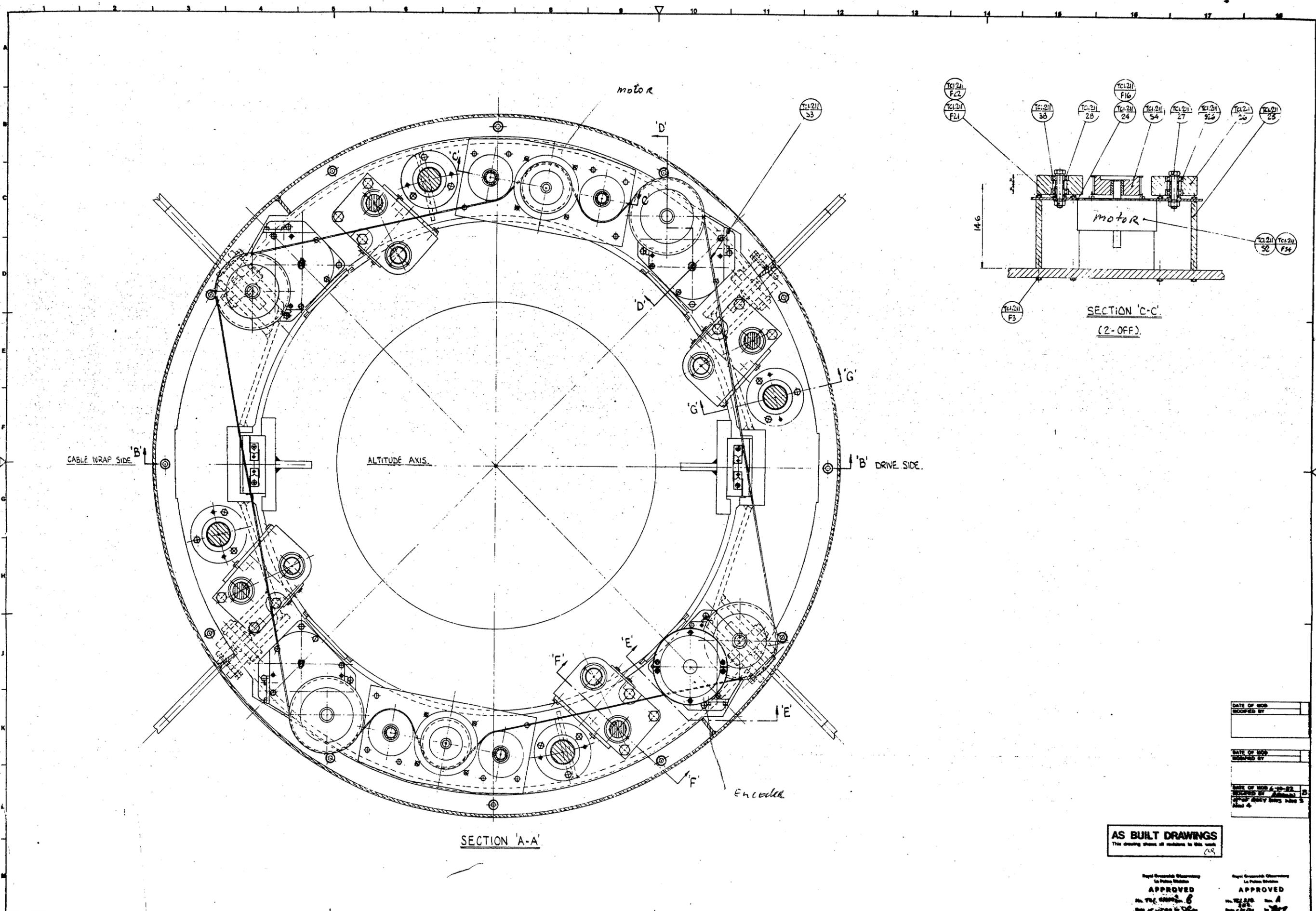


ASSEMBLY PROCEDURE NUMBER:- TCI 211 AP12.4

TOTAL WEIGHT = 2480 KG

**AS BUILT DRAWINGS**  
This drawing shows all variations in this work.

APPROVED  
 TCI 210 F11  
 TCI 210 F12  
 TCI 210 F13  
 TCI 210 F14  
 TCI 210 F15  
 TCI 210 F16  
 TCI 210 F17



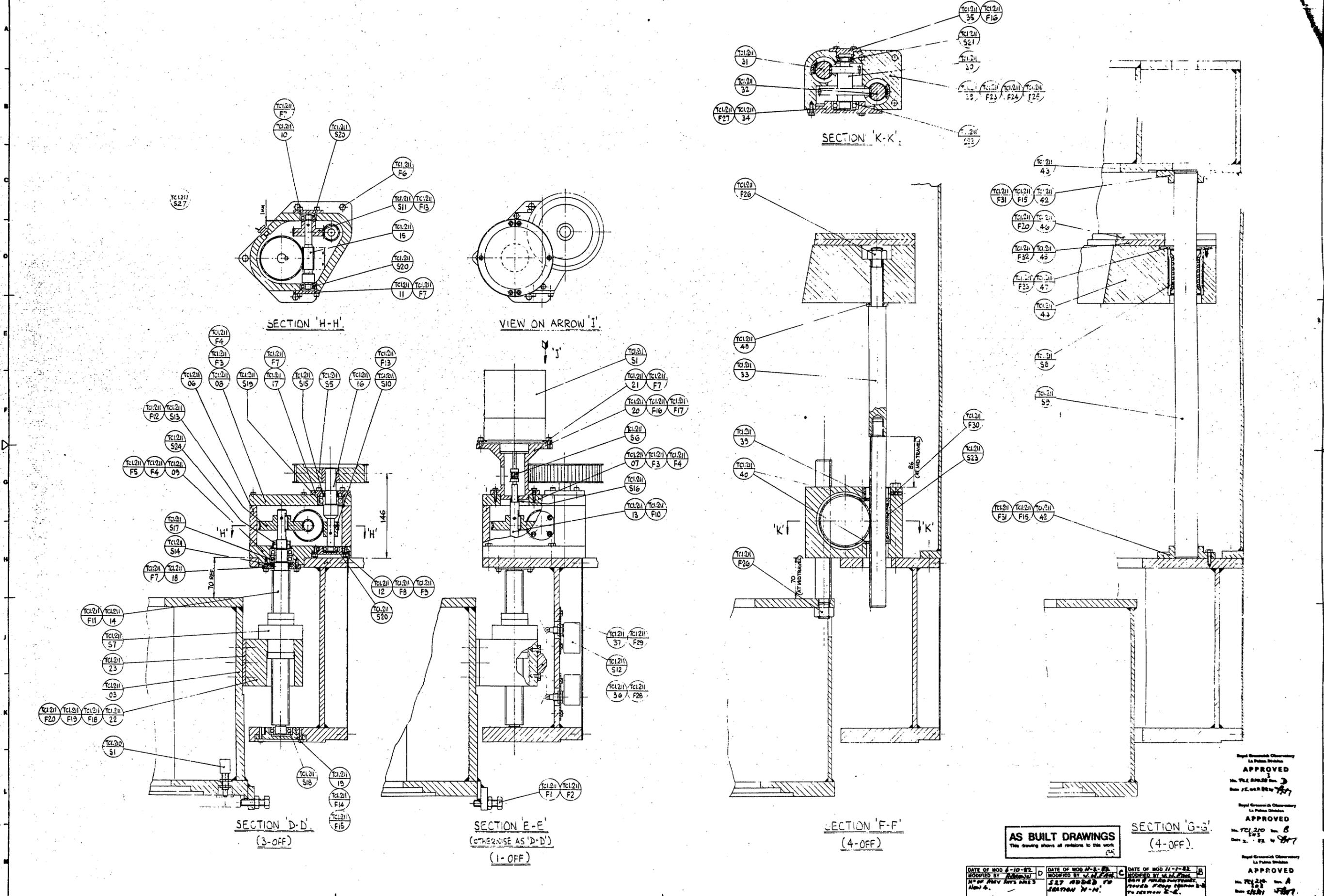
DATE OF MOD	
DESIGNED BY	
DATE OF MOD	
DESIGNED BY	
DATE OF MOD 10-10-82	
DESIGNED BY	
DATE OF MOD 10-10-82	
DESIGNED BY	

