

TABLE A14. Tangent Moduli for Design of Columns (Types 409, 430, 439)

Stress ksi (MPa)	Tangent Modulus: E_t , ksi $\times 10^3$ (MPa $\times 10^3$)			
	Type 409		Types 430, 439	
	Longitudinal compression	Transverse compression	Longitudinal compression	Transverse compression
0	27.0 (186.2)	29.0 (200)	27.0	29.0
4 (27.6)	27.0	29.0	27.0	29.0
8 (55.2)	27.0	29.0	27.0	29.0
12 (82.7)	26.8 (46.9)	29.0	27.0	29.0
16 (110.4)	25.1 (173.1)	28.9 (199.3)	26.7 (184.1)	29.0
20 (137.9)	17.8 (122.7)	26.9 (185.5)	24.7 (170.3)	29.0
24 (165.5)	7.7 (53.1)	13.6 (93.8)	19.1 (131.7)	29.0
28 (193.1)	2.6 (17.9)	2.4 (16.5)	11.5 (79.3)	28.8 (200.2)
32 (220.6)	0.9 (6.2)	0.4 (2.8)	6.0 (41.4)	25.8 (177.9)
36 (248.2)			3.1 (21.4)	12.0 (82.7)
40 (275.8)			1.6 (11)	2.4 (16.5)
44 (303.4)				0.4 (2.8)

TABLE A15. Tensile Strength of Weld Metal

AWS Classification	Tensile Strength, min. ksi (MPa)
E209	100 (689.5)
E219	90 (620.6)
E240	100
E307	85 (586.1)
E308	80 (551.6)
E308H	80
E308L	75 (571.1)
E308Mo	80
E308MoL	75
E309	80
E309L	75
E309Cb	80
E309Mo	80
E310	80
E310H	90
E310Cb	80
E310Mo	80
E312	95
E316	75
E316H	75
E316L	70
E317	80
E317L	75
E318	80
E320	80
E320LR	75
E330	75
E330H	90
E347	75
E349	100
E410	65 (448.2)
E410NiMo	110 (758.5)
E430	65
E502	60 (413.7)
E505	60
E630	135 (930.8)
E16-8-2	80
E7Cr	60

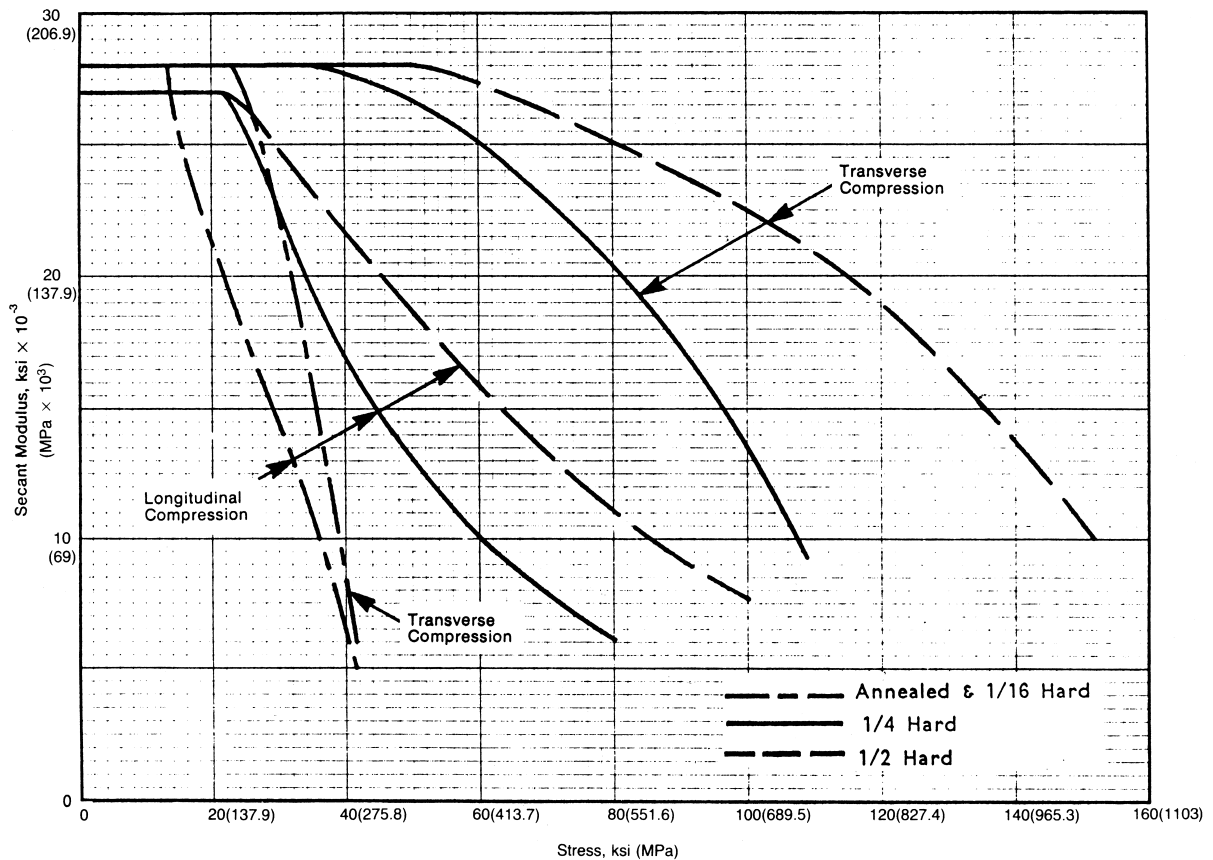
TABLE A16. Tensile Strengths of Annealed, 1/16 Hard, 1/4 Hard, and 1/2 Hard Base Metals

