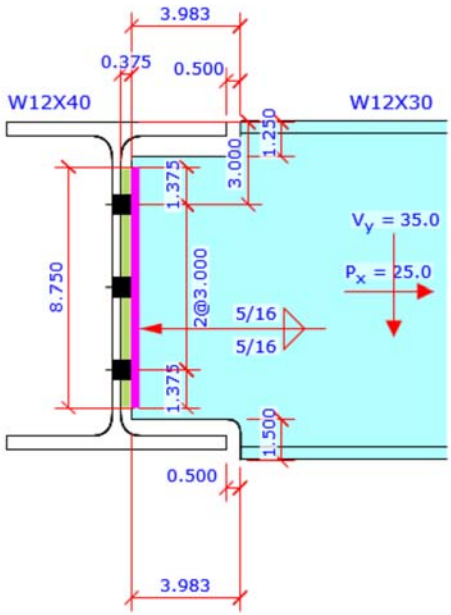
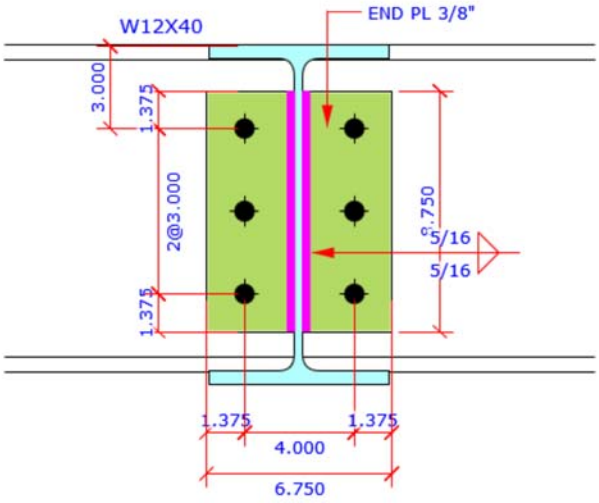
Beam to Girder	End Plate Shear Connection	Code=AISC 360-10 LRFD

Result Summary	geometries & weld limitations = **PASS**	limit states max ratio = **0.86** **PASS**

Sketch	Shear Connection	Code=AISC 360-10 LRFD





Members & Components Summary

Member	Shear Connection				Code=AISC 360-10 LRFD
End Plate					
Plate	W = 6.750	[in]	L = 8.750	[in]	
	t = 0.375	[in]			
Steel Grade A992	F_y = 50.0	[ksi]	F_u = 65.0	[ksi]	
Bolt end plate bolt					
Bolt	dia = 0.750	[in]			
	grade = A325-N		F_u = 120.0	[ksi]	
	F_{nt} = 90.0	[ksi]	F_{nv} = 54.0	[ksi]	
slip critical	SC = No				

Geometry Restriction Check - End Plate to Girder					**PASS**
Min Bolt Edge Distance - End Plate to Girder					
Bolt diameter	d_b =		= 0.750	[in]	
Min edge distance allowed	$L_{e\text{-}min}$ =		= **1.000**	[in]	AISC 14th Table J3.4
Min edge distance in End Plate to Girder	L_e =		= **1.375**	[in]	
			> $L_{e\text{-}min}$	OK	
Min Bolt Spacing - End Plate to Girder					
Bolt diameter	d_b =		= 0.750	[in]	
Min bolt spacing allowed	$L_{s\text{-}min}$ = 2.667 d_b		= **2.000**	[in]	AISC 14th J3.3
Min Bolt spacing in End Plate to Girder	L_s =		= **3.000**	[in]	
			> $L_{s\text{-}min}$	OK	

Weld Limitation Check - Beam Web to End Plate					**PASS**
Min Fillet Weld Size					
Thinner part joined thickness	t =		= 0.260	[in]	
Min fillet weld size allowed	w_{min} =		= **0.188**	[in]	AISC 14th Table J2.4
Fillet weld size provided	w =		= **0.313**	[in]	
			> w_{min}	OK	
Min Fillet Weld Length					
Fillet weld size provided	w =		= 0.313	[in]	
Min fillet weld length allowed	L_{min} = 4 x w		= **1.250**	[in]	AISC 14th J2.2b
Min fillet weld length	L =		= **8.750**	[in]	
			> L_{min}	OK	

