THE APPROVED CONSTRUCTION PLANS, DOCUMENTS AND ALL ENGINEERING MUST BE POSTED ON THE JOB AT ALL INSPECTIONS IN A VISIBLE AND READILY ACCESSIBLE LOCATION.

FULL SIZED LEDGIBLE COLOR PLANS ARE REQUIRED TO BE PROVIDED BY THE PERMITEE ON SITE FOR INSPECTION B-21-0070 CITY OF PUYALLUP

Structural Analysis and Calculations

for

Second Floor Addition 1922 5th Avenue SW Puyallup,WA 98371

for

Jeff Strobl and Kay Wong 1922 5th Avenue SW Puyallup,WA 98371

by

N.L. Olson & Associates, Inc. 2453 Bethel Avenue Port Orchard, WA 98366 360-876-2284 NLO#11112-20



December-20

City of Puyallup Development & Permitting Services /ISUED PERMIT Building Planning Engineering Public Works Fire Traffic

Scope of Work:

Engineering for second story addition to existing SFR.

Analysis was done using the 2015 International Building Code

Materials:

Reinforcing Steel: ASTM A615 Grade 60 Concrete: fc = 2500 psi

Design Assumptions:

Soil Properties: 1500 psf Bearing Capacity, 250 psf/ft lateral capacity (assumed)

Design Wind: 110 MPH 3 sec gust

Seismic Zone D

S_s = 160%

S₁ = 60.0%

Snow Load: 30 psf Ground



EXITING FOUNDATION, DUE TO FLOODPLAIN INSPECTOR MAY REQUIRE COPY OF GEOTECH

Dead Loads					
	Floor = 12	o nsf	3 Joists 3 subflor	or, 4 coverings, 12 HVAC)	City of Puyallup Development & Permitting Services
	Wall = 10	F - 1		eathing,0.5 insul. 3 paneling)	ISSUED PERMIT Building Planning
	Roof = 1			sulation, 3 ceiling, 5, roofing)	Engineering Public Works
		, boi	(2 por truso, 1 m		Fire
Live Loads					
	Floor, L _f =	40 psf	(60 psf Deck)		
	Roof, L _r =	25 psf			
		2			
Snow Loads					
	Exposure Category C		(ASCE	7-10 26.7.3)	
	Risk Category II		(ASCE	7-10 1.5-1)	
	Ct =	1.1	(ASCE	7-10 Table 7-3)	
	Ce =	0.9	(ASCE	7-10 Table 7-2)	
	ls =	1	(ASCE	7-10 Table 1.5-2)	
	Cs =	1	(ASCE	7-10 Figure 7-2)	
	Pg =	30 psf	(ASCE	7-10 Figure 7-1)	
	Pf = 0.7Ce*Ct*Is*Pg				
		Pf =	20.79 psf	(ASCE 7-10 7.3-1)	
	Ps = Cs*Pf				
	13-0311	Ps =	20.79 psf	(ASCE 7-10 7.4-1)	
	Us	e 25 psf fo	r desian		
Wind Loads					
	Vult = 11	0 mph (3 S	ec. Gust)		
		posure B	104040 - 2020-0020		
Seismic Loads					
	Cita Class D		10	(h a	

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Site Class D		(Assumed)
Ss =	1.6	(USGS)
S1 =	0.6	(USGS)

