



**KISMAT**  
EngiTech LLP



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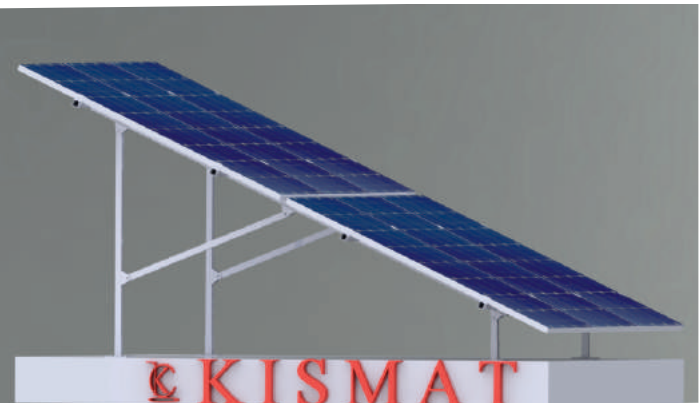
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[www.kismatengitech.com](http://www.kismatengitech.com)

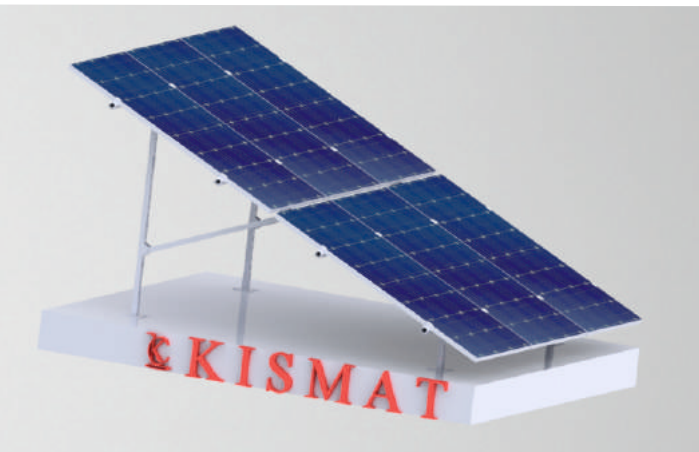




**3 MODULES STRUCTURE**



**6 MODULES STRUCTURE**



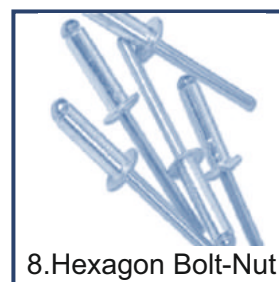
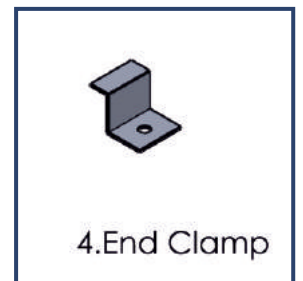
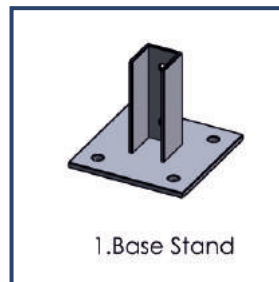
**10 MODULES STRUCTURE**

# KISMAT

## UNISTRUT STRUCTURE

- Unistrut / Slotted Channels solar mounted structure is useful for stockiest.
- Easy installation not so much technical details required.
- From 1KW (2/3 Modules structure) up to customer requirement we gone supply.
- Any Degree/ Angle set up available.
- Material is use is Hot Dip Galvanized, Pre GI, Aluminum accessories as per customer requirements.
- No quality issue for stockiest.
- On House, commercial or ground easy to install such structure.

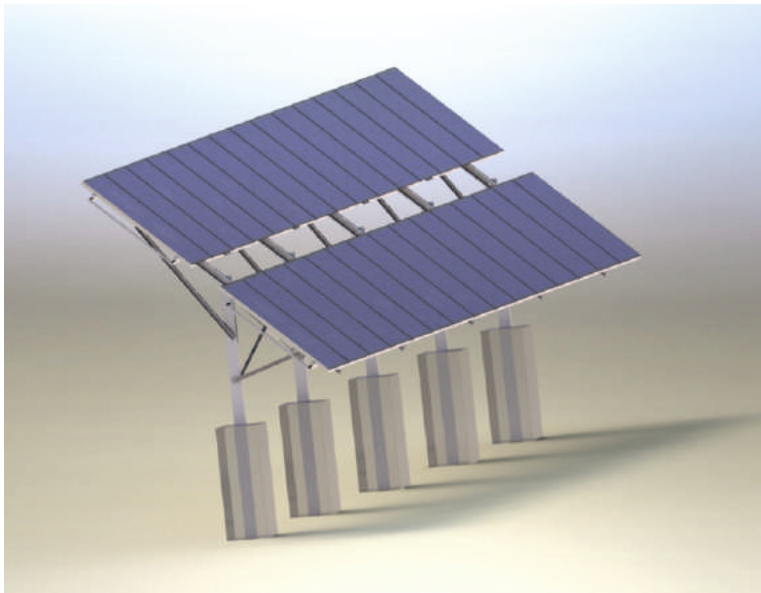
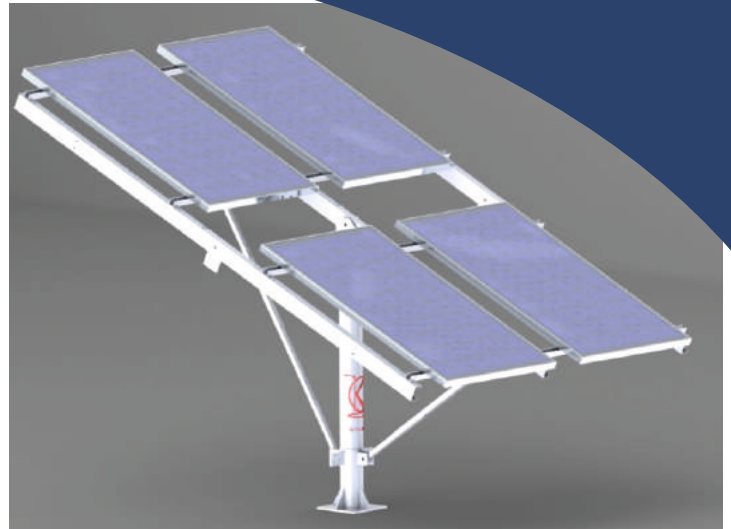
## ACCESSORIES



## **KISMAT 360°**

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- Provide structure of 4,6,8 panels which are useful for small user.
- Manual degree of 5°, 10°, 25°, 35° set up available.
- Easy installation not so much technical details required.
- For 1 Kw to 5 Kws customer is use full.



