

Prof. Pramod Kumar
Associate Professor

Date: 27th May 2020

To,
Shakti Pumps (India) Limited,
Pithampur, Dist. -Dhar,
M.P.-454774

Ref.: E-mail dated 25.05.2020 for Solar PV Module Mounting Structural Design Analysis.

Document Reference specification: Structure design provided in MNRE's Technical Specification of Solar Water Pumping System-July,2019.

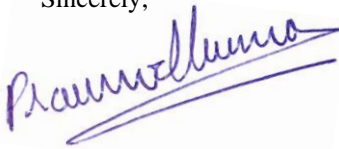
Dear Sir/Madam,

We have performed structural analysis & compared all the technical specifications of the module mounting structures designs provided by you with respect to above reference specification of MNRE-July 2019. The structural designs submitted by M/S Shakti Pumps are safe and capable of wind velocities up to 150 kmph to support 04, 06, 09 and 10 nos. solar PV modules. However, an increase in safety margin on account of downward wind loading on the module due to swirl effect, the following design changes over the mentioned reference standard of MNRE may be considered:

Sr. No.	MNRE MMS Standard design specification	Improved submitted MMS design specification	Improvement points over MNRE specification
1	8- PV Module MMS	9/10- PV Module MMS	The proposed Structure is capable of withstanding 9 or 10 PV module weight up to the wind speed of 150 km/hr as per the simulation results obtained.
2	8- PV Module MMS (Main tube assembly)	9/10- PV Module MMS (Main Tube)	Additional support to purlin using L- Section : 40 x 40 x 5 x 150
3	8- PV Module MMS (Side tube assembly)	9/10- PV Module MMS (Side Tube)	Loading at particular joint is restricted by providing an additional reinforcement plate of 5 mm thickness on both sides.

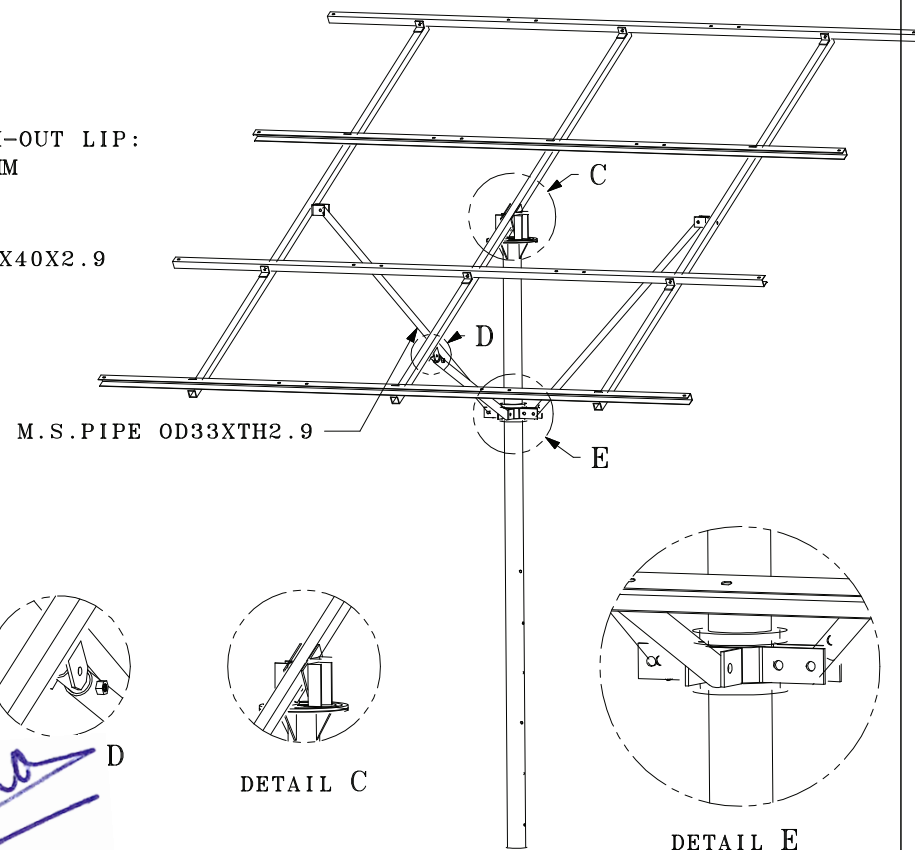
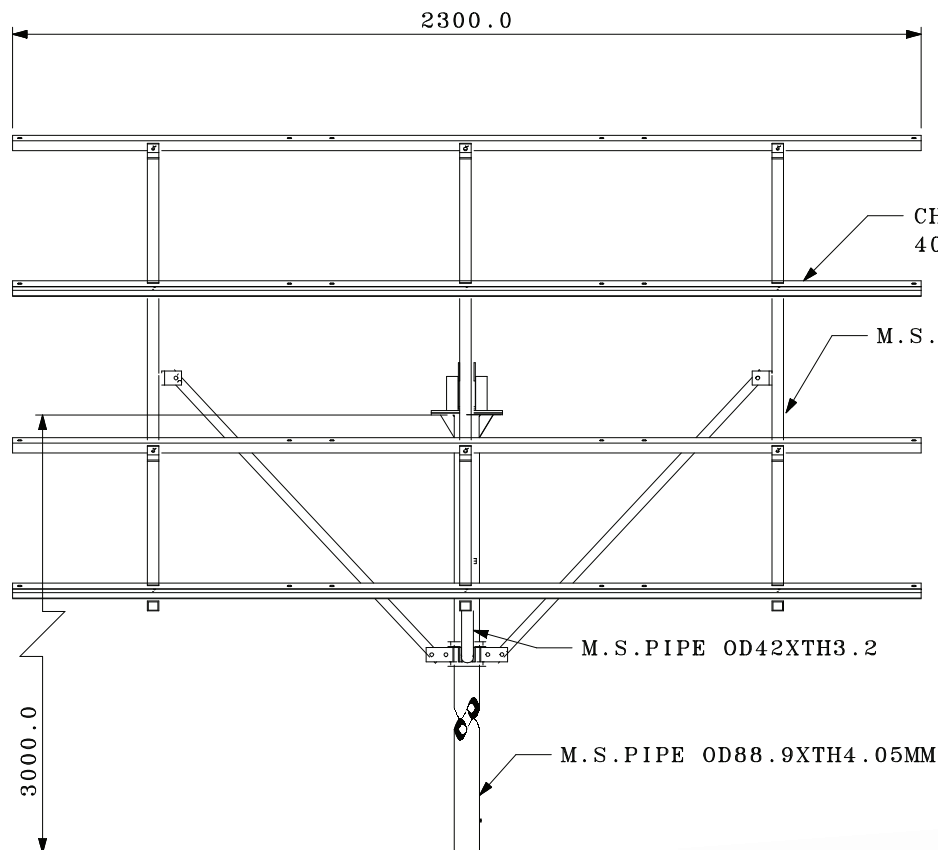
Thanking you.

