs. burning life with minimum @ L 70, The colour rendering index of LED light should be more than 70. Luminaire comprises of driver, PF > 0.95 & surge protection 10KV. Housing made of pressure die cast aluminium with heat resistant flat glass, IP65 protection. Submission LM 79-08/IS16106 (2012), IEC60598, IEC61347 i/c connection wire, testing etc. to complete the job.				
	31.13.1	40W	40Watt to 48Watt, color temp 3000-6500k as required.	6	Each	6105	36630
3	37.1	With G.I. earth pipe	Earthing with G.I. earth pipe 4.5 metre long and 40 mm dia with masonry encloser in cement mortar, cover plate having locking arrangement on the top etc. (but without charcoal or coke and salt) complete as required		Each	3312	9936



14	37.2	Add extra for using salt and charcoal/coke for pipe earth electrode	Add extra for using salt and charcoal/coke for pipe earth electrode as required including excavation & refilling				
	37.2.1	Excavation	Excavation 4.5 m by manual labour	3	Each	1942	5826
15	37.22	18mm dia 500mm long bright nickel plated GI tube	Providing and fixing of lightning conductor finial made of 18mm dia 500mm long bright nickel plated GI tube tapered having single prong at top with bright nickel plated GI base M10 for connection and intersection of flat or round conductor including holes, clamp complete as required.	1	Each	1285	1285
16	37.8	G.I. wire conductor earth electrode	Supply and laying 4.87mm 6 SWG G.I. wire at 0.5 metre below ground level as conductor earth electrode including jointing etc. as required.	10	Metre	25	250
17	37.10.	25x6 mm G.I. strip	Supply and laying 25mm X 6mm G.I. strip at 0.5 metre below ground level/surface as strip earth electrode including jointing etc. as required.	10	Metre	147	1470
18	29.27	LT panel	Supply, fixing, testing & commissioning wall/floor mounted LT panel primer coated with powder coated paint & provided with required gasket for dust/vermin proof with degree of protection IP42 suitable for 415Volt 3 phase, 50 Hz, 4 wire system fabricated out of CRCA sheet upto 2 mm thick (1.6 mm for doors) duly compartmentalized for incomer, bus section, outgoing, cable alleys & CT, PT Ampere Metre, Volt Metre, selector switches, frequency Metre, phase indicating lamp, Energy Metre complete including cost of busbar supports, detachable cable gland plates, 2 earthing terminals, internal wiring & fixing of separately supplied MCBs, MCCBs, ACB, panel mounted changeover switch/SFUs, etc. as required but excluding cost of busbar strips, Ampere Metre, Volt Metre, selector switch as per approved design & specification	50	Kg	397	19850
			Part A- 100x40x40cm size of control panel Part B-25x100x40 cm size of battery box				



19	42.42	Angle/channel/flat iron fitting for overhead line & sub-station etc.	Supply, fabrication and erection of angle/channel/flat iron fitting for overhead line & sub-station etc such as 'D' bracket, cross arms, top clamp, 'V' cross arms, back/support clamp or other similar work etc. including nut bolts of required size, making holes, fabrication, welding, cutting, etc. and painting with one coat of red oxide paint & two coat of aluminium paint as required as per specification.	50	Kg.	105	5250
			Civil work based on SOR MPPWD Vol 1 in force from 01.01.2024				
20	2.6		Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5m in width as well as 10 sqm on plan) including dressing of sides and ramming of bottom disposal of excavated earth, lead up to 50m and lift up to 1.5m, disposed earth to be levelled and neatly dressed. (No extra lift is payable if work is done by mechanical means) All kinds of soil				
			All kinds of soil				
			Foundation				
			Total Earthwork in excavation of Foundation	8.650	Cum	147.00	1271.55
21	4.1		Plain Cement Concrete in Foundation				
	4.1.1		Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All works upto plinth level.				
	4.1.1.3		With 20mm nominal size graded stone aggregate.				
			M-15 - Grade Concrete				
			PCC in foundation				
			Total PCC	0.290	Cum	4471.00	1296.59
22	5.1		RCC up to plinth:-				
	5.1.1		Providing and laying in position specified grade of reinforced cement concrete (with 20mm nominal size graded stone aggregate) excluding the cost of centering shuttering, finishing and reinforcement - All work up to plinth level.				
			M-20 Grade Concrete				
			RCC in foundation				
			Column				
			Total Cost of RCC	2.880	Cum	3474.00	10005.12
			Reinforcement				