**AS BUILT DRAWINGS**  
This drawing shows all changes to this work  
749

APPROVED  
N. REEVE  
DATE 22-4-81

APPROVED  
DATE 22-4-81

SURFACE FINISH EQUIVALENTS MICROMETRES 4 6 10 20 30 125 250 500 MICROINCHES 1/32 1/16 1/8 3/16 1/4 1 2 5	SURFACE FINISH SYMBOLS ✓ DENOTES NOT NECESSARILY MACHINED ▽ DENOTES MACHINED	WELD SYMBOLS TO BS 499 PART 2 1988	FABRICATION TOLERANCES DIMENSIONS UP TO 250 ± 0.2 DIMENSIONS FROM 250 TO 2500 ± 0.3 ANGLES ± 1:800 SURFACE FINISH/FLATNESS 1:800	THIS DRAWING IS THE PROPERTY OF NEL PARSONS LTD. AND MUST NOT BE COPIED OR DISCLOSED TO A THIRD PARTY WITHOUT THE WRITTEN CONSENT OF GRUBB PARSONS.	GENERAL MACHINING TOLERANCES (EXCEPT WHERE STATED OTHERWISE) UNFINISHED DIMENSIONS ± 0.8 DIMENSIONS WITH OVER ± 0.1 DIMENSIONS WITH UNDER ± 0.1 AND DIMENSIONS WITH UNDER ± 0.1	ALL DIMENSIONS ARE IN MILLIMETRES ANGLES IN DEGREES SCREW THREADS TO B.S. 3443 PART 2 MEDIUM FIT MACHINED DIA CONCENTRIC TO D-1 T.Y.R.	PROJECTION CHECKED DATE 22-4-81	DRAWN N. REEVE DATE 22-4-81	<b>GRUBB PARSONS</b> NEWCASTLE UPON TYNE NE8 2YB ASSEMBLY OF TOP END CENTRE STRUCTURE	SCALE 1/2 SHEET 2 TOTAL 12



SECTION 'H-H'

VIEW ON ARROW 'J'

SECTION 'K-K'

SECTION 'D-D'  
(3-OFF)

SECTION 'E-E'  
(OTHERWISE AS 'D-D')  
(1-OFF)

SECTION 'F-F'  
(4-OFF)

SECTION 'G-G'  
(4-OFF)

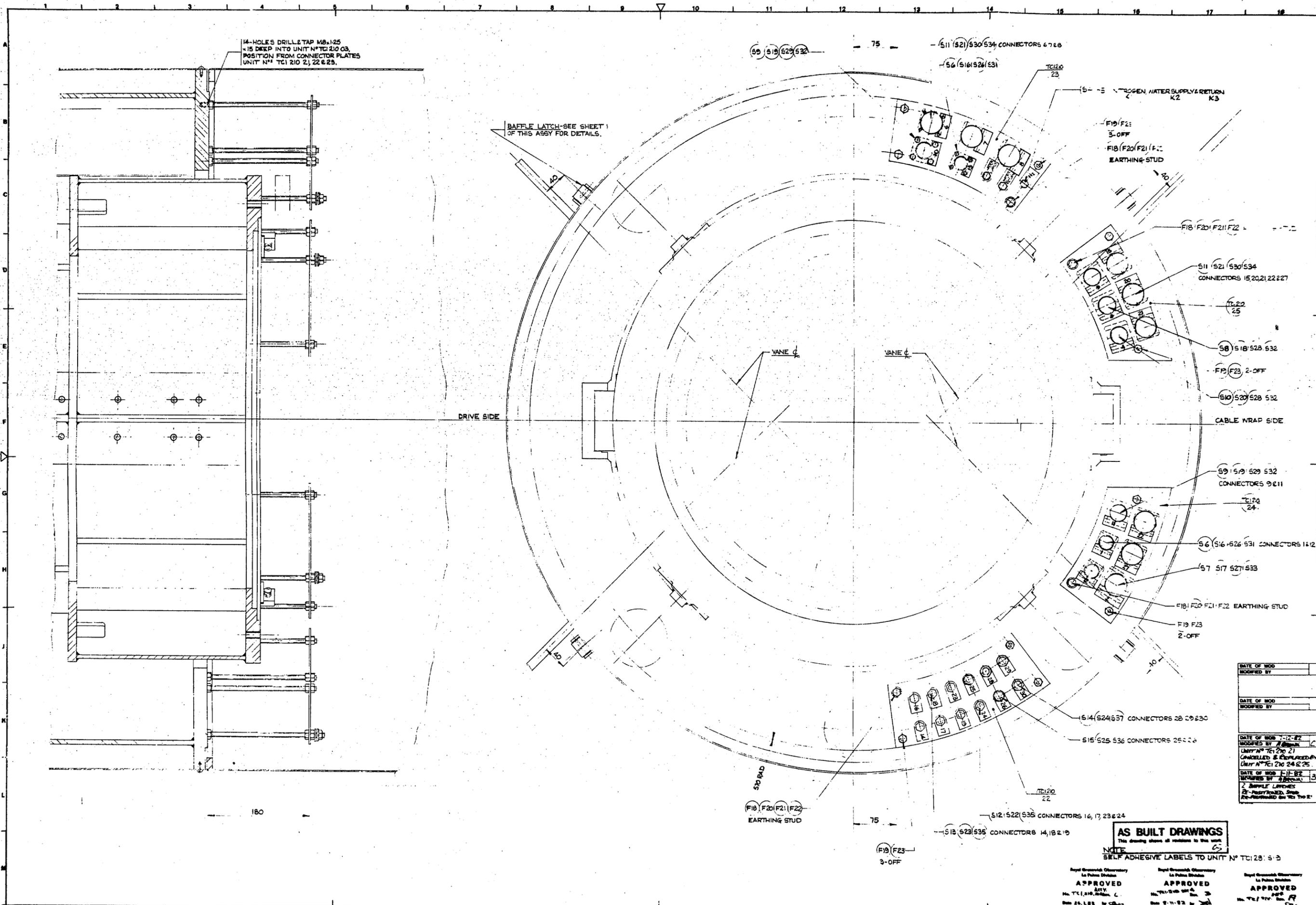
**AS BUILT DRAWINGS**  
This drawing shows all revisions to this work.

