

ARUP 1

Ove Arup & Partners
Building Engineering

Fax To: GOURGOURBES

Fax No: 010 33 6773 3065

Attn: HUMBERT CAMERLO

cc:

From: ANDY SEDGWICK & LORRAINE
LIN

Subject: MOON THEATRE

13 Fitzroy Street
London W1P 6BQ
Telephone: 071-636 1531
Facsimile: 071-580 3924

Direct Dialling:
Fax: 071-465 3743

Date: 24/4/91

Ref/Job no:

Total Pages: 25
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Message

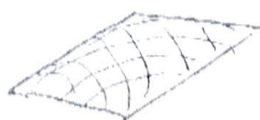
HUMBERT,

- ATTACHED IS THE DESIGN OF THE FIRST
MIRROR

- ITS SHAPE IS CUT FROM A SMALL SECTION
OF A VERY LARGE PARABOLOID WHICH
TAKES PARALLEL RAYS OF MOON LIGHT
AND FOCUSES THEM TO A POINT BEHIND
THE STAGE

* * FROM THE DIAGRAMS, WE SEE
THAT IT IS RELATIVELY FLAT.

- THE SHAPE IS DEVELOPED USING A
SERIES OF LONG NARROW 3x3 BEAMS
CURVED TO FORM A GRID.



ARUP

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Calculation Sheet

JOB NO.

SHEET NO.

REV.

PAGE 2

Job Title

Member/Location

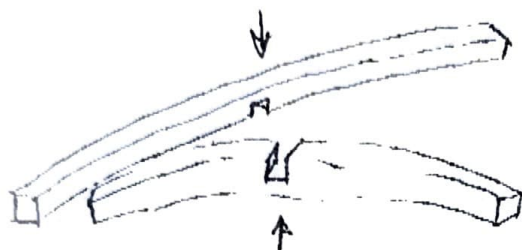
Dig. Ref.

Made by

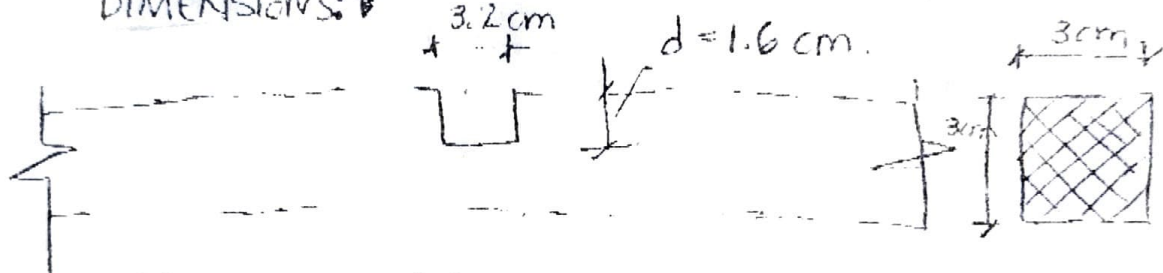
Date

Crd.

- THE GRID WILL BE CONSTRUCTED BY HOLDING TOGETHER CROSSING MEMBERS BY NOTCHING



EACH NOTCH WILL HAVE THE FOLLOWING APPROXIMATE DIMENSIONS:



CONSTRUCTION STEPS

STEP 1) CUT ALL OF THE 3x3 BEAMS TO THE APPROPRIATE LENGTH.

NOTCH IN THE SPECIFIED LOCATIONS.

~~THE~~ ~~RELEVANT~~ ~~THE~~ INFORMATION ON THESE BEAMS IS INCLUDED.

EXA

(CONT)

ARUP

Calculation Sheet

PAGE 3

Job Title

Member/Location

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Date

Chd

STEP 1) CONTD.

