

6 nos Structure drawing

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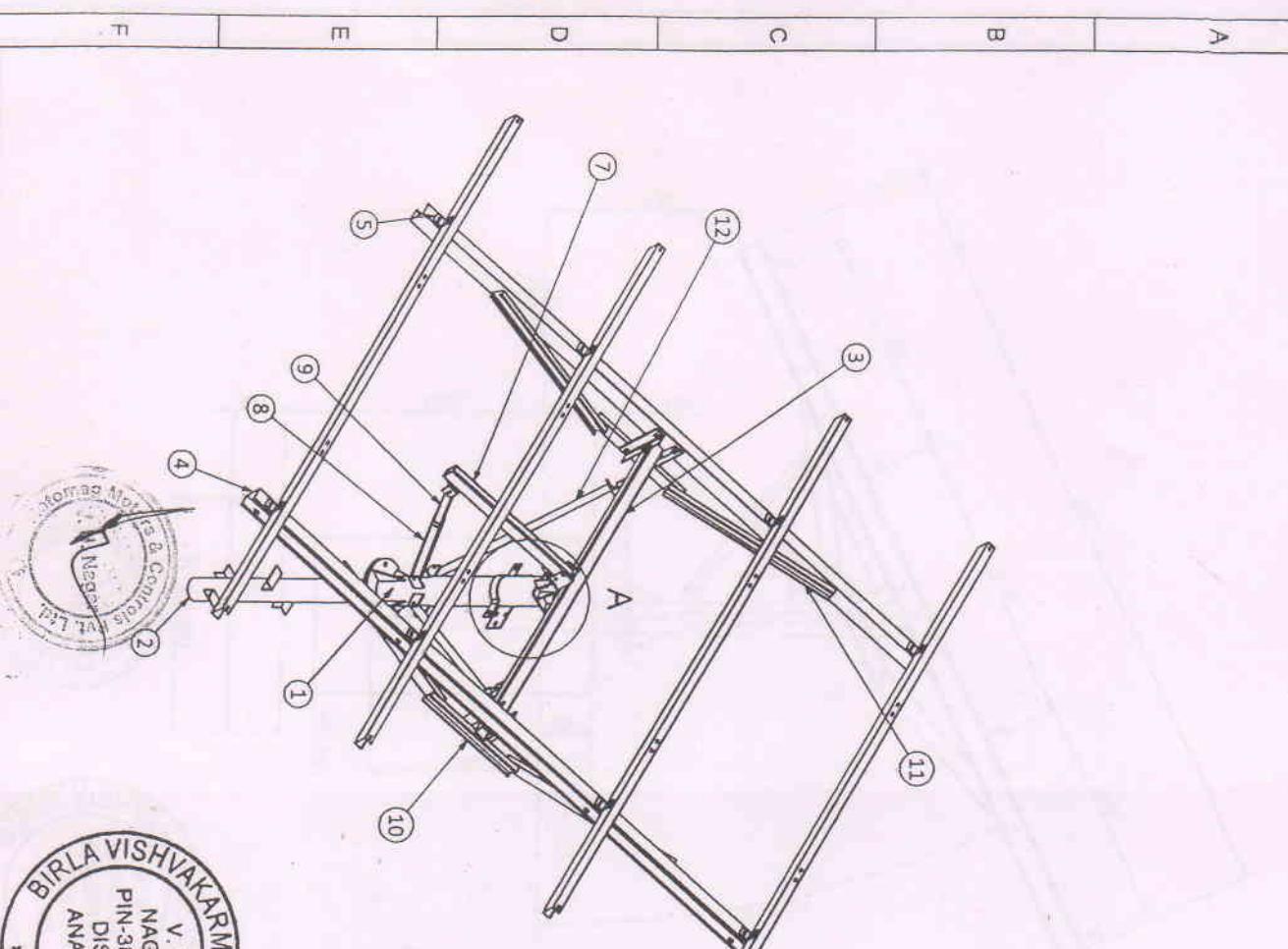
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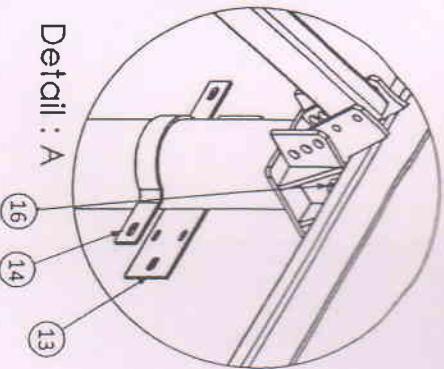
6

7

8



(Signature)
Detail : A



- Notes : 1) MS HD Galvanizing according to IS 4759
for all parts, wherever applicable.
2) All dimensions are in mm.

