

Strong Axis Shear Strength Buckling Modifier Summary

SCM Section		Shear Area	λ	λ_p	λ_r	Buckling Modifier, Inelastic Range $\lambda_p < \lambda \leq \lambda_r$	Buckling Modifier, Elastic Range $\lambda_r < \lambda$
G2.1(a)	Rolled I-shaped w/o TFA	ht_w	h/t_w	$2.24 \sqrt{E/F_y}$	----	Not Considered – Use G2.1(b)	Not Considered – Use G2.2
G2.1(b)	All I-shaped and Channels w/o TFA	ht_w	h/t_w	$1.10 \sqrt{k_v E/F_y}$	----	$C_{v1} = \frac{\lambda_p}{\lambda}$	Not Considered – Use G2.2
G2.2	Interior Web Panels with $a/h \leq 3$, and with TFA	ht_w	h/t_w	$1.10 \sqrt{k_v E/F_y}$	$1.37 \sqrt{k_v E/F_y}$	$C_{v2} = \frac{\lambda_p}{\lambda}$	$C_{v2} = \frac{1.51 k_v E}{\lambda^2 F_y}$
				----	----	$\left[C_{v2} + \frac{1 - C_{v2}}{1.15 \sqrt{1 + (a/h)^2}} \right] \text{ or } \left[C_{v2} + \frac{1 - C_{v2}}{1.15 \left[a/h + \sqrt{1 + (a/h)^2} \right]} \right]$	
G3	Single Angles and Tees	bt	b/t	$1.10 \sqrt{1.2 E/F_y}$	$1.37 \sqrt{1.2 E/F_y}$	$C_{v2} = \frac{\lambda_p}{\lambda}$	$C_{v2} = \frac{1.812 E}{\lambda^2 F_y}$
G4	Rect. HSS, Box, Other	$2ht$	h/t	$1.10 \sqrt{5 E/F_y}$	$1.37 \sqrt{5 E/F_y}$	$C_{v2} = \frac{\lambda_p}{\lambda}$	$C_{v2} = \frac{6 E}{\lambda^2 F_y}$

Where:

1. TFA = Tension Field Action
2. For webs without transverse stiffeners, $k_v = 5.34$
3. For webs with transverse stiffeners, $k_v = 5 + \frac{5}{(a/h)^2}$
4. The Buckling Modifier equals 1.0 whenever $\lambda < \lambda_p$
5. Shear Strength: $V_n = 0.6 F_y (\text{Shear Area}) (\text{Buckling Modifier})$