Royal Greenwich Observatory  
La Palma Station  
**APPROVED**  
No. TC1210 Rev. 3  
Date 2. 12. 1987

Royal Greenwich Observatory  
La Palma Station  
**APPROVED**  
No. TC1210 Rev. 8  
Date 2. 12. 1987

Royal Greenwich Observatory  
La Palma Station  
**APPROVED**  
No. TC1210 Rev. A  
Date 2. 12. 1987

<b>Grubb Parsons</b> A merger of Clarke Chapman and Raytheon Parsons	SURFACE FINISH EQUIVALENTS MICROMETRES 4 8 16 32 63 125 250 500 MICROMETRES 1 2 4 8 16 32 63 125	SURFACE FINISH SYMBOLS DENOTES NOT NECESSARILY MACHINED DENOTES MACHINED	WELD SYMBOLS TO BS 499 PART 2 1969	FABRICATION TOLERANCES DIMENSIONS UP TO 250 ± 0.20 DIMENSIONS FROM 250 TO 2500 ± 0.30 ANGLES ± 1: 800 STRAIGHTNESS/FLATNESS ± 0.100	THIS DRAWING IS THE PROPERTY OF NEI PARSONS LTD. AND MUST NOT BE COPIED OR DISCLOSED TO A THIRD PARTY WITHOUT GRUBB PARSONS WRITTEN CONSENT.	GENERAL MACHINING TOLERANCES (EXCEPT WHERE STATED OTHERWISE) UNSPECIFIED DIMENSIONS DIMENSIONS WITH OVER ± 0.10 DIMENSIONS WITH OVER ± 0.05 DIMENSIONS WITH OVER ± 0.01	ALL DIMENSIONS ARE IN MILLIMETRES ANGLES & SCREW THREADS TO B.S. 3443 PART 2 MEDIUM FIT MACHINED DIA CONCENTRIC TO 0.1 TIR	PROJECTION CHECKED 3rd ANGLE DATE 20.4.81	DRAWN W. REEVE DATE 20.4.81	DATE OF MOD 6-10-82 MODIFIED BY [Signature] No. of Rev. 3 Rev. 3	DATE OF MOD 11-1-82 MODIFIED BY [Signature] No. of Rev. 8 Rev. 8	DATE OF MOD 11-1-82 MODIFIED BY [Signature] No. of Rev. A Rev. A	TITLE 4.2 METRE TELESCOPE ASSEMBLY OF TOP END CENTRE STRUCTURE	SCALE 1:1	SHEET 3 of 4 TC1210
	AS BUILT DRAWINGS This drawing shows all revisions to this work.														



DATE OF MOD	
MODIFIED BY	
DATE OF MOD	
MODIFIED BY	
DATE OF MOD	7-12-82
MODIFIED BY	A. Brown
UNIT N° TC1 210 21 CANCELLED & REPLACED BY UNIT N° TC1 210 24 & 25	
DATE OF MOD	7-11-82
MODIFIED BY	J. Brown
2 BAFFLE LATCHES RE-POSITIONED, SHIP RE-ASSEMBLED ON TC1 210 21	