Types of Stainless Steels	Minimum Tensile Strength, ksi	(MPa)
Annealed		
201-1	90 (Class 1)	(620.6)
201-2	95 (Class 2)	(655)
S20400	95	(655)
301	90	
304,316	75	(571.1)
409	55	(379.2)
430,439	65	(448.2)
1/16 Hard		
201 PSS ^a	90	
FB ^b	75	
301	90	
304 PSS	80	(551.6)
FB	90	
316 PSS	85	(586.1)
FB	90	
1/4 Hard		
201	125	(861.9)
S20400	125	
301	125	
304	125	
316	125	
1/2 Hard		
201	150	(1,034.3)
301	150	
304	150	
316	150	

^a PSS = plate, sheet, and strip.^b FB = flat bar.

TABLE A17. Ratio of Effective Proportional Limit-to-Yield Strength

Type of Stress	Effective Proportional Limit/Yield Strength (F_{pr}/F_y)						
	Types 201, 301, 304, 316			UNS S20400		Type 409	Types 430, 439
	Annealed and 1/16 Hard	1/4 Hard	1/2 Hard	Annealed	1/4 Hard		
Longitudinal tension	0.67	0.50	0.45	0.49	0.29	0.76	0.70
Transverse tension	0.57	0.55	0.60	0.61	0.30	0.83	0.81
Transverse compression	0.66	0.50	0.50	0.73	0.33	0.83	0.82
Longitudinal compression	0.46	0.50	0.49	0.53	0.32	0.73	0.62

