THE M.P. STATE AGRO INDUSTRIES DEVELOPMENT CORPORATION LTD.

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मुख्या / मार्केटिंग / Gem-Portal-79 / 2024-25 / 24 २ ९

दिनांक : 08.10.2024

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प्रति.

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

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

जिला कार्यालयों द्वारा मुख्यालय से जारी SOP के संदर्भ में विगत वर्षों से जैम 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 :-

क0	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 तकनीकि प्राक्कलन प्रस्तुत कर संशोधित प्रशासकीय स्वीकृति हेत् अनुरोध किया जावे।

जेम पोर्टल पर सोलर हाईमास्ट लाईट की बिड़ जारी करते समय आपके द्वारा निर्धारित किये जाने वाले शर्तों में निम्नानुसार शर्ते 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 अविध 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 स्वरुप 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 तकनीिक स्वीकृति उपरांत शीघ्र भेजे जा रहे है तब तक सोलर स्ट्रीट लाईट के व्यवसाय से संबंधित कोई कार्य न किया जावे।

संलग्न : उपरोक्तानुसार कुल प्रव -2.7

प्रतिलिपि :- 2490

01. माननीय अध्यक्ष महोदय, म.प्र. राज्य कृषि उद्योग विकास निगम, भोपाल। 02. प्रमुख सचिव, उद्यानिकी एवं खाद्य प्रसंस्करण विभाग, म.प्र.शासन, √मंत्रालस,

प्रबंध संचालक

Technical Repor

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

Provison 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

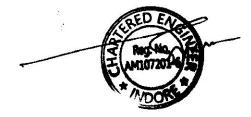
6 Specification

The work will be carried out as per MPPWD

(E/M) specifications

Chartered Mechanical Engineer

Market Market	Est	imate for	Installation of 4 No 25W LED	liahte	on 7-	TT	
S,mo	COD	507	Description of item	Quanti			Amour
1	Non SO	R 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	Eact	6000	24000
2	Non SOI	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	1	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	,	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	LIK	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:69 1990 of approved make	7			
	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:-	2		-	
	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
1 0	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		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)	200			
	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. luminiare 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. Luminiare 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. 24Watt to 25Watt, color temp 3000-6500k as				
	31.12.2	24-25W	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
L	<u> </u>		ELED SA		L		

` _ <u>/</u>	(
			Add extra for using salt and charcoal/coke for			,	
14	37.2	A CASA SHOORY I CONTRACTOR A DISCOVERY NOT NO CONTRACTOR AND ADDRESS OF Y	pipe earth electrode as required including			1	
99			excavation & refilling				
		ciectrode					
	37.2.1	Excavation	Excavation 4.5 m by manual labour	3	Each	1942	5826
			Providing and fixing of lightning conductor finial				
40		18mm dia	made of 18mm dia 500mm long bright nickel]]		
		500mm long	plated GI tube tapered having single prong at				
15	37.22	bright nickel	top with bright nickel plated GI base M10 for	1	Each	1285	1285
		plated GI	connection and intersection of flat or round				
		tube	conductor including holes, clamp complete as				
ľ		1000	required.				
]	G.I. wire	Supply and laying 4.87mm 6 SWG G.I. wire at				
16	37.8	conductor	0.5 metre below ground level as conductor	10	Mana	25	250
10	37.6	earth	earth electrode including jointing etc. as	10	Metre	25	250
		electrode	required.				
			Supply and laying 25mm X 6mm G.I. strip at 0.5				
17	37.10.	25x6 mm G.I.	metre below ground level/surface as strip earth	10	Metre	147	1470
1/	37.10.	strip	electrode including jointing etc. as required.	10	IVICEIC	447	1470
		1	Supply, fixing, testing & commissioning				
			wall/floor mounted LT panel primer coated	•			
	l.		with powder coated paint & provided with		1		
			required gasket for dust/vermin proof with				
	0		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			•	
40	20.27	V T1	section, outgoings, cable alleys & CT, PT	40			45555
18	29.27	LT panel	Ampere Metre, Volt Metre, selector switches,	40	Kg	397	15880
_			frequency Metre, phase indicating lamp,				
			Energy Metre complete including cost of				
		_	busbar supports, detachable cable gland plates,]]		
	1		2 earthing terminals, internal wiring & fixing of				
			separately supplied MCBs, MCCBs, ACB, panel				
	T.		mounted changeover switch/SFUs, etc. as				
			required but excluding cost of busbar strips,				
			Ampere Metre, Volt Metre, selector switch as				
			per approved design & specification	<u></u>			
			Part A- 100x40x40cm size of control panel				30 mm t
	<u> </u>		Part B-25x100x40 cm size of battery box	19. 10. 10. 10. 10. 10. 10. 10. 10. 10. 10	948		•



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1	<u>/</u>		全性等数数分子。 -				7
			Simply, fabrication and erection of				
1			engle/channel/flat iron fitting for overhead line	!	1	1	
Į			& sub-station etc such as 'D' bracket, cross				
1	1		arms, top clamp, 'V' cross arms, back/support	1	-		
19	42.42	fitting for	clamp or other similar work etc. including nut	50	l va	105	F-100
53=5340		overhead line	bolts of required size, making holes,	30	Kg.	105	>430
		& sub-station	fabrication, welding, cutting, etc. and painting			lest.	1
		etc.	with one coat of red oxide paint & two coat of	ŀ			1
1			aluminium paint as required as per	l	39		1
<u></u>	<u> </u>		specification.			8	
			Civil work based on SOR MPPWD Vol 1 in force				
<u> </u>		ļ	from 01.01.2024			100	
	2.6		Earth work in excavation by mechanical means				
			(Hydraulic excavator) / manual means over	1	3	1	!
			areas (exceeding 30cm in depth. 1.5m in width		l		
	!		as well as 10 sqm on plan) including dressing of		1		
20			sides and ramming of bottom disposal of				
			excavated earth, lead up to 50m and lift up to		1	i i	
			1.5m, disposed earth to be levelled and neatly]	-
			dressed. (No extra lift is payable if work is done	8			,
			by mechanical means) All kinds of soil				
			All kinds of soil		 		
			Foundation	111111111111111111111111111111111111111			
		200	Total Earthwork in excavation of Foundation	8.650	Cum	147.00	1271.55
			Plain Cement Concrete in Foundation		1		141 1100
	4.1	- 13A-1	Providing and laying in position cement		<u> </u>		
21			concrete of specified grade excluding the cost				
]		of centering and shuttering - All works upto		1		
			plinth level.		t		
	4.1.1		With 20mm nominal size graded stone				·
			aggregate.			1 '	
	4.1.1.3		M-15 – Grade Concrete	8			
			PCC in foundation				
. 🐠			Total PCC	0.290	Cum	4471.00	1296.59
			RCC up to plinth:-				. 270190
	5.1	f,	Providing and laying in position specified grade				
]2	of reinforced cement concrtete (with 20mm				
22			nominal size graded stone aggregate) excluding]		
			the cost of centering shuttering, finishing and				
	1		reinforcement - All work up to plinth level.				
	5.1.1			0			
	V. I. I		RCC in foundation	,			
			Column				
1		100	20 00 00 00 00 00 00 00 00 00 00 00 00 0	-0.0		ı	
ď		1	Total Cost of RCC	2.880	C	3474.00	10005.12





