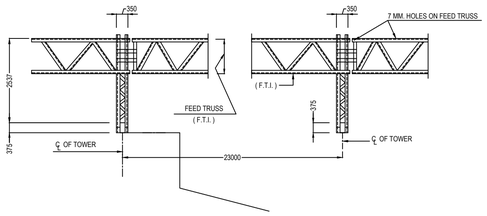
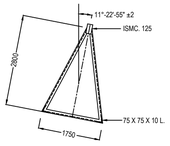
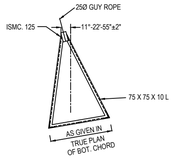
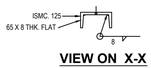




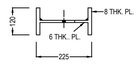
VIEW ON G-G



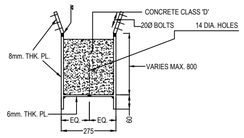
VIEW ON E-E



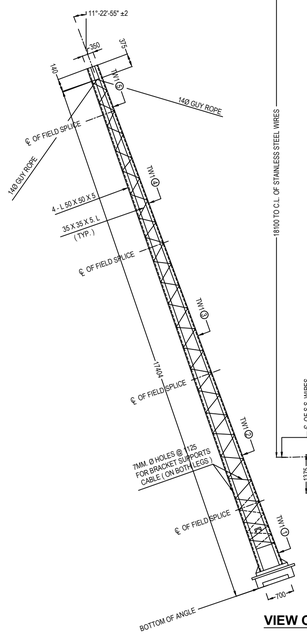
VIEW ON X-X



VIEW ON D1-D1

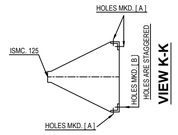


VIEW ON D2-D2

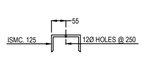


VIEW ON C-C

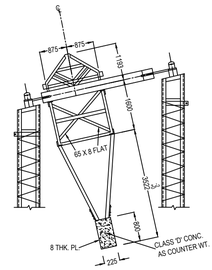
VIEW ON B-B



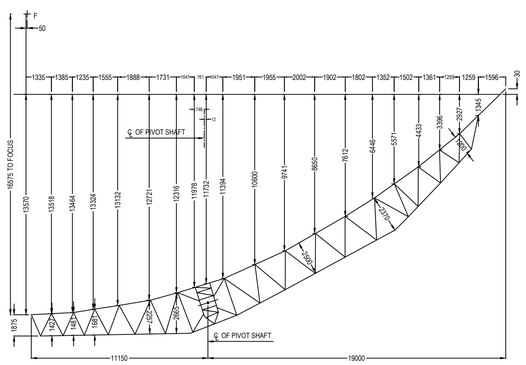
VIEW K-K



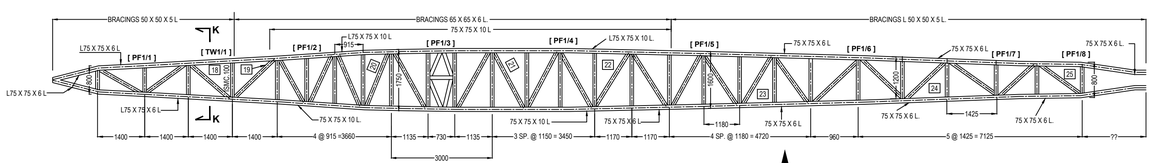
VIEW ON R-R



VIEW ON F-F



ORDINATES FOR PAR. FRAME
ALONG ℄ OF FRAME



TRUE PLAN OF BOTTOM CHORD

NORTH

20 - NOS. PARABOLIC FRAMES REQD. THUS MKD. [PF1] WITH HOLES MKD. [A]

2 - NOS. PARABOLIC FRAMES REQD. THUS MKD. [PF2] WITH HOLES MKD. [A & B]

NOTES:

- ALL DIMENSIONS ARE IN MILIMETERS.
- ALL LOOSE PIECES TO BE MARKED WITH THE RESPECTIVE NUMBERS IN ADDITION TO THEIR DISTINGUISHING MARK e.g. PF4/1, PF3/1, ETC.
- ERECTION CLEATS OR PLATES TO BE SHOP BOLTED WITH THE RESPECTIVE NUMBER FOR DESPATCH XXXX.
- ERECTION HOLES TO BE 14 DIA. OFR 12 DIA. BOLTS UNLESS OTHERWISE NOTED. AND TO BE PLUG WELDED AFTER FINAL WELDING
- THIS DRG. IS TO BE READ IN CONJUNCTION WITH DRG. NOS. 2745/4 : GENERAL LAYOUT OF PARABOLIC FRAMES , 2745/5 : FEED TRUSS , 6 - FEED 2745/7,8 : BENT SUPPORTS , 2745/9: DRIVING SECTOR , 10,11 - INTERMEDIATE FRAME DETAILS.

REV.	DESCRIPTION	BY	DATE
D	AS PER TATA-EBASCO'S LETTER DTD. ON 25/10/1967.	A.K.G.	31/10/67.
C	AS PER TATA-EBASCO'S LETTER DTD. ON 31/08/1967.		19/9/67.
B	GENERAL MODIFICATION.	K.P.	4/8/67.
A	AS PER TATA-EBASCO'S LETTER DTD. ON 2 JUNE 1967.	K.P.	16/6/67.

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SECY/BALMER LAWRIE & CO. LTD. CALCUTTA

FOR **TATA INSTITUTE OF FUNDAMENTAL RESEARCH**
RADIO TELESCOPE AT OOTACAMUND.

DESCRIPTION GENERAL ARRNAGEMENT & MARKING PLAN FOR INTERMEDIATE FRAME

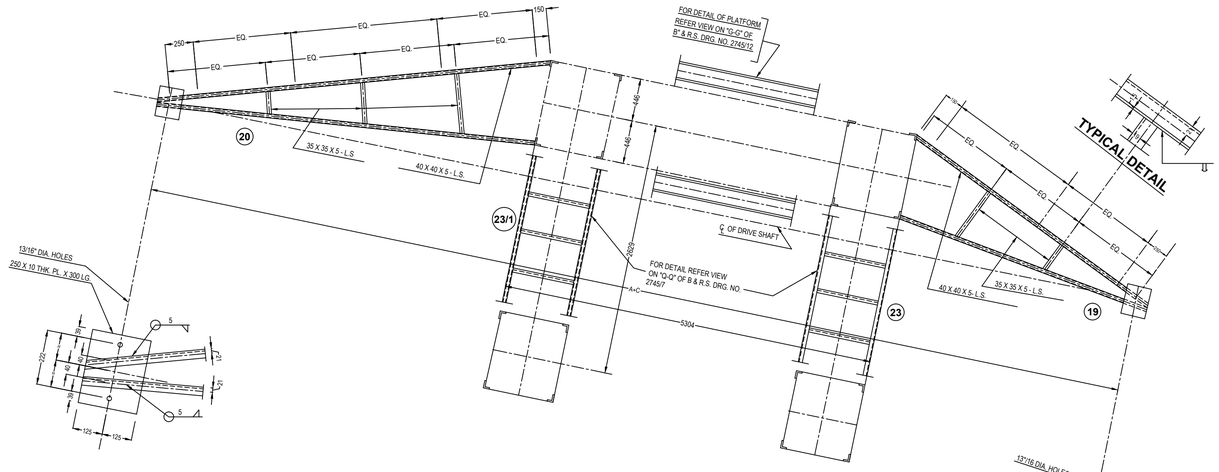
RIVETS	BOLTS	PAINTING
		1-COAT OF RED OXIDE

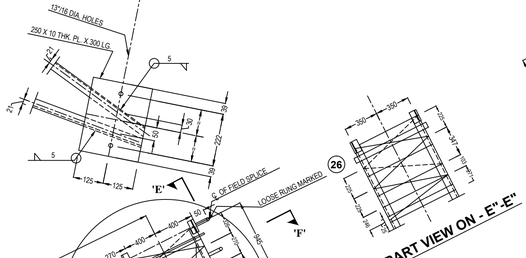
DELIVERY	SCALE	DATE
	1:75	30/3/67.

DRAWN BY
CHECKED BY
DATE

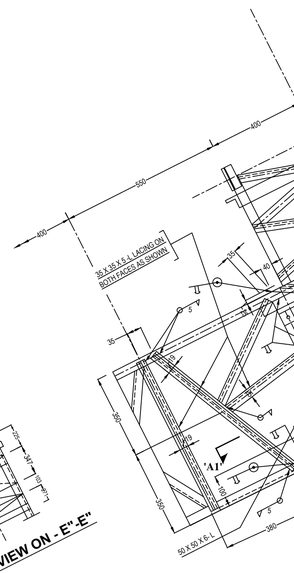
ORDER NO. 2745

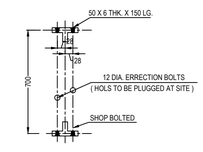
DRAWING NO. 3D





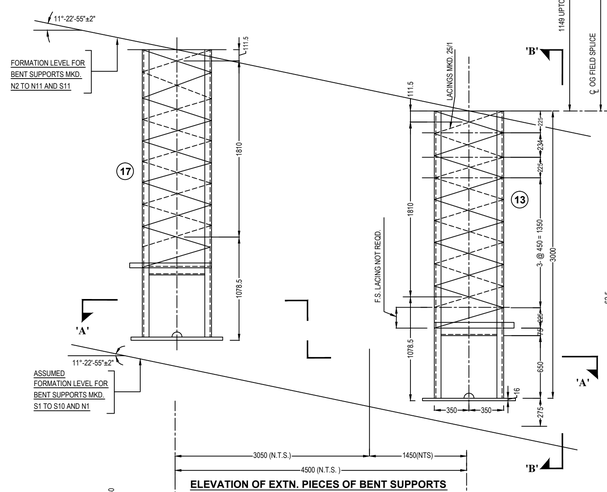
PART VIEW ON - E"-E"





TYPICAL VIEW ON - A1"-A1"

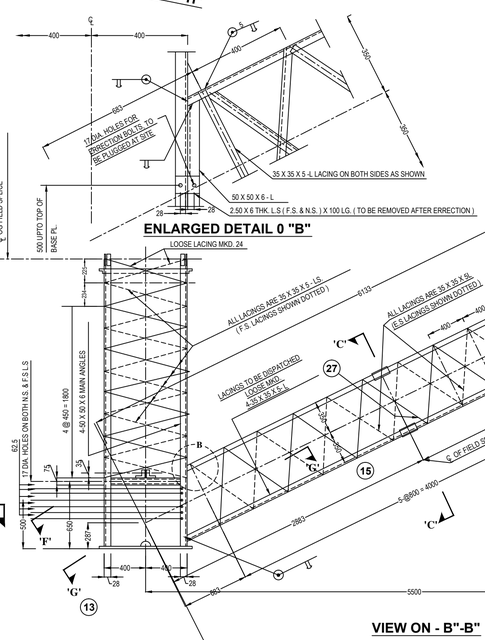
ENLARGED DETAIL - "A"



PLAN ON - A-A

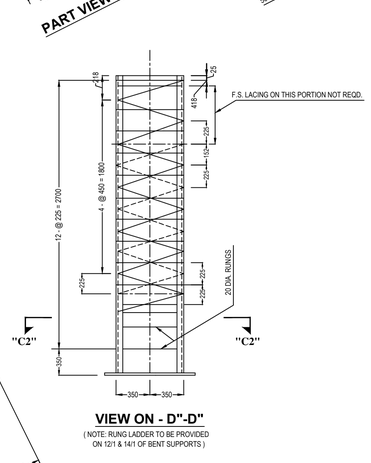
II- SETS OF EXTN. PIECES REQD. AS DRAWN FOR BENT SUPPORTS MKD. S1 TO S10 & N1 ONLY.

NOTE:- FOR PART MARKS OF EXTN. PIECE, REFER DRG. NO. 2745/7. FOR ALL OTHER DETAILS, DIMENSIONS & SECTIONS NOT SHOWN REFER DRG. NO. 2745/7.



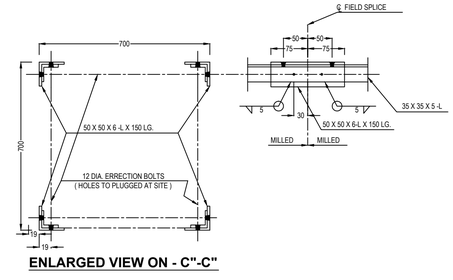
ENLARGED DETAIL 0 "B"

VIEW ON - B"-B"

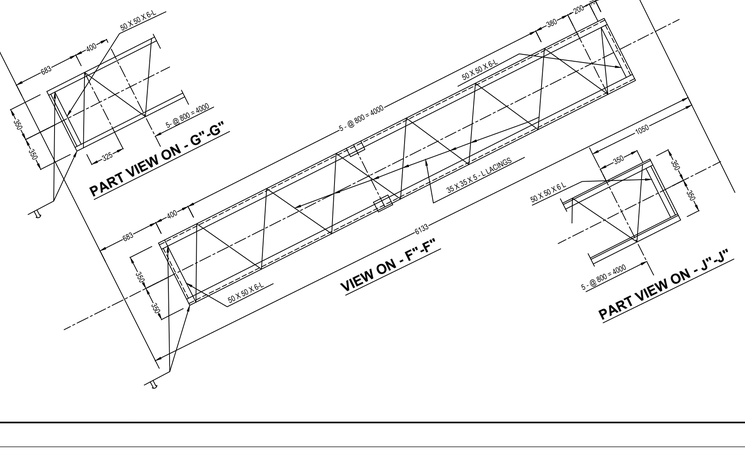


VIEW ON - D"-D"

(NOTE: RUNG LADDER TO BE PROVIDED ON 12/1 & 14/1 OF BENT SUPPORTS)



ENLARGED VIEW ON - C"-C"



NOTES:

ALL BOLT HOLES SHOWN THUS ...o

ALL DIMENSIONS ARE IN MILIMETERS.

FOR VIEW ON H-H REFER B & R.S. DRG. NO. 2745/7B.

FOR ALL OTHER DETAILS & DIMENSIONS& SECTIONS NOT SHOWN IN THIS DRAWING, REFER B & R.S. DRG. NO. 2745/7B

IN ADDITION TO THE DISTINGUISING MARK , EACH COMPONENT TO BE MARKED WITH IT'S INDIVISUAL MARKING.

WITHIN A CIRCLE SUCH AS S1/(14), S4/(15) ETC.

HOLES FOR ERRECTION BOLTS TO BE PLUG WELDED AFTER ERRECTION.

(8) FOR VIEW ON - "C2-C2" REFER B & R.S. DRG. NO. 2745/7B.

REV.	DESCRIPTION	BY	DATE
C	POSITION OF SPLICE DETAIL - "A" ALTERED		29/1/68
B	DETAIL OF RUNGS ADDED MODIFIED AS PER LETTER DTD. 14/8/67.		14/8/67
A	REVISED AS PER TATA-EBASCO'S LETTER DTD. 18/7/67		26/7/67

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FOR **TATA INSTITUTE OF FUNDAMENTAL RESEARCH RADIO TELESCOPE AT OOTACAMUND.**

DESCRIPTION **DETAIL OF EXTENSION PIECES**

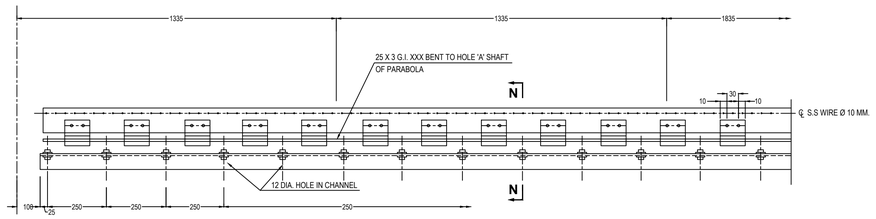
RIVETS	BOLTS	PAINTING
		I-COAT OF RED OXIDE

DELIVERY	SCALES	DATE
	1:25 & 1:10	7/7/67

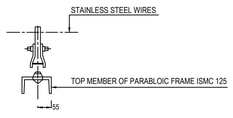
DRAWN BY
CHECKED BY
DATE

ORDER NO. 2745

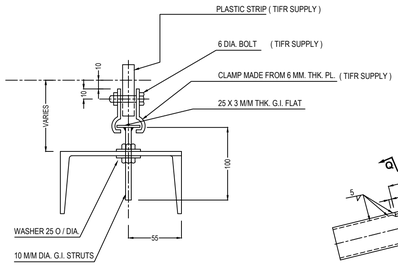
DRAWING NO. 80



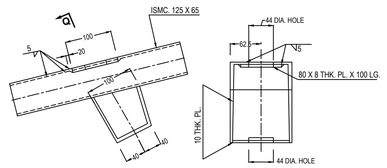
TYPICAL ARRANGEMENT OF CONNECTING STAINLESS STEEL WIRES TO INTERMEDIATE PARABOLIC FRAME



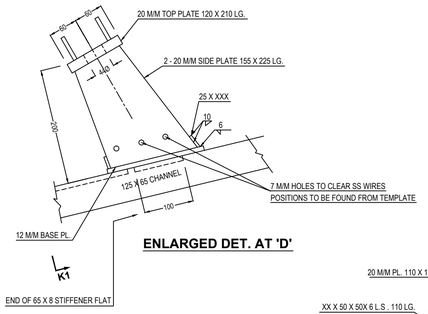
VIEW ON N-N



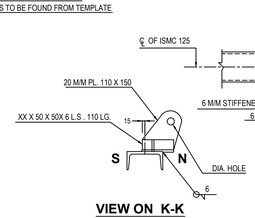
ENLARGED DETAIL



DETAIL 'D' **VIEW ON Q-Q**

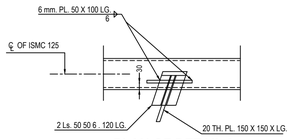


ENLARGED DET. AT 'D'

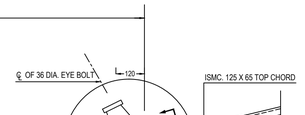


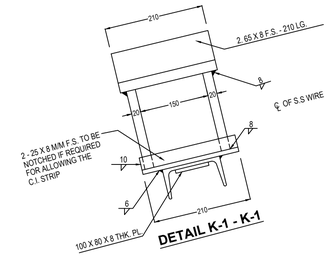
PLAN ON DET. L 1

VIEW ON K-K

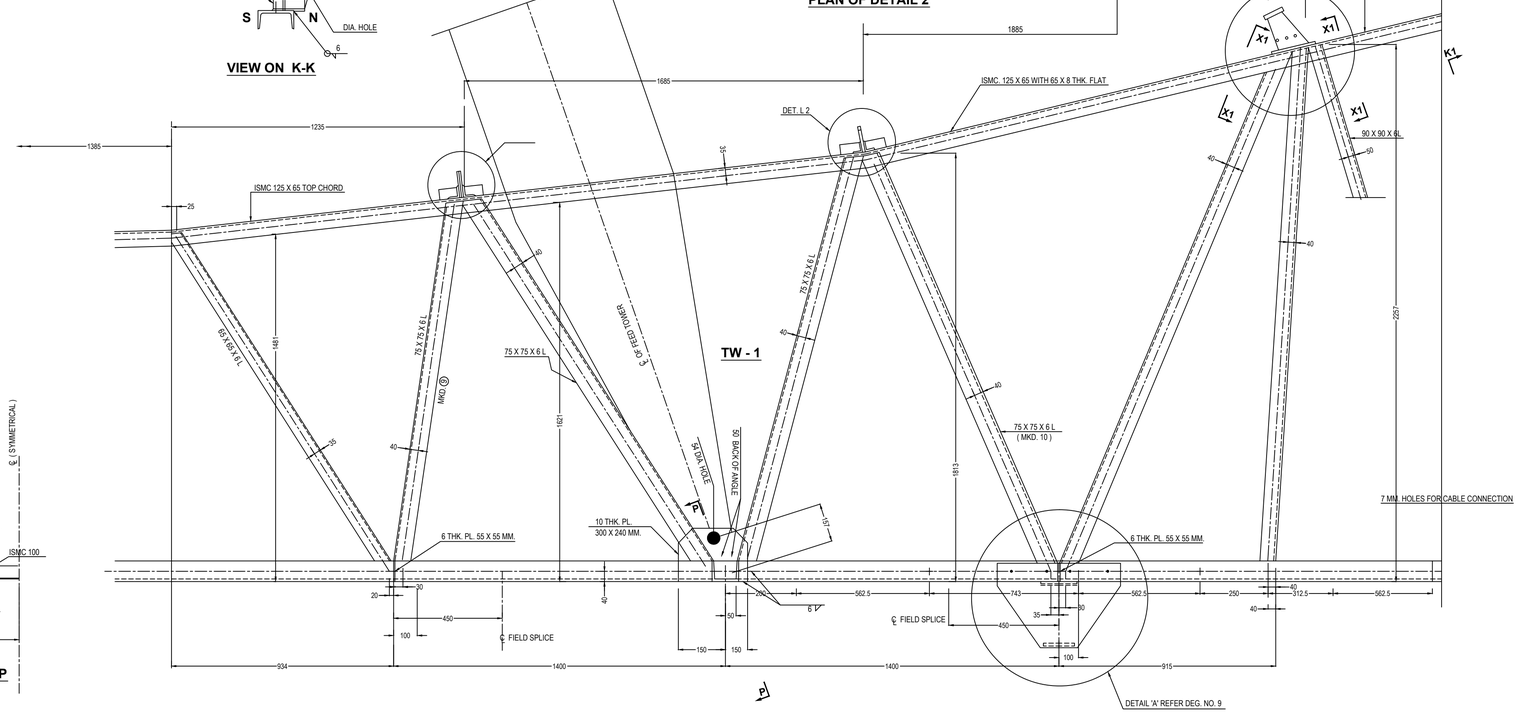


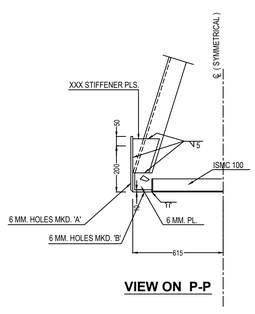
PLAN OF DETAIL 2



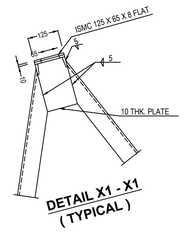


DETAIL K-1 - K-1





VIEW ON P-P



DETAIL X1 - X1 (TYPICAL)

20 - SETS THUS REQUIRED MKD. TW - 1 /1 WITH HOLES MKD. 'A' ON BOTH MEMBERS 8 WITH HOLES MKD. 'B' ONLY ON NORTH SIDE MEMBERS

2 - SETS THUS REQUIRED MKD. TW - 1 /2 WITH HOLES MKD. A & B

THESE ARE TO BE DESPATCHED FITTED WITH BOTTOM PORTION OF FEED TOWER

NOTES:

- XXXXXXXXXXXXXXXXX
- XXXXXXXXXXXXXXXXX

A	GENERAL REVISION	AKB	K.P.	24/10/67.
MOD.	DESCRIPTION	MADE BY	CHKD. BY	DATE

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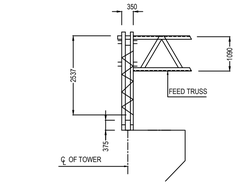
FOR **TATA INSTITUTE OF FUNDAMENTAL RESEARCH**
RADIO TELESCOPE AT OOTACAMUND.

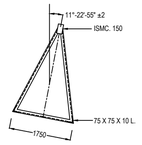
DESCRIPTION TYPICAL DETAIL OF PF - 1 / 2 INTERMEDIATE FRAMES

RIVETS	BOLTS	PAINTING
		1-COAT OF RED OXIDE

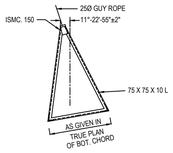
DELIVERY	SCALE	DATE
	1:10 & 1:5	**28/3/67.**

DRAWN BY	ORDER NO. **2745**
CHECKED BY	
DATE	DRAWING NO. **10A**

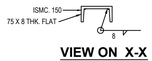




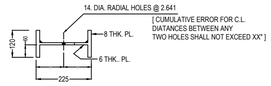
VIEW ON G-G



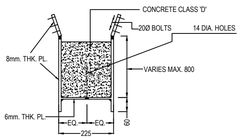
VIEW ON E-E



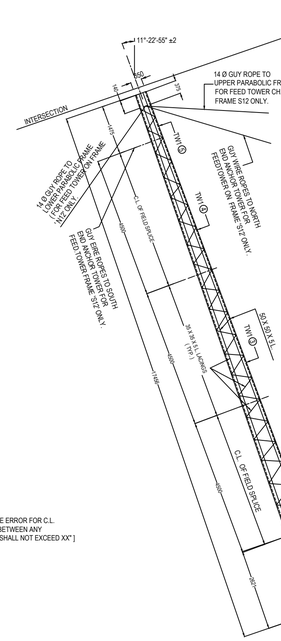
VIEW ON X-X



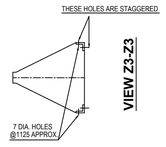
VIEW ON D1-D1



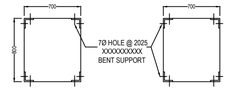
VIEW ON D2-D2



VIEW ON C-C

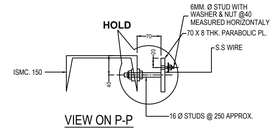


VIEW Z3-Z3



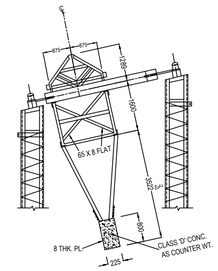
VIEW ON Z1-Z1 (FOR BENT SUPPORT)

VIEW ON Z2-Z2 (FOR BENT SUPPORT)



VIEW ON P-P

(ANCHORING DETAIL SAME FOR PF - 3
BUT ON THE OPPOSITE SIDE OF [ISO)



VIEW ON F-F

VIEW ON A-A

VIEW ON Z'-Z' (FOR FEED TOWER)

1 - NO. FEED TOWER REQD. AS DRAWN [TW4]
1 - NO. FEED TOWER REQD. AS DRAWN & NOTED [TW3]

TYP. DET. @ X
FOR CONNECTING GUY ROPES
FROM ANCHOR TOWER

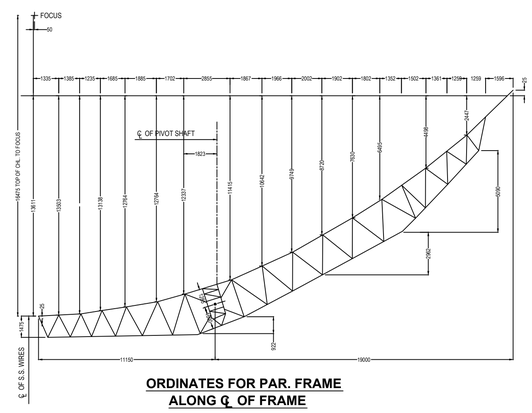
VIEW ON T.T.

VIEW ON S-S

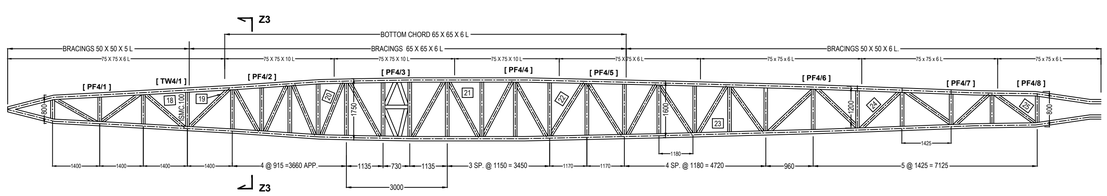
VIEW ON 1-1

VIEW ON B-B

GUY WIRES TO ANCHOR TOWER
NOT SHOWN.



ORDINATES FOR PAR. FRAME
ALONG ℄ OF FRAME



TRUE PLAN OF BOTTOM CHORD

1 - NO. PARABOLIC FRAME REQD. AS DRAWN MKD. [PF4]
1 - NO. PARABOLIC FRAME REQD. AS DRAWN MKD. [PF3] AS NOTED.

NORTH

NOTES:

- ALL DIMENSIONS ARE IN MILIMETERS.
- ALL LOOSE PIECES TO BE MARKED WITH THE RESPECTIVE NUMBERS IN ADDITION TO THEIR DISTINGUISHING MARK e.g. PF4/1, PF3/1, ETC.
- ERECTION CLEATS OR PLATES TO BE SHOP BOLTED WITH THE RESPECTIVE NUMBER FOR DESPATCH XXXX.
- ERECTION HOLES TO BE 14 DIA. OFR 12 DIA. BOLTS UNLESS OTHERWISE NOTED. AND TO BE PLUG WELDED AFTER FINAL WELDING

- THIS DRG. IS TO BE READ IN CONJUNCTION WITH DRG. NOS. 2745/5 : FEED TRUSS , 2745/6 : FEED TOWER , 2745/7 & 8 : BENT SUPPORTS , 2745/9 : DIRRIVING SECTOR , 2745 / 10 & 11 : FRAME DETAILS , 2745/12 : PLATFORM , 2745/14 : MISCELLANEOUS DETAILS OF END FRAMES , 2745/15 : ANCHOR TOWER.

REV.	DESCRIPTION	BY	DATE
A	AS PER TAT-EBASCO'S LETTER DTD. ON 31 AUG. 1967.	K.P.	18/9/67.

BRIDGE & ROOF Co. (INDIA) LTD.
SECY/BALMER LAWRIE & CO. LTD. CALCUTTA

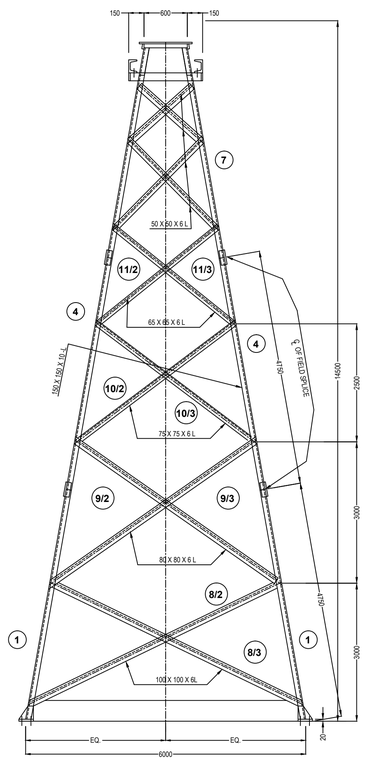
FOR: TATA INSTITUTE OF FUNDAMENTAL RESEARCH
RADIO TELESCOPE AT OOTACAMUND.

DESCRIPTION: GENERAL ARRNAGEMENT & MARKING PLAN FOR END FRAME

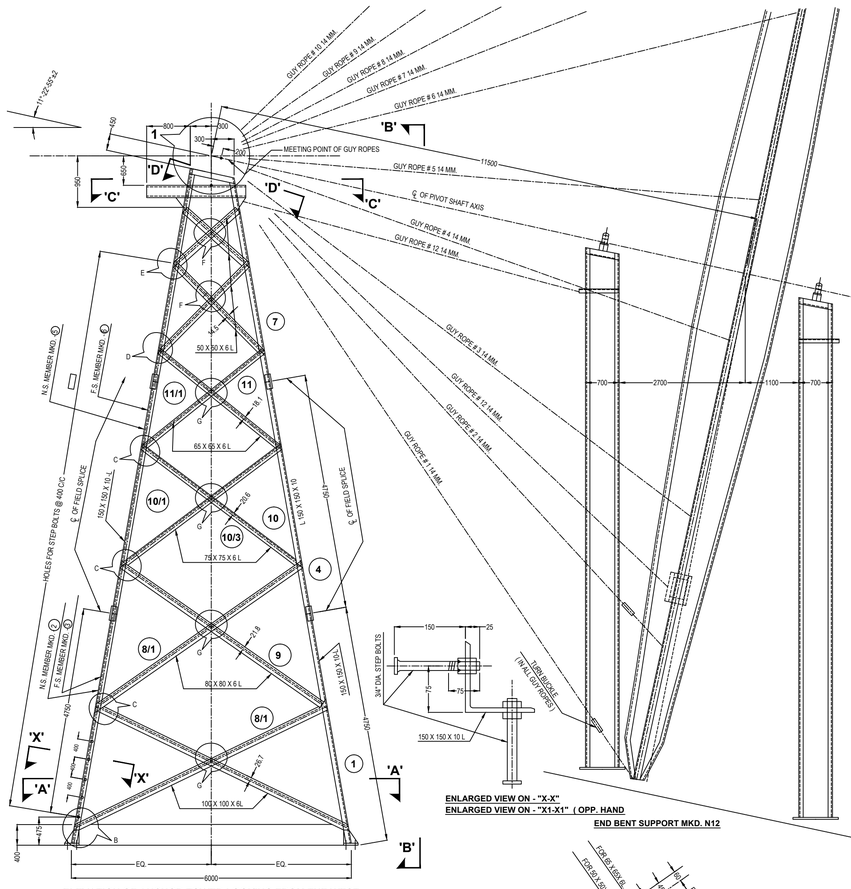
RIVETS	BOLTS	PAINTING
		1-COAT OF RED OXIDE

DELIVERY	SCALE	DATE
	1:75	21/7/67.