## **KISMAT Double Line**

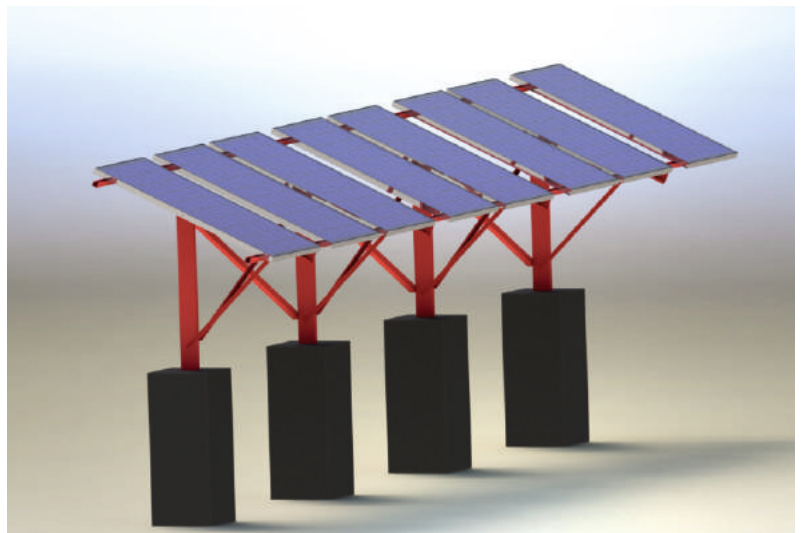
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- Provide structure of 8, 10, 20, 30 panels in table form,
- Used in Ground Mounting structure
- Manual degree of 5°, 10°, 25°, 35° set up available.
- Easy installation not so much technical details required.
- For 500Kws to MW works generally use.

## **KISMAT Single Line**

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- Provide structure of 8, 10, 15 panels in single table form
- Used in Ground Mounting structure
- Manual degree of 5°, 10°, 25°, 35° set up available.
- Easy installation not so much technical details required.
- For 500Kws to MW works generally use.



# KISMAT ULTRA

**KISMAT ULTRA** is a fixed-tilt ground mount solution that is designed to cater to a singular tilt angle. KISMAT ULTRA is specifically designed for installation in vast spaces and can be arranged in various configurations by iterating the structural components and their operative section types. Based on the type of design, Kismat ULTRA can be further categorized into

## Single Pole structures



For smaller array sizes with a maximum span of 4 meters in Ns direction.

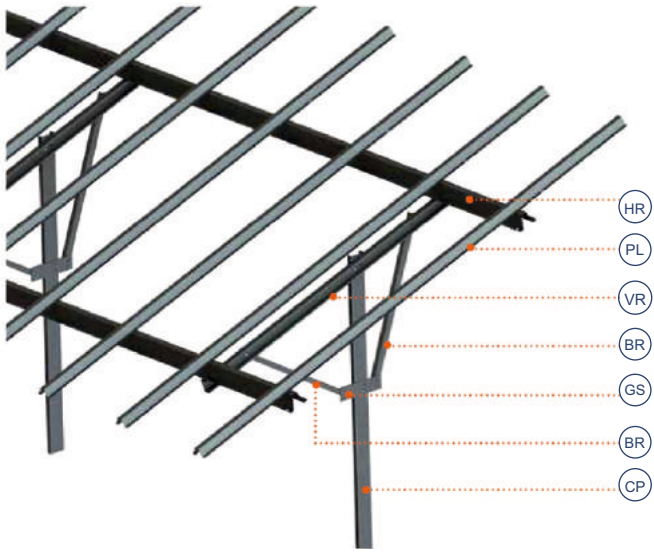
## Dual Pole structures



For large array sizes with a maximum span of 8 meters in NS direction. Owing to lower moments of operative structural loads, dual pole structures are ideal for steeper angles



## Single Pole



## Structure Description:

Single pole and Dual pole structures are erected using the following components

- Column post, Vertical Rafter and Bracings form a triangular support for the structure at the required tilt angle.
- Horizontal Rafters run in E-W direction if the required module orientation is landscape.
- Purlins run over the Vertical Rafter/Horizontal Rafter. Solar modules are installed on the purlins.
- Gusset Plates and Bracing pieces are used as auxiliary components and contribute to the triangular support.
- Splice plates and purlin plates are structural components that enable effective connectivity of all major structural members.
- L-Brackets connect the Vertical Rafter to the Horizontal Rafter or the Purlin, as per the design. L-Brackets are used specifically when the interacting components possess C-sections.
- In addition, for C-section purlins or Horizontal Rafters, Tie Rods are utilized to provide necessary support and avoid buckling.



**CP** Column Post

Post Galvanized MS =80-120  $\mu$   
Yield Strength = 250 - 350 Mpa



**VR** Vertical Rafter

Pre Galvanized MS (550 GSM) (or)  
Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 Mpa



**HR** Horizontal Rafter (Hat)

Galvalume (150 GSM) (or)  
Pre Galvanized MS (550 GSM) (or)  
Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 MPa (MS);  
550 MPa (Galvalume)



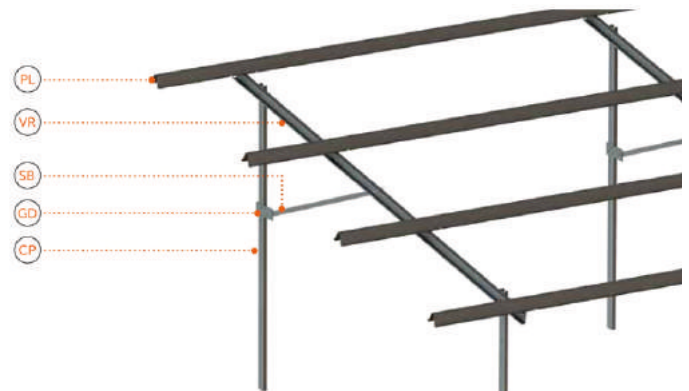
**GS** Gusset Plate (Single Pole)

Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 Mpa

## Technical Data

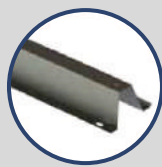
- Design wind speeds: 120- 200 kmph
- Orientation: Portrait / Landscape
- Tilt Angle: Depends on the latitude
- Ground Clearance : 500 - 800 mm
- PV Modules: Crystalline / Thin film
- Approximate Mass of structure excluding the module weight: 5 – 8 kg/m<sup>2</sup> (Typical)
- Concrete consumption: 80 – 100 m<sup>3</sup> / MWp (Typical)

## Dual Pole



**GD** Gusset plate

Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 Mpa



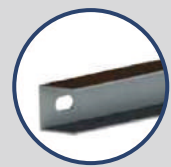
**PL** Purlin

Galvalume (150 GSM) (or)  
Pre Galvanized MS (550 GSM) (or)  
Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 MPa (MS); 550  
MPa (Galvalume)



**BR** Bracing

Pre Galvanized MS (550 GSM) (or)  
Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 Mpa



**SB** Side Bracing

Pre Galvanized MS (550 GSM) (or)  
Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 Mpa

# KISMAT TOPER

**KISMAT TOPER** is a ground mount structure solution that is designed to accommodate various tilt angles. Optimum generation output can be achieved by changing the structural tilt angle at least twice during the year. On the basis of the design and ergonomic components, Kismat Toper can be classified into

## Curved Slot

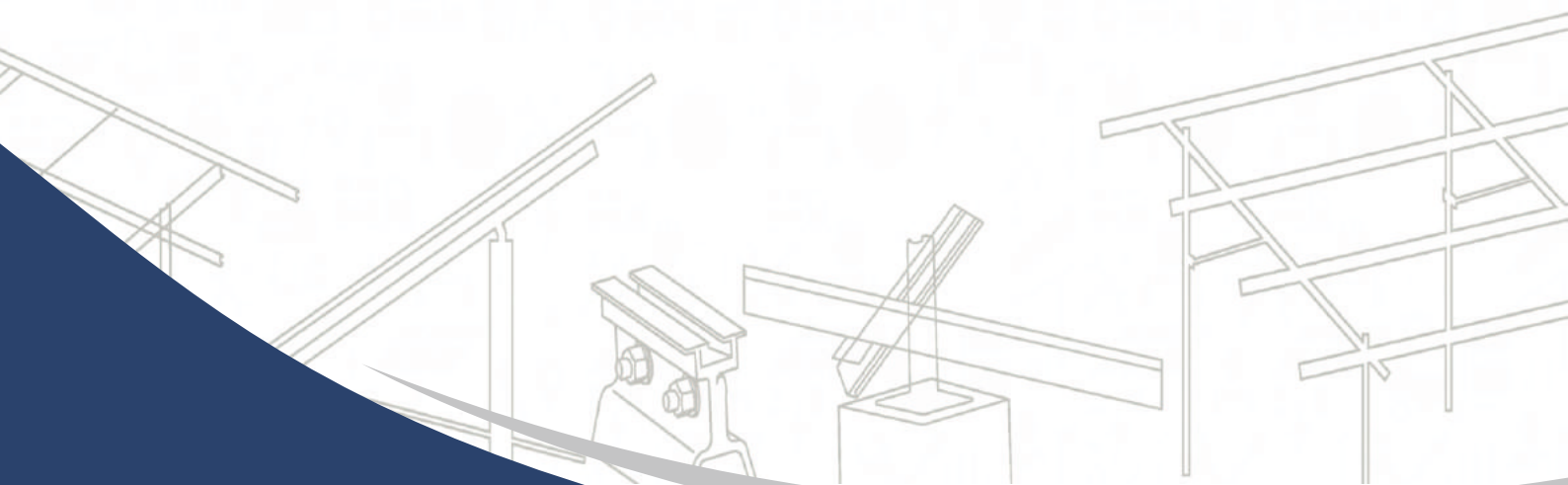


In-built machining of curved slots into vital components permits the tilting of the structure for various angles.

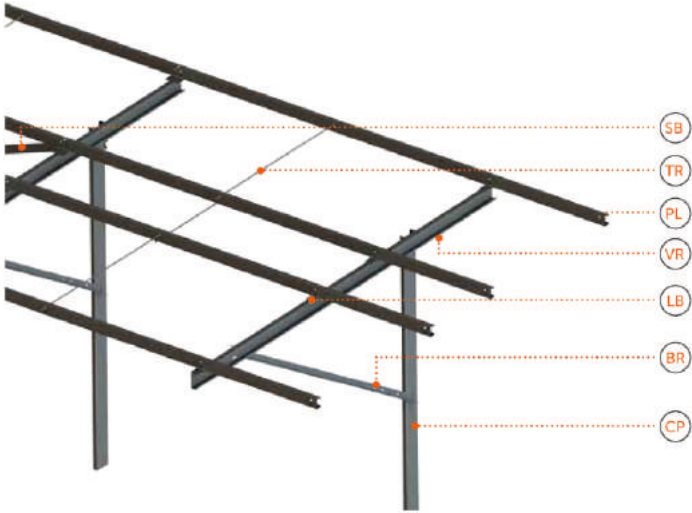
## Hinge Mechanism



Composed of welded assemblies, the hinge mechanism is built for robustness, ready to weather the most extreme conditions.



## Curved Slot



## Structure Description:

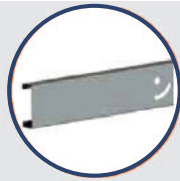
*NuevoTILT structures are composed of the following components*

- Column Post, Vertical Rafter and Bracing form a triangular support for the structure at the required tilt angle.
  - Bracings have the provision of multiple holes, each hole corresponding to a specific tilt angle.
  - Horizontal Rafters run in E-W direction if the required module orientation is landscape.
  - Specifically for a hinge requirement, the hinge mechanism consists of adopter plates and hinges welded in a manner permitting mating of the hinges and free rotational movement along a single axis.
- Purlins run over the Vertical Rafter/Horizontal Rafter on which solar modules are installed.
  - With purlins of C cross-sections, L-brackets will be utilized to connect the purlin to the Vertical Rafter, or to the Horizontal Rafters, as permitted by the design.
  - In addition, for C-section purlins, Tie rods are utilized to provide necessary support and avoid buckling.