		Net Total				40280 271889
	s	Contingency and margi Add GST 18%	n 3.3%			7832
		Total Contingues and more	n 2 EW			223777
	<u> </u>	Net Filling in foundation Trenches	5.480	cum	95.00	520.60
		Quantity of RCC	E 400	C.,	05.00	F00 04
		Quantity of PCC				**
		Total Excavation				37
		upto 1.5m	v			
		ramming and watering lead up to 50 m and lift			1	
		Depth.consolidating each deposited layer by			ł	
		etc.in layers not exceeding 20 cm in				
		rock) in trenches plinth sides of fundations		1	•	
26	2.24	Filling availabel excavated earth (excluding				
		Filling				
		Total Shuttering in foundation	10.98	Sqm	190.60	2092.79
to detail		Column Base (Base of Mast)				
		Footing				
	3.3.1	for concrete upto plinth level		2		
	5.9.1	Foundations, footings, bases of columns, etc.				\$ \$0 X0
25	5.9	propping etc. and removal of form for :				
25	5.9	Shuttering Centering and shuttering including strutting,				
-		Total Cost of Steel	160.00	Kg	80.00	12800.00
		Quantity of Steel as shown in drawing	400.00	No.	90.00	40000 00
24	5.16.6	TMT				
		Specification")				
	18	Splices of Bars for Concrete Reinforcement -				
		"Reinforcement Couplers for Mechanical			i i	
	1	3. Couplers shall be conforming to IS code on				
9 3 00		and/or couplers.				
		2. No extra payment shall be done for overlaps				54% %
		engineer in charge.	•			*
		as shown in the drawing and as per direction of		l	13	
		Spacer bars (chairs) shall be paid separately				
•		Note:-			× 1	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
		detailing) etc. complete. (Note:-			13	
		Design & SP 34 Reinforcement				
		(overlaps shall be provided as per requirement of IS 13920 for ductile detailing IS 456 RCC		- 1		
23	×)	wire all wastages and overlaps, couplers		1	·	
		position and binding including cost of binding		-		
		straightening, cutting, bending, placing in				
	5.16	Reinforcement for R.C.C. work including				

Franction Est No. EL ASSE EARCH 2024-25

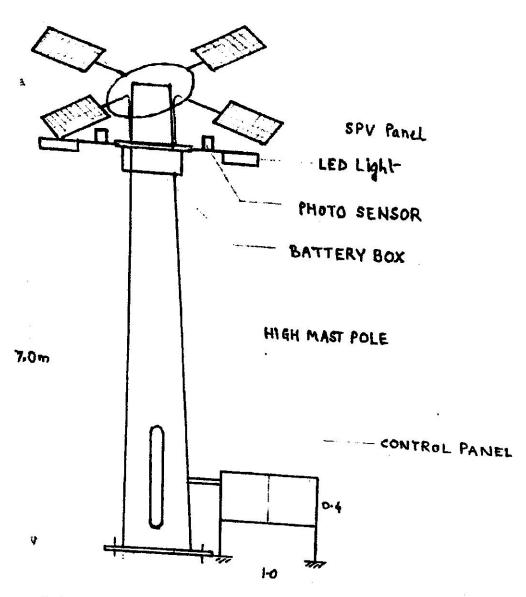
Amount of Rs. 223 777 schoolly

Under the Head 5443

Date 03.10.24

P.W.D. EM Dn.No.-1, Shepart





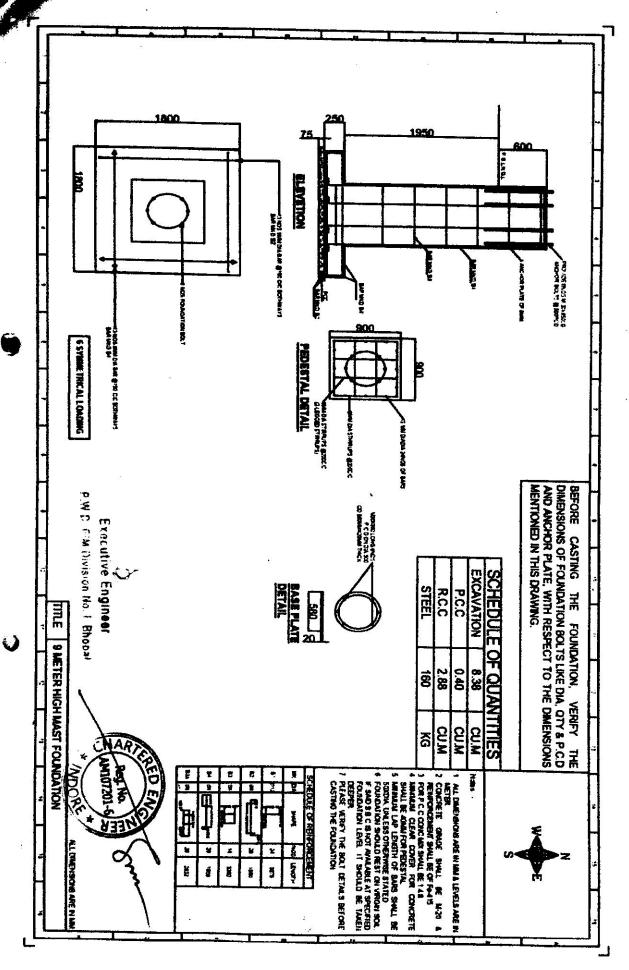
Schemalic Drawing of 4x25W LED. Lights
on 7mlf High Mart