DATA
TYPECALC ON A BEAM

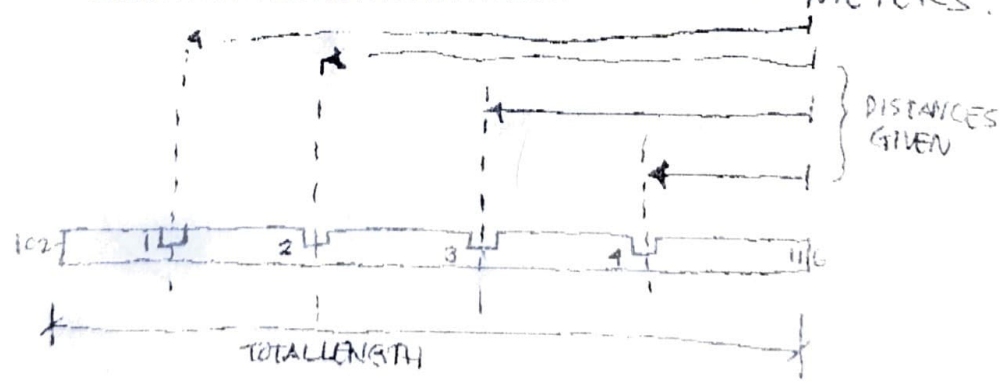
beam number 1 (meters)

Node
NUMBER

node	distance from edge
116	0.000
node	distance from edge
4	0.156
node	distance from edge
3	0.405
node	distance from edge
2	0.654
node	distance from edge
1	0.904
node	distance from edge
102	0.972

POSITION OF THE CENTERLINE
OF THE NOTCHS MEASURED
FROM THE END

LAST NODE:
TOTAL LENGTH
IN METERS.

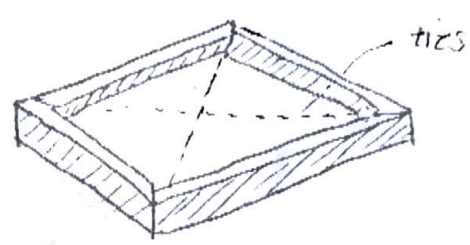


* MARK EACH NOTCH WITH THE NODE NUMBER
DURING CUTTING. TO AVOID

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PAGE 1

STEP 2) CONSTRUCT THE RIGID FRAME.
IT IS FLAT, SO IT CAN BE
ASSEMBLED ON ~~THE~~ A FLAT
SURFACE, LIKE THE GROUND.



PLACE TIES ACROSS THE CORNERS
TO GIVE IT EXTRA RIGIDITY

STEP 3) ~~BEAM~~

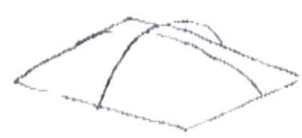
PLACE BEAM 6 IN POSITION BY FASTENING
THE ENDS IN THE SPECIFIED POSITION ALONG
THE EDGE BEAMS.

* MAKE SURE THE ~~ADDER~~ NOTCHES FACE DOWN.



- PLACE BEAM 18 UNDER BEAM 6 WITH
THE NOTCHES FACING UP.

- ~~MAK~~ MATCH UP THE INTERSECTING NODES
THEN SECURE THE ENDS.



~~SECOND PLACE~~

- CONTINUE PLACING ARCHES PARALLEL
TO BEAM 18 IN PLACE STARTING FROM THE
~~BEAM~~ CENTER AND MOVING OUTWARD
BEAMS 19, 17, 20, 16... RESPECTIVELY

AGAIN, WITH THE NOTCHES FACING UP



ARUP

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Calculation Sheet

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Job Title

Member/Location

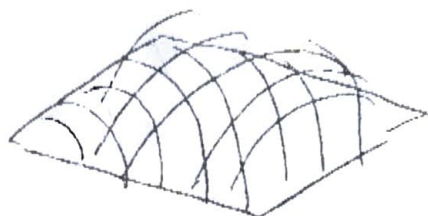
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FINALLY, PLACE THE ARCHES IN THE
OTHER DIRECTION OVER THE GRID
IN A SIMILAR MANNER.



GOOD LUCK!

ANYWAY, I BELIEVE THIS IS ENOUGH
INFORMATION TO GET STARTED.