Sincerely,



Pramod Kumar

Enclosed: Certified copies of the MMS drawings.



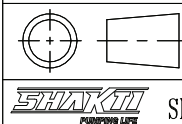
ISOMETRIC VIEW

GENERAL NOTE:-

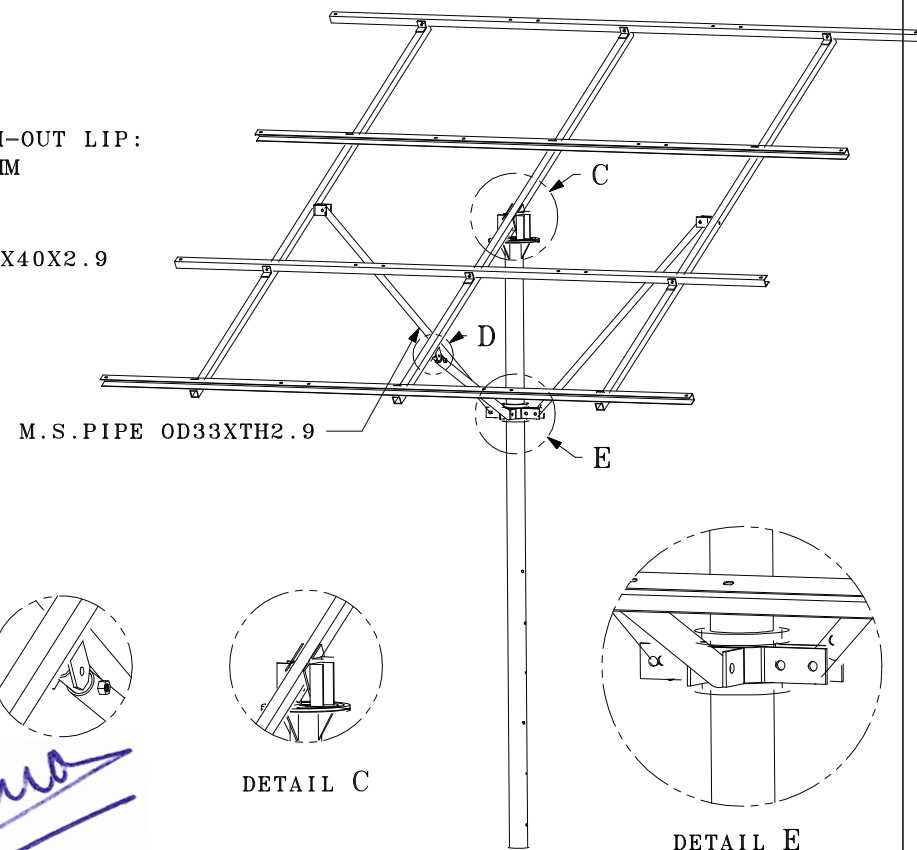
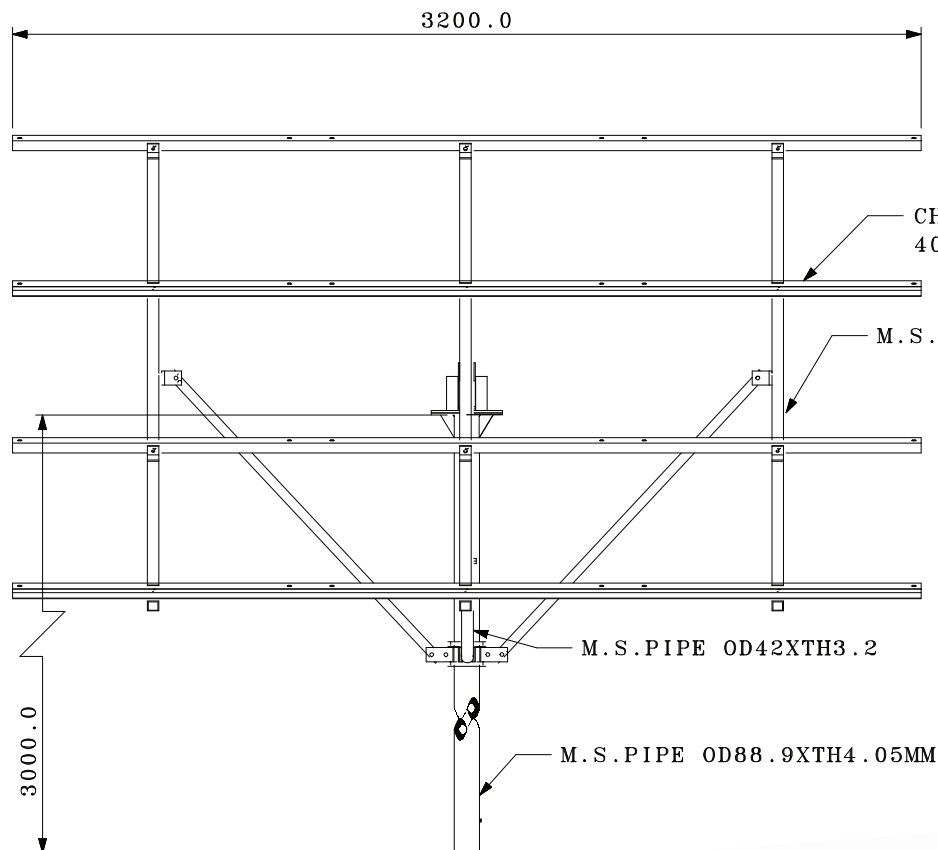
1. COMPONENT SHOULD BE MIN.80 μ m HOT DEEP GALVANIZED COATED. CONFIRMING TO :-
IS 2629: HOT DEEP GALVANIZING PRACTICE
IS 2633: UNIFORMITY OF GALVANIZING COATING
IS 4759: HOT DIP ZINC COATING OF STRUCTURAL STEEL
2. WELDING SHOULD BE CHECKED CONFIRMING TO:-
IS 822: PROCEDURE FOR INSPECTION OF WELDS.
3. ALL DIMENSIONS IS IN MM.
4. ALL WELD ARE 6 MM CONTINUOUS FILLET UNLESS OTHERWISE NOTED.
5. ELECTRODES FOR MILD STEEL SHALL CONFIRM TO IS 814 & IS 815.
6. WELDING PROCEDURE ARE TO BE AS PER IS 816 & 9595.
7. FULL CONTACT LENGTH TO BE WELDED IN ALL CASE.
8. ALL STEEL SECTIONS SHALL BE THOROUGHLY STRAIGHTENED & WIRE BRUSHED TO ENSURE COMPLETE REMOVAL OF RUST & SCALE.
9. DESIGN IS CONFIRMING TO IS800:2007

