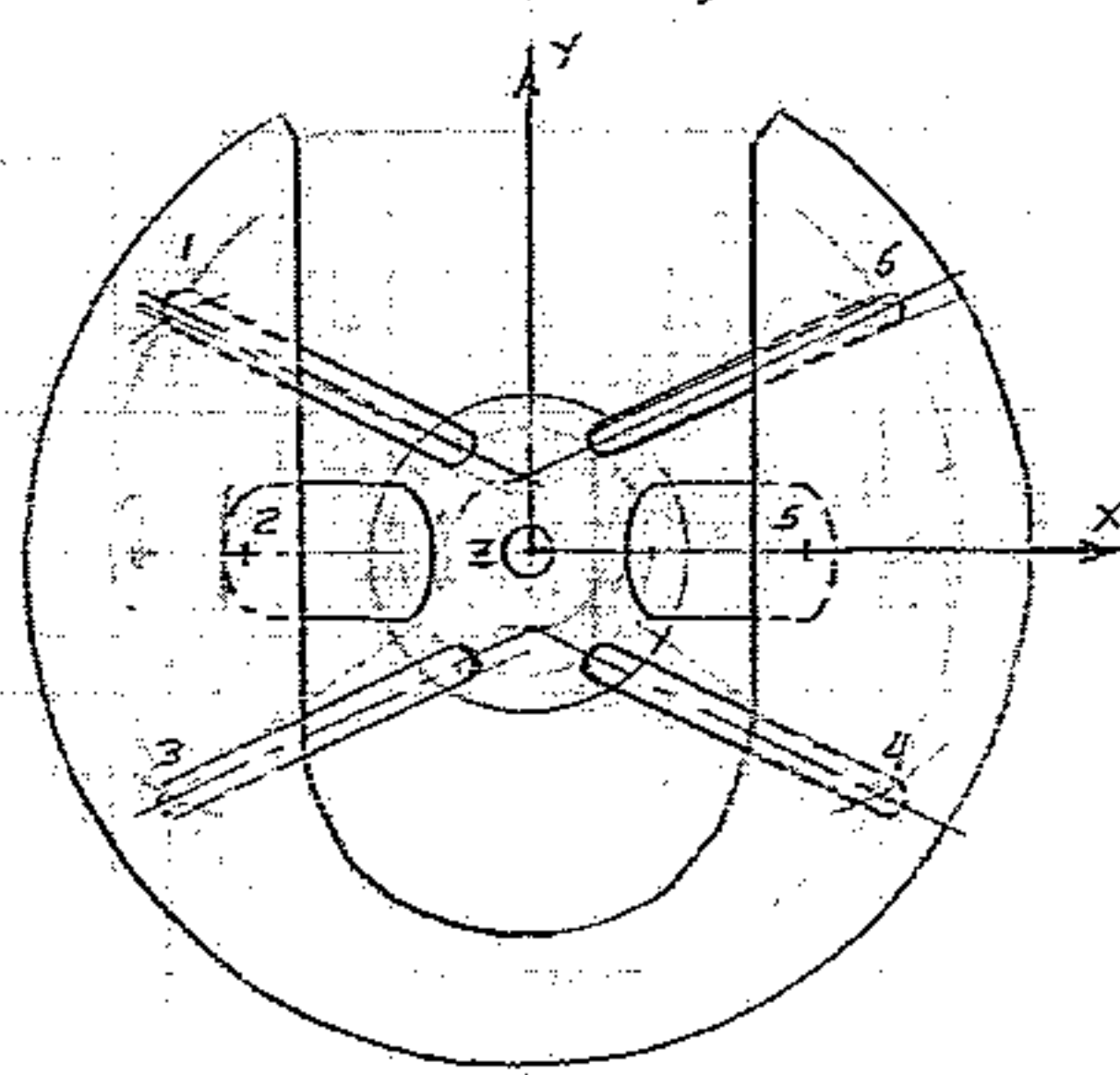


BILL OF MATERIAL

ITEM	QTY.	MATERIAL	DESCRIPTION	WEIGHT
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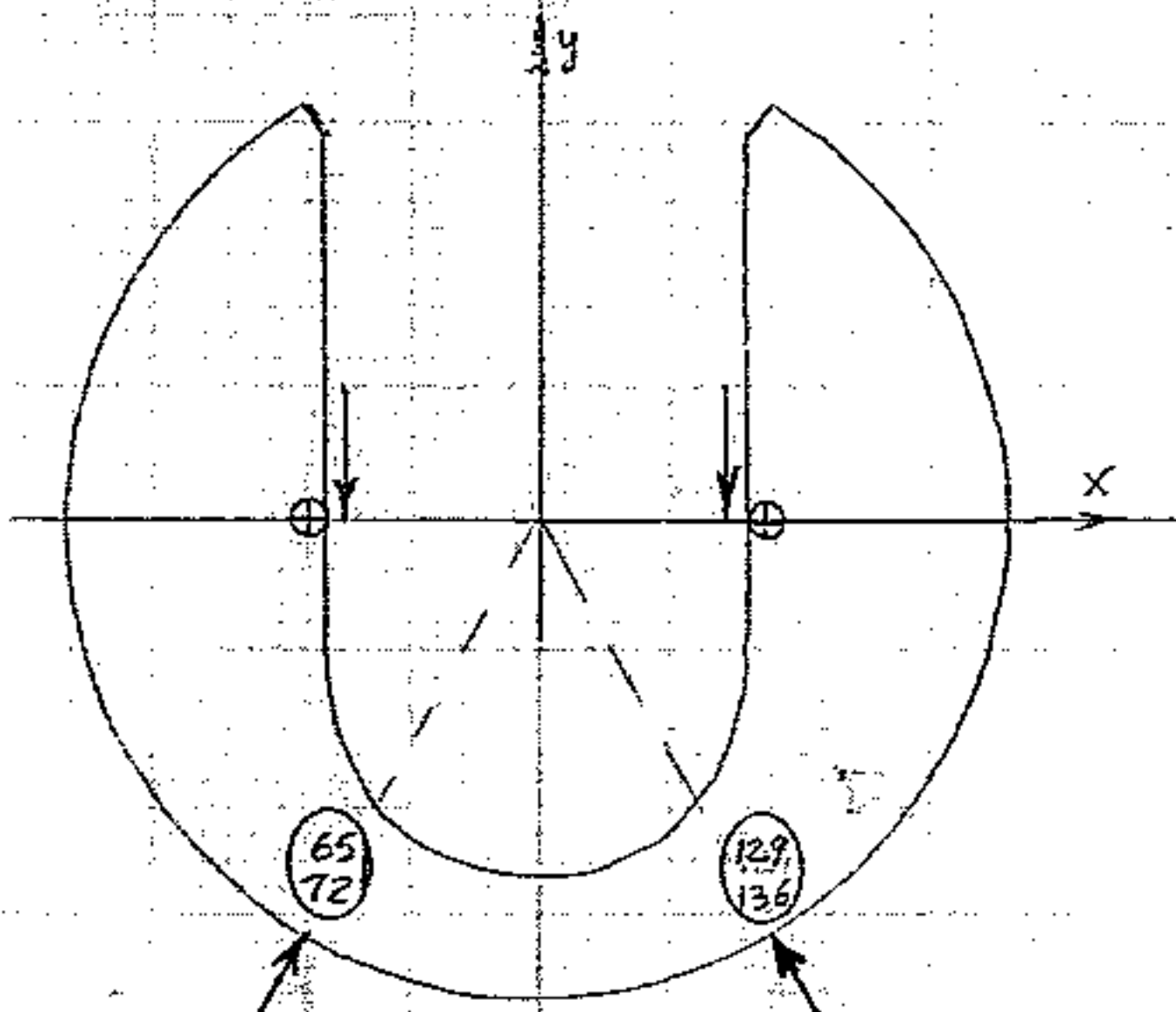
Direction Cosines For Horseshoe Structure Supports  
R-H Coordinate System



Point	Direction X	Direction Y	Direction Z
1	-.4544	-.2328	.8598
2	-.2813	0.0	.9596
3	-.4544	-.2328	.8598
4	.4544	-.2328	.8598
5	.2813	0.0	.9596
6	.4544	.2328	.8598