City of Puyallup ment & Permitting Ser ISSUED PERMIT

Planning

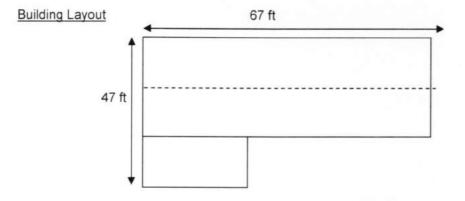
Public Works

Traffic

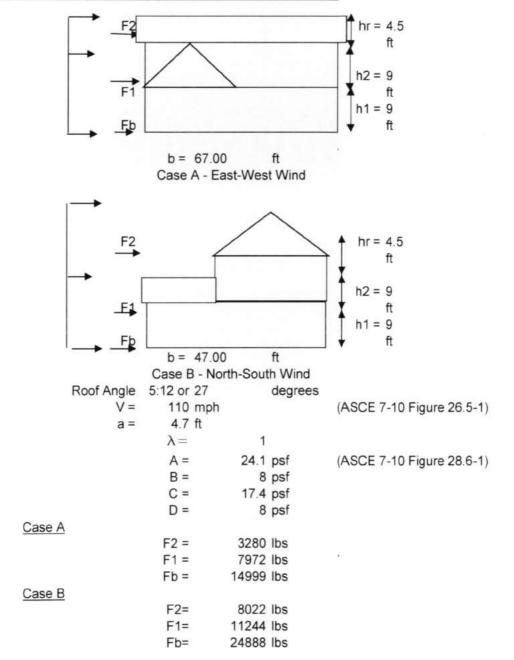
Building

Engineering

Fire



Wind Loads (Simplified Envelope Method) (Per ASCE 7-10 Section 28.2-1)



Seismic Loads City of Puyallup Site Class D evelopment & Permitting Ser ISSUED PERMIT Planning Building **Risk Category II** Engineering Public Works Ss = 1.6Traffic (ASCE 7-10 Table 11.4-1) Fa = 1Sms = Fa*Ss = 1.6 Sds = (2/3)*Sms = 1.000 ► Design Category (ASCE 7-10 Table 11.6-1) D S1 = 0.6Fv = 1.5(ASCE 7-10 Table 11.4-2) Sm1 = S1*Fv = 0.9(ASCE 7-10 Table 11.6-2) Sd1 =(2/3)*Sm1 = 0.55 Design Category D R = 6.5(ASCE 7-10 Table 12.2-1) 0 = 3(ASCE 7-10 Table 12.2-1) Cd = 4(ASCE 7-10 Table 12.2-1) le = 1(ASCE 7-10 Table 1.5-2) Approximate period per ASCE 7-10 Section 12.8.2.1 Ct = 0.02x = 0.75TL = 6T = 0.2169 seconds Cs = (Sds)/(R/le) = 0.1538 Csmax = 0.3902 Csmin = 0.044Use Cs = 0.154 Weight of the Structure Weight @ Roof = 30000 lbs Weight @ 2nd Floor = 99000 lbs Wtotal = 129000 lbs V = CsW = 19846lbs Total applied earthquake load K = 1 (ASCE 7-10 12.8.3) Cv2 = 0.405Cv1 = 0.595(Includes 1/2 upper walls and roof) F2 = 8046lbs (Includes 1/2 walls and 2nd floor) F1 = 11800 lbs Base Shear = 19846 lbs

	North Wall (Second	Floor) (F	Perforated Me	thod) (Seismic)		City of Puyallup Development & Permitting Services
	H = W =		9 ft	(Wall height)		ISSUED PERMIT Building Planning Engineering Public Works
	VV – VVf =	36.83		(Wall width)	hoight choothing)	Fire Traffic
	F =	24.17 4022.9		(Wall width w/ full (Horizontal load)	neight sneathing)	
	w =		5 lb/ft	(Vertical load)		
	w –	F	10/10	(Attatchment)		
Check Shear	ρ=	1.3				
	v =	367	lb/ft	vs = 384 $\varphi = 0.8$	lb/ft (SDPWS Ta	able 4.3A)
		Use 7/1	6in sheathin	g w/ 8d nails@ 6in	edge spacing	
					5 1 5	
Check Studs	Co =	59.0%				
	T = C =	1666.19	lb	Try 2"x6" A	= 8.25	in^2
		201.96	psi	Fc' = 2080	psi	Works
	ft =	201.96	psi	Fť = 1260	psi	Works
		Use No.	.2 HF 2x6 @	wall ends		
Check Anchors		1857.6 5.07	lb/bolt ft	(NDS Table 11E, t	s=1 1/2in, 5/8", HI	F)
		Use 5/8i	in anchor bo	olts @ 48in		
Check Holddowns	Fto =	-950.52	lbs	No Net Uplift		
		No hold	l down requi	red		
Charle D-flast	0			04-4	ACCE 7 40 40	0.0)
Check Deflections	Ga =		in	Cd = 4 Allowable Deflection	(ASCE 7-10 12.)	
	Wall Deflection =	1.47		Allowable Deflection	DII =.U2H =	2.16 in
		Moote d	eflection cri	toria		