Pranav Sharma

1) REMOVE SHARP EDGES 2) DRAWING NOT TO BE SCALE 3) OPEN TOLERANCE ARE ± 0.2		REV.-R0	DESCRIPTION:-		
ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED				NAME	DATE
TITLE :-GAD OF SSMT(TRACK)-4-MODULE(TYPE-B)			DRAWN	DEEPAK	25.05.20
			REVISION		
			APPROVED		
			SHEET	1 OF 1	
			DRG.NO.	4800024968	R0



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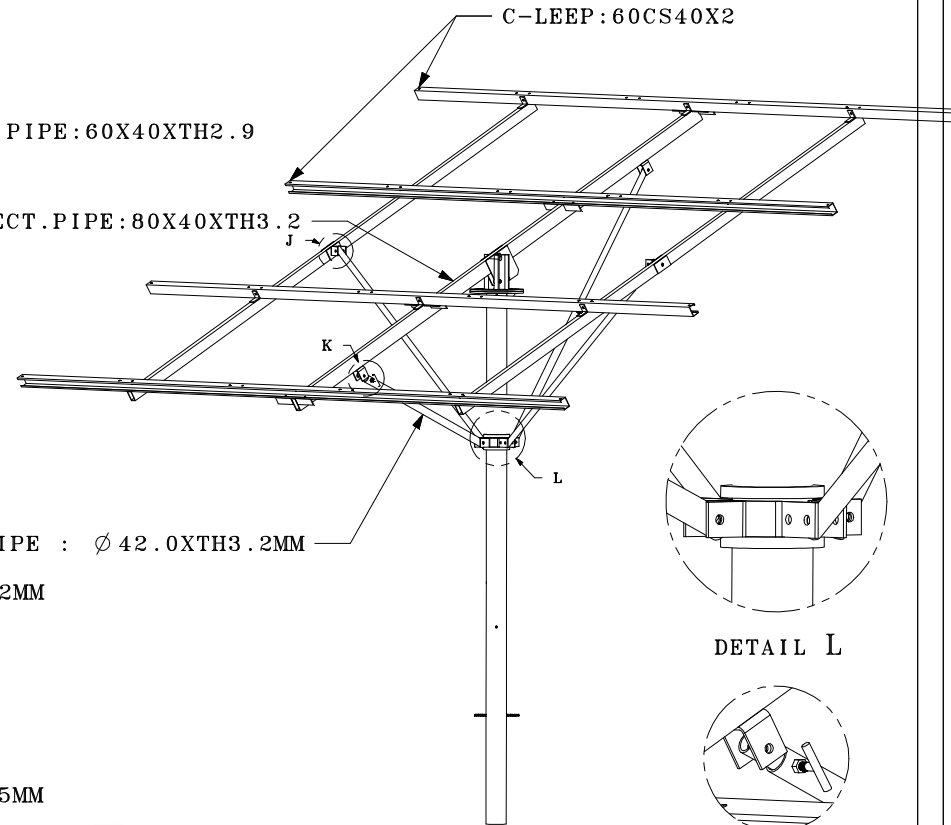
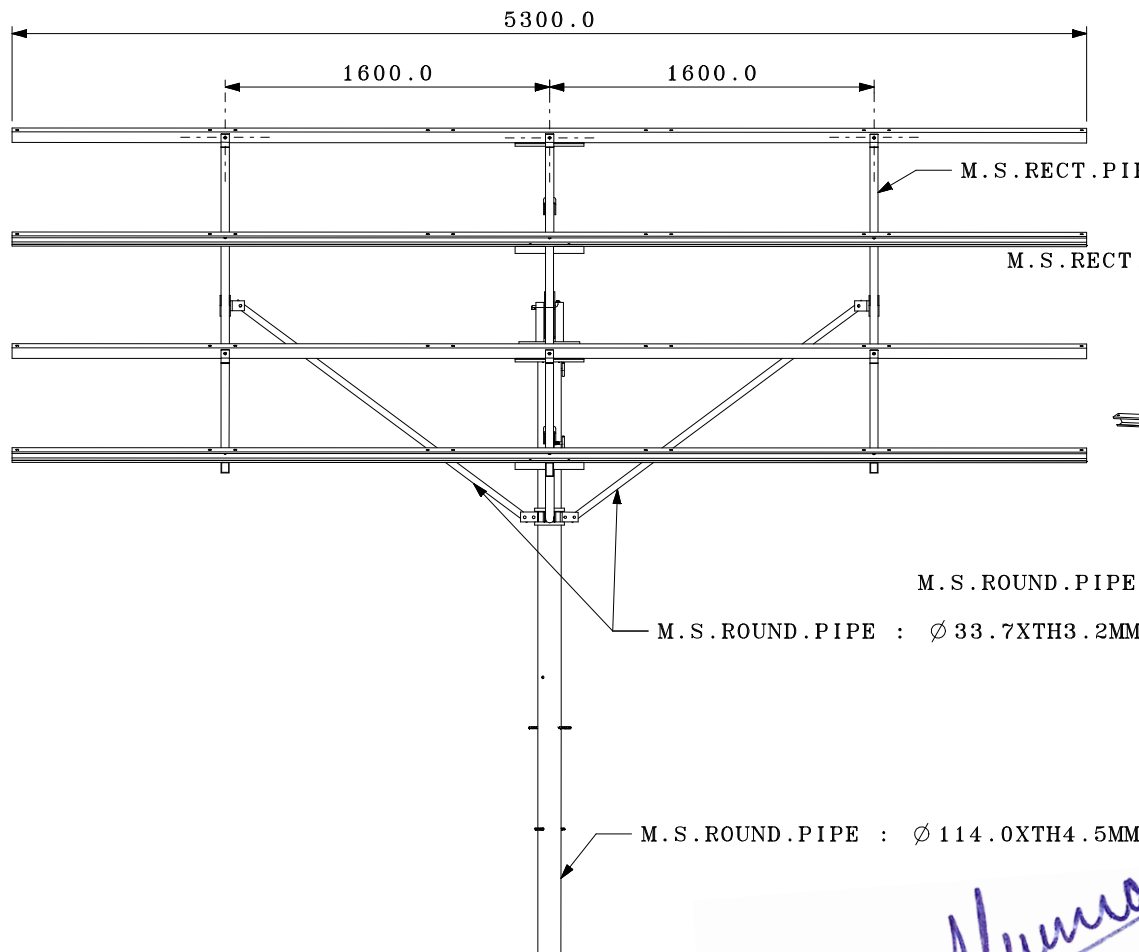


