The weld orofile to be used within the attachment of both the diagonal beam to the baseplate and the vertical end beam is a butt weld.

The weld leg length for the beam being attached to both the baseplate and the vertical end beam is to be a 14mm weld.

The maximum convexity of the weld is to be approximately 4.5mm.

See AISI 304 Beam Material (both Vertical & Diagonal Welded Frame).

> Wide: 100mm, Length: 80mm, Height: 100mm, Trickness: 20mm
> Beam is connecting to the Basspate and Vertical Beam.
> Centre of Area (C of A) superimposed with the coordinate system outside of the vertical beam.
> Selection & jurnification of well profile.
> Selection & jurnification of suitable weld size.

> 100N Downward Vertical Force > 1000N Tangential Force

Notes	Description	Property	Data & Calculat	Unit	Symbol	Expression	Reference	Citatio
Notes	End Beam Size	End Beam Height	800	mm	eb_h	Expression	Defined	Citatio
		End Beam Width	100		eb w		-	
		End Beam Thickness	20		eb_t			
	Base Plate Size	Base Plate Height Base Plate Width	1500 1500	mm	bp_h		Defined	
		Base Plate Width Base Plate Thickness	1500 15		bp_w bp t			
		Base Place Hillochiess	15		up_t			
		Length of Beam	80	mm	I_b		Defined	
	Specified FOS	Factor of Safety	2		FOS			
Downward Direction	Force Y - Direction	Hole A Force	1943.10	N	F		Calculated	
Jownward Direction	Force Y - Direction	Hole A Force	1943.10	N		SQRT(((F_plt1+F_plt2+F_shr d+F by)^2)+((F bx)^2)))	Calculated	
Offset - Flaure X	Hole A	Offset Distance	300	mm	offset d	u+r_byj-2j+((r_bx)-2jj)	Calculated	
Diametre of Hole A		Diametre	30		dia_b		Defined	
	Mass	Plate 1	49.46	kg	m_plt1		Bolt Design	
		Plate 2 Shredder Unit	7.07 45.45		m_plt2 m_shrd			
		Siredder Offic	43.43		III_SIIIG			
	Forces - Belt	Tension Belt	1000.00	N	F_b		Defined	
		X Component	461.75		F_bx	F_b*SIN(ang_rads)	Calculated	
		Y Component	887.01		F_by	F_b*COS(ang_rads)		
			27.5	theta			Defined	
	Angle	Belt - Degrees Belt - Rads	27.5 0.48	theta	ang_degs ang_rads	ang_deg*(PI()/180)	Defined Calculated	
		Delt - Hada	0.40	CIPCIN	8116_1843	and_ord (11())100)	Carculated	
	Forces - Shredder	Plate 1	485.20		F_plt1	m_plt1*g	Calculated	
		Plate 2	69.36		F_plt2	m_plt2*g	- 1	
		Shredder Unit	445.86		F_shrd	m_shrd*g		
	Acceleration due to Gravity	Gravity Constant	9.81	m/s^2	_		n	[1]
	Acceleration due to Gravity	Gravity Constant	9.81	m/s^2	8		Researched	[1]
	Rectangular Hollow Beam	Beam Height	100	mm	b_h		Defined	
	Diagonal - Welded Frame	Beam Width	100		b_w			
		Beam Thickness	20		b_t			
	AISI 304 Steel Beam Material	Tensile Strength						[3]
	AISI 304 Steel Beam Material Properties	Tensile Strength Weld Shear Stress Factor	505 3	N/mm^2	Su weld f		Datasheet Researched	[3]
	Properties	Weld Silear Scress Factor	3		weiu_i		rvesear cried	[2]
Formula from		Allowable Shear Stress	119.03	MPa	t_all	Su*weld_f	Calculated	Lectu
Lectures								
		Calcula	itions - End Bean	n				
	Beam to Base Plate	Moment	20061 07	Neor		E utab t	Calculated	[1]
	Beam to Base Plate Bending	Moment Moment of Inertia	38861.92 3533.33	Nmm	M 7 w	F_y*eb_t (b_w+b_b)+(/b_w)*2/3)	Calculated	[1]