**AS BUILT DRAWINGS**  
This drawing shows all variations to the work.

NOTE  
SELF ADHESIVE LABELS TO UNIT N° TC1 210 5-9

Royal Greenwich Observatory  
La Palma Division

APPROVED  
DATE 7-10-82  
BY A. Brown

Royal Greenwich Observatory  
La Palma Division

APPROVED  
DATE 7-10-82  
BY J. Brown

Royal Greenwich Observatory  
La Palma Division

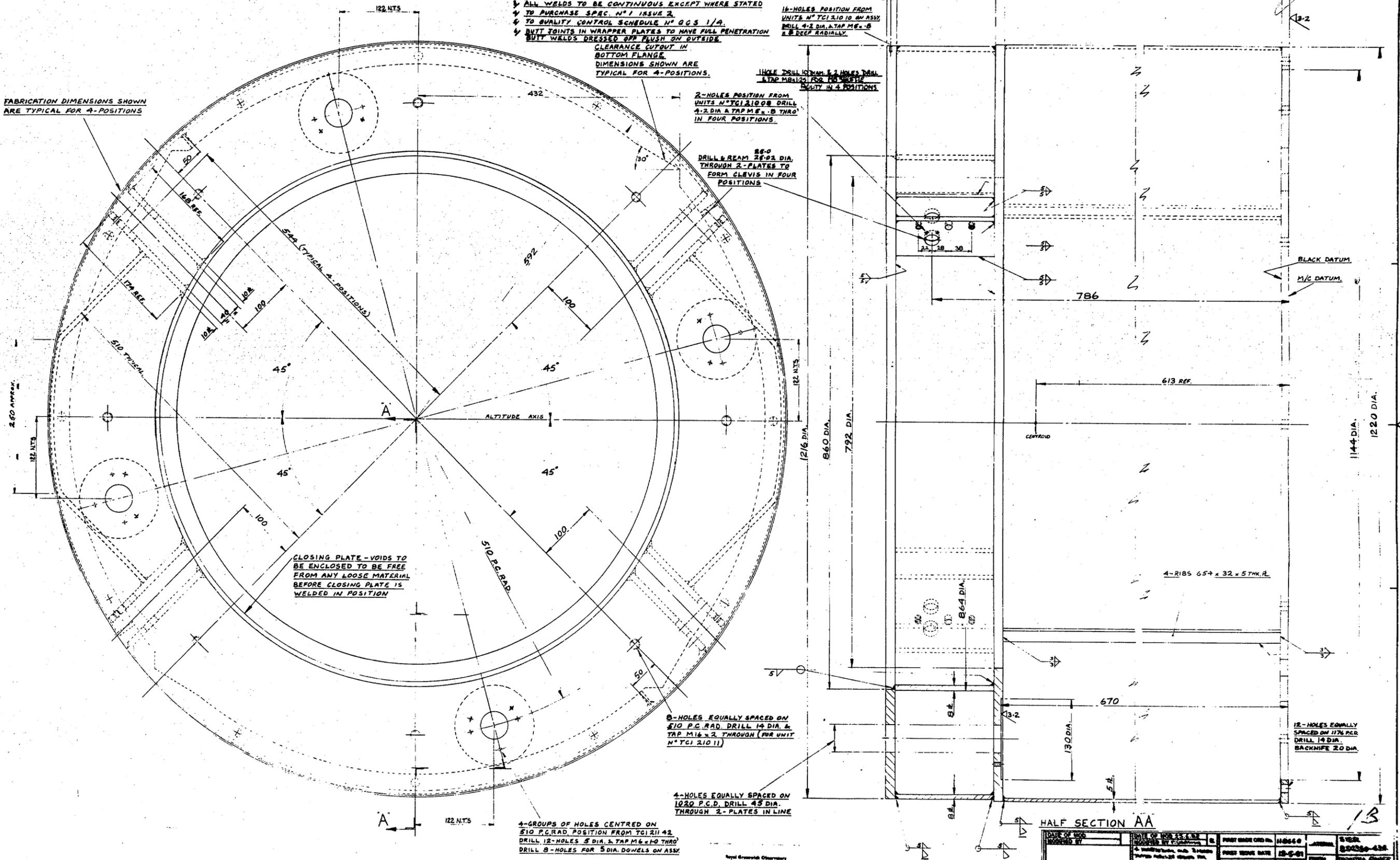
APPROVED  
DATE 7-10-82  
BY J. Brown

<b>SURFACE FINISH EQUIVALENTS</b> A merger of Clarke Chapman and Rayette Parsons	SURFACE FINISH SYMBOLS DENOTES NOT NECESSARILY MACHINED DENOTES MACHINED	WELD SYMBOLS TO BS 499 PART 1	FABRICATION TOLERANCES DIMENSIONS UP TO 250 ± 0.20 DIMENSIONS FROM 250 TO 2500 ± 0.30 ANGLES 1: 800 STRAIGHTNESS/FLATNESS 1: 800	THIS DRAWING IS THE PROPERTY OF HEI PARSONS LTD AND MUST NOT BE COPIED OR DISCLOSED TO A THIRD PARTY WITHOUT GRUBB PARSONS WRITTEN CONSENT.	SPECIAL MACHINING TO DIMENSIONS UNLESS OTHERWISE SPECIFIED DIMENSIONS WITH - OVER ± 0.03 DIMENSIONS WITH - OVER ± 0.01	ALL DIMENSIONS ARE IN MILLIMETRES ANGLES - SCREW THREADS TO B.S. 3843 PART 2 MEDIUM FIT MACHINED DIA CONCENTRIC TO 0.1 TIR	PROJECTION CHECKED 3rd ANGLE APPROVED	DRAWN A. BROWN DATE 7-10-82	<b>GRUBB PARSONS</b> NEWCASTLE UPON TYNE NE6 2YB TITLE 4.2 METRE TELESCOPE ASSEMBLY OF TOP END CENTRE STRUCTURE SCALE 1/2	SHEET 4 OF 4 DRAWING NUMBER TC1 210 ASSY
	THIS DRAWING CONFORMS TO B.S. 208									



MATERIAL BS 4360-43A

- NOTES:-**
- TO BE STRESS RELIEVED TO B.S. 1500-1958 SECTION 4.D & GRIT BLASTED- PAINT WITH PRIMER IMMEDIATELY AFTER GRIT BLASTING
  - ALL WELD SURFACES TO BE CLEAN & FREE FROM SCALE, LAMINATIONS & INCLUSIONS.
  - ALL WELDS TO BE CONTINUOUS EXCEPT WHERE STATED
  - TO PURCHASE SPEC. N° 1 ISSUE 2
  - TO QUALITY CONTROL SCHEDULE N° QCS 1/4.
  - BUTT JOINTS IN WRAPPER PLATES TO HAVE FULL PENETRATION BUTT WELDS DRESSED OFF FLUSH ON OUTSIDE.



FABRICATION DIMENSIONS SHOWN ARE TYPICAL FOR 4-POSITIONS

CLEARANCE CUTOUT IN BOTTOM FLANGE DIMENSIONS SHOWN ARE TYPICAL FOR 4-POSITIONS.

16-HOLES POSITION FROM UNITS N° TCI 210 10 ON ASSY. DRILL 4.2 DIA. & TAP M6 x 0.8 & 8 DEEP RADIALLY.

2-HOLES POSITION FROM UNITS N° TCI 210 08 DRILL 4.2 DIA. & TAP M6 x 0.8 THRO' IN FOUR POSITIONS.

DRILL & REAM 25.02 DIA. THROUGH 2-PLATES TO FORM CLEVIS IN FOUR POSITIONS

1-HOLE DRILL 10.00 DIA. & 2 HOLES DRILL & TAP M8 x 1.0 FOR POSITIVE LOCK IN 4 POSITIONS

CLOSING PLATE - VOIDS TO BE ENCLOSED TO BE FREE FROM ANY LOOSE MATERIAL BEFORE CLOSING PLATE IS WELDED IN POSITION

8-HOLES EQUALLY SPACED ON 510 P.C. RAD. DRILL 14 DIA. & TAP M16 x 2 THROUGH (FOR UNIT N° TCI 210 11)

4-HOLES EQUALLY SPACED ON 1020 P.C.D. DRILL 45 DIA. THROUGH 2-PLATES IN LINE

4-GROUPS OF HOLES CENTRED ON 510 P.C. RAD. POSITION FROM TCI 211 42 DRILL 12-HOLES 5 DIA. & TAP M6 x 1.0 THRO' DRILL 8-HOLES FOR 5 DIA. DOWELS ON ASSY.