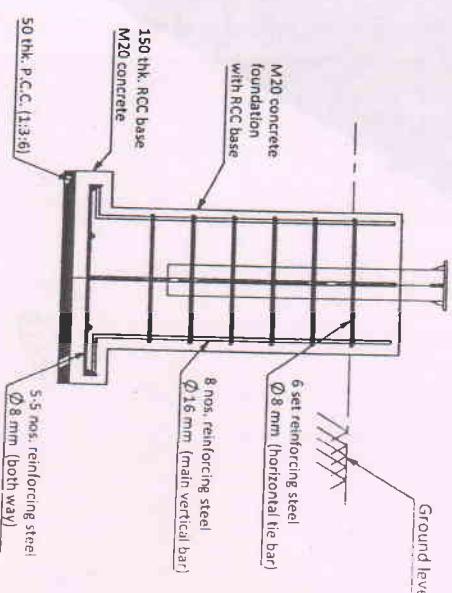
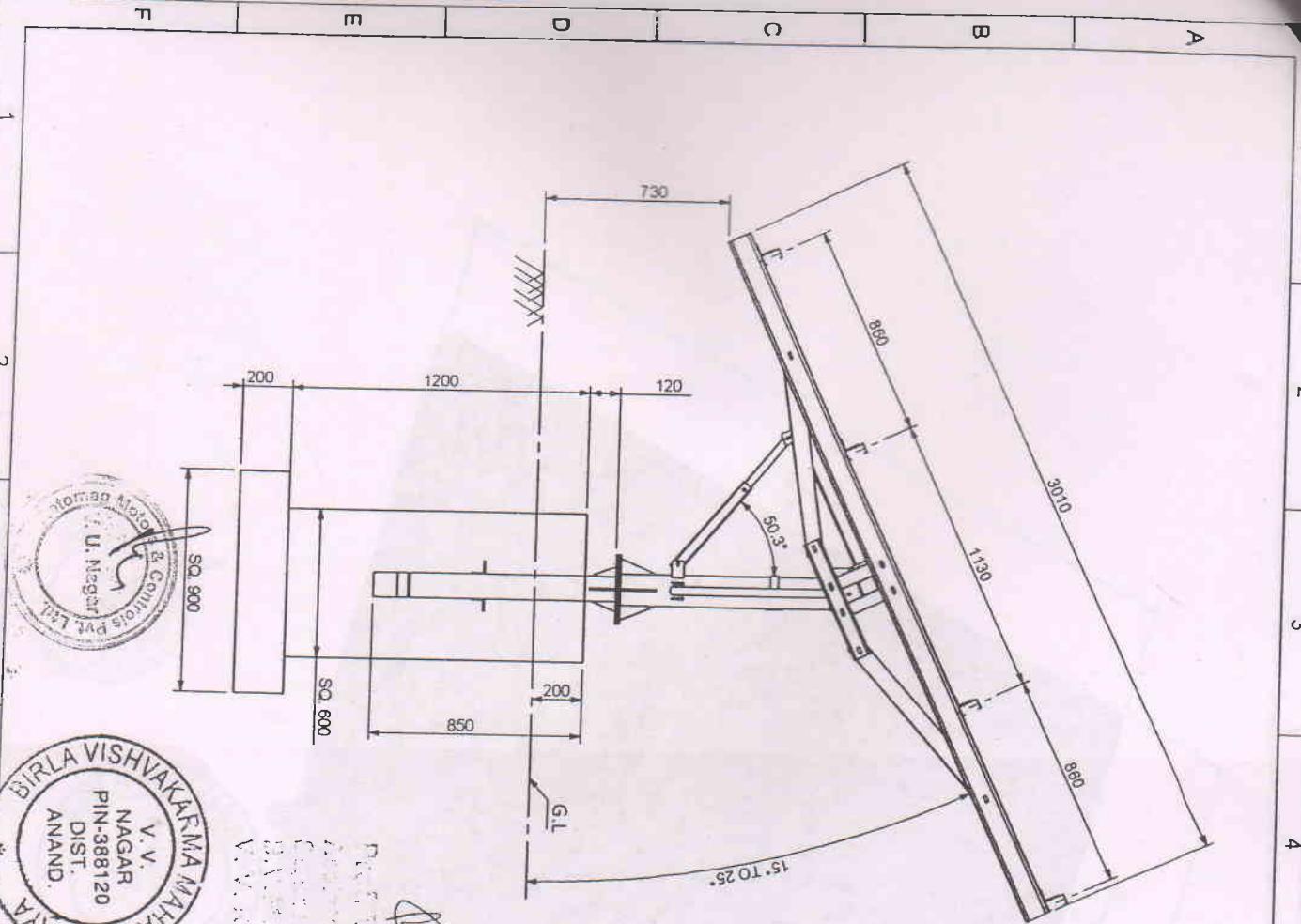
TITLE 6 nos. Module mounting
structure

PART NO.	SCALE	DRG NO
DRN BY Faiz	07.02.20	
CHD BY Faiz	-	
APPD BY D.R.P.	1:50	SMP-SM-1219 (Sheet 1 of 16)

1
2
3

4
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6
SUPERSEDES NO.



Foundation Detail

Mr. D. Patel
C.E. Department
G.V.M.A.