Case

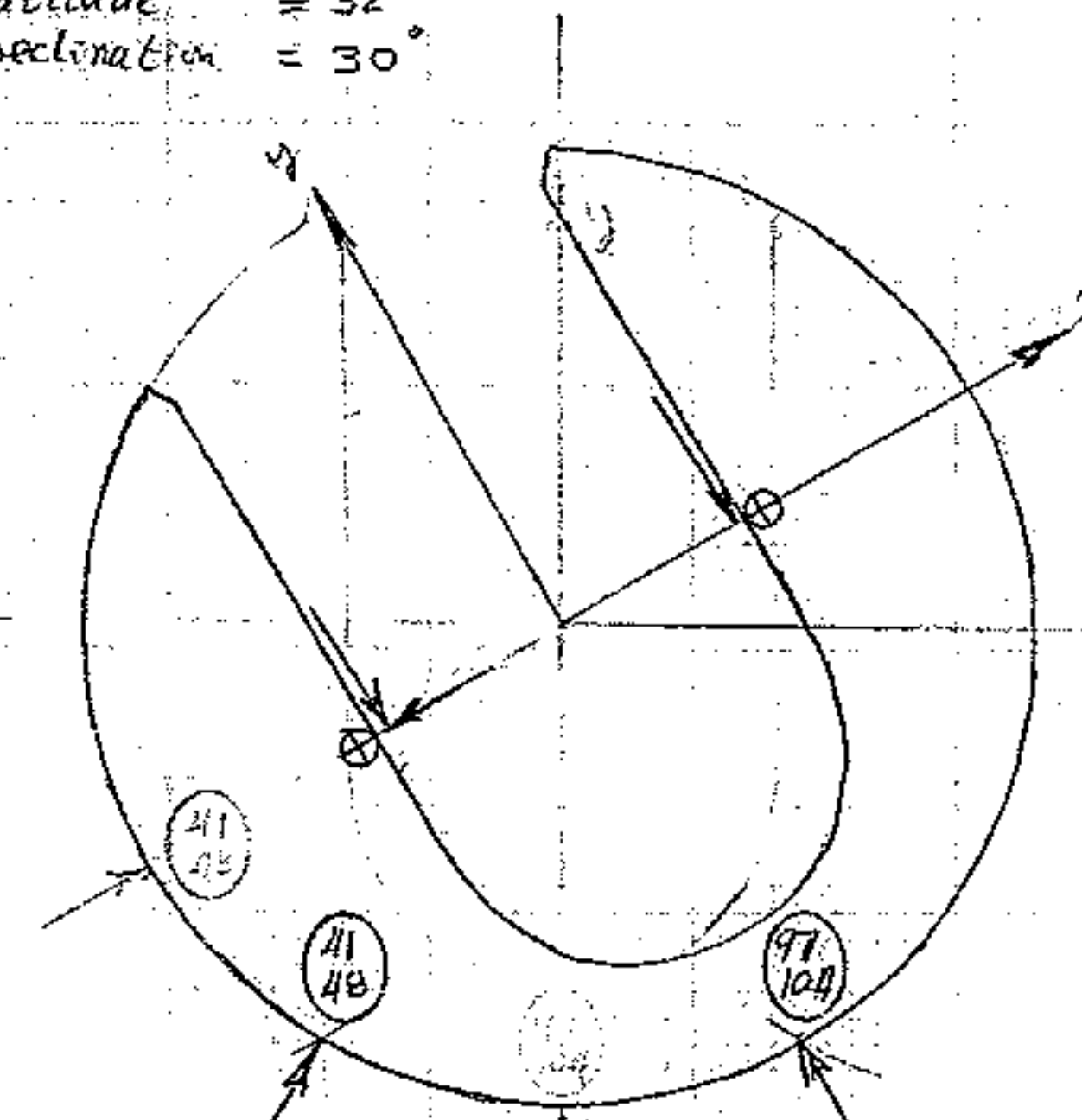
Latitude = 32°  
Declination = 0°



Node	65	72	129	136
Element	153	154	257	258
Direction Cosines	.500 .867 .000	.500 .867 .000	-.500 .867 .000	-.500 .867 .000
Stiffness (lbs/inch)	$1 \times 10^{10}$	$1 \times 10^{10}$	$1 \times 10^{10}$	$1 \times 10^{10}$