Executive Engineer

P.W.C. E. M. Division No. I. Bhopsi

(>)

Drawing & Design of Foundation of 7 m High Mast Pole , Footing , coloumn Anchor bolt & Base Plate as per Drawing





LIST OF APPROVED MATERIAL

S.NO.	NAME OF ITEMS	SUGGESTIVE MAK	E CERTIFICATION BY/SUGGESTIVE STANDARD
1	SOLAR PV MODULE	WAAREE,LOOM,TAT	A MNRE
2	SOLAR BATTERY	LITPAX OR EQUIVALENT	AS PER BIS
3	CHARGE CONTROLLER	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,INVERT ER, TULIP, IRIS OR EQUIVALENT	STANDARD MAKE

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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

Provison has been made for installation of

40Wx6 LED light on 9 m high mast, fully

charged by solar PV modules.

5 Rate

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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

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

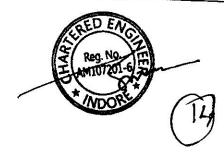
S.no	SOR ITEM No	SOR	Description of item	Quantity	Unit	Rate	Amount
1	Non SOR	PV module	Supply and installation of 150 Wp MNRE approved polycrystalline half cut PV module protected with toughened glass, open circuit voltage 21.4V minimum, conforming to IEC 61215 and IEC 61370, having terminal box as per 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.	0.	Metre	132	7920

		<u> </u>						3	3/2
	9	27.8	MCB Series 240/415V Cycle 10kA/15	TOTAL COLUMN DEPONDE (BECON) COL	ic				
_	27	7.8.1	Single po	:- le Single pole	es				
		t	MCB SP (o 32A, 10	A MCB SP 6Amp to 32Amp 10kA rating	6	Eac	ch as	+	
	27	.8.2	Double Po	le Double pole			ch 26	3 1!	578
	27.8	1.2.2 N	MCB DP 6	A MCB DP 6Amp to 32Amp 10kA rating	1	Eac	h 887	, 88	
[]	27.		SPN MCB DB	copper wire not less than 16 sq.mm & two earth terminals etc. complete as per	t	-			
	27.13		Vay doubl	8 Way double door IP 43 protection	1	Each	2127		
11		M()	Fixing of CB/MCCE Isolator, Cour only) B/Isolator	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)			212/	212	7
	28.4.		SP/DP	MCB/Isolator SP/DP	7	Each	22	154	4
2	31.13	wit pow	eet light h high er LED stem c H Se IE	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 umens output with efficacy>120 lm/Watt. uminiare having color temp upto 6500K & 60000 hrs. burning life with minimum @ L 70, he colour rendering index of LED light should e more than 70. Luminiare comprises of river, PF> 0.95 & surge protection 10KV. ousing made of pressure die cast aluminium ith heat resistant flat glass, IP65 protection. Ibmission LM 79-08/IS16106 (2012), C60598, IEC61347 i/c connection wire, testing c. to complete the job.				154	
+	31.13.1	40	W re	Watt to 48Watt, color temp 3000-6500k as quired.	6 F	ach			-
	37.1	With earth	G.I. pipe on	thing with G.I. earth pipe 4.5 metre long and mm dia with masonry encloser in cement rtar, cover plate having locking arrangement the top etc. (but without charcoal or coke sait) complete as required			3312	36630 9936	

	AND THE PARTY OF T						AI
14	37.2	THE COME COM	d 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	1			
15	37.22	18mm dia 500mm long bright nickel plated GI tube	Providing and fixing of lightning conductor finismade 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.	3 al	Each	1942	1285
16 	37.8	earth	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.	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	v rich de proper de la company	supply, fixing, testing & commissioning wall/floor mounted LT panel primer coated with powder coated paint & provided with equired gasket for dust/vermin proof with egree of protection IP42 suitable for 415Volt 3 hase, 50 Hz, 4 wire system fabricated out of RCA sheet upto 2 mm thick (1.6 mm for doors) uly compartmentalized for incomer, bus ection, outgoings, cable alleys & CT, PT impere Metre, Volt Metre, selector switches, equency Metre, phase indicating lamp, nergy Metre complete including cost of isbar supports, detachable cable gland plates, earthing terminals, internal wiring & fixing of parately supplied MCBs, MCCBs, ACB, panel ounted changeover switch/SFUs, etc. as quired but excluding cost of busbar strips, inpere Metre, Volt Metre, selector switch as rapproved design & specification	50	Kg	397	19850
		Par	t A- 100x40x40cm size of control panel t B-25x100x40 cm size of battery box				