		Moment Moment of Inertia Component due to Bending	38861.92 3533.33 11.00	Nmm * N/mm	M Z_w F bnd	F_y*eb_t (b_w+b_h)+((b_w)^2/3) M/Z w	Calculated	[1]
	Bending	Moment of Inertia Component due to Bending	3533.33 11.00		Z_w	(b_w+b_h)+((b_w)^2/3)	:	-
		Moment of Inertia Component due to Bending Assumption of Width	3533.33 11.00		Z_w F_bnd w	(b_w+b_h)+((b_w)^2/3) M/Z_w	" " Assumption	-
lcting upon each mm	Bending	Moment of Inertia Component due to Bending Assumption of Width Perimetre of Beam	3533.33 11.00 1.00 400.00	N/mm mm	Z_w F_bnd w P	(b_w+b_h)+((b_w)^2/3) M/Z_w (b_h*2)+(b_w*2)	:	-
cting upon each mm	Bending	Moment of Inertia Component due to Bending Assumption of Width Perimetre of Beam Area of Weld	3533.33 11.00 1.00 400.00 400.00	N/mm mm mm*2	Z_w F_bnd w P A w	(b_w+b_h)+((b_w)^2/3) M/Z_w (b_h*2)+(b_w*2) w*p	Assumption Calculated	-
cting upon each mm	Bending	Moment of Inertia Component due to Bending Assumption of Width Perimetre of Beam Area of Weld Force	3533.33 11.00 1.00 400.00 400.00 1943.095797	N/mm mm mm^2	Z_w F_bnd w P A_w V	(b_w+b_h)+((b_w)^2/3) M/Z_w (b_h*2)+(b_w*2) w*p F	Assumption Calculated	Lectu
cting upon each mm	Bending	Moment of Inertia Component due to Bending Assumption of Width Perimetre of Beam Area of Weld	3533.33 11.00 1.00 400.00 400.00	N/mm mm mm*2	Z_w F_bnd w P A w	(b_w+b_h)+((b_w)^2/3) M/Z_w (b_h*2)+(b_w*2) w*p	Assumption Calculated	-
cting upon each mm	Bending	Moment of Inertia Component due to Bending Assumption of Width Perimetre of Beam Area of Weld Force Force due to Shear Torque	3533.33 11.00 1.00 400.00 400.00 1943.095797 4.86	N/mm mm mm^2	Z_w F_bnd w P A_w V F_s	(b_w+b_h)+((b_w)^2/3) M/Z_w (b_h*2)+(b_w*2) w*p F V/A_w F*bp_w	Assumption Calculated Defined Calculated	Lectu
cting upon each mm	Bending Shear	Moment of linertia Component due to Bendling Assumption of Width Perimetre of Beam Area of Weld Force Force due to Shear Torque Radius of Beam	3533.33 11.00 1.00 400.00 400.00 1943.095797 4.86 2914643.70 70.71	N/mm mm mm^2 N/mm	Z_w F_bnd w P A_w V F_s	(b_w+b_h)+((b_w)^2/3) M/Z_w (b_h*2)+(b_w*2) w*p F V/A_w F*bp_w SORT((b_w)2)*2+(b_h/2)^2/2	Assumption Calculated Defined Calculated	Lectu (1)
cting upon each mm	Bendling Shear Torsion	Moment of Inertia Component due to Bending Assumption of Width Perimetre of Beam Area of Weld Force Force due to Shear Torque	3533.33 11.00 1.00 400.00 400.00 1943.095797 4.86	N/mm mm mm^2 N N/mm	Z_w F_bnd w P A_w V F_s	(b_w+b_h)+((b_w)^2/3) M/Z_w (b_h*2)+(b_w*2) w*p F V/A_w F*bp_w	Assumption Calculated Defined Calculated	Lectu
cting upon each mm	Bending Shear Torsion Beam	Moment of Inertia Component due to Bending Assumption of Width Perimetre of Beam Area of Weld Force Force due to Shear Torque Radius of Beam Twisting Moment of Inertia	3533.33 11.00 1.00 400.00 400.00 1943.095797 4.86 2914643.70 70.71 1333333.33	N/mm mm mm^2 N/mm N/mm Pa mm Pa	Z_w F_bnd w P A_w V F_s T r b J_w	(b_w+b_h)-((b_w)^2/3) M/Z_w - (b_h*2)-(b_w*2) W*p F V/A_w SQRT((b_w)^2/2^2+(b_h/2)^2/2) ((b_w+b_h)^3)/6	Assumption Calculated Defined Calculated	Lectu (1)