**CP** Column Post

Post Galvanized MS =80-120  $\mu$   
Yield Strength = 250 - 350 Mpa



**VR** Vertical Rafter

Pre Galvanized MS (550 GSM) (or)  
Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 Mpa



**HR** Horizontal Rafter (Hat)

Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 Mpa



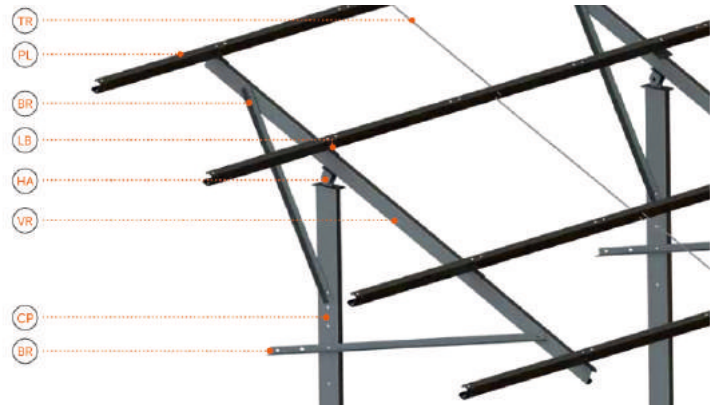
**GS** Gusset Plate (Single Pole)

Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 Mpa

## Technical Data

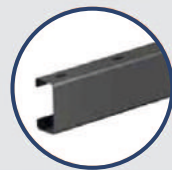
- Design wind speeds: 120- 200 kmph
- Orientation: Portrait / Landscape
- Tilt Angle: Optimal tilt angles determined via PVSystem.
- Ground Clearance : 500 - 800 mm
- PV Modules: Crystalline / Thin film
- Approximate Mass of structure excluding the module weight: 5 – 8 kg/m<sup>2</sup>  
(Typical)
- Concrete consumption: 80 – 100 m<sup>3</sup>  
/ MWp (Typical)

## Hinge Mechanism



**HA** Hinge Assembly

Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 Mpa



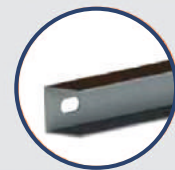
**PL** Purlin (Type)

Galvalume (150 GSM) (or)  
Pre Galvanized MS (550 GSM) (or)  
Post Galvanized MS (80-120  $\mu$ )  
Yield Strength=250-350 MPa (MS);  
550 MPa(Galvalume)



**BR** Bracing

Pre Galvanized MS (550 GSM) (or)  
Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 Mpa



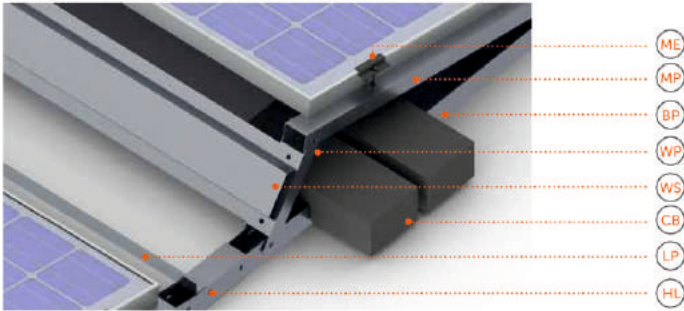
**SB** Side Bracing

Pre Galvanized MS (550 GSM) (or)  
Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 Mpa

# Low Elevation Ballast

## Structure Description:

The Low Elevation Ballast system is built up of the following major components:



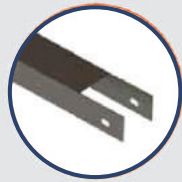
- Base Post, Module Post and Wind Shield Post form a triangular support for the rooftop structure that is installed at a singular tilt angle.
- L-Angle connects adjacent base posts to ensure perfect and proper alignment.
- Hat Link interconnects the rows for even distribution of loads on the roof.
- Wind Shield is designed to reduce the wind impacts on the solar module.

- EPDM sheet separates the array from the roof which helps during water stagnations. In addition, the EPDM strip acts as a frictional layer between the roof and the structure



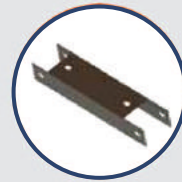
**BP** Base Post

Post Galvanized MS (80  $\mu$ )  
Yield strength of the section = 250 Mpa



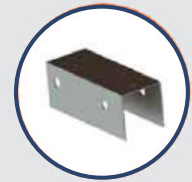
**MP** Module Post

Pre Galvanized MS (550 GSM)  
Yield Strength = 250 Mpa



**WP** Wind Shield Post

Pre Galvanized MS (550 GSM)  
Yield Strength = 250 Mpa



**HL** Hat Link

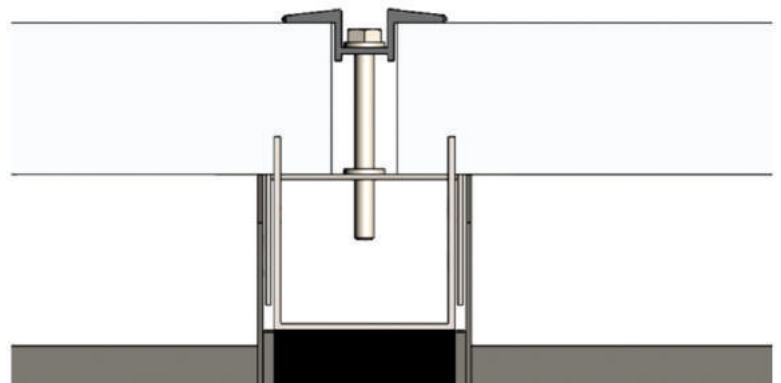
Pre Galvanized MS (550 GSM)  
Yield Strength = 250 Mpa

## Technical Data

- Design wind speeds: 140-200 kmph
- Orientation: Landscape
- Tilt Angle: 10 degrees