							,
St. Co.	S. A. S.		Supply, fabrication and erection of				
	İ	Angle/channe	angle/channel/flat iron fitting for overhead lin & sub-station etc such as 'D' bracket, cross	e	ı	- 1	
ŀ		I/flat iron	arms top dame by an as D' bracket, cross	Ī	1	*	
10	40.40		arms, top clamp, 'V' cross arms, back/support			ļ.	
19	42.42	overhead line	clamp or other similar work etc. including nut bolts of required size, making holes,	50	, ,	-	
		& sub-station	fabrication analytics, making holes,	1 30	′ '	(g. 105	5250
		etc.	fabrication, welding, cutting, etc. and painting	j	ļ. Iz	ļ	
ĺ			with one coat of red oxide paint & two coat of			ļ	*
200			aluminium paint as required as per specification:		- 1	ļ	
			Civil work based on COR server				
			Civil work based on SOR MPPWD Vol 1 in force from 01.01.2024	6			
	2.6] [Earth work in excavation by mechanical means	+			
		1	(Hydraulic excavator) / manual means over		- 1		B.
			areas (exceeding 30cm in depth. 1.5m in width			1	
		l	as well as 10 sqm on plan) including dressing of		ł	ł	
20		s	sides and ramming of bottom disposal of	1	- [ĺ	
	3	e	excavated earth, lead up to 50m and lift up to		ŀ		}
		1	1.5m, disposed earth to be levelled and neatly				
		d	dressed. (No extra lift is payable if work is done	ŀ			
		b	by mechanical means) All kinds of soil]	İ	1	1
			All kinds of soil				
			oundation				T
			otal Earthwork in excavation of Foundation				
		PI	lain Cement Concrete in Foundation	8.65	O Cun	147.00	1271.5
	4.1	Pi	roviding and laying in position cement				
21		cc	oncrete of specified grade excluding the cost		ł	1	
		of	f centering and shuttering - All works upto				
		<u> Di</u>	inth level.		en par	4	
ŀ	4.1.1	w	fith 20mm nominal size graded stone		-}	-	
-	4444	lag	gregate.		1		
	4.1.1.3	M·	-15 - Grade Concrete		 	 -	
			C in foundation		 -	 	
-+		N All As the second of the Charleson	tal PCC	0.200	Cum	4474 00	
\dashv	5.1	RC	C up to plinth:-	0,20(Cuili	4471.00	1296.59
1	J. 1	Pro	oviding and laying in position specified grade		+	 	
	1	of i	reinforced cement concrtete (with 20mm			1	
22		nor	minal size graded stone aggregate) excluding		1	} j	
	ł	the	cost of centering shuttering, finishing and		l	l l	
		reir	nforcement - All work up to plinth level.			1	j
	5.1.1		20 Grade Concrete				}
		RCC	in foundation		ļ <u> </u>		
			umn				
	1		al Cost of RCC				
				2.880		3474.00	<u> </u>

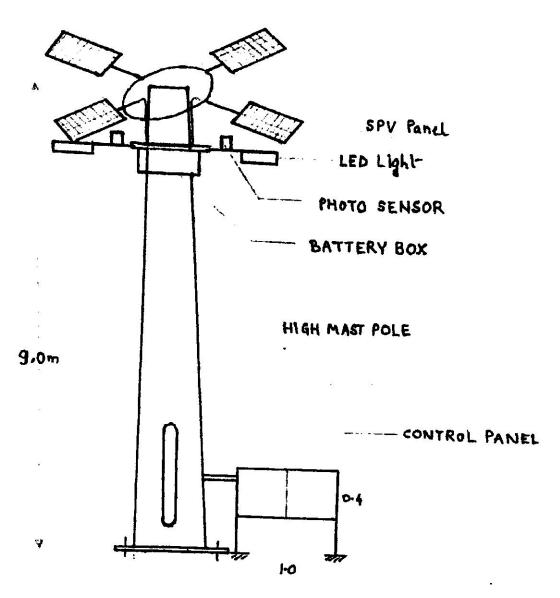


	5.16		6/
	5.16	Reinforcement for R.C.C. work including	<u> </u>
-		straightening, cutting, bending, placing in	
	1	position and binding including cost of binding]
23	1	wire all wastages and overlaps, couplers	
	1	(overlaps shall be provided as a couplers	
		(overlaps shall be provided as per requirement	1
		of IS 13920 for ductile detailing IS 456 RCC Design & SP 34 Reinforcement	
100		detailing lets count to the	1
		detailing) etc. complete. (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.	1
		3. Couplers shall be conforming to IS code on	
		"Reinforcement Couplers for Mechanical	
		Splices of Bars for Concrete Reinforcement -	
	5.16.6	Specification") TMT	
	31.10.0		+
-		Quantity of Steel as shown in drawing	+
		Total Cost of Steel 160.00 Kg 80.00	42000
25	5.9	Shuttering	12800.0
	0.0	Centering and shuttering including strutting,	
	5.9.1	propping etc. and removal of form for :]
	0.0.1	Foundations, footings, bases of columns, etc.	
		for concrete upto plinth level	ł
		Footing	
		Column Base (Base of Mast)	 -
		Total Shuttering in foundation 10.98 Sqm 190.60	2000 =
26	2.24		2092.7
-	2.27	Filling availabel excavated earth (excluding	
		rock) in trenches plinth sides of fundations	
		etc.in layers not exceeding 20 cm in	
		Depth.consolidating each deposited layer by	
	i	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	
		Total 95.00	520.60
		Contingency and margin 3.5%	318386
		Add CCT 40%	11143
		Add GST 18%	57309
		Net Total	386839

Amount of Rs. 318 3862 (D) only
Under the Head 8.443

FIND EMPAND AND A BHOKE





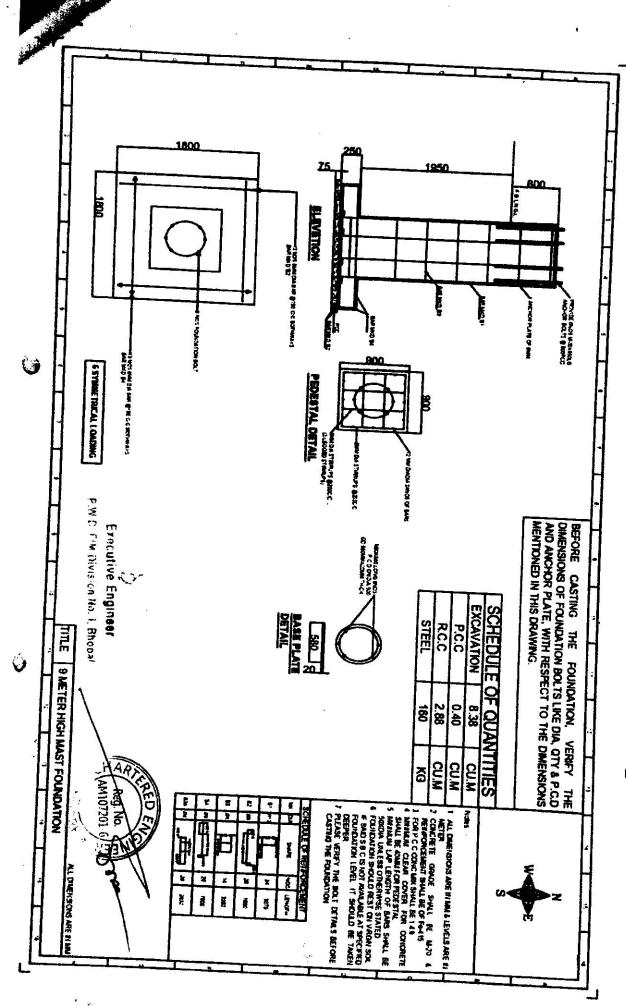
Schematic Drawing of 6×40 W LED. Lights
on 9 mir High Mart