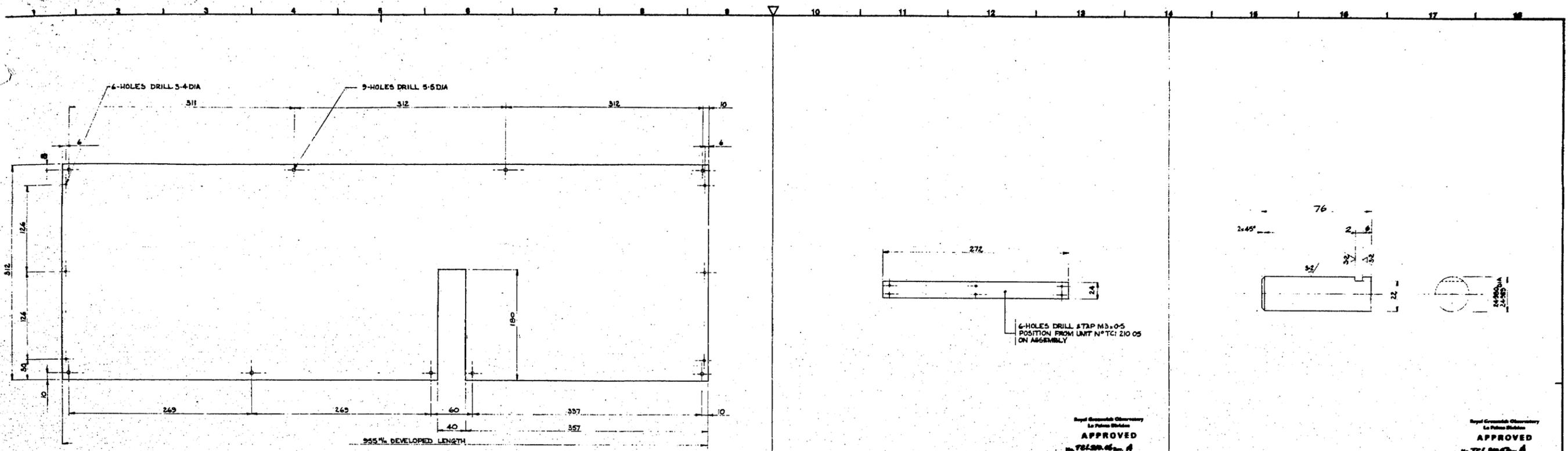
BLACK DATUM  
M/C DATUM

HALF SECTION AA

ROYAL GREENWICH OBSERVATORY  
La Palma Division  
APPROVED  
No. 7822000 Rev. A  
Date 2.8.81

AS BUILT DRAWING  
This drawing shall be retained by the user.

DATE OF ISS. 10-3-81	DATE OF REV. 10-3-81	REV. NO. 1	REV. DESCRIPTION
ISSUED BY	DESIGNED BY	CHECKED BY	APPROVED BY
PROJECT NAME AND NO. 4-2 METRE TELESCOPE		PROJECT REFERENCE NO. 10-3-81	PROJECT DRAWING NO. TCI 210 04
DRAWN BY		SCALE 1:2	UNIT NO. 10-3-81
MATERIAL SPECIFICATION		QUANTITY	REMARKS



NOTE  
BEND TO A RADIUS OF 608mm  
TWO OF THESE COVERS ARE TO BE  
OPPOSITE HAND TO THE REMAINING TWO,  
HANDING DEPENDS ON THE WAY THE COVERS  
ARE CURVED, IF TWO BENT INWARD & 2 BENT  
OUTWARD

Royal Greenwich Observatory  
La Palma Division  
**APPROVED**  
No. 761.00.09 Rev. A  
Date 5.5.81

DATE OF MOD. REVISION BY	DATE OF MOD. REVISION BY	FIRST MADE ORD No. 118660	MATERIAL STAINLESS STEEL	DATE OF MOD. REVISION BY	DATE OF MOD. REVISION BY	FIRST MADE ORD No. 118660	MATERIAL STAINLESS STEEL	DATE OF MOD. REVISION BY	DATE OF MOD. REVISION BY	FIRST MADE ORD No. 118660	MATERIAL STAINLESS STEEL	DATE OF MOD. REVISION BY	DATE OF MOD. REVISION BY	FIRST MADE ORD No. 118660	MATERIAL STAINLESS STEEL		
		FIRST ISSUE DATE 12-5-81	FRESH CASUALTY BLANK			FIRST ISSUE DATE 12-5-81	FRESH CASUALTY BLANK			FIRST ISSUE DATE 12-5-81	FRESH CASUALTY BLANK			FIRST ISSUE DATE 12-5-81	FRESH CASUALTY BLANK		
		COST ACCOUNT 210	PART No.			COST ACCOUNT 210	PART No.			COST ACCOUNT 210	PART No.			COST ACCOUNT 210	PART No.		
		TITLE KAP PLATE						TITLE SPACER						TITLE COVER PLATE			
		WEIGHT 0.000 kg	SCALE 1:1	UNIT No. TC1 210 06		WEIGHT 0.000 kg	SCALE 1:1	UNIT No. TC1 210 09		WEIGHT 0.000 kg	SCALE 1:2	UNIT No. TC1 210 10		WEIGHT 0.000 kg	SCALE 1:2	UNIT No. TC1 210 07	

Royal Greenwich Observatory  
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**APPROVED**  
No. 761.00.09 Rev. A  
Date 5.5.81

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La Palma Division  
**APPROVED**  
No. 761.00.09 Rev. A  
Date 5.5.81

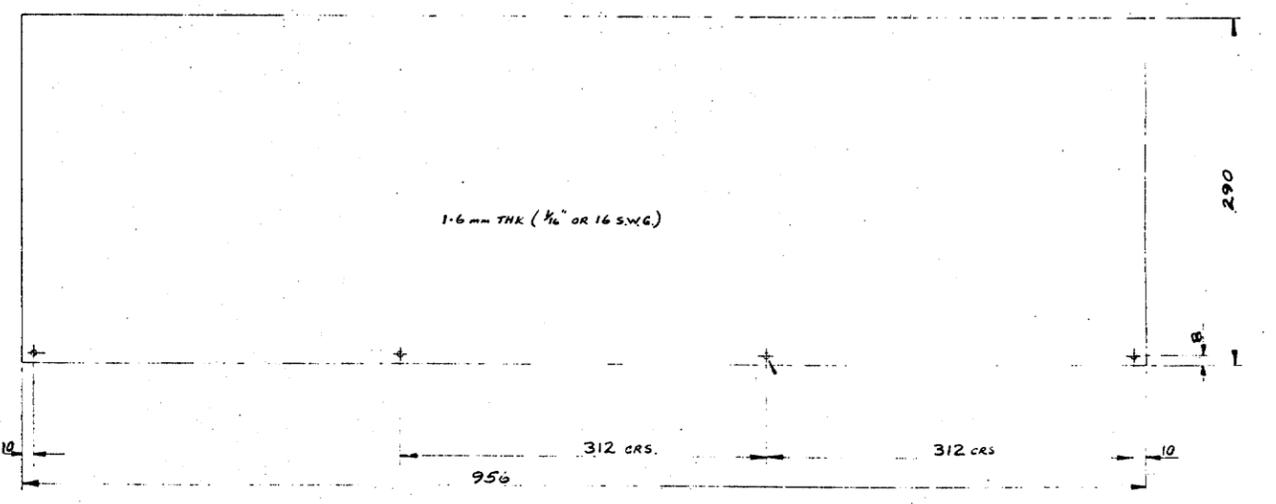
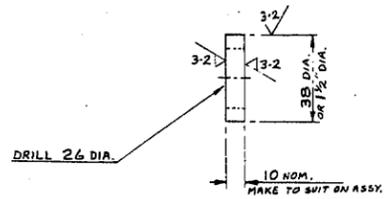
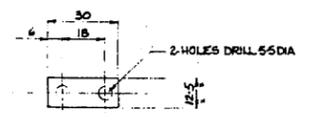


PLATE TO BE ROLLED TO A RADIUS OF 608mm  
4-PLATES TO BE TAILORED TO FIT THE 1216 NOM DIA.  
TOP PLATE OF UNIT N° TC1 210 04 - 290 LONG EDGES OF  
PLATES TO BE DRESSED IF REQUIRED TO EFFECT BUTT  
JOINTS.