## Advantages

- Non-penetrative.
- Can be relocated
- Customized as per module dimensions.
- Ideal Do-It-Yourself rooftop solution fo

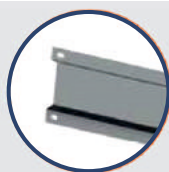


Module Mid Clamp Connection



**LP** L-Angle

Pre Galvanized MS (550 GSM)  
Yield Strength = 250 Mpa



**WS** Wind Shield

Galvalume (150 GSM)  
Yield Strength = 550 Mpa



**CB** Concrete Blocks

Grade = M20 / M25

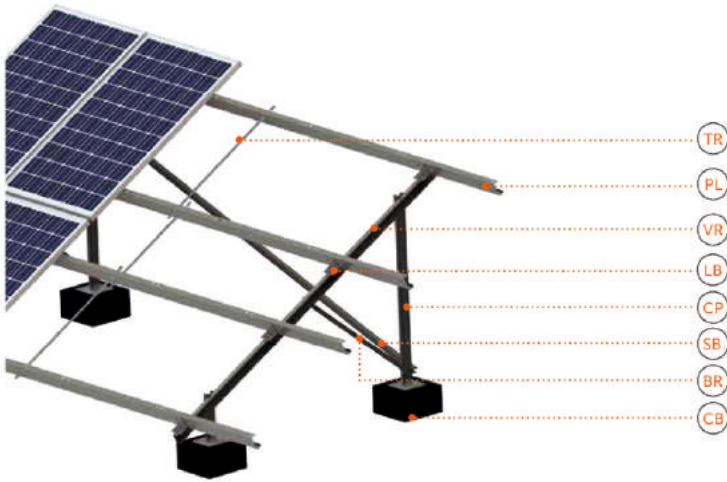


**ME** Mid & End Clamps with Hex-nuts

Anodized Aluminium (15  $\mu$ )  
Yield Strength = 210 Mpa



## Elevated Ballast



## Structure Description:

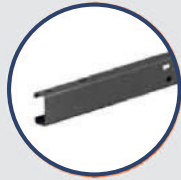
The Low Elevation Ballast system is built up of the following major components:

- Column Post, Vertical Rafter, Bracings that form a triangular support for the structure at the required tilt angle.
- Horizontal Rafters run in E-W direction if the required module orientation is landscape.
- Purlins run over the Vertical Rafter/Horizontal Rafter. The solar modules are installed on purlins. Gusset Plates and Bracing pieces are used as auxiliary components and contribute to the triangular support.
- Splice Plates and Purlin Plates are structural components that enable effective connectivity of all major structural members.
- L-Brackets connect the vertical rafter to the horizontal rafter or the purlin, as per the design. L-Brackets are used specifically when the interacting components possess C-sections.
- In addition, for C-section purlins or Horizontal Rafters, Tie Rods are utilized to provide necessary support and avoid buckling.



**CP** Column Post

Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 Mpa



**VR** Vertical Rafter

Pre Galvanized MS (550 GSM) (or),  
Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 MPa



**CB** Concrete Block

Grade = M20 / M25M  
Yield Strength = 250 Mpa

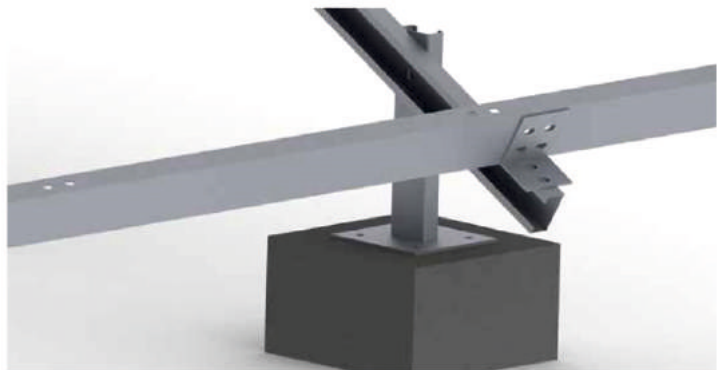


**LB** L Brackets

Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 Mpa

## Technical Data

- Design wind speeds: 120- 200 kmph
- Orientation: Portrait / Landscape
- Tilt Angle: Typically 10 to 20 degrees
- Ground Clearance: 300 – 1500 mm
- PV Modules: Crystalline / Thin film
- Approximate Mass of structure excluding the module weight: 6 – 8 kg/m<sup>2</sup> (Typical)



**LP** Purlin

Galvalume (150 GSM) (or)  
Pre Galvanized MS (550 GSM) (or)  
Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 MPa (MS);  
550 MPa (Galvalume)



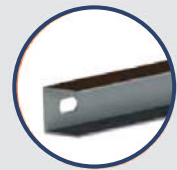
**TR** Tie Rod

Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 Mpa



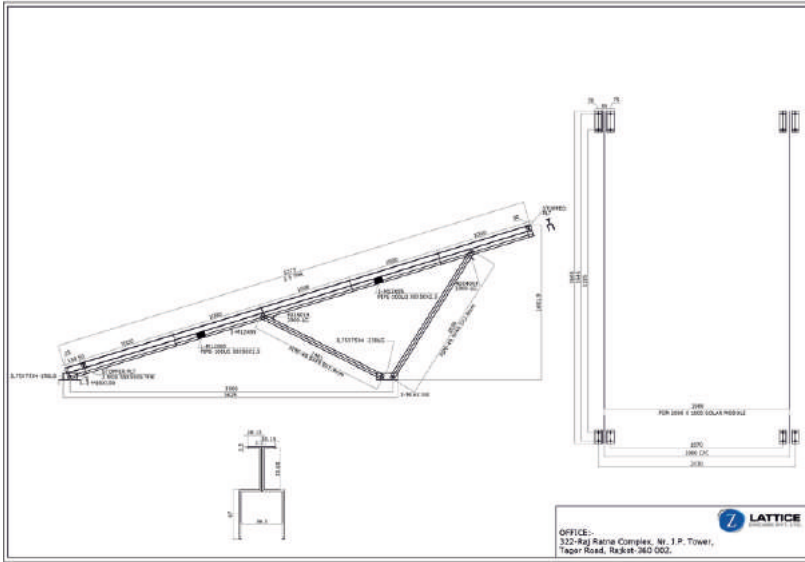
**BR** Bracing

Pre Galvanized MS (550 GSM) (or)  
Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 Mpa