	Couth Wall (Cocood		Commented M	othod) (Colomic)		
2	South Wall (Second	F1001) (3	segmented w	ethod) (Seishic)		City of Puyallup Development & Permitting Services
,	4 =	5	ft	(Wall height)		ISSUED PERMIT Building Planning
	N =	40.5		(Wall width)		Engineering Public Works
١	/Vf =	40.5			ull height sheathing)	Fire Traffic
I	F =	4022.9	lbs	(Horizontal load))	
N N	N =	115.5	b/ft	(Vertical load)		
		F		(Attatchment)		
Check Shear	ρ =	1.3				
	v =	129	lb/ft	vs = 384	lb/ft (SDPWS Ta	able 4.3A)
				$\varphi = 0.8$,	
		Use 7/1	6in sheathin	g w/ 8d nails@ 6	in edge spacing	
				-		
Check Studs		100.0%				
	T = C =	496.65	lb	Try 2"x6"	A = 8.25	in^2
	fc =	60.20	psi	Fc' = 2080) psi	Works
		60.20	psi	Fť = 1260		Works
					• 2000	
		Use No.	2 HF 2x6 @	wall ends		
Check Anchors	z =	1857.6	lb/bolt	(NDS Table 11E	E, ts=1 1/2in, 5/8", HI	F)
	S =	14.39	ft			2
		Use 5/8	in anchor bo	oits @ 48in		
Check Holddowns	Fto =	212.52	lbs	Net Uplift		
		No Hold	Iown Requir	ed		
Check Deflections	Ga =	11		Cd = 4	(ASCE 7-10 12.	8.6)
	Wall Deflection =	0.36	in in	Allowable Deflect		1.2
						in
		Meets d	leflection cri	teria		

	East Wall (Second I	Floor) (Pe	erforated Met	hod) (Seismic)		City of Puyallup Development & Permitting Services
	H =	9	ft	(Wall height)		ISSUED PERMIT Building Planning
	W =	19.67	ft	(Wall width)		Engineering Public Works
	Wf =	13.34	ft	(Wall width w/ full	height sheathing)	Fire
	F =	1341	lbs	(Horizontal load)		
	w =	63	lb/ft	(Vertical load)		
		F		(Attatchment)		
Check Shear	o -	1.3				
Check Shear				204		
	v =	218	lb/ft	vs = 384 $\varphi = 0.8$	lb/ft (SDPWS Ta	able 4.3A)
		Use 7/16	bin sheathin	g w/ 8d nails@ 6in	edge spacing	
Check Studs	Co =	60.0%				
	T = C =	1022.59	lb	Try 2"x6" A :	= 8.25	in^2
	fc =	123.95	psi	Fc' = 2080	psi	Works
		123.95	1	Ft' = 1260	psi	Works
		Use No.	2 HF 2x6 @	wall ends		
Check Anchors	z =	1857.6	lb/bolt	(NDS Table 11E, t	s=1 1/2in, 5/8", HI	F)
	S =	8.53	ft			
		Use 5/8i	n anchor bo	lts @ 48in		
Check Holddowns	Fto =	-6.05	lbs	No Net Uplift		
		No Hold	lown Requir	ed		
Check Deflections	Ga =	11		Cd = 4	(ASCE 7-10 12.)	8.6)
	Wall Deflection =	1.19	in	Allowable Deflection		2.16
		Meets d	eflection cri	teria		in

	East Wall (Interior, S	Second Floor) (Segme	ented Method) (Seismic)	City of Puyallup Development & Permitting Services
	H =	9 ft	(Wall height)	ISSUED PERMIT Building Planning
	W =	15 ft	(Wall width)	Engineering Public Works
	VVf =	15 ft	(Wall width w/ full height sheathing)	Fire
	F =	2681.9 lbs	(Horizontal load)	
	w =	63 lb/ft	(Vertical load)	
		F	(Attatchment)	
Check Shear	ρ=	1.3		
	v =	: 232 Ib/ft	vs = 384 lb/ft (SDPWS Tage = 0.8	able 4.3A)
		Use 7/16in sheathir	ng w/ 8d nails@ 6in edge spacing	
		ose mon sheathin	ig in ou hunde on ougo optionig	
Check Studs	Co =	100.0%		
<u>Oneon oldus</u>		: 1609.15 lb	Try 2"x6" A = 8.25	in^2
		1000.10 10	11) 2 20 71 0.20	
	fc =	195.05 psi	Fc' = 2080 psi	Works
		195.05 psi	Fť = 1260 psi	Works
		100.00 po.	the second per-	
		Use No.2 HF 2x6 @	wall ends	
Check Anchors	z =	1857.6 lb/bolt	(NDS Table 11E, ts=1 1/2in, 5/8", H	F)
		7.99 ft		
	5. The second	A 15.5		
		Use 5/8in anchor be	olts @ 48in	
Check Holddowns	Fto =	1136.65 lbs	Net Uplift	
		Use MSTC48B3		
Check Deflections	Ga =	- 11	Cd = 4 (ASCE 7-10 12.	8.6)
Check Deflections			Allowable Deflection =.02H =	2.16
	Wall Deflection =	1.39 11	Allowable Deflection02H -	2.10 in
		Meets deflection cr	itoria	111
		weets deflection cr	iteria	

