



SPIL/HR/KUSUM/10HP/MMS/2020/01

DATE: 23.09.2020

To,
The Director General,
Department of New and Renewable Energy,
Haryana and HAREDA,
Panchkula, Haryana – 134102.

Sub: - Regarding submission of MMS design

Ref: 1) LOA No. 2385-2391, Dated – 18/05/2020

2) NIT/Bid document no. EESL/06/2019-20/KUSUM/SWPS/Phase-1/10HP/Off Grid/192012030,
Dated- 20.12.2019

Respected Sir

With reference to aforesaid subject and references made above, we hereby are submitting foundation design which is verified from IISc, Bangalore as required for complete MMS design. Kindly do the needful.

Looking forward for your kind support & association.

Yours Faithfully,



For Shakti Pumps (India) Ltd.

Mahesh Hedao,
Asst. Manager (Govt. Sales)
(Authorized Signatory)

SHAKTI PUMPS (INDIA) LIMITED

CIN: L29120MP1995PLC009327, Regd. Office & Works: Plot No. 401, 402 & 413, Industrial Area, Sector - 3, Pithampur - 454774, Dist. Dhar (M.P.) INDIA.
Tel.: +91 7292 410500, Fax: +91 7292 410645, E-mail: info@shaktipumps.com, sales@shaktipumps.com, Web: www.shaktipumps.com



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.

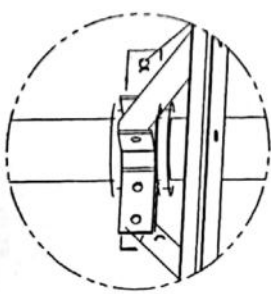
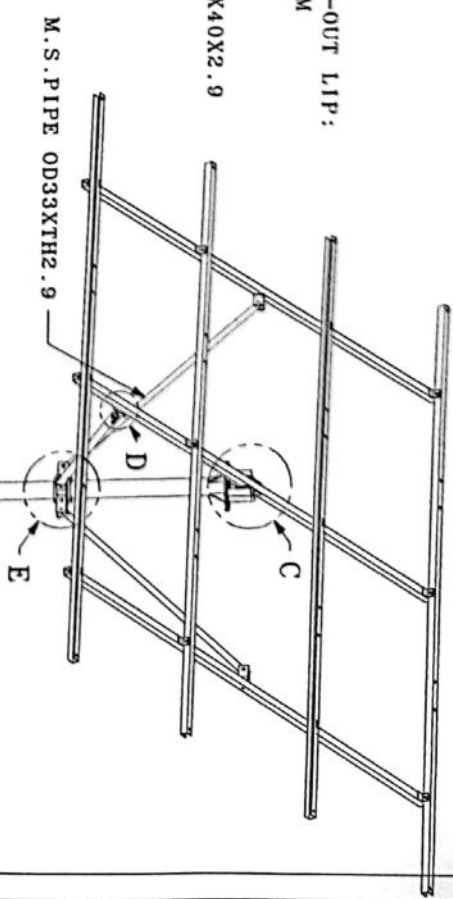
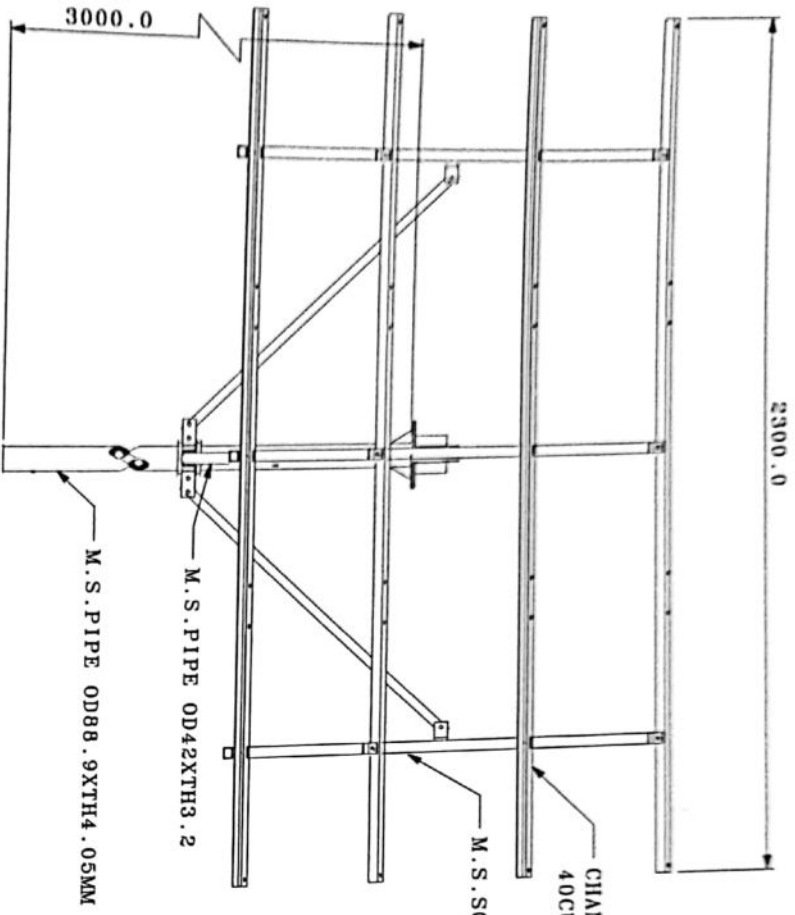
Thanking you.