Case

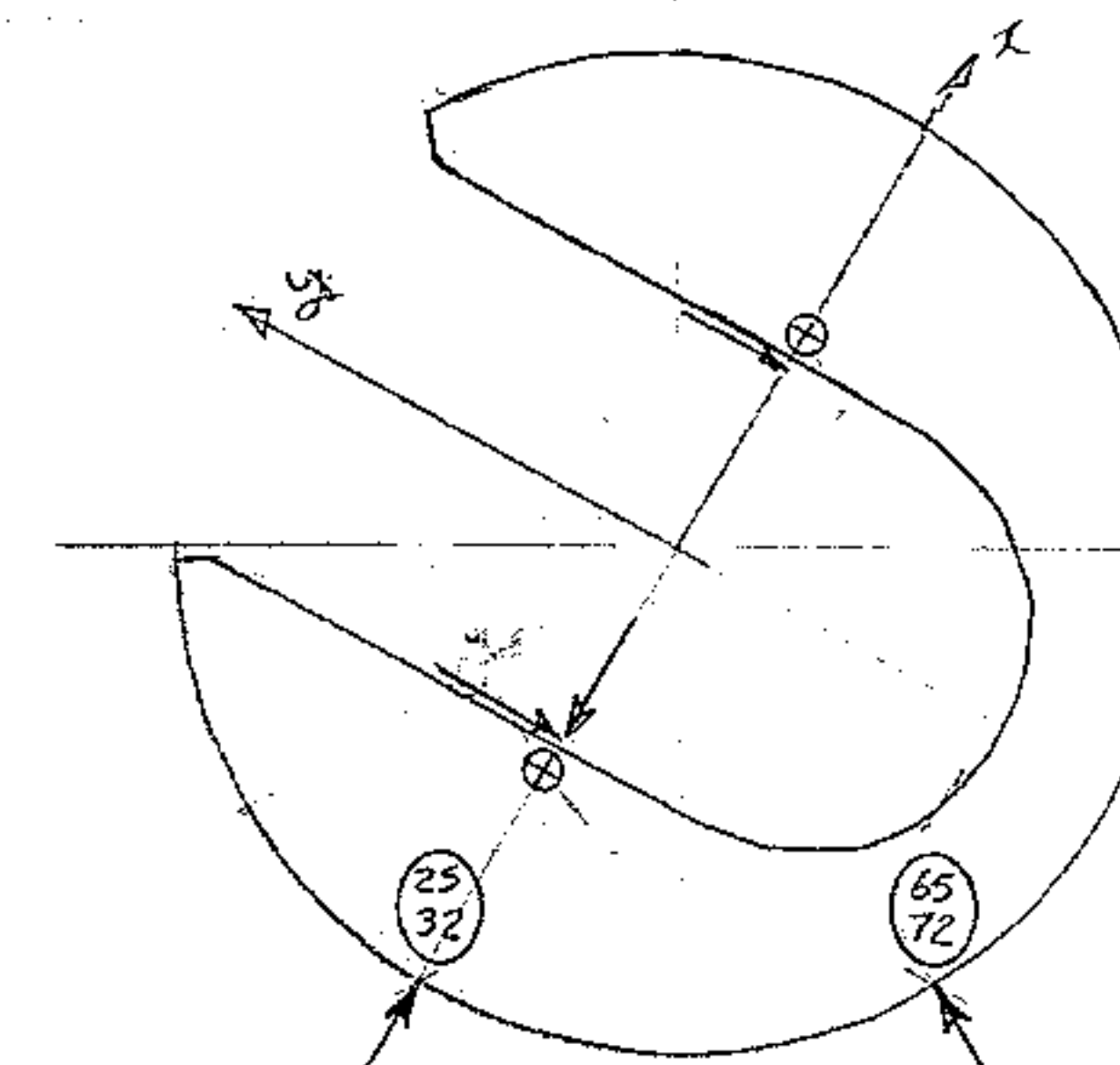
Latitude = 32°  
Declination = 30°



Node	41	49	97	104
Element	76	77	201	202
Direction Cosines	.967 .500 .000	.867 .500 .000	.000 .000 1.000	.000 .000 1.000
Stiffness (lbs/inch)	$1 \times 10^{10}$	$1 \times 10^{10}$	$1 \times 10^{10}$	$1 \times 10^{10}$