4-HOLES DRILL 5.5 DIA.  
**AS BUILT DRAWINGS**  
This drawing shows all materials to be used  
OR  
ESTIMATED WEIGHT 3.48 kg  
ESTIMATED WEIGHT (4-PLATES) 13.93 kg

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La Palma Division  
**APPROVED**  
No. 761.00.09 Rev. A  
Date 5.5.81

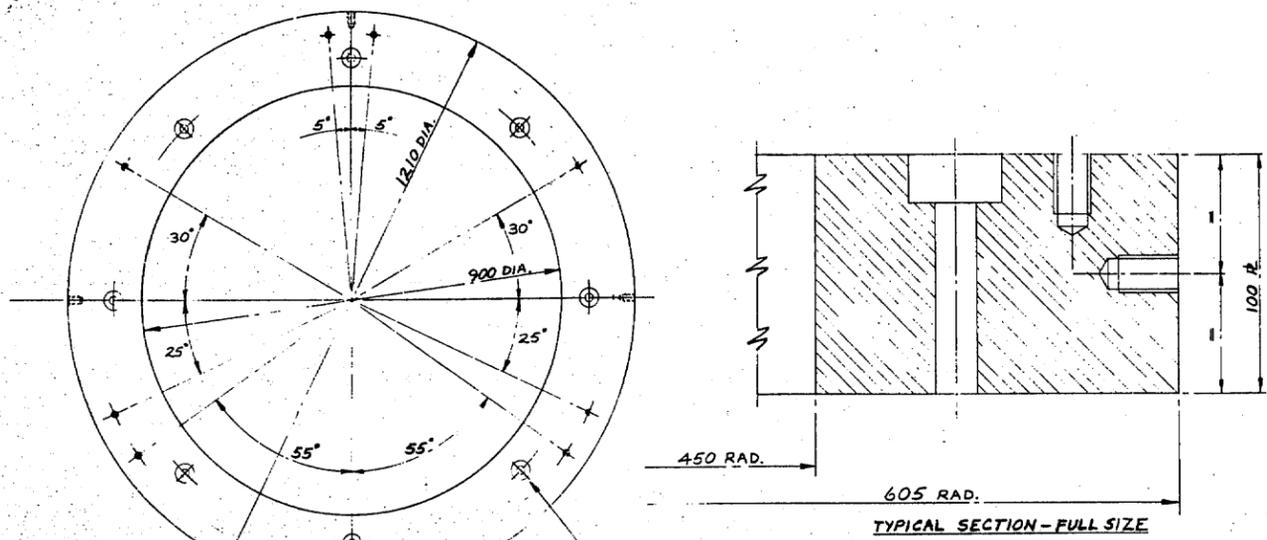
Royal Greenwich Observatory  
La Palma Division  
**APPROVED**  
No. 761.00.09 Rev. A  
Date 5.5.81

Royal Greenwich Observatory  
La Palma Division  
**APPROVED**  
No. 761.00.09 Rev. A  
Date 5.5.81

**AS BUILT DRAWINGS**  
This drawing shows all materials to be used  
OR

ESTIMATED WEIGHT 3.48 kg  
ESTIMATED WEIGHT (4-PLATES) 13.93 kg

DATE OF MOD. REVISION BY	DATE OF MOD. REVISION BY	FIRST MADE ORD No. 118660	MATERIAL STAINLESS STEEL	DATE OF MOD. REVISION BY	DATE OF MOD. REVISION BY	FIRST MADE ORD No. 118660	MATERIAL STAINLESS STEEL	DATE OF MOD. REVISION BY	DATE OF MOD. REVISION BY	FIRST MADE ORD No. 118660	MATERIAL STAINLESS STEEL	DATE OF MOD. REVISION BY	DATE OF MOD. REVISION BY	FIRST MADE ORD No. 118660	MATERIAL STAINLESS STEEL		
		FIRST ISSUE DATE 12-5-81	FRESH CASUALTY BLANK			FIRST ISSUE DATE 12-5-81	FRESH CASUALTY BLANK			FIRST ISSUE DATE 12-5-81	FRESH CASUALTY BLANK			FIRST ISSUE DATE 12-5-81	FRESH CASUALTY BLANK		
		COST ACCOUNT 210	PART No.			COST ACCOUNT 210	PART No.			COST ACCOUNT 210	PART No.			COST ACCOUNT 210	PART No.		
		TITLE KAP PLATE						TITLE SPACER						TITLE COVER PLATE			
		WEIGHT 0.000 kg	SCALE 1:1	UNIT No. TC1 210 06		WEIGHT 0.000 kg	SCALE 1:1	UNIT No. TC1 210 09		WEIGHT 0.000 kg	SCALE 1:2	UNIT No. TC1 210 10		WEIGHT 0.000 kg	SCALE 1:2	UNIT No. TC1 210 07	



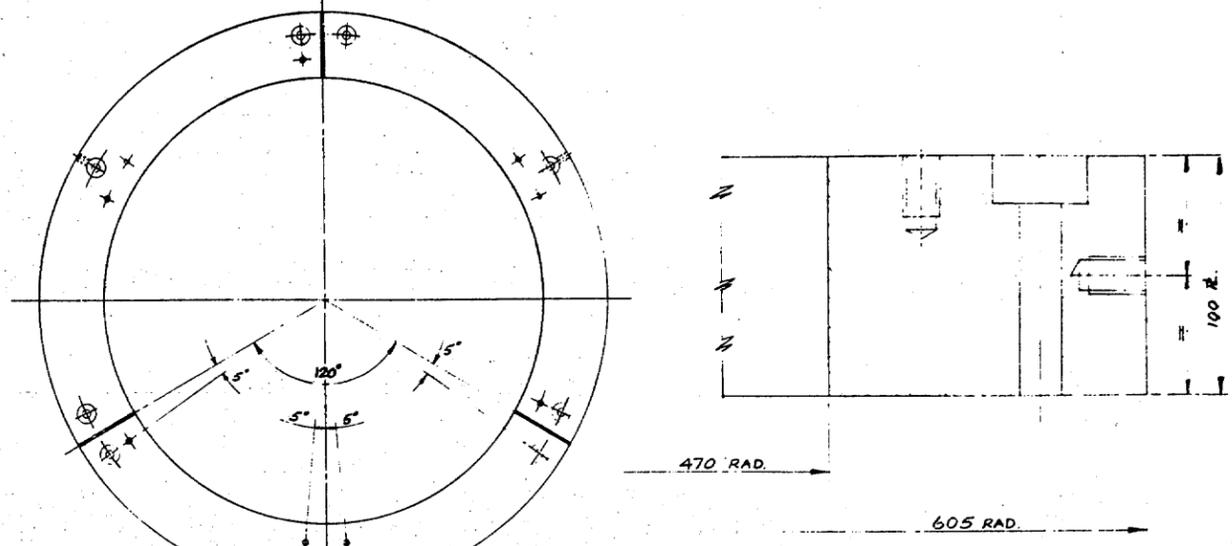
B-HOLES EQUALLY SPACED ON 510 P.C.RAD. DRILL 18 DIA. THROUGH - C'BORE 40 DIA. x 20 DEEP.