Sincerely,

Pramod Kumar

Enclosed: Certified copies of the MMS drawings.





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GENERAL NOTE:-

1. COMPONENT SHOULD BE MIN. 80µm 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 PILET 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

ISOMETRIC VIEW

DETAIL B

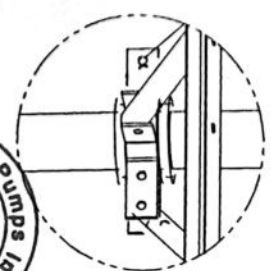
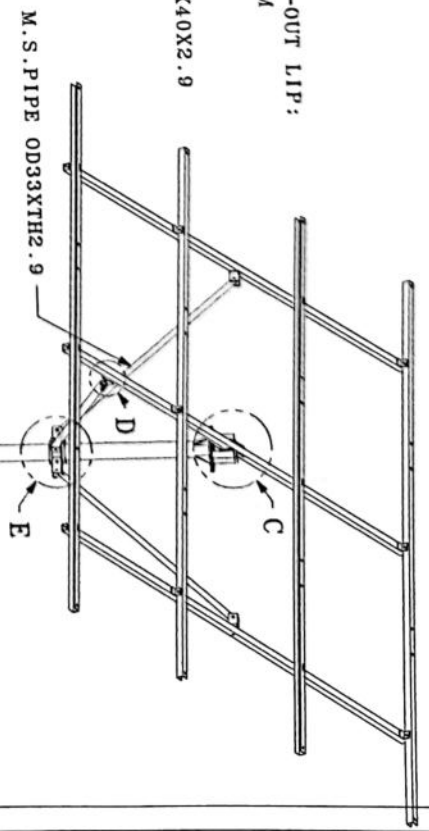
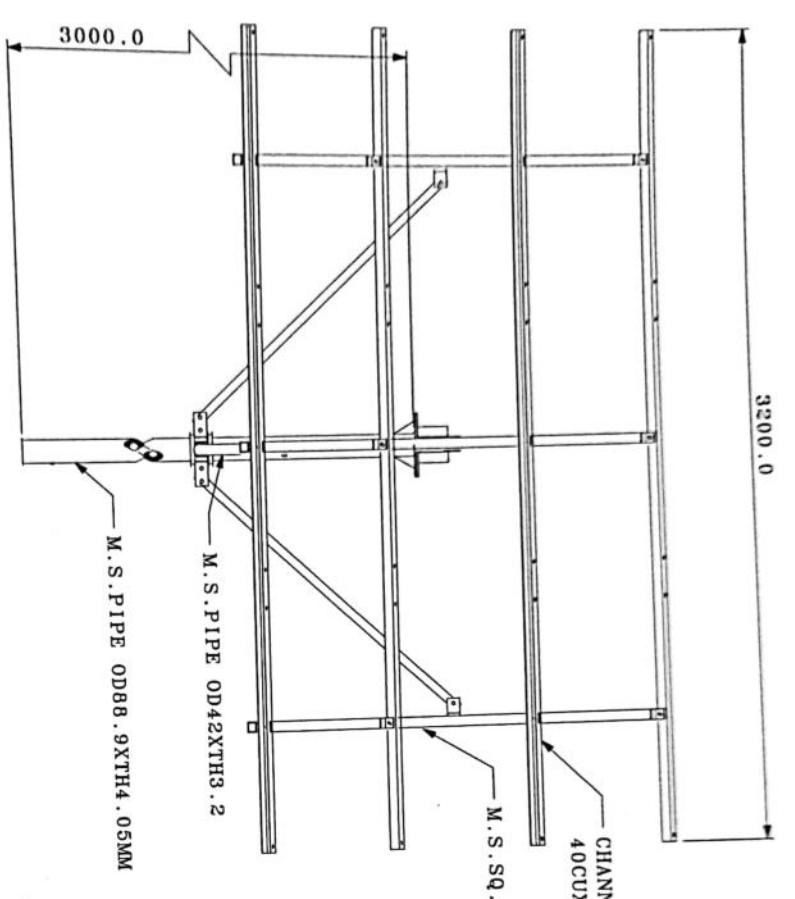
DETAIL C