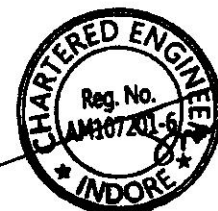


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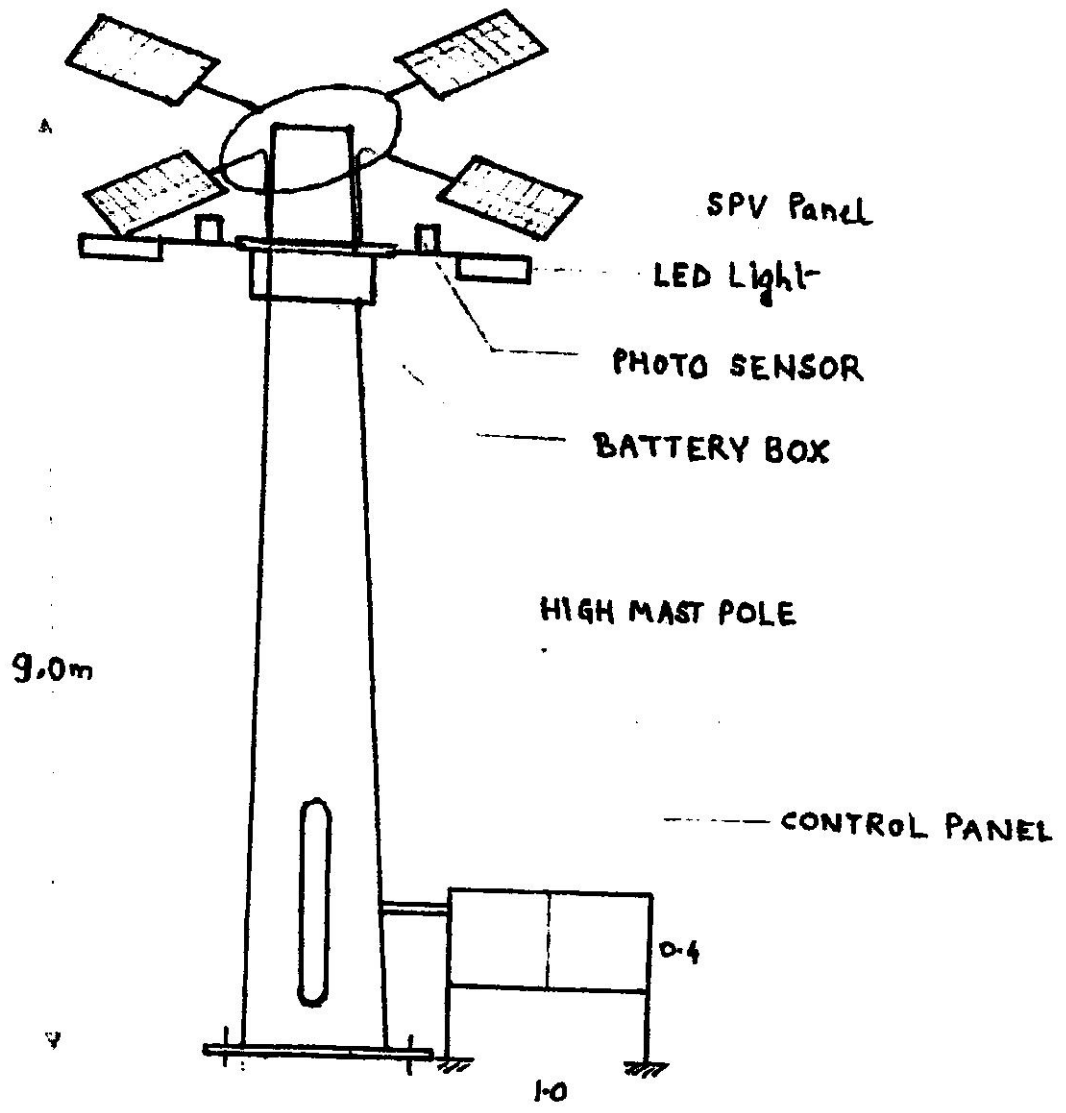
23	5.16	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding including cost of binding wire all wastages and overlaps, couplers (overlaps shall be provided as per requirement of IS 13920 for ductile detailing IS 456 RCC Design & SP 34 Reinforcement detailing) etc. complete. (Note:- Note:-				
		1. Spacer bars (chairs) shall be paid separately as shown in the drawing and as per direction of engineer in charge.				
		2. No extra payment shall be done for overlaps and/or couplers.				
		3. Couplers shall be conforming to IS code on "Reinforcement Couplers for Mechanical Splices of Bars for Concrete Reinforcement - Specification")				
	5.16.6	TMT				
		Quantity of Steel as shown in drawing				
		Total Cost of Steel	160.00	Kg	80.00	12800.00
25	5.9	Shuttering				
		Centering and shuttering including strutting, propping etc. and removal of form for :				
	5.9.1	Foundations, footings, bases of columns, etc. for concrete upto plinth level				
		Footing				
		Column Base (Base of Mast)				
		Total Shuttering in foundation	10.98	Sqm	190.60	2092.79
26	2.24	Filling				
		Filling available excavated earth (excluding rock) in trenches plinth sides of foundations etc. in layers not exceeding 20 cm in Depth. consolidating each deposited layer by ramming and watering lead up to 50 m and lift upto 1.5m				
		Total Excavation				
		Quantity of PCC				
		Quantity of RCC				
		Net Filling in foundation Trenches	5.480	Cum	95.00	520.60
Total						318386
Contingency and margin 3.5%						11143
Add GST 18%						57309
Net Total						386839