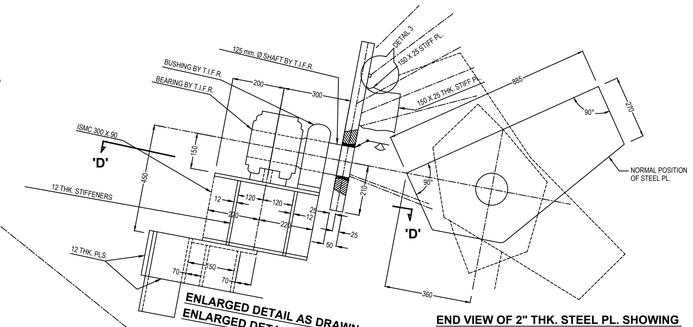
DRAWN BY		ORDER NO.	2745
CHECKED BY		DRAWING NO.	13A
DATE			



VIEW ON - 'B-B'

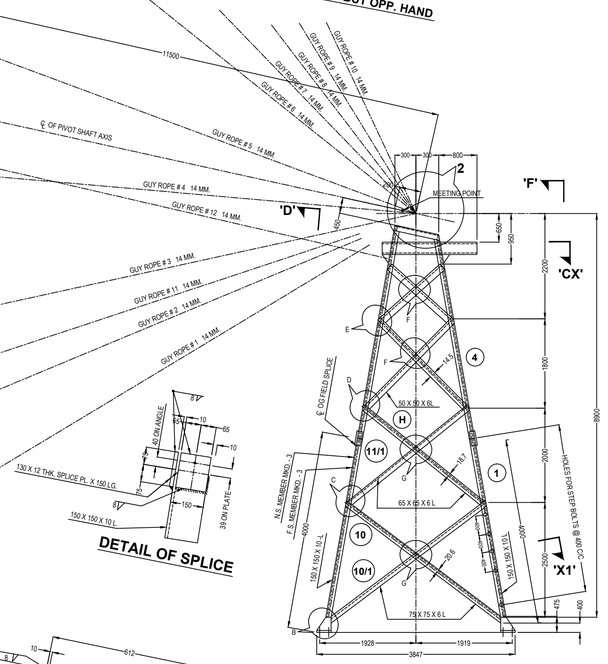


ELEVATION OF ANCHOR TOWER LOOKING FROM THE WEST
1 NO. REQD. AS DRAWN MKD. "AT"



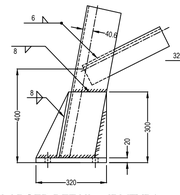
ENLARGED DETAIL AS DRAWN
ENLARGED DETAIL SIMILAR BUT OPP. HAND

END VIEW OF 2" THK. STEEL PL. SHOWING VARIOUS POSITIONS

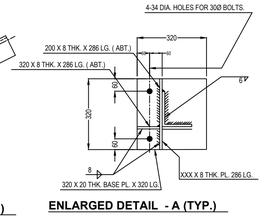


END BENT SUPPORT MKD. "S12"

DETAIL OF SPLICE

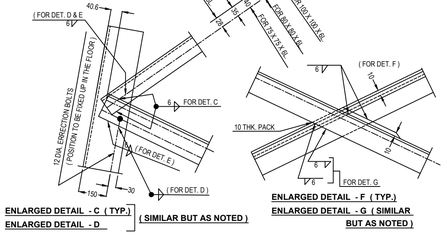


ENLARGED DETAIL - 'B' (TYP.)



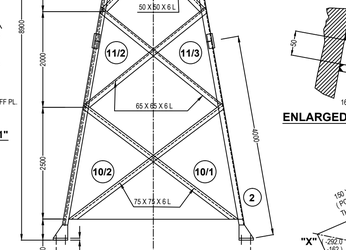
ENLARGED DETAIL - A (TYP.)

PLAN ON A-A

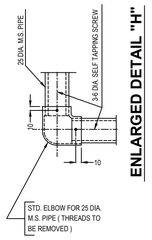


ENLARGED DETAIL - C (TYP.)
ENLARGED DETAIL - D
(SIMILAR BUT AS NOTED)

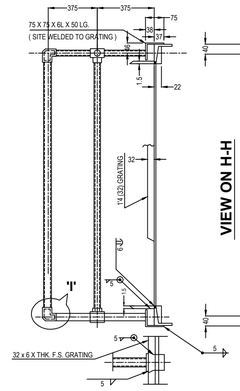
ENLARGED DETAIL - F (TYP.)
ENLARGED DETAIL - G (SIMILAR BUT AS NOTED)

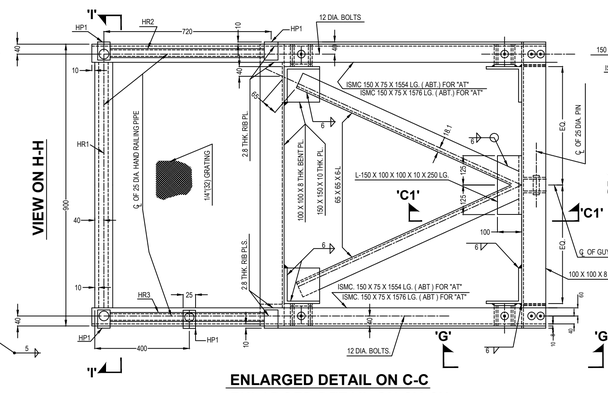


PART VIEW ON - "C1-C1"



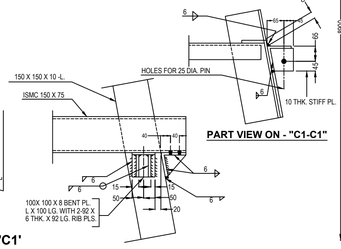
ENLARGED DETAIL "H"





VIEW ON H-H

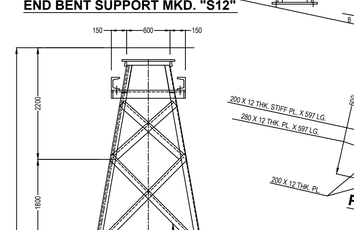
ENLARGED DETAIL ON C-C
ENLARGED DETAIL ON CX-CX (OPP. HAND & AS NOTED)



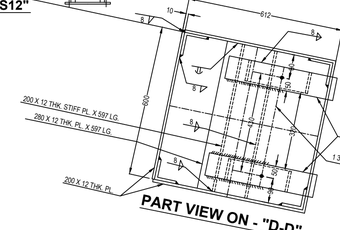
PART VIEW ON - "G-G"

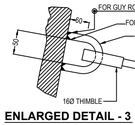
NOTES :

ALL BOLT HOLES SHOWN THUS •
ALL SHOP BOLTS SHOWN THUS ⊕
ALL DIMENSIONS ARE IN MM.
SHOP BOLTS ARE TO BE TURNED & FITTED
IN ADDITION TO THE DISTINGUISHING MARK EACH COMPONENT TO BE MARKED WITH ITS INDIVIDUAL MARKING WITHIN A CIRCLE SUCH AS AT / ⓐ AT / ① ETC.
HOLES FOR ERECTION BOLT TO BE PLUG WELDED AT SITE.

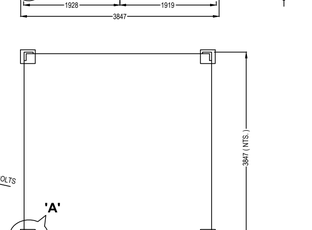


VIEW ON - 'F-F'





ENLARGED DETAIL - 3



PLAN ON 'E-E'

DETAIL OF ANCHOR PL. SHOWING ORDINATES OF GUY ROPES
(FOR OTHER DETAILS REFER END VIEW.)

REV.	DESCRIPTION	BY	DATE
E	MARKING FOR HANDRAILING & POST INCORPORATED		24/4/68.
D	AS PER TAT-EBASCO'S LETTER DTD. ON 18/1/68. & SOME ALTERATION OF MARKING.		27/1/68.
C	AS PER TAT-EBASCO'S LETTER DTD. ON 1/12/67.		22/12/67.
B	AS PER TAT-EBASCO'S LETTER DTD. ON 31/8/67.		21/9/67.
A	CORRECTIONS MADE ON VIEW ON 'H-H'		21/3/67

BRIDGE & ROOF Co. (INDIA) LTD.
SECY/BALMER LAWRIE & CO. LTD. CALCUTTA

FOR: TATA INSTITUTE OF FUNDAMENTAL RESEARCH
RADIO TELESCOPE AT OOTACAMUND.

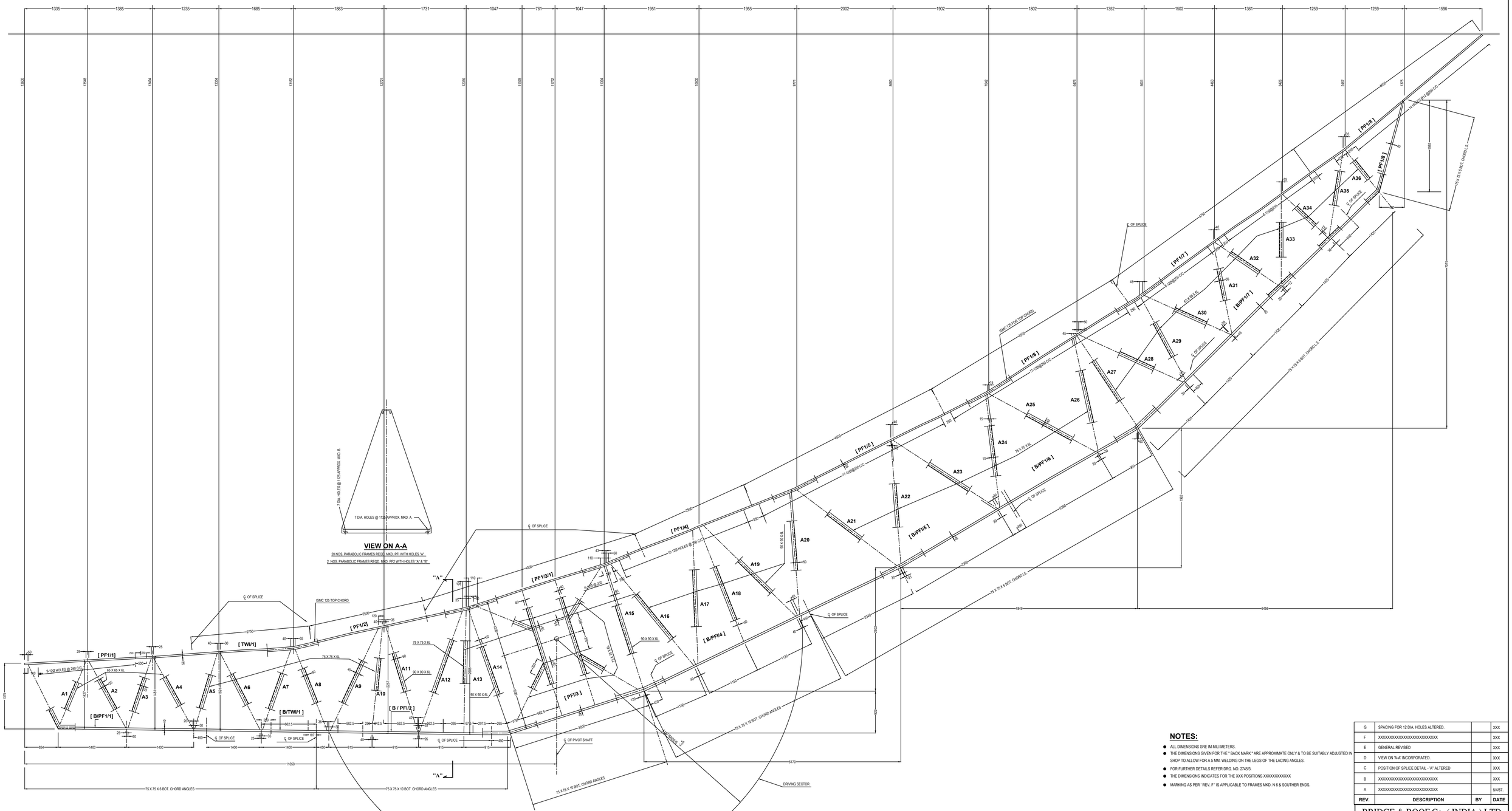
DESCRIPTION: DETAIL OF ANCHOR TOWER

RIVETS	BOLTS	PAINTING
		1-COAT OF RED OXIDE

DELIVERY	SCALES	DATE
	1:50 & 1:10	25/7/67

DRAWN BY
CHECKED BY
DATE

ORDER NO. 2745
DRAWING NO. 15B



NOTES:

- ALL DIMENSIONS SRE IM MILI METERS.
- THE DIMENSIONS GIVEN FOR THE " BACK MARK " ARE APPROXIMATE ONLY & TO BE SUITABLY ADJUSTED IN SHOP TO ALLOW FOR A 5 MM. WELDING ON THE LEGS OF THE LACING ANGLES.
- FOR FURTHER DETAILS REFER DRG. NO. 2745/3.
- THE DIMENSIONS INDICATES FOR THE XXX POSITIONS XXXXXXXXXXX
- MARKING AS PER " REV. F " IS APPLICABLE TO FRAMES MKD. N 6 & SOUTHER ENDS.

REV.	DESCRIPTION	BY	DATE
G	SPACING FOR 12 DIA. HOLES ALTERED.		XXX
F	XXXXXXXXXXXXXXXXXXXXXXXXX		XXX
E	GENERAL REVISED		XXX
D	VIEW ON 'A-A' INCORPORATED.		XXX
C	POSITION OF SPLICE DETAIL - "A" ALTERED		XXX
B	XXXXXXXXXXXXXXXXXXXXXXXXX		XXX
A	XXXXXXXXXXXXXXXXXXXXXXXXX		5/4/67.

BRIDGE & ROOF Co. (INDIA) LTD.

SECY/BALMER LAWRIE & CO. LTD. CALCUTTA

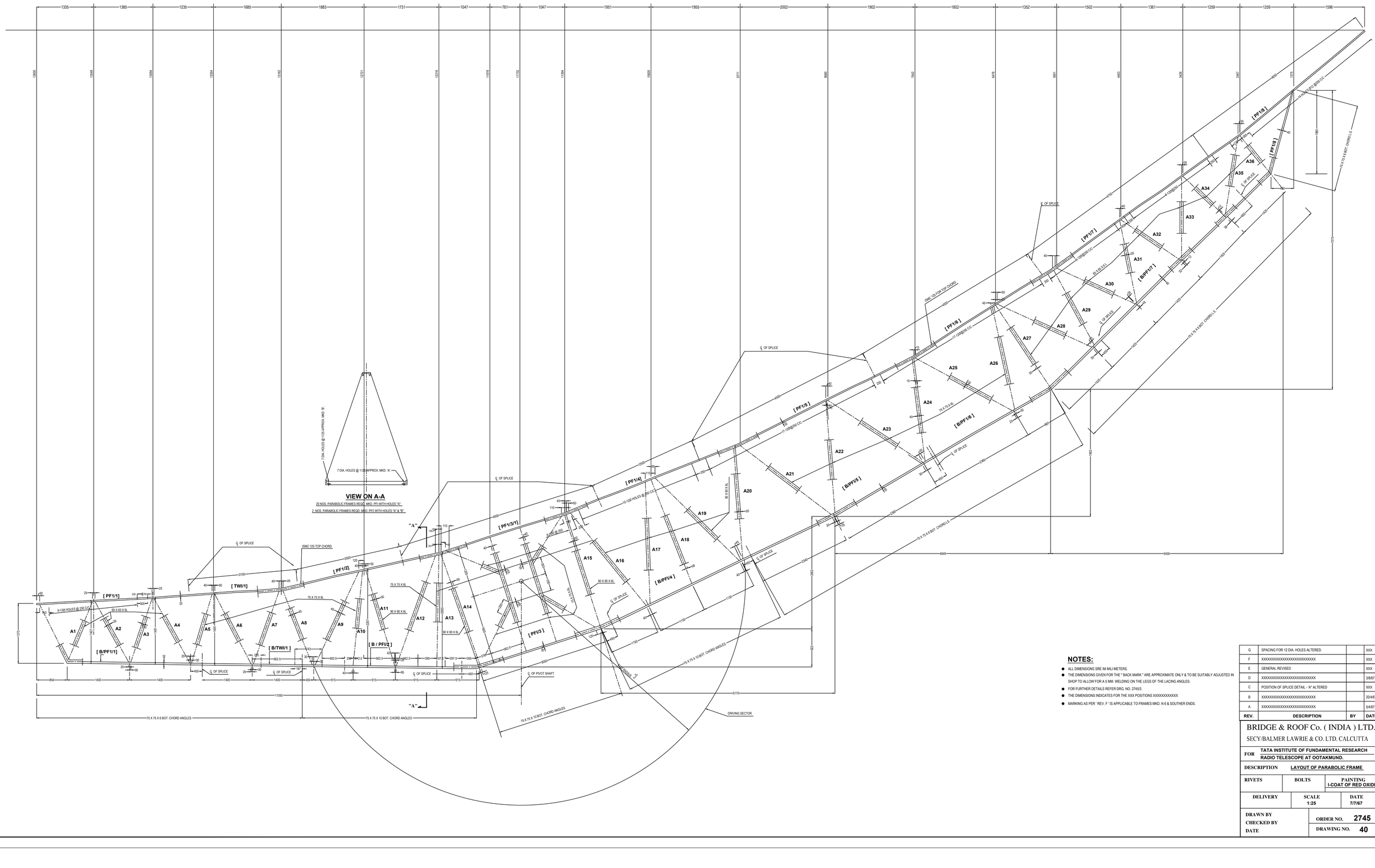
FOR **TATA INSTITUTE OF FUNDAMENTAL RESEARCH**
RADIO TELESCOPE AT OOTAKMUND.

DESCRIPTION **LAYOUT OF PARABOLIC FRAME**

RIVETS	BOLTS	PAINTING
		I-COAT OF RED OXIDE

DELIVERY	SCALE	DATE
	1:25	7/7/67

DRAWN BY	ORDER NO.	2745
CHECKED BY		
DATE	DRAWING NO.	40



NOTES:

- ALL DIMENSIONS SRE IM MILI METERS.
- THE DIMENSIONS GIVEN FOR THE " BACK MARK " ARE APPROXIMATE ONLY & TO BE SUITABLY ADJUSTED IN SHOP TO ALLOW FOR A 5 MM. WELDING ON THE LEGS OF THE LACING ANGLES.
- FOR FURTHER DETAILS REFER DRG. NO. 2745/3.
- THE DIMENSIONS INDICATES FOR THE XXX POSITIONS XXXXXXXXXXX
- MARKING AS PER ' REV. F ' IS APPLICABLE TO FRAMES MKD. N 6 & SOUTHER ENDS.

REV.	DESCRIPTION	BY	DATE
G	SPACING FOR 12 DIA. HOLES ALTERED.		XXX
F	XXXXXXXXXXXXXXXXXXXXXXXXX		XXX
E	GENERAL REVISED		XXX
D	XXXXXXXXXXXXXXXXXXXXXXXXX		3/8/67.
C	POSITION OF SPLICE DETAIL - 'A' ALTERED		XXX
B	XXXXXXXXXXXXXXXXXXXXXXXXX		20/4/67.
A	XXXXXXXXXXXXXXXXXXXXXXXXX		5/4/67.

BRIDGE & ROOF Co. (INDIA) LTD.

SECY/BALMER LAWRIE & CO. LTD. CALCUTTA

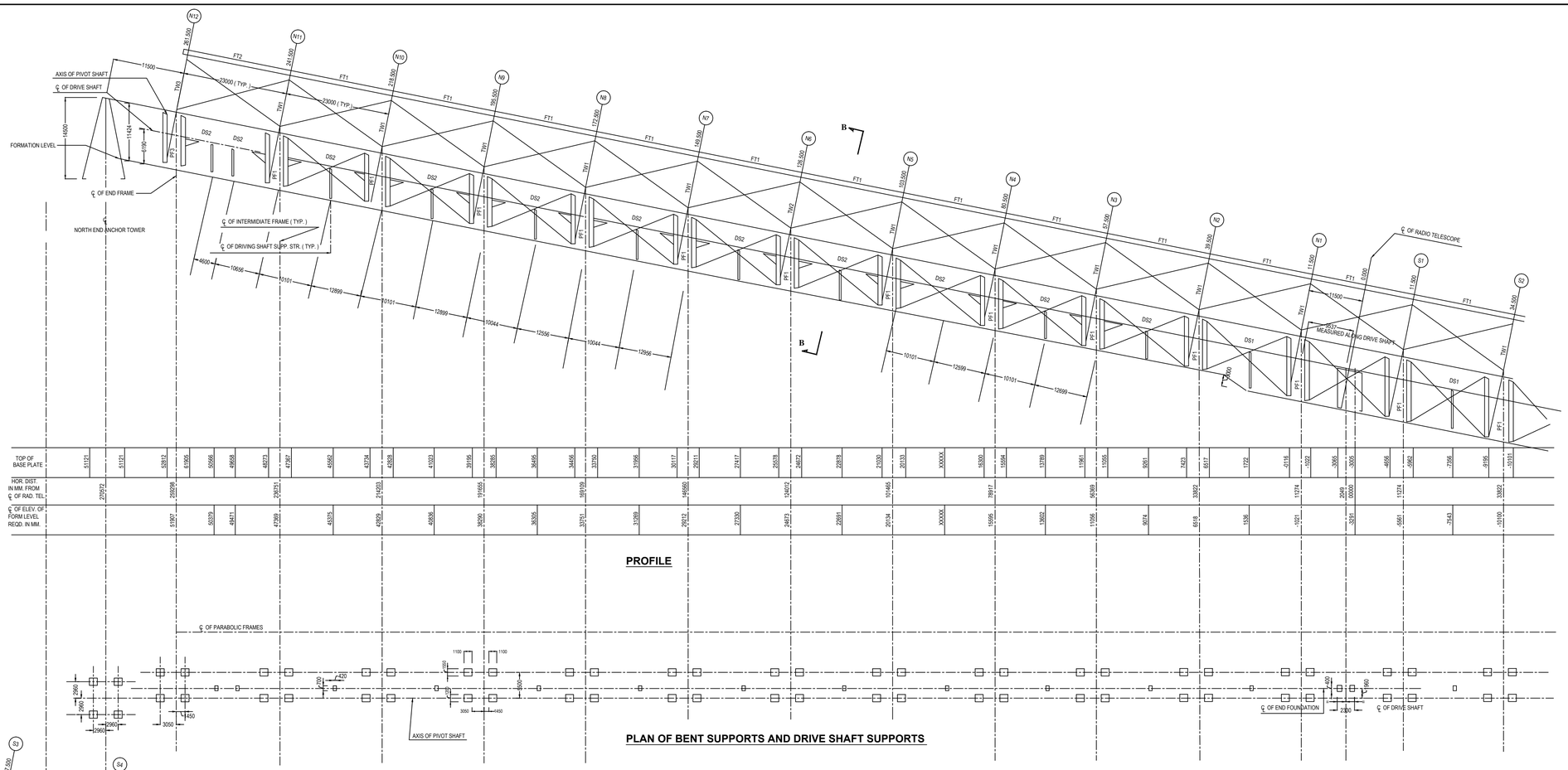
FOR **TATA INSTITUTE OF FUNDAMENTAL RESEARCH**
RADIO TELESCOPE AT OOTAKMUND.

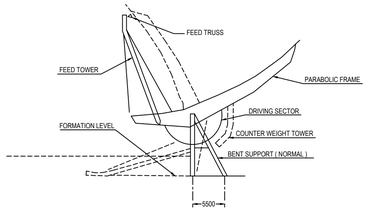
DESCRIPTION **LAYOUT OF PARABOLIC FRAME**

RIVETS	BOLTS	PAINTING
		I-COAT OF RED OXIDE

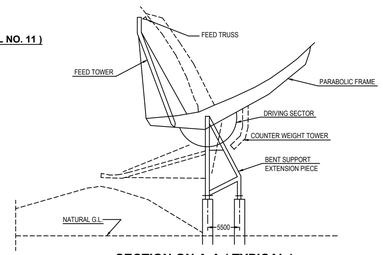
DELIVERY	SCALE	DATE
	1:25	7/7/67

DRAWN BY	ORDER NO. 2745
CHECKED BY	DRAWING NO. 40
DATE	





SECTION ON B-B (TYPICAL)
(FOR FRAMES N1 TO N11 & S11 (TOTAL NO. 11)



SECTION ON A-A (TYPICAL)
(FOR FRAMES S1 TO S10 & N1 (TOTAL NO. 11)

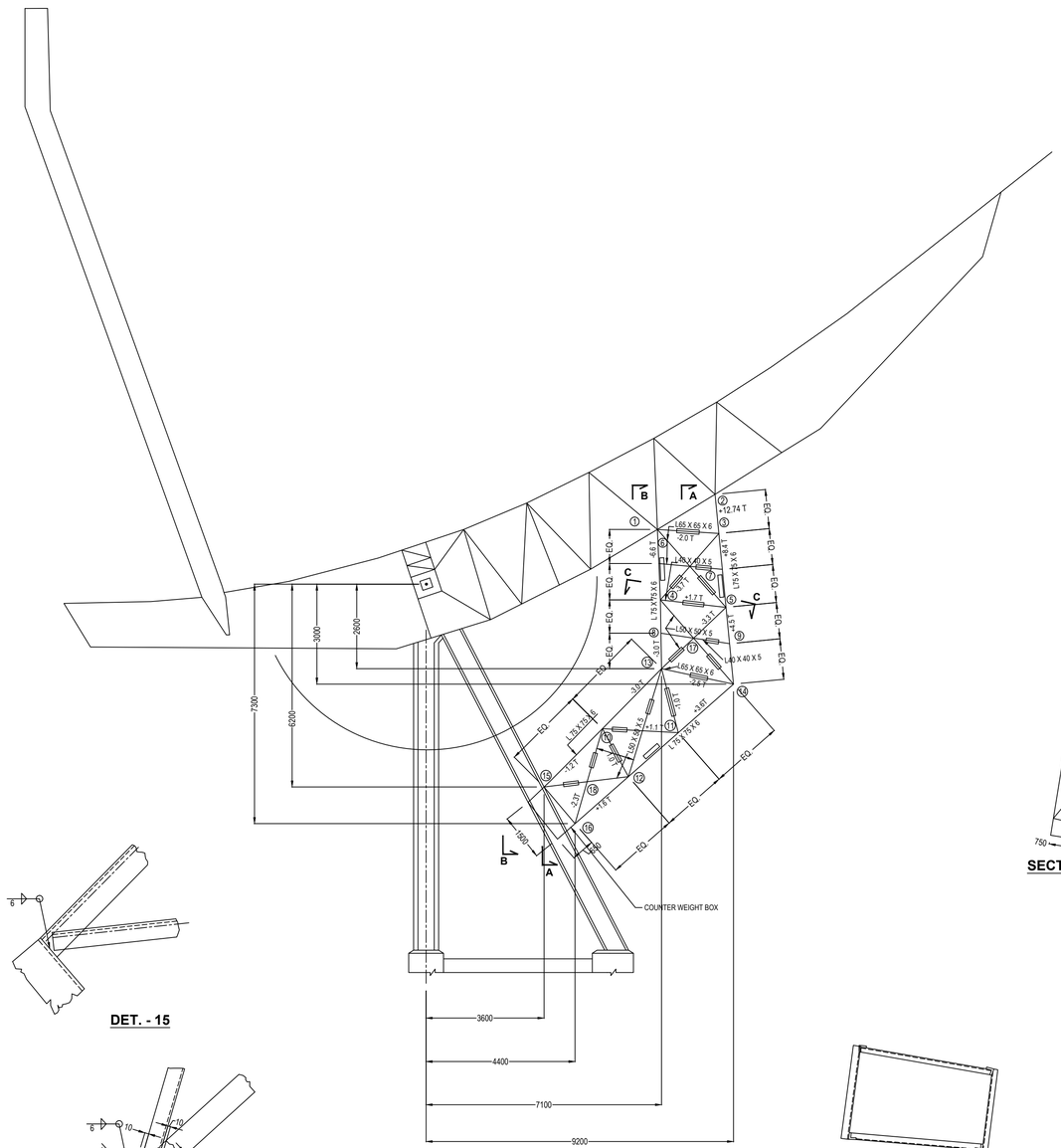
NOTES:

1) ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE STATED.

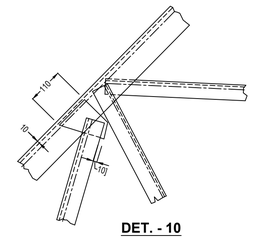
RADIO ASTRONOMY CENTRE

OOTACAMUND

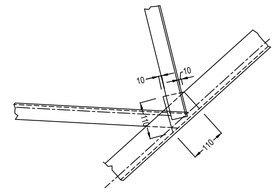
DRAWN		GENERAL ARRANGEMENT ORIGINALLY DONE BY
CHECKED		BRIDGE & ROOF Co. (INDIA) LTD.
CHECKED		
SCALE		DRG. NO. RAC - 29/74.



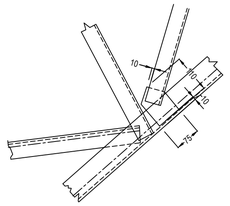
ELEVATION



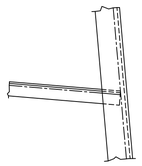
DET. - 10



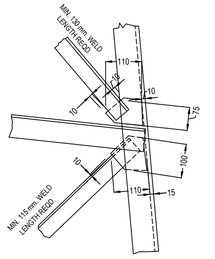
DET. - 11



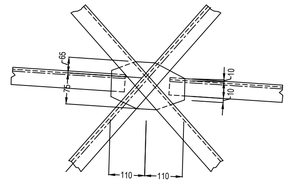
DET. - 12



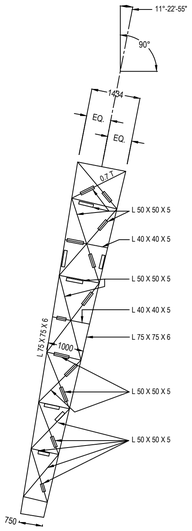
DET. - 7
(DETS. 6,8 & 9 SIMILAR)



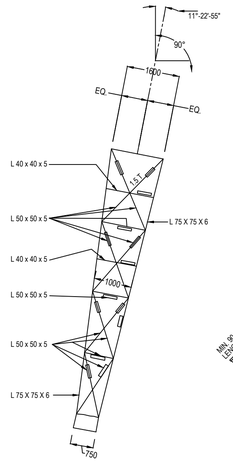
DET. - 5



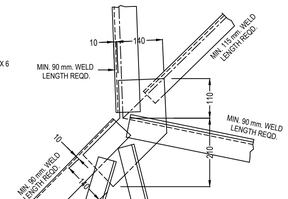
DET. - 17



SECT. A-A



SECT. B-B

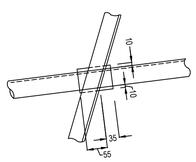


DET. - 13

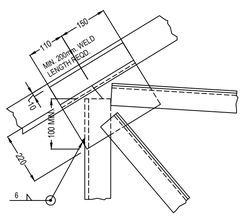
DET. - 15

DET. - 16

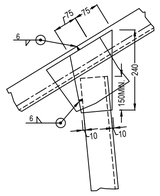
SECT. C-C



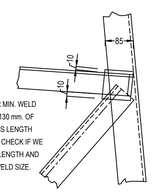
DET. - 18



DET. - 1

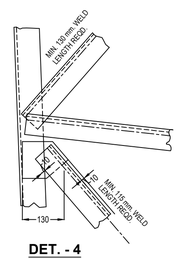


DET. - 2



DET. - 3

FOR THIS MEMBER MIN. WELD LENGTH REQD. IS 130 mm. OF 5 mm. WELD. IF THIS LENGTH IS NOT POSSIBLE , CHECK IF WE CAN GET 110 mm. LENGTH AND THEN INCREASE WELD SIZE.