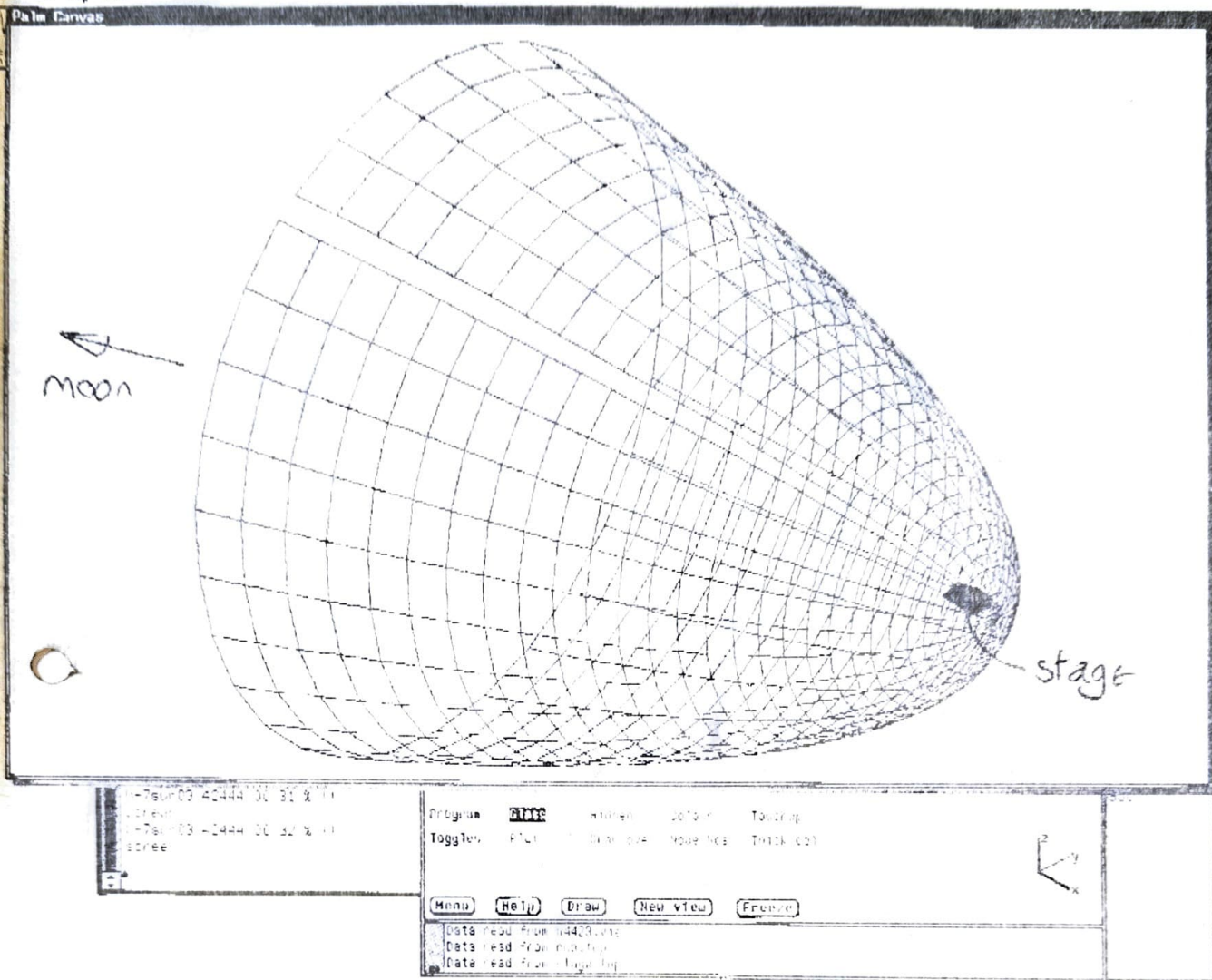
CALL IF THERE ARE ANY QUESTIONS.