cting upon each mm	Bendling Shear Torsion	Moment of linertia Component due to Bendling Assumption of Width Perimetre of Beam Area of Weld Force Force due to Shear Torque Radius of Beam	3533.33 11.00 1.00 400.00 400.00 1943.095797 4.86 2914643.70 70.71 1333333.33	N/mm mm mm^2 N/mm N/mm Pa mm Pa radians	Z_w F_bnd w P A_w V F_s T r b J_w angg_rads	(b_w+b_h)+((b_w)^2/3) M/Z_w (b_h*2)+(b_w*2) w*p f V/A_w F*bp_w SQRTI((b_w/2)+2+(b_h/2)^2) ((b_w+b_h)*3)(6 ATAN(b_t/(b_b/2))	Assumption Calculated Defined Calculated	Lectu (1)
cting upon each mm	Bending Shear Torsion Beam	Moment of Inertia Component due to Bending Assumption of Width Perimetre of Beam Area of Weld Force Force due to Shear Torque Radius of Beam Twisting Moment of Inertia	3533.33 11.00 1.00 400.00 400.00 1943.095797 4.86 2914643.70 70.71 1333333.33	N/mm mm mm^2 N/mm N/mm Pa mm Pa	Z_w F_bnd w P A_w V F_s T r b J_w	(b_w+b_h)-((b_w)^2/3) M/Z_w - (b_h*2)-(b_w*2) W*p F V/A_w SQRT((b_w)^2/2^2+(b_h/2)^2/2) ((b_w+b_h)^3)/6	Assumption Calculated Defined Calculated	Lectu
cting upon each mm	Bending Shear Torsion Beam	Moment of Inertia Component due to Bending Assumption of Width Perimetre of Beam Area of Weld Force Force due to Shear Torque Radius of Beam Twisting Moment of Inertia	3533.33 11.00 1.00 400.00 400.00 1943.095797 4.86 2914643.70 70.71 1333333.33	N/mm mm mm^2 N/mm N/mm Pa mm Pa radians	Z_w F_bnd w P A_w V F_s T r b J_w angB_rads	(b_w+b_h)+((b_w)^2/3) M/Z_w M/Z_w M/Z_w (b_h^*2)+(b_w^*2) F F/b_w SORTI((b_w/2)^2/4(b_h/2)^2) ((b_w+b)^3/3/6 ATAN(b_t/(b_t/2)^2) angB_rads*180/PI()	Assumption Calculated Defined Calculated	Lectu
cting upon each mm	Bending Shear Tarsion Beann Angles	Moment of inertia Component due to Bending Assumption of Width Perimetre of Beam Area of Wield Force Force due to Shear Torque Radius of Beam Twisting Moment of Inertia	3533.33 11.00 1.00 400.00 400.00 1943.095797 4.86 2914643.70 70.71 1333333.33	* N/mm mm ** mm^2 N N/mm Pa mm Pa radians degrees	Z_w F_bnd w P A_w V F_s T r b J_w angB_rads angB_degs F_J	(b_w+b_h)+((b_w)^2/3) M/Z_w M/Z_w (b_h^2)+(b_w^2) F F F/A_w F FSQN SORT((0_w/2)^2+(b_h/2)^2) (b_w+b_h)^3]/6 ATAN(b_V((b_w^2)) ang_Tads*180/F(()	Assumption Calculated Defined Calculated	Lectu (1)
cting upon each mm	Bending Shear Tarsion Beann Angles	Moment of inertia Component due to Bending Assumption of Width Perimetrs of Beam Area of Weld Force Force due to Shear Torque Radius of Beam Twisting Moment of Inertia theta Force due to Torsion	3533.33 11.00 400.00 400.00 1943.095797 4.86 2914643.70 70.71 1333333.33 1.11 63.43 154.57	* N/mm mm ** mm^2 N N/mm Pa mm Pa radians degrees	Z_w F_bnd w P A_w V F_s T r b J_w angB_rads	(b_w+b_h)+((b_w)^2/3) M/Z_w M/Z_w M/Z_w (b_h^*2)+(b_w^*2) F F/b_w SORTI((b_w/2)^2/4(b_h/2)^2) ((b_w+b)^3/3/6 ATAN(b_t/(b_t/2)^2) angB_rads*180/PI()	Assumption Calculated Defined Calculated	Lectu (1)
acting upon each mm	Shear Torsion Beam Angles Force Components Torsion	Moment of inertia Component due to Bending Assumption of Width Perimetro of Beam Area of Weld Force due to Shear Torque Radius of Beam Twisting Moment of Inertia theta theta Force due to Torsion Force due to Torsion Force due to Torsion Valis Force due to Torsion 7-Asis	3533.33 11.00 1.00 400.00 400.00 1943.095797 4.86 2914643.70 70.71 133333.33 1.11 63.43 154.57 138.25 69.13	* N/mm mm ** mm^2 N N/mm Pa mm Pa radians degrees	Z_w F_bnd w P A_w V F_s T r b J_w angB_rads angB_degs F_J F_Jy F_Jz	(b_w+b_h)-((b_w)^2/3) M/Z_w M/Z_w (b_h^2)-(b_w^2) W^p V/A_w F** SORT((w w/2)^2-(b_h^2)^2) ((b_w+b_h)^3)/6 ATAN(b_1/(b_1/2)) angli _rad**180/P(t) [T**, b)/J_w FJ**COS(angli _rads) FJ**COS(angli _rads)	Assumption Calculated Defined Calculated	Lectu [1]