Beam Web - Shear Yielding					ratio = 35.00 / 74.49	= **0.47**	**PASS**
Plate Shear Yielding Check							
Plate size	width b_p = 9.550	[in]	thickness t_p = 0.260	[in]			
Plate yield strength	F_y = 50.0	[ksi]					
Plate gross area in shear	$A_{gv} = b_p t_p$		= 2.483	[in^2]			
Shear force required	V_u =		= **35.00**	[kips]			
Plate shear yielding strength	$R_n = 0.6 F_y A_{gv}$		= 74.49	[kips]	AISC 14th Eq J4-3		
Resistance factor-LRFD	ϕ = 1.00				AISC 14th Eq J4-3		
	ϕR_n =		= **74.49**	[kips]			
	ratio = **0.47**		> V_u	OK			

Beam Web - Shear Rupture			ratio = 35.00 / 72.63	= **0.48**	**PASS**
Plate Shear Rupture Check					
Plate size	width b_p = 9.550	[in]	thickness t_p = 0.260	[in]	
Plate tensile strength	F_u = 65.0	[ksi]			
Plate net area in shear	$A_{nv} = b_p t_p$		= 2.483	[in^2]	
Shear force in demand	V_u =		= **35.00**	[kips]	
Plate shear rupture strength	$R_n = 0.6 F_u A_{nv}$		= 96.84	[kips]	AISC 14th Eq J4-4
Resistance factor-LRFD	ϕ = 0.75				AISC 14th Eq J4-4
	ϕ R_n =		= **72.63**	[kips]	
	ratio = **0.48**		> V_u	OK	

Beam Web - Tensile Yielding			ratio = 25.00 / 102.38	= **0.24**	**PASS**
End Plate Direct Connect Length Calc					
Beam web-end plate connect length	L =		= 8.750	[in]	
Beam web thickness	t_w =		= 0.260	[in]	
Gross area subject to tension	$A_g = L t_w$		= 2.275	[in^2]	
Gross area subject to tension	A_g =		= 2.275	[in^2]	
Steel yield strength	F_y =		= 50.0	[ksi]	
Tensile force required	P_u =		= **25.00**	[kips]	
Tensile yielding strength	$R_n = F_y A_g$		= 113.75	[kips]	AISC 14th Eq D2-1
Resistance factor-LRFD	ϕ = 0.90				AISC 14th D2 (a)
	ϕ R_n =		= **102.38**	[kips]	AISC 14th Eq D2-1
	ratio = **0.24**		> P_u	OK	

Beam Web - Tensile Rupture			ratio = 25.00 / 102.98	= **0.24**	**PASS**
End Plate Direct Connect Length Calc					
Beam web-end plate weld length	L =		= 8.750	[in]	
Beam web-end plate fillet weld size	w =		= 0.313	[in]	
Beam web-end plate connect length	$L_w = L - 2 w$		= 8.125	[in]	
Plate Tensile Rupture Check					
Plate size	width b_p = 8.125	[in]	thickness t_p = 0.260	[in]	
Plate tensile strength	F_u = 65.0	[ksi]			
Plate net area in tension	$A_{nt} = b_p t_p$		= 2.113	[in^2]	
Tensile force in demand	P_u =		= **25.00**	[kips]	
Plate tensile rupture strength	$R_n = F_u A_{nt}$		= 137.31	[kips]	AISC 14th Eq J4-2
Resistance factor-LRFD	ϕ = 0.75				AISC 14th Eq J4-2
	ϕ R_n =		= **102.98**	[kips]	AISC 14th Eq J4-2
	ratio = **0.24**		> P_u	OK	

