SPREADER BAR

I.D. Nº 27 COLOR OF BAR: ALUM.

LOAD CAPACITY PAINTED ON BAR (450#) .225 TONS.

DATE CAP. & I.D. Nº PAINTED ON BAR 3/10/89

DATE OF LAST LOAD TEST. 3/10/89

TEST LOAD WEIGHT (700#) .35 TONS

TEST LOAD % 156%

STRESS CALCULATIONS:

DONE BY E.M. Dillman

DATE 2-28-89

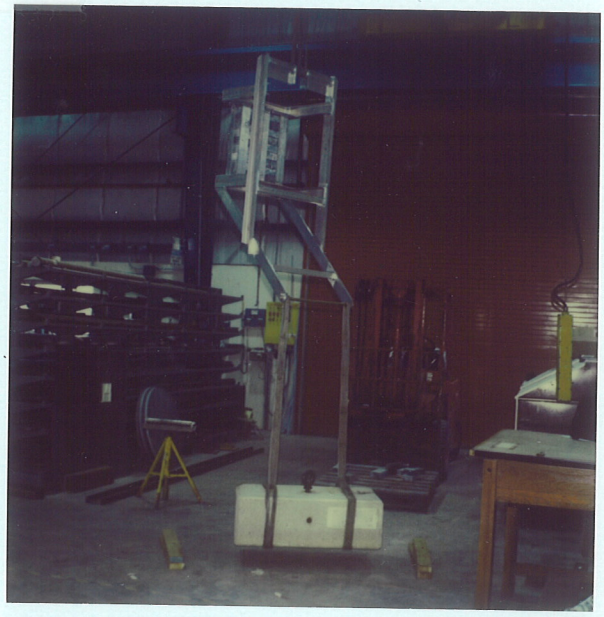
REMARKS:

SEE ATTACHED SHEET FOR CALCULATIONS.

FERMILAB
ENGINEERING NOTE

SECTION	PROJECT	SERIAL - CATEGORY	PAGE

3/10/89
700#



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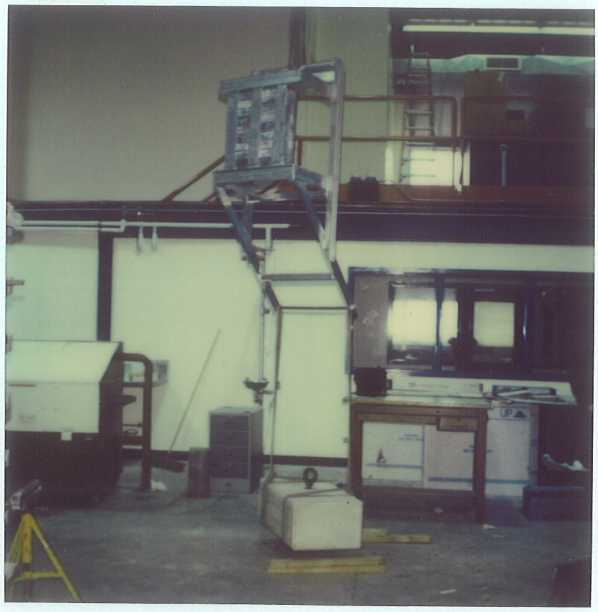
3/10/89