Chot

PART NO. - TITLE 6 nos. Module mounting

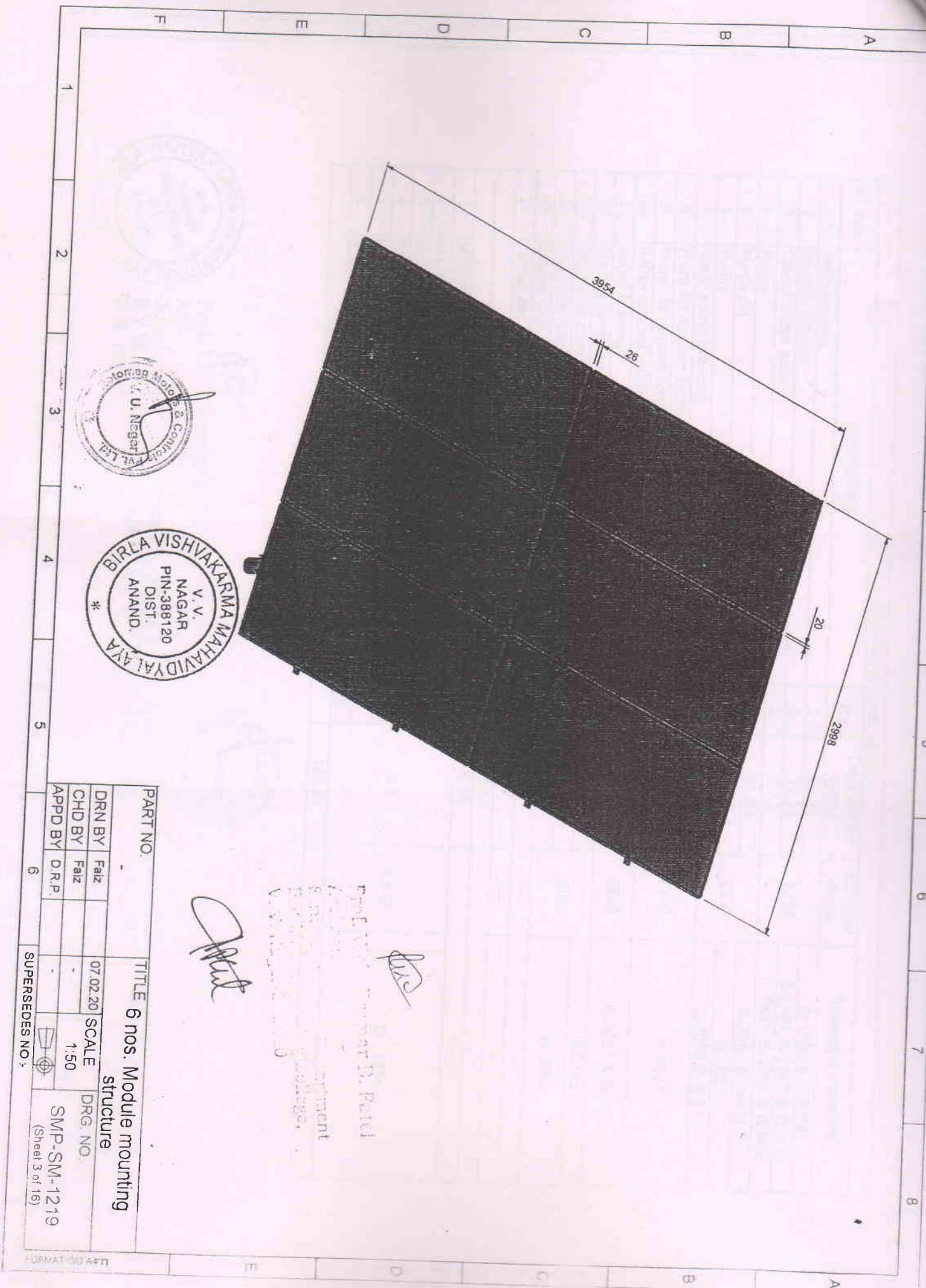
Structure

DRN BY Faiz 07.02.20 SCALE 1:100 DRG NO.

CHD BY Faiz SMP-SM-1219

APPD BY D.R.P.

6 SUPERSEDES NO:



A

B

Item list of 6nos. MMS

Sr. nos.	Descriptions	Qty.	Total weight (kgs.)	Material Grade	Reference standards
1	Main column	1	21.71		IS:1161 & IS 2062
2	Bottom column	1	15.23	E250	IS:1161, IS 2062 & IS:808
3	Center beam assly.	1	17.2		IS:4923, IS:2062 & IS:808
4	Rafter	2	21.96		IS:2062 & IS:811
5	Purlin clit	8	1.15	E350	IS:2062
6	Purlin	4	25.16		IS:2062 & IS:811
7	North south brancing	1	3.52		
8	Front tilt support bottom	1	1.49	E250	IS:4923
9	Front tilt support top	1	1.1		
10	Rafter bracing holder	2	1.62		
11	Rafter bracing	4	5.47	E350	IS:2062 & IS:811
12	Bracing center beam	4	3.33		
13	Controller clamp- rear	2	0.6		IS:1161
14	Controller clamp- front	2	0.8	E250	IS:2062
15	Rubber pad	1	---		
16	Center pin	1	---		
Approx. total weight.		1	120.4		---
Galvanizing -7 %			8.43		IS:4759
1	M16x60 bolt with 1-nut & 2-palin washer	4			
2	M12x15 bolt with 1-nut & 2-palin washer	1			
3	M10x100 bolt with 1-nut & 2-palin washer	17			
4	M12x35 bolt with 1-nut & 2-palin washer	16	6.5	8.8 GI	IS : 1364
5	M10x30 bolt with 1-nut & 2-palin washer	16			
6	M6x25 Anti theft nut bolt, SS-304 (HeadOD ϕ 15 mm)	16			
Approx. total weight of the structure		16	135.33	---	---



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Assistant Professor
Structural Engineering Department
B.V.M. Engineering College,
V.V. Raval Engineering College,

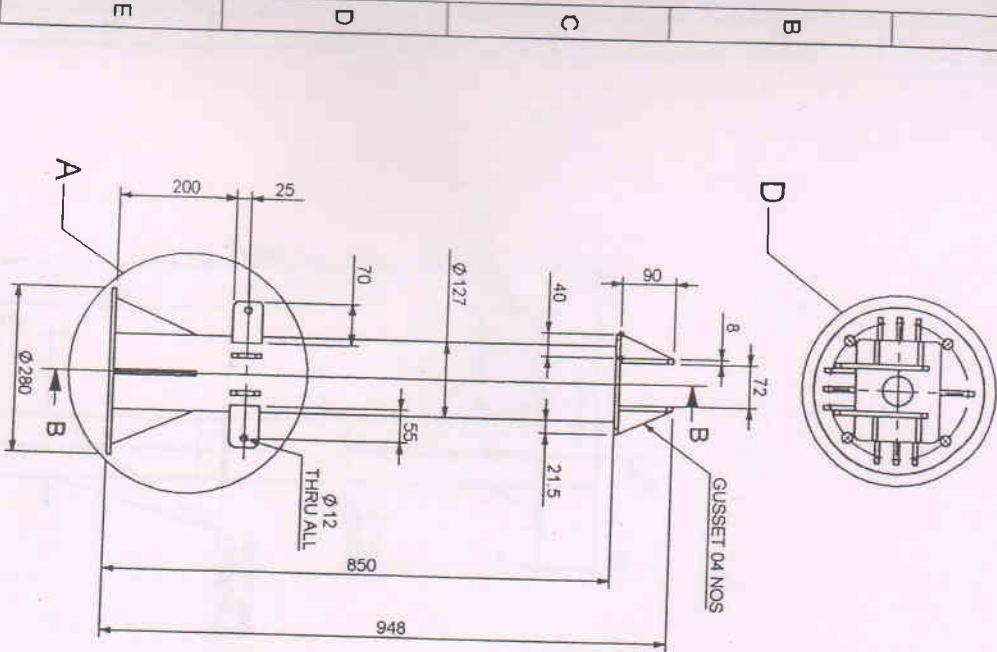


PART NO.

