

AISC Spec: Vocabulary

Strength Limit States:

Failure modes affecting the safety of a structure.

Strength limit states for steel structures generally involve one of three phenomena:

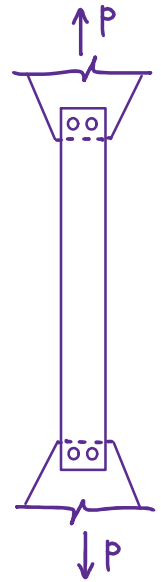
- fracture
- instability
- yielding (generally treated as a strength limit state when it results in excessive deformation; localized yielding is not considered a strength limit state)

Strength limit states are checked using factored loads

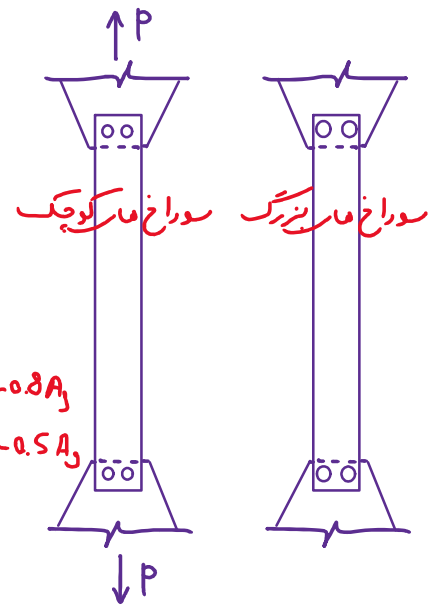
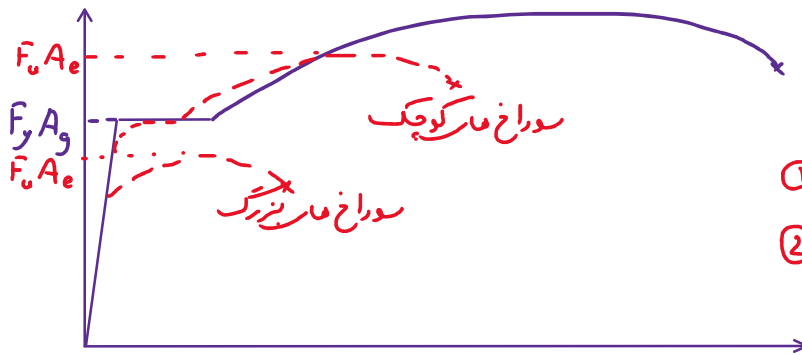
Tension Member Limit States

- ① Yield of Gross Section
- ② Fracture of Net Section
- ③ Block shear Fracture

$R_u \leq \phi R_n$
 مقاومت موجود \leq مقاومت مورد نیاز
 available strength \leq required strength



Engelhardt handout (Appendix A)



- ① $F_y A_g$
- ② $F_u A_n$
 $0.8 A_g$
 $0.5 A_g$

مقاومت اسبی عضو کشش

$P_n = F_y A_g$
 $\phi_t = 0.90$ (LRFD) $\Omega_t = 1.67$ (ASD)

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① تنش تسلیم در مقطع کل $(F_y A_g)$

$P_n = F_u A_e$
 $\phi_t = 0.75$ (LRFD) $\Omega_t = 2.00$ (ASD)

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② تنش نهایی در مقطع خالص مؤثر $(F_u A_e)$ ص ۶۴

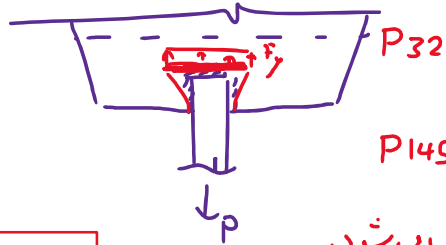
$R_n = 0.60 F_u A_{nv} + U_{bs} F_u A_{nt} \leq 0.60 F_y A_{gv} + U_{bs} F_u A_{nt}$
 $\phi = 0.75$ (LRFD) $\Omega = 2.00$ (ASD)