Executive Engineer

P.W.D. FIM Division No. 1, Bhopail

46

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



LIST OF APPROVED MATERIAL

S.NO.	NAME OF ITEMS	SUGGESTIVE MAK	BY/SUGGESTIV
1	SOLAR PV MODULE	WAAREE,LOOM,TA	TA 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 OF 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	BIS
9	SPN DB	OR EQUIVALENT HAVELLS, C&S OR EQUIVALENT	BIS
10	STREET LIGHT LED	PHILIPS, CROMPTON, WIPRO OR	BIS
11	G. I. PIPE	EQUIVALENT 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,INVERT ER, TULIP, IRIS OR EQUIVALENT	STANDARD MAKE

(-

TIBER -3 1/15

15/6/

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

Provison 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



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

		Description of item	I s	tit	nit Ra	te Amou
Non SO	R PV modu	practice and condition performance warrants are	+	Ea	ch 765	
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	Eac	ch 14600	58400
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	Eac	h 3800	3800
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.	I	Each	61450	61450
Non SOR	Inverter	Supply and installation of pure sine wave inverter of capacity			 	
Non SOR	LDR	Supply and fixing of AC Auto day/Nicha		Each	8590	8590
	ĭ	Wind turbine vertical 500 Watt/ 24 volt DC/ 40	6	Each	1299	7794
on SOR	Vertical Axis Vind Turbine s	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. lated speed 500 Watt@300 RPM 250 watt @ 150 RPM 40% wind and 60% solar capacity The total indicated capacity and details of technical pecifications are given below Design criteria in accordance with standard set by INRE/BIS	1	Each	69000	69000
	Non SOR Non SOR Non SOR Non SOR	Non SOR PV modul Non SOR Battery Non SOR Charge controller Non SOR Polygonal high mast Non SOR Inverter Non SOR LDR On SOR Vertical Axis (in Medical in Sortion of the Inverter in Sortion on SOR Wind Turbine in Sortion on SOR Wind Turbine in Sortion on SOR Wind Turbine in Sortion on SOR Wind Turbine in Sortion on SOR Wind Turbine in Sortion on SOR Wind Turbine in Sortion on SOR Wind Turbine in Sortion on SOR Wind Turbine in Sortion on SOR Wind Turbine in Sortion on SOR Wind Turbine in Sortion on SOR Wind Turbine in Sortion on SOR Wind Turbine in Sortion on SOR Wind Turbine in Sortion on SOR Wind Turbine in Sortion on SOR Wind Turbine in Sortion on SOR Wind Turbine in Sortion on S	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 61370, having terminal box as per standard practice and condition performance warranty min 25 yrs. Module efficiency must be more than 20%. 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 Supply and installation inside the control panel , Solar charge controller type PWM/ MPPT type as per EN 51530 . 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 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 1 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. Non SOR LDR Supply and installation of pure sine wave inverter of capacity more than 400VA 12V output Supply and installation of pure sine wave inverter of capacity more than 400VA 12V output Supply and fixing of AC Auto day/Night on off photocell sensor LDR switch for lighting waterproof IP 65 20A 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%	Non SOR Non SOR PV module File (E G1370, having terminal box as per standard practice and condition performance warranty min 25 yrs. Module efficiency must be more than 20%. 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 Supply and installation inside the control panel ,5olar charge controller type PWN/MPPT type as per EN 51530. Charge controller type PWN/MPPT type as per EN 51530. Charge controller type PWN/MPPT type as per EN 51530. Charge controller type PWN/MPPT type as per EN 51530. Charge controller type PWN/MPPT type as per EN 51530. Charge controller type PWN/MPPT type as per EN 51530. Charge controller type PWN/MPPT type as per EN 51530. Charge controller type PWN/MPPT type as per EN 51530. Charge controller type PWN/MPPT type as per EN 51530. Charge controller type PWN/MPPT type as per EN 51530. Charge controller type PWN/MPPT type as per EN 51530. Charge controller type PWN/MPPT type as per EN 51530. Charge controller type PWN/MPPT type as per EN 51530. Charge controller type PWN/MPPT type as per EN 51530. Charge controller type PWN/MPPT type as per EN 51530. Charge for the file of the post by means and battery. The high mast should be equipped with winch mechanism for lowering the panel and lights etc for maintenance purposes. Non SOR Non SOR LDR Supply and installation of pure sine wave inverter of capacity purply and installation of pure sine wave inverter of capacity purply and installation of purply and six management system for lighting waterproof lP 65 20A Wind turbine vertical 500 Watt Q104 VQ4 Q4 mps rotor diameter 1m. Sha	Supply and installation of 150 Wp MNRE approved polycrystalline half cut PV module protected with toughened golycrystalline half cut PV module protected with toughened golycrystalline half cut PV module protected with toughened golycrystalline half cut PV module protected with toughened practice and condition performance warranty min 25 yrs. Module efficiency must be more than 20%.	Supply and installation of 150 Wp MNRE approved polycrystalline half cut PV module protected with toughened glass, open circuit voitage 21.4V minimum, conforming to IEC 51275 and IEC 61370, having terminal box as per standard practice and condition performance warranty min 25 yrs. Module efficiency must be more than 20%. Supply and installation of 12V 78 Ah capacity Lithium ferro Phosphate battery Bis approved having output voitage as 12.8 V and suitable battery management system for cell bancing, over charge and over temperature protection DOD 80% life cycle 2000 Supply and installation inside the control panel, Solar charge controller type PWM/ MPPT type as per EN 51530. Charge controller and asserbation of 9m polygonal high mast in single section of 3 mm thickness m



8	Non SO	Permanen Magnet Generator Low RPM	Rated RPM -350 RPM Frequency -58.3 Hz	1	Each	30000	30000
له .	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 weight4 Kg	1	Each	6800	6800
10	19.1	Single core PVC insulated FRLS cable					
	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.		168	Metre	38	6384
	19.1.4.2	2 wire	2 X 6.00 sq. mm.	_			
11	27.8	MCB 'C' Series,	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, IFC: 60898: 2002 8	30	Metre	135	4050
	27.8.1	Single pole	60947-2 but without enclosures :-				
- 1 -	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	E ach	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	20.4	Isolator I	Fixing of MCB/MCCB/Isolator in sheet steel enclosure as required as per accepted practice, including mounting on busbar and cable connection etc.				