cting upon each mm	Bending Shear Tarsion Beann Angles	Moment of Inertia Component due to Bending Assumption of Width Perimetre of Beam Pere of Widd Force Force due to Shear Torque Radius of Beam Twisting Moment of Inertia theta " Force due to Torsion Force due to Torsion Y-Asis	3533.33 11.00 1.00 400.00 400.00 1943.095797 4.86 2914643.70 70.71 1333333.33 1.11 63.43 154.57 138.25	* N/mm mm ** mm^2 N N/mm Pa mm Pa radians degrees	Z_w F_bnd w P A_w V F_s T r b J_w ang8_rads ang8_degs F_J F_Jy F_Jy	(b_w+b_h)+((b_w)^2/3) M/Z M/Z M/Z (b_h^2)-(b_w^2) WP F V/A SORTI((b_w)^2)-2+(b_h^2)-2 ((b_w+b_h)^3)/6 ATAN(b_w/2) angB_rads*180/P(l) (T*r_b)/_W F_JSSW(angE_rads) F_JCOS(angB_rads) F_JCOS(angB_rads)	Assumption Calculated Defined Calculated	Lectu
Acting upon each mm	Shear Torsion Beam Angles Force Components Torsion	Moment of inertia Component due to Bending Assumption of Width Perimetro of Beam Area of Weld Force due to Shear Torque Radius of Beam Twisting Moment of Inertia theta theta Force due to Torsion Force due to Torsion Force due to Torsion Valis Force due to Torsion 7-Asis	3533.33 11.00 1.00 400.00 400.00 1943.095797 4.86 2914643.70 70.71 133333.33 1.11 63.43 154.57 138.25 69.13	* N/mm mm ** mm^2 N N/mm Pa mm Pa radians degrees	Z_w F_bnd w P A_w V F_s T r b J_w angB_rads angB_degs F_J F_Jy F_Jz	(b_w+b_h)-((b_w)^2/3) M/Z_w M/Z_w (b_h^2)-(b_w^2) W^p V/A_w F** SORT((w w/2)^2-(b_h^2)^2) ((b_w+b_h)^3)/6 ATAN(b_1/(b_1/2)) angli _rad**180/P(t) [T**, b)/J_w FJ**COS(angli _rads) FJ**COS(angli _rads)	Assumption Calculated Defined Calculated	Lectu
licting upon each mm	Shear Torsion Beam Angles Force Components Torsion	Moment of Inertia Component due to Brading Assumption of Width Premeter of Beam New York Force Force due to Shear Topoge Bastiss of Beam Twisting Moment of Inertia theta Force due to Trainin Force d	3533.33 11.00 1.00 400.00 400.00 400.00 1943.095797 4.86 2914643.70 70.71 1333333.33 1.11 63.43 154.57 138.25 69.13	* N/mm mm ** mm^2 N N/mm Pa mm Pa radians degrees	Z_w F_bnd w P A_w V F_s T r b J_w angB_rads angB_degs F_J F_Jy F_Jz	[b_wwb,]n(b_wv/21) M/2, w M/2, w M/2, w p (b_12,2)-(b_1,w^2) w*p (b_12,2)-(b_2,w^2) w*p (b_22,b)-(3)-(6 (b_22,b)-(3)-(6 (b_22,b)-(3)-(6 (b_23,b)-(3)-(6 (b_23,b)-(6 (b_2	Assumption Calculated Defined Calculated " " " "	Lectu
	Shear Torsion Beam Angles Force Components Torsion Summing Vectorial	Moment of Inertia Component due to Brading Assumption of Wildel Assumption of Wildel Assumption of Wildel Force Force due to Shear Torque Radius of Beam Thisting Women of Inertia theta Force due to Transion Force due to Transion Force due to Transion Pais Force desting on Component	3533.33 11.00 1.00 400.00 400.00 1943.095797 4.86 2914643.70 70.71 1333333.33 1.11 63.43 154.57 138.215 69.13	* N/mm mm ** mm^2 N N/mm Pa mm Pa radians degrees	Z_w F_bnd w P A_w V F_s T r b J_w angB_rads angB_degs F_Jy F_Jz F_comp	(b_w+b_h)+((b_w)^2/3) M/Z M/Z M/Z (b_h^2)-(b_w^2) WP F V/A SORTI((b_w)^2)-2+(b_h^2)-2 ((b_w+b_h)^3)/6 ATAN(b_w/2) angB_rads*180/P(l) (T*r_b)/_W F_JSSW(angE_rads) F_JCOS(angB_rads) F_JCOS(angB_rads)	Assumption Calculated Defined Calculated	Lectu (1)