716
 Section Est. No. 2 ASSESSMENT 2024-25
 Amount of Rs. 3,18,386.86/- only
 Under the Head 8443
 Date 23.10.24


 Executive Engineer
 P.W.D. EMD No. 1, Bhoni

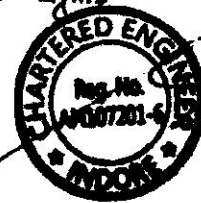


15



Schematic Drawing of 6x40W LED Lights
on 9 mtr High Mast

Executive Engineer
P.W.D. P.M. Division No. I, Bhopal



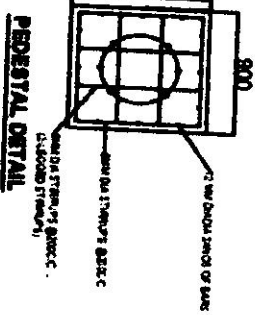
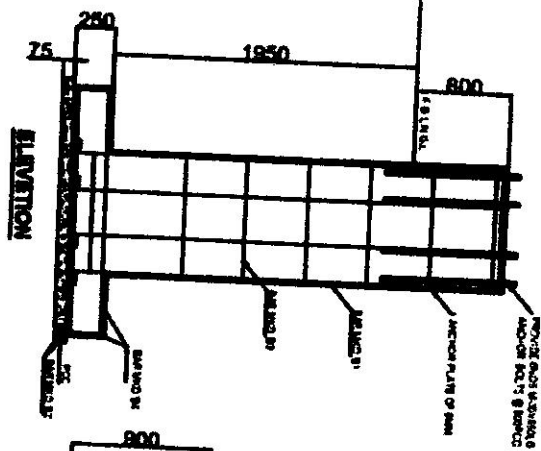
Drawing & Design of Foundation of 9 m High Mast Pole, Footing, column Anchor bolt & Base Plate as per Drawing

(17)

BEFORE CASTING THE FOUNDATION, VERIFY THE DIMENSIONS OF FOUNDATION BOLTS LIKE DIA, QTY & P.C.D AND ANCHOR PLATE, WITH RESPECT TO THE DIMENSIONS MENTIONED IN THIS DRAWING.

SCHEDULE OF QUANTITIES

EXCAVATION	8.38	CUM
P.C.C	0.40	CUM
R.C.C	2.88	CUM
STEEL	180	KG

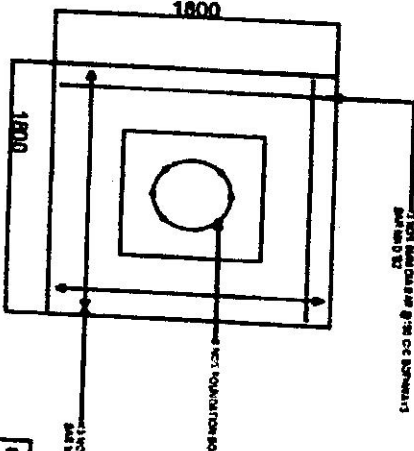


BASE PLATE DETAIL

1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METER.
2. CONCRETE GRADE SHALL BE M-20 & REINFORCEMENT SHALL BE OF F-415.
3. FOR P.C.C GRADE SHALL BE 1:4:8.
4. BRASS PLATE COVER FOR CONCRETE SHALL BE 10MM FOR P.C.C.
5. MINIMUM LAP LENGTH OF BARS SHALL BE 300MM UNLESS OTHERWISE STATED.
6. FOUNDATION SHOULD REST ON VIBRATORY SOX.
7. FOUNDATION LEVEL IT SHOULD BE TAKEN DEEPER.
8. PLEASE VERIFY THE BOLT DETAILS BEFORE CASTING THE FOUNDATION.

SCHEDULE OF REINFORCEMENT

NO.	SHAPE	NO. OF BARS	LENGTH	AREA
1	12	12	1.00	113.1
2	12	12	1.00	113.1
3	12	12	1.00	113.1
4	12	12	1.00	113.1
5	12	12	1.00	113.1
6	12	12	1.00	113.1
7	12	12	1.00	113.1
8	12	12	1.00	113.1
9	12	12	1.00	113.1
10	12	12	1.00	113.1
11	12	12	1.00	113.1
12	12	12	1.00	113.1
13	12	12	1.00	113.1
14	12	12	1.00	113.1
15	12	12	1.00	113.1
16	12	12	1.00	113.1
17	12	12	1.00	113.1
18	12	12	1.00	113.1
19	12	12	1.00	113.1
20	12	12	1.00	113.1
21	12	12	1.00	113.1
22	12	12	1.00	113.1
23	12	12	1.00	113.1
24	12	12	1.00	113.1
25	12	12	1.00	113.1
26	12	12	1.00	113.1
27	12	12	1.00	113.1
28	12	12	1.00	113.1
29	12	12	1.00	113.1
30	12	12	1.00	113.1
31	12	12	1.00	113.1
32	12	12	1.00	113.1
33	12	12	1.00	113.1
34	12	12	1.00	113.1
35	12	12	1.00	113.1
36	12	12	1.00	113.1
37	12	12	1.00	113.1
38	12	12	1.00	113.1
39	12	12	1.00	113.1
40	12	12	1.00	113.1
41	12	12	1.00	113.1
42	12	12	1.00	113.1
43	12	12	1.00	113.1
44	12	12	1.00	113.1
45	12	12	1.00	113.1
46	12	12	1.00	113.1
47	12	12	1.00	113.1
48	12	12	1.00	113.1
49	12	12	1.00	113.1
50	12	12	1.00	113.1