DET. - 4

NOTES

- THE MATERIAL TO CONFORM IS:226.
- FABRICATION AND ERECTION TO CONFIRM IS:226.
- ALL WELDS ARE FILLET WELDS WITH MINIUM LENGTHS AND SIZES ARE AS FOLLOES :

FOR SPLICE IN MAIN LEG MEMBERS :	SIZE	LENGTH
(a) BETWEEN JOINTS AND BENTS	6 mm.	400
(b) OTHER LOCATIONS	6 mm.	200
BRACINGS	5 mm.	75 UNLESS NOTED

- ALL DIMENSIONS ARE IN MILI METERS AND ARE GIVEN IN PLANE PERPENDICULAR TO THE BOTTOM FACE OF THE PARABOLIC FRAME
- ALL GUSSET PLATES AND COUNTER WEIGHT BOX PLATES TO BE 8 mm. THK.
- + INDICATES COMPRESSION
- - INDICATES TENSION

FOR R0 ISSUES ONLY					ISSUE	REVISIONS	BY	CLEARED			APPD.	DATE	ISSUE	REVISIONS	BY	CLEARED			APPD.	DATE	ISSUE	REVISIONS	BY	CLEARED			APPD.	DATE
CHECKED			CLEARED					CIVIL	ELEC.	MECH.						CIVIL	ELEC.	MECH.						CIVIL	ELEC.	MECH.		
DEPT.	INITIALS	DATE	SIGNATURE	DATE																								
MECH.																												
ELEC.																												
CIVIL																												

'P' (PRELIMINARY) ISSUES ARE NOT TO BE USED FOR CONSTRUCTION / FABRICATION, BUT ARE ISSUED FOR LIMITED PURPOSES ONLY AS INDICATED IN THE SMALL BLOCK ABOVE THE TOP RIGHT HAND CORNER OF THE TITLE BLOCK.

CONSTRUCTION / FABRICATION WORK IS PERMITTED ON 'R' (RELEASED) ISSUES ONLY.

INFORMATION CONTAINED WITHIN 'HOLDS' IS NOT RELEASED FOR CONSTRUCTION / FABRICATION. FIELD MUST GET DESIGN OFFICE TO CLEAR HOLDS IN TIME BEFORE PROCEEDING WITH CONSTRUCTION / FABRICATION WORK RELATED TO HOLDS

TATA INSTITUTE OF FUNDAMENTAL RESEARCH
RADIO ASTRONOMY CENTRE
OOTACAMUND

PROPOSED COUNTER WEIGHT FOR OOTY RADIO TELESCOPE

TATA CONSULTING ENGINEERS , BOMBAY

SCALE :- 1 :75, 7.5

APPROVED

CHIEF CIVIL ENGINEER

3-2-78.
DATE.

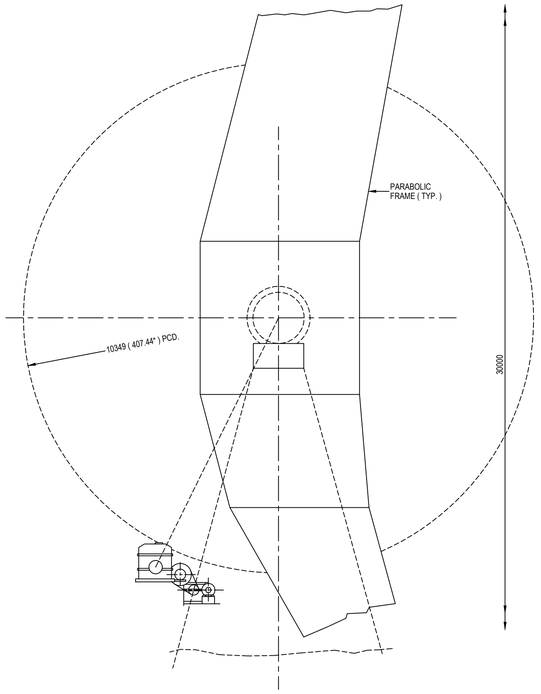
DIV. CIVIL

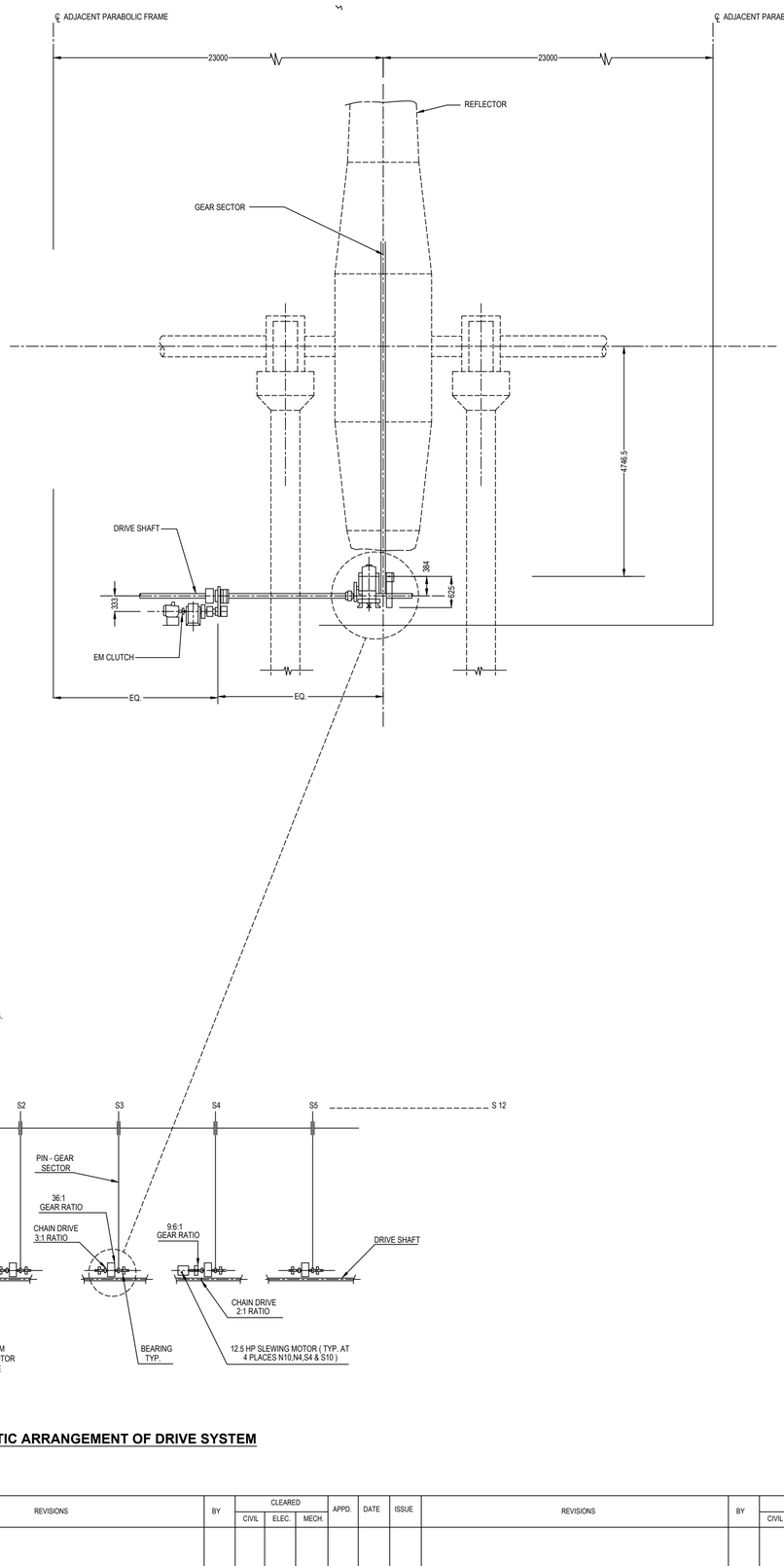
DR. P.M.MAKWANA

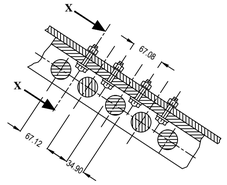
CH.

DWG. **TCE-29A-056-1**

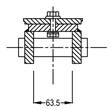
ISSUE **R0**







TYPICAL MOUNTING METHOD OF PIN SECTOR ON THE STRUCTURAL MEMBER TO MESH WITH (10.186") PCD. PINION



SECTION X-X

SCHEMATIC ARRANGEMENT OF DRIVE SYSTEM

TRACKING SPEED	15° / Hr.
SLEWING SPEED	375° / Hr.
SCANNING SPEED	45° / Hr.

FOR STUDY ONLY.

DRIVE SYSTEM LAYOUT FOR OOTY RADIO TELESCOPE

TATA CONSULTING ENGINEERS , BOMBAY

SCALE :- 1 :50

APPROVED

CHIEF ENGINEER DATE.

DIV.

DR.

CH.

DWG. **TCE-773-SK-01** ISSUE **P0**

FOR R0 ISSUES ONLY				
CHECKED		CLEARED		
DEPT.	INITIALS	DATE	SIGNATURE	DATE
MECH.				
ELEC.				
CIVIL				

ISSUE	REVISIONS	BY	CLEARED			APPD.	DATE
			CIVIL	ELEC.	MECH.		

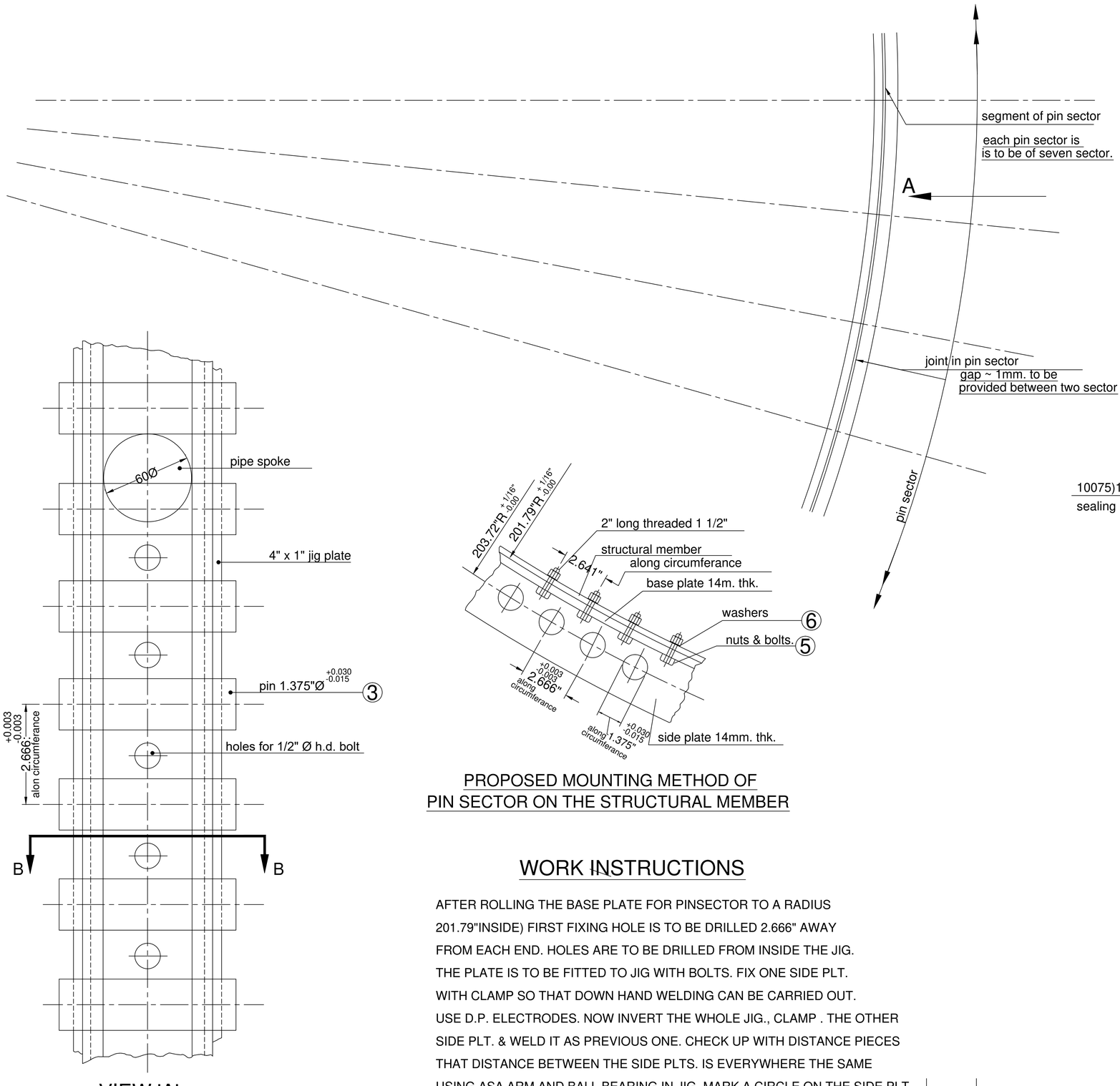
ISSUE	REVISIONS	BY	CLEARED			APPD.	DATE
			CIVIL	ELEC.	MECH.		

ISSUE	REVISIONS	BY	CLEARED			APPD.	DATE
			CIVIL	ELEC.	MECH.		

'P' (PRELIMINARY) ISSUES ARE NOT TO BE USED FOR CONSTRUCTION / FABRICATION. BUT ARE ISSUED FOR LIMITED PURPOSES. ONLY AS INDICATED IN THE SMALL BLOCK ABOVE THE TOP RIGHT HAND CORNER OF THE TITLE BLOCK.

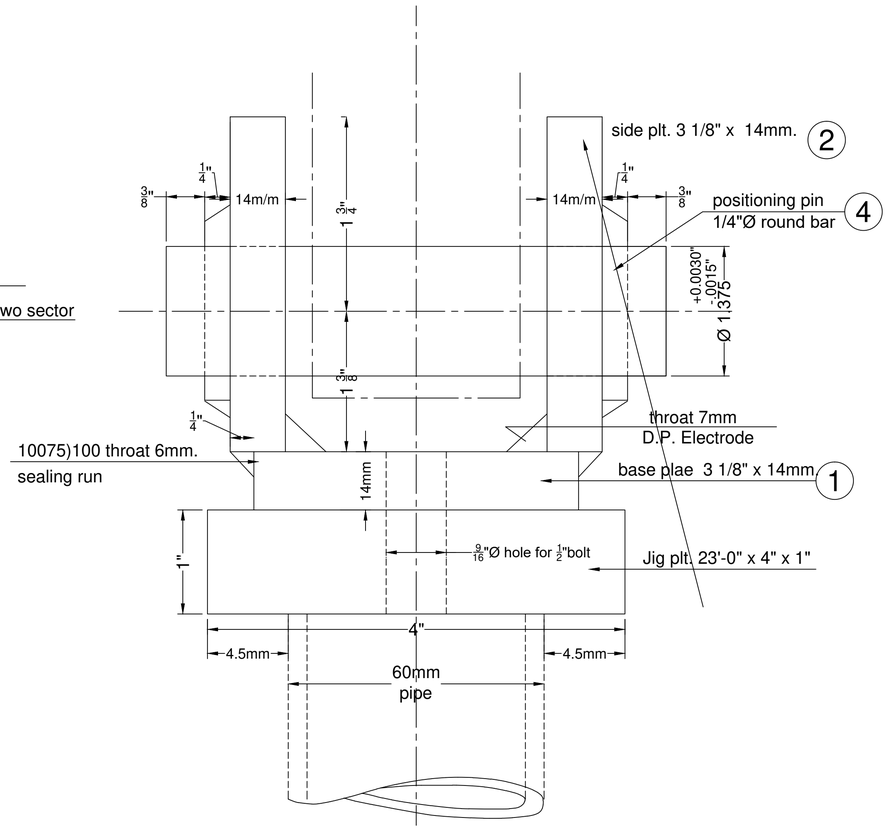
CONSTRUCTION / FABRICATION WORK IS PERMITTED ON 'R'(RELEASED) ISSUES ONLY.

INFORMATION CONTAINED WITHIN 'HOLDS' IS NOT RELEASED FOR CONSTRUCTION / FABRICATION. FIELD MUST GET DESIGN OFFICE TO CLEAR HOLDS IN TIME BEFORE PROCEEDING WITH CONSTRUCTION / FABRICATION WORK RELATED TO 'HOLDS'.



VIEW 'A'

PROPOSED MOUNTING METHOD OF
PIN SECTOR ON THE STRUCTURAL MEMBER



SECTION 'BB'
FULL SCALE

WORK INSTRUCTIONS

AFTER ROLLING THE BASE PLATE FOR PINSECTOR TO A RADIUS
201.79"INSIDE) FIRST FIXING HOLE IS TO BE DRILLED 2.666" AWAY
FROM EACH END. HOLES ARE TO BE DRILLED FROM INSIDE THE JIG.
THE PLATE IS TO BE FITTED TO JIG WITH BOLTS. FIX ONE SIDE PLT.
WITH CLAMP SO THAT DOWN HAND WELDING CAN BE CARRIED OUT.
USE D.P. ELECTRODES. NOW INVERT THE WHOLE JIG., CLAMP . THE OTHER
SIDE PLT. & WELD IT AS PREVIOUS ONE. CHECK UP WITH DISTANCE PIECES
THAT DISTANCE BETWEEN THE SIDE PLTS. IS EVERYWHERE THE SAME
USING ASA ARM AND BALL BEARING IN JIG. MARK A CIRCLE ON THE SIDE PLT.
AT 203.72" RADIUS. DRILL FIRST PIN HOLE!1.3" AWAY FROM END
DRILL FURTHER HOLES WITH SPECIAL JIG. A JIG HAVING AT LEAST
SIX PIN HOLES IS TO BE MADE GIVING EXACT DISTANCE BETWEEN HOLES.)

✱ **THEASE DIMENSIONS ARE IMPORTANT**

AFFIX	DESCRIPTION	DATE	APPROVED

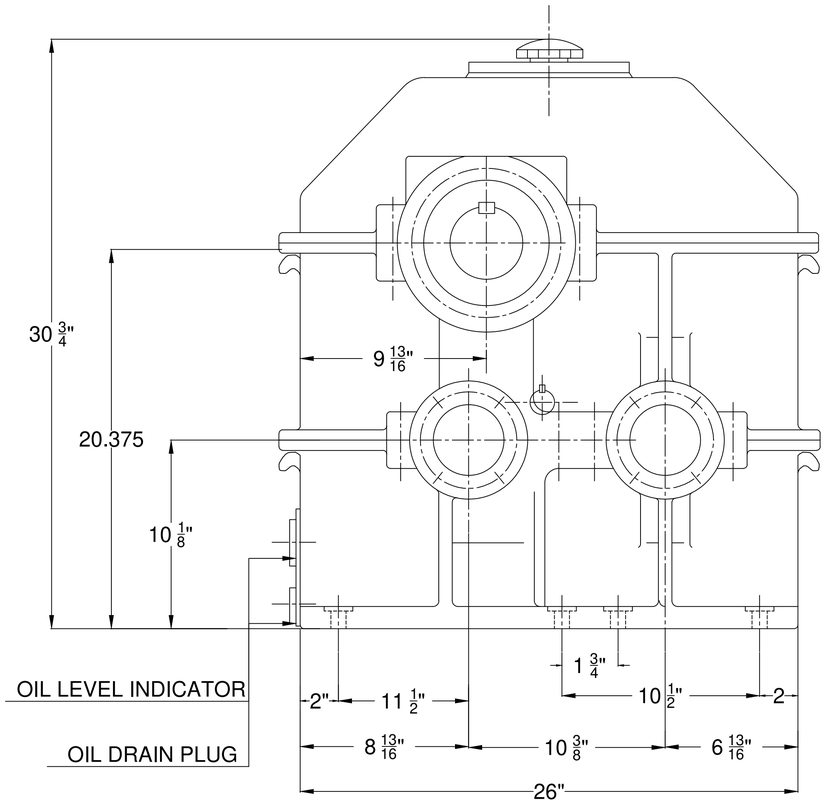
NATIONAL CENTRE FOR RADIO ASTROPHYSICS

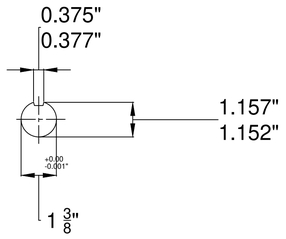
TATA INSTITUTE OF FUNDAMMENTAL RESEARCH
NCRA, PUNE UNIVERSITY CAMPUS, GANESHKHIND,
PUNE-411 007. INDIA.
TEL: (020) 569 71 07, 569 13 84/5,
FAX: 569 21 49.
NCRA. TIFR

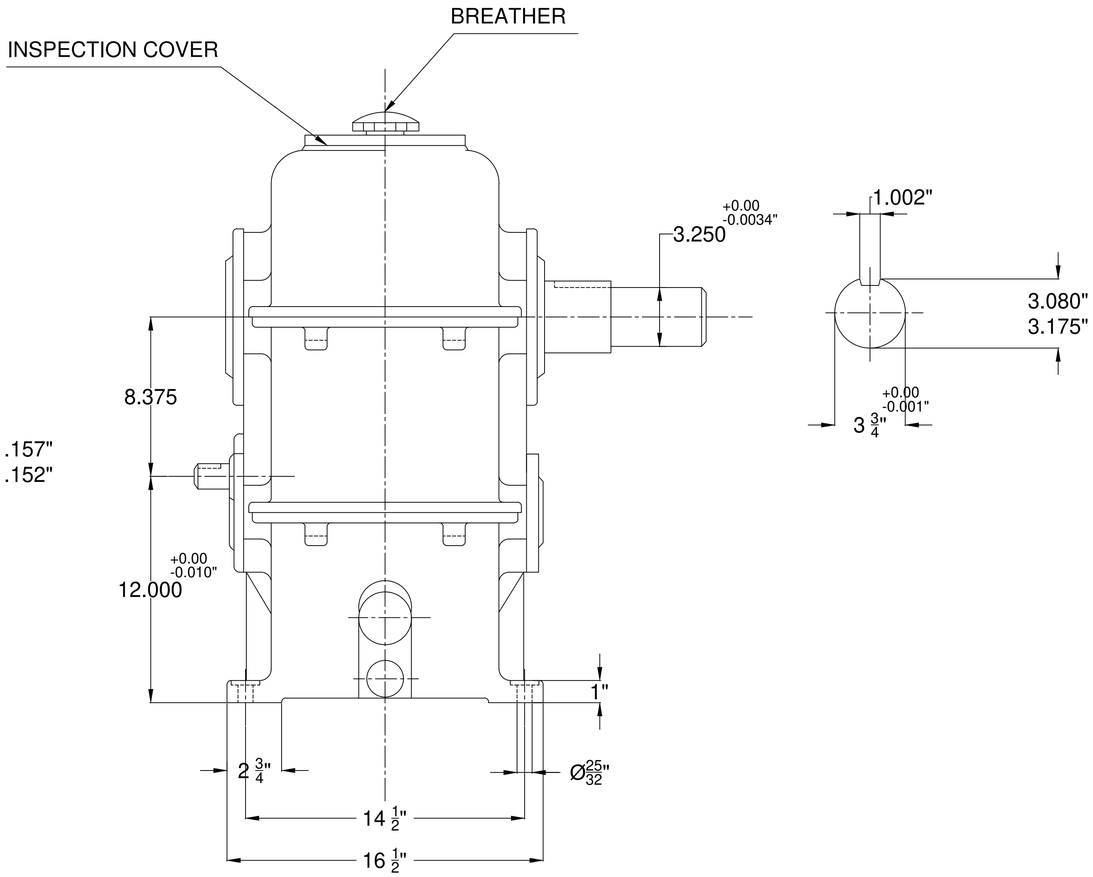
Designed	Elect.		Project: **NEW ALLENBERRY WORKS.**
	Mech.		
	SIGN	DATE	
Traced			Title: **REFRANCE ASSLY. OF G.B. 36:1**
Drawn			
Checked			
Approved			

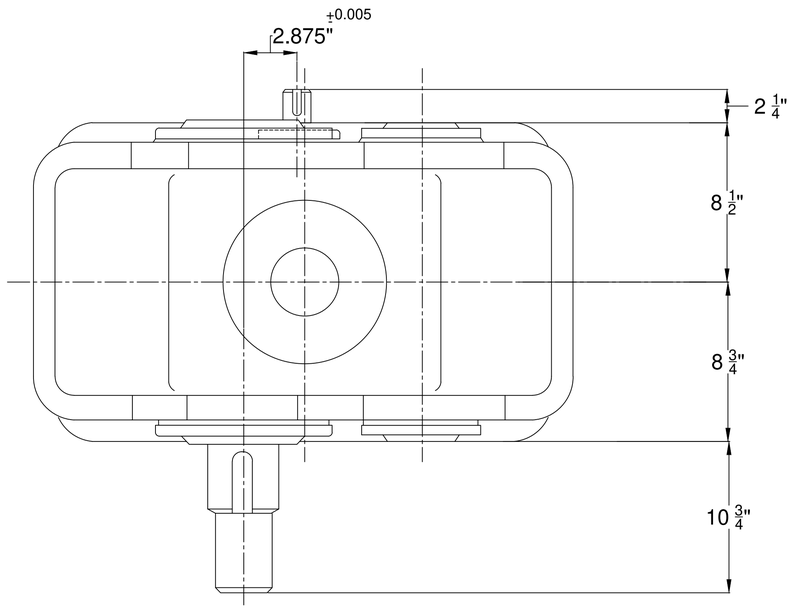
SCALE:- 1 : 8" | DRG.NO. - 60205339 | 29-11 (R1)

DRG. PATH:- COM2\D:\CERT\29-11\29-11.Dwg









✱ **THEASE DIMENSIONS ARE IMPORTANT**

AFFIX	DESCRIPTION	DATE	APPROVED

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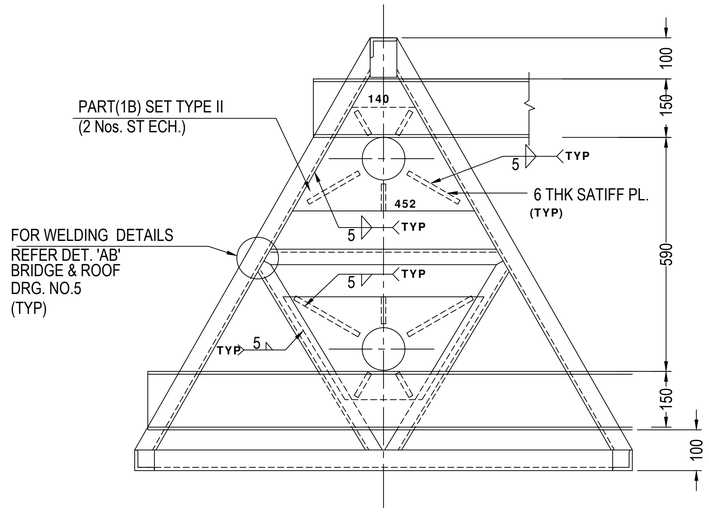
TEL: (020) 569 71 07, 569 13 84/5,
FAX: 569 21 49.

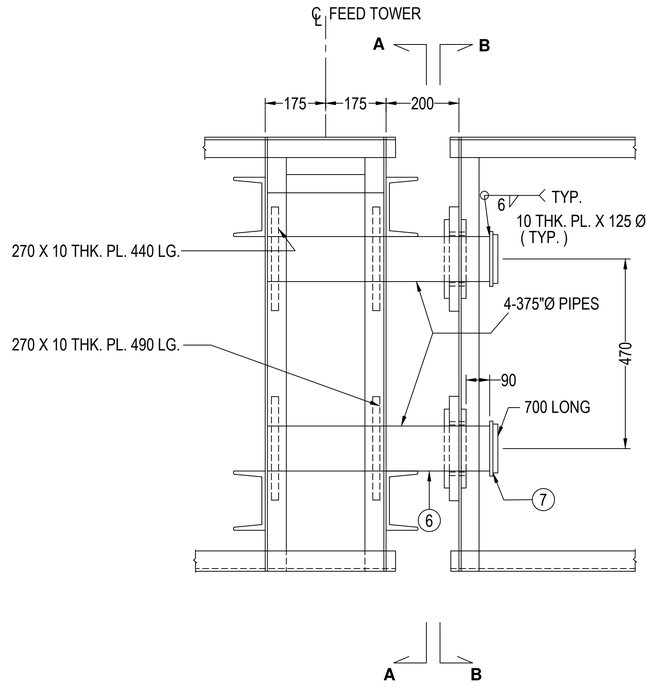
NCRA. TIFR

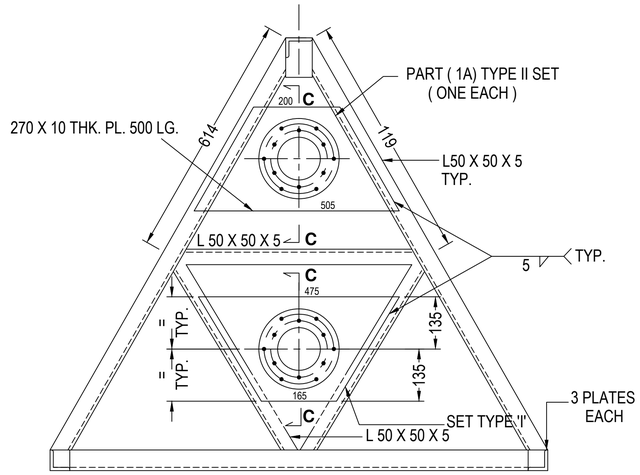
Designed	Elect.		Project: **NEW ALLENBERRY WORKS.**
	Mech.		
	SIGN	DATE	
Traced			Title: **REFRANCE ASSLY. OF G.B. 36:1**
Drawn			
Checked			
Approved			
SCALE:- 1 : 8"	DRG.NO. - 60205339		29-11 (R1)

DRG. PATH:- COM2\D:\CERT\29-11\29-11.Dwg

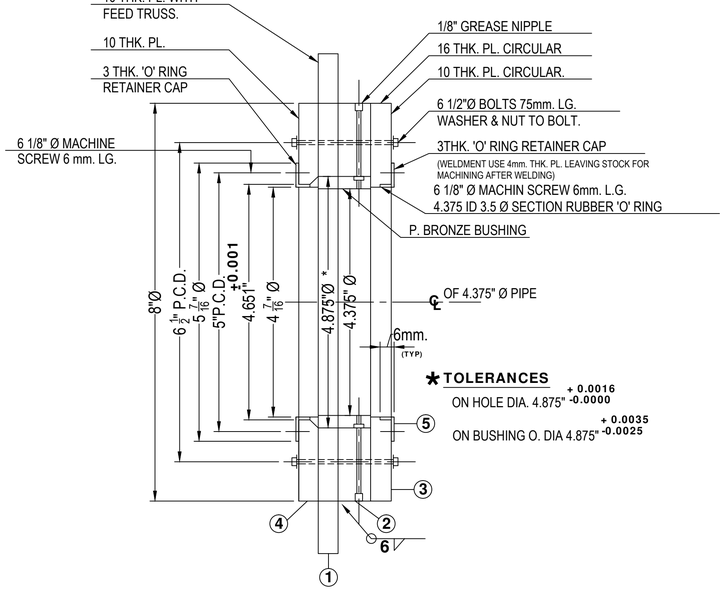


VIEW A-A



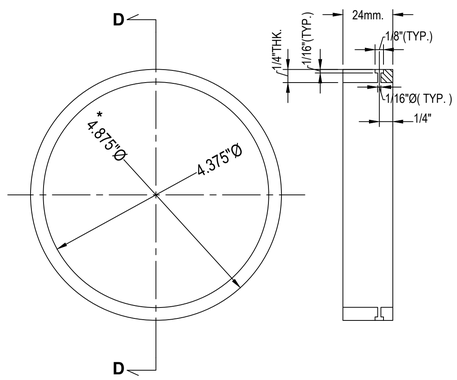


VIEW B-B



SECT C-C

scale 1:2



BUSHING DET. SECT. D-D

1:2

NOTES:

- ALL DIMENSIONS ARE IN MILIMETERS U.N.
- FOR DETAILS OF FEED TRUSS REFER BRIDGE & ROOF NO. 5
- ENSURE THAT TUBES ARE PARALLEL.
- ALL MATING FACES TO BE MACHINED.