Coped Beam - Flexural Rupture			ratio = 35.00 / 44.21	= **0.79**	**PASS**
Beam section & cope side	sect = W12X30		cope side = double cope		
Beam top flange cope	depth d_c = 1.250	[in]	length L_c = 3.983	[in]	
Beam bottom flange cope	depth d_c = 1.500	[in]	length L_c = 3.983	[in]	
Beam section elastic modulus	S_{net} =		= 3.952	[in^3]	
Beam section tensile strength	F_u =		= 65.0	[ksi]	
Distance from face of cope to the point of inflection of beam	e =		= 4.358	[in]	AISC 14th Page 9-6
Beam end shear force	V_u =		= **35.00**	[kips]	
Beam end shear resistance	$R_n = F_u S_{net} / e$		= 58.95	[kips]	AISC 14th Eq 9-4
Resistance factor-LRFD	ϕ = 0.75				AISC 14th Eq 9-4
	ϕR_n =		= **44.21**	[kips]	
	ratio = **0.79**		> V_u	OK	

Coped Beam - Local Web Buckling			ratio = 35.00 / 40.81	= **0.86**	**PASS**
Beam section & cope side	sect = W12X30		cope side = double cope		
Beam top flange cope	depth d_{ct} = 1.250	[in]	length L_{ct} = 3.983	[in]	
Beam bottom flange cope	depth d_{cb} = 1.500	[in]	length L_{cb} = 3.983	[in]	
Beam section elastic modulus	S_{net} =		= 3.952	[in^3]	
Distance from face of cope to the point of inflection of beam	e =		= 4.358	[in]	AISC 14th Page 9-6
Beam section	depth d = 12.300	[in]	web t_w = 0.260	[in]	
	F_y = 50.0	[ksi]	E = 29000	[ksi]	
	$f_d = 3.5 - 7.5 (d_{ct} / d)$		= 2.738		AISC 14th Eq 9-13
Reduced beam depth	$h_0 = d - d_{ct} - d_{cb}$		= 9.550	[in]	
Plate local buckling stress	$F_{cr} = 0.62 \pi E \frac{t_w^2}{L_{ct} h_0} f_d$		= 274.8	[ksi]	AISC 14th Eq 9-12
	$F_{cr} = F_{cr} \leq F_y$		= 50.0	[ksi]	AISC 14th Eq 9-12
Beam end shear force	V_u =		= **35.00**	[kips]	
Beam end shear resistance	$R_n = F_{cr} S_{net} / e$		= 45.34	[kips]	AISC 14th Eq 9-6
Resistance factor-LRFD	ϕ = 0.90				AISC 14th Eq 9-6
	ϕR_n =		= **40.81**	[kips]	
	ratio = **0.86**		> V_u	OK	

End Plate - Shear Yield				ratio = 17.50 / 98.44	= **0.18**	**PASS**
Plate Shear Yielding Check						
Plate size	width b_p = 8.750	[in]	thickness t_p = 0.375	[in]		
Plate yield strength	F_y = 50.0	[ksi]				
Plate gross area in shear	$A_{gv} = b_p t_p$		= 3.281	[in^2]		
Shear force required	V_u =		= **17.50**	[kips]		
Plate shear yielding strength	$R_n = 0.6 F_y A_{gv}$		= 98.44	[kips]	AISC 14th Eq J4-3	
Resistance factor-LRFD	ϕ = 1.00				AISC 14th Eq J4-3	
	ϕR_n =		= **98.44**	[kips]		
	ratio = **0.18**		> V_u	OK		

End Plate - Shear Rupture				ratio = 17.50 / 67.18	= **0.26**	**PASS**
Plate Shear Rupture Check						
Bolt hole diameter	bolt dia d_b = 3/4	[in]	bolt hole dia d_h = 7/8	[in]	AISC 14th B4.3b	
Number of bolt	n = 3					
Plate size	width b_p = 8.750	[in]	thickness t_p = 0.375	[in]		
Plate tensile strength	F_u = 65.0	[ksi]				
Plate net area in shear	$A_{nv} = (b_p - n d_h) t_p$		= 2.297	[in^2]		
Shear force required	V_u =		= **17.50**	[kips]		
Plate shear rupture strength	$R_n = 0.6 F_u A_{nv}$		= 89.58	[kips]	AISC 14th Eq J4-4	
Resistance factor-LRFD	ϕ = 0.75				AISC 14th Eq J4-4	
	ϕR_n =		= **67.18**	[kips]		
	ratio = **0.26**		> V_u	OK		