TITLE 6 nos. Module mounting

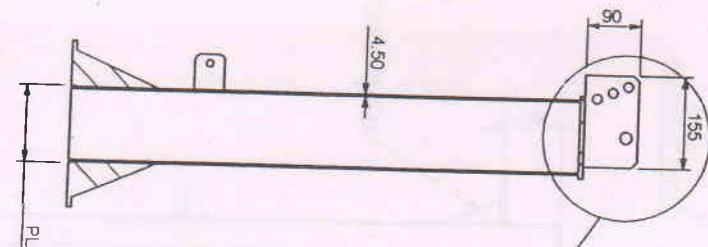
DRN BY	Faiz	07.02.20	SCALE	DRG NO.
CHD BY	Faiz	-	1:100	SMP-SM-1219
APPD BY	D.R.P.	-		(Sheet 4 of 16)

1) Main column

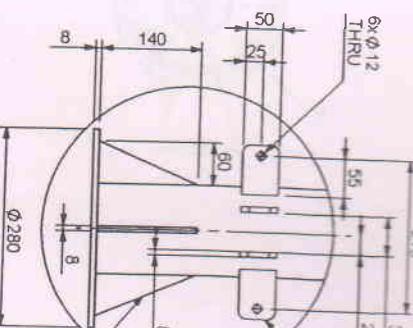


FICCI-VISAKHAPATNAM B. Patel

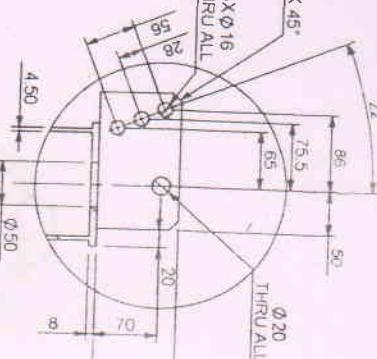
SECTION B-B
SCALE 1 : 12



DETAIL A
SCALE 1 : 10



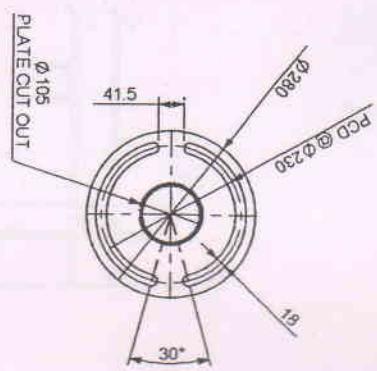
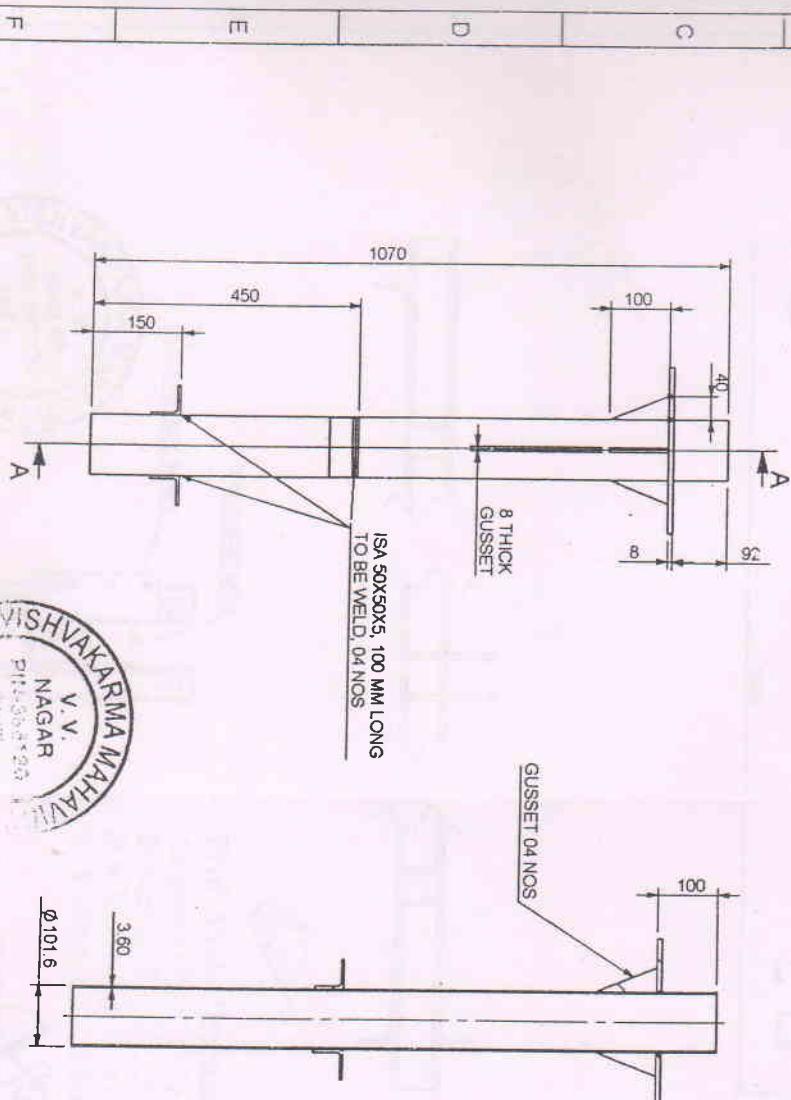
DETAIL
SCALE 1:8