REV. NO.	REVISIONS	BY	CLEARED CIVIL	CLEARED ELEC.	CLEARED MECH.	APPD.	DATE

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RELEASED FOR FABRICATION

TATA INSTITUTE OF FUNDAMENTAL RESEARCH
RADIO ASTRONOMY

SLIDING ARRANGEMENT DET. FOR FEED TRUSS

TATA CONSULTING ENGINEERS , BOMBAY

SCALE :- 1 :10 U.N.

APPROVED

CHIEF ENGINEER DATE. 7-4-72.

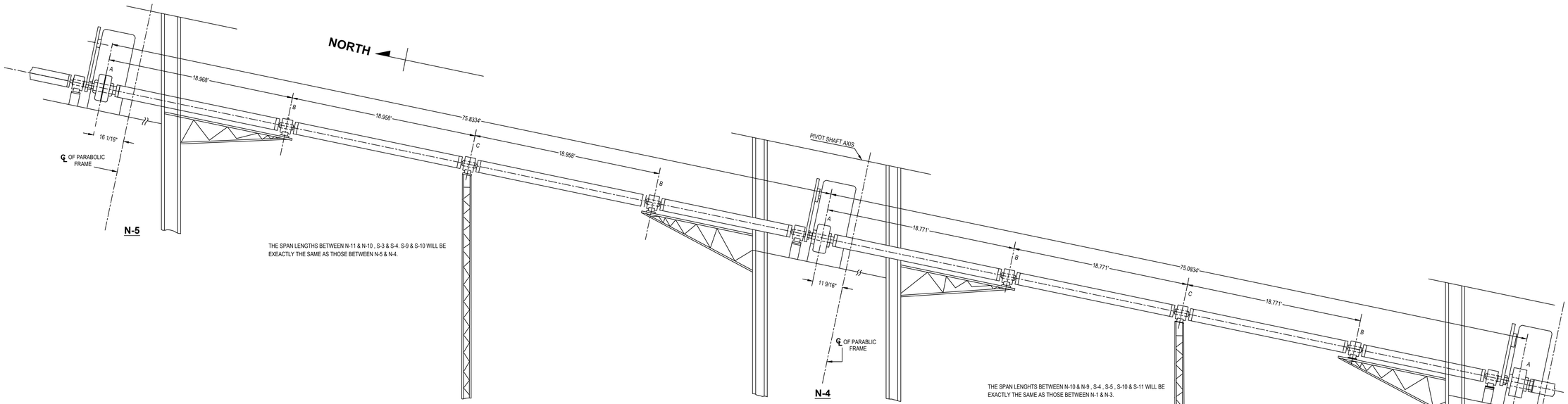
DIV. CIVIL

DR. Y.M.G.

CH.

DWG. **TCE-29A-056-SK.601** R 0

TITLE: DPUR GEAR DRIVE - 250:1 — DWG. TE-29-101 — R



THE SPAN LENGTHS BETWEEN N-11 & N-10 , S-3 & S-4 , S-9 & S-10 WILL BE EXEACTLY THE SAME AS THOSE BETWEEN N-5 & N-4.

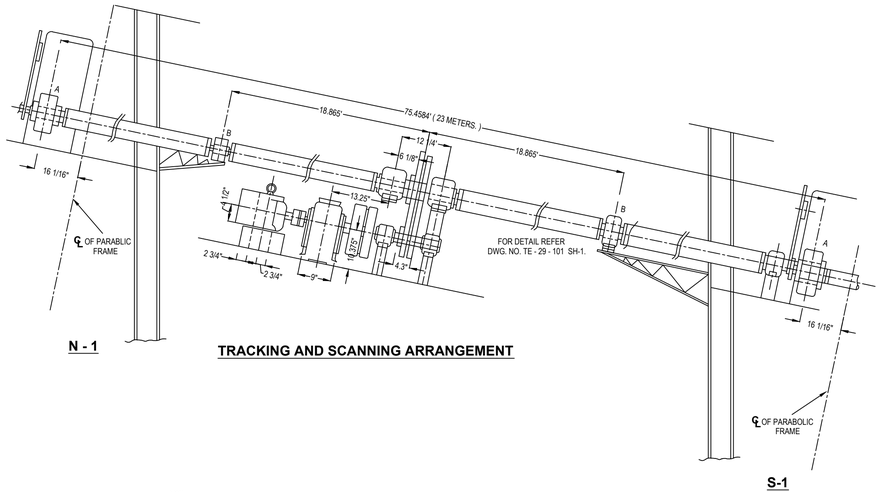
THE SPAN LENGHTS BETWEEN N-10 & N-9 , S-4 , S-5 , S-10 & S-11 WILL BE EXACTLY THE SAME AS THOSE BETWEEN N-1 & N-3.

TYPICAL SLEWING ARRANGEMENT

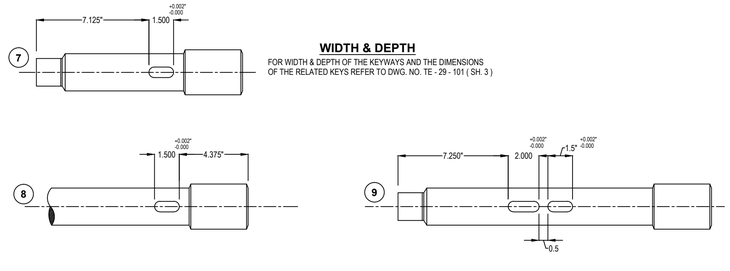
BILL OF MATERIAL FOR DWG. NO. TE 29 - 101 SH. 1 & 2

ITEM	NOS. REQD.	SPECIFICATIONS						MATERIAL	SUPPLIED BY
	NOS.	SIZE	NOS.	SIZE	NOS.	SIZE		
1). DRIVE SHAFT 4" OD. , 3.5" I.D.	2 2 2 4 4	13.748' 14.352' 14.425' 14.466' 17.041'	4 13 2 4 13	17.427' 17.521' 17.629' 18.031' 18.125'	8 4 24 8	18.146' 18.218' 18.239' 18.333'		AISI 4140 HAVING TENSILE STRENGTH OF 112,000 P.S.I.	OTHERS
2). 2.5" 1215 K- SELF ALIGNING SUPPORT BEARING WITH SLEEVES AND PLUMMER BLOCK 3.5" - 1217K - *	NINETY EIGHT TWO	2.5" - BORE 3.5" - BORE							OTHERS OTHERS
FLEXIBLE COUPLINGS	TWENTY FOUR	2 7/8" - BORE						CAST IRON	OTHERS
SPROCKETS	FOUR TWENTY FOUR ONE	1" PITCH 46 TEETH 14.688" PITCH DIA. 3/4" PITCH 19 TEETH 4.556" PITCH DIA. DUPLEX 1 1/2" PITCH 32 TEETH 15.376" PITCH DIA.						AISI 1020 AISI 1020 AISI 1020	OTHERS OTHERS OTHERS
RIGID INTER CONNECTION TYPE B	FOURTY SIX	AS FOLLOWS						-------	THE CONTRACTOR
1) INTERCONNECTING SHAFT	FOURTY SIX	AS SHOWN IN THIS DRAWING AS '1' .						ANY MATERIAL (EN - 9 OR EQUIVALENT) HAVING MIN. T.S. 45 TON/SQ. IN.	THE CONTRACTOR
2) BUSHES	117	AS SHOWN IN THIS DRAWING AS '2' .						EN 4 OR EN 5 HAVING MIN. T.S. = 30 TONS/ SQ. IN	THE CONTRACTOR
a) PINS	117	AS SHOWN IN THIS DRAWING AS '5' .						MILD STEEL	THE CONTRACTOR
b) HOLES TO BE DRILLED	184	FOR ACCOMODATING PINS						MILD STEEL	THE CONTRACTOR
FLEXIBLE CONNECTION (TYPE - C)	25	AS FOLLOWS						-------	THE CONTRACTOR
3) INTERCONNECTING SHAFT	25	AS SHOWN IN THIS DRAWING AS '3' .						ANY MATERIAL (EN - 9 OR EQUIVALENT) HAVING MIN. T.S. 45 TON/SQ. IN.	THE CONTRACTOR
4) BUSHES	24	AS SHOWN IN THIS DRAWING AS '4' .						EN 4 OR EN 5 HAVING MIN. T.S. = 30 TONS/ SQ. IN	THE CONTRACTOR

ITEM	NOS. REQD.	SPECIFICATIONS	MATERIAL	SUPPLIED BY
II. RIGID INTERCONNECTION	1	AS FOLLOWS	----	
INTERCONNECTING SHAFT	1	AS SHOWN IN THIS DRAWING AS '10'.	SAME AS FOR ' I' (a)RESP.	THE CONTRACTOR
BUSHES	2	SAME AS IN 'I' RESPECTIVELY	"---"	THE CONTRACTOR
PINS	2	"---"	"---"	THE CONTRACTOR
HOLES TO BE DRILLED	4	"---"	"---"	THE CONTRACTOR
FLEXIBLE COUPLING CONNECTION	24	AS FOLLOWS	----	THE CONTRACTOR
III. INTERCONNECTING SHAFT	a) 19	AS SHOWN IN THIS DRAWING AS '7'.	SAME SHAFT MATERIAL AS IN 'I'	THE CONTRACTOR
	b) 18	AS SHOWN IN THIS DRAWING AS '6'.	SAME SHAFT MATERIAL AS IN 'I'	THE CONTRACTOR
BUSHES	a) 18 }	AS MENTIONED FOR RIGID	"--"	"--"
PINS	18 }	INTERCONNECTION I(2) & 2a	"--"	"--"
IV. INTERCONNECTING SHAFT	a) 4	AS SHOWN IN THIS DRAWING AS '9'.	"--"	"--"
	b) 4	AS SHOWN IN THIS DRAWING AS '6'.	"--"	"--"
BUSHES	4 }	AS MENTIONED FOR RIGID	"--"	"--"
PINS	4 }	INTERCONNECTION I(2) & I(2)	"--"	"--"
V. INTERCONNECTING SHAFT	a) 2	AS SHOWN IN THIS DRAWING AS '8'.	"--"	"--"
	b) 1	AS SHOWN IN THIS DRAWING AS '6'.	"--"	"--"
KEYS AND KEYWAYS	--	ALL THE NECESSARY KEYS AND KEYWAYS SHALL BE MANUFACTURED AND MACHINED AS PER THE REQUIRMENTS WHICH SHALL BE SPECIFIED LATER.	MATERIAL SHALL BE SPECIFIED ALONG WITH THE DIMENSIONS.	THE CONTRACTOR
WELDING & MACHINING	--	ALL THE NECESSARY WELDING OF BUSHES TO THE DRIVE SHAFT WITH PROPER ELECTRODES & ALL THE REQUIRED MACHINING AS PER TOLERANCES SPECIFIED SHALL BE CARRIED OUT BY THE CONTRACTOR.	--	"--"



TRACKING AND SCANNING ARRANGEMENT



WIDTH & DEPTH

FOR WIDTH & DEPTH OF THE KEYWAYS AND THE DIMENSIONS OF THE RELATED KEYS REFER TO DWG. NO. TE - 29 - 101 (SH. 3)

NOTES :

1. MATERIALS SPECIFIED IN THE BILL OF MATERIAL OR EQUIVALENT HAVING ULTIMATE TENSILE STRENGTH (MIN.) SHOULD BE USED. TEST CERTIFICATES SHALL BE FURNISHED TO VERIFY PHYSICAL AND CHEMICAL PROPERTIES OF THE STEEL.
2. THE DIMENSIONS OF KEYS AND KEYWAYS AND TOLERANCES OF THE INTERCONNECTING SHAFTS , WHERE THE SPROCKET WHEELS AND FLEXIBLE COUPLINGS ARE MOUNTED SHALL BE FURNISHED LATER.
3. TOLERANCES ON THE OUTSIDE DIAMETER AND THE WALL THICKNESS OF THE SHAFT ARE AS FOLLOWS.
   4.000 + 0.011 " - 0.011 ; 0.250 + 0.025 " - 0.025
4. THE BUSHES SHALL BE SNUG FIT AT THE END OF THE I.D. OF THE SHAFTS. HENCE , BUSH DIAMETER SHALL BE SMALLER THAN I.D. OF THE CORRESPONDING SHAFT.
5. ALL DIMENSIONS ARE XXXX

REFERENCE DRAWINGS :

1. TE 28 - 104. GENERAL ARRANGEMENT - GEAR DRIVES - 1
2. FLEXIBLE COUPLINGS :- DAVID BROWN GREAVES DWG. NO. G.C. 2192
3. TE 29- 501 PLAN AND PROFILE.
4. INTERMIDIATE FRAME DWG. NO. TE 29 - 502
5. TE 29-101 (SH 1) GENERAL ARRANGEMENT INTERCONNECTIONS OF DRIVE SHAFT.
6. TE 29 - 101 (SH. 3) KEYS AND KEYWAYS.
7. TE. 29 -104 R-1 GENERAL ARRG. GEAR DRIVES - 2

TITLE	CHECKED	DATE
ELECTRICAL SUPERVISOR		
MECHANICAL SUPERVISOR		
CIVIL SUPERVISOR		
TITLE	CLEARED	DATE
ELECTRICAL ENGINEER		
MECHANICAL ENGINEER		
CIVIL ENGINEER		

REV. NO.	REVISIONS	BY	CLEARED CIVIL	CLEARED ELEC	CLEARED MECH	APPD.	DATE
1	LOCATION OF KEY & KEYWAYS OF SHAFT NO. 7,8 & 9.	B.D.A.					20/7/67.
2	INCORPORATED CLUTCH DETAILS & SERVO MOTOR DETAILS.	B.D.A.					29/11/67
3	REVISION AS CIRCLED.	Y.M.G.					1/4/68

T.I.F.R.
RADIO TELESCOPE

GENERAL ARRANGEMENT
INTER-CONNECTION OF DRIVE SHAFT

TATA-EBASCO CONSULTING ENGINEERING SERVICES, BOMBAY.

SCALE :- 1/16"-1"	APPROVED	DATE:- 7/6/67
DIV. MECH.		DWG. NO.
DR. MOSESE		TE- 29 - 101
CH.		SH. 2 R - 3

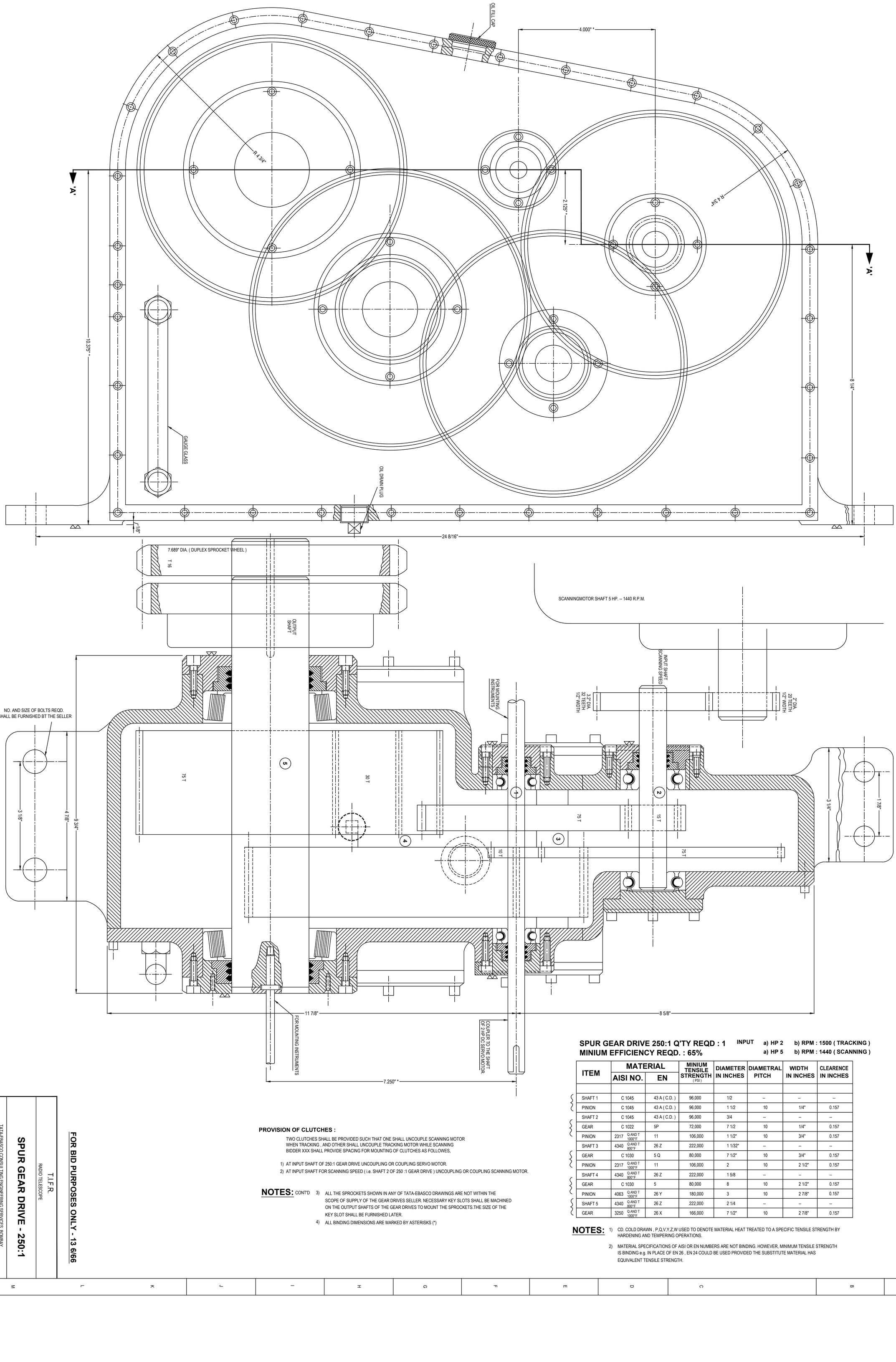
TITLE	CHECKED	DATE
ELECTRICAL SUPERVISOR		
MECHANICAL SUPERVISOR		
CIVIL SUPERVISOR		
TITLE	CLEARED	DATE
ELECTRICAL ENGINEER		
MECHANICAL ENGINEER		
CIVIL ENGINEER		

REV. NO.	REVISIONS	BY	CLEARED: CIVIL	CLEARED: ELEC	CLEARED: MECH	APPD.	DATE
1	REVISED TO ADD DETAILS 1,2& 3, END VIEW OF PLATE AND VIEW OF PLATE SHOWING VARIOUS POSITIONS AND ORDINATES OF GUY ROPES. PLAN T-T AND SECTION F-F REVISED.	B.D.A.					30/11/67.
2	REVISED " SKETCH SHOWING SHAFT ".	B.D.A.					19/12/67.
4	ANCHOR TOWER SHAFT REVISED	Y.M.G.					5/3/69.

KKS

DWG. TE-29-102

TITLE **DPUR GEAR DRIVE - 250:1**



SPUR GEAR DRIVE 250:1 Q'TY REQD : 1
MINIUM EFFICIENCY REQD. : 65%

INPUT a) HP 2 b) RPM : 1500 (TRACKING)
a) HP 5 b) RPM : 1440 (SCANNING)

ITEM	MATERIAL: AISI NO.	MATERIAL: EN	MINIUM TENSILE STRENGTH (PSI)	DIAMETER IN INCHES	DIAMETRAL PITCH	WIDTH IN INCHES	CLEARENCE IN INCHES
SHAFT 1	C 1045	43 A (C.D.)	96,000	1/2	--	--	--
PINION	C 1045	43 A (C.D.)	96,000	1 1/2	10	1/4"	0.157
SHAFT 2	C 1045	43 A (C.D.)	96,000	3/4	--	--	--
GEAR	C 1022	5P	72,000	7 1/2	10	1/4"	0.157
PINION	2317 Q AND T 1000°F	11	106,000	1 1/2"	10	3/4"	0.157
SHAFT 3	4340 Q AND T 800°F	26 Z	222,000	1 1/32"	--	--	--
GEAR	C 1030	5 Q	80,000	7 1/2"	10	3/4"	0.157
PINION	2317 Q AND T 1000°F	11	106,000	2	10	2 1/2"	0.157
SHAFT 4	4340 Q AND T 800°F	26 Z	222,000	1 5/8	--	--	--
GEAR	C 1030	5	80,000	8	10	2 1/2"	0.157
PINION	4063 Q AND T 1000°F	26 Y	180,000	3	10	2 7/8"	0.157
SHAFT 5	4340 Q AND T 800°F	26 Z	222,000	2 1/4	--	--	--
GEAR	3250 Q AND T 1000°F	26 X	166,000	7 1/2"	10	2 7/8"	0.157

NOTES:
1) CD. COLD DRAWN , P,Q,Y,Y,Z,W USED TO DENOTE MATERIAL HEAT TREATED TO A SPECIFIC TENSILE STRENGTH BY HARDENING AND TEMPERING OPERATIONS.
2) MATERIAL SPECIFICATIONS OF AISI OR EN NUMBERS ARE NOT BINDING. HOWEVER, MINIMUM TENSILE STRENGTH IS BINDING e.g. IN PLACE OF EN 26 , EN 24 COULD BE USED PROVIDED THE SUBSTITUTE MATERIAL HAS EQUIVALENT TENSILE STRENGTH.

PROVISION OF CLUTCHES :

TWO CLUTCHES SHALL BE PROVIDED SUCH THAT ONE SHALL UNCOUPLE SCANNING MOTOR WHEN TRACKING , AND OTHER SHALL UNCOUPLE TRACKING MOTOR WHILE SCANNING
BIDDER XXX SHALL PROVIDE SPACING FOR MOUNTING OF CLUTCHES AS FOLLOWES,

1) AT INPUT SHAFT OF 250:1 GEAR DRIVE UNCOUPLING OR COUPLING SERVO MOTOR.
2) AT INPUT SHAFT FOR SCANNING SPEED (i.e. SHAFT 2 OF 250 :1 GEAR DRIVE) UNCOUPLING OR COUPLING SCANNING MOTOR.

NOTES: CONT'D
3) ALL THE SPROCKETS SHOWN IN ANY OF TATA-EBASCO DRAWINGS ARE NOT WITHIN THE SCOPE OF SUPPLY OF THE GEAR DRIVES SELLER. NECESSARY KEY SLOTS SHALL BE MACHINED ON THE OUTPUT SHAFTS OF THE GEAR DRIVES TO MOUNT THE SPROCKETS.THE SIZE OF THE KEY SLOT SHALL BE FURNISHED LATER.
4) ALL BINDING DIMENSIONS ARE MARKED BY ASTERISKS (*)

FOR BID PURPOSES ONLY - 13 6/66

T.I.F.R.
RADIO TELESCOPE

SPUR GEAR DRIVE - 250:1

TATA-EBASCO CONSULTING ENGINEERING SERVICES, BOMBAY.

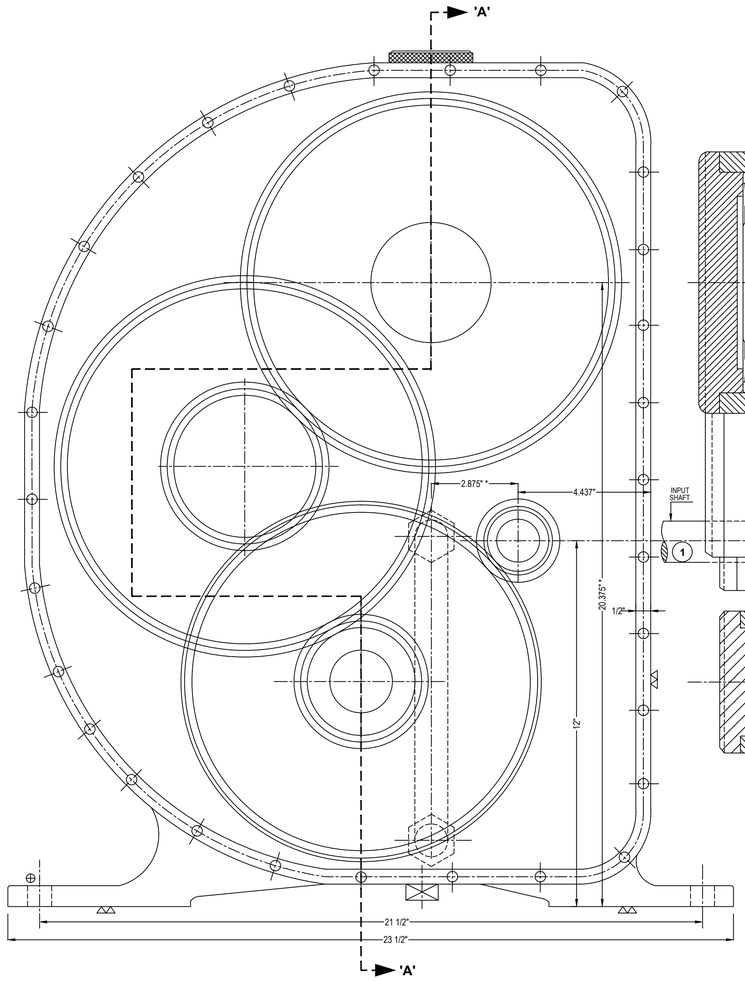
SCALE :- FULL SCALE
DIV. MECH.
DR. MOSESE
CH.

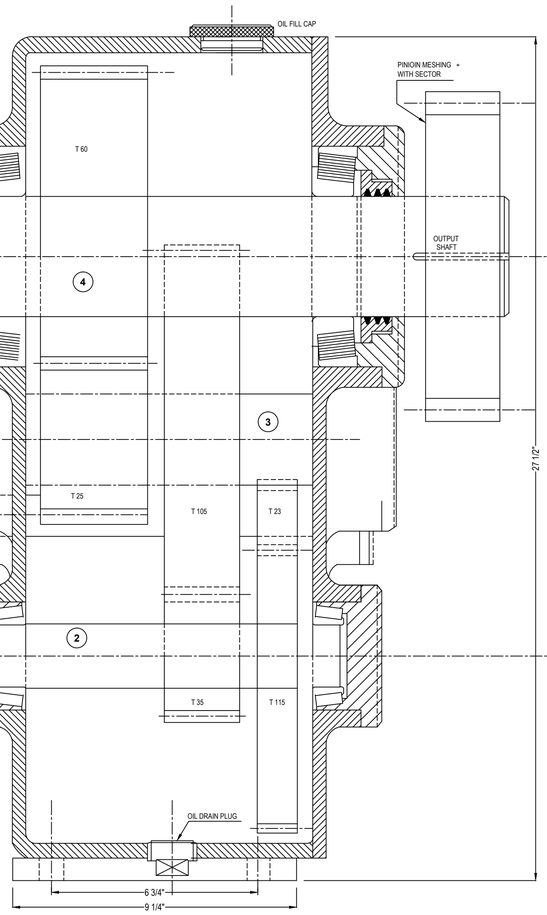
APPROVED

DATE:-
DWG. NO.
TE- 29 - 102

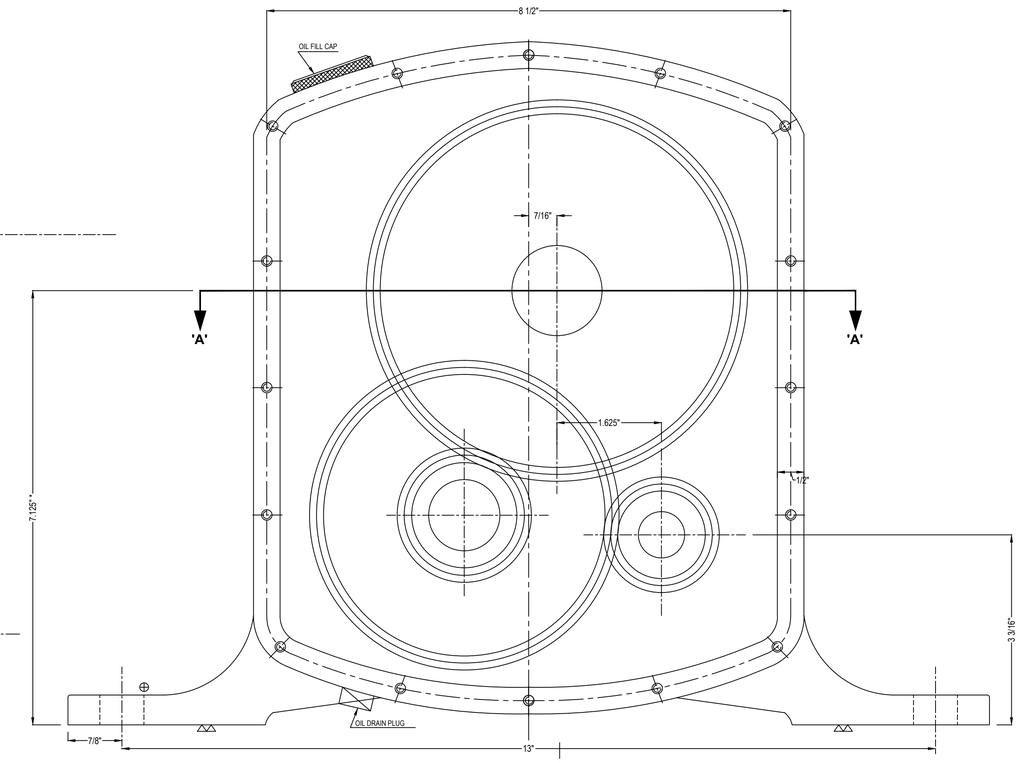
TITLE .