6. STRUCTURAL LOADING

Executive Engineer
P.W.D. DIVISION NO. 1, BHOJAL



TITLE 9 METER HIGH MAST FOUNDATION

ALL DIMENSIONS ARE IN MM

LIST OF APPROVED MATERIAL

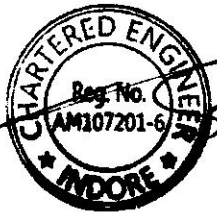
S.NO.	NAME OF ITEMS	SUGGESTIVE MAKE	CERTIFICATION BY/SUGGESTIVE STANDARD
1	SOLAR PV MODULE	WAAREE, LOOM, TATA OR EQUIVALENT	MNRE
2	SOLAR BATTERY	LITPAX OR EQUIVALENT	AS PER BIS
3	CHARGE CONTROLLER	AMIEI SMART, OR EQUIVALENT	MNRE AT
4	POLYGONAL/SERCULAR HIGH MAST	SURYA, UTKARSH, BAJAJ OR EQUIVALENT	BIS
5	INVERTER	LUMINOUS, EXIDE, MICROTEK OR EQUIVALENT	BIS
6	LDR SENSOR	EYESENSE OR EQUIVALENT	
7	F.R.L.S (FIRE RATED LOW SMALL) COPPER CONDUCTOR	ANCHOR, HAVELLS, FINOLEX OR EQUIVALENT	BIS
8	MCB/ISOLATOR	HAVELLS, C&S, L&T, LEGENDS OR EQUIVALENT	BIS
9	SPN DB	HAVELLS, C&S OR EQUIVALENT	BIS
10	STREET LIGHT LED	PHILIPS, CROMPTON, WIPRO OR EQUIVALENT	BIS
11	G. I. PIPE	SWASTIK, SURYA OR EQUIVALENT	BIS
12	LIGHTING CONDUCTOR	AS PER STANDARD PRACTICE	BIS
13	G.I. WIRE	TATA, SAIL OR EQUIVALENT	BIS
14	G.I. STRIP	TATA, SAIL, OR EQUIVALENT	BIS
15	LT PANEL	FABRICATION ITEM	
16	HARDWARE	TATA, SAIL OR EQUIVALENT	BIS
17	STEEL FOR REINFORCEMENT	TATA, BANSAL, MOIRA OR EQUIVALENT	BIS
18	PERMANENT MEGNET GENERATOR MOTOR	STANDARD MAKE	STANDARD MAKE
19	WIND TURBINE	IYSERT, INVERTER, TULIP, IRIS OR EQUIVALENT	STANDARD MAKE



Technical Report

- 1 Name of the work Estimate for Installation of 6 No 40W LED lights on 9m High mast with 500 W Solar wind hybrid system.
- 2 Amount of Estimate ₹ 4,85,912
- 3 Department MP AGRO Industries development Corporation Limited MP
- 4 Provision Provision has been made for installation of 40Wx6 LED light on 9 m high mast, fully charged by solar PV modules. Equipped with vertical axis wind turbine (500W) Solar wind Hybrid system.
- 5 Rate As per current MPPWD SOR in force 01.01.2024 and market rates.
- 6 Specification The work will be carried out as per MPPWD (E/M) specifications

Chartered
Mechanical Engineer



1/15

2/15

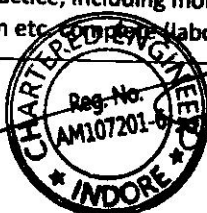
Estimate for Installation of 6 No 40W LED lights on 9m High mast with 500 W Solar wind hybrid system.

S.no	SOR ITEM No	SOR	Description of item	Quantity	Unit	Rate	Amount
1	Non SOR	PV module	Supply and installation of 150 Wp MNRE approved polycrystalline half cut PV module protected with toughened glass, open circuit voltage 21.4V minimum, conforming to IEC 61215 and IEC 61370, having terminal box as per standard practice and condition performance warranty min 25 yrs. Module efficiency must be more than 20%.	4	Each	7650	30600
2	Non SOR	Battery	Supply and installation of 12V 78 Ah capacity Lithium ferro Phosphate battery BIS approved having output voltage as 12.8 V and suitable battery management system for cell balancing, over charge and over temperature protection DOD 80% life cycle 2000	4	Each	14600	58400
3	Non SOR	Charge controller	Supply and installation inside the control panel ,Solar charge controller type PWM/ MPPT type as per EN 51530 . Charge controller rating 60A.Module rating 150Wp @ 16.4 V plus minus 2V.Open circuit voltage >21V, Vmp 16.4 V	1	Each	3800	3800
4	Non SOR	Polygonal high mast	Supply and installation of 9m polygonal high mast in single section of 3 mm thickness made from hot dip galvanized and suitable for wind speed 70 km per hour with 100 mm top and 200 mm bottom . Baseplate 350x350x16 mm. foundation bolt J type 750 x750 x 24 mm ,approximate weight 198 kg capable of supporting GI structure for solar panel luminary carriage and battery.The high mast should be equipped with winch mechanism for lowering the panel and lights etc for maintenance purposes.	1	Each	61450	61450
5	Non SOR	Inverter	Supply and installation of pure sine wave inverter of capacity more than 400VA 12V output	1	Each	8590	8590
6	Non SOR	LDR	Supply and fixing of AC Auto day/Night on off photocell sensor LDR switch for lighting waterproof IP 65 20A	6	Each	1299	7794
7	Non SOR	Vertical Axis Wind Turbine	Wind turbine vertical 500 Watt/ 24 volt DC/ 40 amps rotor diameter 1m.Shall be mounted on the top of the post by means of stand made of galvanized iron structure.Arrangement shall be provided to up and down turbine during maintenance. Hybrid systems comprising of vertical axis wind turbine and Solar PV panels are required with the following configurations. Rated speed 500 Watt@300 RPM 250 watt @ 150 RPM 40% wind and 60% solar capacity The total indicated capacity and details of technical specifications are given below (i) Design criteria in accordance with standard set by MNRE/BIS Wind turbine vertical 500 Watt/ 24 volt DC/ 40 amps rotor diameter 1m. shall be mounted on the top of the post by	1	Each	69000	69000