**SB** Side Bracing

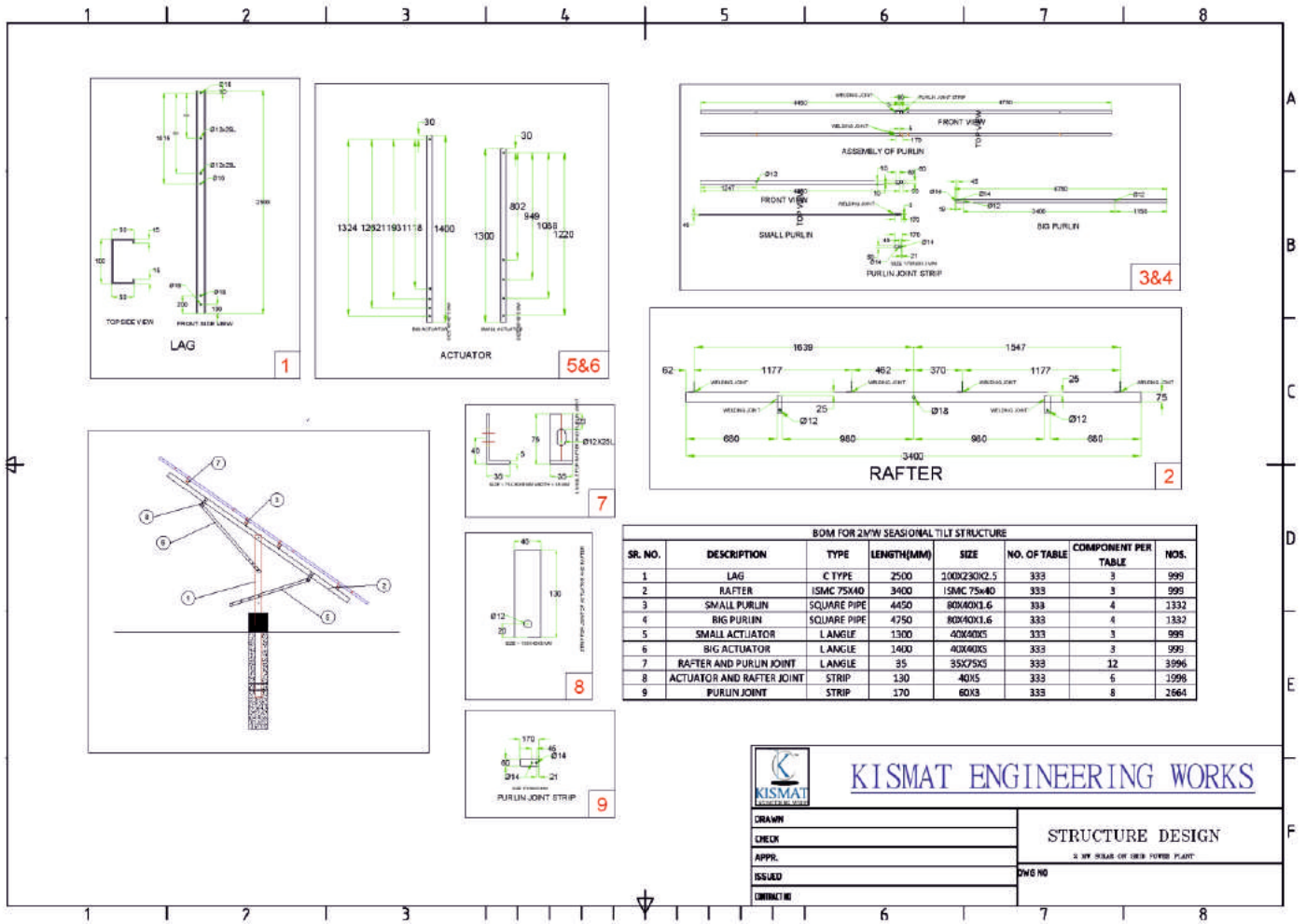
Pre Galvanized MS (550 GSM) (or)  
Post Galvanized MS (80-120  $\mu$ )  
Yield Strength = 250 - 350 Mpa



BILL OF MATERIAL PER STRUCTURE							
Sr.No.	Item Description		Section Size	Unit Nos.	Length/ Mtr	Unit wt. (Kg/ M)	Total Wt.(Kg)
1	RAFTER	HDMS Sheet	2.5mm Thk.	24	5.275	16.530	396.72
2	SUPPORTING PIPE (A)	H.D Pipe S.H.S	49.9x49.9x2.9 mm	13	1.636	4.150	88.26
3	SUPPORTING PIPE (B)	H.D Pipe S.H.S	49.9x49.9x2.9 mm	13	1.481	4.150	79.90
4	CLEAT B1	IS-2062	75x75x4 mm	24	0.230	4.710	26.00
5	CLEAT B2	IS-2062	75x75x4 mm	24	0.150	4.710	16.96
6	CROSS BRACING	IS-2062	40x40x3 mm	24	1.750	1.850	77.70
7	RUNNER	H.D Pipe S.H.S	49.9x49.9x2.9 mm	39	0.100	4.150	16.19
8	STOPPER	Thk.HDMS Sheet	55X50X 6 mm	48	0.005	47.160	11.32
							<b>713.04</b>
NUT-BOLT PER STRUCTURE							
Sr.No.	Description		Unit Nos.	Length/ Mtr	wt.(Kg/ Pc)	Total Wt.(Kg)	
1	M16X100		72	0.100	0.350	25.20	
2	M12X85		26	0.085	0.164	4.26	
3	M12X80		65	0.080	0.154	10.01	
4	M12X70		26	0.070	0.135	3.51	
5	M12X35		26	0.035	0.067	1.74	
6	M12x2 mmThk.Spring washer		325	-	0.004	1.30	
							<b>Total 46.03</b>
For Solar Module 12x5=60				Structure weight		713.04	
				Nut & Bolt weight		46.03	
				Total weight		<b>759.07</b>	
Proposed Solar Park				Lattice Zincare Private Limited-Rajkot			



# Project of 4 + 4 + 12 MW Kalawad, Gujarat



# KISMAT RT\_FIX

**KISMAT RT\_FIX** solutions are premium rooftop mounting solutions designed for flat RCC roofs. The non-penetrative nature of the solution facilitates easy installation on both residential and commercial spaces, and provides for rapid expansion from kilowatt to megawatt scales.