Prof. Vishwanath Patel		A.P.T.		PART NO.	
Assistant Professor		V.V.		TITLE 6 nos. Module mounting	
Structures		NAGAR		structure	
E.V.I.T.		DRN BY		07.02.20 SCALE	
Engineering College,		Faiz		1:100 DRG. NO.	
1	2	V.V. N.	PIN-386120	DIST.	APPD BY
3	4	386120	CHQ BY	Faiz	DRP
5	6		ANALYST		
SUPERSEDES NO. : SMP-SM-1219 (Sheet 5 of 16)					

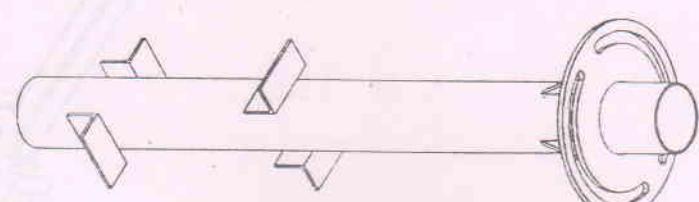
2) Bottom column

1 2 3 4 5 6 7 8



Prof. V. V. Patel
Assistant Professor
Structural Engineering
B.V.M.E.
V. V. Patel

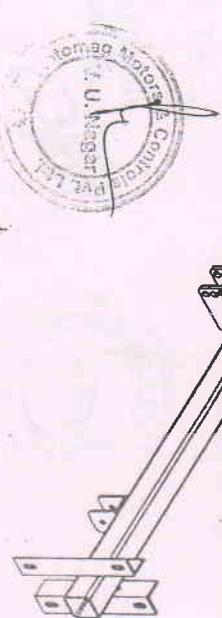
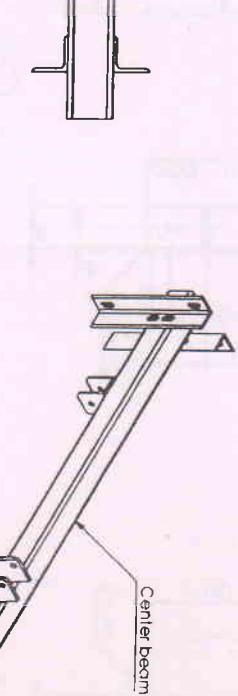
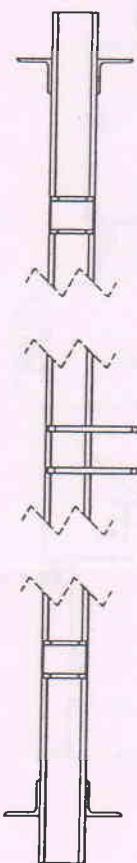
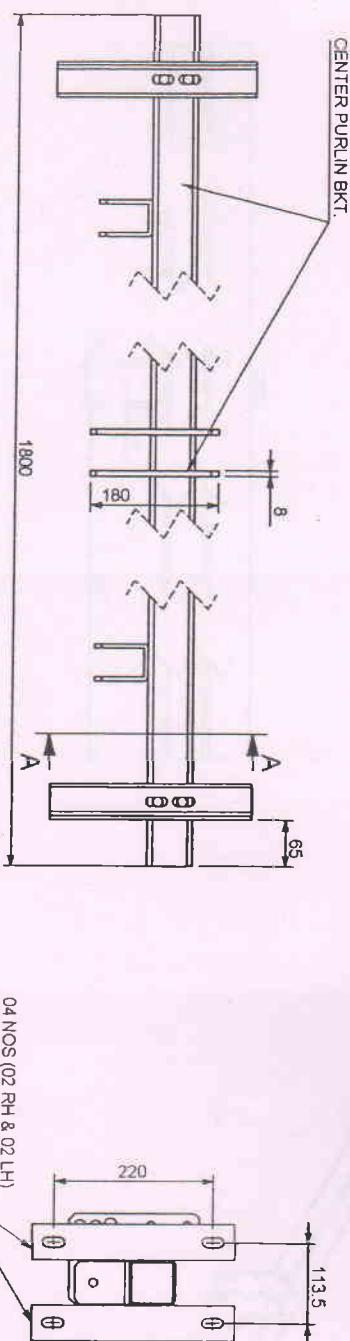
(Signature)



SECTION A-A
SCALE 1:12

PART NO.	TITLE
-	6 nos. Module mounting
DRN BY	07.02.20
CHD BY	1:100
APPD BY	SMP-SM-1219 (Sheet 6 of 16)
D.R.P.	DRG. NO.
6	SUPERSEDES NO.

3) Center beam assly.



SECTION A-A
SCALE 1:10

PART NO.	TITLE 6 nos. Module mounting structure	
DRN BY	Faiz	07.02.20
CHD BY	Faiz	SCALE 1:100
APPD BY	D.R.P.	SMP-SM-1219 (Sheet 7 of 16)

