Aluminum Sheet Order

24 April 1965

Ryerson quoted 5000 lb .063 x 48 x 144" sheet low gloss white acrylic colorweld one side ACI-1945 wash coat on reverse side, alloy 3003-H14 at 0.481 dollars/lb, FOB Stanford

Alcoa quote was .47 uncoated, .71 coated Samples submitted matched my sample in both cases

Quantity estimate

Surface: 112 sheets	112		
Stiffeners: ⅓ sheet/panel	19		
Center 20 foot dia	10		
Gussets	2		
Feed	1		
Hub	3		
Motor box	10		
Damage allowance	6		
	163	@ 43.1 lb	= 7020 lb.
Frame	45		
	208	@ 43.1	= 8950 lb.

Order 9000 lb.

Tube versus Angle

The order for tubing depends on a satisfactory choice of diameter but a test to destruction has not yet been carried out. If we use angle made from 12' sheet we can change the size at will. Also the price per pound will be 48¢ instead of around $1.20. We will need a 6 ft shear and brake or be prepared to splice. Cost of labor is small compared with saving in metal cost (70¢/lb comes to $28 per sheet).

Layout on p. 89 does flat 4 ft shears and brake can be used on U1, T2, T3, T4, taking advantage of panel flange. Other members require over 6 ft and possibly 9 ft sheet. means splicing. Hence do it all on 4 ft machines (at the site?)

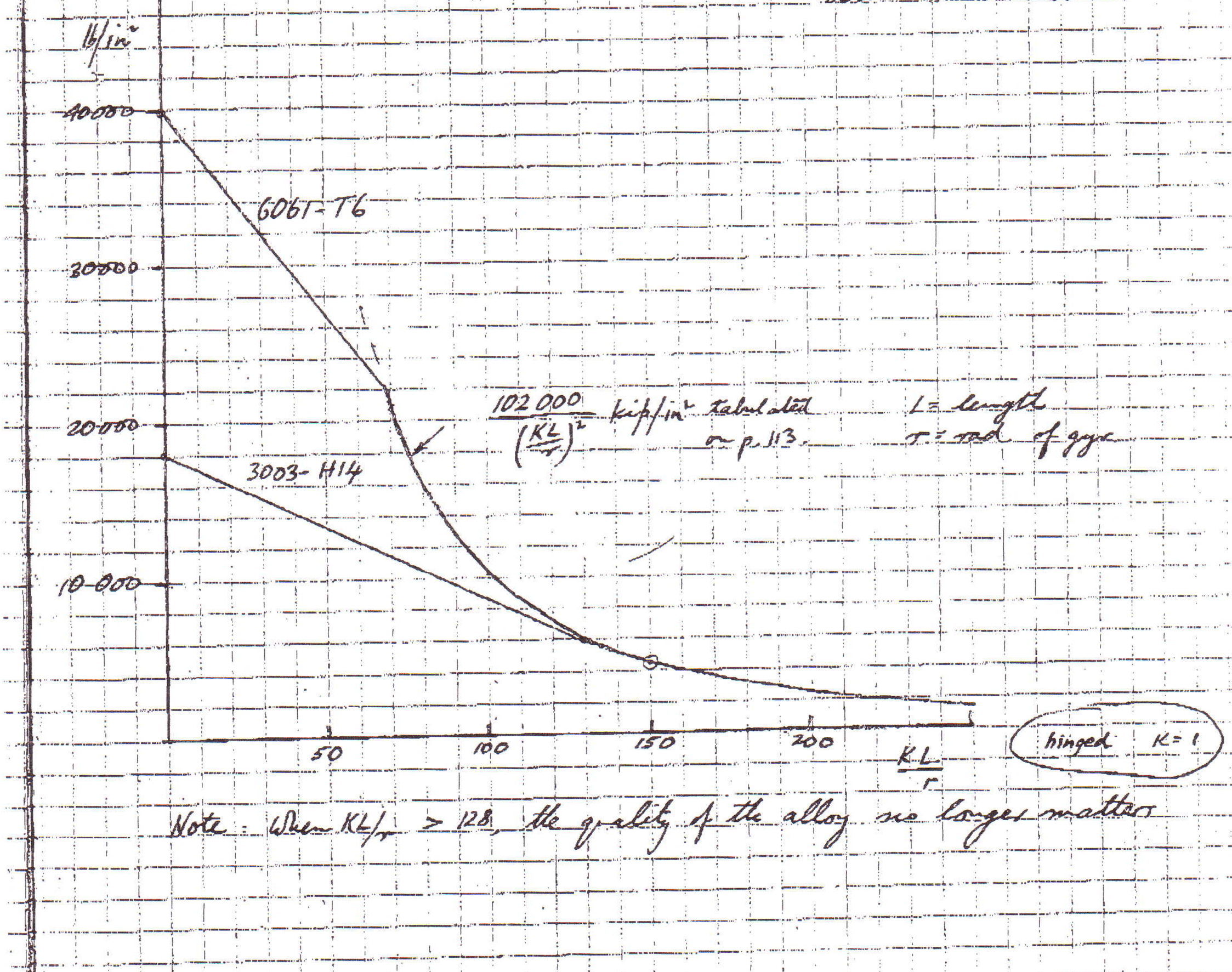
Rivet U joints will be eased by use of sheet.