**FIGURE A1a. Secant Moduli for Deflection Calculations (Types 201, 301, 304, and 316)**

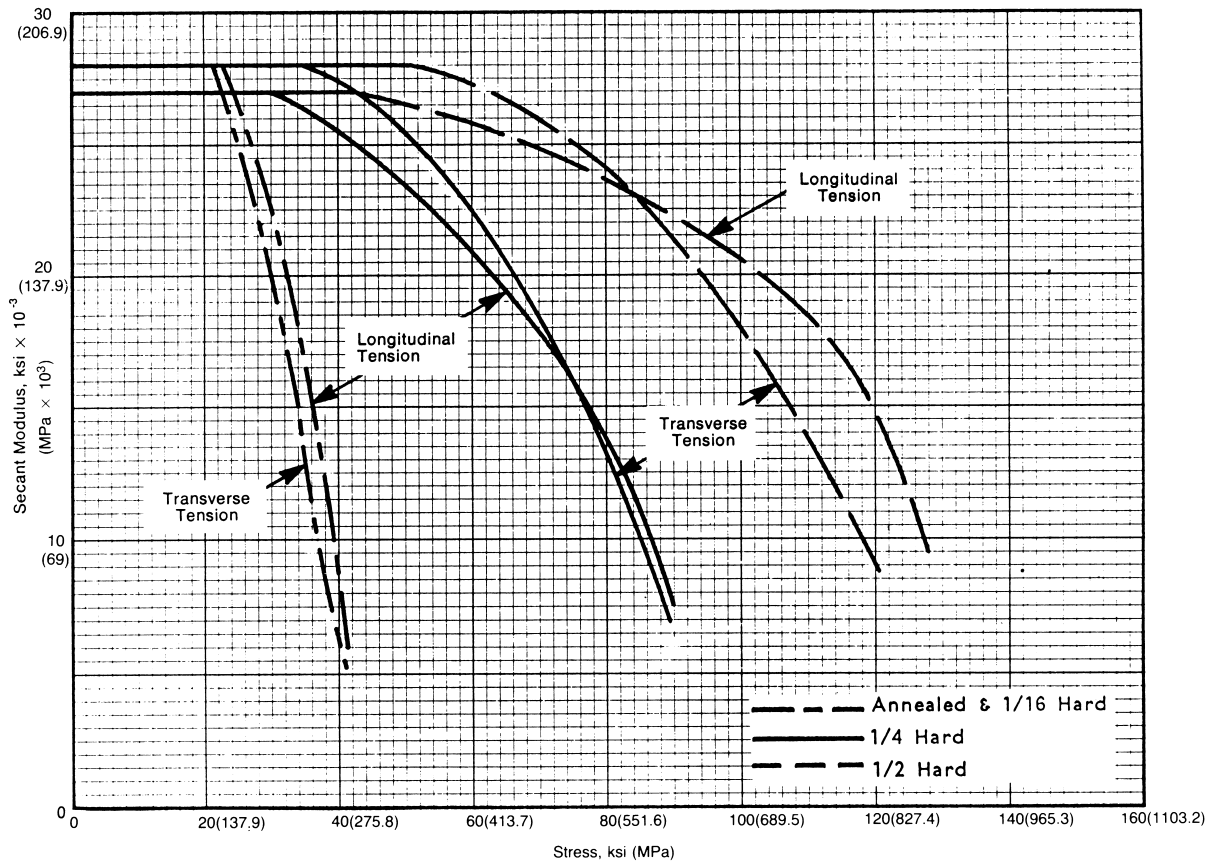


FIGURE A1a. *Continued*

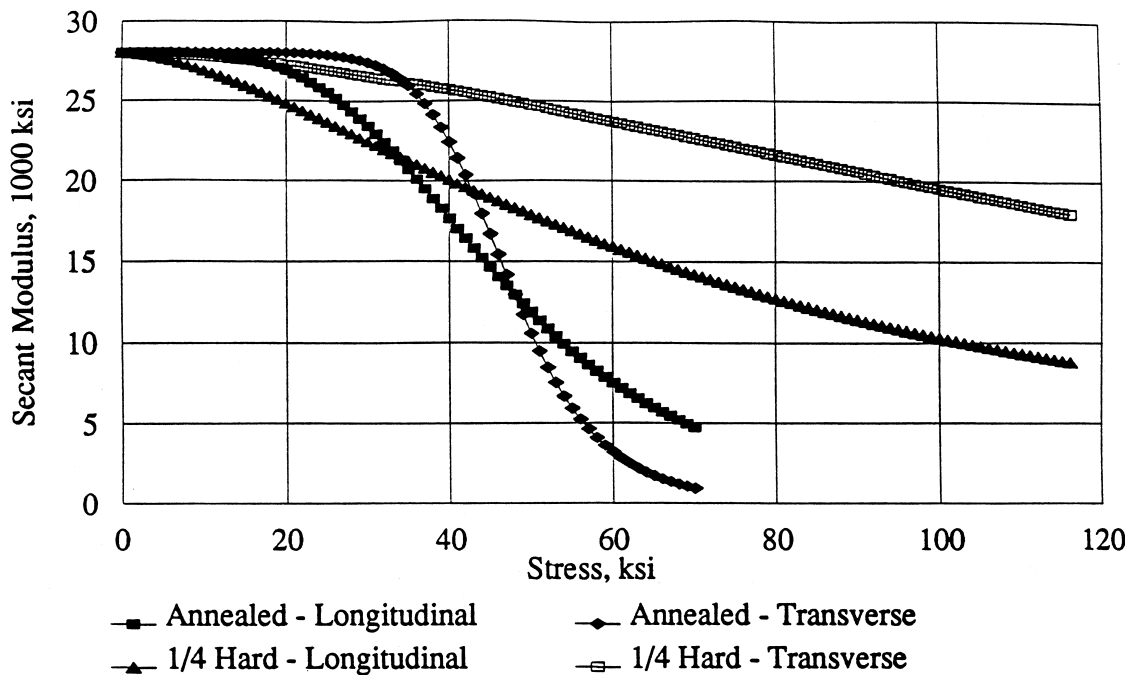