Regards,

Jonan

P66

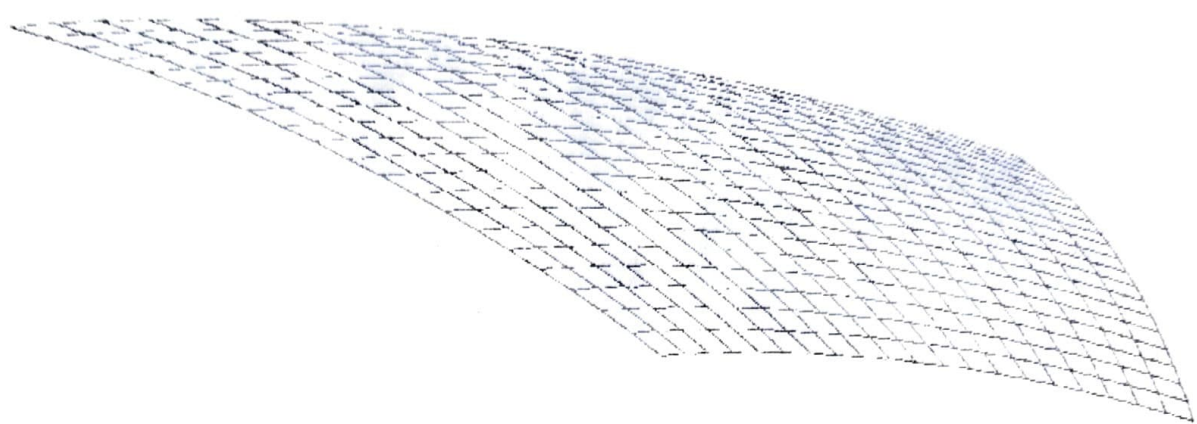
Paint Canvas



whole paraboloid

167

Palm Canvas



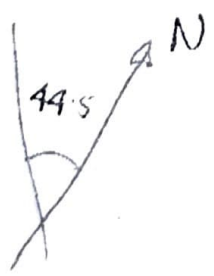
[3] Done textedit
L-7sun24 42441-00 27 % te safe top
[3] 21303
M-7sun24 42441-00 28 % schem

Program **Alisp** Hides Colour Touch up
Toggles Plot Draw over Hide Nos Thick col

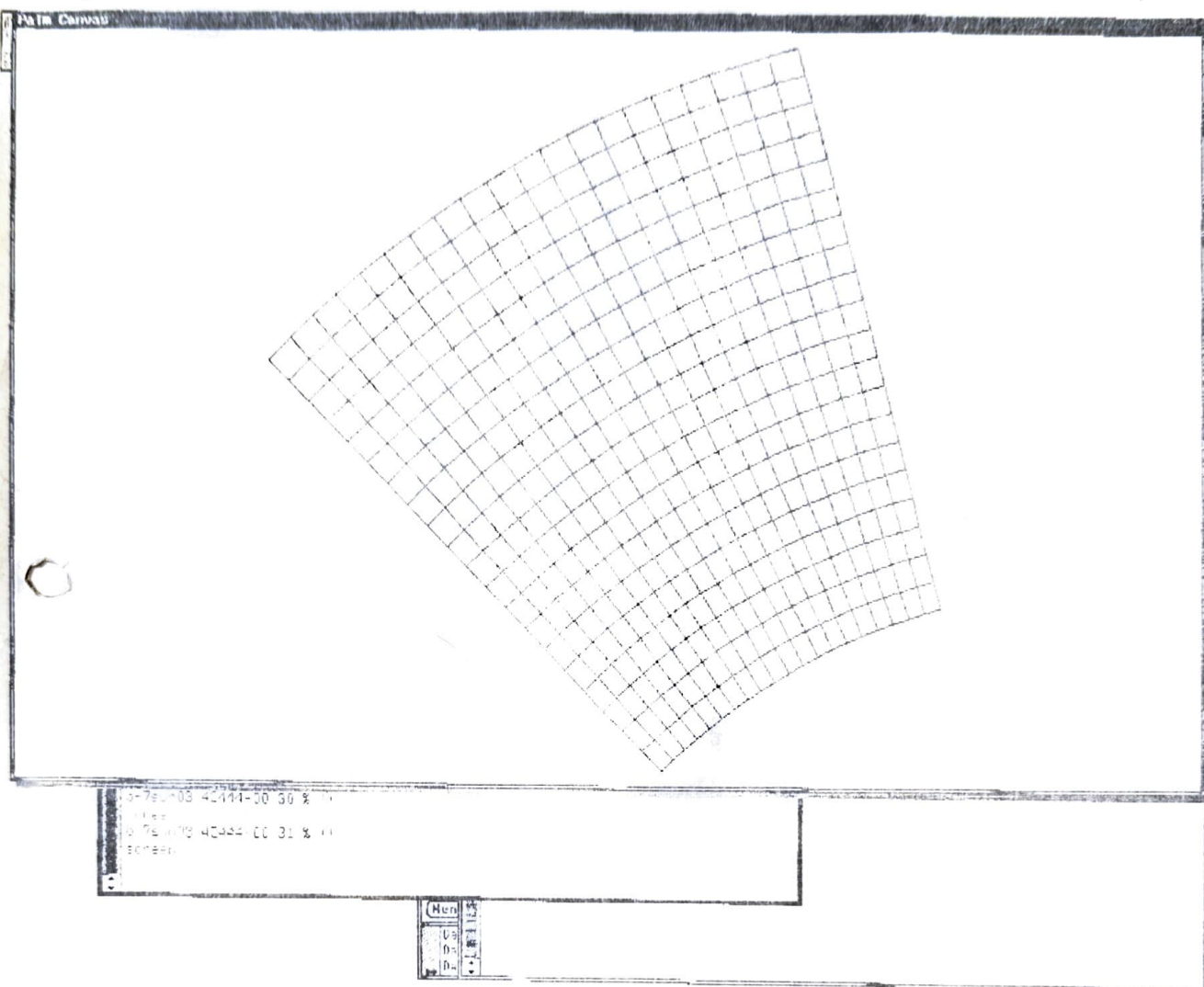
Menu Help Draw New view Freeze

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Data read from 84401.tcp
File read from 84401.tcp