End Plate - Block Shear - Center Strip				ratio = 35.00 / 170.93	= **0.20**	**PASS**
Plate Block Shear - Center Strip						
Bolt hole diameter	bolt dia d_b = 3/4	[in]	bolt hole dia d_h = 7/8	[in]	AISC 14th B4.3b	
Plate thickness	t_p = 0.375	[in]				
Plate strength	F_y = 50.0	[ksi]	F_u = 65.0	[ksi]		
Bolt no in ver & hor dir	n_v = 2		n_h = 3			
Bolt spacing in ver & hor dir	s_v = 4.000	[in]	s_h = 3.000	[in]		
Bolt edge dist in ver & hor dir	e_v = 1.375	[in]	e_h = 1.375	[in]		
Gross area subject to shear	$A_{gv} = [(n_h - 1) s_h + e_h] t_p$ x 2		= 5.531	[in^2]		
Net area subject to shear	$A_{nv} = A_{gv} - [(n_h - 1) + 0.5] d_h t_p$ x2		= 3.891	[in^2]		
Net area subject to tension when sheared out by center strip	$A_{nt} = (n_v - 1) (s_v - d_h) t_p$		= 1.172	[in^2]		
Block shear strength required	V_u =		= **35.00**	[kips]		
Uniform tension stress factor	U_{bs} = 1.00				AISC 14th Fig C-J4.2	
Bolt shear resistance provided	$R_n = \min(0.6F_u A_{nv}, 0.6F_y A_{gv}) + U_{bs} F_u A_{nt}$		= 227.91	[kips]	AISC 14th Eq J4-5	
Resistance factor-LRFD	ϕ = 0.75				AISC 14th Eq J4-5	
	ϕR_n =		= **170.93**	[kips]		
	ratio = **0.20**		> V_u	OK		

End Plate - Block Shear - 2-Side Strip ratio = 35.00 / 148.08 = **0.24** **PASS**

Plate Block Shear - 2 Side Strips

Bolt hole diameter	bolt dia d_b = $^3/_4$	[in]	bolt hole dia d_h = $^7/_8$	[in]	AISC 14th	B4.3b
Plate thickness	t_p = 0.375	[in]				
Plate strength	F_y = 50.0	[ksi]	F_u = 65.0	[ksi]		
Bolt no in ver & hor dir	n_v = 2		n_h = 3			
Bolt spacing in ver & hor dir	s_v = 4.000	[in]	s_h = 3.000	[in]		
Bolt edge dist in ver & hor dir	e_v = 1.375	[in]	e_h = 1.375	[in]		
Gross area subject to shear	$A_{gv} = [(n_h - 1) s_h + e_h] t_p \times 2$		= 5.531	[in^2]		
Net area subject to shear	$A_{nv} = A_{gv} - [(n_h - 1) + 0.5] d_h t_p \times 2$		= 3.891	[in^2]		
Net area subject to tension when sheared out by 2 side strips	$A_{nt} = (e_v - 0.5 d_h) t_p \times 2$		= 0.703	[in^2]		
Block shear strength required	V_u =		= **35.00**	[kips]		
Uniform tension stress factor	U_{bs} = 1.00				AISC 14th	Fig C-J4.2
Bolt shear resistance provided	R_n = min ($0.6F_u A_{nv}$, $0.6F_y A_{gv}$) + $U_{bs} F_u A_{nt}$		= 197.44	[kips]	AISC 14th	Eq J4-5
Resistance factor-LRFD	ϕ = 0.75				AISC 14th	Eq J4-5
	ϕR_n =		= **148.08**	[kips]		
	ratio = **0.24**		> V_u	OK		

