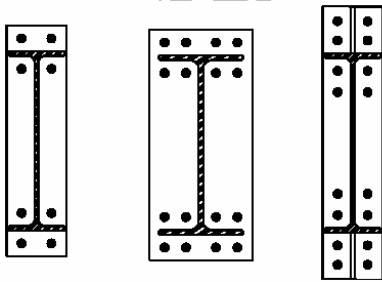


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(IPE 600 ) W24x68

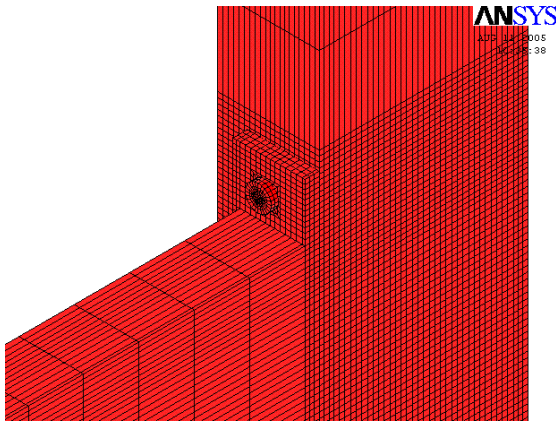
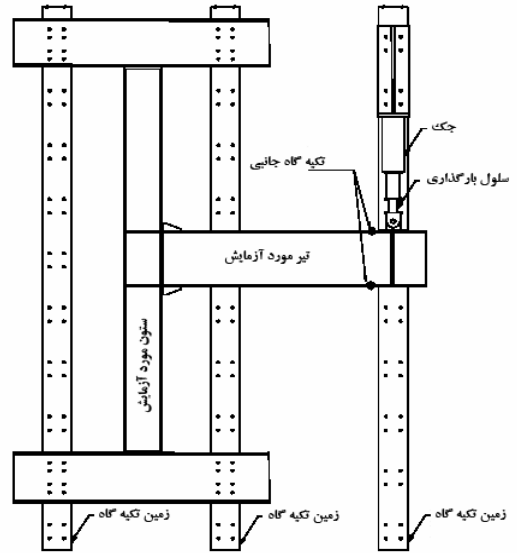
(IPBL 360 ) W14x120

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Contact174  
Solid45



Solid45

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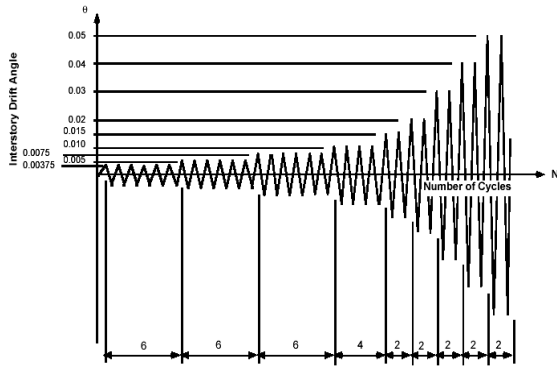
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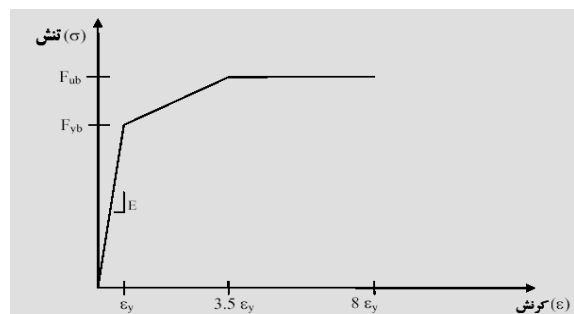
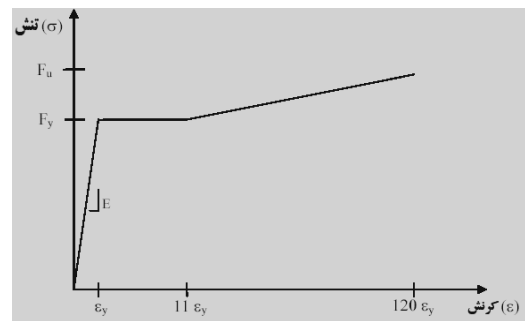
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Ksi (Mpa)	Ksi (Mpa)		
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( )	( )	A36	
( )	( )	A490	