28 April 1965

Columns

Alcoa Structural H6
p. 111

	B	C	D
3003-H14	18	128	.092
6061-T6	40	68	.263



$\frac{102\,000}{\left(\frac{KL}{r}\right)^2}$ kip/in² tabulated on p. 113.

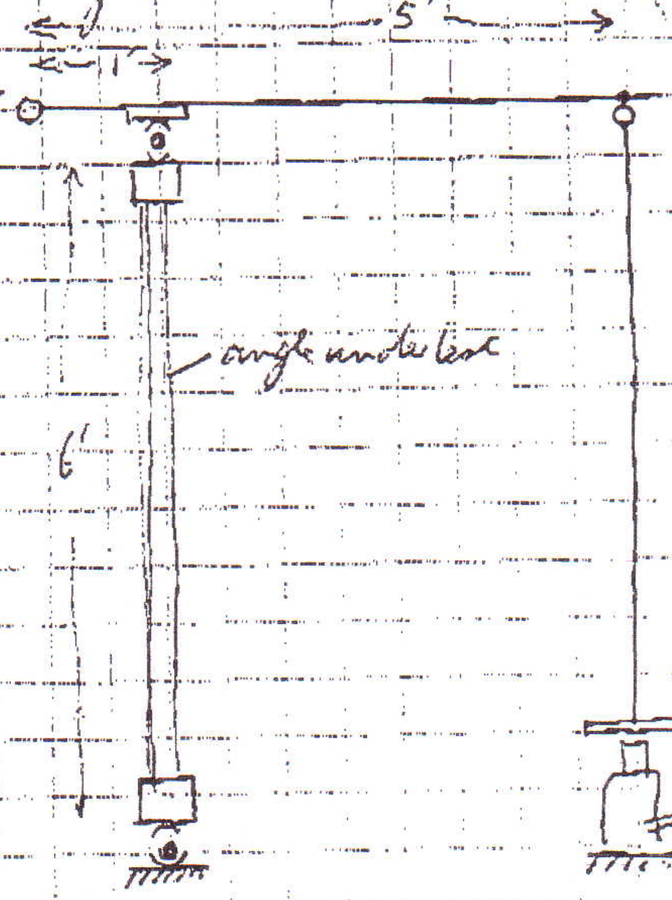
L = length
r = rad of gyr

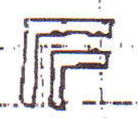
Note: When $KL/r > 128$, the quality of the alloy no longer matters

Column Tests

May 12 1965

Testing machine was built May 10 by C C Lee



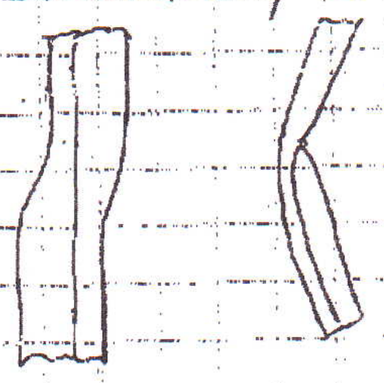
End pieces  receive angle and apply axial load centroid

Test piece No: 1 2×2×.063 aluminum angle 6061-T4

Various loads were applied and removed. The weight of the span was 61 lb. When 25 lb extra was added the angle bent but regained shape. With 50 lb extra, it failed by buckling.

Ultimate load was 5(50+61) = 555 lb

Weight 1.8 lb (6 ft)



Test piece No. 2 2×2×.091 structural section

Weight 2.7 lb (6 feet) Ultimate load 1180 lb

This is in better agreement with expectation.

Test piece No 3 1¼" dia × .049

Weight 1.3 lb Ultimate load 1050 lb The tube deflected far more than the angles before passing elastic limit