SP(DP) SP(DP) Sp(DP) 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 unimens output with fiftings/1202 long/MARL luminisar having with high power LED on the fiftings/1202 long/MARL luminisar having color temp upto 6500K & 50000 km. burning life with minimum (@ 1.70 fice colour rendering index of LED light should be more than 70. Luminisar comprises of driver, PP- 0.95 & surge protection JOW- Housing made of pressure die cast aluminum with heat resistant file glass, P66 protection. Submission IM 79-08/ISL6106 (2012), IEC60598, IEC61347 I/c connection wire, testing ect. to complete the job. 31.13.1 40W 40/Vart to 46/Vart, color temp 3000-6500K as required. 6 Each 6105 3663 with masoning encloser in cement morar, cover plate having locking arrangement on the top etc. (but without charcoal or using sails and with masoning encloser in cement morar, cover plate having locking arrangement on the top etc. (but without charcoal or using sails and charcoal/coke for pipe earth electrode for pipe earth electrode as required including excavation & refilling electrode for pipe earth electrode as required including excavation & refilling electrode. 18 37.2.1 Exavation Excavation A.5 m by manual labour 37.2 Exavation Excavation Excavation Providing and fixing of lightning conductor final made of 30mm long bright nickel plated GI tube tapered bright nickel plated GI tube topered bright nickel p		28.4.1	MCB/Isolat	tor Lean (c.)				
ware each on existing bracket assembled on single MCPCs and additional unique peanut tens on each LED, system lumens output with efficacy>120 in/Watt Luminiare having with high power ILED system Street light with high power ILED system 131.33.1 40W. 20.53 & surge protection 10KV. Housing made of pressure die cast eluminium with hear tresistant flat glass, IP65 protection. Submission LM 796/R515106 (2012), IEC0598, IEC0347 IV. Connection wire, testing etc. to complete the job. 131.33.1 40W. 40Watt to 48Watt, color temp 3000-6500k as required. 237.1 With G.I. with G.I. earth pipe 4.5 metre long and 40 mm dis with masonry encloser in cement mortar, cover plate having indicating and harvoal/coke for pipe earth of coles and sait) complete as required Add extra for using sait and charcoal/coke for pipe earth electrode are required including excavation & refilling electrode as required including excavation & refilling electrode as required including excavation & refilling electrode as required including excavation & refilling electrode as required including excavation & refilling electrode as required including excavation & refilling electrode as required including excavation & refilling electrode including excavation & refilling electrode as required including excavation & refilling electrode as required including excavation & refilling electrode including excavation & refilling electrode including excavation & refilling electrode including excavation & refilling electrode including excavation & refilling electrode including excavation & refilling electrode including excavation & refilling electrode including excavation & refilling electrode including excavation & refilling electrode including excavation & refilling electrode including excavation & refilling electrode including excavation & refilling electrode including excavation & refilling electrode including excavation & refilling electrode including excavation & refilling electrode including excavation & refilling electrode including excavation & refilling		20.4.1	SP/DP	MCB/Isolator SP/DP	7	Each	22	154
31.13.1 40W 40Watt to 48Watt, color temp 3000-6500k as required. 6 Each 6105 36631 With G.I. earth pipe 4.5 metre long and 40 mm dia with masonny encloser in cement mortar, cover plate having locking arrangement on the top etc. (but without charcoal or coke and sait) complete as required Add extra for using salt and charcoal/coke for pipe earth clectrode as required electrode as required electrode as required electrode in the for pipe carth electrode as required including excavation & refilling 18 ay 7.2.1 Excavation Excavation 4.5 m by manual labour 3 Each 1942 5825 18 ay 7.2.2 Excavation Excavation 4.5 m by manual labour 3 Each 1942 5825 18 ay 7.2.2 Excavation Excavation 4.5 m by manual labour 3 Each 1942 5825 19 ay 7.2.2 Supply 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 10 Date of 18mm dia 500mm long bright nickel plated GI base 10 Date of 18mm dia 500mm long bright nickel plated GI base 11 Each 1285 1285 20 ay 7.8 Supply and laying 4.87mm 5 SWG G.I. wire at 0.5 metre below ground level as conductor earth electrode including jointing etc. as required. Supply and laying 2.87mm 5 SWG G.I. wire at 0.5 metre below ground level as conductor earth electrode including jointing etc. as required. Supply and laying 2.5mm x 5mm G.I. strip at 0.5 metre below ground level as strip earth electrode including jointing etc. as required. Supply, fixing, testing & commissioning wall/floor mounted LT panel primer coated with powder coated paint & provided with required gasket for dusty-ermin proof with degree of protection [P42 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, outgoings, cable alleys & CT, PT Ampere Metre, Volt Metre, selector switchs, frequency Metre, phase indicating lamp, Energy Metre complete including cost of busbar supports, detachable to able gland plates, 2 ea	14	31.13	with high power LEI	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. luminiare 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. Luminiare 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, IFC61347 i//				
With G.I. earth pipe With G.I. earth pipe Add extra for using salt and charcoal/coke for pipe earth electrode and salt) complete as required Add extra for using salt and charcoal/coke for pipe earth electrode as required including excavation & refilling Excavation 4.5 m by manual labour 18 37.2.1 Excavation Excavation 4.5 m by manual labour 19 37.22 Excavation Excavation 4.5 m by manual labour 19 37.22 Excavation Excavation flating of lightning conductor finial made of soomm long bright nickel plated GI tube tapered having single prong at top with bright nickel plated GI base plated GI tube conductor conductor including holes, clamp complete as required. 31.8 Supply and laying 4.87mm 6.5 WG G.I. wire at 0.5 metre below ground level as conductor earth electrode including jointing etc. as required. 32.5 Smm C.I. Supply and laying 25mm X.5 mm G.I. strip at 0.5 metre below ground level as strip earth electrode including jointing etc. as required. Supply and laying 25mm X.5 mm G.I. strip at 0.5 metre below ground level as strip earth electrode including jointing etc. as required. 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, outgoings, cable alleys & CT. PT Ampere Metre, Volt Metre, selector switches, frequency Metre, phase indicating lamp, finergy Metre complete including cost of busbar strips, anner mounted LT 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 2 part 4. 100x40x40cm size of control namel		31.13.1	40W	40Watt to 48Watt, color temp 3000-6500k as required		 -	ļ	
37.2 Supply and laying 25mm X 5mm G.I. strip at 0.5 metre below ground level as strip earth electrode as required. 37.9 Supply, fixing, testing & commissioning wall/floor mounted LT panel primer coated with powder coated paint & provided with required asset for dust/vermin proof with degree of protection ip P42 suitable for 415/bott 3 phase, 50 Nz. 4 wire system afbricated out of CRCA sheet upto 2 mm thick (1.6 mm for doors) duly compartmentalized for incomer, bus section, outgoings, cable alleys & C.T. PT Ampere Metre, Volt Metre, selector switch as per approved design & per part At 100x40x40cm size of control page. Add extra for using salt and charcoal/coke for pipe earth electrode as required. 37.2 Samm G.I. Summ dia 500mm long bright nickel plated GI bube above pright nickel plated GI base pright nicke	17	37.1		with masonry encloser in cement mortar, cover plate having locking arrangement on the top etc. (but without chargoal or				36630 9936
18mm dia 500mm long bright nickel plated GI tube bapered baving single prong at top with bright nickel plated GI tube tapered bright nickel plated GI tube tapered bright nickel plated GI tube tapered bright nickel plated GI tube tapered bright nickel plated GI tube tapered bright nickel plated GI tube tapered bright nickel plated GI tube tapered bright nickel plated GI tube tapered bright nickel plated GI tube tapered bright nickel plated GI tube tapered bright nickel plated GI tube tapered bright nickel plated GI tube tapered bright nickel plated GI tube taper	, 	37.2	using salt and charcoal/coke for pipe earth	Add extra for using salt and charcoal/coke for nine earth				
18mm dia 500mm long bright nickel plated GI tube 18mm dia 500mm long bright nickel plated GI tube 18mm dia 500mm long bright nickel plated GI tube 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 carth electrode including holes, clamp complete as required. 37.8 G.I. wire conductor earth electrode including jointing etc. as required. 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. 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. 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, outgoings, 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 Part A-100x40x40cm size of control panel.	18	37.2.1	Excavation	Excavation 4.5 m by manual labour		<u> </u>		
Supply and laying 4.87mm 6 SWG G.I. wire at 0.5 metre below ground level as conductor earth electrode etc. as required. 37.9 25x5 mm G.I. strip 25x5 mm G.I. strip at 0.5 metre below ground level as strip earth electrode including jointing etc. as required. 37.9 25x5 mm G.I. strip at 0.5 metre below ground level as strip earth electrode including jointing etc. as required. 37.9 25x5 mm G.I. strip at 0.5 metre below ground level as strip earth electrode including jointing etc. as required. 37.9 37.9 25x5 mm G.I. strip at 0.5 metre below ground level as strip earth electrode including jointing etc. as required. 38upply, 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, outgoings, 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 25 250 26 27 28 28 29 29 20 20 20 20 20 20 20 20 20 20 20 20 20	19	37.22	500mm long bright nickel	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				
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, outgoings, 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 Part A- 100x40x40cm size of control panel	20	37.8	conductor earth	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
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, outgoings, 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 Part A- 100x40x40cm size of control page.	_	37.9	strip	required.	10	Metre	130	1300
Part B-25x100x40 cm size of battery box		29.27	LT panel I	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, outgoings, cable alleys & CT, PT Ampere Metre, Volt Metre, selector switches, frequency Metre, phase indicating amp, 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 equired but excluding cost of busbar strips, Ampere Metre, folt Metre, selector switch as per approved design & pecification	50	Kg	397	19850
	22	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	A No.	art A- 100x40x40cm size of control panel art B-25x100x40 cm size of battery box				