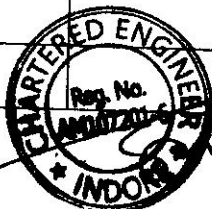


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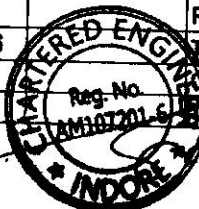
8	Non SOR	Permanent Magnet Generator Low RPM	Permanent magnet type of motor shall have capacity 0.5 kilowatt with increased gearbox Warranty -5 years Output -AC single phase Weight- 10.5 kg Rated power- 500 Watt Rated RPM -350 RPM Frequency -58.3 Hz Rated voltage- 12 /24/48 volt Starting torque- 1Nm Struction -outer router Generator shell material- Aluminium Alloy Material of -axis Carbon Steel Specifications- 320x320x300	1	Each	30000	30000
	Non SOR	Wind controller	Wind controller (AC/ DC rectifier) Protection- overcharge ,over discharge, reverse connection of batteries, overloading, lighting current, control automatic braking Function MPPT charging Unloading way- PWM electrodeless and noiseless unloading Working temperatures- 20~+60C 35~85%RH Dimensions- 100x80x15 mm Net weight - .4 Kg	1	Each	6800	6800
10	19.1	Single core PVC insulated FRLS cable	Supplying and drawing single core PVC insulated cable FRLS with copper multi strand conductor ISI marked in existing rigid PVC casing and capping/conduit in surface or concealed as per specification.				
	19.1.1	1.5 sq. mm.	1.5 sq. mm. wire				
	19.1.1.2	2 wire	2 X 1.5 sq. mm.				
	19.1.4	6.00 sq. mm.	6.00 sq. mm. wire	168	Metre	38	6384
	19.1.4.2	2 wire	2 X 6.00 sq. mm.				
				30	Metre	135	4050
11	27.8	MCB 'C' Series, 240/415V, 50 Cycle, 10kA/15kA	Supply of ISI marked and accepted standard of miniature circuit breaker (MCB) of 'C' series with short circuit indication, suitable for 240/415 Volts, 50 Cycle, 10 kA/15 kA Value AC supply conforming to IS : 8828 : 1996, IEC : 60898 : 2002 & 60947-2 but without enclosures :-				
	27.8.1	Single pole	Single pole				
	27.8.1.2	MCB SP 6A to 32A, 10kA	MCB SP 6Amp to 32Amp 10kA rating	6	Each	263	1578
	27.8.2	Double Pole	Double pole				
	27.8.2.2	MCB DP 6A to 32A, 10kA	MCB DP 6Amp to 32Amp 10kA rating	1	Each	887	887
12	27.11	SPN MCB DB	Supply of approved make powder coated sheet steel encloser SPN MCB DB inclusive of busbar, neutral bar, earth bar, connection copper wire not less than 16 sq.mm & two earth terminals etc. complete as per IS:13032(exclusive of MCB & isolator)-				
	27.11.5	8 Way double door	8 Way double door IP 43 protection	1	Each	2127	2127
13	28.4	Fixing of MCB/MCCB/ Isolator, (labour only)	Fixing of MCB/MCCB/Isolator in sheet steel enclosure as required as per accepted practice, including mounting on busbar and cable connection etc. (labour only)				