- 1) REMOVE SHARP EDGES
 - 2) DRAWING NOT TO BE SCALE
 - 3) OPEN TOLERANCE ARE ±0.2
- ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED

TITLE :- GAD OF SSMT(TRACK)-4-MODULE(TYPE-B)

	SCALE	MATERIAL	WEIGHT	DRAWN	NAME	DATE
	NTS	STD	115 kg			
	REVISION	APPROVED	SHEET	1	OF	1
			DRG. NO. 4800024968 R0			





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ISOMETRIC VIEW

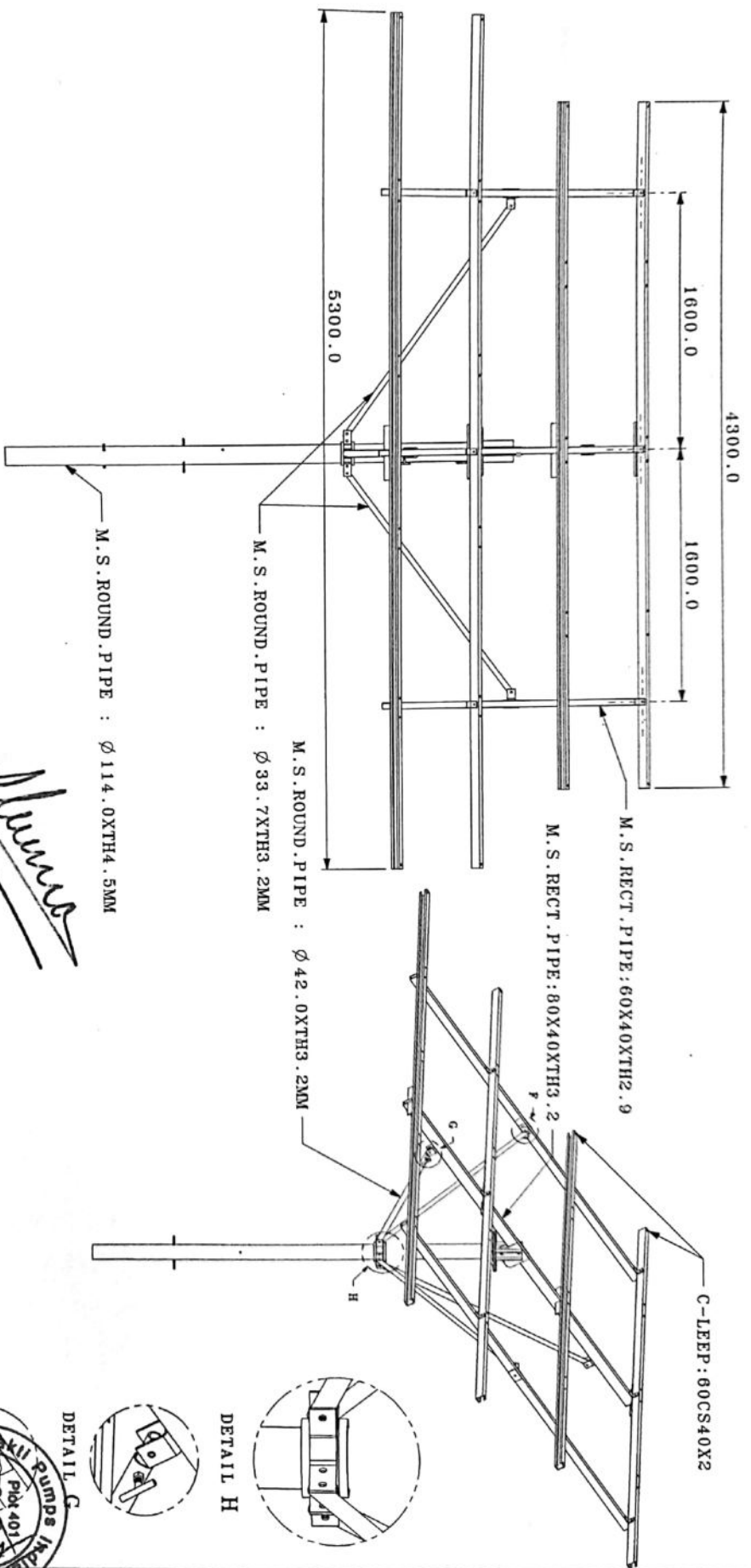


GENERAL NOTE:-

- COMPONENT SHOULD BE MIN. 80µm HOT DEEP GALVANIZED COATED.
- CONFIRMING TO :-
 1. 2629: HOT DEEP GALVANIZING PRACTICE
 2. 2633: UNIFORMITY OF GALVANIZING COATING
 3. 4759: HOT DIP ZINC COATING OF STRUCTURAL STEEL
 4. 4769: HOT DIP ZINC COATING OF STRUCTURAL STEEL
 5. 822: WELDING SHOULD BE CHECKED CONFIRMING TO :-
 6. 822: PROCEDURE FOR INSPECTION OF WELDS.
 7. 822: WELDING SHOULD BE CHECKED CONFIRMING TO :-
 8. 822: WELDING SHOULD BE CHECKED CONFIRMING TO :-
 9. 822: WELDING SHOULD BE CHECKED CONFIRMING TO :-
- ALL DIMENSIONS IS IN MM.
- ALL WELD ARE 6 MM CONTINUOUS FILLET UNLESS OTHERWISE NOTED.
- ELECTRODES FOR MILD STEEL SHALL CONFORM TO IS 814 & IS 819.
- WELDING PROCEDURE ARE TO BE AS PER IS 816 & 9505.