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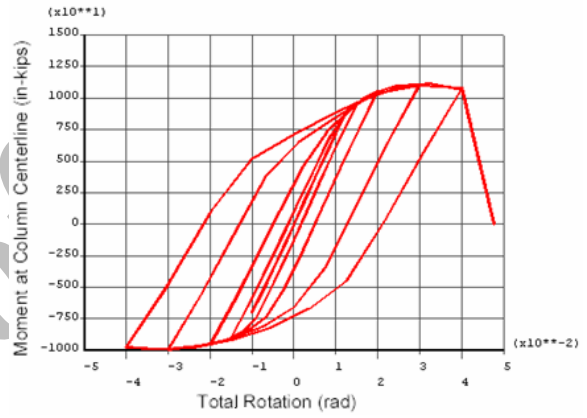
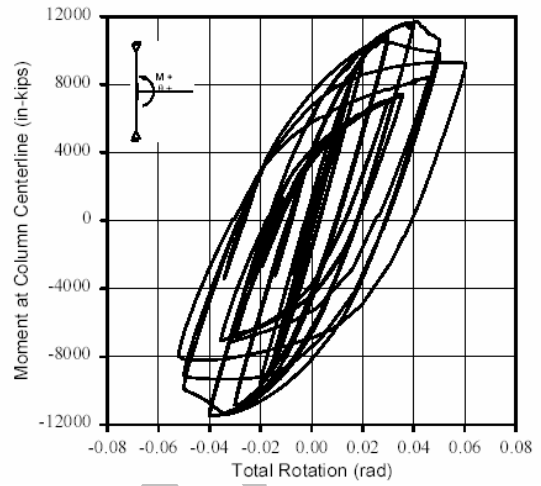
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k.in

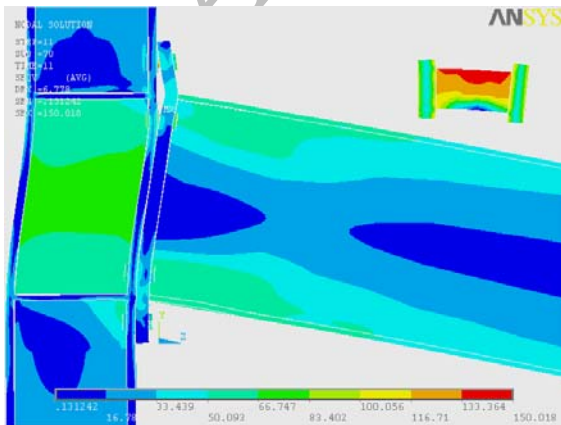
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$$M_{\max} \theta_u M_y \theta_y \quad ( )$$



[ ]

$M_{\max}$ (k.in)	$\theta_u$ (rad.)	$M_y$ (k.in)	$\theta_y$ (rad.)	
	/		/	
	/		/	

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[ ] AISC

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$$V_p < V_y$$

$$V_p$$

$$V_y$$

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$$V_y = 0.6F_{yc}d_c t_{wc} \left\{ 1 + \frac{3b_c t_{cf}^2}{d_b d_c t_{wc}} \right\} \quad ( )$$

$$V_p = 0.8 \frac{M_p}{d_b} \quad ( )$$

$d_b$

$M_p$

$t_{cf}, b_c, t_{wc}, d_c, F_{yc}$

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$M_p$

$$M_p = f_y \cdot Z$$

( )