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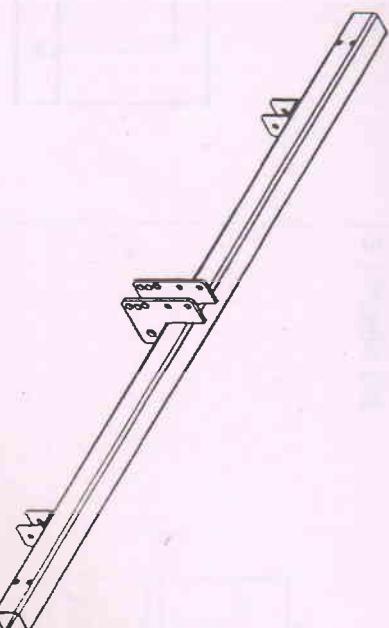
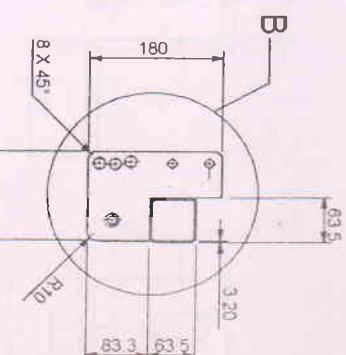
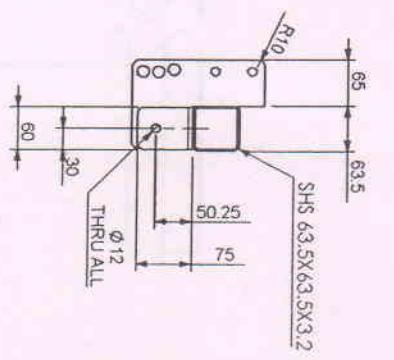
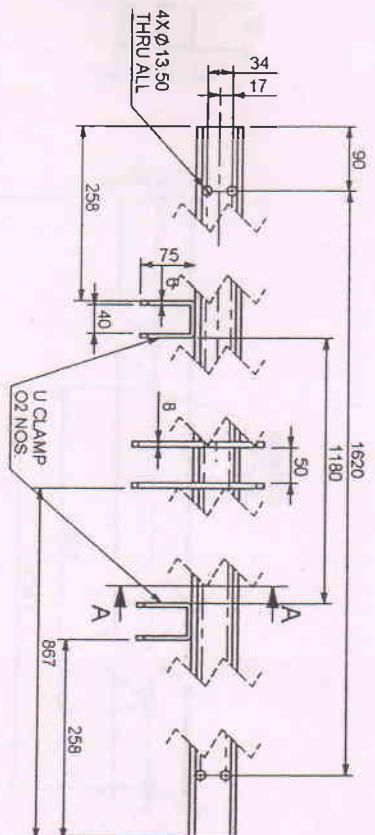
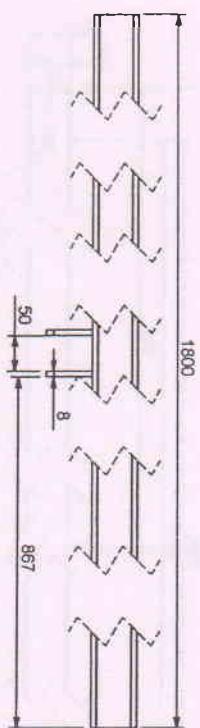
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SUPERSEDES NO.:

3) Center beam

1 2 3 4 5 6 7

5 6 7 8

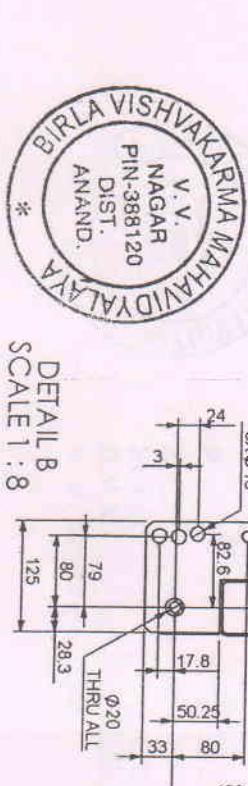


SECTION A-A
SCALE 1 : 10

SECTION B-B
SCALE 1 : 10

SECTION C-C
SCALE 1 : 10

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B.V.M. Engineering College,
V. V. Nagar-388120



DETAIL B
SCALE 1:8

1

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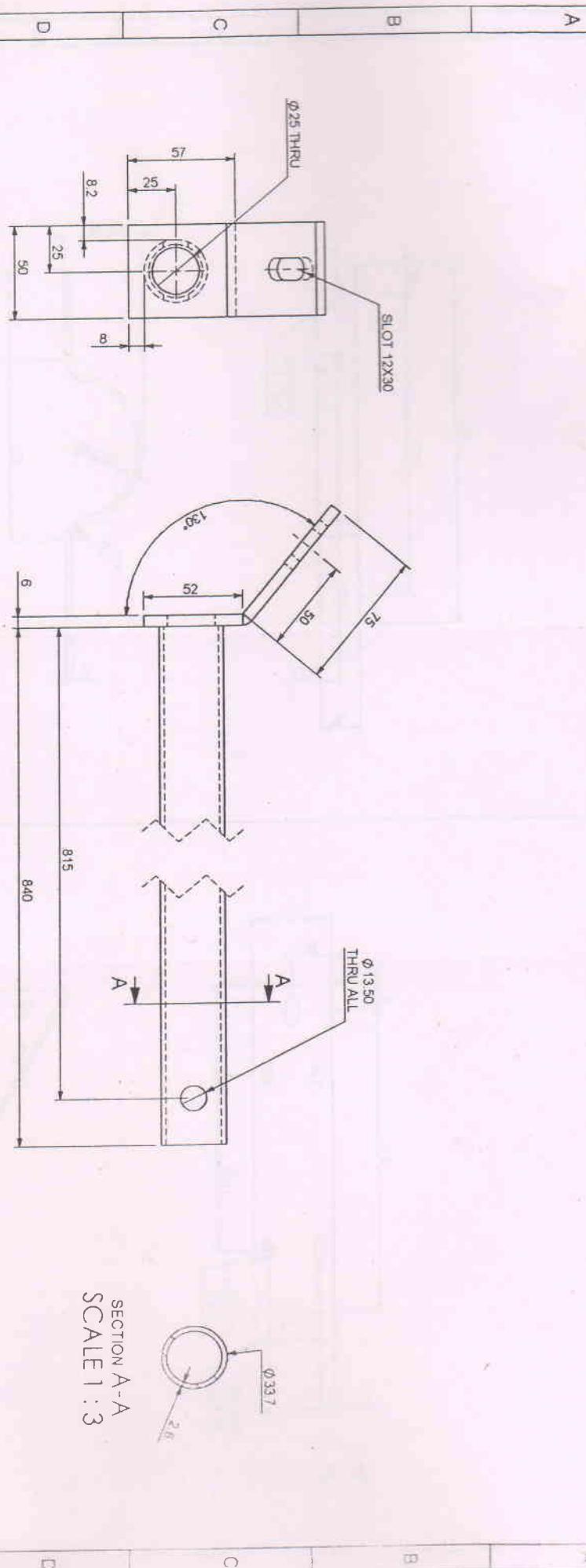
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SUPERSEDES NO :