PARABOLOID ARC :
PLAN VIEW

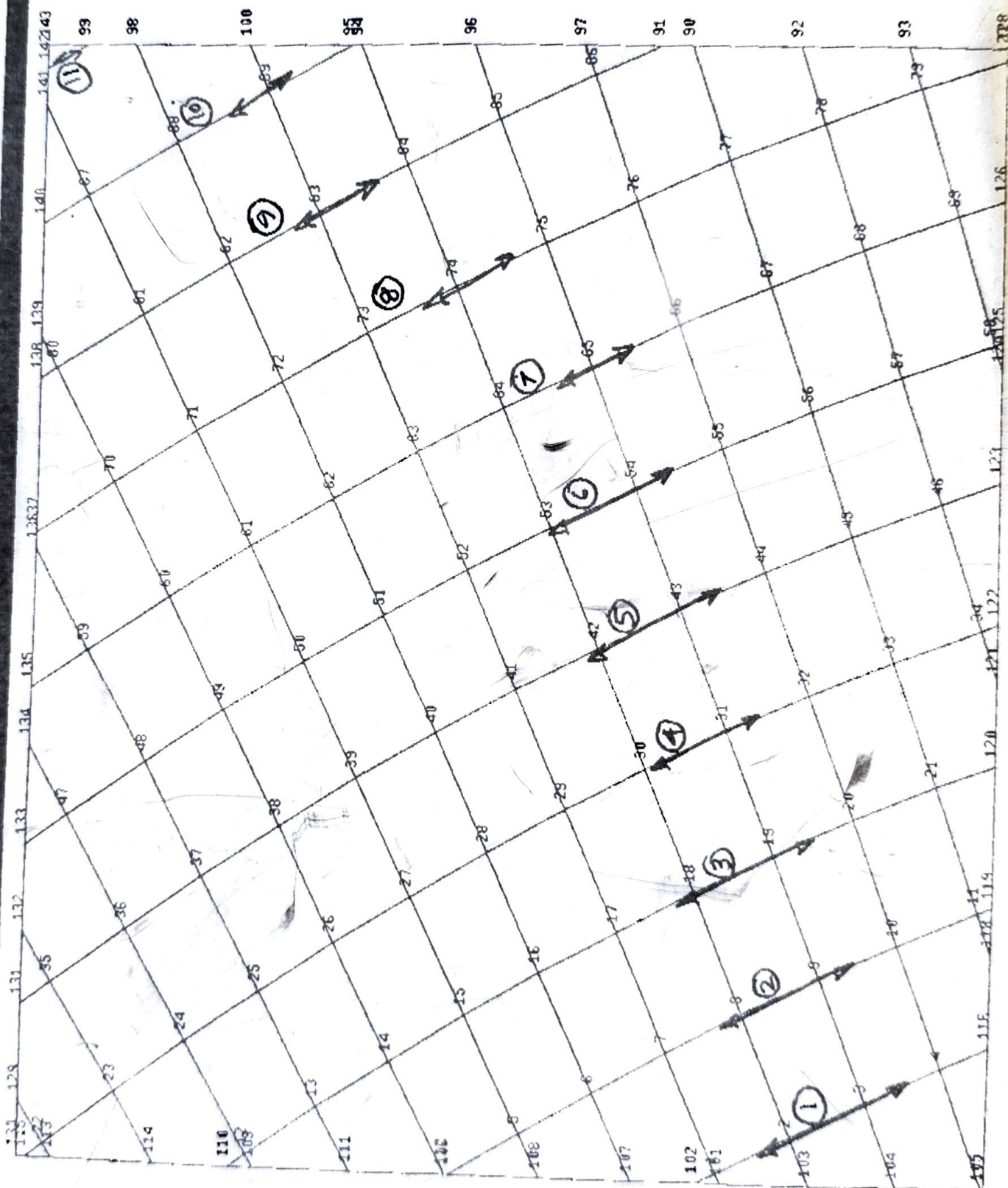


PG 9



PARABOLOID ARC :