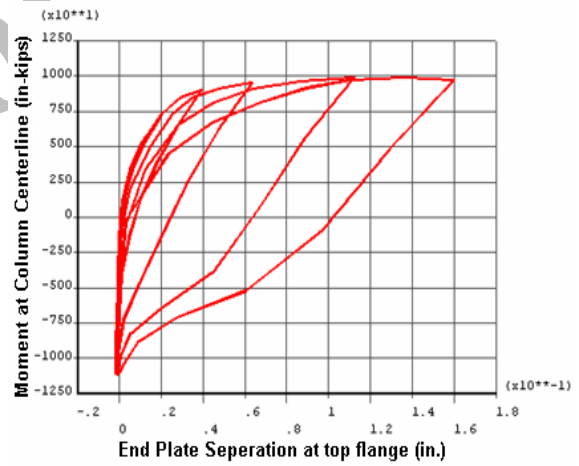
$Z$

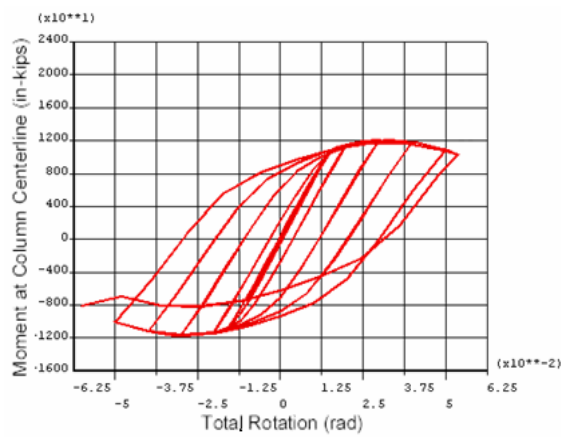
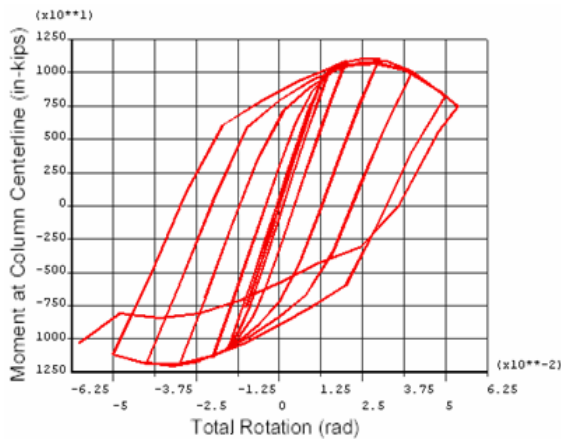
$f_y$

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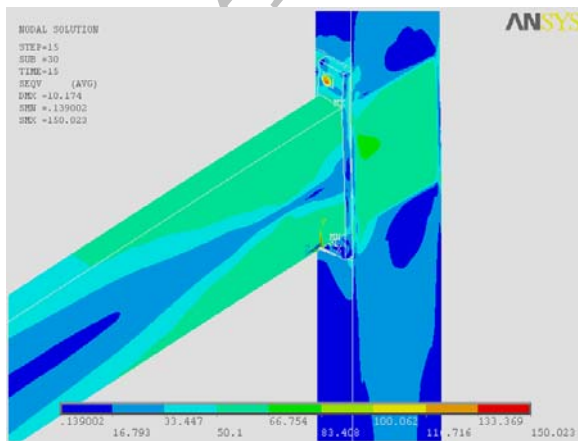
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$M_{max}$ (k.in)	$\theta_p$ (rad.)	$M_y$ (k.in)	$\theta_y$ (rad.)	
	/		/	"
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[ ] FEMA-350

$$M_p = 1.1 \left[ \frac{f_y + f_u}{2} \right] Z \quad (1)$$

$$\left( \right) f_u \quad (2)$$

:( Kip = / kN)

$$V_y = 0.6 \times 53 \times 14.5 \times 0.6 \times \left\{ 1 + \frac{3 \times 14.75 \times 0.95^2}{24 \times 14.5 \times 0.6} \right\} = 30211 K \quad (3)$$

$$\left( \right)$$

$$\left( \right)$$

$$V_{P1} = 0.8 \frac{53 \times 178}{24} = 314.7 \text{ Kips} \quad (4)$$

$$\left( \right)$$

$$\left( \right)$$

$$V_{P2} = 0.8 \frac{1.1 \left( \frac{53 + 70.7}{2} \right) \times 178}{24} = 403.7 \text{ Kips} \quad (5)$$

$$\left( \right)$$

$$V_{P1} = 314.7 K \Rightarrow d_{c1} = 15.3'' \Rightarrow d_c = 16'' \quad (6)$$