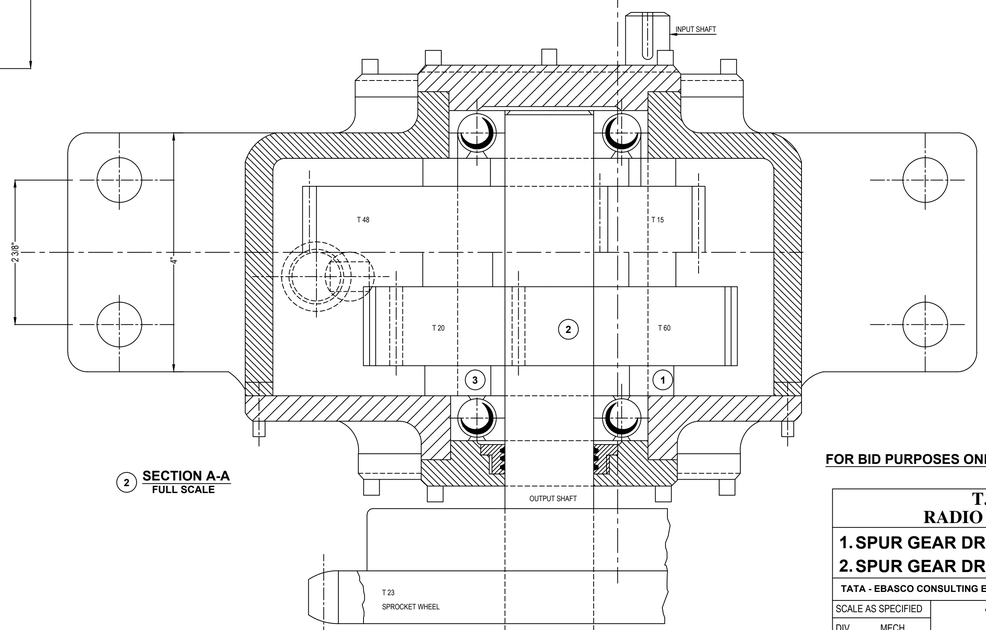
DWG. TE-29-103. S-9





1 **SECTION A-A**
HALF SCALE





2 **SECTION A-A**
FULL SCALE

2 SPUR GEAR DRIVE 9.6:1 Q'TY REQD : FOUR
MINIUM EFFICIENCY REQD. : 81% . INPUT a) HP 12.5 , RPM. 1440

ITEM	MATERIAL		MINIUM TENSILE STRENGTH (PSI)	DIAMETER IN INCHES	DIAMETRAL PITCH	WIDTH IN INCHES	CLEARENCE IN INCHES
	AISI NO.	EN					
SHAFT 1	1063 Q AND T 1000°F	26 Y	180,000	3/4"	--	--	--
PINION	C 1095	11 V	141,000	1 1/2"	10	1 1/8"	0.157"
SHAFT 2	4063 Q AND T 1000°F	26 Y	180,000	1 1/16"	--	--	--
GEAR	2317 Q AND T 1000°F	11	106,000	4.8"	10	1 1/8"	0.157"
PINION	4063 Q AND T 1000°F	26 Y	180,000	2"	10	1 5/16"	0.157"
SHAFT 3	4063 Q AND T 1000°F	26 Y	180,000	1 1/2"	--	--	--
GEAR	3150 Q AND T 1000°F	19 W	151,000	6"	10	1 5/16"	0.157"

FOR NOTES AND PROVISION FOR CLUTCHES, REFER DWG. NO. TE 29 - 102

2 SPUR GEAR DRIVE 36:1 Q'TY REQD : 24
MINIUM EFFICIENCY REQD. : 73%

INPUT HP
a1) 0.047 b1) r.p.m. 1 (TRACKING)
a2) 1.08 b2) r.p.m. 25 (SLEWING)
a3) 0.14 B3) r.p.m. 3 (SCANNING)

ITEM	MATERIAL		MINIUM TENSILE STRENGTH (PSI)	DIAMETER IN INCHES	DIAMETRAL PITCH	WIDTH IN INCHES	CLEARENCE IN INCHES
	AISI NO.	EN					
--	--	--	--	--	--	--	--
SHAFT 1	4063 Q AND T 1000°F	26 Y	180,000	1 3/8"	--	--	--
PINION	4063 Q AND T 1000°F	26 Y	180,000	2.3	10	1 5/16	0.157
SHAFT 2	4063 Q AND T 1000°F	26 Y	180,000	2	--	--	--
GEAR	C 1095	11 V	141,000	11 1/2"	10	1 5/16	0.157
PINION	4340 Q AND T 800°F	26 Z	222,000	4	10	2.6	0.157
SHAFT 3	4340 Q AND T 800°F	28 Z	222,000	2 3/4"	--	--	--
GEAR	4340 Q AND T 800°F	26 Z	222,000	8	10	2.6	0.157
PINION	4340 Q AND T 800°F	26 Z	222,000	5	5	3 1/2"	0.314
SHAFT 4	4340 Q AND T 800°F	26 Z	222,000	3 3/4"	--	--	--
GEAR	4340 Q AND T 1000°F	26 Y	180,000	12	5	3 1/2"	0.314

+ THESE PINIONS ARE NOT WITHIN GEAR DRIVES SELLER SCOPE OF SUPPLY. NECESSARY KEY SLOT SHALL BE MACHINES ON THE OUTPUT SHAFT OF THE GEAR DRIVE TO MOUNT THE PINION.THE SIZE OF THE KEY SLOT SHALL BE FURNISHED LATER.

⊕ NUMBER AND SIZE OF BOLTS REQUIRED SHALL BE FURNISHED BY SELLER.

FOR BID PURPOSES ONLY - 8 7/66

TITLE	CHECKED	DATE
ELECTRICAL SUPERVISOR		
MECHANICAL SUPERVISOR		
CIVIL SUPERVISOR		
TITLE	CLEARED	DATE
ELECTRICAL ENGINEER		
MECHANICAL ENGINEER		
CIVIL ENGINEER		

REV. NO.	REVISIONS	BY	CLEARED CIVIL	CLEARED ELEC	CLEARED MECH	APPD.	DATE
		Y.M.G.					
		V.D.S.					
		Y.M.G.					3/7/67.

T.I.F.R.
RADIO TELESCOPE

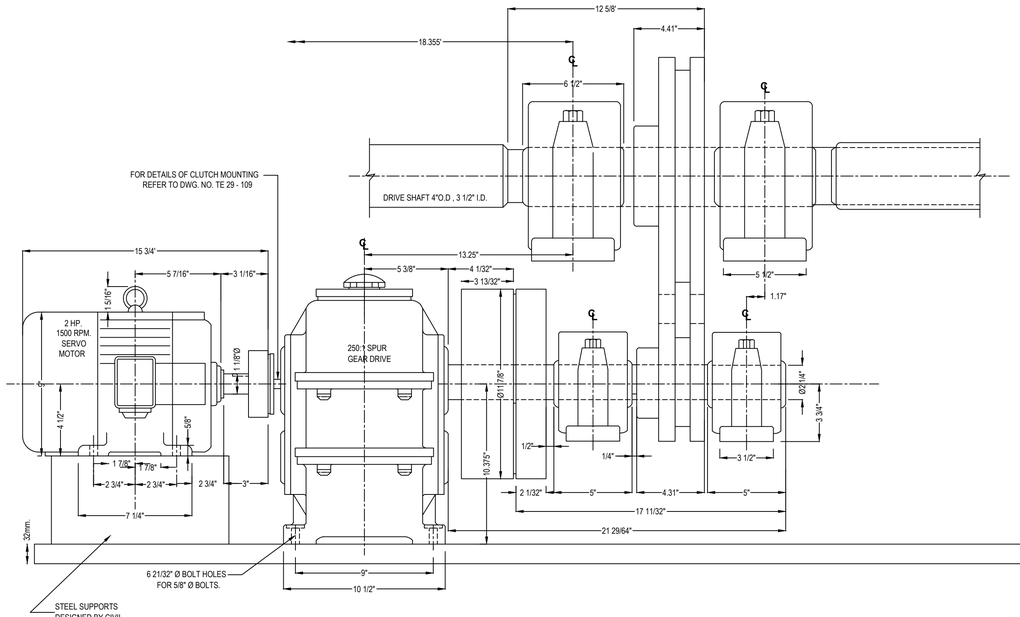
1. SPUR GEAR DRIVE - 36:1
2. SPUR GEAR DRIVE - 9.6:1

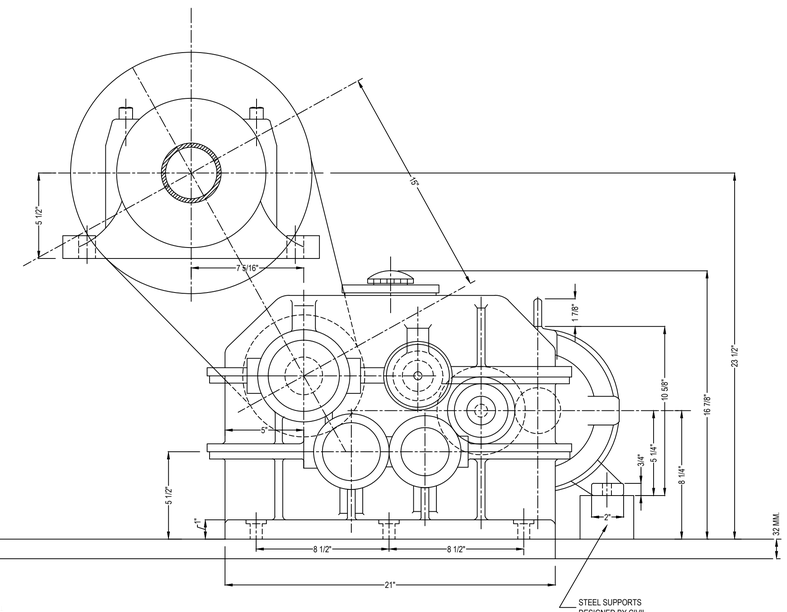
TATA - EBASCO CONSULTING ENGINEERING SERVICES, BOMBAY.

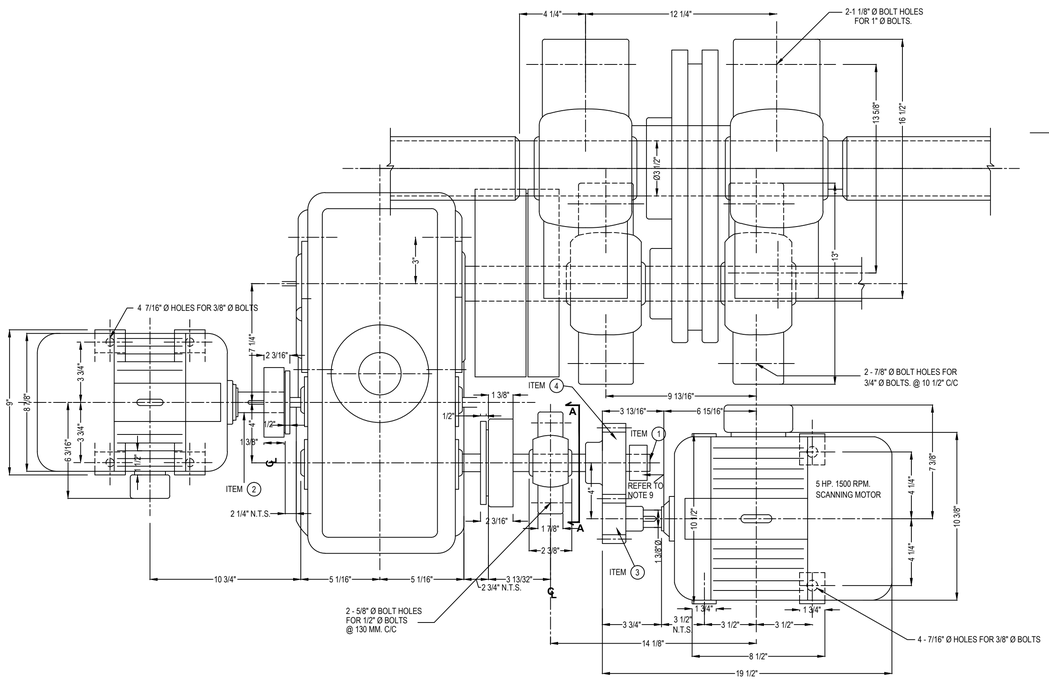
SCALE AS SPECIFIED	APPROVED	DATE
DIV. MECH		DWG. NO.
DR. MOSESE		TE- 29 - 103
CH.		

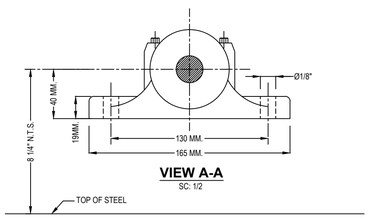
TITLE: G.A. GEAR DRIVES - 2

DWG. TE-29-104





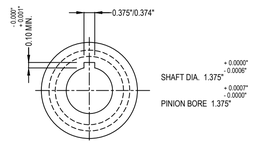




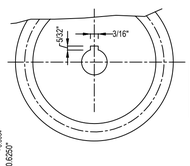
VIEW A-A
SC: 1/2

	NO. OF TEETH	D.P.	DIA.	TOTAL WIDTH	WIDTH	MATERIAL	
PINION	30	10	3"	2.75"	1.5"	En 8 OR EQUI.	Sc = 1400 psi.
GEAR	50	10	5"	2.75"	1.5"		Sb = 19000 psi.

PINION & GEAR DETAILS



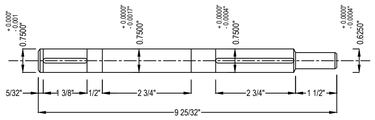
ITEM ③ PINION KEYWAY SC: 1/2" = 1"
KEYSIZE ; NOM. (W X T X L) = 3/8" X /14" X 3"



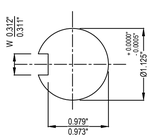
GEAR BORE . 0.7500 +0.0005" -0.0000"

SHAFT Ø	NOMINAL WIDTH	NOMINAL THK.	MAX. W. IN SHAFT & HUB	MIN. DEPTH IN SHAFT	MIN. DEPTH IN HUB	TOLERANCES ON KEY W & T	TOLERANCES ON KEYWAY WIDTH	TOLERANCES ON KEYWAY DEPTH	LENGTH
0.7500"	3/16"	5/32"	0.1875"	0.0935"	0.0648"	+ 0.0010 - 0.0010"	+ 0.0010" - 0.0000"	+ 0.0010" - 0.0000"	2 3/4"

ITEM ④ GEAR KEYWAY SC: 1/2" = 1"
KEYSIZE ; NOM. (W X T X L) = 3/16" X 5/32" X 2 3/4"



DETAIL OF ITEM ①



CLUTCH BORE TOL. : 1.125 +0.0006" -0.0000"
KEYSIZE NOM. (W X t) = 5/16" X 7/32" (TOL. ON WET OF KEYWAY . + 0.001")

MIN. DEPTH OF KEYWAY IN CLUTCH	WIDTH OF KEYWAY IN CLUTCH BORE SAME AS THAT OF MOTOR SHAFT	LENGTH OF KEYWAY REQD. FOR DRIVING PART OF CLUTCH
0.072"		1.375"

DETAIL OF ITEM ② FOR CLUTCH BORE & KEYWAY SIZE

NOTES :

1. ALL DIMENSIONS MARKED WITH ASTERISKS ARE CRITICAL. FOR TOLERANCES ON THOSE DIMENSIONS REFER TO NEW ALLENBERRY DWG. NO. 6206340
2. ALL CHAMFERS ARE 45° X 1/16"
3. KEYS AND KEYWAYS ARE NOT SHOWN FOR SIMPLICITY
4. ALL DIMENSIONS ARE ±1/64"
5. BUSHING & BUSHING PEDESTAL SHALL BE PROVIDED BY T.I.F.R. THE INSTALLATION BOLT HOLES SHALL BE DRILLED AT SITE.
6. FOR MOUNTING DETAILS REFER TO SERVO MOTOR STRUCTURE & DETAILS DWG. NO. 29 - 509 R1.

REFERENCE DWGS. :

1. NEW ALLENBERRY DWGS. 250.1 GEAR DRIVE - NO. 6206340
2. ELECTRO - MAGNETIC CLUTCH - FAWICK CLUTCH DATA SH. NO. 205.1
3. SPROCKETS - DIAMOND CHAIN CO. SC - 933 & SC - 934
4. TATA-EBASCO DWG. NO. TE 29 - 101 . SH.1 & 2
5. MAWDLEY'S LTD. CATALOGUE NO. A1-1512 FOR MOTOR DETAILS.

TITLE	CHECKED	DATE
ELECTRICAL SUPERVISOR		
MECHANICAL SUPERVISOR		
CIVIL SUPERVISOR		
TITLE	CLEARED	DATE
ELECTRICAL ENGINEER		
MECHANICAL ENGINEER		
CIVIL ENGINEER		

REV. NO.	REVISIONS	BY	CLEARED CIVIL	CLEARED ELEC	CLEARED MECH	APPD.	DATE
1	INCORPORATED SERVO & SCANNING MOTOR DETAILS.	BEN HUR					4/11/67.
2	INCORPORATED BUSHING & BUSHING PEDESTAL ON ITEM NO. 1	BEN HUR					24/1/68
3	CORRECTED ' TOP OF STEEL ' DATUM LINE.	BEN HUR					25/12/68.

T.I.F.R.
RADIO TELESCOPE

GENERAL ARRANGEMENT
GEAR DRIVES - 2

TATA-EBASCO CONSULTING ENGINEERING SERVICES, BOMBAY.

SCALE :- 1/4":1" | APPROVED | DATE:- 28/9/67.

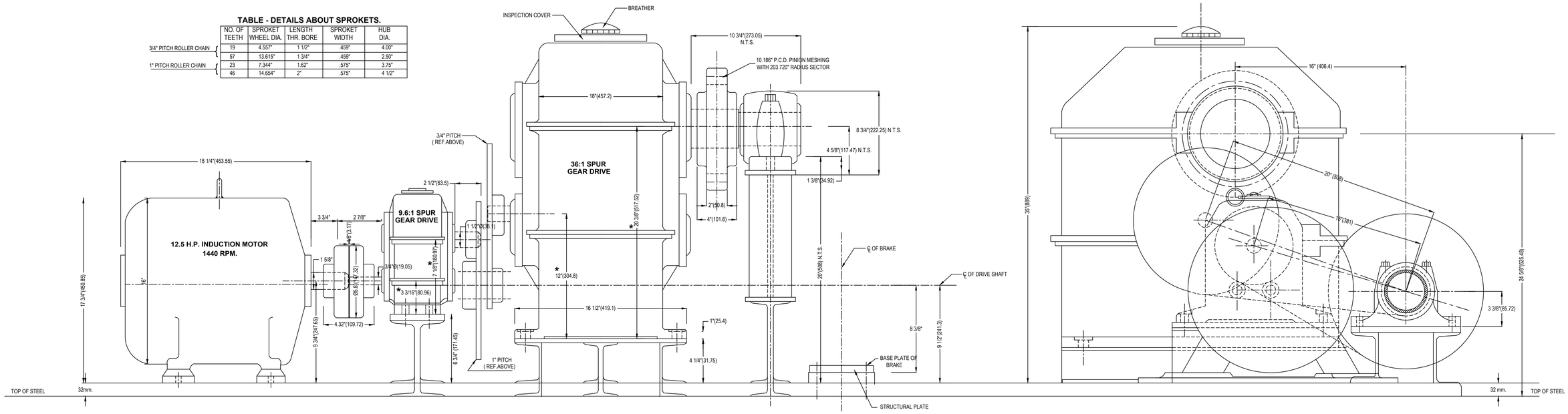
DIV. MECH.
DR. BEN HUR S.
CH.

DWG. NO.
TE- 29 - 104
R - 3

TITLE: GENERAL ARRANGEMENT - GEAR DRIVES--1 DWG. TE-29-104

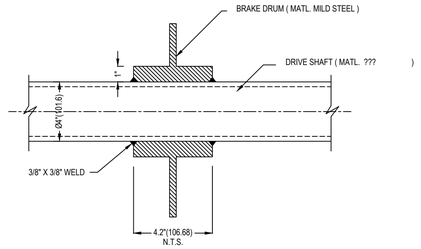
TABLE - DETAILS ABOUT SPROKETS.

	NO. OF TEETH	SPROKET WHEEL DIA.	LENGTH THR. BORE	SPROKET WIDTH	HUB DIA.
3/4" PITCH ROLLER CHAIN	19	4.557"	1 1/2"	.459"	4.00"
	57	13.615"	1 3/4"	.459"	2.50"
1" PITCH ROLLER CHAIN	23	7.344"	1.62"	.575"	3.75"
	46	14.654"	2"	.575"	4 1/2"



ELEVATION

PLAN

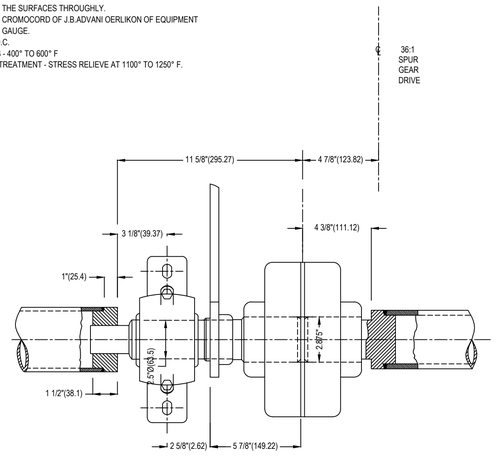


DET. 'A'

WELDING OF BRAKE DRUM TO DRIVE SHAFT

WELDING PROCEDURE:

1) CLEAR BOTH THE SURFACES THROUGHLY.
2) ELECTRODE :CROMOCORD OF J.B.ADVANI OERLIKON OF EQUIPMENT
3) THIKNESS 10 GAUGE.
4) CURRENT : D.C.
5) PREHEATING - 400° TO 600° F
6) POST WELD TREATMENT - STRESS RELIEVE AT 1100° TO 1250° F.



(FOR TWENTY PLATFORMS)
i.e. EXCEPT N4,N10,S4 & S10

NOTES:-

1. ALL DIMENSIONS MARKED WITH ASTERIKS ARE CRITICAL. FOR TOLERANCES ON THESE DIMENSIONS REFER TO NEW ALLENBERRY DWG. NOS. 6203337 & 6205339
2. ALL CHANNELS ARE 45° X 1/18"
3. KEYS AND KEYWAYS ARE NOT SHOWN FOR SIMPLICITY.
4. ALL DIMENSIONS ARE ±1/64" UNLESS OTHERWISE SPECIFIED.
5. PLAN AND SECTIONS ARE AS VIEWED OVER A PLANE 11° - 22.9° TO THE HORIZONTAL ON DWG. NO.TE29-101 SH.1 AND SH.2.
6. THE 12.5 BHP. SLEWING MOTOR, THE 9.6:1 SLEWING GEAR BOX, THE INTERCONNECTING COUPLING BETWEEN THE MOTOR AND THE GEAR BOX NAD THE RELEVANT INTER-CONNECTING SHAFT OF THE DRIVE SHAFTS ARE NOT TO BE INSTALLED ON THE PLATFORMS OTHER THAN N-10 , N-4 , S-4 & S-10.
7. N.T.S. DENOTES NOT TO SCALE.

REFERENCE DWGS:-

1. 12.5 HORSE POWER MOTOR G.C.C.P. DIM. SHEET NO. KGA-8/6/7.
2. 9.6:1 & 36"4 SPUR GEAR DRIVE NEW ALLENBERRY. DWG. NOS. 62035337 & 8205339.
3. SPROKETS DIAMOND CHAIN - DWG. NOS. SC - 929.930,931,932.
4. PINION WHEEL MAZGAON DOCK LTD. NO.G 9399/3.
5. PLUMMER BLOCKS OF SMR , MPG & MPK.
6. ??? ? ? ???????????
7. BRAKE - JAGAT ENGG CO. DWG. NO. SH-40021.
8. FOR MOUNTING DETAILS REFER TO 'MISCELLANEOUS DETAILS' DWG. NO. TE29-506 R5.

TITLE	CHECKED	DATE
ELECTRICAL SUPERVISOR		
MECHANICAL SUPERVISOR		
CIVIL SUPERVISOR		
TITLE	CLEARED	DATE
ELECTRICAL ENGINEER		
MECHANICAL ENGINEER		
CIVIL ENGINEER		

REV. NO.	REVISIONS	BY	CLEARED CIVIL	CLEARED ELEC	CLEARED MECH	APPD.	DATE
R-1	INCORPORATED DETAILS OF ELECTRIC BRAKE , THE FLEXIBLE COUPLING BETWEEN THE 12.5 H.P. MOTOR AND 9.6:1 GEAR DRIVE, SPROKET WHEELS DIMENSIONAL DETAILS PLUMMER BLOCK FOR THE BEARING ON THE OUTPUT SHAFT OF 36:1 GEAR DRIVE						
R-2	INCORPORATED WELDING DETAILS OF BRAKE DRUM TO DRIVE SHAFT.						
R-3	CHANGED CC DISTANCE OF MOTOR INSTALLATION BOLTS FROM 23" TO 13"						
R-4	CORRECTED TOP OF STEEL DATUM LINE	BAS					10/12/65

SH. 1

T.I.F.R.
RADIO TELESCOPE

GENERAL ARRANGEMENT - GEAR DRIVES--1

TATA-EBASCO CONSULTING SERVICES, BOMBAY.

SCALE :- 1/4" = 1"	APPROVED	DATE:- 7/6/67.
DIV. MECH. DR. CH.		DWG. NO. **TE29-104** R-4

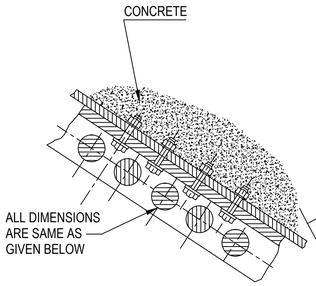
LENGTH OF SEGMENTS

FIVE MIDDLE SEGMENTS EACH = 7.109 FT.
7' - 1 5/16"

END SEGMENTS = 5.1875'
5' - 2 1/4"

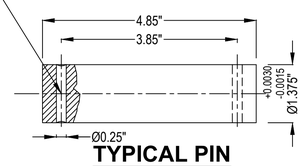
GAP BETWEEN SEGMENT = 1 M/M = 0' - 0.04"

LENGTH OF ONE SECTOR = 45' - 11 1/16"

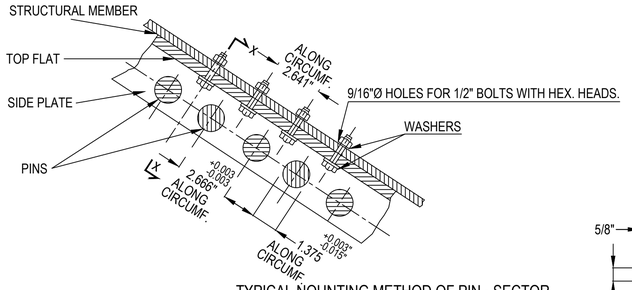


TYPICAL NOUNTING METHOD OF PIN - SECTOR
ON THE STRUCTURAL MEMBER
UNDER THE COUNTERWEIGHT CONCRETE

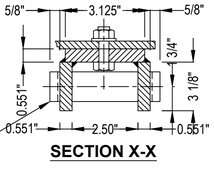
1/4" Ø DIA. POSITIONING PINS
TO BE WELDED TO THE SIDE PLATES



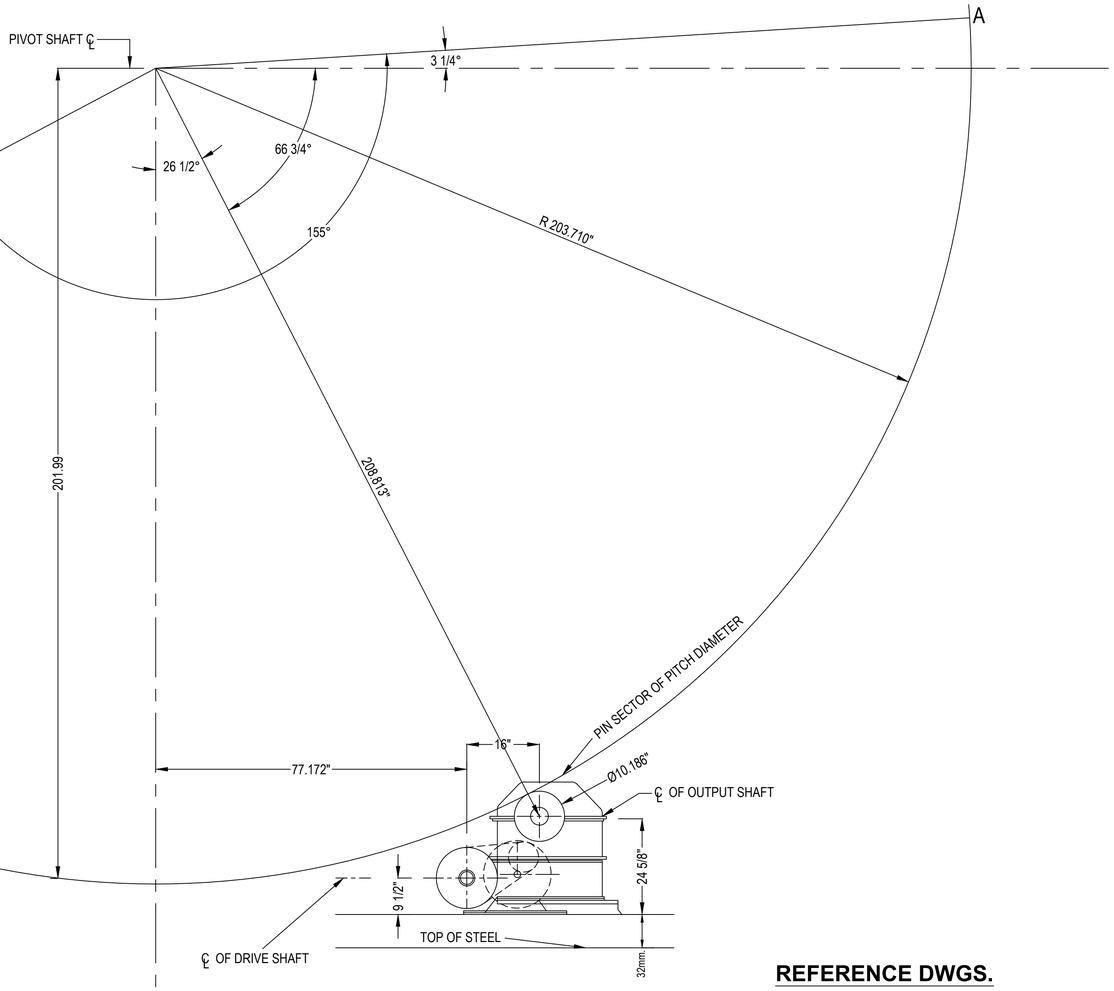
TYPICAL PIN



TYPICAL NOUNTING METHOD OF PIN - SECTOR
ON THE STRUCTURAL MEMBER
EXCEPT UNDER THE COUNTERWEIGHT CONCRETE
POSITIONING PIN



SECTION X-X



REFERENCE DWGS.

1) NEW ALLENBERRY DWG NOS. 6203337 AND 6205339 FOR 9.6 & 36:1 SPUR GEAR DRIVE.
2) TE 29 - 104 - GENERAL ARRANGEMENT - GEAR DRIVE - 1
3) TE 29 - 502 INTERMEDIATE FRAME
4) MAZGAON DOCK LTD. DWG. NOS. G / 9399 / 2F, G / 9399 / 3D AND G / 9399 / 4A. FOR PIN SECTOR PINION WHEEL AND PIN RESPECTIVELY.

MATERIAL SPECIFICATIONS

ITEM	MATERIAL	TENSILE STRENGTH PSI
PINS	SAE 8620 *	93,800
FLATS & PLATES	ISI - 226 *	60,500 (MIN.)
PINION	EN - 36 *	145,500

* OR EQUIVALENT

PLATES & FLAT SIZES

SIDE PLATES	79.375 MM (3 1/8") X 14 MM.
TOP FLAT	79.375 MM (3 1/8") X 14 MM.

REV. NO.	REVISIONS	BY	CLEARED CIVIL	CLEARED ELEC.	CLEARED MECH.	APPD.	DATE
R0 R1.	CORRECTED TOP OF STEEL DATUM LINE						20/12/68.

FOR BID PURPOSE ONLY.

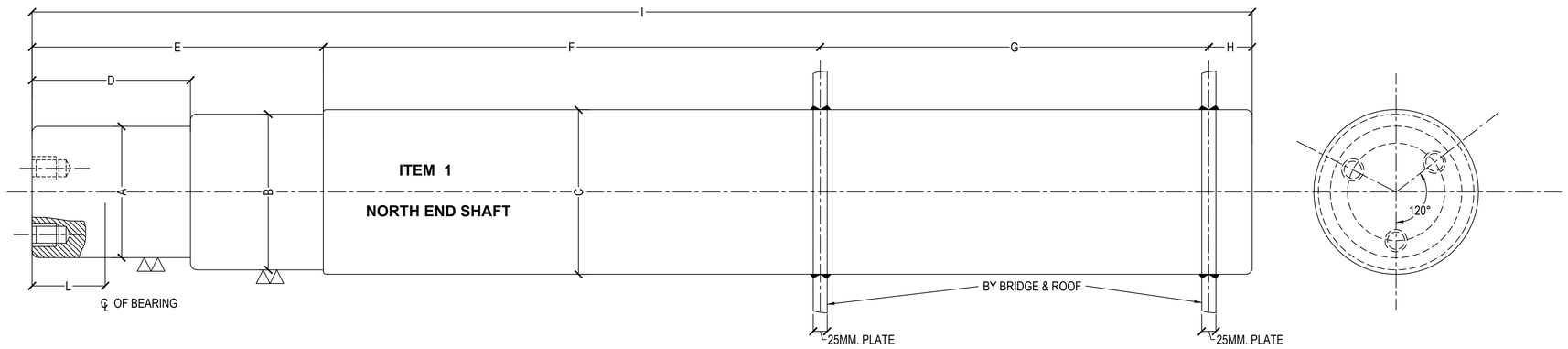
T.I.F.R.