Acting upon each mm	Shear Torsion Beam Angles Force Components Torsion Summing Vectorial	Moment of Inertia Component due to Brading Assumption of Wishin Perimeter of Blass Area of Wish Force Force due to Direct Torque Radius of Brass Torque Radius of Brass Force due to Torsion of Asis Force due to Torsion Asis Force acting on Component Wish due to georgift Advasable Wish Force Asis	3533.33 11.00 1.00 400.00 400.00 70.71 1333333.33 1.11 63.43 154.57 138.25 69.13 159.31	" N/mm mm " " N/mm Pa mm Pa radians degrees N/mm " " " mm " "	Z_w F_bnd w P A_w V F_s T r b J_w angB_rads angB_degs F_J F_Jy F_Jz F comp	[b_w*e_h]n([c_w*/2]) M/Z_w M/Z_w [0_h*e_h]n([c_w*/2]) M/Z_w #p W/A SARTIJO w*2) W*5 SARTIJO w*2) ([b_w*e_h)n([b_w*e_h	Assumption Calculated Defined Calculated " " " " " " " " " " " " " " " " " " "	Lectu (1)
	Shear Torsion Beam Angles Force Components Torsion Summing Vectorial	Moment of Inertia Component due to Brading Assumption of Wildel Assumption of Wildel Assumption of Wildel Force Force due to Shear Torque Radius of Beam Thisting Women of Inertia theta Force due to Transion Force due to Transion Force due to Transion Pais Force desting on Component	3533.33 11.00 1.00 400.00 400.00 1943.095797 4.86 2914643.70 70.71 1333333.33 1.11 63.43 154.57 138.215 69.13	N/mm mm ** mm^2 N N/mm Pa mm Pa radians degrees N/mm **	Z_w F_bnd w P A_w V F_s T r b J_w angB_rads angB_degs F_Jy F_Jz F_comp	[b_wwb,]n(b_wv/21) M/2, w M/2, w M/2, w p (b_12,2)-(b_1,w^2) w*p (b_12,2)-(b_2,w^2) w*p (b_22,b)-(3)-(6 (b_22,b)-(3)-(6 (b_22,b)-(3)-(6 (b_23,b)-(3)-(6 (b_23,b)-(6 (b_2	Assumption Calculated Defined Calculated " " " "	Lectu
	Shear Torsion Beam Angles Force Components Torsion Summing Vectorial	Moment of Inertia Component due to Brading Assumption of Wishin Perimeter of Blass Area of Wish Force Force due to Shear Rode to Shear Rode Rode Rode Rode Rode Rode Rode Rode	3533.33 11.00 1.00 400.00 400.00 70.71 1333333.33 1.11 163.43 154.57 138.25 69.13 159.31	" N/mm mm " mm^2 N N/mm Pa mm Pa radians degrees N/mm " " " mm mm	Z_w F_bnd w P A_w V F_s T r b J_w angB_rads angB_degs F_J F_Jy F_Jz F comp	[b_w*e_h]n([c_w*/2]) M/Z_w M/Z_w [0_h*e_h]n([c_w*/2]) M/Z_w #p W/A SARTIJO w*2) W*5 SARTIJO w*2) ([b_w*e_h)n([b_w*e_h	Assumption Calculated Defined Calculated " " " " " " " " " " " " " " " " " " "	Lectu
	Shear Torsion Ream Angles Force Components Torsion Summing Vectorial Weld	Moment of Inertia Component due to Brading Assumption of Whith Perincipion Radius of Beam Torque Radius of Beam Perincipion Radius of Beam Perincipion Radius of Beam Whith Radius of Beam Radi	3533.33 11.00 400.00 400.00 1943.095797 48.6 2914643.70 70.71 1333333.33 154.57 138.25 69.13 159.31 2.68 0.67 13.4 2.68	"N/mm mm" "mm"2 N N/mm Pa mm Pa degrees N/mm "	Z_w F_bnd w P A_w V F_s T r b J_w angB_rads angB_degs F_J F_J F_J F_J F_J F_d F_d M_bp	[b_wwb,]n(b_wv/2/1) M.Z_w M.Z_w M.Z_w W*p (b_1*2)+[b_w*2] W*p SORT[b_wv2]+[b_wv2] SORT[b_wv2]+2(b_wv2) ATAM(b_wv2)+2(b_wv2)+2(b_wv2) ATAM(b_wv2)+2	Assumption Calculated Defined Calculated " " " " " " " " " " " " " " " " " " "	[1]