## Low Elevation Ballast

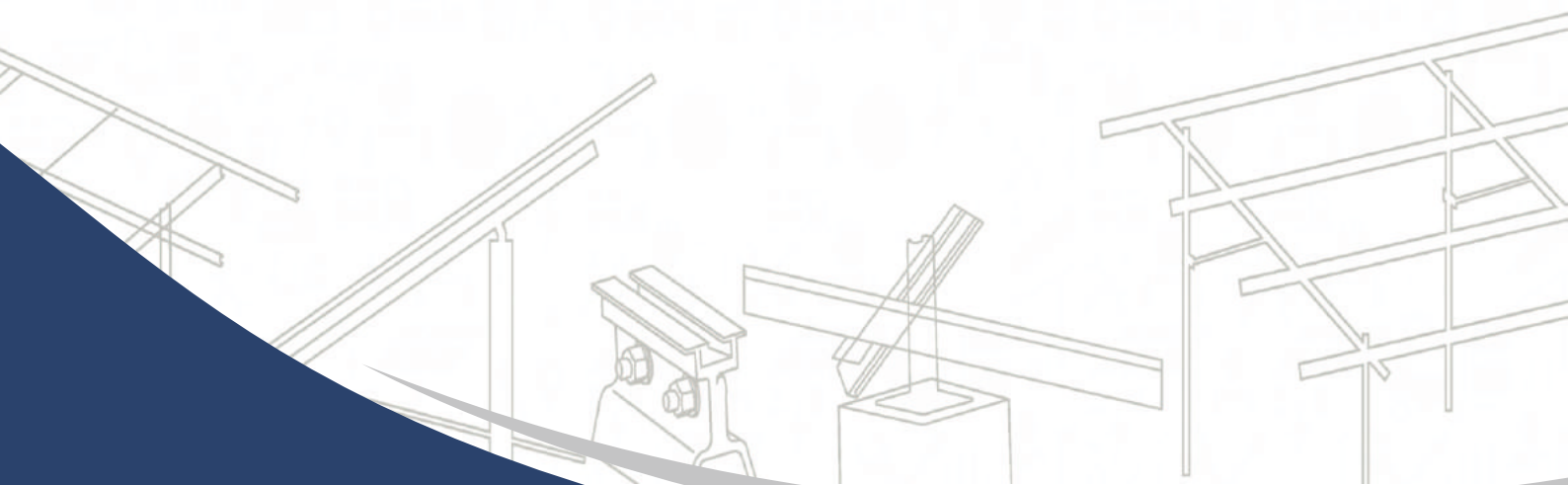


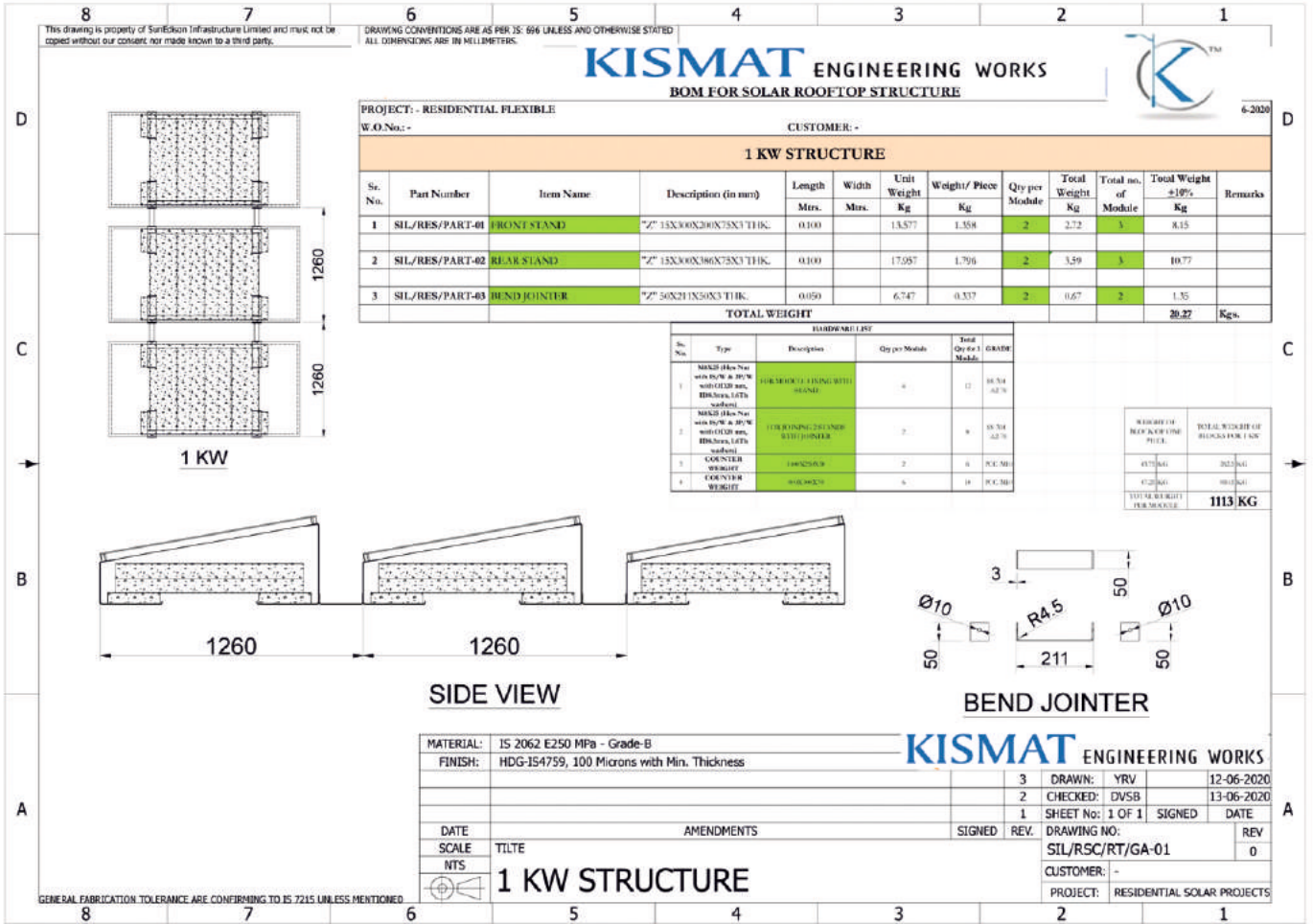
Modular structure with minimal connections, the perfect DoIt-Yourself