VIEW FROM MOON



PG 17

1410

beam number 1

node distance from edge
116 0.000
node distance from edge
4 0.156
node distance from edge
3 0.405
node distance from edge
2 0.654
node distance from edge
1 0.904
node distance from edge
102 0.972



beam number 2

node distance from edge
119 0.000
node distance from edge
11 0.047
node distance from edge
10 0.305
node distance from edge
9 0.562
node distance from edge
8 0.820
node distance from edge
7 1.079
node distance from edge
6 1.338
node distance from edge
5 1.597
node distance from edge
106 1.850



beam number 3

node distance from edge
120 0.000
node distance from edge
21 0.187
node distance from edge
20 0.453
node distance from edge
19 0.719
node distance from edge
18 0.986
node distance from edge
17 1.254
node distance from edge
16 1.522
node distance from edge
15 1.790
node distance from edge
14 2.059
node distance from edge
13 2.329
node distance from edge
12 2.600
node distance from edge
110 2.668



beam number 4

node distance from edge
122 0.000
node distance from edge
34 0.052

P419

node distance from edge
33 0.327
node distance from edge
32 0.601
node distance from edge
31 0.877
node distance from edge
30 1.153
node distance from edge
29 1.429
node distance from edge
28 1.706
node distance from edge
27 1.984
node distance from edge
26 2.262
node distance from edge
25 2.540
node distance from edge
24 2.820
node distance from edge
23 3.100
node distance from edge
22 3.380
node distance from edge
115 3.451 X

beam number 5

node distance from edge
123 0.000
node distance from edge
46 0.184
node distance from edge
45 0.467
node distance from edge
44 0.750
node distance from edge
43 1.035
node distance from edge
42 1.319
node distance from edge
41 1.605
node distance from edge
40 1.890
node distance from edge
39 2.177
node distance from edge
38 2.461
node distance from edge
37 2.752
node distance from edge
36 3.040
node distance from edge
35 3.329
node distance from edge
131 3.452 X

beam number 6

node distance from edge
125 0.000
node distance from edge
58 0.024
node distance from edge
57 0.316
node distance from edge
56 0.608

PL 213

node distance from edge
 55 0.900
 node distance from edge
 54 1.193
 node distance from edge
 53 1.487
 node distance from edge
 52 1.781
 node distance from edge
 51 2.076
 node distance from edge
 50 2.371
 node distance from edge
 49 2.668
 node distance from edge
 48 2.964
 node distance from edge
 47 3.262
 node distance from edge
 133 3.420



beam number 7

node distance from edge
 126 0.000
 node distance from edge
 69 0.147
 node distance from edge
 68 0.448
 node distance from edge
 67 0.749
 node distance from edge
 66 1.050
 node distance from edge
 65 1.352
 node distance from edge
 64 1.655
 node distance from edge
 63 1.958
 node distance from edge
 62 2.261
 node distance from edge
 61 2.566
 node distance from edge
 60 2.871
 node distance from edge
 59 3.177
 node distance from edge
 135 3.391



beam number 8

node distance from edge
 127 0.000
 node distance from edge
 79 0.272
 node distance from edge
 78 0.581
 node distance from edge
 77 0.891
 node distance from edge
 76 1.201
 node distance from edge
 75 1.512
 node distance from edge
 74 1.823
 node distance from edge
 73 2.135

Pg 2-1

node distance from edge
72 2.448
node distance from edge
71 2.761
node distance from edge
70 3.075
node distance from edge
137 3.365 X

node distance from edge

beam number 9

node distance from edge
91 0.000
node distance from edge
86 0.230
node distance from edge
85 0.550
node distance from edge
84 0.870
node distance from edge
83 1.191
node distance from edge
82 1.512
node distance from edge
81 1.835
node distance from edge
80 2.158
node distance from edge
138 2.219 X

node distance from edge

beam number 10

node distance from edge
95 0.000
node distance from edge
89 0.303
node distance from edge
88 0.634
node distance from edge
87 0.965
node distance from edge
140 1.132 X

node distance from edge

beam number 11

node distance from edge
99 0.000
node distance from edge
142 0.150

node distance from edge

beam number 12

node distance from edge
93 0.000
node distance from edge
79 0.136
node distance from edge
69 0.549
node distance from edge
58 0.959
node distance from edge
124 1.039 X

node distance from edge

beam number 13

node distance from edge
92 0.000
node distance from edge
78 0.251
node distance from edge
68 0.664