	Shear Torsion Bram Angles Force Component's Torsion Summing Vectorial Weld	Moment of Inertia Component due to Branding Assumption of Wath Preserved Mark Preserved Mark Area of Wath Preserved Mark Area of Wath Preserved Mark Area of Wath Preserved Mark Area Force due to There Twisting Woment of Inertia theta theta Force due to Troinon A-Asis Force due to T	3533.33 11.00 400.00 400.00 1943.095797 4.86 2914643.70 70.71 1333333.33 1.11 63.43 154.57 138.25 69.13 159.31	"N/mm mm" "mm^2 N N/mm Pa mm Pa radians degrees N/mm " " " mm	Z_w F_bnd w P A_w V F_s T r b J_w ang8_rads ang8_degs F_J F_J F_J F_J F_d F_omp	(b_w*b_h)*(b_w*/2h) M/Z_w M/Z_w (b_h*2)*(b_w*/2h) M/Z_w (b_h*2)*(b_w*2) w*p //A, w F*b_w //A, w //A, w F*b_w //A, w //A, w F*b_w //A, w /	Assumption Calculated Defined Calculated " " " " " " Lectures	Lectu
	Shear Torsion Ream Angles Force Components Torsion Summing Vectorial Weld Beam to End Plate Broakly	Moment of Inertia Component due to Branding Assuração of Worth Personal of Media Personal of Resonal Tusting Movener of Inertia Bradius of Resonal Tusting Movener of Inertia Personal of Resonal Personal of Personal of Assistance Personal of Terrison Turking Force due to Tornison Tuking Force due to Tornison Tuking Force due to Tornison Tuking Force acting on Component World Log Longth Advisable World Factor Component due to Bending	3533.33 11.00 400.00 400.00 1943.095797 400.00 70.71 1333333.33 154.57 138.25 69.13 159.31 2.68 0.67 13.4 291464.20 13.9 13.9 13.9 13.9 13.9 13.9 13.9 13.9	" N/mm mm " mm " " N/mm " " N/mm Pa mm Pa mm Pa mm " " " " " " " " mm N/mm " " " " " " " " " " " " " " " " " "	Z_w F_bnd w P A_w V F_s T t b J_w ang8_degs F_J F_JY F_JE F comp w_1 w_fac w_ad	[b_wwb,]n(b_wv/2/1) M.Z_w M.Z_w M.Z_w W*p (b_1*2)+[b_w*2] W*p SORT[b_wv2]+[b_wv2] SORT[b_wv2]+2(b_wv2) ATAM(b_wv2)+2(b_wv2)+2(b_wv2) ATAM(b_wv2)+2	Assumption Calculated Defined Calculated """ """ """ Lectures "" Calculated "" Calculated	[1]
Researched Value	Shear Torsion Ream Angles Force Components Torsion Summing Vectorial Weld	Moment of Inertia Component due to Brading Assumption of Whith Perincipion Radius of Beam Torque Radius of Beam Perincipion Radius of Beam Perincipion Radius of Beam Whith Radius of Beam Radi	3533.33 11.00 400.00 400.00 1943.095797 48.6 2914643.70 70.71 1333333.33 154.57 138.25 69.13 159.31 2.68 0.67 13.4 2.68	"N/mm mm" "mm"2 N N/mm Pa mm Pa degrees N/mm "	Z_w F_bnd w P A_w V F_s T r b J_w angB_rads angB_degs F_J F_J F_J F_J F_J F_d F_d M_bp	[b_wwb,]n(b_wv/2/1) M.Z_w M.Z_w M.Z_w W*p (b_1*2)+[b_w*2] W*p SORT[b_wv2]+[b_wv2] SORT[b_wv2]+2(b_wv2) ATAM(b_wv2)+2(b_wv2)+2(b_wv2) ATAM(b_wv2)+2	Assumption Calculated Defined Calculated " " " " " " Lectures	[1]