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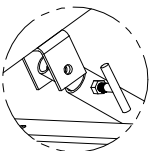
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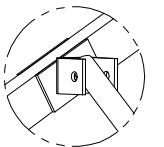
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ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED				NAME	DATE
TITLE :-GAD OF SSMT(TRACK)-6-MODULE(TYPE-B)				DRAWN	DEEPAK 08.02.20
				REVISION	
	SCALE	MATERIAL	WEIGHT	APPROVED	
	NTS	STD	121kg	SHEET	1 OF 1
		SHAKTI PUMPS (INDIA) LTD. PITHAMPUR		DRG.NO.	4800024837 R0



DETAIL L



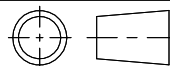

DETAIL K

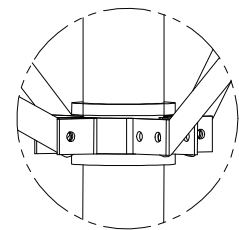
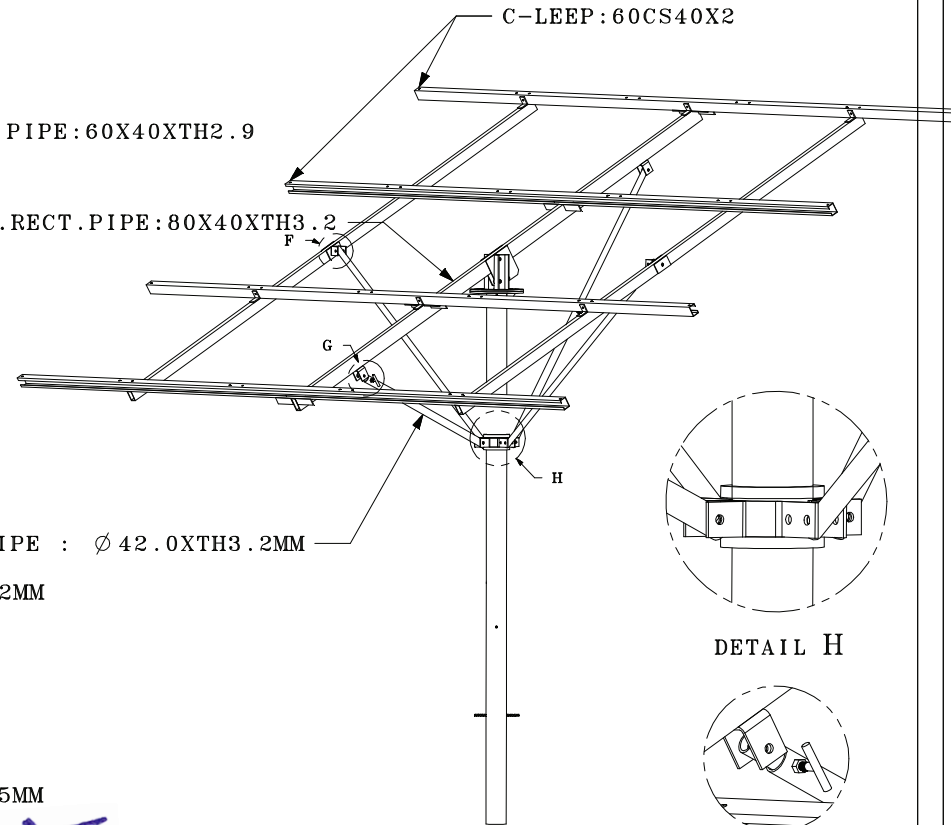
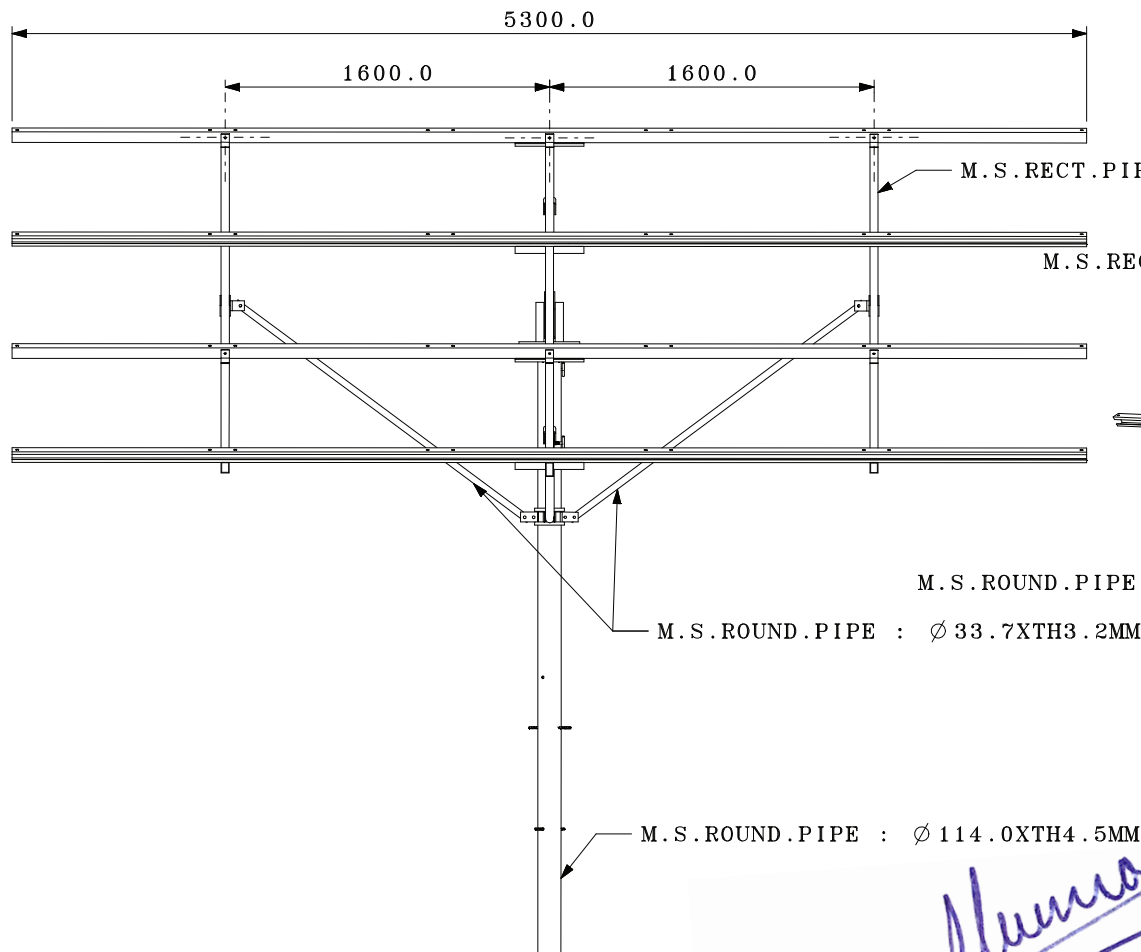