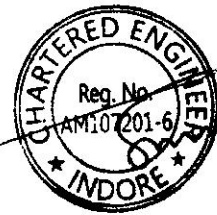
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14	31.13	Street light with high power LED system	Supply and fixing street light with high power LED of 3 to 6 Watt each on existing bracket assembled on single MCPCB and additional unique peanut lens on each LED, system lumens output with efficacy > 120 lm/Watt. luminaire having color temp upto 6500K & 50000 hrs. burning life with minimum @ L 70, The colour rendering index of LED light should be more than 70. Luminaire comprises of driver, PF > 0.95 & surge protection 10KV. Housing made of pressure die cast aluminium with heat resistant flat glass, IP65 protection. Submission LM 79-08/IS16106 (2012), IEC60598, IEC61347 i/c connection wire, testing etc. to complete the job.				
	31.13.1	40W	40Watt to 48Watt, color temp 3000-6500k as required.	6	Each	6105	36630
17	37.1	With G.I. earth pipe	Earthing with G.I. earth pipe 4.5 metre long and 40 mm dia with masonry encloser in cement mortar, cover plate having locking arrangement on the top etc. (but without charcoal or coke and salt) complete as required	3	Each	3312	9936
	37.2	Add extra for using salt and charcoal/coke for pipe earth electrode	Add extra for using salt and charcoal/coke for pipe earth electrode as required including excavation & refilling				
18	37.2.1	Excavation	Excavation 4.5 m by manual labour	3	Each	1942	5826
19	37.22	18mm dia 500mm long bright nickel plated GI tube	Providing and fixing of lightning conductor finial made of 18mm dia 500mm long bright nickel plated GI tube tapered having single prong at top with bright nickel plated GI base M10 for connection and intersection of flat or round conductor including holes, clamp complete as required.	1	Each	1285	1285
20	37.8	G.I. wire conductor earth electrode	Supply and laying 4.87mm 6 SWG G.I. wire at 0.5 metre below ground level as conductor earth electrode including jointing etc. as required.	10	Metre	25	250
	37.9	25x5 mm G.I. strip	Supply and laying 25mm X 5mm G.I. strip at 0.5 metre below ground level as strip earth electrode including jointing etc. as required.	10	Metre	130	1300
	29.27	LT panel	Supply, fixing, testing & commissioning wall/floor mounted LT panel primer coated with powder coated paint & provided with required gasket for dust/vermin proof with degree of protection IP42 suitable for 415Volt 3 phase, 50 Hz, 4 wire system fabricated out of CRCA sheet upto 2 mm thick (1.6 mm for doors) duly compartmentalized for incomer, bus section, outgoing, cable alleys & CT, PT Ampere Metre, Volt Metre, selector switches, frequency Metre, phase indicating lamp, Energy Metre complete including cost of busbar supports, detachable cable gland plates, 2 earthing terminals, internal wiring & fixing of separately supplied MCBs, MCCBs, ACB, panel mounted changeover switch/SFUs, etc. as required but excluding cost of busbar strips, Ampere Metre, Volt Metre, selector switch as per approved design & specification	50	Kg	397	19850
22			Part A- 100x40x40cm size of control panel Part B- 25x100x40 cm size of battery box				



42.42	Angle/channel /flat iron fitting for overhead line & sub-station etc.	Supply, fabrication and erection of angle/channel/flat iron fitting for overhead line & sub-station etc such as 'D' bracket, cross arms, top clamp, 'V' cross arms, back/support clamp or other similar work etc. including nut bolts of required size, making holes, fabrication, welding, cutting, etc. and painting with one coat of red oxide paint & two coat of aluminium paint as required as per specification.	50	Kg.	105	5250
23		Civil work based on SOR MPPWD Vol 1 in force from 01.01.2024				
2.6		Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5m in width as well as 10 sqm on plan) including dressing of sides and ramming of bottom disposal of excavated earth, lead up to 50m and lift up to 1.5m, disposed earth to be levelled and neatly dressed. (No extra lift is payable if work is done by mechanical means) All kinds of soil				
		All kinds of soil				
		Foundation				
		Total Earthwork in excavation of Foundation	8.650	Cum	147.00	1271.55
24		Plain Cement Concrete in Foundation				
4.1		Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All works upto plinth level.				
4.1.1		With 20mm nominal size graded stone aggregate.				
4.1.1.3		M-15 - Grade Concrete				
		PCC in foundation				
		Total PCC	0.290	Cum	4471.00	1296.59
25		RCC up to plinth:-				
5.1		Providing and laying in position specified grade of reinforced cement concrete (with 20mm nominal size graded stone aggregate) excluding the cost of centering shuttering, finishing and reinforcement - All work up to plinth level.				
5.1.1		M-20 Grade Concrete				
		RCC in foundation				
		Column				
		Total Cost of RCC	2.880	Cum	3474.00	10005.12
26		Reinforcement				
5.16		Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding including cost of binding wire all wastages and overlaps, couplers (overlaps shall be provided as per requirement of IS 13920 for ductile detailing IS 456 RCC Design & SP 34 Reinforcement detailing) etc. complete. (Note:-				
		Note:-				
		1. Spacer bars (chairs) shall be paid separately as shown in the drawing and as per direction of engineer in charge.				
		2. No extra payment shall be done for overlaps and/or couplers.				
25		3. Couplers shall be conforming to IS code on "Reinforcement Couplers for Mechanical Splices of Bars for Concrete Reinforcement - Specification")				
5.16.6		TMT				
		Quantity of Steel as shown in drawing				
		Total Cost of Steel	160.00	Kg	80.00	12800.00



		Shuttering				
5.9		Centering and shuttering including strutting, propping etc. and removal of form for :				
5.9.1		Foundations, footings, bases of columns, etc. for concrete upto plinth level				
		Footing				
		Column Base (Base of Mast)				
		Total Shuttering in foundation				
27		Filling	10.98	Sqm	190.60	2092.79
		Filling availabel excavated earth (excluding rock) in trenches plinth sides of foundations etc.in layers not exceeding 20 cm in Depth consolidating each deposited layer by ramming and watering lead up to 50 m and lift upto 1.5m				
2.24		Total Excavation				
		Quantity of PCC				
		Quantity of RCC				
		Net Filling in foundation Trenches	6.480	Cum	95.00	520.60
Total						399928
Contingency and margin 3.5%						13997
Add GST 18%						71987
Net Total						485912

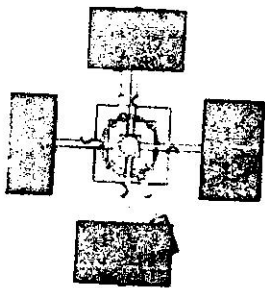


P.W.D. EM No. 717 / SEREM No. 2024-25
 Amount of Rs. 3,99,928.00 only
 Under the Head 8443
 Date 03.10.24

Executive Engineer
 P.W.D. EM No. 1, P.W.D.