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Researched Value	Shear Torsion Ream Angles Force Components Torsion Summing Vectorial Weld Beam to End Plate Broakly	Moment of Inertia Component due to Branding Assuração of Worth Personal of Media Personal of Resonal Tusting Movener of Inertia Bradius of Resonal Tusting Movener of Inertia Personal of Resonal Personal of Personal of Assistance Personal of Terrison Turking Force due to Tornison Tuking Force due to Tornison Tuking Force due to Tornison Tuking Force acting on Component World Log Longth Advisable World Factor Component due to Bending	3533.33 11.00 400.00 400.00 1943.095797 400.00 70.71 1333333.33 154.57 138.25 69.13 159.31 2.68 0.67 13.4 291464.20 13.9 13.9 13.9 13.9 13.9 13.9 13.9 13.9	" N/mm mm " mm " " N/mm " " N/mm Pa mm Pa mm Pa mm " " " " " " " " mm N/mm " " " " " " " " " " " " " " " " " "	Z_w F_bnd w P A_w V F_s T t b J_w ang8_degs F_J F_JY F_JE F comp w_1 w_fac w_ad	[b_wwb,]n(b_wv/2/1) M.Z_w M.Z_w M.Z_w W*p (b_1*2)+[b_w*2] W*p SORT[b_wv2]+[b_wv2] SORT[b_wv2]+2(b_wv2) ATAM(b_wv2)+2(b_wv2)+2(b_wv2) ATAM(b_wv2)+2	Assumption Calculated Defined Calculated """ """ """ Lectures "" Calculated "" Calculated	[1]
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Researched Value	Shear Torsion Beam Angles Force Components Torsion Summing Vectorial Weld Beam to End Plate Bening Shear Torsion	Moment of Inertia Component due to Brading Assumption of Westle Assumption of Westle Force due to Dean Force due to Dean Force due to Dean Force due to Dean Force due to Torsion Advantage Westle Length Advantage Advantage Moment Calcula Moment Force due to Torsion Force due to Tors	3533.33 11.00 400.00 400.00 1943.095797 486 2934643.70 70.71 1333333.33 1.11 63.43 154.57 132.35 69.13 159.31 2.68 0.67 114 20166.44 8.25 1.00 194309.58	" N/mm mm " mm N/mm Pa radians degrees N/mm " " mm N/mm mm N/mm mm N/mm mm Pa	Z_w F_bot P_bot P_c A_w P_c A_w P_c T r_b J_w J_w J_c F_f J_r F_f	[b_wwb,]n(b_wv)/21) M/Z_w M/Z_w M/Z_w wfp [c_wh2]n(b_wh2)n(b_wh2) wfp SORT[[b_wh2]n(b_wh2)n(b_wh2) ATAMp(w[b_wh2]n(b_wh2)n(b_wh2)n(b_wh2)n(b_wh2) ATAMp(w[b_wh2]n(b_wh2)n(b_w	Assumption Calculated Defined Calculated " " " " " " " " " Calculated " " " " " " " " " " " " " " " " " " "	[1]
Researched Value	Shear Torsion Ream Angles Force Components Torsion Summing Vectorial Weld Beam to End Plate Sending Shear Torsion Force Components Torsion	Moment of Inertia Assumption of Weish Assumption of Weish Personal of Mean Torque Radulus of Beam Tusting Worder of Inertia theta Force due to Torsion of Assumption Force due to Torsion of Assumption Advasable Weish Earth Moment Component due to Bending Assumption of Weish Torque Force due to Torsion	3533 33 33 33 31 31 31 30 31 30 31 30 31 30 31 30 31 31 31 31 31 31 31 31 31 31 31 31 31	* N/mm mm mm 2 N/mm mm Pa radianse selection mm N/mm mm N/mm mm N/mm mm N/mm mm N/mm * * * * * * * * * * * * * * * * * *	Z_w F_bnd w P A_w V V F_s T T r b J_w ang8_rads ang6_dags f_s F_s F_s W_fac w_ad M_bp f_bnd_pp T_bnd F_bly B_bd F_bly F_bly B_b F_bly B_bd F_bly B_bd F_bly F_bly B_b	[b_wwb_]n/(b_wv/2/1) M/Z_w M/Z_w M/Z_w w*p (b_1*2)+[b_w*2] w*p SORT[[b_1*2]+[b_1*2] SORT[[b_1*2]+2]+[b_1*2]+[b	Assumption Calculated	Lectu