End Plate - Bolt Bearing on End Plate			ratio = 35.00 / 107.35	= **0.33**	**PASS**
Single Bolt Shear Strength					
Bolt shear stress	bolt grade = A325-N		F_{nv} = 54.0	[ksi]	AISC 14th Table J3.2
	bolt dia d_b = 0.750	[in]	bolt area A_b = 0.442	[in^2]	
Single bolt shear strength	$R_{n\text{-}bolt} = F_{nv} A_b$		= 23.86	[kips]	AISC 14th Eq J3-1
Bolt Bearing / TearOut Strength on Plate					
Bolt hole diameter	bolt dia d_b = 3/4	[in]	bolt hole dia d_h = 13/16	[in]	AISC 14th Table J3.3
Bolt spacing & edge distance	spacing L_s = 3.000	[in]	edge distance L_e = 1.375	[in]	
Plate tensile strength	F_u = 65.0	[ksi]			
Plate thickness	t = 0.375	[in]			
Interior Bolt					
Bolt hole edge clear distance	$L_c = L_s - d_h$		= 2.188	[in]	
Bolt tear out/bearing strength	$R_{n\text{-}t\&b\text{-}in} = 1.5\, L_c\, t\, F_u \le 3.0\, d_b\, t\, F_u$				AISC 14th Eq J3-6b
	= 79.98 ≤ 54.84		= 54.84	[kips]	
Bolt strength at interior	$R_{n\text{-}in} = \min(R_{n\text{-}t\&b\text{-}in}, R_{n\text{-}bolt})$		= 23.86	[kips]	
Edge Bolt					
Bolt hole edge clear distance	$L_c = L_e - d_h / 2$		= 0.969	[in]	
Bolt tear out/bearing strength	$R_{n\text{-}t\&b\text{-}ed} = 1.5\, L_c\, t\, F_u \le 3.0\, d_b\, t\, F_u$				AISC 14th Eq J3-6b
	= 35.42 ≤ 54.84		= 35.42	[kips]	
Bolt strength at edge	$R_{n\text{-}ed} = \min(R_{n\text{-}t\&b\text{-}ed}, R_{n\text{-}bolt})$		= 23.86	[kips]	
Number of bolt	interior n_{in} = 4		edge n_{ed} = 2		
Bolt bearing strength for all bolts	$R_n = n_{in} R_{n\text{-}in} + n_{ed} R_{n\text{-}ed}$		= 143.14	[kips]	
Required shear strength	V_u =		= **35.00**	[kips]	
Bolt resistance factor-LRFD	ϕ = 0.75				AISC 14th J3-10
	ϕ R_n =		= **107.35**	[kips]	
	ratio = **0.33**		> V_u	OK	

End Plate / Girder - Bolt Shear			ratio = 35.00 / 107.35	= **0.33**	**PASS**
Bolt shear stress	grade = A325-N		F_{nv} = 54.0	[ksi]	AISC 14th Table J3.2
	bolt dia d_b = 0.750	[in]	bolt area A_b = 0.442	[in^2]	
Number of bolt carried shear	n_s = 6.0		shear plane m = 1		
Bolt group eccentricity coefficient	C_{ec} =		= 1.000		
Required shear strength	V_u =		= **35.00**	[kips]	
Bolt shear strength	$R_n = F_{nv} A_b n_s m C_{ec}$		= 143.14	[kips]	AISC 14th Eq J3-1
Bolt resistance factor-LRFD	ϕ = 0.75				AISC 14th Eq J3-1
	ϕ R_n =		= **107.35**	[kips]	
	ratio = **0.33**		> V_u	OK	

End Plate / Girder - Bolt Bearing on Girder ratio = 35.00 / 107.35 = **0.33** **PASS**