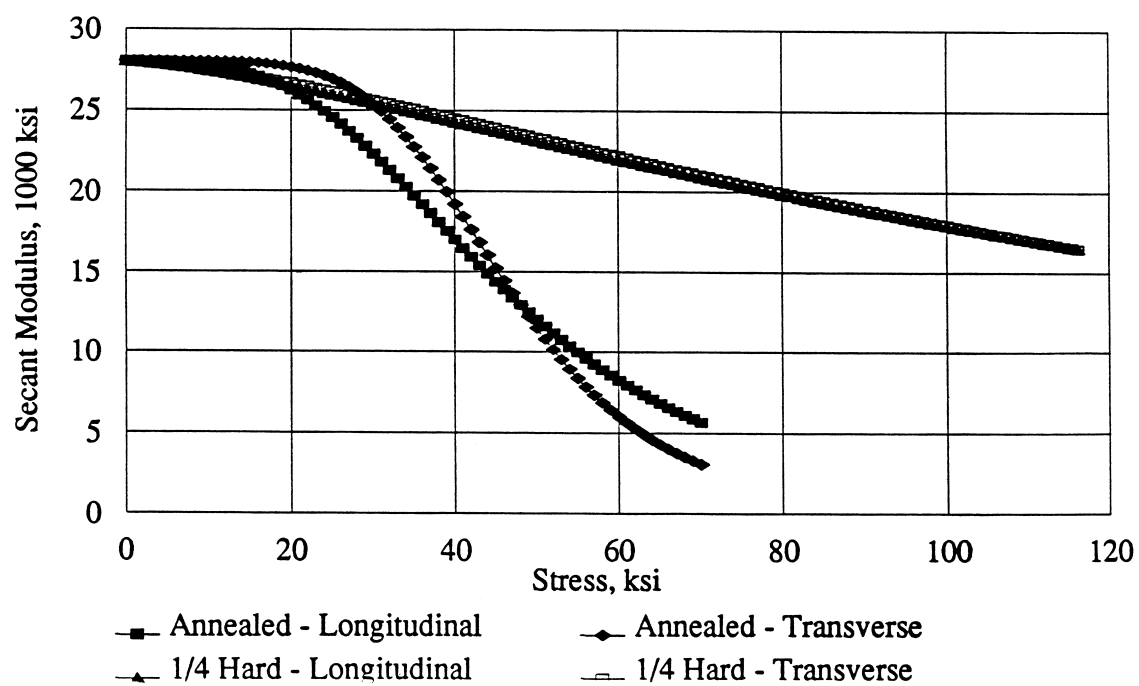
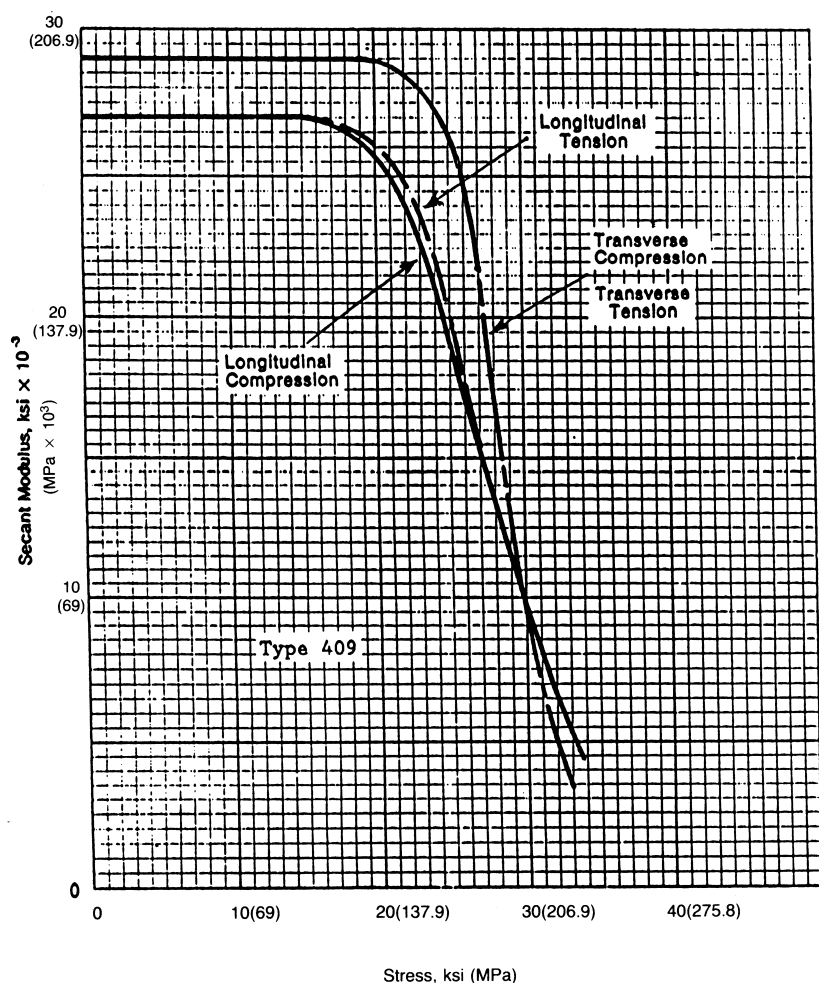
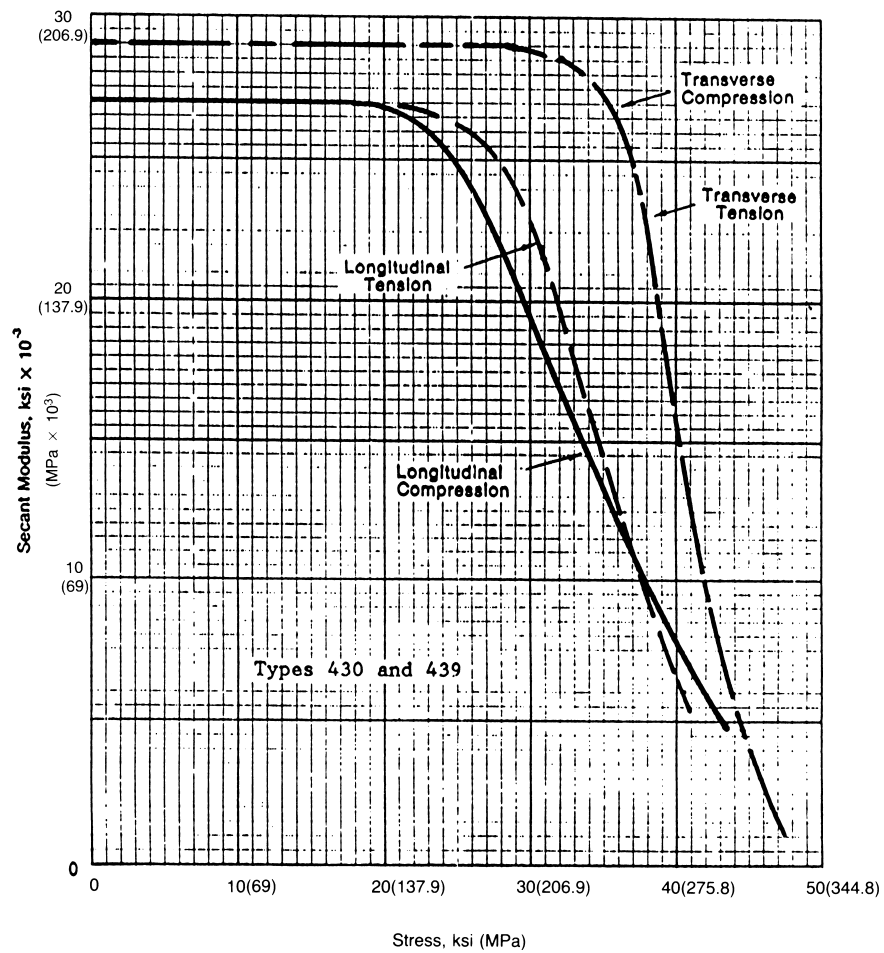