Therefore, the final weld leg length is to be a length of 14mm to the nearest common weld leg length.

This correlates to the minimum required weld leg length of a value between 3 to 5mm for the beam to the end beam and the weld leg length hence, of recommended suitability to this weld falls within the expected range of approximately 10 to 15mm.

As expected the weld of the beam to the base plate is a lower value than that of the weld of the beam to the end beam (or vertical beam).

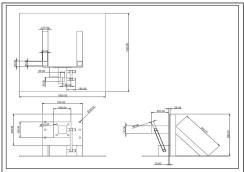
The results show the weld of the beam to the beam plate to have a minimum required weld (ag length of 2.28mm. Therefore, the weld leg length recommended must follow the advisable leg length for safety and fall at appreciately 4 farm for similar reasons mentioned prior.

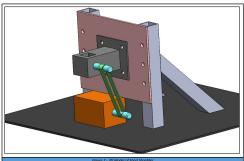
The size of the weld to the vertical end beam is expected to be larger due to the larger beanding component involved.

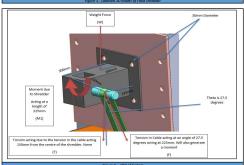
The weld profile suitable therefore, for this investigations and system would be a tee folist or even potentially a corner joint with double bevel, I or filled. For this investigation and prioritisation of labour and cost, it would be recommended to engloy a double bevel for the balance for support and welding process. To save letter on the weld cost a but weld can also be used as illustrated in future 7. [5]

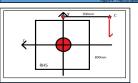
The maximum convexity, c, of the weld has been referenced and researched to be an acceptable value of 5/16 of the width for welds with widths less than 8mm. Therefore, the weld should have a c of approximately 4.5mm.

Citation	Reference
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[6]	Holdren, R., 2021. What is This Thing Called Convexity?. [online] App.aws.org. Available at: https://app.aws.org/itrends/2010/07/it201007/it0710-23.pdf [online] App.aws.org. Available at: https://app.aws.org/itrends/2010/07/it201007/it0710-23.pdf

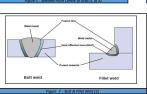












[6]