	West Wall (Interior,	Second I	Floor) (Segm	ented Method) (Se	eismic)	City of Puyallup
						Development & Permitting Services
	H =	9) ft	(Wall height)		Building Planning
	W =	9.33	ft	(Wall width)		Engineering Public Works
	VVf =	9.33	ft	(Wall width w/ fu	II height sheathing)	Fire
	F =	2681.9	lbs	(Horizontal load)		
	w =	63	b/ft	(Vertical load)		
		F		(Attatchment)		
Check Shear	ρ=	1.3				
	v =	374	lb/ft	vs = 560	lb/ft (SDPWS T	able 4.3A)
				$\varphi = 0.8$	N N	,
		lleo 7/1	Sin cheathin	g w/ 8d nails@ 4i	in edge snacing	
		Use m	oin Sheathin	g w/ ou nansus +	in euge spacing	
Check Studs	Co =	100.0%				
Check Studs		2587.05	lb	Try 2"x6"	A = 8.25	in^2
	1-0-	2301.03	ID ID	1192.00	- 0.20	111 2
	fc =	313.58	psi	Fc' = 2080	psi	Works
		313.58	• 2 A (5)	Fť = 1260		Works
		010.00	por	11 1200	poi	
		Use No.	2 HF 2x6 @	wall ends		
Check Anchors	7 =	1857.6	lb/bolt	(NDS Table 11F	, ts=1 1/2in, 5/8", H	E)
CHECK AICHOIS		4.97	ft		, 10 1 1/2/11, 0/0 , 11	.,
	0-	4.57	it.			
		Use 5/8i	in anchor bo	lts @ 48in		
Check Holddowns	Fto =	3206	lbs	Net Uplift		
		Use MS	TC48B3			
Check Deflections	Ga =			Cd = 4	(ASCE 7-10 12)	
	Wall Deflection =	2.01	in	Allowable Deflect	tion =.02H =	2.16
						in
		Manta d	aflaction ori	to rio		

	West Wall (Second Floor)	Perforated Me	ethod) (Seismic)		
	H = W = Wf =	9 ft 19 ft 16 ft 11 lbs	(Wall height) (Wall width) (Wall width w/ full	height sheathing)	City of Puyallup Development & Permitting Services /ISSUED FERMIT Building Planning Engineering Public Works Fire Traffic
	·	53 lb/ft	(Horizontal load) (Vertical load)		
	F		(Attatchment)		
Check Shear	ρ = 1.3				
Check Shear	v = 182	lb/ft	vs = 384 $\varphi = 0.8$	lb/ft (SDPWS Ta	ble 4.3A)
	Use 7	16in sheathir	ng w/ 8d nails@ 6in	edge spacing	
Check Studs	Co = 60.0%				
	T = C = 1058.6	i5 lb	Try 2"x6" A	= 8.25	in^2
	fc = 128.32		Fc' = 2080	psi	Works
	ft = 128.32	psi	Fť = 1260	psi	Works
	Use N	o.2 HF 2x6 @	wall ends		
Check Anchors	z = 1857.6 S = 10.23		(NDS Table 11E,	ts=1 1/2in, 5/8", HF)
	Use 5	8in anchor b	olts @ 48in		
Check Holddowns	Fto = 36.69	lbs	Net Uplift		
	No Ho	ldown Requi	red		
Check Deflections	Ga = 11		Cd = 4	(ASCE 7-10 12.8	.6)
	Wall Deflection = 1.0)9 in	Allowable Deflecti		2.16 in
					8635

