

Historical Requirements for Secondary Members

In the 1978 AISC Specification, web slenderness ratios were limited to $l/r \leq 120$ for double web members and $l/r \leq 160$ for single web members [1.6 ($l/200r$)]. These limits were based on the assumption that secondary members would not be subjected to significant axial loads.

The 1989 AISC Specification introduced a more general approach by defining a slenderness ratio limit K based on the axial load P relative to the critical buckling load C_p . The limit is defined as:

- $K < C_p$
- $K > C_p$
- $K > 120$

For $K < C_p$, the slenderness ratio limit is $l/r \leq 120$. For $K > C_p$, the limit is $l/r \leq 1.6(l/200r)$. For $K > 120$, the limit is $l/r \leq 1.6(l/200r)$. The 2010 AISC Specification (Table 4-22) provides ASD stress limits for various slenderness ratios. The table shows that as the slenderness ratio increases, the allowable stress decreases, and the increase in stress due to secondary bending also increases.

Table 4-22 ASD stress limits for various slenderness ratios. The table shows that as the slenderness ratio increases, the allowable stress decreases, and the increase in stress due to secondary bending also increases.

l/r	0.65 l/r	1/(1.6- $l/200r$)	Table 4-22 ASD stress		Increase Due to K
			l/r	0.65 l/r	
120	78	1.00	10.1	15.6	1.54
140	91	1.11	7.67	13.9	1.81
160	104	1.25	5.78	12.2	2.11
180	117	1.43	4.64	10.5	2.26
200	130	1.67	3.76	8.86	2.36

Short-Term Corrosion

Short-term corrosion is a concern for steel members, particularly in marine or industrial environments. The 2010 AISC Specification provides guidelines for the design of steel members to resist short-term corrosion. The design should consider the expected service life and the environment in which the member will be used.

The 2010 AISC Specification (Table 4-22) provides ASD stress limits for various slenderness ratios. The table shows that as the slenderness ratio increases, the allowable stress decreases, and the increase in stress due to secondary bending also increases. The 2010 AISC Specification also provides guidelines for the design of steel members to resist short-term corrosion. The design should consider the expected service life and the environment in which the member will be used.

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- H ... :
- A ... , H ... (2003), A ...
 C ...
 ... C ... E ... , ... 15,1, F ...
 ... 2-24.
 - X ... , (1996), B ...
 ... H ...
 ... B D ... , .E., .D

Percent Composite Action

h C n n I8 h *Specifications* s:
 h d p s n, s p s n d b
 h $\Sigma Q_u/F_y A_s$ (h sh mn ns n h
 d d d b h d s n h h s s s n),
 n u n s h u s n h. Plus h p n -
 p s n w s b h n 50%?

... AI C