FIGURE A1b. Secant Moduli for Deflection Calculations (S20400, Compression)

FIGURE A1b. *Continued* (S20400, Tension)



**FIGURE A2. Secant Moduli for Deflection Calculations
(Types 409, 430, and 439)**

FIGURE A2. *Continued*

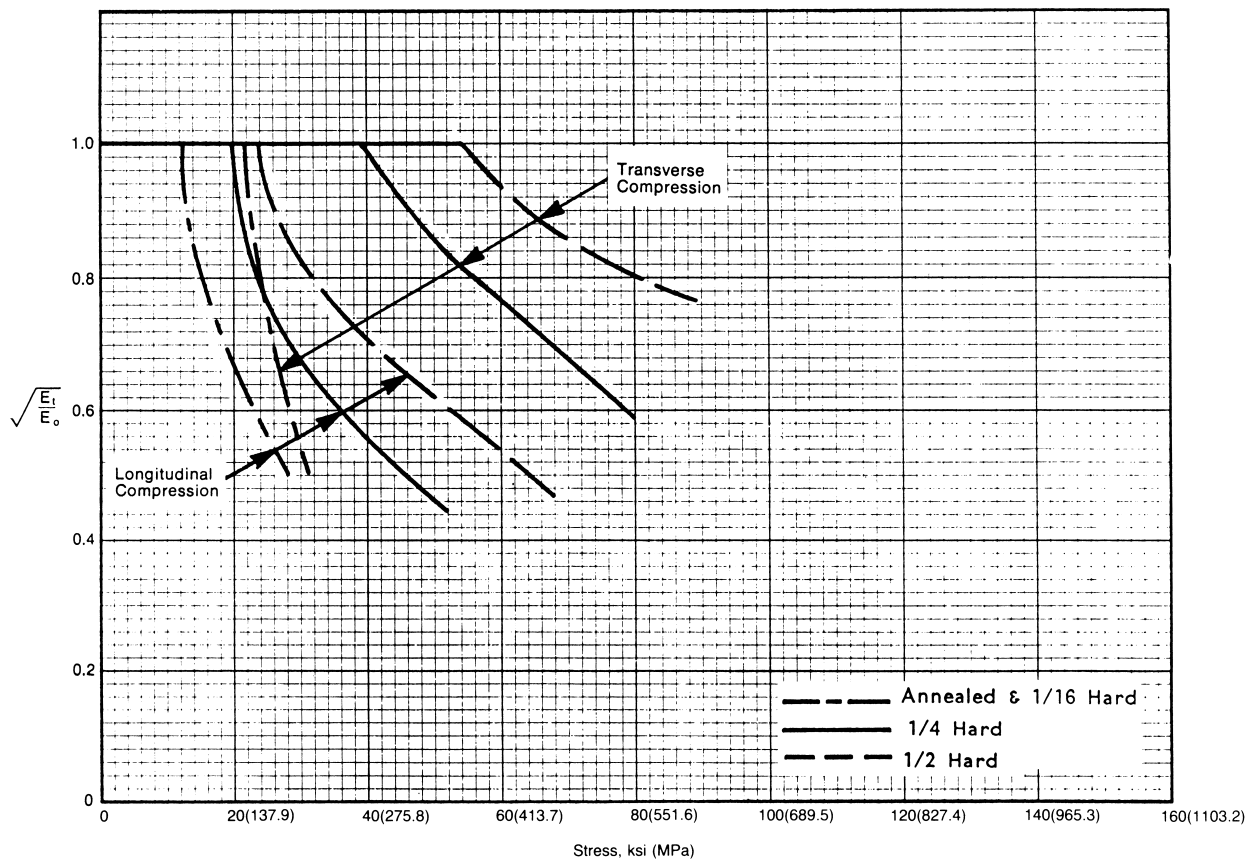


FIGURE A3a. Plasticity Reduction Factors for Stiffened Compression Elements (Types 201, 301, 304, and 316)