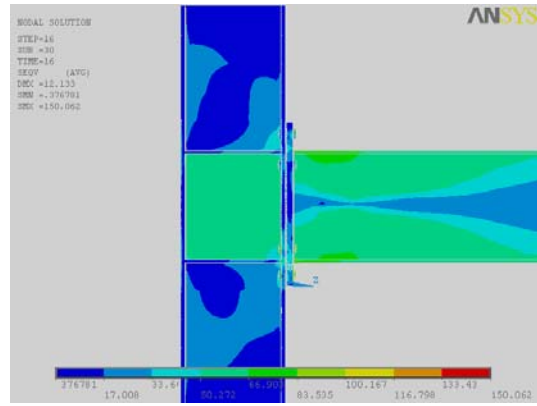
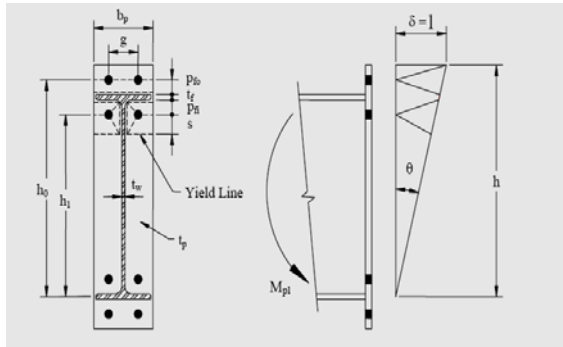
$$V_{P2} = 403.7 K \Rightarrow d_{c2} = 20.3'' \Rightarrow d_c = 21'' \quad (7)$$

$$\left( \right) \left( \right)$$

$$\left( \right)$$

$$S = \frac{1}{2} \sqrt{b_p g}$$

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$$s = \frac{1}{2} \sqrt{10 \times 6} = 3.87''$$

( )

$$M_{nL} = 38 \times 1.5^2 \left[ \frac{10}{2} \left[ 215 \left( \frac{1}{19} + \frac{1}{387} \right) + 259 \left( \frac{1}{19} \right) - \frac{1}{2} \right] + \frac{2t_r}{6} [215(19+387)] \right]$$

$$= 16362 \text{ (K.in)}$$

( )

k.in

$$\phi_b = 0.9$$

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$M_{nL}$

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$$53 \times 178 = 0.9 \times 38 \times t_p^2 \times 191.368 \Rightarrow t_{p1} = 1.43''$$

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$$1.1 \left( \frac{53 + 70.7}{2} \right) 178 = 0.9 \times 38 \times t_p^2 \times 191.368$$

$$\Rightarrow t_{p2} = 1.21''$$

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$$M_l = F_{yL} t_p^2 \left\{ \frac{b_p}{2} \left[ h_1 \left( \frac{1}{p_{fi}} + \frac{1}{s} \right) + h_0 \left( \frac{1}{p_{fo}} \right) - \frac{1}{2} \right] + \frac{2}{g} [h_1(p_{fi} + s)] \right\}$$

( )