Schematic Diagram of Solar Wind Hybrid High Mast, Pole 9 m.

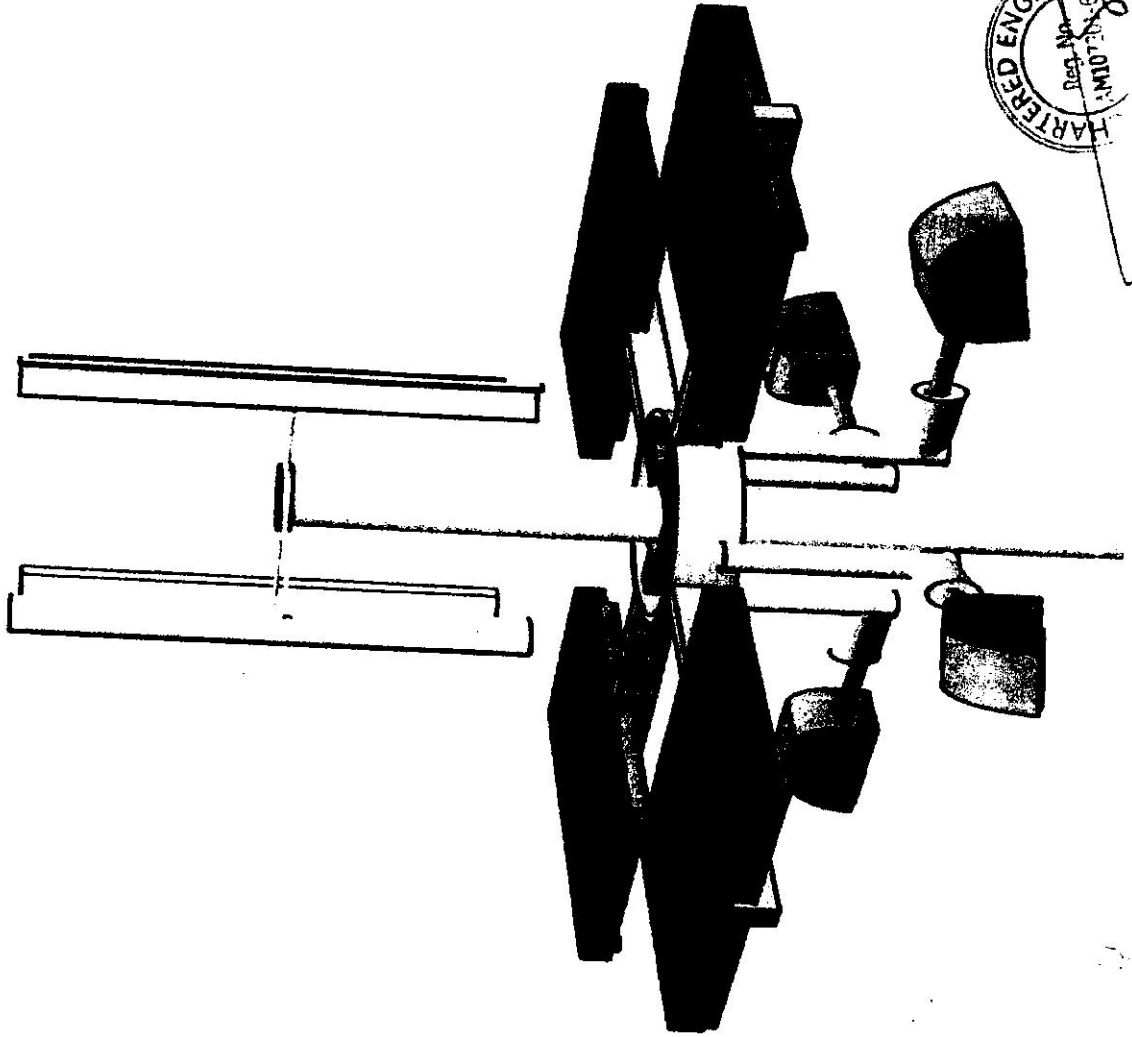
4 x 40 Watt LED Light & 500 Watt VAWT



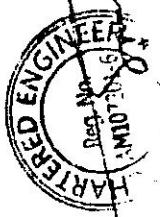
Top View



Front View



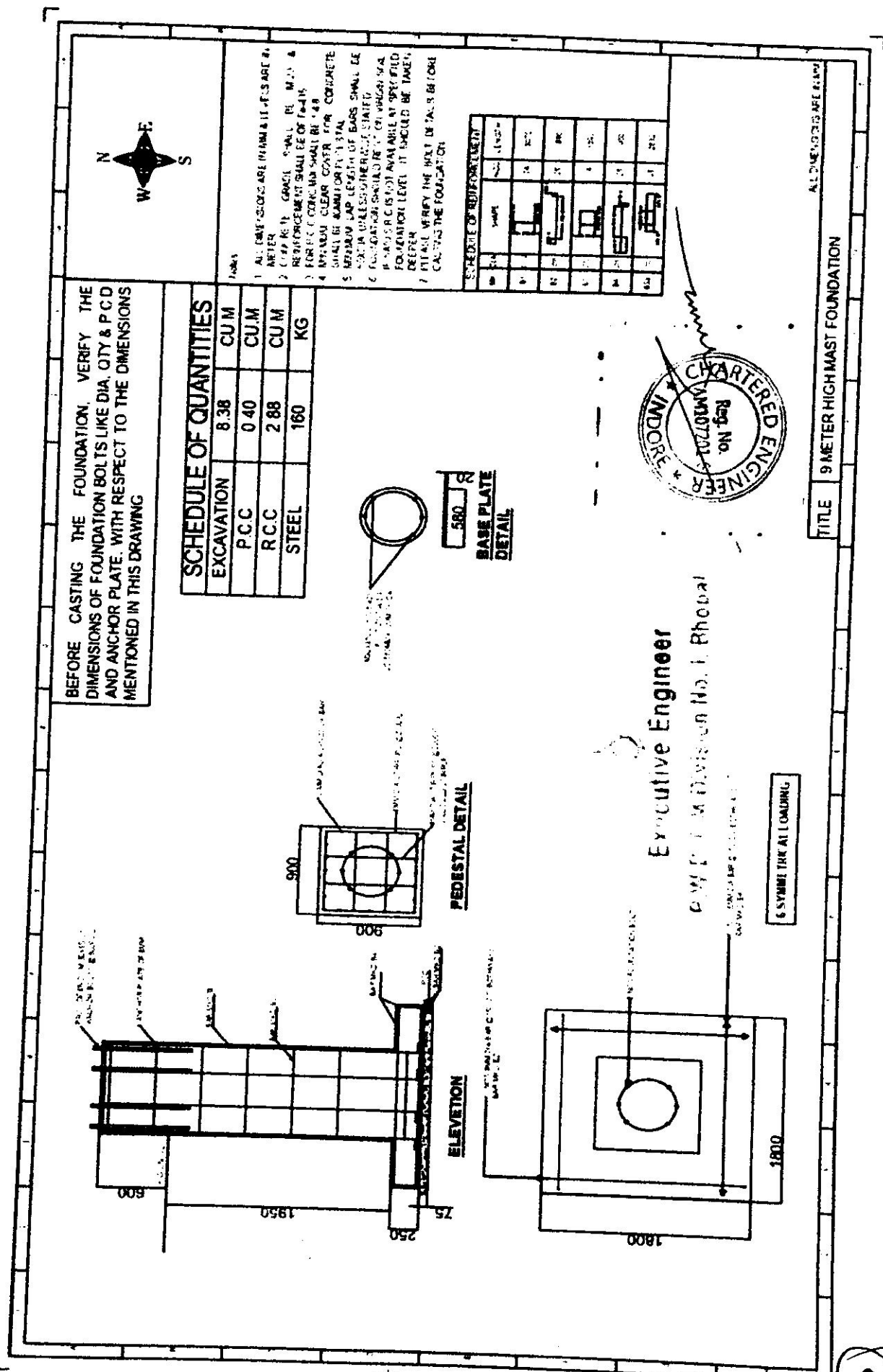
Enlarge View



Executive Engineer
Public Works Dept. - P. 10107

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Drawing & Design of Foundation of 9 m High Mast Pole



LIST OF APPROVED MATERIAL

S.NO.	NAME OF ITEMS	SUGGESTIVE MAKE	CERTIFICATION BY/SUGGESTIVE STANDARD
1	SOLAR PV MODULE	WAAREE, LOOM, TATA OR EQUIVALENT	MNRE
2	SOLAR BATTERY	LITPAX OR EQUIVALENT	AS PER BIS
3	CHARGE CONTROLLER	AMIEI SMART, OR EQUIVALENT	MNRE AT
4	POLYGONAL/SERCULAR HIGH MAST	SURYA, UTKARSH, BAJAJ OR EQUIVALENT	BIS