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ص ۲۱۹



③ برش قالبی



ص ۶۰

④ ملاحظات لانژی $\frac{L}{r} \leq 300$

ص ۲۱۸

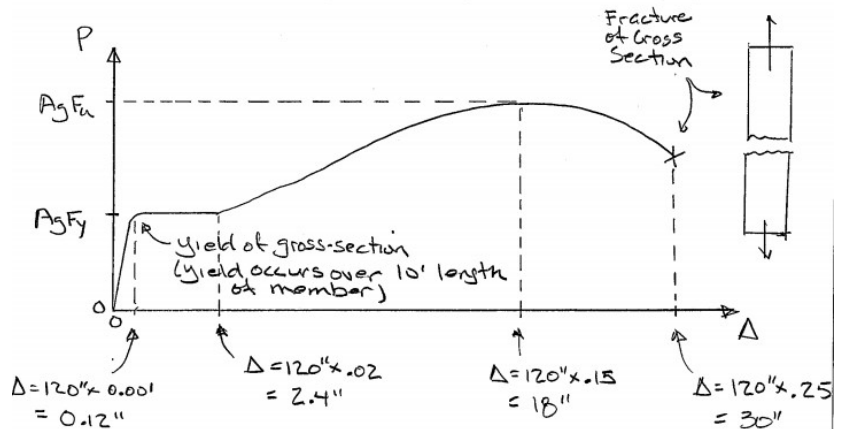
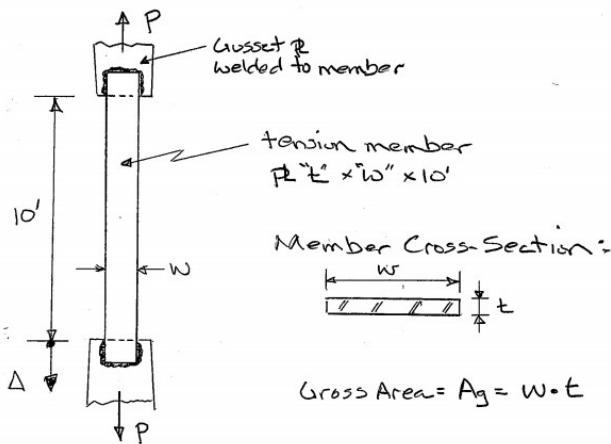
⑤ تسلیم مقطع دیتمور Whitmore

در فولاد ۲ بحث می شود.

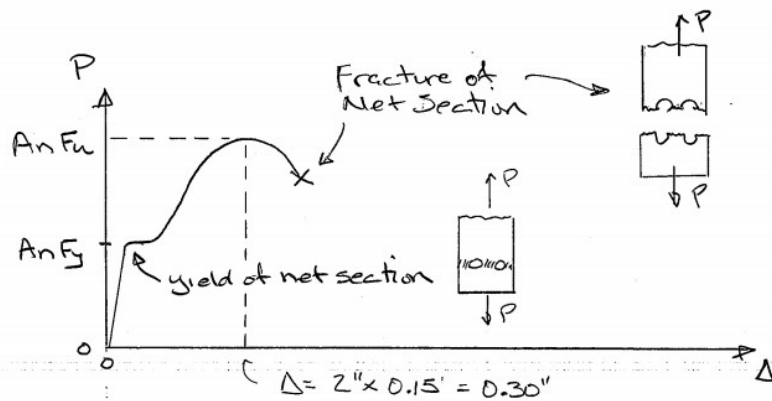
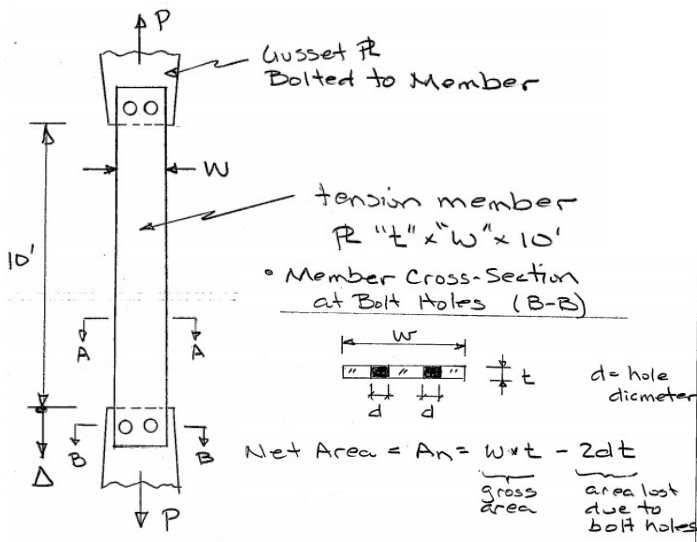
⑥ جوش، بیج و انفالات

Appendix A

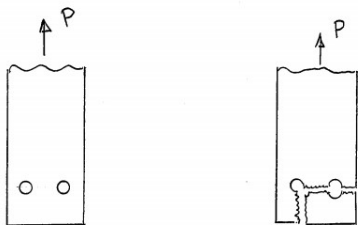
① Yield of Gross Section



② Fracture of Net Section



③ Block Shear Fracture



$$R_n = 0.60 F_u A_{nv} + U_{bs} F_u A_{nt} \leq 0.60 F_y A_{gv} + U_{bs} F_u A_{nt}$$

$$\phi = 0.75 \text{ (LRFD)} \quad \Omega = 2.00 \text{ (ASD)}$$