$$g \quad s \quad b_p \quad p_{fo} \quad p_{fi} \quad h_0 \quad h_1$$

$$t_p \quad \cdot \quad ( )$$

$F_{yL}$

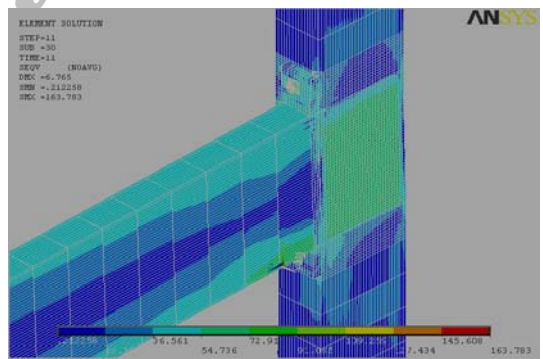
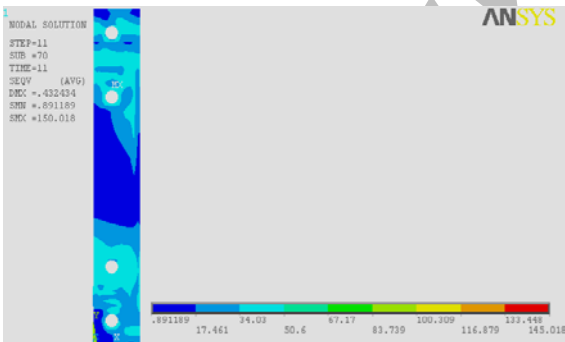
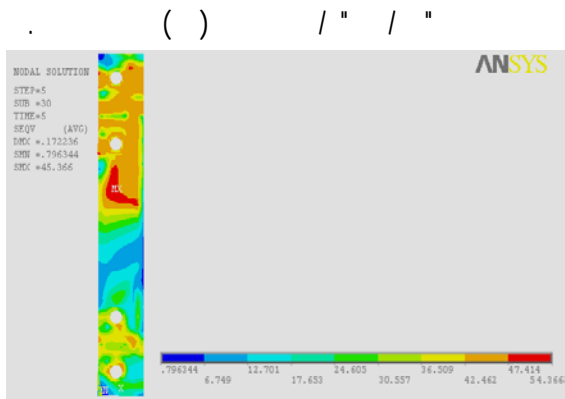
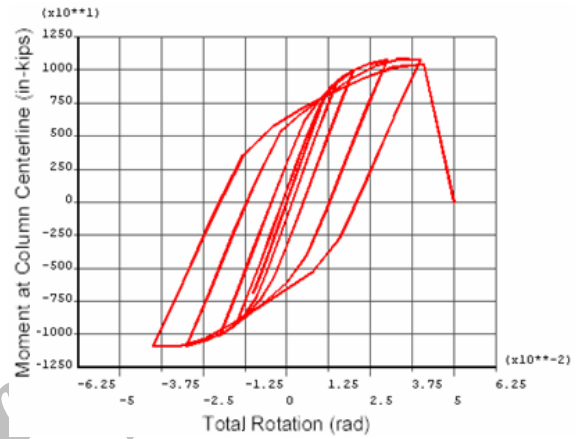
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$$M_{nL} = 1.25^2 \times 38 \times 191.3 = 11358.3 \text{ K.in} \quad ( )$$

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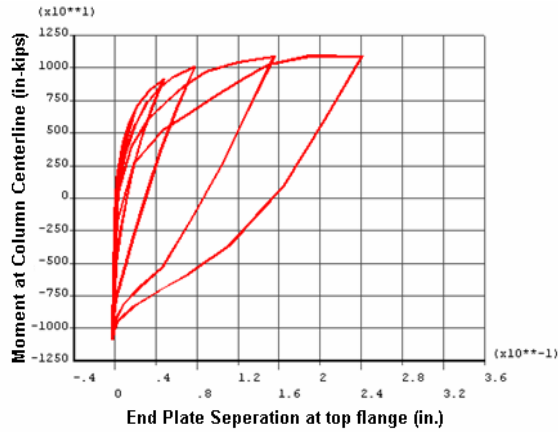
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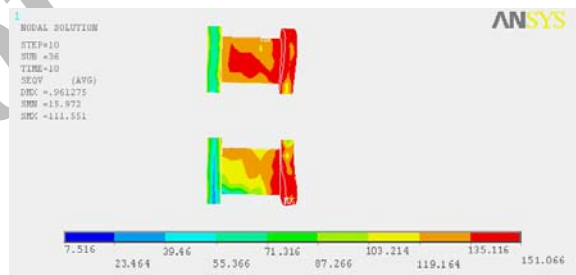
( Mpa)