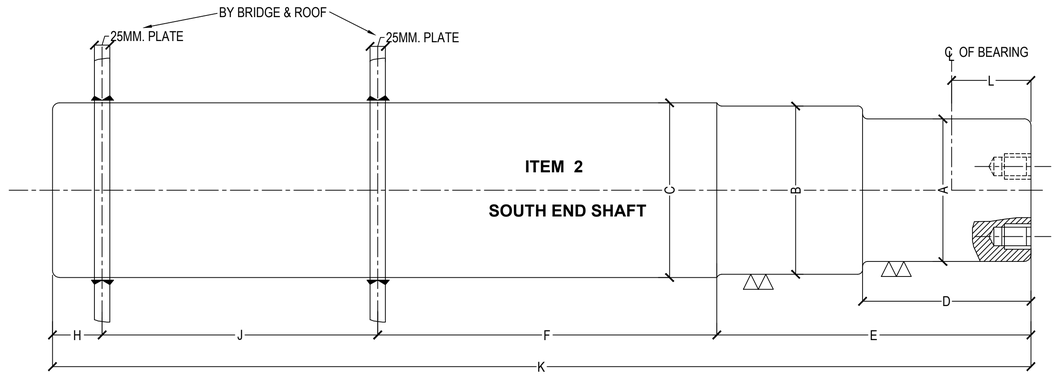
RADIO TELESCOPE

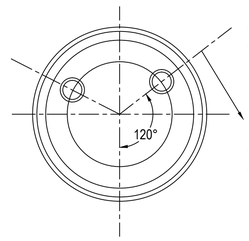
GENERAL ARRANGEMENT - PIN SECTOR - PINION AND FEAR DRIVES

TATA - EBASCO CONSULTING ENGINEERING SERVICES , BOMBAY.

SCALE :- NONE	APPROVED	DATE. 12-6-67.
DIV. MECH.		DWG. NO.
DR. MOSESE		TE-29-105 R1
CH.		







INTERMEDIATE FRAME

3 - M16 HOLES TO BE TAPPED , TO A DEPTH OF 20 MM. , EQUALLY SPACED (AT 120 °) ON 80 MM. P.C.D.
(SAME APPLIES TO ITEM NO. 1 ABOVE)

END FRAME

3 - M16 HOLES TO BE TAPPED , TO A DEPTH OF 25 MM. , EQUALLY SPACED (AT 120 °) ON 100 MM. P.C.D.

	A	B	C	D	E	F	G	H	I	J	K	L
INTERMEDIATE FRAME	Ø4.2500" +0.0000" -0.0034"	Ø125 +0.00 -0.50	Ø165	132	200	60	310	35	605	398	693	60
	Ø110 +0.0000" -0.0039"	Ø125 +0.00 -0.50	Ø165	132	200	60	310	35	605	398	693	60
END FRAME	Ø5.2500 +0.0000" -0.0039"	Ø150 +0.00 -0.50	Ø165	159	225	49	310	35	619	398	707	74
	Ø135 +0.0000" -0.0100"	Ø150 +0.00 -0.50	Ø165	159	225	49	310	35	619	398	707	74

NOTES:

1) ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED.
2) DIMENSIONS G,H, & J ARE FURNISHED TO FACILITATE MOUNTING OF STRUCTURAL PART OF THE PIVOT SHAFT.
3) ALL RADII UNLESS OTHERWISE SPECIFIED SHALL BE 1/8" RADIUS.

REFERENCE DWGS.

1) TE. 29 -503 " INTERMEDIATE FRAME DETAILS " (FOR PIVOT SHAFT ASSEMBLY, REFER TO DETAIL 'N'.
2) SKF. DWG. NO. I - 4908 , " CRT PIVOT SHAFT BEARING HOUSING "

INTERMEDIATE FRAME BILL OF MATERIAL

ITEM	TENSILE STRENGTH OF THE MATERIAL - PSI.	NOS. REQD.	QTY. OF STEEL
	80,000	22	
	80,000	22	

END FRAME BILL OF MATERIAL

	80,000	2	7000 KG.
	80,000	2	

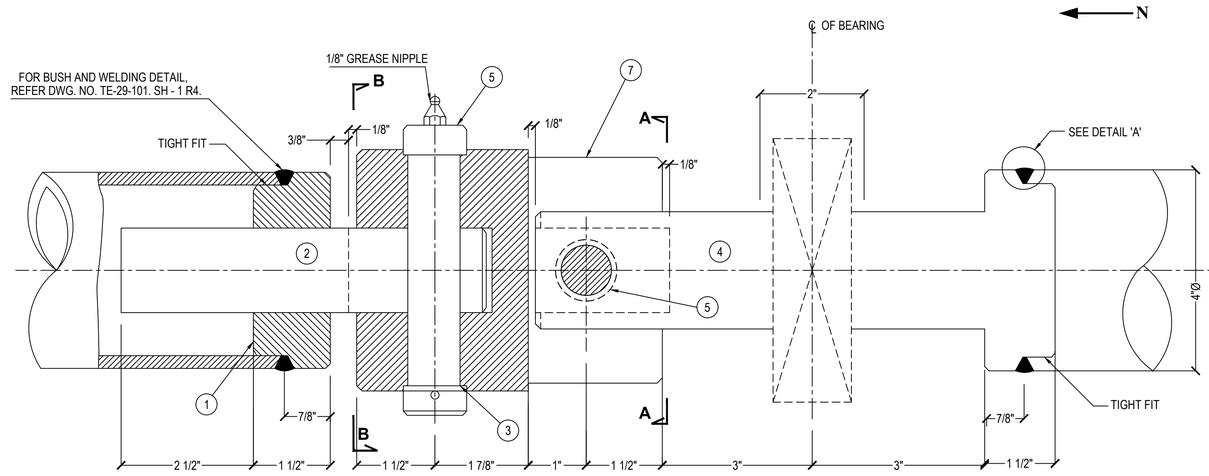
REV. NO.	REVISIONS	BY	CLEARED CIVIL	CLEARED ELEC.	CLEARED MECH.	APPD.	DATE

T.I.F.R.
RADIO TELESCOPE

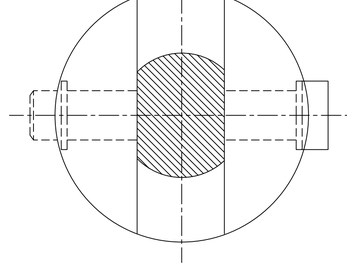
PIVOT SHAFT DETAILS

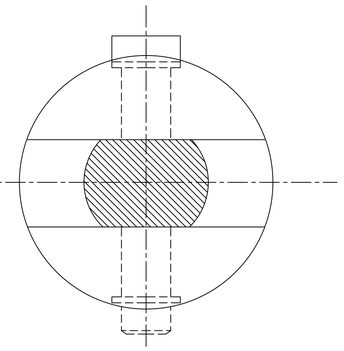
TATA - EBASCO CONSULTING ENGINEERING SERVICES , BOMBAY.

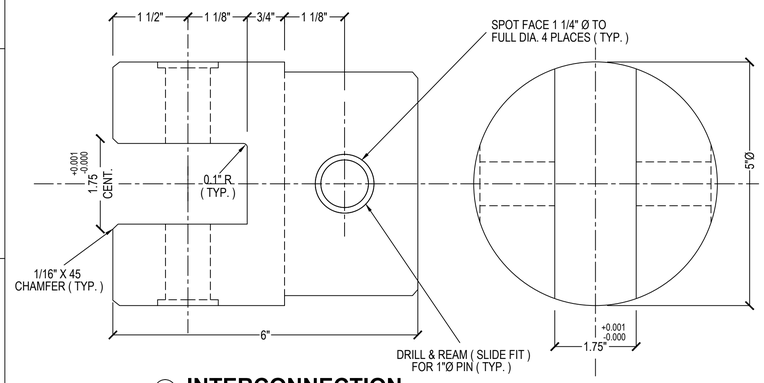
SCALE :- NONE	APPROVED	DATE. 3-10-67.
DIV. MECH.		DWG. NO.
DR. P.K.KUNDLE		TE-29-108
CH.		



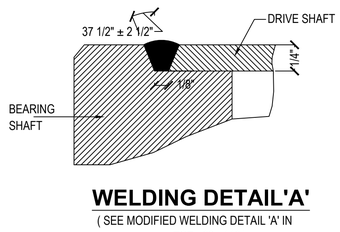
FLEXIBLE INTERCONNECTION (TYPE - C)





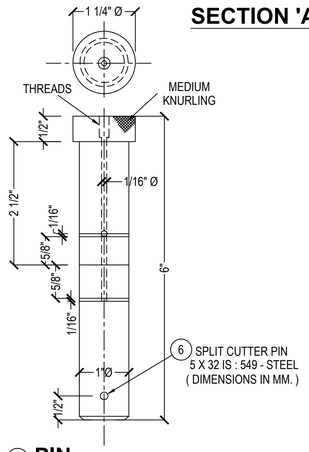


⑦ INTERCONNECTION

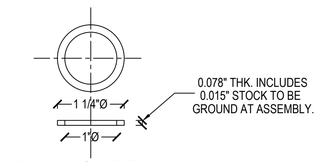


WELDING DETAIL'A'

(SEE MODIFIED WELDING DETAIL 'A' IN TCE - 29 - 116)

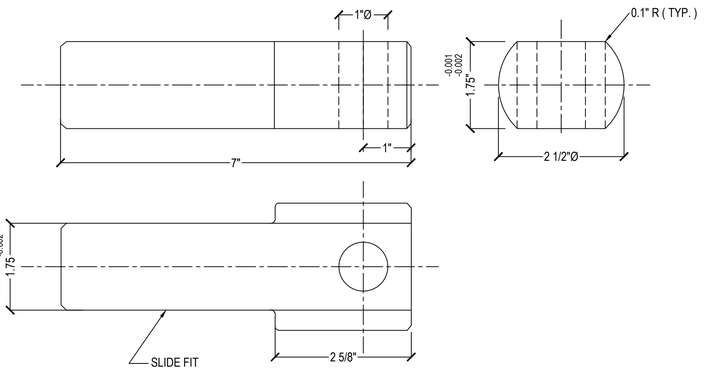


⑤ ⑧ PIN

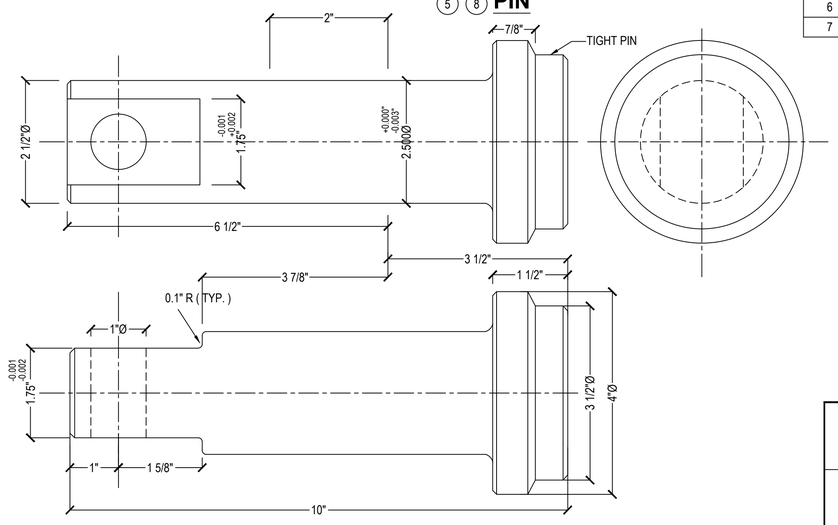


③ WASHER

BILL OF MATERIAL			
SR. NO.	QTY. REQD.	ITEM	MATERIAL
1	25	BUSH	En-9
2	25	SLIDING SHAFT	En-9
3	132	WASHER	M.S.
4	25	BEARING SHAFT	En-9
5	66	PIN 1"Ø	En-9
6	66	SPLIT COTTER PIN	STEEL - IS: 549
7	33	INTERCONNECTION	En-9



② SLIDING SHAFT



④ BEARING SHAFT

NOTES:

- FOR SHAFTS ②&④ HARDEN TO 230 TO 250 Bhn. AND GRID. GROUND FACES TO BE PARALLEL , CONCENTRIC AND SQUARE WITHIN 0.0005"
- FOR BUSH AND INTERCONNECTION ①&⑦ HARDNESS 290 TO 310 Bhn.
- FOR INTERCONNECTION ⑦
- ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
- MINIMUM U.T.S. FOR En-9 SHALL BE 55 TONS / SQ. INCH.

REFERENCE DWGS.

1) TE - 29 - 101 - SH. 1 - R4.
2) TCE - 29 - 116

REV. NO.	REVISIONS	BY	CLEARED CIVIL	CLEARED ELEC.	CLEARED MECH.	APPD.	DATE

"P" (PRELIMINARY) ISSUES ARE NOT TO BE USED FOR CONSTRUCTION / FABRICATION. BUT ARE ISSUED FOR LIMITED PURPOSES. ONLY AS INDICATED IN THE SMALL BLOCK ABOVE THE TOP RIGHT HAND CORNAER OF THE TITLE BLOCK.

CONSTRUCTION / FABRICATION WORK IS PERMITTED ON 'R' (RELEASED) ISSUES ONLY.

INFORMATION CONTAINED WITHIN 'HOLDS' IS NOT RELEASED FOR CONSTRUCTION / FABRICATION FIELD MUST GET DESIGN OFFICE TO CLEAR HOLD'S IN TIME BEFORE PROCEEDING WITH CONSTRUCTION / FABRICATION WORK RELATED TO 'HOLD'S

R1

TATA INSTITUTE OF FUNDAMENTAL RESEARCH
RADIO ASTRONOMY

REVISED
FLEXIBLE INTERCONNECTION

TATA CONSULTING ENGINEERS , BOMBAY

SCALE :- 1 :2

APPROVED

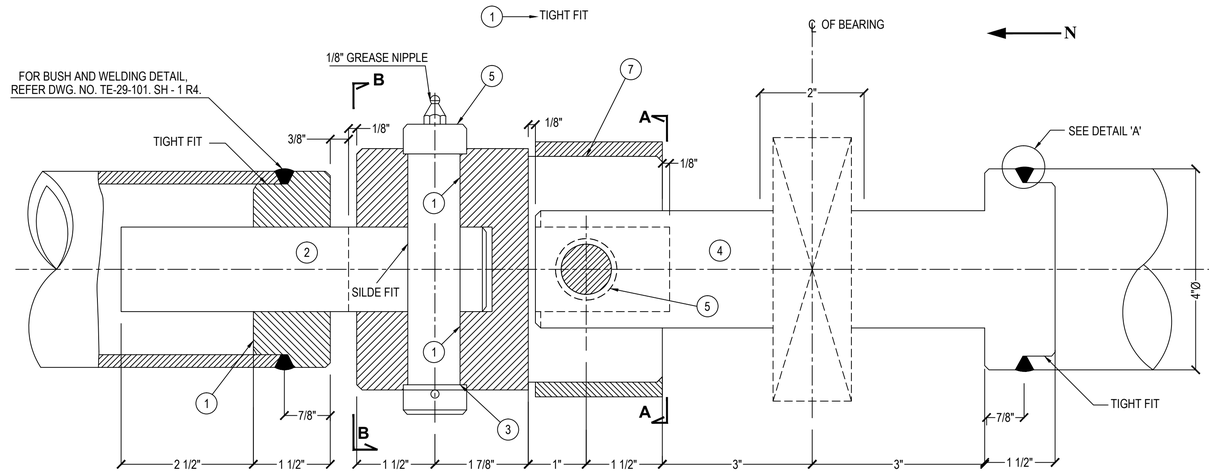
CHIEF ENGINEER DATE. 21-2-72.

DIV. MECH.

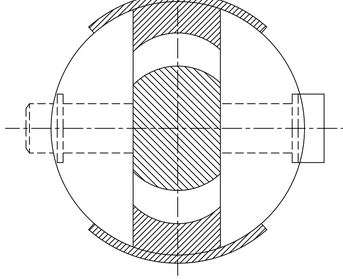
DR. RAJGOPAL P.

CH.

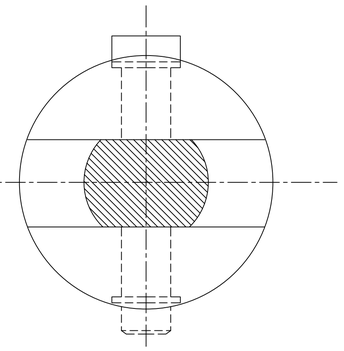
DWG. **TCE-29A-110**



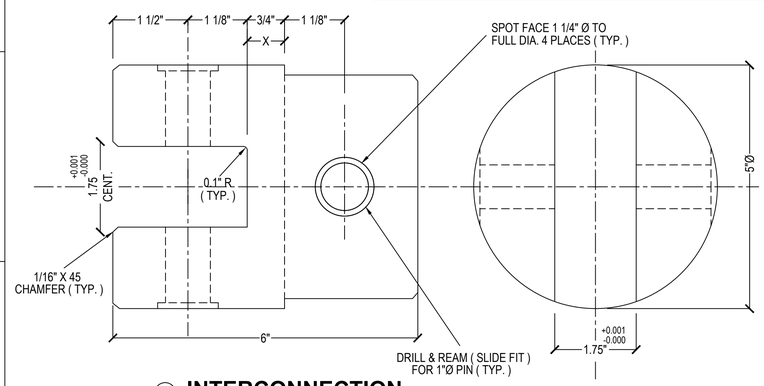
FLEXIBLE INTERCONNECTION (TYPE - C)



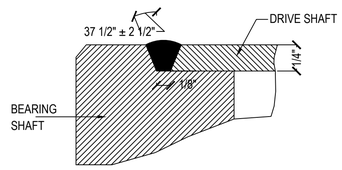
SECTION 'AA'



SECTION 'BB'

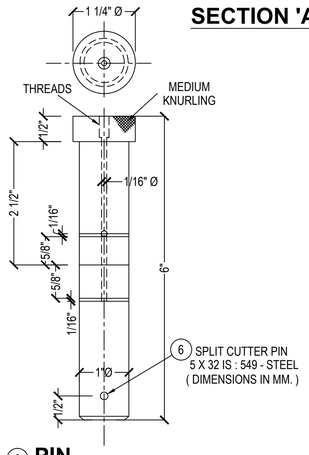


7 INTERCONNECTION

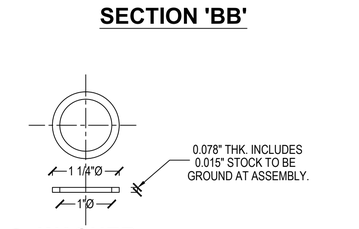


WELDING DETAIL'A'

(SEE MODIFIED WELDING DETAIL 'A' IN TCE - 29 - 116)

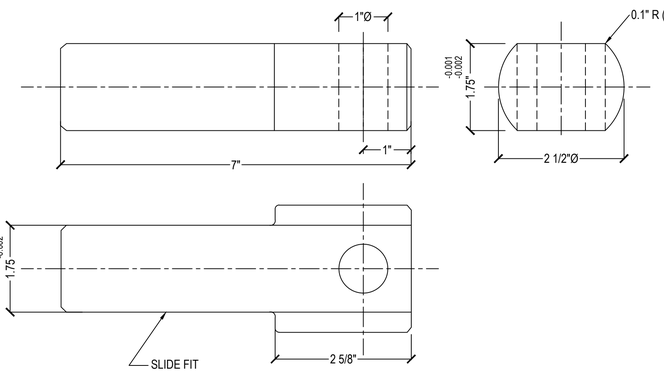


5 8 PIN

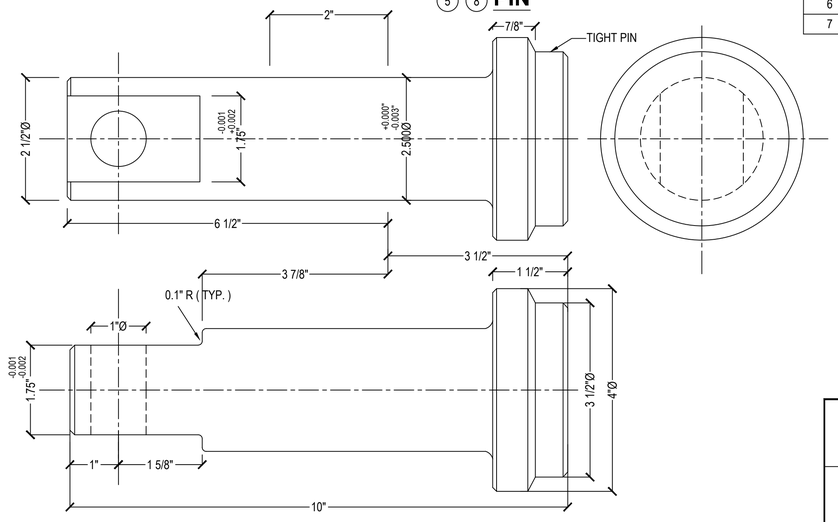


3 WASHER

BILL OF MATERIAL			
SR. NO.	QTY. REQD.	ITEM	MATERIAL
1	25	BUSH	En-9
2	25	SLIDING SHAFT	En-9
3	132	WASHER	M.S.
4	25	BEARING SHAFT	En-9
5	66	PIN 1"Ø	En-9
6	66	SPLIT COTTER PIN	STEEL - IS: 549
7	33	INTERCONNECTION	En-9



2 SLIDING SHAFT



4 BEARING SHAFT

NOTES:

- FOR SHAFTS ②&④ HARDEN TO 230 TO 250 Bhn. AND GRID. GROUND FACES TO BE PARALLEL , CONCENTRIC AND SQUARE WITHIN 0.0005"
- FOR BUSH AND INTERCONNECTION ①&⑦ HARDNESS 290 TO 310 Bhn.
- FOR INTERCONNECTION ⑦
- ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
- MINIMUM U.T.S. FOR En-9 SHALL BE 55 TONS / SQ. INCH.

REFERENCE DWGS.

1) TE - 29 - 101 - SH. 1 - R4.
2) TCE - 29 - 116

REV. NO.	REVISIONS	BY	CLEARED CIVIL	CLEARED ELEC.	CLEARED MECH.	APPD.	DATE

"P" (PRELIMINARY) ISSUES ARE NOT TO BE USED FOR CONSTRUCTION / FABRICATION. BUT ARE ISSUED FOR LIMITED PURPOSES. ONLY AS INDICATED IN THE SMALL BLOCK ABOVE THE TOP RIGHT HAND CORNAER OF THE TITLE BLOCK.

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R1

TATA INSTITUTE OF FUNDAMENTAL RESEARCH
RADIO ASTRONOMY

REVISED
FLEXIBLE INTERCONNECTION

TATA CONSULTING ENGINEERS , BOMBAY

SCALE :- 1 :2

APPROVED

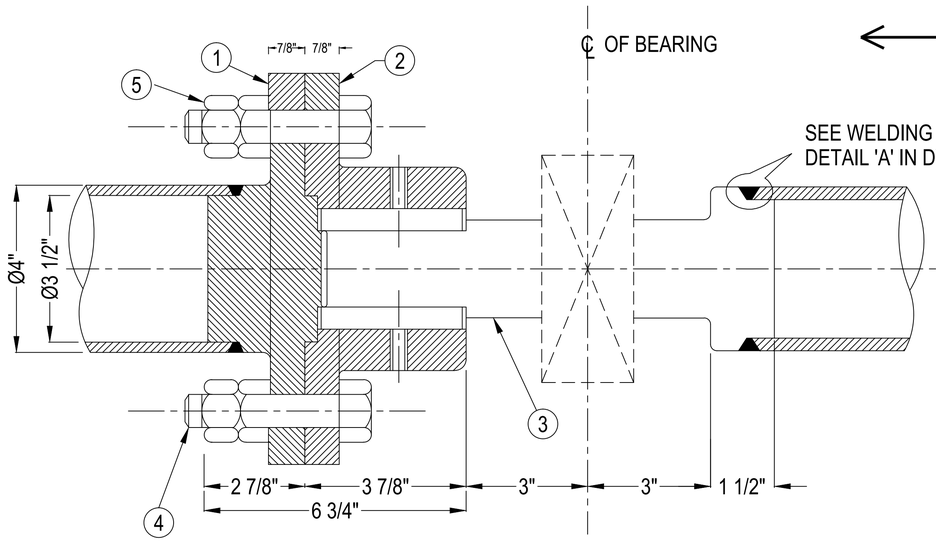
CHIEF ENGINEER DATE. 21-2-72.

DIV. MECH.

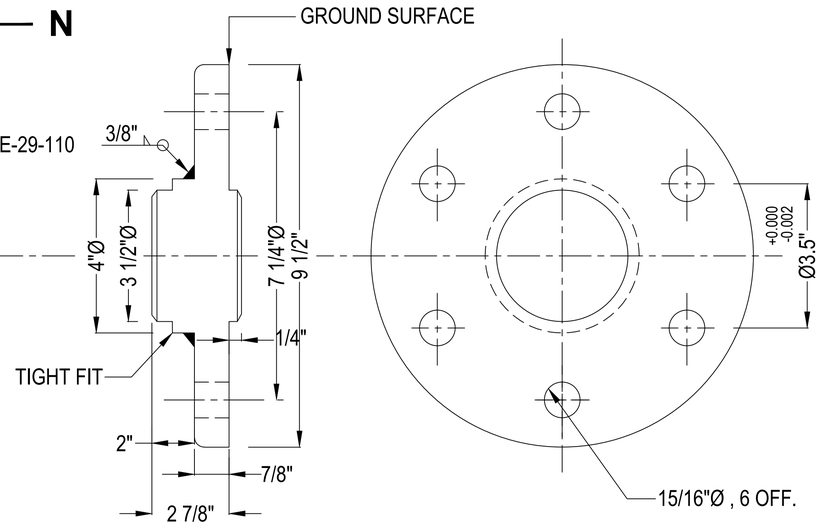
DR. RAJGOPAL P.

CH.

DWG. **TCE-29A-110**



RIGID INTERCONNECTION (TYPE - B)



1 FLANGE

BILL OF MATERIAL			
SR. NO.	QTY.	ITEM	MAT.
1	46	FLANGE	M.S.
2	46	FLANGE	M.S.
3	46	BEARING SHAFT	En-9
4	276	BOLT 7/8"Ø X 4"	M.S.
5	552	NUT 7/8"Ø	M.S.

NOTES:

MINIMUM U.T.S. FOR M.S = 60,000 P.S.I.

MINIMUM U.T.S. FOR En-9 = 55 TONS / □"

ALL DIMENSIONS ARE IN INCHES .

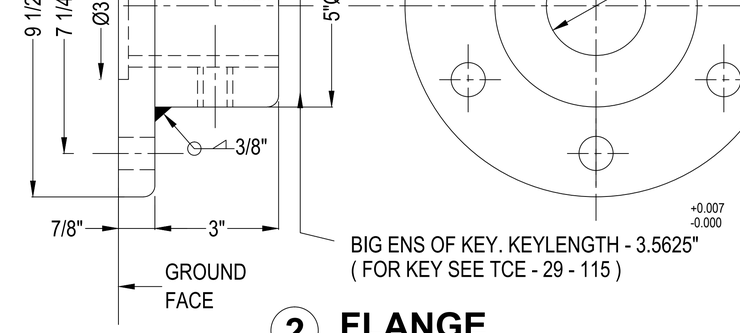
FOR KEY DIMENSIONS SEE TCE - 29 - 111

REFERENCE DWGS:

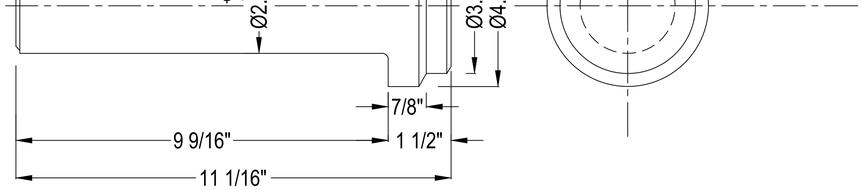
TE - 29 - 101 , SH-1 R4

TCE - 29 - 110 , TCE - 29 - 111

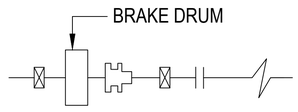
TCE - 29 - 112 , TCE - 29 - 113



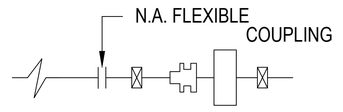
2 FLANGE



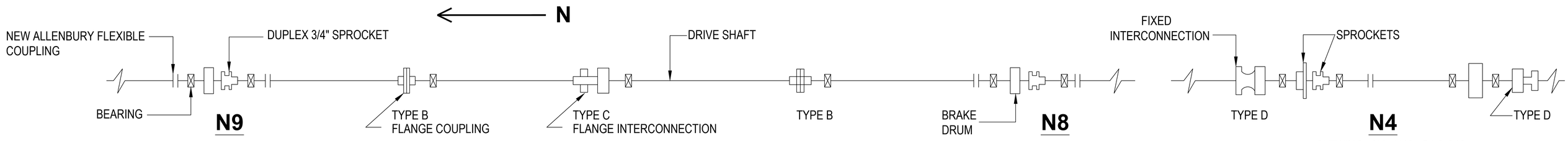
3 BEARING SHAFT



N12



S12



SLEWING - N4 , N10 , S4 & S10

GENERAL LAYOUT - DRIVE SHAFT

	DATE	REVISION	BY	CH	APP

TATA CONSULTING ENGINEERS
BOMBAY
T.I.F.R.
CLIENT
RADIO TELESCOPE
PROJECT

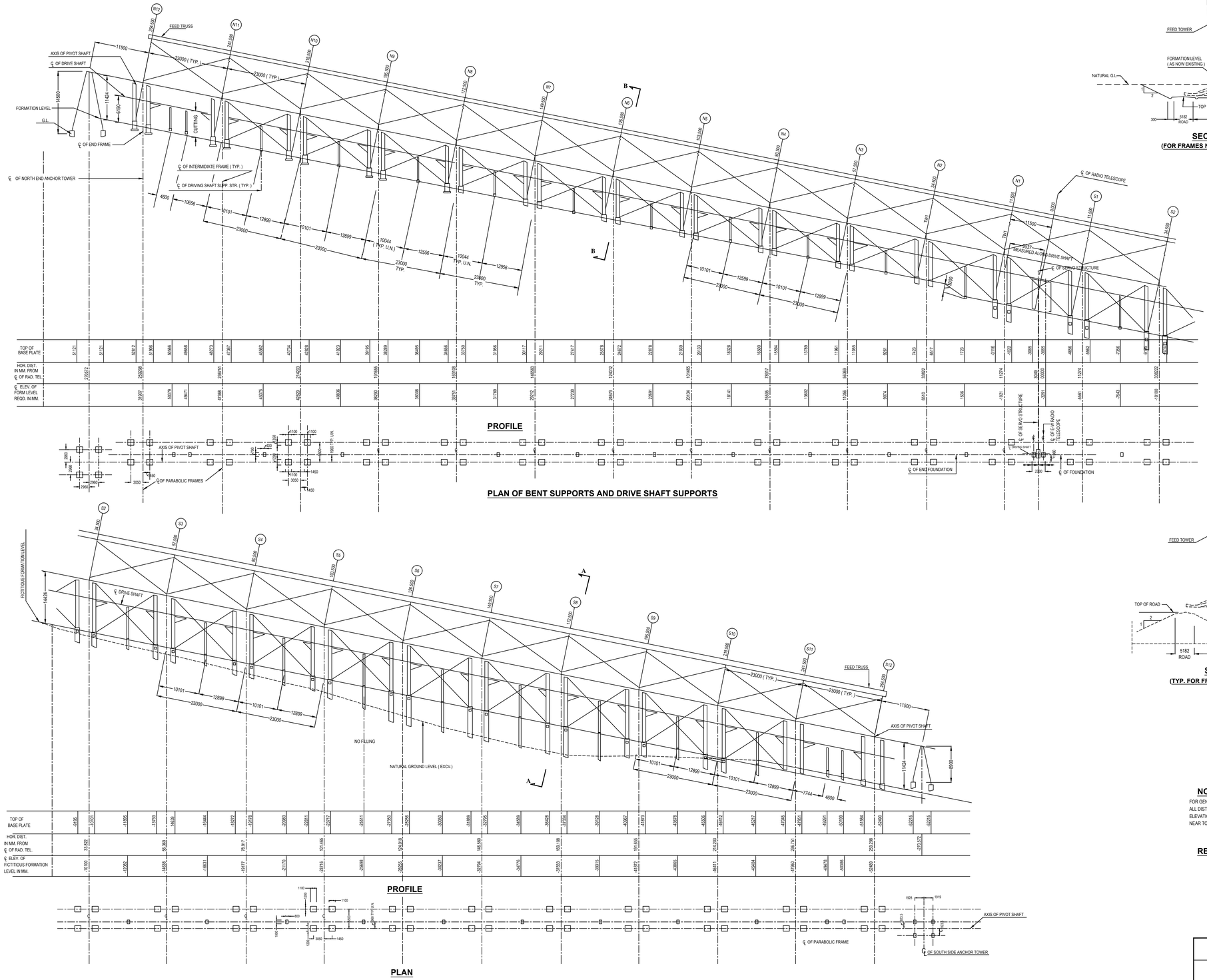
REVISED RIGID INTERCONNECTION

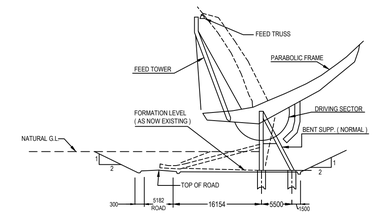
SCALE 1:4 | APPROVED
DIV. MECH.
DR R.P.M.
CH
DWG **TCE - 29 - 114 / R1**

TITLE: PLAN AND PROFILE

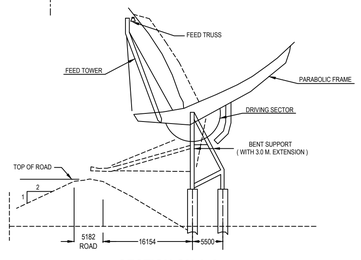
DWG. TE-29-501

T-S6





SECTION ON B-B
(FOR FRAMES N2 TO N11 & S11 (TOTAL NO. 11)



SECTION ON A-A
(TYP. FOR FRAMES S1 TO S10 & N1 (TOTAL NO. 11)

NOTES :

FOR GENERAL NOTES REFER DWG. NO. TE 29-XXX
ALL DISTANCES AND ELEVATIONS MARKED, ARE IN MILIMETERS UNLESS NOTED OTHERWISE.
ELEVATION 6995.20 FT = 2132137 mm. DESIGNATED AS XXXXX
NEAR TOWER LOCATION N1 HAS BEEN ASSUMED AS ZERO BENCH MARK.