0

	5.16.6	C	AT Jantity of Steel as shown in drawing tal Cost of Steel				
	5.16.6	CAV					
_	- 46						
		Re	einforcement - Specification")	ľ	-	1	
5		Co	puplers for Mechanical Splices of Bars for Concrete	Į.			
_ [3.	Couplers shall be conforming to IS code on "Reinforcement				
			ouplers.				<u> </u>
		2.	No extra payment shall be done for overlaps and/or				
		dr	Spacer bars (chairs) shall be paid separately as shown in the awing and as per direction of engineer in charge.		Ţ		
_			ote:- °				
Ī		de	etailing) etc. complete. (Note:-		ŀ		
35 20		de	etaling IS 456 RCC Design & SP 34 Reinforcement		Î		
1	J. 10	st	hall be provided as per requirement of IS 13920 for ductile		ĺ		
	5.16	o	f binding wire all wastages and overlaps, couplers (overlaps				
	ŀ	lci	utting, bending, placing in position and binding including cost				
1		R	einforcement for R.C.C. work including straightening,				
26		R	einforcement	2.000	Juili	3474.00	10005.1
<u>,</u>			otal Cost of RCC	2.880	Cum	2474 00	4000-
_	_		Column		 		
			ICC in foundation	 	 	 	
	5.1.1		M-20 Grade Concrete	 			
			inishing and reinforcement - All work up to plinth level.		9		
		ءُ [eggregate) excluding the cost of centering shuttering,	1			
-	5.1	Jo	ement concrtete (with 20mm nominal size graded stone		Ì	[[
ſ	Acr. 10	ļ	Providing and laying in position specified grade of reinforced				3
Ţ			_ 	 	 		
25			RCC up to plinth:-	0.290	Cum	4471.00	1296.
]			Total PCC	-	 	ļ	
			PCC in foundation	 			
	4.1.1.3		M-15 – Grade Concrete		 		
	4.1.1		With 20mm nominal size graded stone aggregate.		-	<u> </u>	.
	2007 00	[,	grade excluding the cost of centering and shuttering - All works upto plinth level.	ſ	ľ		
Í	4.1	i,	Providing and laying in position cement concrete of specified				
							5.0
24			Plain Cement Concrete in Foundation	8.65	0 Cum	147.00	1271
·) 7			Total Earthwork in excavation of Foundation				
			Foundation	 			
-	-	T	All kinds of soil	-			
		,	payable if work is done by mechanical means) All kinds of soi	1			
			earth to be levelled and neatly dressed. (No extra lift is				
		1	excavated earth, lead up to 50m and lift up to 1.5m, disposed	4			
	2.6	ļ,	dressing of sides and ramming of bottom disposal of		.6		
			depth. 1.5m in width as well as 10 sqm on plan) including	Í		1	
			excavator) / manual means over areas (exceeding 30cm in		İ		1
			Earth work in excavation by mechanical means (Hydraulic				
	·		01.01.2024	ĺ			
23			Civil work based on SOR MPPWD Vol 1 in force from		-		
	-	<u> </u>	paint as required as per specification.				
		etc.	with one coat of red oxide paint & two coat of aluminium	1			
		& sub-station	making holes, fabrication, welding, cutting, etc. and painting	5	1		0.026
	12.12	overhead line	other similar work etc. including nut bolts of required size,	50	Kg.	105	5250
	42.42	fitting for	cross arms, top clamp, 'V' cross arms, back/support clamp of	r	y 15		
		/flat iron	fitting for overhead line & sub-station etc such as 'D' bracke	t,	9.5		ľ