(Sheet 8 of 16)

12) Bracing center beam

1 2 3 4 5 6 7 8



V. V.
NAGAR
PIN-388120
DIST. ANAND.

BIRLA VISHVAKARMA
MANAHAVIDYALAYA

Prof. V. V. Patel
Associate Professor
Semi-conductor Department

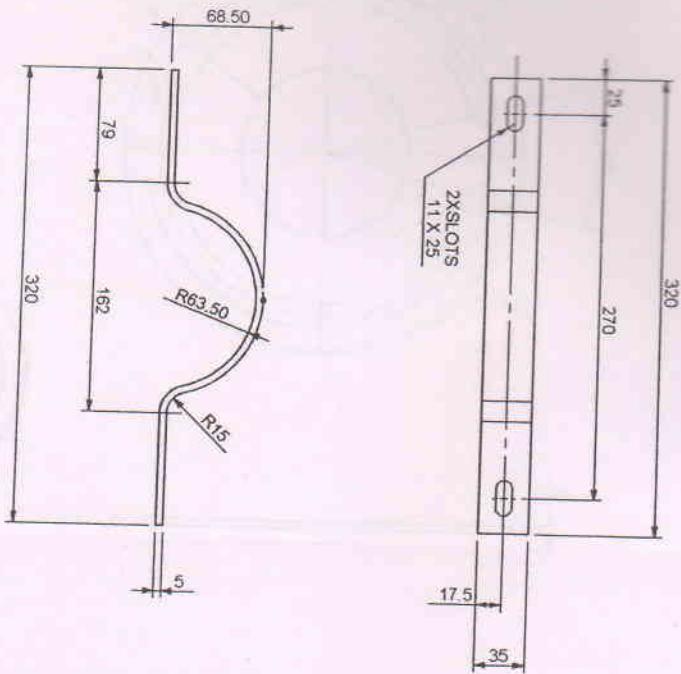
T.V.M.
Engineering College,
V. V. Nagar



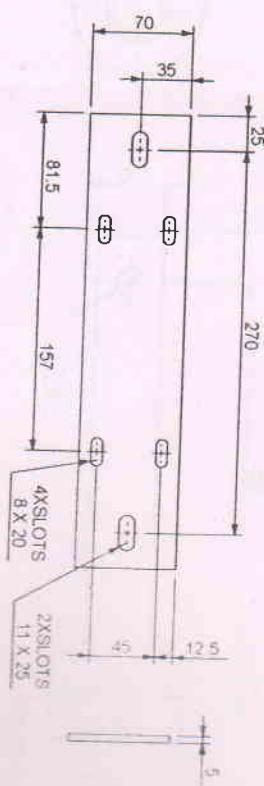
PART NO. - TITLE 6 nos. Module mounting structure

DRN BY	Faiz	07.02.20	SCALE	DRG NO
CHD BY	Faiz	-	1:10	SMP-SM-1219
APPD BY	D.R.P.	-		(Sheet 14 of 16)

13) Controller clamp - rear



14) Controller clamp - Front



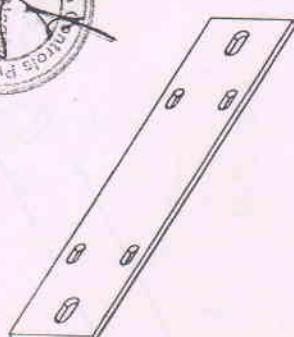
BIRLA VISHVAKARMA
V.V.
NAGAR
PIN-388120
DIST.
ANAND.

MAHAVIDYALAYA

Prof. VISHNUVARDH B. Patel
Assistant Professor
Srinivas Institute of Engineering & Technology
B.V.I.E.T.,
V. V. Nagar

ANAND.

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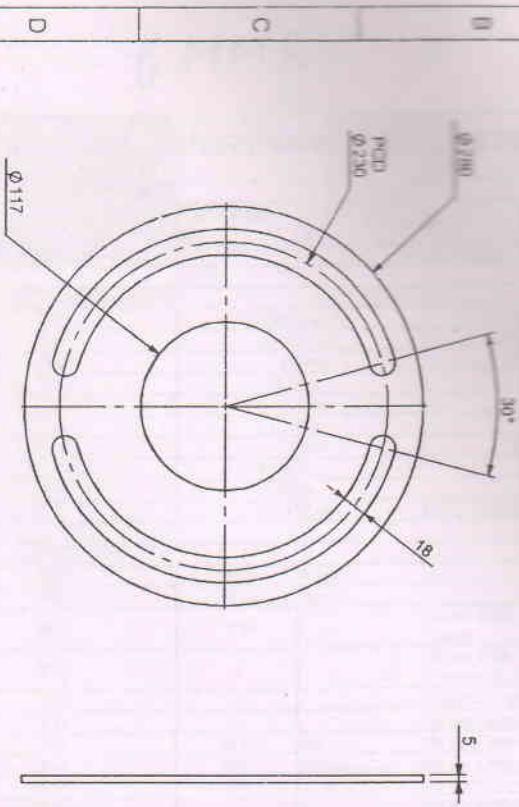
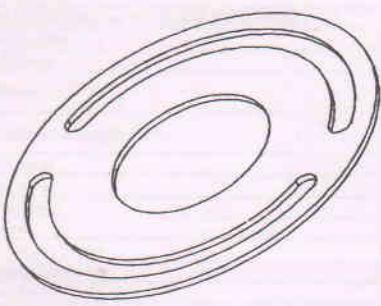


PART NO. - TITLE 6 nos. Module mounting structure

DRN BY	Faiz	07/02/20	SCALE	DRG NO
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APPD BY	D.R.P.	-		(Sheet 15 of 16)