REFERENCE DRAWINGS :

SITE SURVEY XXXX.	TE = 29 - 501
INTERMEDIATE FRAME	TE = 29 - 502
INTERMEDIATE FRAME DETAILS.	TE = 29 - 503
FOUNDATION DETAILS.	TE = 29 - 504
BENT SUPP. MISC. STR.	TE = 29 - 506
END FRAMES	TE = 29 - 507
SOUTH END & NORTH END ANCHOR TOERS	TE = 29 - 508
SERVO MOTOR STRUCTURE	TE = 29 - 509

TATA INSTITUTE OF FUNDAMENTAL RESEARCH
RADIO TELESCOPE AT OOTACAMUND

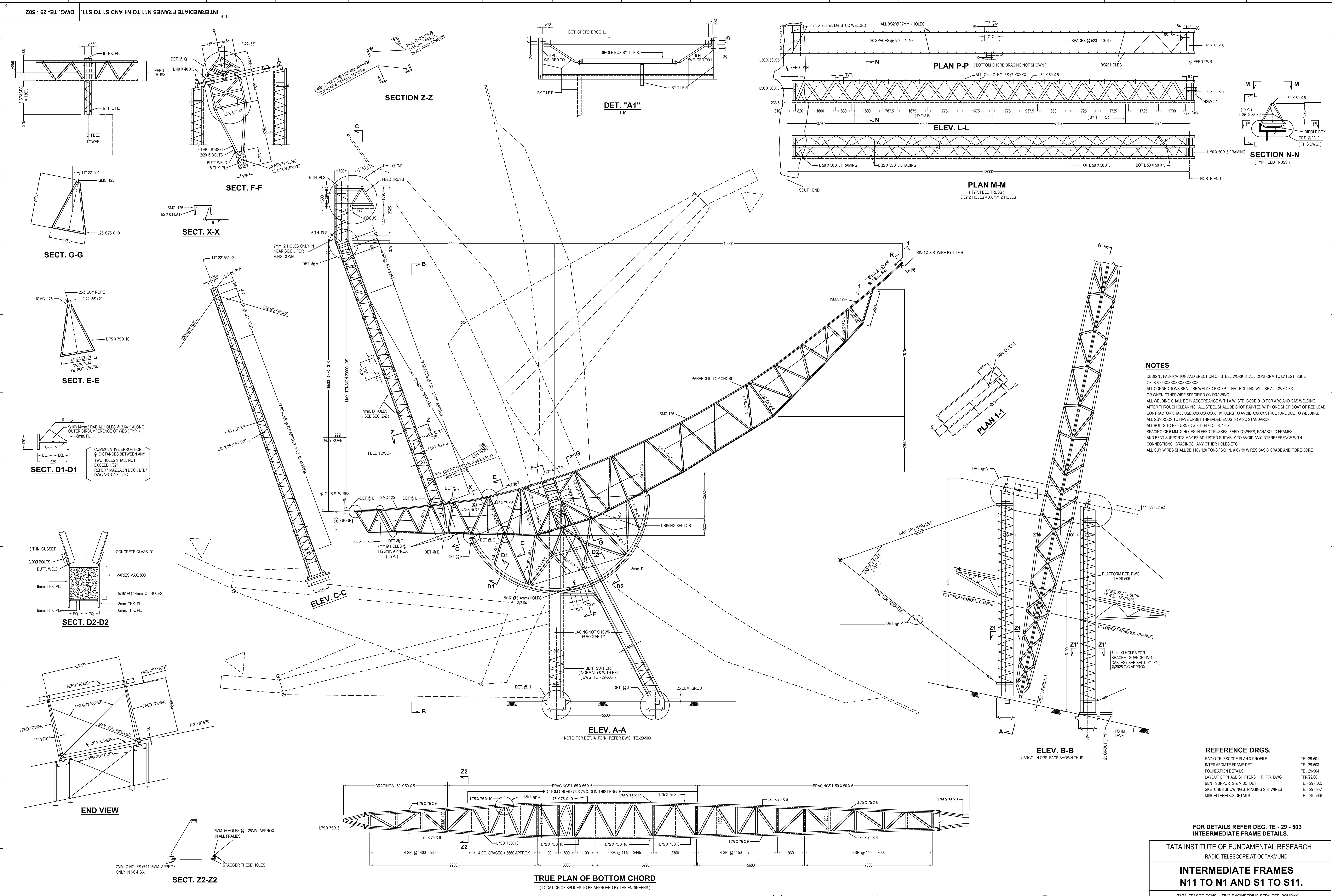
PLAN AND PROFILE

TATA-EBASCO CONSULTING ENGINEERING SERVICES, BOMBAY.

SCALE :- 1:400 , U.N.	APPROVED	DATE:- 1/12/66.	
DIV. CIVIL		DWG. NO.	
DR. D.G.PHATAK		TE- 29 - 501	
CH.		R - 2	

TITLE	CHECKED	DATE
ELECTRICAL SUPERVISOR		13/5
MECHANICAL SUPERVISOR		
CIVIL SUPERVISOR		
TITLE	CLEARED	DATE
ELECTRICAL ENGINEER		
MECHANICAL ENGINEER		
CIVIL ENGINEER		

REV. NO.	REVISIONS	BY	CLEARED CIVIL	CLEARED ELEC	CLEARED MECH	APPD.	DATE
R1	GUY RODS BETWEEN THE FEED TOERS SHOWN.	Y.M.G.					14-2-67.
R2	AS SHOWN	B.N.P.					
R3	LOCATIONS OF DRIVE SHAFT SUPPORT STR, REVISED & RELEASED 'HOLD', DIMENSIONS ADDED AS SHOWN.	B.N.P.					
R4	REVISED TO INCLUDE , END FRAME , NORTH & SOUTH END ANCHOR TOWERS & SERVO MOTOR STRUCTURE.	Y.M.G.					14-7-67.
R5	TOP OF BASE PLATES & HORIZONTAL DISTANCES FOR SOUTH END & NORTH END ANCHOR TOERS ADDED.	V.D.S.					21-9-67.
R6	SERVO STRUCTURE LOCATION RELEASED.	V.D.S.					26-9-67
R7	CENTRE LINE DIMENSIONS OF NORTH END ANCHOR TOWER CHANGED & BASE EL. OF DRIVE SHAFT SUPPORTING STR. INDICATED & FDN. FOR TOWER S7 & S8 RELEASED.	Y.M.G.					4-10-67.



NOTES

DESIGN , FABRICATION AND ERECTION OF STEEL WORK SHALL CONFORM TO LATEST ISSUE OF IS 800 XXXXXXXXXXXXXXX.
ALL CONNECTIONS SHALL BE WELDED EXCEPT THAT BOLTING WILL BE ALLOWED XX OR WHEN OTHERWISE SPECIFIED ON DRAWING
ALL WELDING SHALL BE IN ACCORDANCE WITH A.W. STD. CODE D1.0 FOR ARC AND GAS WELDING.
AFTER THROUGH CLEANING , ALL STEEL SHALL BE SHOP PAINTED WITH ONE SHOP COAT OF RED LEAD.
CONTRACTOR SHALL USE XXXXXXXXXX FIXTUERS TO AVOID XXXXX STRUCTURE DUE TO WELDING.
ALL GUY RODS TO HAVE UPSET THREADED ENDS TO AISC STANDARDS.
ALL BOLTS TO BE TURNED & FITTED TO I.S. 1367.
SPACING OF 6 MM. Ø HOLES IN FEED TRUSSES, FEED TOWERS, PARABOLIC FRAMES AND BENT SUPPORTS MAY BE ADJUSTED SUITABLY TO AVOID ANY INTEREFERENCE WITH CONNECTIONS , BRACINGS , ANY OTHER HOLES ETC.
ALL GUY WIRES SHALL BE 110 / 120 TONS / SQ. IN. & 6 / 19 WIRES BASIC GRADE AND FIBRE CORE

REFERENCE DRGS.

RADIO TELESCOPE PLAN & PROFILE	TE . 29-501
INTERMEDIATE FRAME DET.	TE . 29-503
FOUNDATION DETAILS	TE . 29-504
LAYOUT OF PHASE SHIFTERS ... T.I.F.R. DWG.	TFR/29/66
BENT SUPPORTS & MISC. DET.	TE. - 29 - 505
SKETCHES SHOWING STRINGING S.S. WIRES	TE. - 29 - SK1
MISCELLANEOUS DETAILS	TE. - 29 - 506

FOR DETAILS REFER DEG. TE - 29 - 503
INTEERMEDIATE FRAME DETAILS.

TITLE	CHECKED	DATE
ELECTRICAL SUPERVISOR		13/5/67.
MECHANICAL SUPERVISOR		
CIVIL SUPERVISOR		
TITLE	**CLEARED**	**DATE**
ELECTRICAL ENGINEER		13/5/67.
MECHANICAL ENGINEER		
CIVIL ENGINEER		

REV. NO.	REVISIONS	BY	CLEARED CIVIL	ELEC	MECH	APPD.	DATE
R1.	REVISED AS SHOWN. (20)	Y.M.G.					30/1/67.
R2.	DIMENSIONS REVISED AS SHOWN , TENSION IN GUY ROD INDICATED (6)	Y.M.G.					8/2/67.
R2.	CABLE CONN. HOLES IN FEED TOWER & BENT SUPPORT REVISED AS SHOWN & NEW HOLES FOR CABLE CONN. ADDED IN PARABOLIC FRAME . (10)	Y.M.G.					28/3/67.

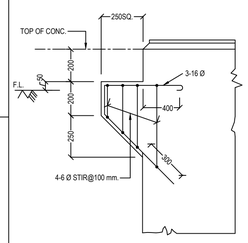
TATA INSTITUTE OF FUNDAMENTAL RESEARCH
RADIO TELESCOPE AT OOTAKMUND

INTERMEDIATE FRAMES N11 TO N1 AND S1 TO S11.

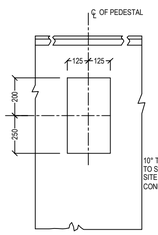
TATA-EBASCO CONSULTING ENGINEERING SERVICES, BOMBAY.

SCALE :- 1:75 , U.N. | APPROVED | DATE:- 25/4/67.
DIV. CIVIL
DR. Y.M.GOKHALE D.G. PHATAK
CH.
DWG. NO. **TE- 29 - 502** R 3

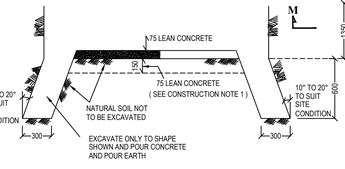
TITLE: FOUNDATION DETAILS — DWG. TE-29-504 — SH. 1



TYP. DET. OF BRACKET

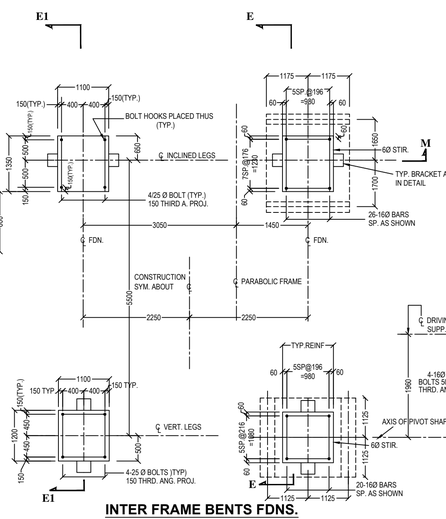


END VIEW



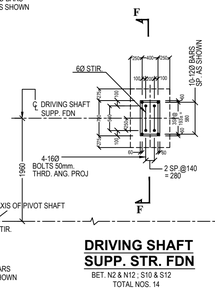
TYP. CROSS SECTION

(THROUGH EXCAVTED PIT FOR FOUNDATION)



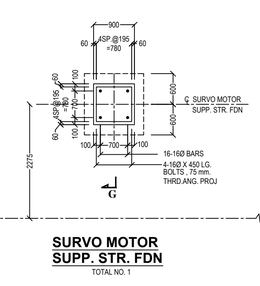
INTER FRAME BENTS FDNS.

(TYP. FOR LOC'S N2 TO N12 & S11, S12)
TOTAL NOS. 13
(G.L. TO BE BROUGHT UP TO E1)



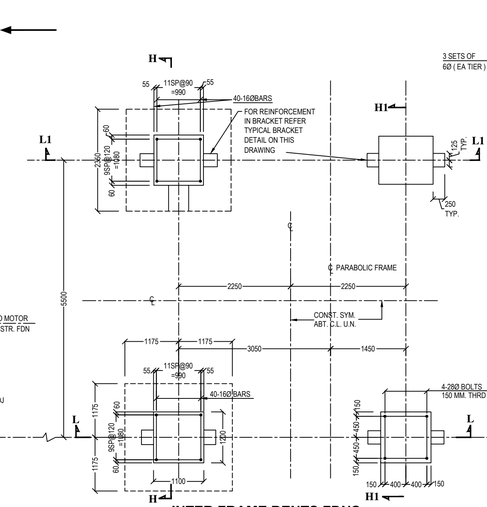
DRIVING SHAFT SUPP. STR. FDN

BET. N2 & N12 ; S10 & S12
TOTAL NOS. 14



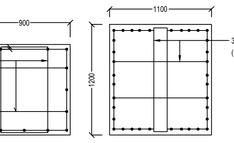
SURVO MOTOR SUPP. STR. FDN

TOTAL NO. 1



INTER FRAME BENTS FDNS

FOR LOC'S S4,S5&S6. TOTAL NOS. 3 AS SHOWN

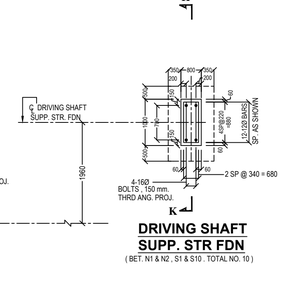


TYP. STIR SP.

(16 BARS)

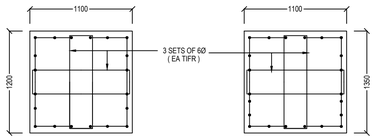
TYP. STIR SP.

(40 BARS)



DRIVING SHAFT SUPP. STR FDN

(BET. N1 & N2 , S1 & S10 . TOTAL NO. 10)

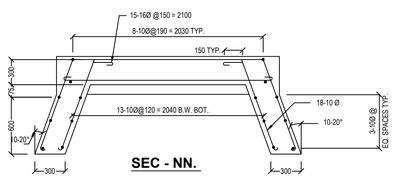


TYP. STIR SP.

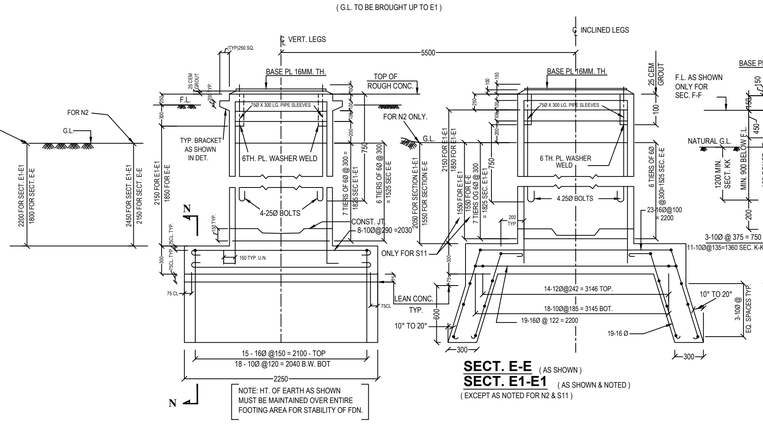
(20 BARS)

TYP. STIR SP.

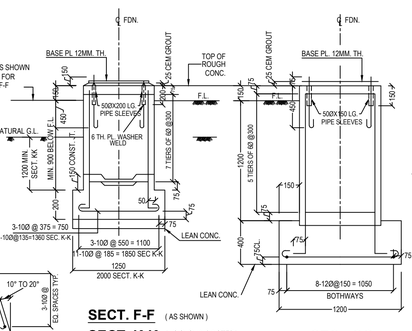
(24 BARS)



SEC - NN.

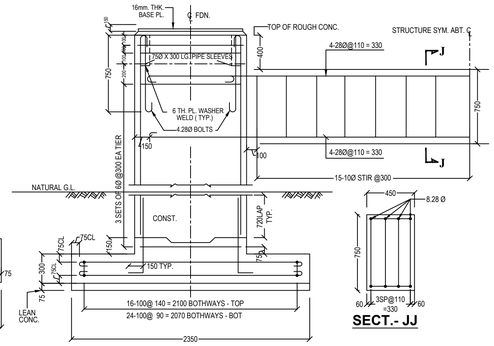


SECT. E-E (AS SHOWN)
SECT. E1-E1 (AS SHOWN & NOTED)
(EXCEPT AS NOTED FOR N2 & S11)



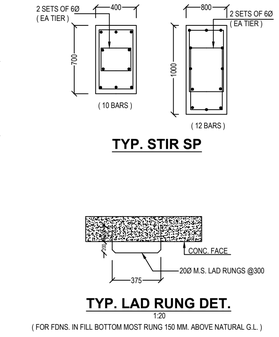
SECT. F-F (AS SHOWN)
SECT. K-K (AS SHOWN & NOTED)
1:25

SEC - GG.
1:25



SEC - HH. AS SHOWN
SEC - H1H1. AS SHOWN & NOTED

SECT.- JJ

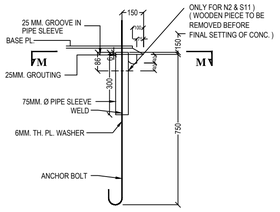


TYP. STIR SP

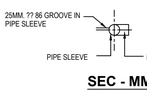
TYP. LAD RUNG DET.

1:20

(FOR FDNS. IN FILL BOTTOM MOST RUNG 150 MM. ABOVE NATURAL G.L.)



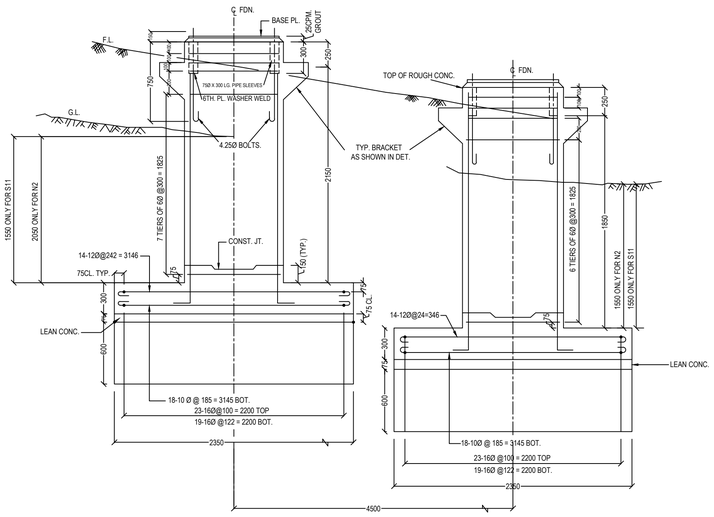
TYP. DET. OF GROUTING OF PIPE SLEEVES



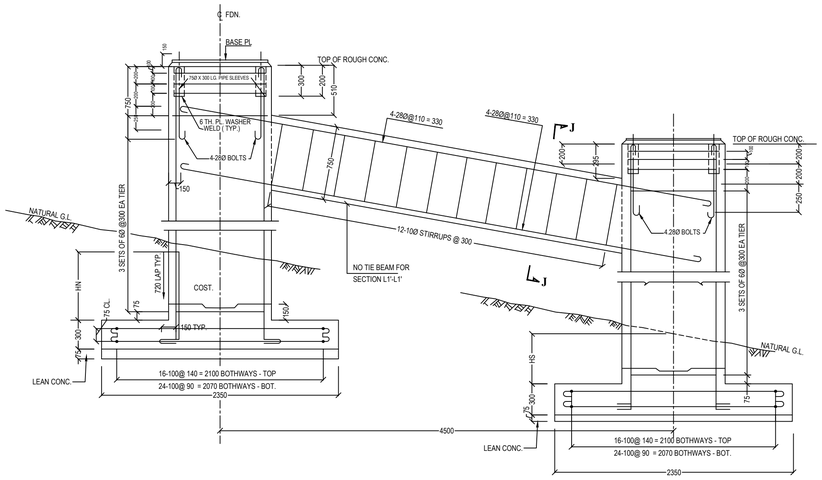
SEC - MM.

CONSTRUCTION NOTES

1. ALL PITS FOR FOUNDATIONS IF ALREADY EXCAVATED TO THE REQUIRED LEVEL SHALL BE EXCAVATED FURTHER DOWN BY 150 mm. AND TO BE CONCRETED WITH LEAN CONCRETE.
2. TIME LAPSE BETWEEN EXCAVATION TO FDN. LEVEL AND START OF CONCRETING NOT TO EXCEED 24 HRS.
3. AFTER REMOVAL OF FORMWORK,BACK FILLING SHALL BE CARRIED OUT AS SOON AS FEASIBLE.BACKFILLING SHALL BE THROUGH AND VERY WELL COMPACTED IN LAERS OF 6" TO 9".
4. DOWN HILL FOOTINGS OF EACH FROUP OF FOUNDATION TO BE CONCRETED BEFORE UP HILL FOOTINGS ARE TAKEN UP FOR CONSTRUCTION.
5. ANCHOR BOLTS SHALL BE SUPPLIED , FABRICATED AND PLACED IN CONCRET BY THE CONTRACTOR.



SEC - MM.



SEC - LL. AS SHOWN
SEC - L1'-L1'. AS SHOWN & NOTED

NOTES:

- MATERIAL FABRICATION & CONSTRUCTION OF STRUCTURE SHALL COMPLY WITH THE LATEST INDIAN STANDARD CODES OF PRACTICE FOR PLAIN & REINFORCED CONCRETE.
- CONCRETE SHALL BE 2250 PSI COMPRESSIVE STRENGTH AT 28 DAYS WORKS TEST (CLASS C OR D) UNLESS NOTED.
- LEAN CONCRETE FOR LEVELING COURSE SHALL BE 1:4:8 NOMINAL MIX.
- REINFORCEMENT SHALL BE OF MILD STEEL COMPLYING WITH IS 432.
- ALL REINFORCEMENT WHERE SPLICED SHALL LAP 45 DIA. MIN. UN.
- ALL ANCHOR BOLTS , PIPE SLEEVES & OTHER INSERTS TO BE IN POSITION BEFORE CONCRETE IS PLACED.
- ALL DIMENSIONS ARE TO CENTRES OF BARS U.N.
- PROVIDE CLEAR COVER OF 50 TO REINFORCING BARS U.N.
- SHIFT OR BEND BARS TO CLEAR ANCHOR BOLTS, PIPE SLEEVES ETC.
- STEEL TEMPLATE SHALL BE USED FOR FIXING ANCHOR BOLTS IN CONCRETE.
- RUNGS SHALL BE PROVIDED ON EACH FACE OF ALL NORTH INCLINED LEG FOUNDATION OF BENT SUPPORTS FROM NATURAL GROUND LEVEL TO TOP OF ROUGH CONCRETE.
- FOR TOP OF BASE PLATE LEVELS REFER DWG. TE-29-501.
- EARTH ABOVE FOOTINGS TO BE PERMANENTLY MAINTAINED AT THE LEVELS SHOWN TO MAINTAIN STABILITY OF THE FOUNDATIONS.
- ALL PIPE SLEEVES TO BE GROUTED UP AFTER STEEL WORK ERECTION U.N. - UNLESS NOTED. B.W. - BOTH WAYS. EA - EACH.

REFERENCE DRAWINGS:

RADIO TELESCOPE - PLAN AND PROFILE.	:	TE - 29 - 501
INTERMIDIATE FRAME	:	TE - 29 - 502
INTERMIDIATE FRAME DETAILS	:	TE - 29 - 503
BENT SUPP. & MISC. SUPP. DETAILS.	:	TE - 29 - 505
END FRAMES	:	TE - 29 - 507
NORTH END & SOUTH END ANCHOR TOWERS	:	TE - 29 - 508
SERVO MOTOR STRUCTURE	:	TE - 29 - 509

TITLE	CHECKED	DATE
ELECTRICAL SUPERVISOR		
MECHANICAL SUPERVISOR		
CIVIL SUPERVISOR		
TITLE	CLEARED	DATE
ELECTRICAL ENGINEER		
MECHANICAL ENGINEER		
CIVIL ENGINEER		

REV. NO.	REVISIONS	BY	CLEARED CIVIL	CLEARED ELEC	CLEARED MECH	APPD.	DATE
1	FOUNDATIONS REVISED AS SHOWN.	Y.M.G.					
2	REVISED AS SHOWN.	V.D.S.					3/7/67.
3	REVISED AS SHOWN.	V.D.S.					
4	REVISED TO INCLUDE FOUNDATION FOR N12 , S12.	Y.M.G.					
5	FOUNDATIONS S5 & S6 AND DRIVE SHAFT SUPPORTING STRUCTURES RELEASED FOR CONST.	V.D.S.					22/9/67
6	TABLE INDICATING DEPTH OF FOOTING FOR TOWERS S4,S5,S6,S7& S9 ADDED.	V.D.S.					16/10/67
7	REVISED TO DELETE FDNS. S7 & S9 FOUNDATIONS;DEPTH BELOW G.L. ADDED FOR S11.	V.D.S					25/10/67

FRAME / BENT FDN. H	SECTION L - L HN MIN.	L - L HS MIN.	SECTION HN MIN.	L1 - L1 HS MIN.
S4	1950	1550	1950	1550
S5	2100	1550	2100	1550
S6	2250	1550	2300	1550

TATA INSTITUTE OF FUNDAMENTAL RESEARCH
RADIO TELESCOPE AT OOTACAMUND

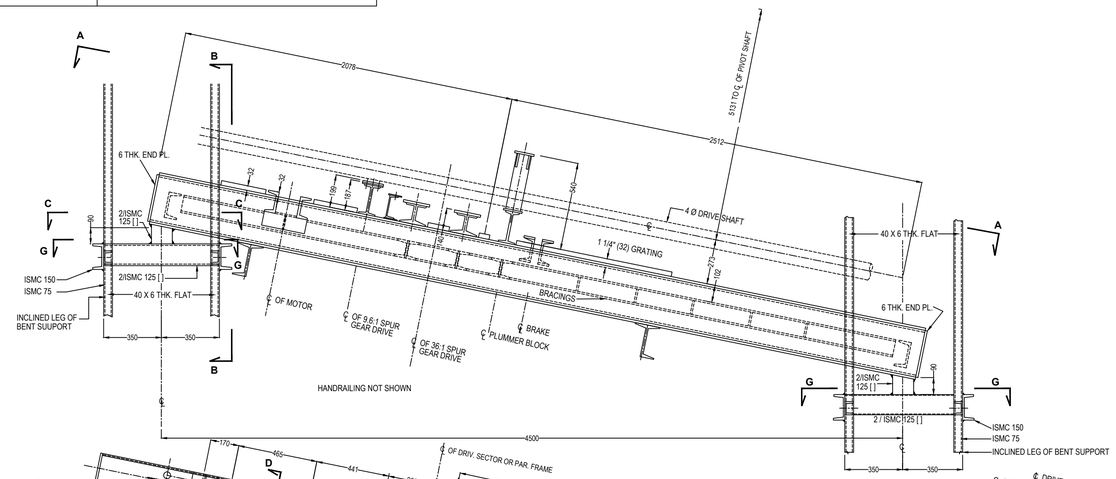
FOUNDATION DETAILS
SH. 1

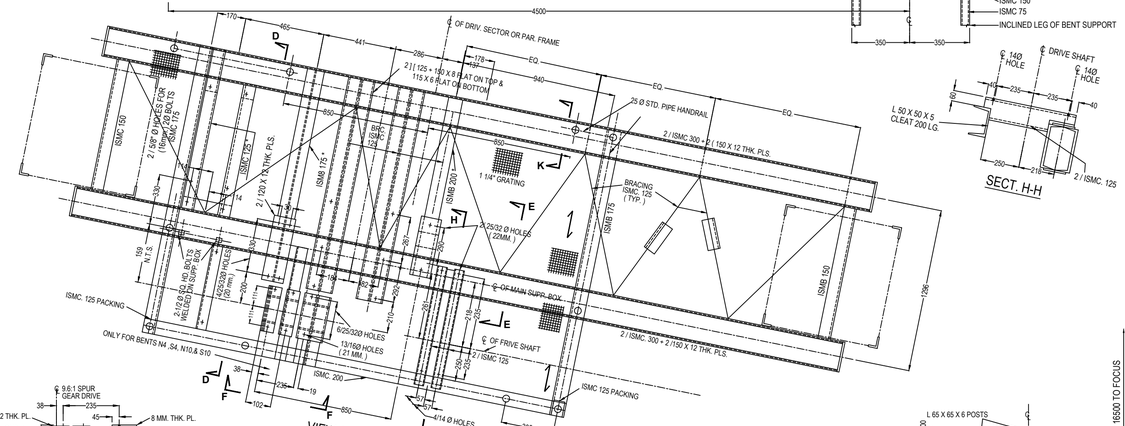
TATA-EBASCO CONSULTING SERVICES, BOMBAY.