Case

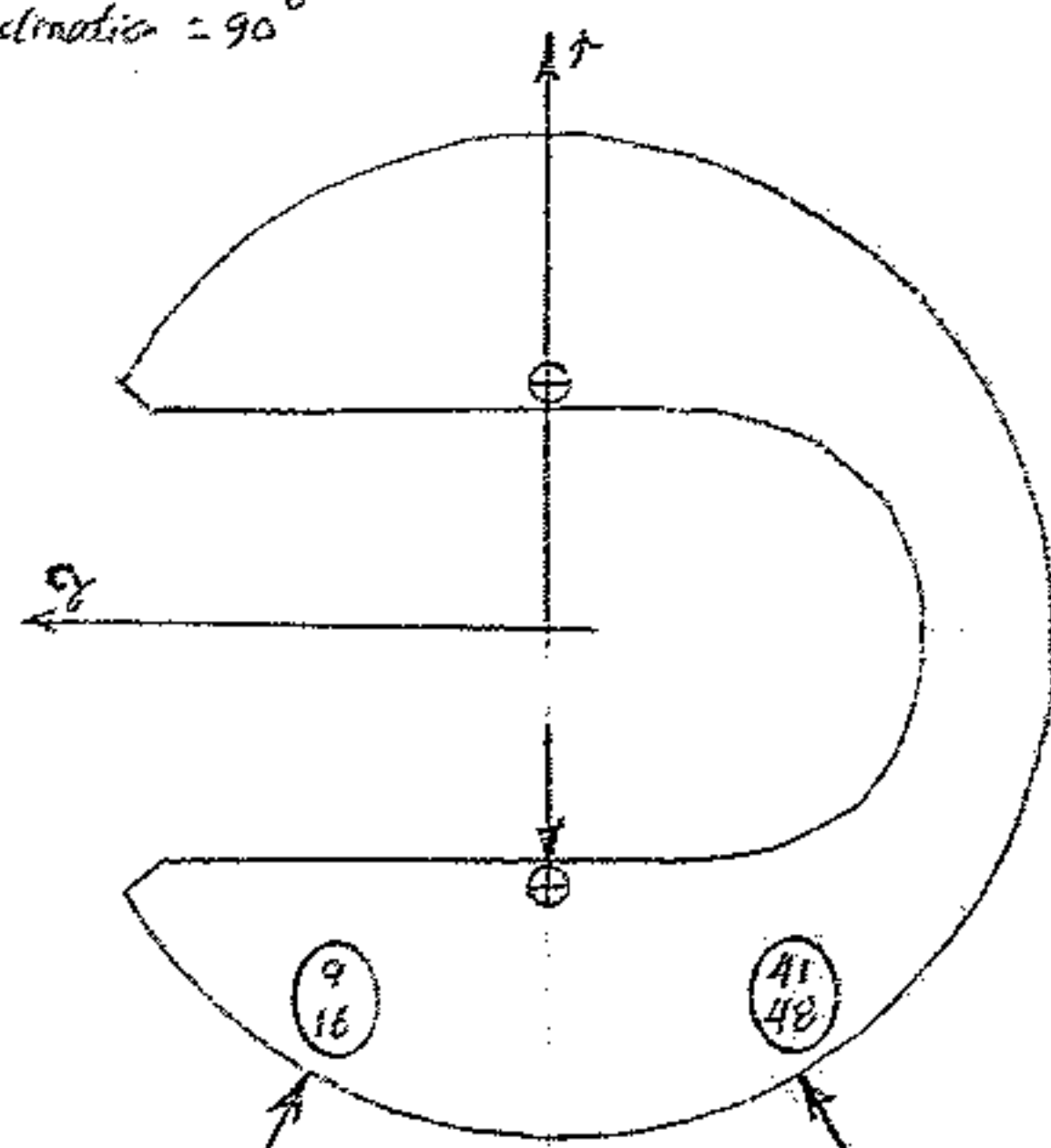
Latitude = 32°  
Declination = 60°



Node	25	32	65	72
Element	44	71	153	154
Direction Cosines	1.000 .000 1.000	1.000 .000 1.000	-.500 .867 .000	-.500 .867 .000
Stiffness (lbs/inch)	$1 \times 10^{10}$	$1 \times 10^{10}$	$1 \times 10^{10}$	$1 \times 10^{10}$