4-HOLES DRILL 14 DIA. & TAP M16 x 2 x 25 DEEP (FOR EYE BOLTS)  
8-HOLES ON 560 P.C.RAD. DRILL 14 DIA. & TAP M16 x 2 x 25 DEEP.

ESTIMATED WEIGHT :- 403.28

DATE OF MOD. APPROVED BY	DATE OF MOD. APPROVED BY	FIRST MADE ORD. No.	110660	MATERIAL	100 CARBON STEEL
DATE OF MOD. APPROVED BY	DATE OF MOD. APPROVED BY	FIRST ISSUE DATE	12-8-81	FINISH	ANNEALING
DATE OF MOD. APPROVED BY	DATE OF MOD. APPROVED BY	COST ACCOUNT	210	PART No.	
TITLE: BALANCE WEIGHT					
WEIGHT (SEE ABOVE)		SCALE	1:1	UNIT No.	TC1210 11
No. OFF PER SET			1:1		A

Royal Greenwich Observatory  
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No. TC1210 11  
E.S.P. 1987



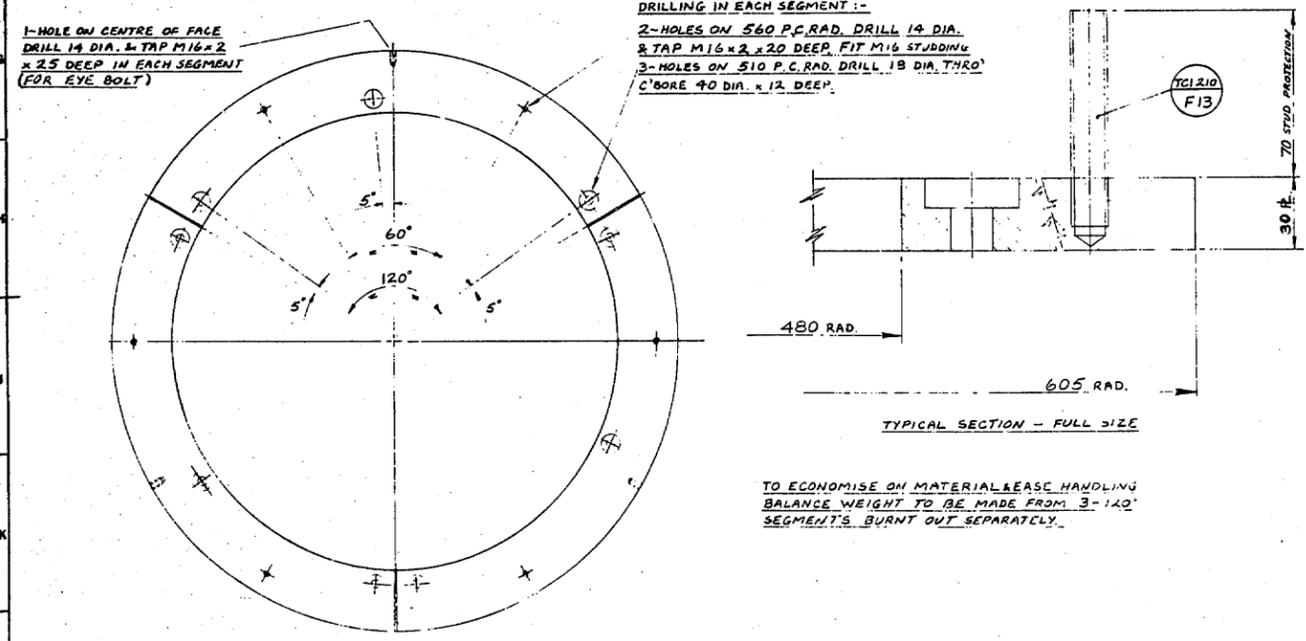
TO ECONOMISE ON MATERIAL & EASE HANDLING BALANCE WEIGHT TO BE MADE FROM 3-120° SEGMENTS BURNT OUT SEPARATELY.

ESTIMATED WEIGHT FOR EACH SEGMENT = 119.33 kg.  
ESTIMATED WEIGHT FOR COMPLETE RING = 358 kg.

DRILLING IN EACH SEGMENT :-  
3-HOLES ON 510 P.C.RAD. DRILL 14 DIA. & TAP M16 x 2 x 25 DEEP.  
3-HOLES ON 560 P.C.RAD. DRILL 18 DIA. THRO. C'BORE 40 DIA. x 20 DEEP.  
1-HOLE DRILL 14 DIA. & TAP M16 x 2 x 25 DEEP (FOR EYE BOLT)

Royal Greenwich Observatory  
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APPROVED  
No. TC1210 12  
E.S.P. 1987

DATE OF MOD. APPROVED BY	DATE OF MOD. APPROVED BY	FIRST MADE ORD. No.	110660	MATERIAL	100 CARBON STEEL
DATE OF MOD. APPROVED BY	DATE OF MOD. APPROVED BY	FIRST ISSUE DATE	12-8-81	FINISH	ANNEALING
DATE OF MOD. APPROVED BY	DATE OF MOD. APPROVED BY	COST ACCOUNT	210	PART No.	
TITLE: BALANCE WEIGHT					
WEIGHT (SEE ABOVE)		SCALE	1:1	UNIT No.	TC1210 12
No. OFF PER SET			1:1		A



DRILLING IN EACH SEGMENT :-  
2-HOLES ON 560 P.C.RAD. DRILL 14 DIA. & TAP M16 x 2 x 20 DEEP. FIT M16 STUDDING.  
3-HOLES ON 510 P.C.RAD. DRILL 18 DIA. THRO. C'BORE 40 DIA. x 12 DEEP.