Single Bolt Shear Strength

Bolt shear stress	bolt grade = A325-N		F_{nv} = 54.0	[ksi]	AISC 14th Table J3.2
	bolt dia d_b = 0.750	[in]	bolt area A_b = 0.442	[in^2]	
Single bolt shear strength	$R_{n\text{-}bolt} = F_{nv} A_b$		= 23.86	[kips]	AISC 14th Eq J3-1

Bolt Bearing / TearOut Strength on Plate

Bolt hole diameter	bolt dia d_b = $^3/_4$	[in]	bolt hole dia d_h = $^{13}/_{16}$	[in]	AISC 14th Table J3.3
Bolt spacing	spacing L_s = 3.000	[in]			
Plate tensile strength	F_u = 65.0	[ksi]			
Plate thickness	t = 0.295	[in]			

Interior Bolt

Bolt hole edge clear distance	$L_c = L_s - d_h$		= 2.188	[in]	
Bolt tear out/bearing strength	$R_{n\text{-}t\&b\text{-}in} = 1.5\ L_c\ t\ F_u \le 3.0\ d_b\ t\ m\ F_u$				AISC 14th Eq J3-6b
	= 62.92 ≤ 43.14		= 43.14	[kips]	
Bolt strength at interior	$R_{n\text{-}in}$ = min ($R_{n\text{-}t\&b\text{-}in}$, $R_{n\text{-}bolt}$)		= 23.86	[kips]	
Number of bolt	interior n_{in} = 6				
Bolt bearing strength for all bolts	$R_n = n_{in} R_{n\text{-}in}$		= 143.14	[kips]	
Required shear strength	V_u =		= **35.00**	[kips]	
Bolt resistance factor-LRFD	ϕ = 0.75				AISC 14th J3-10
	ϕ R_n =		= **107.35**	[kips]	
	ratio = **0.33**		> V_u	OK	

Bolt Tensile Prying Action on End Plate					ratio = 4.17 / 6.91	= **0.60**	**PASS**
Bolt group forces	shear V = 35.00	[kips]		axial P = -25.00	[kips]		
Single Bolt Tensile Capacity Without Considering Prying							
Bolt grade	grade = A325-N						
Nominal tensile/shear stress	F_{nt} = 90.0	[ksi]		F_{nv} = 54.0	[ksi]	AISC 14th	Table J3.2
	bolt dia d_b = 0.750	[in]		bolt area A_b = 0.442	[in^2]		
Bolt group shear force	shear V = 35.00	[kips]		no of bolt n = 6			
Shear stress required	$f_{rv} = V / (n A_b)$			= 13.20	[ksi]		
Resistance factor-LRFD	ϕ = 0.75					AISC 14th	J3.7
Modified nominal tensile stress	$F'_{nt} = 1.3 F_{nt} - \frac{F_{nt}}{\phi F_{nv}} f_{rv} \le F_{nt}$			= **87.66**	[ksi]	AISC 14th	Eq J3-3a
Bolt norminal tensile strength	$r_n = F'_{nt} A_b$			= 38.73	[kips]	AISC 14th	Eq J3-1
Resistance factor-LRFD	ϕ = 0.75					AISC 14th	J3.6
Single bolt tensile capacity	ϕr_n =			= **29.04**	[kips]		
Single Bolt Tensile Capacity After Considering Prying							
End plate	width w = 6.750	[in]		bolt gage g = 4.000	[in]		
	web t_w = 0.260	[in]					
Dist from bolt center to plate edge	$a = 0.5 (w - g)$			= 1.375	[in]		
	$a' = a + 0.5 d_b \le (1.25 b + 0.5 d_b)$			= 1.750	[in]	AISC 14th	Eq 9-27
Bolt hole diameter	bolt dia d_b = 0.750	[in]		bolt hole dia d_h = 0.813	[in]	AISC 14th	B4.3b
Dist from bolt center to face of web	$b = 0.5(g - t_w)$			= 1.870	[in]		
	$b' = b - 0.5 d_b$			= 1.495	[in]	AISC 14th	Eq 9-21
Bolt pitch spacing	s_v = 3.000						
Bolt tributary length	$p = s_v$ $p \le 2b$ and $p \le s_v$			= 2.917	[in]	AISC 14th	Page 9-11
	$\rho = b' / a'$			= 0.854		AISC 14th	Eq 9-26
	$\delta = 1 - d_h / p$			= 0.721		AISC 14th	Eq 9-24
Tensile capacity per bolt before considering prying	B = from calc shown in above section			= 29.04	[kips]		
Resistance factor-LRFD	ϕ = 0.90					AISC 14th	Page 9-10
End plate thickness	t = 0.375	[in]		tensile F_u = 65.0	[ksi]		
Plate thickness req'd to develop bolt tensile capacity without prying	$t_c = (\frac{4 B b'}{\phi p F_u})^{0.5}$			= 1.009	[in]	AISC 14th	Eq 9-30a
	$\alpha' = \frac{1}{\delta (1 + \rho)} [(\frac{t_c}{t})^2 - 1]$			= 4.664		AISC 14th	Eq 9-35
when $\alpha' > 1$	$Q = (\frac{t}{t_c})^2 (1 + \delta)$			= 0.238		AISC 14th	Eq 9-34
Bolt tensile force per bolt in demand	T = from calc shown below			= **4.17**	[kips]		
Tensile strength per bolt after considering prying	$\phi r_n = B \times Q$			= **6.91**	[kips]	AISC 14th	Eq 9-31
	ratio = **0.60**			> T	OK		
Calculate Max Single Bolt Tensile Load							
Bolt group force	axial P = 25.00	[kips]					
Bolt number	Bolt Row n_h = 2			Bolt Col n_v = 3			
Bolt tensile force per bolt	$T = P / (n_v n_h)$			= **4.17**	[kips]		