- WELDING CONTACT LENGTH TO BE WELDED IN ALL CASE.
- FULL CONTACT SECTIONS SHALL BE THOROUGHLY STRAIGHTENED & WIRE BRUSHED TO ENSURE COMPLETE REMOVAL OF RUST & SCALE.
- DESIGN IS CONFIRMING TO IS 800:2007

REV. -NO	DESCRIPTION:-	NAME	DATE
1	REMOVE SHARP EDGES	DEEPAK	08.02.20
2	DRAWING NOT TO BE SCALE		
3	OPEN TOLERANCE ARE ±0.2		
ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED			
TITLE :- GAD OF SSMT(TRACK)-6-MODULE(TYPE-B)			
SCALE	MATERIAL	WEIGHT	
NTS	STD	121kg	
DRAWN		APPROVED	
SHEET		1 OF 1	
DRG. NO.		4800024837	RO

SHAKTI PUMPS (INDIA) LTD. PITHAMPUR



Pranav Kumar

- GENERAL NOTE:-
- COMPONENT SHOULD BE MIN. 80µm 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
WELDING SHOULD BE CHECKED CONFIRMING TO:-
IS 822: PROCEDURE FOR INSPECTION OF WELDS.
 - ALL DIMENSIONS IS IN MM.
 - ALL WELD ARE 6 MM CONTINUOUS FILLET UNLESS OTHERWISE NOTED.
ELECTRODES FOR MILD STEEL SHALL CONFIRM TO IS 814 & IS 815.
 - WELDING PROCEDURE ARE TO BE AS PER IS 816 & 9595.
 - FULL CONTACT LENGTH TO BE WELDED IN ALL CASE.
 - ALL STEEL SECTIONS SHALL BE THOROUGHLY STRAIGHTENED & WIRE BRUSHED TO ENSURE COMPLETE REMOVAL OF RUST & SCALE.
 - DESIGN IS CONFIRMING TO IS 800:2007

