

6-35 NORTON

ME 340

1/10/99

PAGE 1 OF 2

THE SOLUTION TO THIS PROBLEM IS EXACTLY LIKE 6-33 EXCEPT
STRESS CONCENTRATION FACTORS AND C_{SURF} ARE SET TO 1
SINCE CAST IRONS "INTERNAL FLAWS" MASK THESE EFFECTS. DON'T FORGET
THAT $S_e' = 0.45 S_{ut}$ FOR IRONS.

SEE ATTACHED SPREAD SHEET FOR ANSWERS (METHOD PARALLELS SOLUTION
FOR 6-33).

NOTE: A SIGNIFICANT IMPROVEMENT TO THIS METHOD WOULD BE
TO USE THE MODIFIED-MOHR FAILURE THEORY OVER VON MISES.

Prob. 6-35

Data from Table P6-6							Stresses at Point A (Mpa)								
ROW	l (m)	a (m)	F (N)	od (m)	id (m)		Kf (bend)	Kf (tors)	Sigma bend	Tau-torsion	Tau-bending	von mises	Csize	Csurf	Sut
a	0.100	0.400	50	0.020	0.014		1.00	1.00	8.38	16.76	0	30.2	0.89		170
b	0.070	0.200	85	0.020	0.006		1.00	1.00	7.64	10.92	0	20.4	0.89		115
c	0.300	0.100	95	0.025	0.017		1.00	1.00	23.64	3.94	0	24.6	0.87		141
d	0.800	0.500	160	0.046	0.022		1.00	1.00	14.14	4.42	0	16.1	0.82		98
e	0.085	0.350	900	0.055	0.024		1.00	1.00	4.86	10.01	0	18.0	0.81		112
f	0.050	0.180	950	0.050	0.030		1.00	1.00	4.45	8.01	0	14.6	0.81		90
g	0.160	0.280	850	0.045	0.019		1.00	1.00	15.71	13.75	0	28.5	0.82		174
h	0.200	0.100	800	0.040	0.024		1.00	1.00	29.27	7.32	0	31.9	0.83		192
i	0.400	0.150	950	0.065	0.037		1.00	1.00	15.76	2.95	0	16.6	0.79		104
j	0.200	0.100	600	0.045	0.032		1.00	1.00	18.03	4.51	0	19.6	0.82		120
k	0.120	0.180	880	0.060	0.047		1.00	1.00	7.99	5.99	0	13.1	0.80		82
l	0.150	0.250	750	0.052	0.028		1.00	1.00	8.90	7.42	0	15.6	0.81		96
m	0.070	0.100	500	0.036	0.030		1.00	1.00	14.77	10.55	0	23.5	0.84		140
n	0.085	0.150	820	0.040	0.015		1.00	1.00	11.32	9.99	0	20.7	0.83		124