DETAIL J

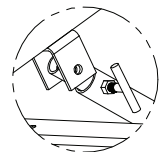
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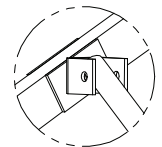
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ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED				NAME	DATE
TITLE :-GAD OF SSMT(TRACK)9-MODULE (TYPE-B)			DRAWN	DEEPAK	27.02.20
			REVISION		
			APPROVED		
			SHEET	1 OF 1	
			DRG.NO.	4800024839	R0



DETAIL H



DETAIL G



DETAIL F

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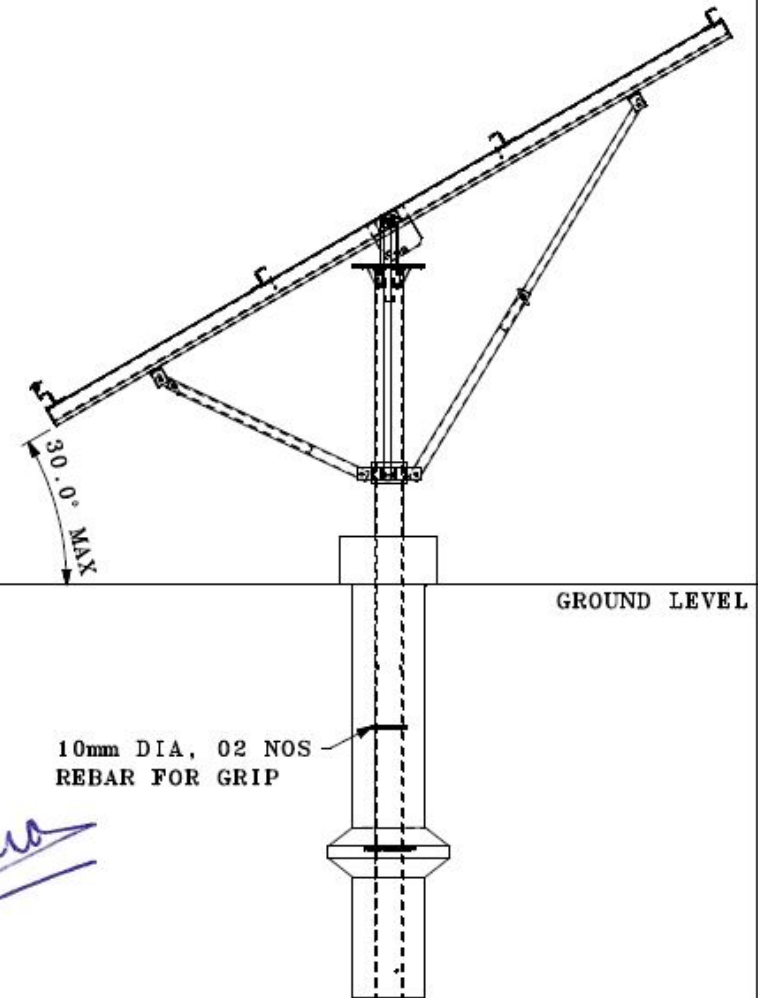
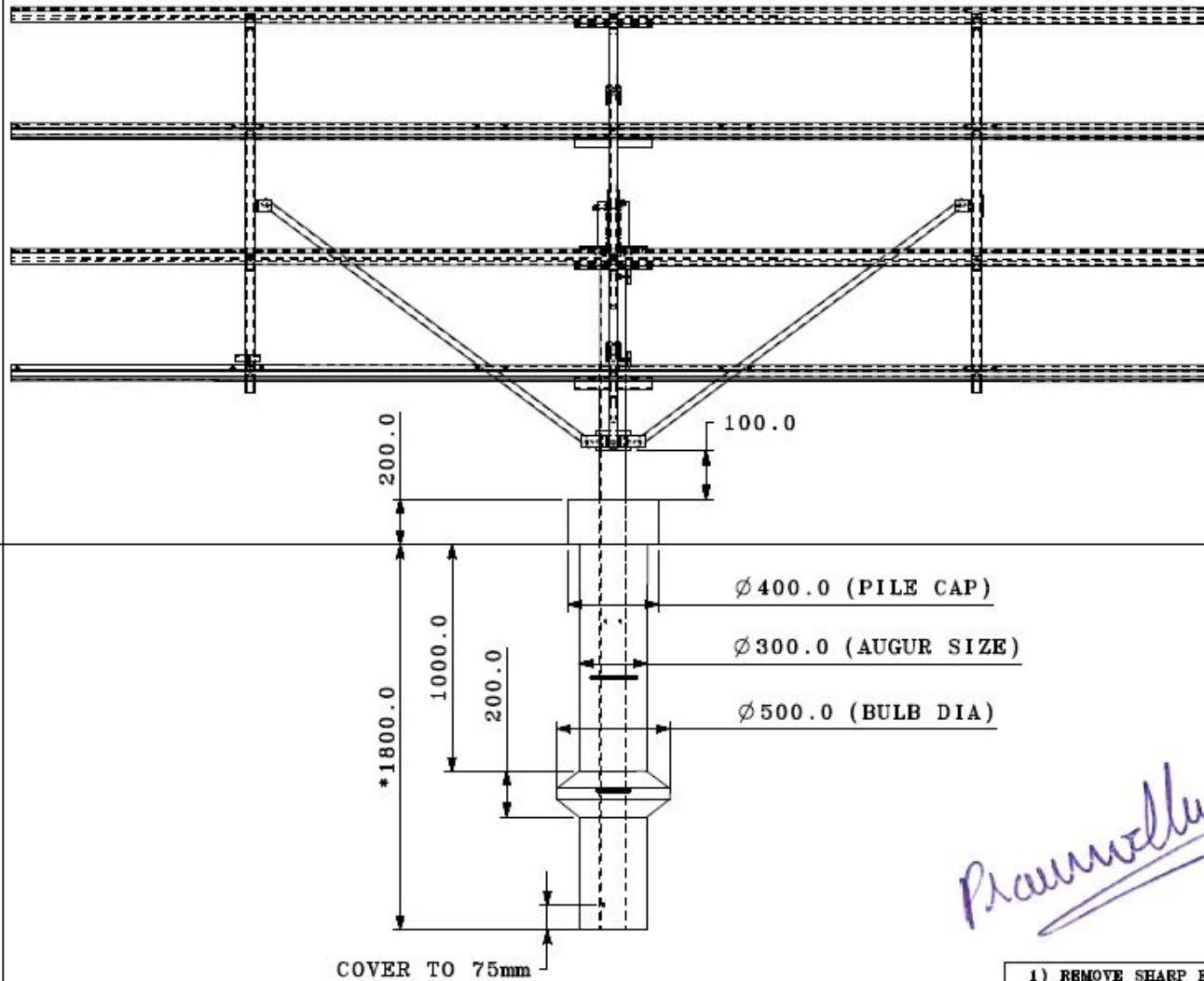
Pranav Sharma