REV.	NO	DESCRIPTION:	DATE
1		REMOVE SHARP EDGES	
2		DRAWING NOT TO BE SCALE	
3		OPEN TOLERANCE ARE 10.2	

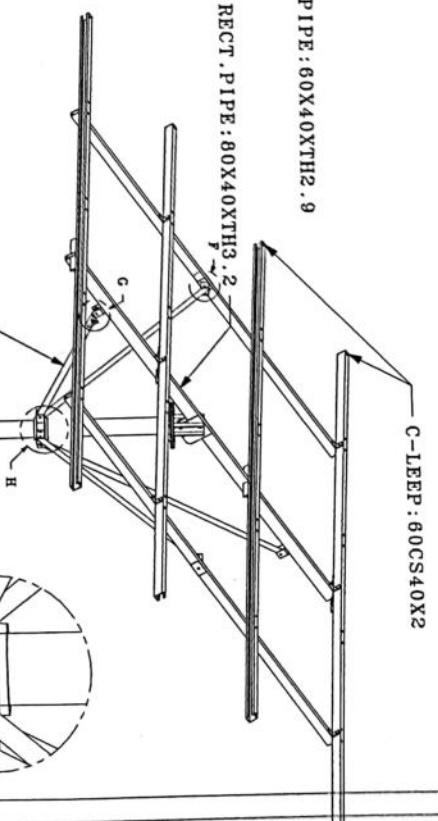
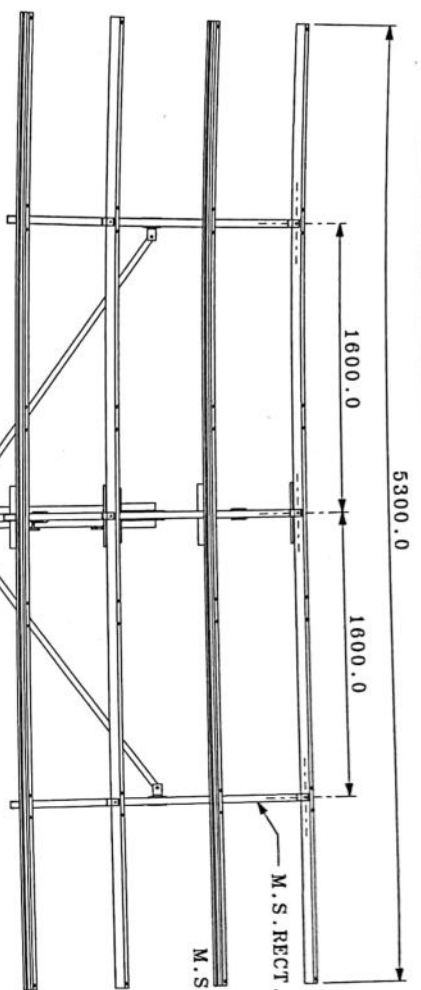
ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED

SCALE	MATERIAL	WEIGHT	REVISION	NAME	DATE
NTS	STD	185.0kg	APPROVED	DEEPAK	27.02.20
			SHEET	I OF 1	

TITLE :- GAD OF SSMT (TRACK) 9-PLATE (TYPE-B)

DRG. NO.	4800024838	RO
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M.S. ROUND PIPE : Ø 114.0XTH4.5MM

M.S. ROUND PIPE : Ø 33.7XTH3.2MM

M.S. ROUND PIPE : Ø 42.0XTH3.2MM

C-LEEP : 60CS40X2

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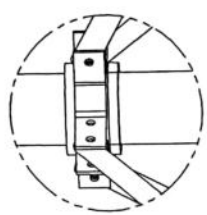
GENERAL NOTE:-

1. COMPONENT SHOULD BE MIN. 80µm 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
WELDING SHOULD BE CHECKED CONFIRMING TO:-
IS 822: PROCEDURE FOR INSPECTION OF WELDS.
2. ALL DIMENSIONS IS IN MM.
3. ALL WELD ARE 6 MM CONTINUOUS FILLET UNLESS OTHERWISE NOTED.
4. ELECTRODES FOR MILD STEEL SHALL CONFIRM TO IS 814 & IS 815.
5. WELDING PROCEDURE ARE TO BE AS PER IS 816 & 9695.
6. FULL CONTACT LENGTH TO BE WELDED IN ALL CASE.
7. FULL STEEL SECTIONS SHALL BE THOROUGHLY STRAIGHTENED & WIRE BRUSHED TO ENSURE COMPLETE REMOVAL OF RUST & SCALE.
8. DESIGN IS CONFIRMING TO IS800:2007