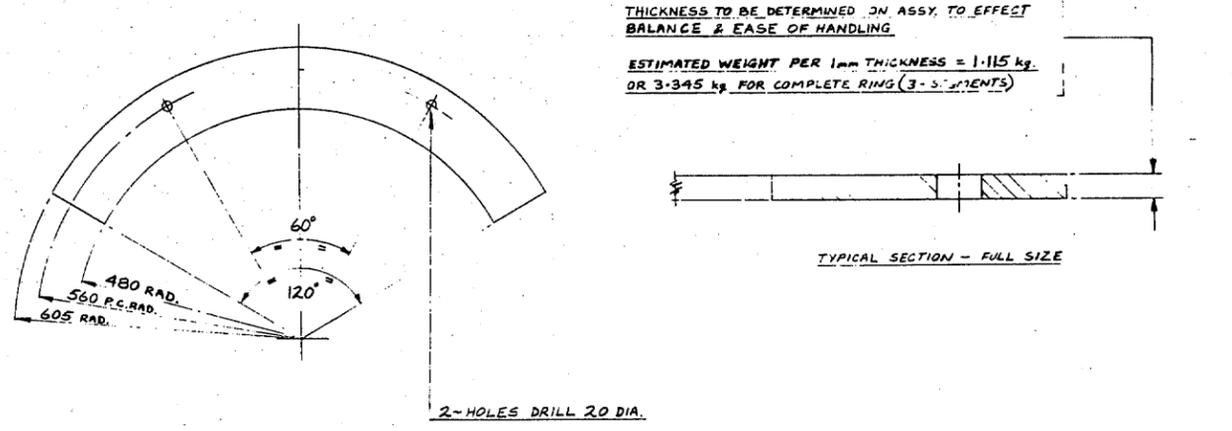
1-HOLE ON CENTRE OF FACE DRILL 14 DIA. & TAP M16 x 2 x 25 DEEP IN EACH SEGMENT (FOR EYE BOLT)

TO ECONOMISE ON MATERIAL & EASE HANDLING BALANCE WEIGHT TO BE MADE FROM 3-120° SEGMENTS BURNT OUT SEPARATELY.

ESTIMATED WEIGHT FOR EACH SEGMENT = 33.45 kg.  
ESTIMATED WEIGHT FOR COMPLETE RING = 100.35 kg.

DATE OF MOD. APPROVED BY	DATE OF MOD. APPROVED BY	FIRST MADE ORD. No.	110660	MATERIAL	100 CARBON STEEL
DATE OF MOD. APPROVED BY	DATE OF MOD. APPROVED BY	FIRST ISSUE DATE	12-8-81	FINISH	ANNEALING
DATE OF MOD. APPROVED BY	DATE OF MOD. APPROVED BY	COST ACCOUNT	210	PART No.	
TITLE: BALANCE WEIGHT					
WEIGHT (SEE ABOVE)		SCALE	1:1	UNIT No.	TC1210 13
No. OFF PER SET			1:1		B

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No. TC1210 13  
E.S.P. 1987



THICKNESS TO BE DETERMINED IN ASSY. TO EFFECT BALANCE & EASE OF HANDLING.

ESTIMATED WEIGHT PER 1mm THICKNESS = 1.115 kg.  
OR 3.345 kg FOR COMPLETE RING (3-120° SEGMENTS)

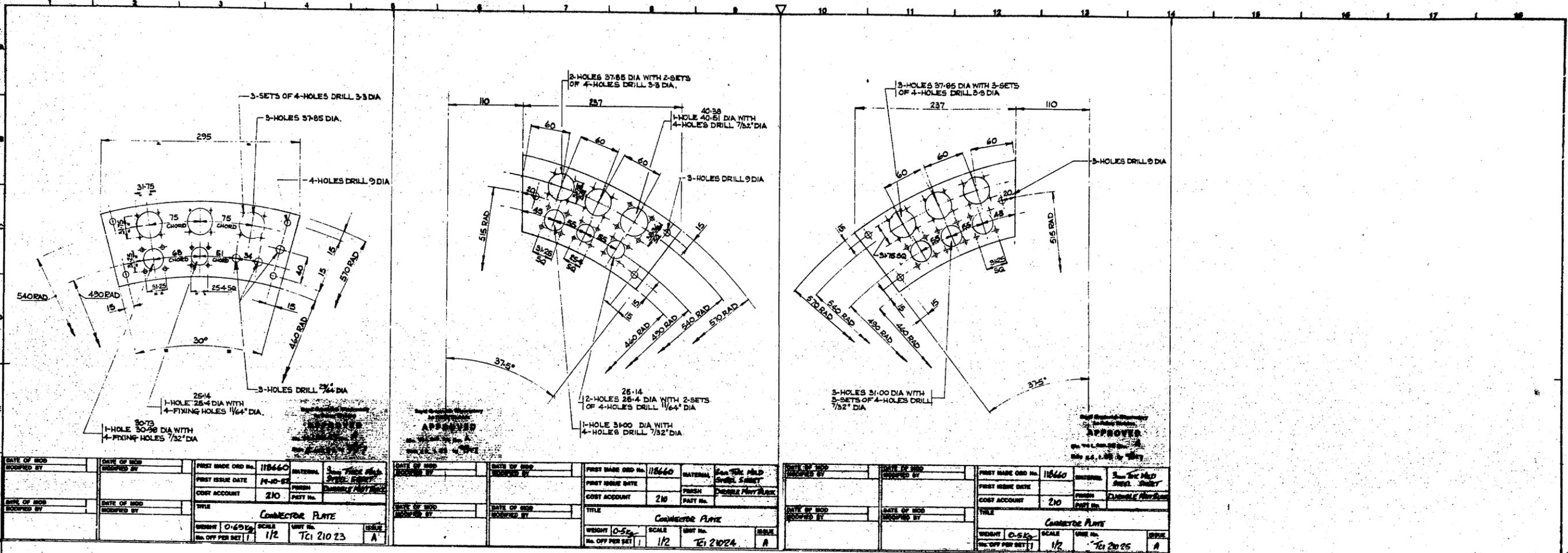
NUMBER OFF TO BE DETERMINED ON ASSY. WHEN BALANCING FLIP OVER RING. GENERALLY WEIGHTS TO BE IN MULTIPLES OF 3 FORMING COMPLETE RINGS.

DATE OF MOD. APPROVED BY	DATE OF MOD. APPROVED BY	FIRST MADE ORD. No.	110660	MATERIAL	100 CARBON STEEL
DATE OF MOD. APPROVED BY	DATE OF MOD. APPROVED BY	FIRST ISSUE DATE	12-8-81	FINISH	ANNEALING
DATE OF MOD. APPROVED BY	DATE OF MOD. APPROVED BY	COST ACCOUNT	210	PART No.	
TITLE: BALANCE WEIGHT					
WEIGHT (SEE ABOVE)		SCALE	1:1	UNIT No.	TC1210 14
No. OFF PER SET			1:1		C

Royal Greenwich Observatory  
La Palma Station  
APPROVED  
No. TC1210 14  
E.S.P. 1987







**AS BUILT DRAWINGS**  
The quality of work is guaranteed.