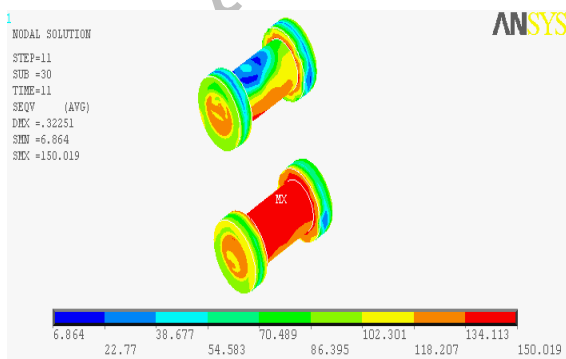
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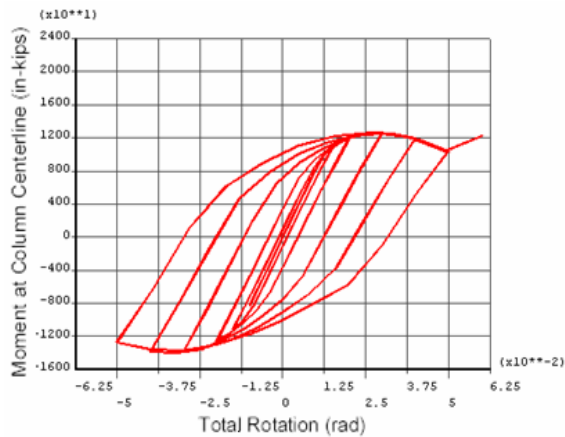


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$$\frac{d}{4}$$

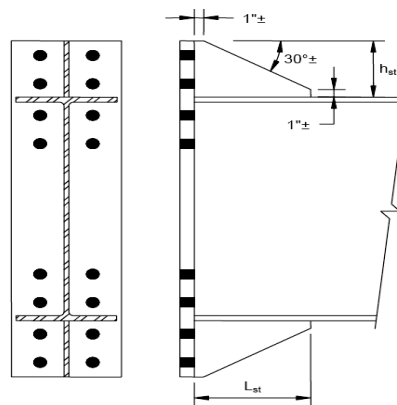
FEMA

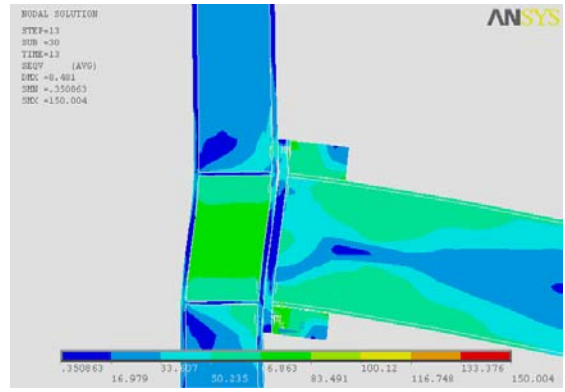
$$L_{st} = \frac{h_{st}}{\tan 30^\circ} = \frac{4.5}{\tan(30)} = 8''$$

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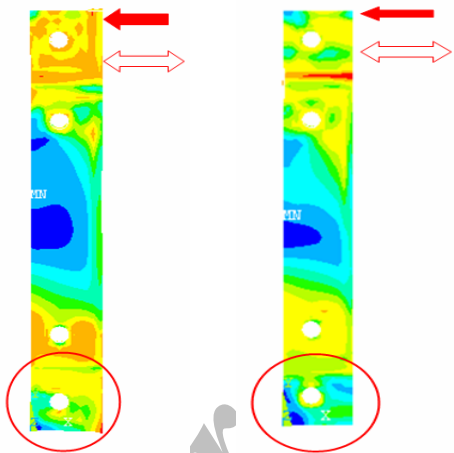
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$$\theta = l$$

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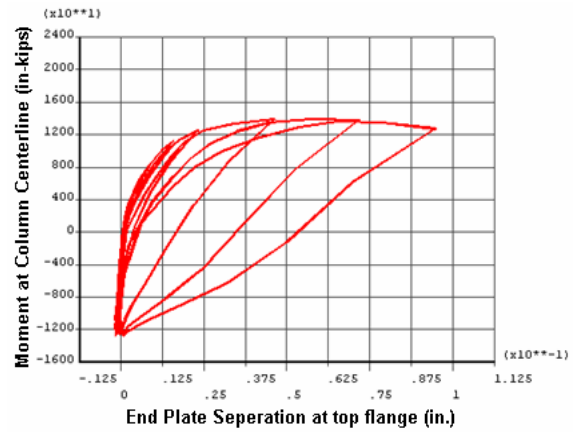
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- i- Extended end-plate moment connection
  - 2 - Cyclic loading
  - 3 - Actuator
  - 4 - Pre-tension
  - 5 - Panel zone
  - 6 - Prying action

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