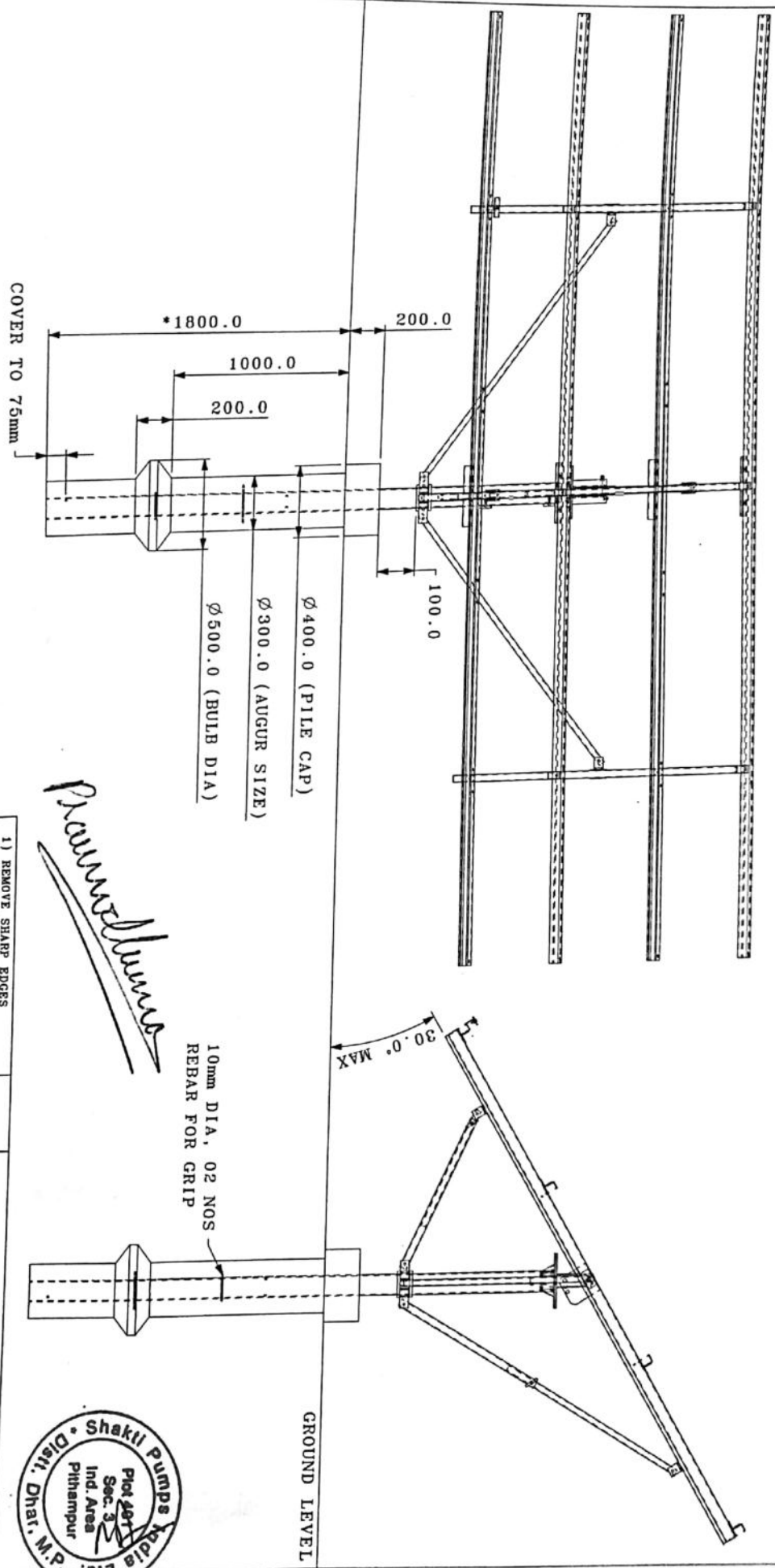
1) REMOVE SHARP EDGES 2) DRAWING NOT TO BE SCALE 3) OPEN TOLERANCE ARE :0.2 ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED		REV -R0	DESCRIPTION:
TITLE :-GAD OF SMT(TRACK)10MODULE (TYPE-B) SCALE: NTS MATERIAL: STD WEIGHT: 190.0Kg			
DRAWN: DEEPAK DATE: 27.02.20			
APPROVED:			
DRG. NO.: 4800024839			
SHEET: 1 OF 1			
R0			



DETAIL H



SOUTH FACING



Pranved Kumar

10mm DIA, 02 NOS
REBAR FOR GRIP



- 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

<p>1) REMOVE SHARP EDGES 2) DRAWING NOT TO BE SCALE 3) OPEN TOLERANCE ARE ±0.2</p>		REV.-R0	DESCRIPTION:-
ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED			
TITLE :- PILE FOUNDATION OF SSMT 4/6/9/10-PLATE. B			
SCALE	MATERIAL	WEIGHT	DATE
NTS	STD	NA	DEEPAK 19.06.20
DRAWN		REVISION	
APPROVED		SHEET	
DRG. NO. 4800025034		1 OF 1	
R0			

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