P19 22

node distance from edge
 57 1.073
 node distance from edge
 45 1.481
 node distance from edge
 36 1.086
 node distance from edge
 121 2.048 X

leaf number 14

node distance from edge
 90 0.000
 node distance from edge
 27 0.376
 node distance from edge
 67 0.708
 node distance from edge
 56 1.787
 node distance from edge
 45 1.604
 node distance from edge
 33 2.009
 node distance from edge
 21 2.410
 node distance from edge
 11 2.810
 node distance from edge
 116 2.947 X

leaf number 15

node distance from edge
 97 0.000
 node distance from edge
 88 0.098
 node distance from edge
 76 0.512
 node distance from edge
 16 0.503
 node distance from edge
 65 1.331
 node distance from edge
 44 1.737
 node distance from edge
 32 2.161
 node distance from edge
 20 2.582
 node distance from edge
 10 2.942
 node distance from edge
 8 3.329
 node distance from edge
 125 3.899 X

leaf number 16

node distance from edge
 14 0.000
 node distance from edge
 40 0.261
 node distance from edge
 71 0.567
 node distance from edge
 43 1.082
 node distance from edge
 54 1.475
 node distance from edge
 41 1.881

PA 23

node distance from edge
31 2.284
node distance from edge
19 2.685
node distance from edge
9 3.083
node distance from edge
3 3.480
node distance from edge
104 3.761 X

#####

beam number 17

node distance from edge
94 0.000
node distance from edge
84 0.401
node distance from edge
74 0.813
node distance from edge
64 1.223
node distance from edge
53 1.630
node distance from edge
42 2.035
node distance from edge
30 2.437
node distance from edge
18 2.838
node distance from edge
8 3.236
node distance from edge
2 3.631
node distance from edge
103 3.794 X

#####

beam number 18

node distance from edge
100 0.000
node distance from edge
89 0.156
node distance from edge
83 0.570
node distance from edge
73 0.981
node distance from edge
63 1.390
node distance from edge
52 1.796
node distance from edge
41 2.201
node distance from edge
29 2.602
node distance from edge
17 3.002
node distance from edge
7 3.399
node distance from edge
1 3.794
node distance from edge
101 3.830

#####

beam number 19

node distance from edge
98 0.000
node distance from edge
88 0.336

PC1 21

node	distance from edge
87	0.750 ✓
node	distance from edge
72	1.160
node	distance from edge
62	1.568
node	distance from edge
51	1.974
node	distance from edge
40	2.378
node	distance from edge
28	2.779
node	distance from edge
16	3.177
node	distance from edge
5	3.574
node	distance from edge
107	3.869

beam number 20

node	distance from edge
141	0.000
node	distance from edge
87	0.319
node	distance from edge
81	0.731
node	distance from edge
71	1.141
node	distance from edge
61	1.549
node	distance from edge
50	1.954
node	distance from edge
39	2.356
node	distance from edge
27	2.757
node	distance from edge
15	3.154
node	distance from edge
5	3.550
node	distance from edge
108	3.900

beam number 21

node	distance from edge
139	0.000
node	distance from edge
80	0.110
node	distance from edge
70	0.519
node	distance from edge
60	0.926
node	distance from edge
49	1.330
node	distance from edge
38	1.732
node	distance from edge
26	2.131
node	distance from edge
14	2.528
node	distance from edge
112	2.919

beam number 22

node	distance from edge
136	0.000

PC 25

22

node distance from edge
59 0.362
node distance from edge
48 0.765
node distance from edge
37 1.166
node distance from edge
25 1.565
node distance from edge
13 1.961
node distance from edge
111 2.185



X

beam number 23

node distance from edge
134 0.000
node distance from edge
47 0.252
node distance from edge
36 0.653
node distance from edge
24 1.050
node distance from edge
12 1.446
node distance from edge
109 1.493



X

beam number 24

node distance from edge
132 0.000
node distance from edge
35 0.185
node distance from edge
23 0.582
node distance from edge
114 0.835



X

beam number 25

node distance from edge
129 0.000
node distance from edge
22 0.164
node distance from edge
113 0.207