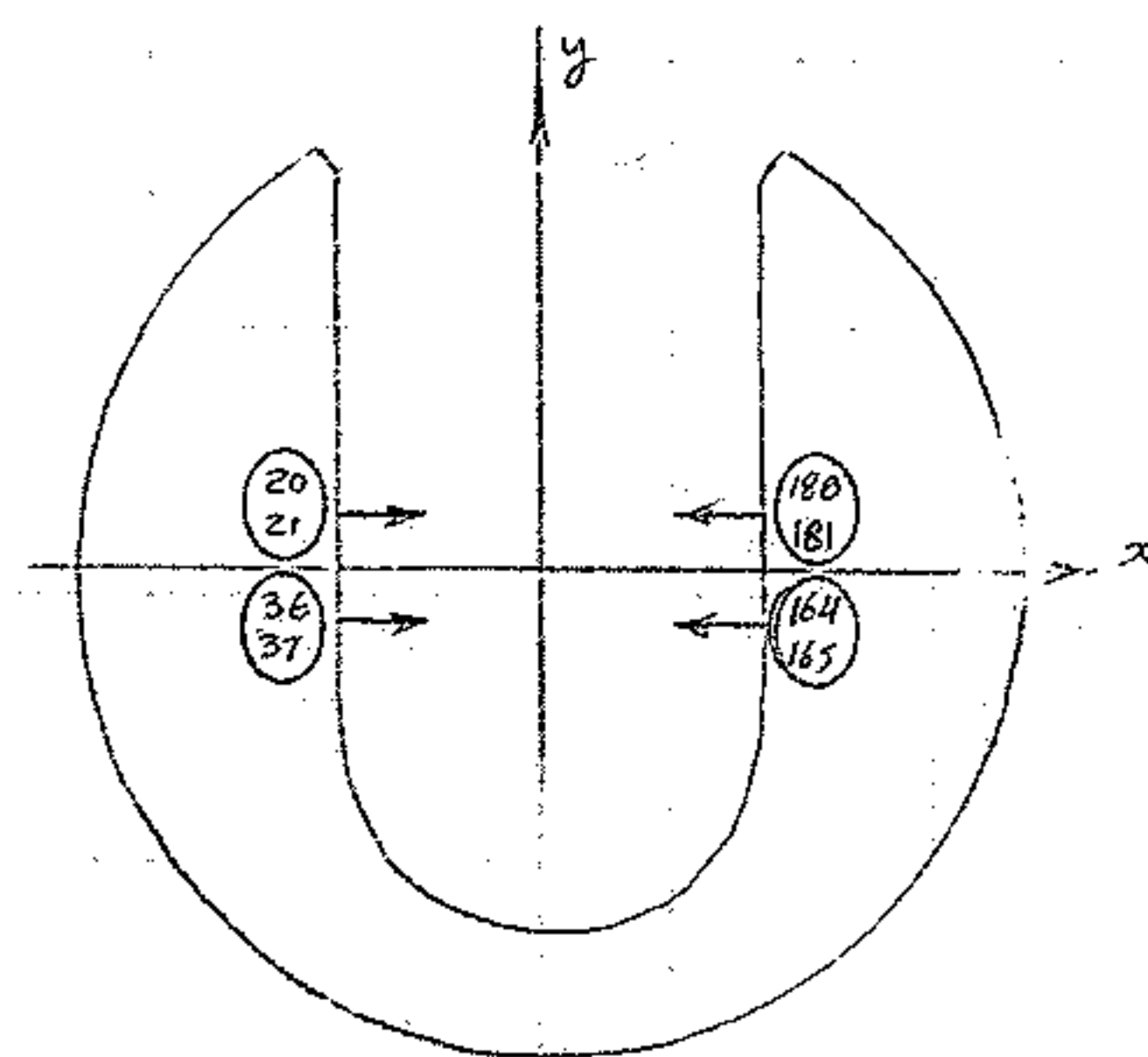
Case

Latitude = 32°  
Declination = 90°