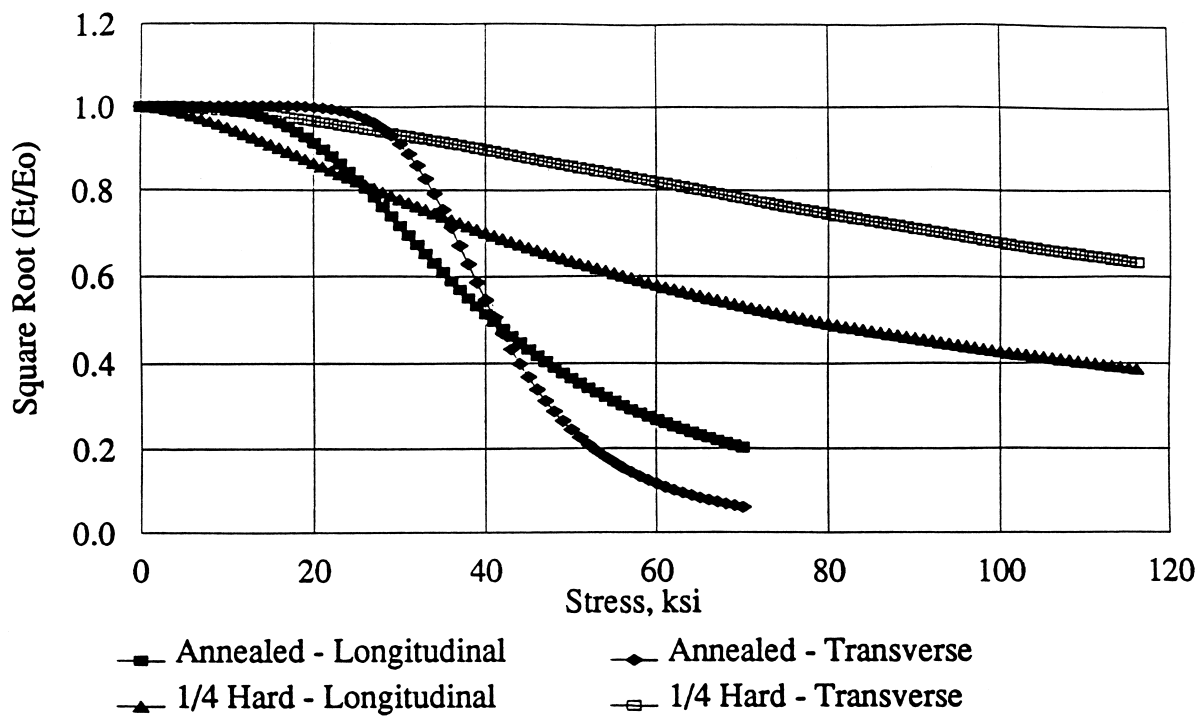


FIGURE A3b. Plasticity Reduction Factors for Stiffened Compression Elements (S20400)