(23)

		ive fotal			-	485912
		Net Total				71987
		Add GST 18%				13997
)		Contingency and margin 3.5%				399928
		Total			33.00	520.60
		Net Filling in foundation Trenches	5.480	Cum	95.00	F20 00
		Quantity of RCC				
		Quantity of PCC				
		Total Excavation				
	2.24	Filling availabel excavated earth (excluding rock) in trenches plinth sides of fundations 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				
~/		Filling	10.98	Sqm	190.60	2092.79
27		Total Shuttering in foundation	40.00	 _ 		
		Column Base (Base of Mast)	 		 -	
		Footing	 			
	5.9.1	Foundations, footings, bases of columns, etc. for concrete upto plinth level				
	5.9	Centering and shuttering including strutting, propping etc. and removal of form for :				
		Shuttering	T			

Amount of Rs. 3,99928 - Donly

Under the Head 8443

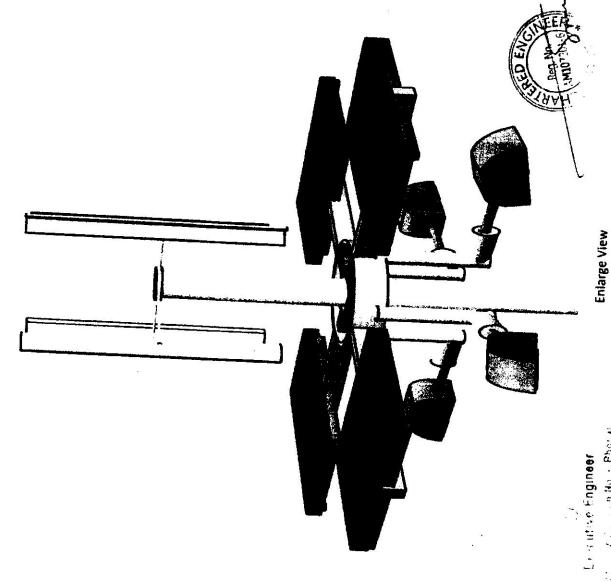
Date 0.3:10:24

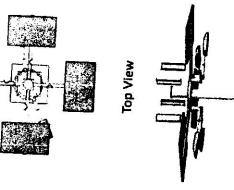
Executive Engineer P.W.D. EM On.No.-1, Rhee



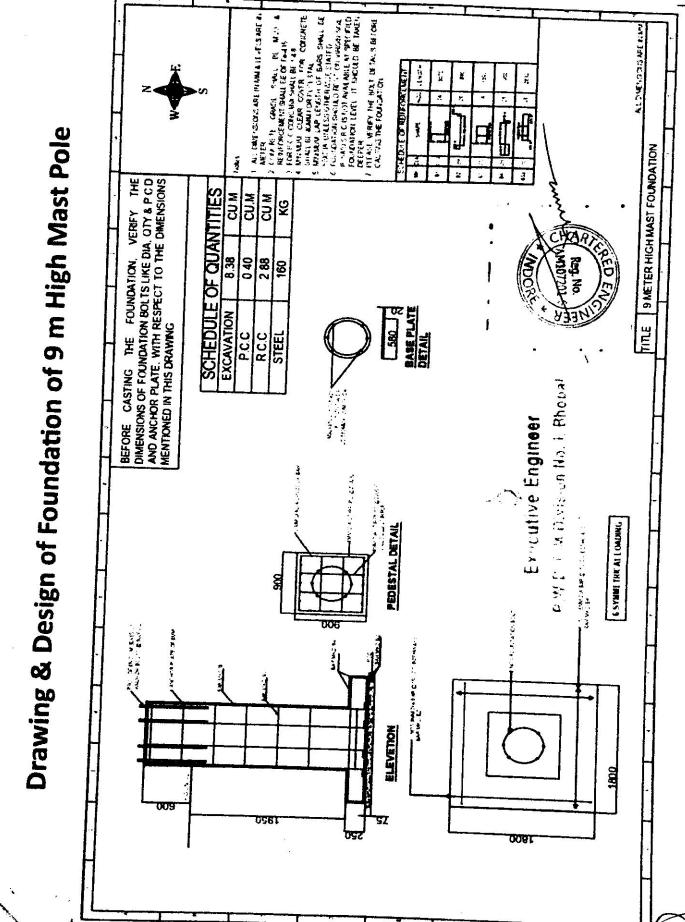
Schematic Diagram of Solar Wind Hybrid High Mast, Pale 9 m.

4 × 40 Watt LED Light & soo Watt VAWT





Front View



2)

LIST OF APPROVED MATERIAL

S.NO.	NAME OF ITEMS	SUGGESTIVE MAKE	CERTIFICATION BY/SUGGESTIVE STANDARD
1	SOLAR PV MODULE	WAAREE,LOOM,TATA OR EQUIVALENT	
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,INVERT ER, TULIP, IRIS OR EQUIVALENT	STANDARD MAKE