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ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED				NAME	DATE
TITLE :-GAD OF SSMT(TRACK)10MODULE (TYPE-B)				DRAWN	DEEPAK 27.02.20
				REVISION	
				APPROVED	
				SHEET	1 OF 2
				DRG.NO.	4800024839
					R0



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SOUTH FACING



NOTE:-
NOTE:

- 1) ALL EXCAVATION WORK SHOULD BE ACCORDANCE TO IS:1904
 - 2) ALL FASTENERS FOR STRUCTURE MOUNTING SHOULD BE 8.8 Gr
 - 3) USE M25-GRADE CONCRETE AS PER IS 456-2000
 - 4) 10mm REBAR SHOULD BE INSERTED AT THE TIME OF INSTALLATION
 - 5) USED IS-2911 FOR PILE DESIGN
- * CHANGED AS PER SITE CONDITION

- 1) REMOVE SHARP EDGES
- 2) DRAWING NOT TO BE SCALE
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REV.-R0

DESCRIPTION:-

ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED

TITLE :-PILE FOUNDATION OF SSMT 4/6/9/10-PLATE.B



SCALE
NTS

MATERIAL
STD

WEIGHT
NA

DRAWN

DEEPAK

19.06.20

REVISION

APPROVED

SHEET

1 OF 1

DRG.NO.

4800025034

R0



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