Beam Web to End Plate Weld Strength						ratio = 5.29 / 7.61	= **0.70**	**PASS**
Weld Group Forces								
	shear V = 35.00	[kips]		axial P = -25.00	[kips]	in tension		
Beam web-end plate weld length	L =			= 8.750	[in]			
Beam web-end plate fillet weld size	w =			= 0.313	[in]			
Beam web-end plate weld length used for design	L_w = L - 2 w			= 8.125	[in]			
Combined Weld Stress								
Weld stress from axial force	f_a = P / L			= -3.077	[kip/in]	in tension		
Weld stress from shear force	f_v = V / L			= 4.308	[kip/in]			
Weld stress combined - max	$f_{max} = (f_a^2 + f_v^2)^{0.5}$			= **5.294**	[kip/in]	AISC 14th Eq 8-11		
Weld stress load angle	$\theta = \tan^{-1} (\frac{f_a}{f_v})$			= 35.5	[°]			
Fillet Weld Strength Calc								
Fillet weld leg size	w = 5/16	[in]	load angle θ = 35.5		[°]			
Electrode strength	F_{EXX} = 70.0	[ksi]	strength coeff C_1 = 1.00			AISC 14th Table 8-3		
Number of weld line	n = 2 for double fillet							
Load angle coefficient	$C_2 = (1 + 0.5 \sin^{1.5} \theta)$			= 1.22		AISC 14th Page 8-9		
Fillet weld shear strength	R_{n-w} = 0.6 (C_1 x 70 ksi) 0.707 w n C_2			= 22.671	[kip/in]	AISC 14th Eq 8-1		
Base metal - beam web	thickness t = 0.260	[in]	tensile F_u = 65.0		[ksi]			
Base metal - beam web is in shear, shear rupture as per AISC 14th Eq J4-4 is checked						AISC 14th J2.4		
Base metal shear rupture	R_{n-b} = 0.6 F_u t			= 10.140	[kip/in]	AISC 14th Eq J4-4		
Double fillet linear shear strength	R_n = min (R_{n-w} , R_{n-b})			= **10.140**	[kip/in]	AISC 14th Eq 9-2		
Resistance factor-LRFD	ϕ = 0.75					AISC 14th Eq 8-1		
	ϕ R_n =			= **7.605**	[kip/in]			
	ratio = **0.70**			> f_{max}	OK			