SCALE :- 1:50 U.N. | APPROVED | DATE:- 1/12/66.
DIV. CIVIL
DR. DGP / DPG
CH.
DWG. NO. TE- 29 - 504 R-2

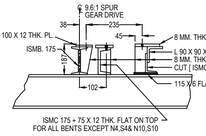
TITLE: MISCELLANEOUS DETAILS

DWG. TE-29-506

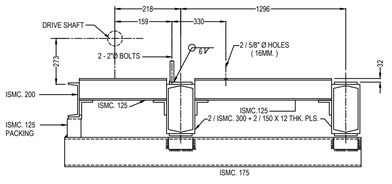




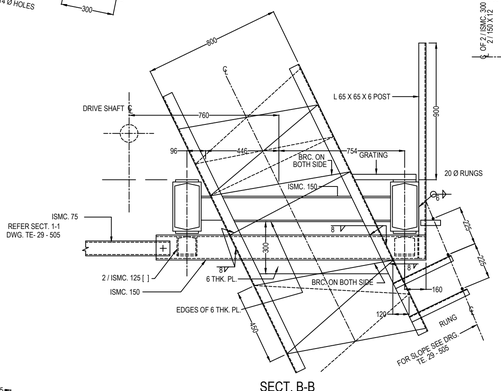
SECT. H-H



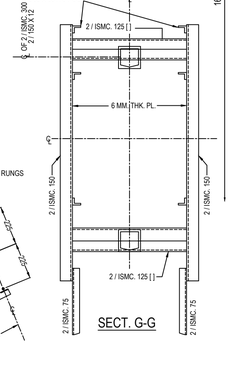
VIEW F-F



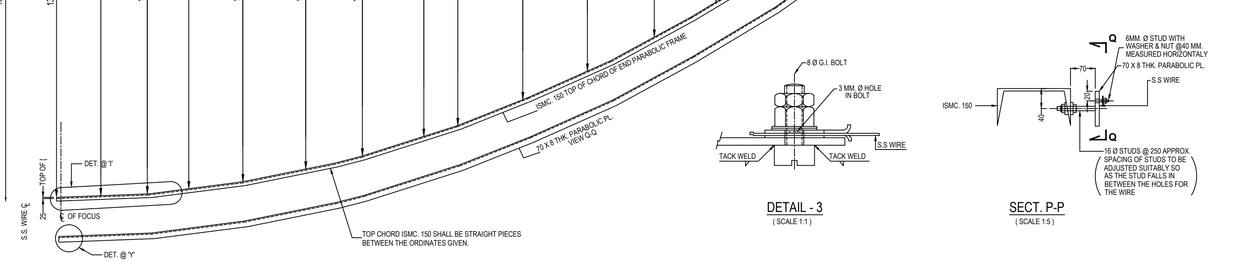
SECT. D-D
(HR. NOT SHOWN)

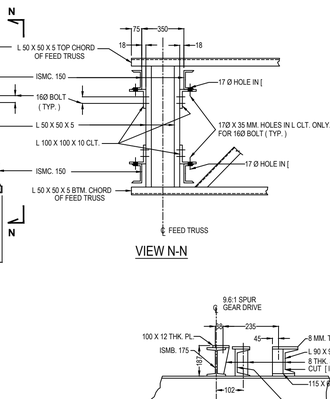


SECT. B-B
(FAR SIDE BRACING L S SHOWN DOTTED)



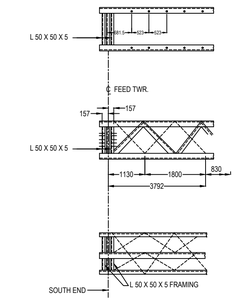
SECT. G-G



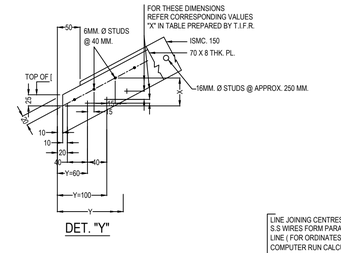


VIEW N-N

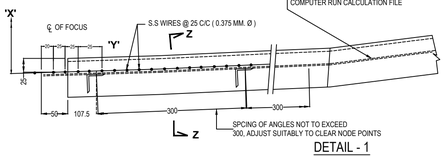
VIEW F-F



END DET. OF FEED TRUSS BETWEEN S12 & S11



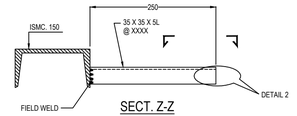
DET. "Y"



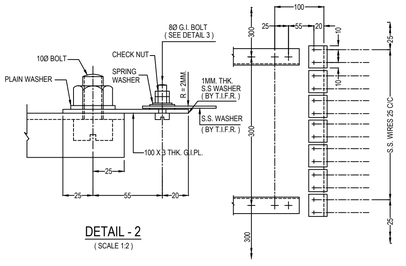
DETAIL - 1
(SCALE 1:5)

DETAIL - 3
(SCALE 1:1)

SECT. P-P
(SCALE 1:5)

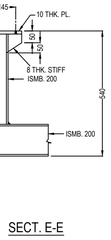


SECT. Z-Z
(SCALE- 1.5)

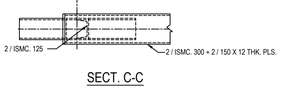


DETAIL - 2
(SCALE 1:2)

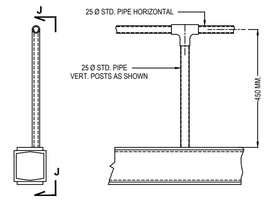
PLAN X-X
(SCALE 1:5)



SECT. E-E



SECT. C-C



SECT. K-K

VIEW J-J

(ALL CONNECTIONS TO BE 6 MM. FILLET WELDED UNLESS NOTED.)

NOTES :

FOR GENERAL NOTES, REFER DWG. NO. TE. 29 - 502

REFERENCE DRAWINGS :

PLAN & PROFILE	TE.29-501
INTERMEDIATE FRAME	TE.29-502
INTERMEDIATE FRAME DET.	TE.29-503
FOUNDATION DETAILS	TE.29-504
BENT SUPPORT DETAILS	TE.29-505
SITE SURVEY MAP	TE.29-511
END FRAMES	TE.29-507

TITLE	CHECKED	DATE
ELECTRICAL SUPERVISOR		
MECHANICAL SUPERVISOR		
CIVIL SUPERVISOR		
TITLE	CLEARED	DATE
ELECTRICAL ENGINEER		
MECHANICAL ENGINEER		
CIVIL ENGINEER		

REV. NO.	REVISIONS	BY	CLEARED CIVIL	CLEARED ELEC	CLEARED MECH	APPD.	DATE
1	REVISED AS SHOWN. (12)	Y.M.G.					31/5/67
2	REVISED TO INCLUDE PLATFORMS FOR END FRAMES N12 & S12.	Y.M.G.					3/7/67
3	DIMENSIONS IN SECT. B-B REVISED AS SHOWN ORDINATES AND ABSCISSAE REVISED AS SHOWN	V.D.S.					28/7/67
4	REVISED AS SHOWN	V.D.S.					26/9/67
5	DETAILS - 1,2,3,4 , SECTION Z-Z AND PLAN ADDED.	B.D.A.					1/12/67.
6	MOTOR FIXING BOLTS & BOLT DIMENSIONS REVISED AS SHOWN.	Y.M.G.					28/10/68.

TATA INSTITUTE OF FUNDAMENTAL RESEARCH

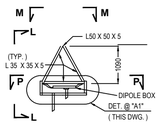
RADIO TELESCOPE AT OOTACAMUND

MISCELLANEOUS DETAILS

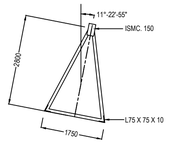
TATA-EBASCO CONSULTING ENGINEERING SERVICES, BOMBAY.

SCALE :- 1:15 U.N.	APPROVED	DATE:- 24/4/67.
DIV. CIVIL		DWG. NO.
DR. Y.M.G.		TE- 29 - 506
CH.		R - 6

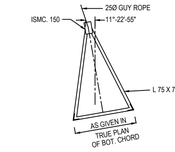
TITLE: END FRAMES N 12 & S 12. DWG. TE- 29 - 507.



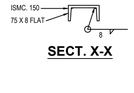
SECTION N-N
(TYP. FEED TRUSS)



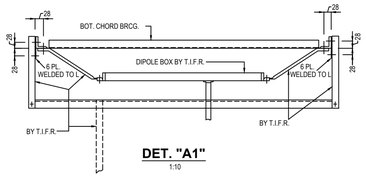
SECT. G-G



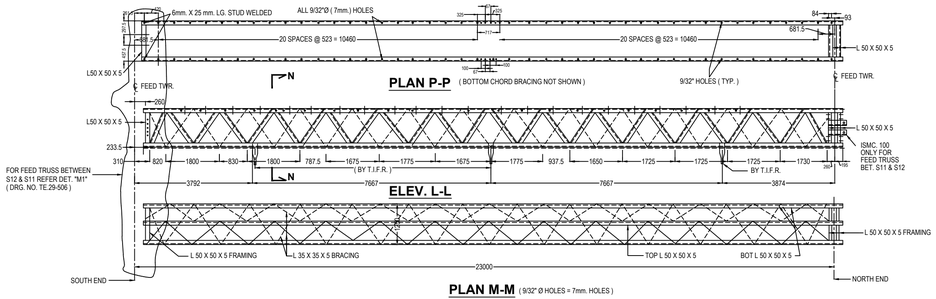
SECT. E-E



SECT. X-X

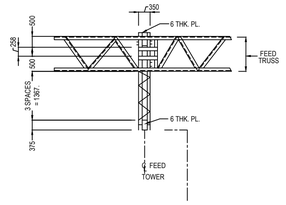


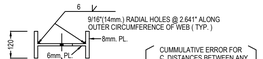
DET. "A1"
1:10



PLAN M-M (9/32" Ø HOLES = 7mm. HOLES)

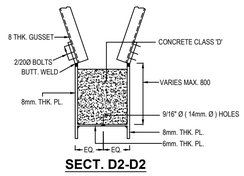
FEED TRUSS BETWEEN FRAMES N12 & N11 AS SHOWN & BETWEEN S12 & S11 AS SHOWN & AS NOTED.



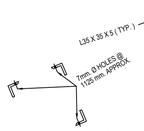


SECT. D1-D1

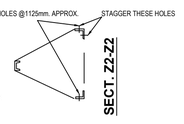
CUMMULATIVE ERROR FOR ℄ DISTANCES BETWEEN ANY TWO HOLES SHALL NOT EXCEED 1/32" REFER " MAZAGAON DOCK LTD" DWG NO. G/9399/2C.

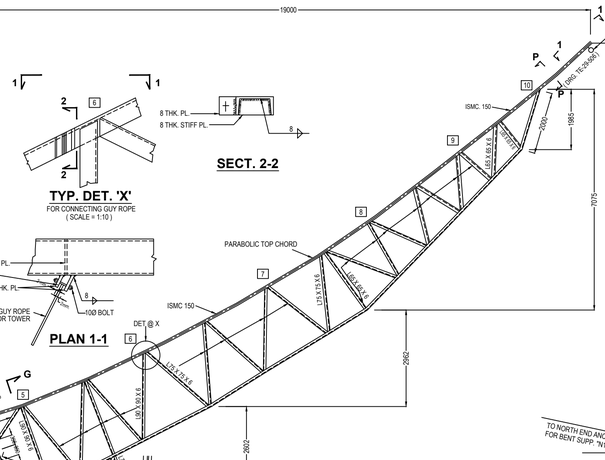


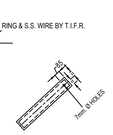
SECT. D2-D2



END VIEW



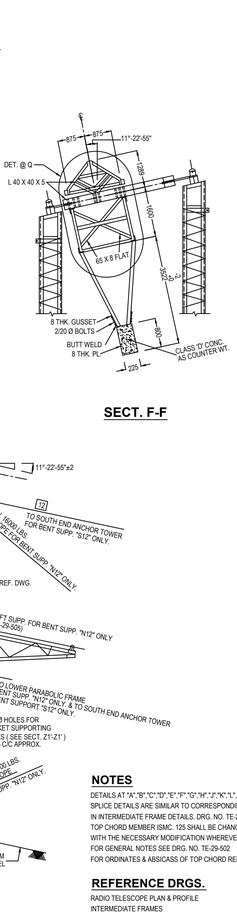




ELEV. B-B
(BRCG. IN OPP. FACE SHOWN THUS ——)

SEC. Z1-Z1

SEC. Z1'-Z1'



SECT. F-F

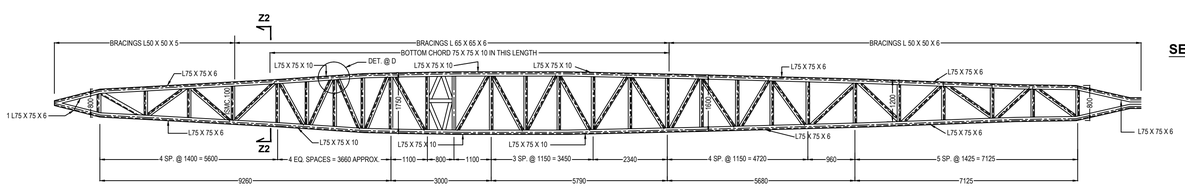
NOTES

DETAILS AT "A","B","C","D","E","F","G","H","J","K","L","M","N","P","Q","R","S", SPLICE DETAILS ARE SIMILAR TO CORRESPONDING DETAILS AS SHOWN IN INTERMEDIATE FRAME DETAILS. DRG. NO. TE-29-503, EXCEPT THE TOP CHORD MEMBER ISMC. 125 SHALL BE CHANGED TO ISMC 150 WITH THE NECESSARY MODIFICATION WHEREVER APPLICABLE & SPECIFIED FOR GENERAL NOTES SEE DRG. NO. TE-29-502 FOR ORDINATES & ABSICASS OF TOP CHORD REFER DRG. TE-23-506

REFERENCE DRGS.

RADIO TELESCOPE PLAN & PROFILE	TE . 29-501
INTERMEDIATE FRAMES	TE . 29-502
INTERMEDIATE FRAMES DETAILS	TE . 29-503
FOUNDATION DETAILS	TE . 29-504
LAYOUT OF PHASE SHIFTERS ... T.I.F.R. DEG.	TFR/29/66
BENT SUPPORTS & MISC. STRUCTURES	TE - 29 - 505
SKETCHES SHOWING STRINGING S.S. WIRES	TE - 29 - SK1
MISCELLANEOUS DETAILS	TE - 29 - 506
SITE SURVEY MAP	TE - 29 - 511

FOR BID PURPOSES ONLY - 13 6/66



TRUE PLAN OF BOTTOM CHORD
(LOCATION OF SPLICES TO BE APPROVED BY THE ENGINEERS)

N

TITLE	CHECKED	DATE
ELECTRICAL SUPERVISOR		
MECHANICAL SUPERVISOR		
CIVIL SUPERVISOR		
TITLE	CLEARED	DATE
ELECTRICAL ENGINEER		
MECHANICAL ENGINEER		7/2/67.
CIVIL ENGINEER		

REV. NO.	REVISIONS	BY	CLEARED CIVIL	CLEARED ELEC	CLEARED MECH	APPD.	DATE

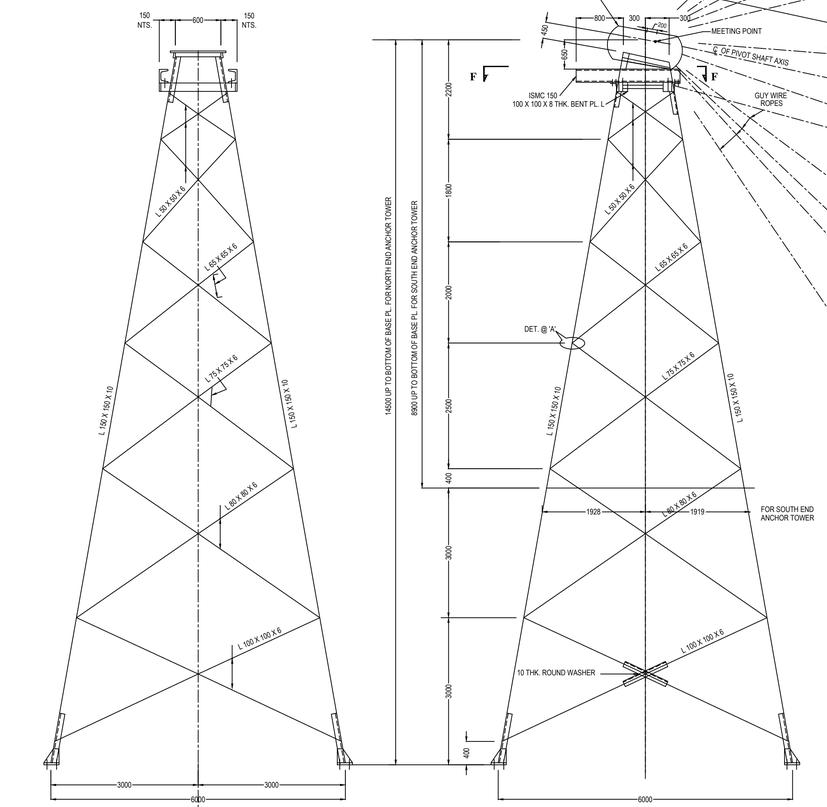
TATA INSTITUTE OF FUNDAMENTAL RESEARCH
RADIO TELESCOPE AT OOTAKMUND

END FRAMES N 12 & S 12.

TATA-EBASCO CONSULTING ENGINEERING SERVICES, BOMBAY.

SCALE :- 1:75 , U.N.	APPROVED	DATE:- 3/7/67.
DIV. CIVIL		DWG. NO.
DR. Y.M.G.		TE- 29 - 507.
CH.		R - 0

TITLE: **FOUNDATION DETAILS** — **DWG. TE-29-504** — E.R



END VIEW

ELEVATION OF ANCHOR TOWER

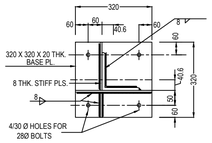
DETAIL AT BASE (TYP.)

SCALE - 1:10

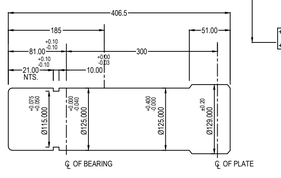
DET. "A" (TYP.)

SCALE - 1:10

PLAN AT BASE



PLANT AT BASE



ANCHOR TOWER SHAFT

(SCALE 1:5)

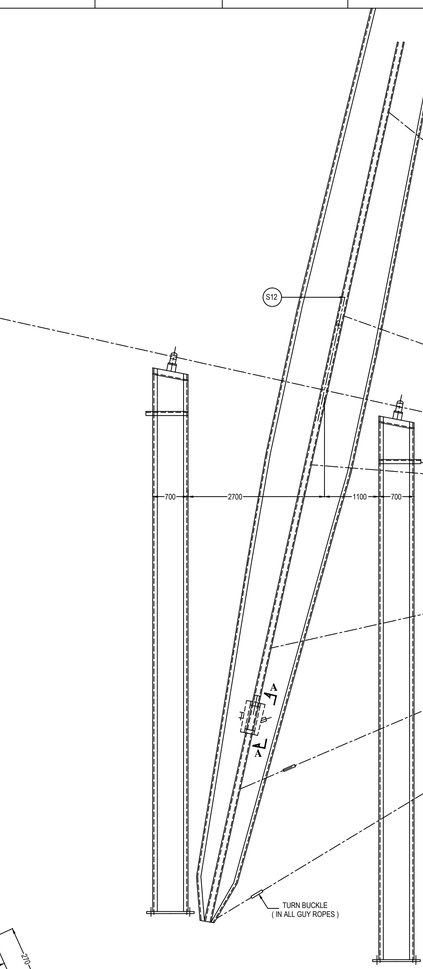
END FRAME N12

DETAIL - 1 SCALE - 1:10

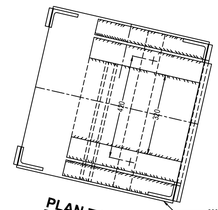
(DET. 2 OPP. HAND)

END VIEW OF PLATE (SCALE 1:10)

(SHOWING VARIOUS POSITIONS)

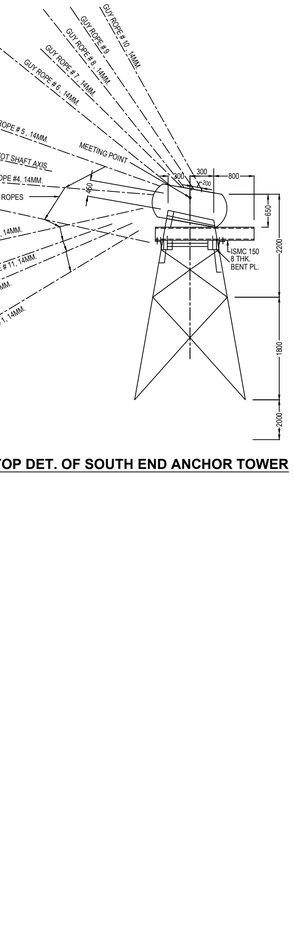


END FRAME S12

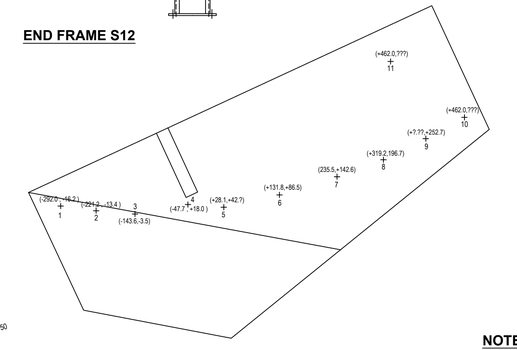


PLAN T-T

SCALE - 1:10 (FOR OTHER DIMENSIONS SEE DETAIL 1)

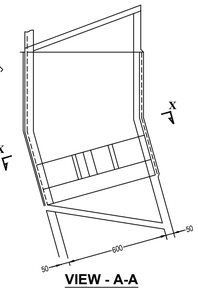


TOP DET. OF SOUTH END ANCHOR TOWER



END VIEW OF PLATE (SCLAE = 1:5)

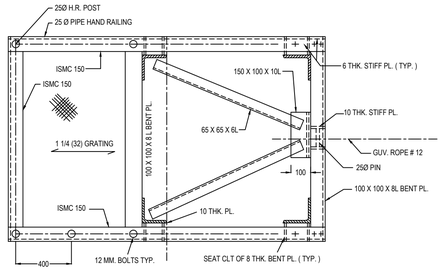
(SHOWING ORDINATES OF GUY ROPES (X,Y)



VIEW - A-A

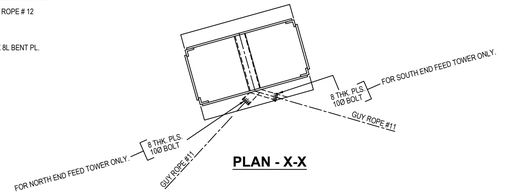
(SCLAE = 1:15)

FOR OTHER DETAILS SEE DET. 'A' . SRG. NO. TE - 29 -503

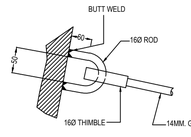


SECT. F-F

SCALE 1:15



PLAN - X-X



DETAIL - 3 (SCALE - 1:5)

NOTES:

FOR GENERAL NOTES , REFER DWG. NO. TE-29-502

REFERENCE DRAWINGS:

PLAN & PROFILE	:	TE - 29 - 501
INTERMIDIATES	:	TE - 29 - 502
INTERMIDIATE FRAME DETAILS	:	TE - 29 - 503
FOUNDATION DETAILS	:	TE - 29 - 504
BENT SUPPORTS OF MISC. STRUCTURES	:	TE - 29 - 505
MISCELLANEOUS DETAILS	:	TE - 29 - 506
END FRAME N12 & S12	:	TE - 29 - 507

TITLE	CHECKED	DATE
ELECTRICAL SUPERVISOR		
MECHANICAL SUPERVISOR		
CIVIL SUPERVISOR		
TITLE	CLEARED	DATE
ELECTRICAL ENGINEER		
MECHANICAL ENGINEER		
CIVIL ENGINEER		

REV. NO.	REVISIONS	BY	CLEARED CIVIL	CLEARED ELEC	CLEARED MECH	APPD.	DATE
1	REVISED TO ADD DETAILS 1,2& 3, END VIEW OF PLATE AND VIEW OF PLATE SHOWING VARIOUS POSITIONS AND ORDINATES OF GUY ROPES, PLAN T-T AND SECTION F-F REVISED.	B.D.A.					30/11/67.
2	REVISED " SKETCH SHOWING SHAFT ".	B.D.A.					19/12/67.
4	ANCHOR TOWER SHAFT REVISED	Y.M.G.					5/3/69.

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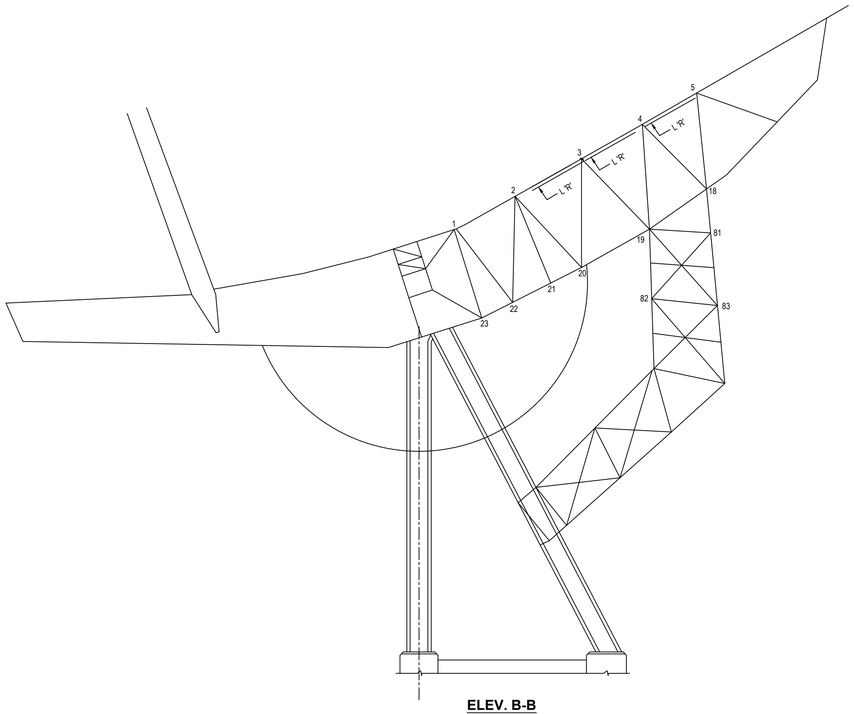
RADIO TELESCOPE AT OOTACAMUND

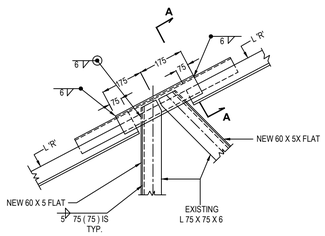
NORTH END AND SOUTH END ANCHOR TOWERS AND DETAILS

TATA-EBASCO CONSULTING SERVICES, BOMBAY.

SCALE :- 1:50 U.N.	APPROVED	DATE:- 3/7/67.
DIV. CIVIL		DWG. NO.
DR. Y.M.G.		TE- 29 - 508
CH.		R-3

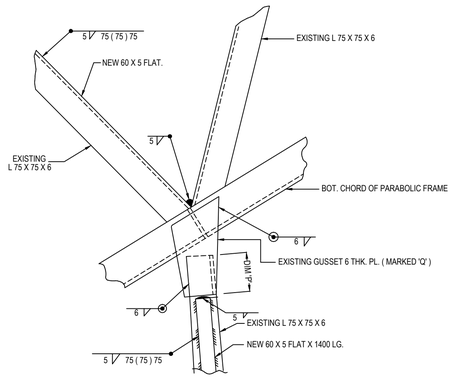


ELEV. B-B
SHOWING SOUTH FACE



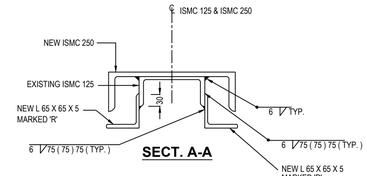
DET. AT JOINTS 3 & 4

NOTE: 60 X 5 FLATS ARE TO BE WELDED TO MEMBERS 4 - 19 & 4 - 18 ON BOTH FACES OF PARABOLIC FRAME.

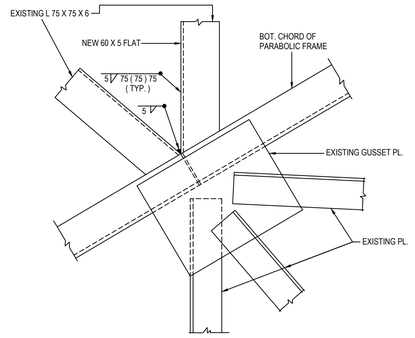


DET. AT JOINTS 18

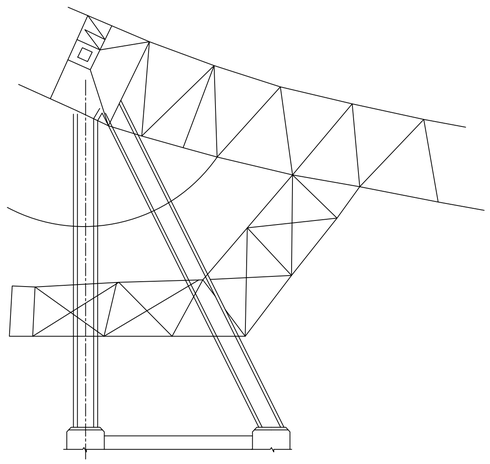
NOTE: DIMENSIONS 'P' SHOULD BE ATLEAST 150 mm. . IF THIS LENGTH IS NOT AVAILBLE , ATTACH EXTENSION TO EXISTING GUSSET PLATE. SITE TO ENSURE THAT GUSSET PLATE MARKED XXXXXXX. WELDS ALL AROUND BOTH TO MEMBER 18:81 AND TO BOT. CHORD.

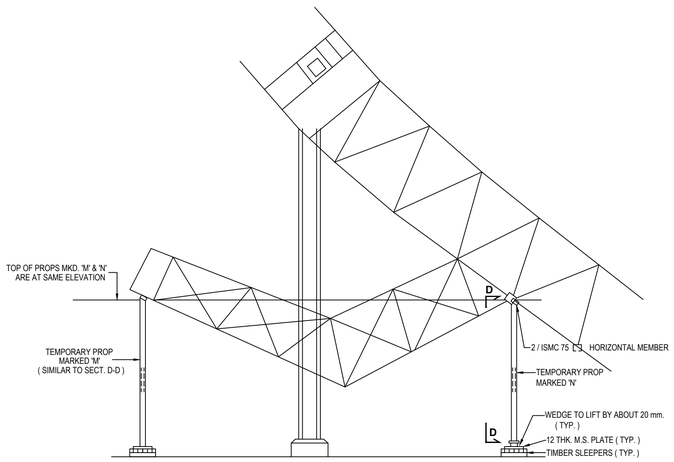


SECT. A-A

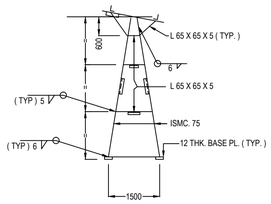


DET. AT JOINT 19





ELEV. C-C
PROP MARKED 'M' SHOULD BE MADE EFFECTIVE AFTER PROP MARKED 'N'



SECT. D-D

NOTES

ALL DIMENSIONS ARE IN MILIMETERS.

FOR R0 ISSUES ONLY				
CHECKED		CLEARED		
DEPT.	INITIALS	DATE	SIGNATURE	DATE
MECH.				
ELEC.				
CIVIL				

ISSUE	REVISIONS	BY	CLEARED CIVIL	CLEARED ELEC.	CLEARED MECH.	APPD.	DATE

ISSUE	REVISIONS	BY	CLEARED CIVIL	CLEARED ELEC.	CLEARED MECH.	APPD.	DATE

ISSUE	REVISIONS	BY	CLEARED CIVIL	CLEARED ELEC.	CLEARED MECH.	APPD.	DATE

'P' (PRELIMINARY) ISSUES ARE NOT TO BE USED FOR CONSTRUCTION / FABRICATION. BUT ARE ISSUED FOR LIMITED PURPOSES, ONLY AS INDICATED IN THE SMALL BLOCK ABOVE THE TOP RIGHT HAND CORNAER OF THE TITLE BLOCK.

CONSTRUCTION / FABRICATION WORK IS PERMITTED ON 'R' (RELEASED) ISSUES ONLY.

INFORMATION CONTAINED WITHIN 'HOLDS' IS NOT RELEASED FOR CONSTRUCTION / FABRICATION. FIELD MUST GET DESIGN OFFICE TO CLEAR HOLDS IN TIME BEFORE PROCEEDING WITH CONSTRUCTION / FABRICATION WORK RELATED TO 'HOLDS'.

TATA INSTITUTE OF FUNDAMENTAL RESEARCH
RADIO ASTRONOMY AT OOTACAMUND

MODIFICATIONS TO OOTY RADIO TELESCOPE

TATA CONSULTING ENGINEERS , BOMBAY

SCALE :- -

APPROVED 2/2/78.
CHIEF CIVIL ENGINEER DATE.

DIV. CIVIL
DR. Y.M.G.
CH.

DWG. TCE-29A-056-2 ISSUE R0