3/10/89

FERMILAB

ENGINEERING NOTE

SECTION	PROJECT	SERIAL - CATEGORY	PAGE
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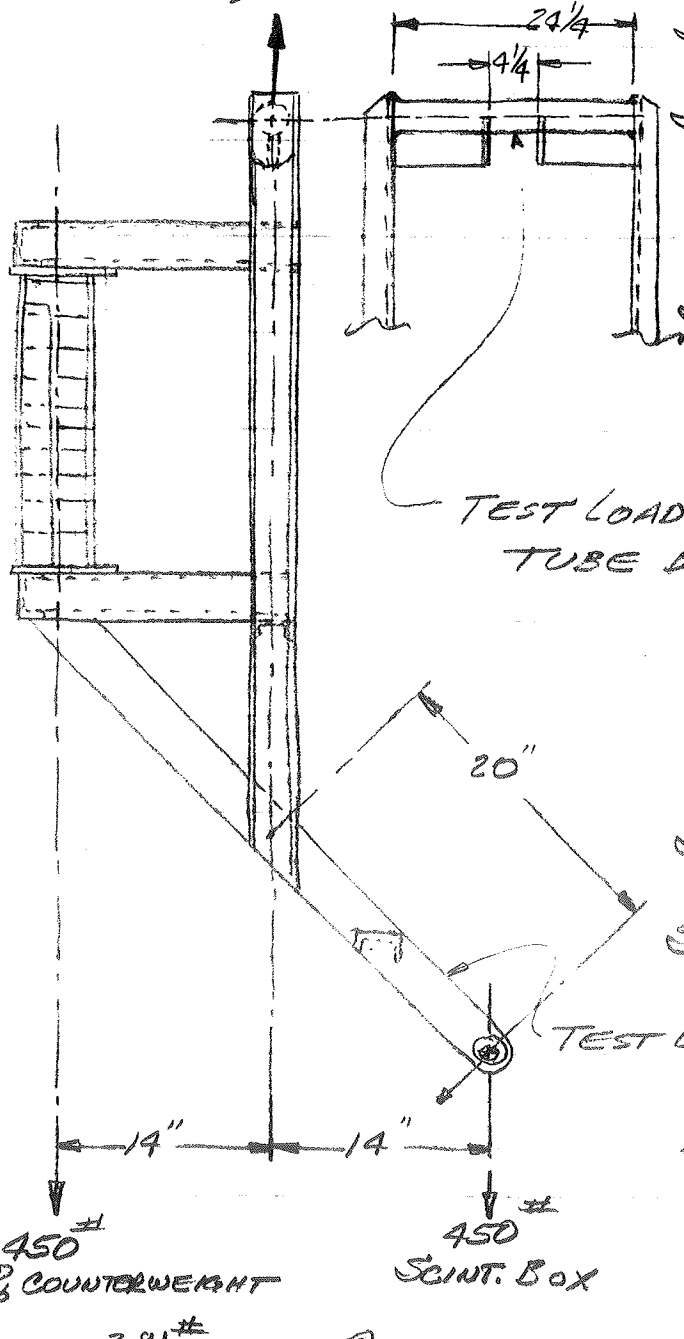
SUBJECT: E-665 UPGRADE
SCINTILLATOR BOX
LIFTING FIXTURE (STRESS ANALYSIS)

NAME: E. M. Villegas

DATE: 2-28-89 | REVISION DATE:



MAT'L. ALUM. 6061-T6

$S_{yb} = 35 \times 10^3$ psi

$S_{ab} = \frac{S_{yb}}{3} = 11{,}667$ psi

$S_{yv} = 20 \times 10^3$ psi

$S_{av} = \frac{S_{yb}}{3} = 6{,}667$ psi

$E = 10 \times 10^6$ psi

TEST LOAD ON TUBE = $1.25 \times 900 = 1125$#

TUBE DIM. 2 1/2 OD x 1/4 WALL

$A = 1.767$ IN^2

$I = \frac{\pi(2.5^4 - 2^4)}{64} = 1.132$

$V = \frac{1125}{2} = 563$#

$S_v = \frac{563}{1.767} = 319$ psi

$S_b = \frac{1125 \times 2.25 \times 1.25}{4 \times 1.132} = 1{,}320$ psi

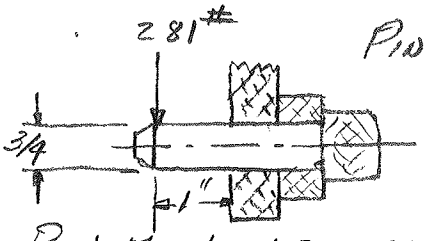
TEST LOAD ON BAR (1/2 x 3) = $\frac{1.25 \times 450}{2} = 281$#

$A = 1.5$ IN^2

$I = \frac{.5 \times 3^3}{12} = 1.125$

$281 \times \sin 45° = 199$#

$S_b = \frac{199 \times 20 \times 1.5}{1.125} = 5{,}307$ psi



PIN, MAT'L. S.S. TYPE 304

$S_{yb} = 30 \times 10^3$

$S_{ab} = \frac{S_{yb}}{3} = 10 \times 10^3$

$S_{av} = .75 \times 10 \times 10^3 = 7{,}500$ psi

PIN - $A = .442$

$I = \frac{\pi .75^4}{64} = .015$

$S_b = \frac{281 \times 1 \times .375}{.015} = 7{,}025$ psi

$V = 199$#

$S_v = \frac{199}{1.5} = 133$ psi

$S_v = \frac{281}{.442} = 636$ psi