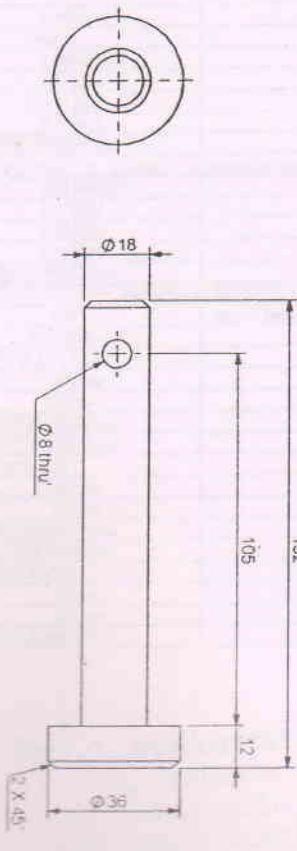
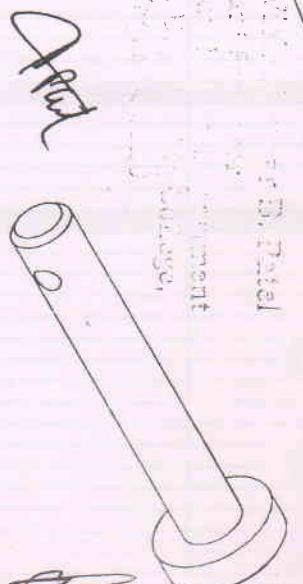
SUPERSIDES NO.:

16) Rubber pad



17) Center pin

PrGf. 77
Assist. Engr.
Sarita
B.V.S. Engg.
V.V. Nagar
Anand.



PART NO.	TITLE 6 nos. Module mounting structure		
DRN BY	Faiz	07.02.20	SCALE DRG. NO.
CHD BY	Faiz	-	1:5 SMP-SM-1219
APPD BY	D.R.P.	-	(Sheet 16 of 16)
1	2	3	4
5	6	SUPERSEDES NO.	

6 MMS

PROJECT :-	SOLAR MODULE MOUNTING STRUCTURE INPUT DESIGN CALCULATIONS FOR STAAD (TILT ANGLE-25 DEGREE)				
DOCUMENT TITLE :-					
CLIENT :-	DESIGNED BY:-	CHECKED BY:-	APPROVED BY:-	DATE	REVISION
DOC NO:-	HIMANSHU SINGH			26.02.2020	0
Dead Load Calculations:-					
Length of Module	Lm=	1955 mm	1.955 m		
Width of Module	Bm=	990 mm	0.99 m		
Thickness of Module	Tm=	40 mm	0.04 m		
Weight of each Module	Wm=	22.5 Kg			
No. of Modules	=	6 Nos			
Total Weight of Modules	=	135 Kg			
No. of Purlins	=	4 Nos	0		
Load on each Purlin	=	33.750 Kg			
Length of each Purlin	=	3.01 m			
UDL Load per metre on Purlin	=	11.21 Kg/m	0.110 kN/m		
Wind Load Calculations as per IS:875 Part-3 2015 :-					
Wind Speed (Kmph)	Vb=	155 Kmph			
Basic Wind Speed	Vb=	43.06 m/sec			
Risk Coefficient	K1=	0.9	As per Table - 1 Clause 6.3.1(25 Years)		
Terrain Roughness & Height Factor	K2=	1	As per Table - 2, Terrain Category 2, class A, Height 10 m		
Topography Factor	K3=	1	As per Clause 6.3.3		
Importance Factor	K4=	1	As per Clause 6.3.4		
Design Wind Speed	Vz=	38.75 m/s	As per Clause 6.3		
Wind Pressure	Pz=	0.90 kN/m ²	As per Clause 7.2		
Wind Directional Factor	Kd=	0.9	As per Clause 7.2.1		
Area Averaging Factor	Ka=	1	As per Table - 4 Clause 7.2.2		
Combination Factor	Kc=	1	As per Clause 7.3.3.13		
Design Wind Pressure	Pd=	0.81 kN/m ²	As per Clause 7.2		
Tilt Angle	=	25 Degree	As per Table - 8		
Tilt Angle	Case 1				
Pressure Coefficient Cf max	25				
Pressure Coefficient Cf min	-1				As per Table - 8
Wind Pressure Downward	-1.6				As per Table - 8
Wind Suction Upward	0.81				kN/m ²
Wind Suction Upward	-1.30				kN/m ²
Area of Module	=				
Tilt Angle	=	1.94 m ²			
Wind Pressure Upward	=	Case 1			
Wind Load on each PV Module	=	-1.30 kN/m ²			
Total Wind Load on 6 Module	=	-2.51 KN			
Load on each Purlin	=	-15.07 KN			
UDL Load per metre on Purlin	=	-3.77 KN			
Wind Pressure Downward	=	-1.251 KN/m			
Wind Pressure Downward	=				
Wind Load on each PV Module	=	0.81 kN/m ²			
Total Wind Load on 6 Module	=	1.57 KN			
Load on each Purlin	=	9.42 KN			
UDL Load per metre on Purlin	=	2.35 KN			
Wind Load on Solar Frame Structure	=	0.782 KN/m			
Pressure Co-efficient - Members	=				
Wind Pressure on Members	=	1.2	As per Table - 26 For C-Section		
Assuming Column Member Size	=	0.973 kN/m ²			
Column Member Dia.	=	PIPE 127L			
Column Member Dia.	=	127 mm			
Wind Load on Column	=	127 mm			
Wind Load on Column	Gxc=	0.124 kN/m			
Assuming Rafter Member Size	Gxc=	0.124 kN/m			
Rafter Member Depth	=	100CS60X2			
Rafter Member Width	=	100 mm			
Wind Load on Rafter	=	60 mm			
Assuming Bracket Member Size	Gzr=	0.097 kN/m			
Bracing Member Depth	Gzi=	0.058 kN/m			
Bracing Member Width	=	PIPE 330D			
Wind Load on bracing	Gzb=	33 mm			
	Gzb=	33 mm			
	Gzb=	0.032 kN/m			



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