5	INVERTER	LUMINOUS, EXIDE, MICROTEK OR EQUIVALENT	BIS
6	LDR SENSOR	EYESENSE OR EQUIVALENT	
7	F.R.L.S (FIRE RATED LOW SMALL) COPPER CONDUCTOR	ANCHOR, HAVELLS, FINOLEX OR EQUIVALENT	BIS
8	MCB/ISOLATOR	HAVELLS, C&S, L&T, LEGENDS OR EQUIVALENT	BIS
9	SPN DB	HAVELLS, C&S OR EQUIVALENT	BIS
10	STREET LIGHT LED	PHILIPS, CROMPTON, WIPRO OR EQUIVALENT	BIS
11	G. I. PIPE	SWASTIK, SURYA OR EQUIVALENT	BIS
12	LIGHTING CONDUCTOR	AS PER STANDARD PRACTICE	BIS
13	G.I. WIRE	TATA, SAIL OR EQUIVALENT	BIS
14	G.I. STRIP	TATA, SAIL, OR EQUIVALENT	BIS
15	LT PANEL	FABRICATION ITEM	
16	HARDWARE	TATA, SAIL OR EQUIVALENT	BIS
17	STEEL FOR REINFORCEMENT	TATA, BANSAL, MOIRA OR EQUIVALENT	BIS
18	PERMANENT MEGNET GENERATOR MOTOR	STANDARD MAKE	STANDARD MAKE
19	WIND TURBINE	IYSERT, INVERTER, TULIP, IRIS OR EQUIVALENT	STANDARD MAKE