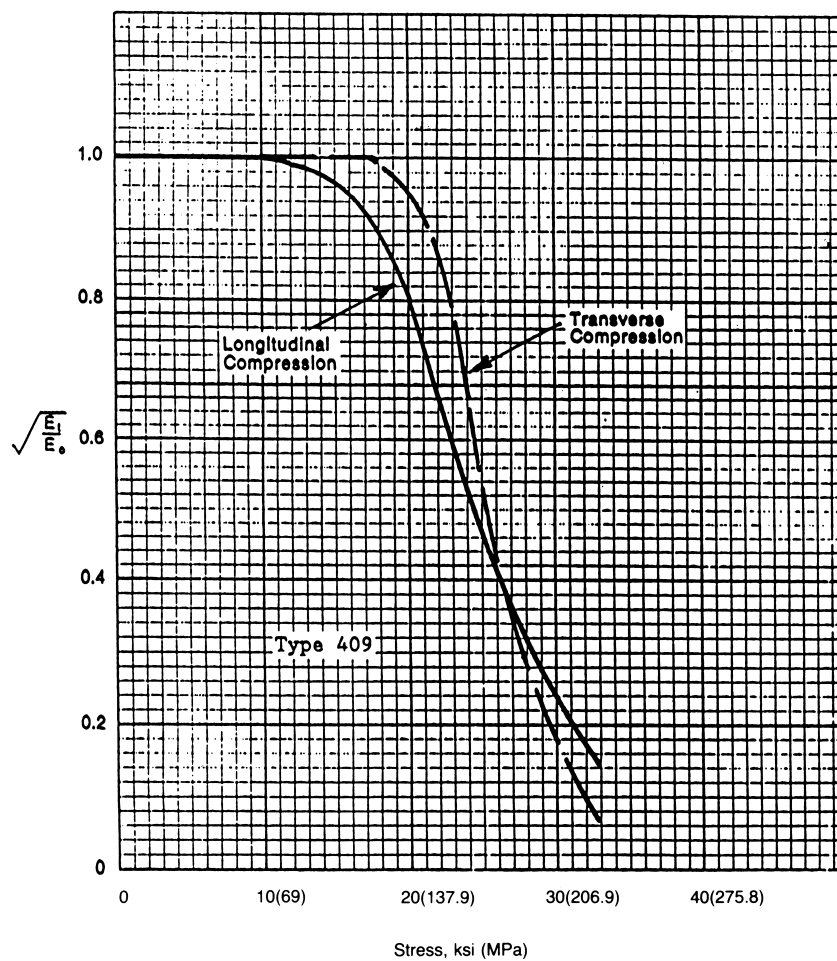


FIGURE A4. Plasticity Reduction Factors for Stiffened Compression Elements (Types 409, 430, and 439)

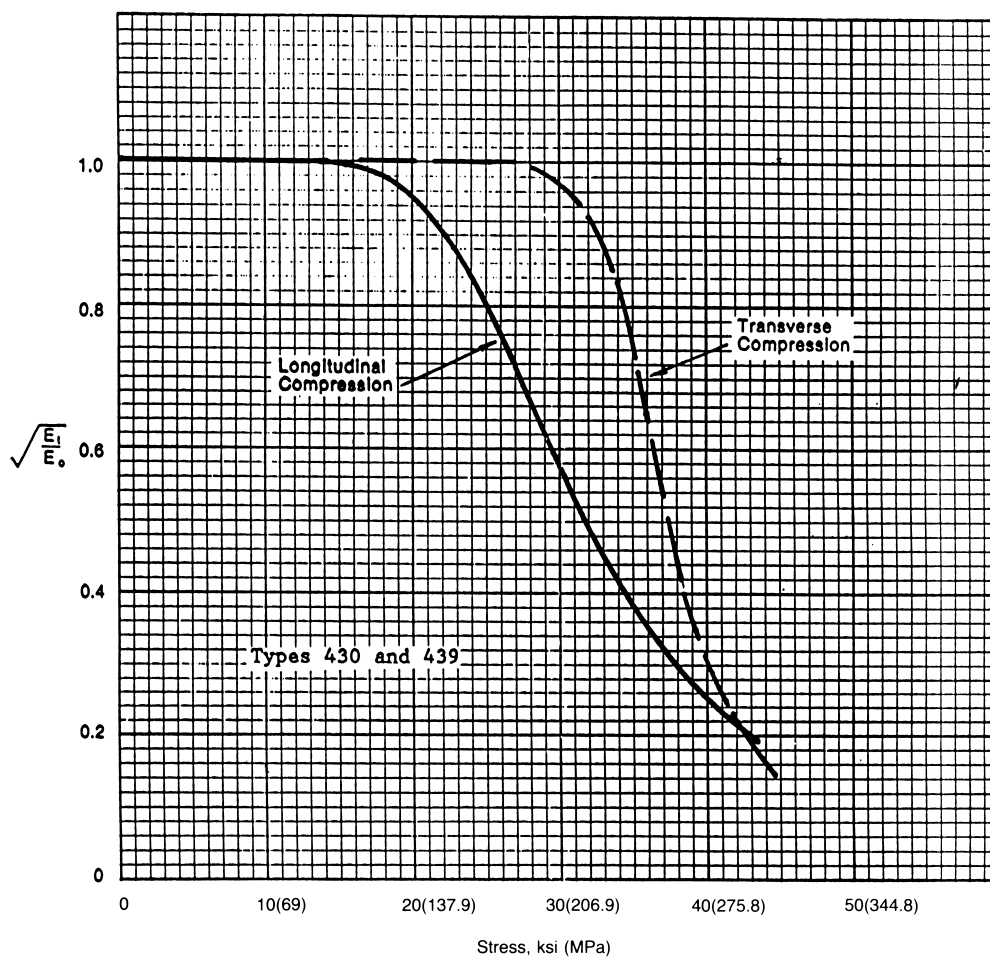


FIGURE A4. *Continued*