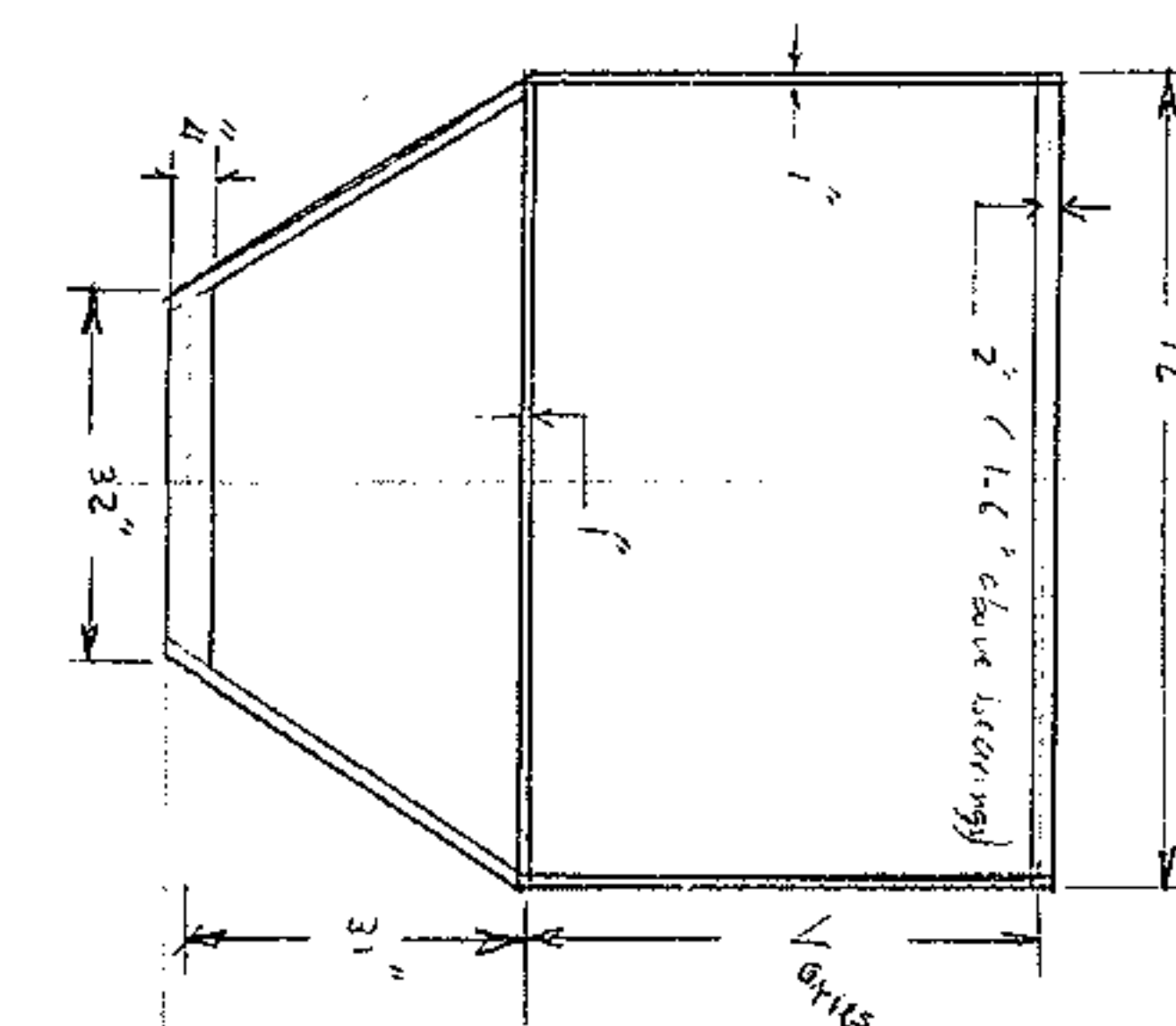
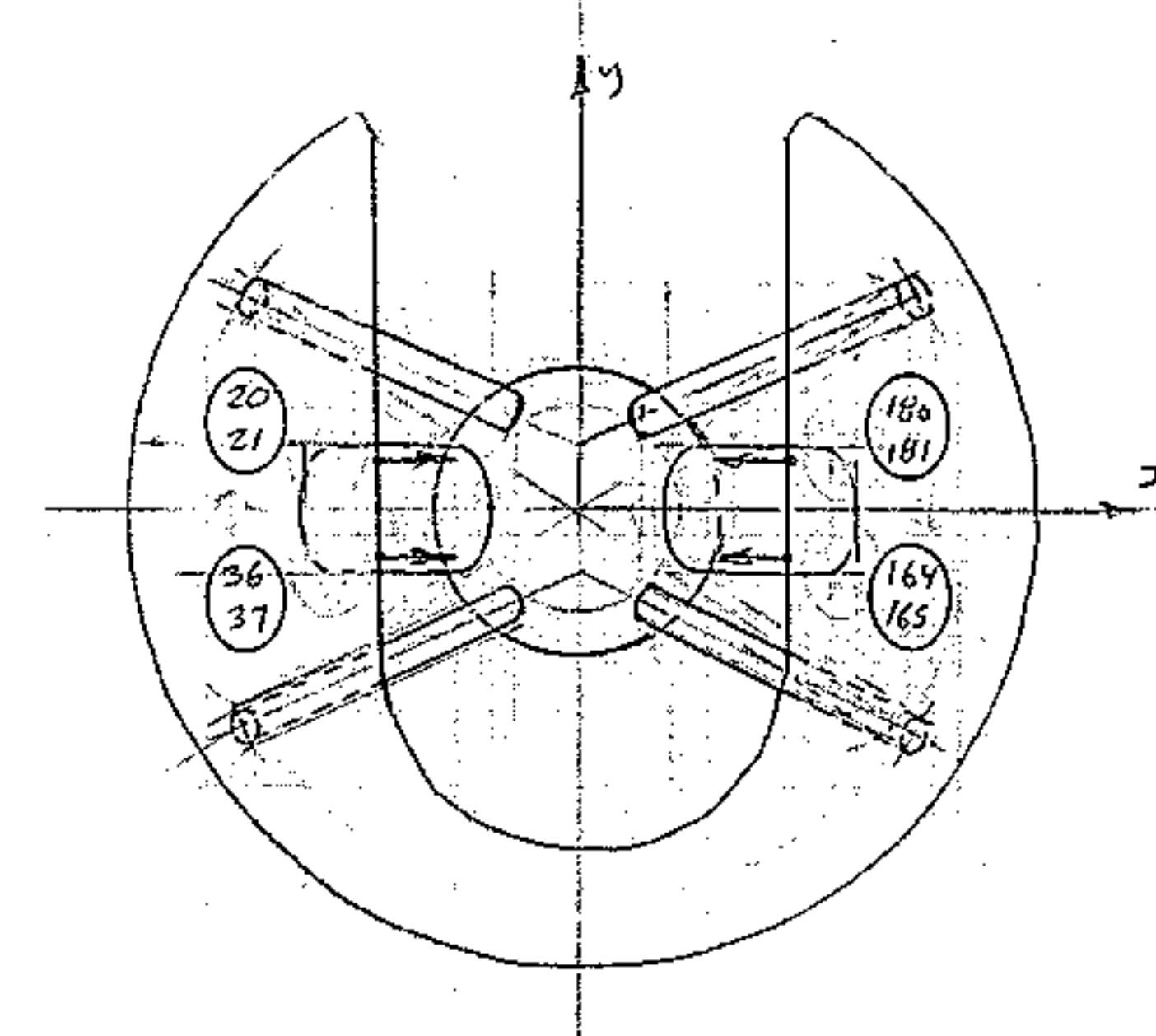