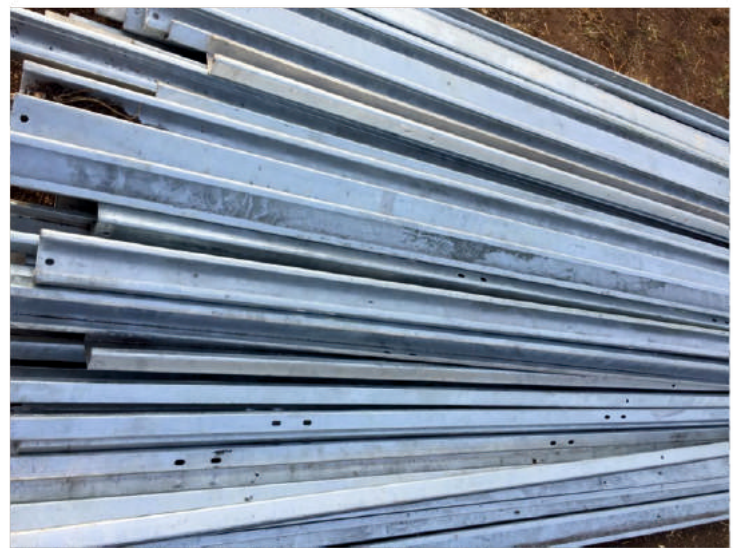
## Elevated Ballast



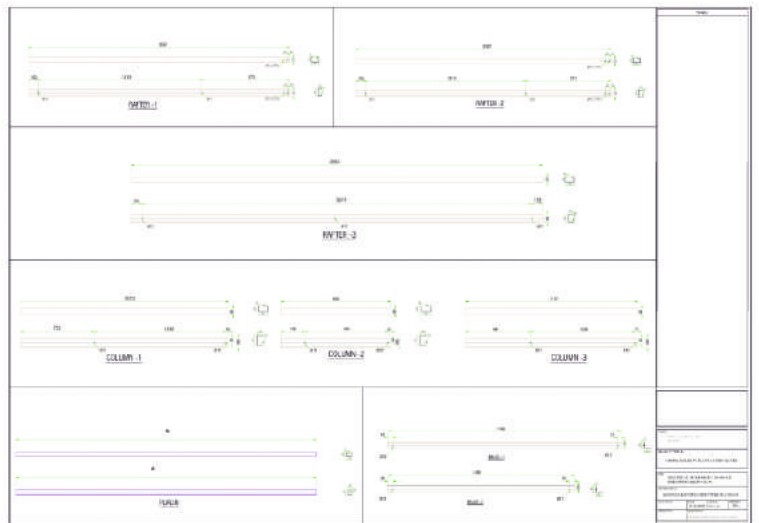
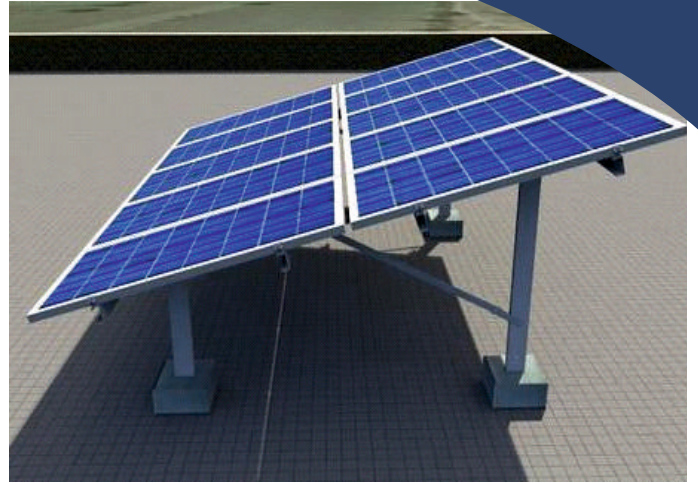
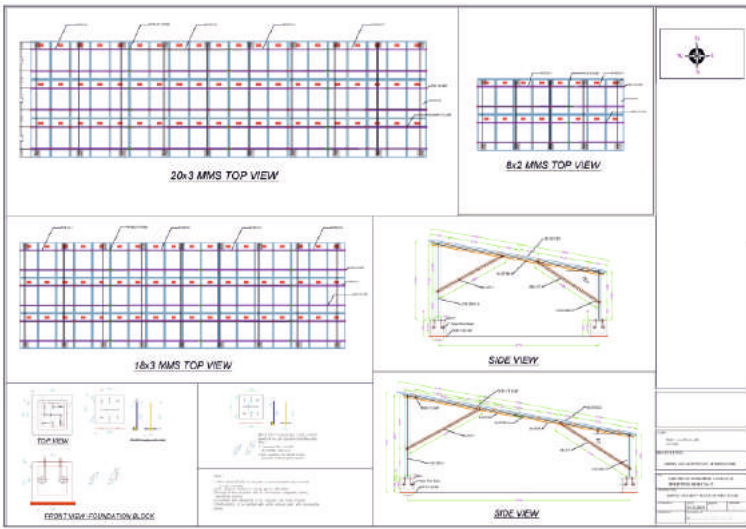
Robust rooftop solutions guaranteeing longevity. Perfect for captive power and net metering.







**Project of 3 MW Anida, Lodhika, Rajkot, Gujarat**



**Supply 50KW & 100KW standard structure as per Government of Kerala**





# KISMAT

EngiTech LLP

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📍 Off.N.H-8A, Bamanbore-Morbi National Highway, Nr.wakaner Boundry,  
Mesariya Road, At.: Rangpar, Tal wakaner, Dist.: Morbi - 363621