Node	9	16	41	48
Element	37	38	77	78
Direction Cosines	.867 -.500 .000	.867 -.500 .000	.867 .500 .000	.867 .500 .000
Stiffness (lbs/inch)	$1 \times 10^{10}$	$1 \times 10^{10}$	$1 \times 10^{10}$	$1 \times 10^{10}$

Preloading



Inclusions



THIS DWG. WAS USED IN PREPARING  
DR. R. RICHARD REPORT ON HORSE  
SHOE DEFLECTION ANALYSIS.

FOR ASSEMBLY SEE

TOLERANCES UNLESS OTHERWISE NOTED

DECIMAL DIMENSIONS  
00.00 ± .010  
00.000 ± .003

FRACTIONAL DIMENSIONS  
UP TO 18" ± 1/64  
18" TO 50" ± 1/32  
50" & OVER ± 1/16

BREAK SHARP EDGES

ALL SURFACES  
TO HAVE 125/ FINISH UNLESS OTHERWISE NOTED.

KITT PEAK NATIONAL OBSERVATORY

OPERATED BY THE  
ASSOCIATION OF UNIVERSITIES FOR RESEARCH IN ASTRONOMY, INC.  
UNDER CONTRACT WITH  
NATIONAL SCIENCE FOUNDATION

150" TELESCOPE

NAME STUDY DRAWING, HORSE SHOE STRESS ANALYSIS  
SCALE NONE  
PRINT ISSUED

DESIGNED BY DATE APPROVED BY DATE  
DRAWN BY MKA DATE APPROVED BY RMR DATE 7/23/68  
CHECKED BY DATE APPROVED BY DATE  
DRAWING NUMBER 2120-K-D1  
REV.

QUANT.	PRINT RECORD	DATE	NO.	REVISION	DATE	BY
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