			B (O 1 1-)	
	North Wall (First Floor)) (Segmented Meth	nod) (Seismic)	City of Puyallup Development & Permitting Services
	0 -	0.8	(Moll beight)	ISSUED PERMIT Building Planning
	H =	8 ft	(Wall height)	Engineering Public Works
	VV = VVf =	21 ft	(Wall width)	Fire
	F =	21 ft 8153 lbs	(Wall width w/ full height sheathing)	
		228.2 lb/ft	(Horizontal load)	
	w = F	228.2 ID/IL	(Vertical load) (Attatchment)	
	F		(Attatenment)	
Check Shear	$\rho = 1.3$	3		
	v = 50		vs = 560 lb/ft (SDPWS Ta	ble 4 3A)
	V = 50	55 15/12	$\varphi = 0.8$	510 4.01 ()
	Us	se 7/16in sheathir	ng w/ 8d nails@ 4in edge spacing	
Check Studs	Co = 10	0.0%		
	T = C = 31	105.91 lb	Try 2"x6" A = 8.25	in^2
	fc = 37	76.47 psi	Fc' = 2080 psi	Works
	ft = 37	76.47 psi	Fť = 1260 psi	Works
	Us	se No.2 HF 2x6 @	wall ends	
Check Anchors	z = 18	857.6 lb/bolt	(NDS Table 11E, ts=1 1/2in, 5/8", HF	;)
	S = 3.	68 ft	· · · · · · · · · · · · · · · · · · ·	
	U	se 5/8in anchor b	olts @ 36in	
Check Holddowns	Fto = 37	777 Ibs	Net Uplift	
	U	se HDU5		
Check Deflections	Ga = 14	4	Cd = 4 (ASCE 7-10 12.8	3.6)
	Wall Deflection =	1.57 in	Allowable Deflection = 02H =	1.92
				in

	South Wall (First Flo	oor) (Seg	mented Meth	nod) (Seismic)		City of Puyallup
	H = W = Wf = F = w =	8 18.25 18.25 9923.1 228.2 F	ft Ibs	(Wall height) (Wall width) (Wall width w/ full (Horizontal load) (Vertical load) (Attatchment)	height sheathing)	Development & Permitting Services ISSUED PERMIT Building Planning Engineering Public Works Fire Traffic
Check Shear	10	1.3				
	v =	707	lb/ft	arphi = 720 arphi = 0.8	Ib/ft (SDPWS T	able 4.3A)
		Use 7/10	6in sheathin	g w/ 8d nails@ 3in	edge spacing	
Check Studs		100.0%				
	T = C =	4349.84	lb	Try 2"x6" A	= 8.25	in^2
	fc =	527.25	psi	Fc' = 2080	psi	Works
	ft =	527.25	psi	Fť = 1260	psi	Works
		Use No.	2 HF 2x6 @	wall ends		
Check Anchors	z =	1857.6	lb/bolt	(NDS Table 11E,	ts=1 1/2in, 5/8", H	F)
	S =	2.63	ft			
		Use 5/8i	in anchor bo	olts @ 30in		
Check Holddowns	Fto =	5312	lbs	Net Uplift		
		Use HD	U5/MSTC66	B3		
Check Deflections	Ga =	17		Cd = 4	(ASCE 7-10 12.	8.6)
	Wall Deflection =	1.83	in	Allowable Deflecti	on =.02H =	1.92
		Maata d	aflection or	itorio		in

	West Wall (First Flo	or) (Sear	mented Metho	od) (Seismic)		
						City of Puyallup Development & Permitting Services ISSUED PERMIT
	H =	8	ft	(Wall height)		Building Planning
	VV =	15	ft	(Wall width)		Engineering Public Works
	VVf =	15	ft	(Wall width w/ ful	I height sheathing)	Fire Traffic
	F =	6383	lbs	(Horizontal load)		
	w =	119	lb/ft	(Vertical load)		
		F		(Attatchment)		
Check Shear		1.3				
	v =	553	lb/ft	vs = 560	lb/ft (SDPWS Ta	able 4.3A)
				$arphi_{-}=$ 0.8		
		Use 7/10	6in sheathin	g w/ 8d nails@ 4ir	n edge spacing	
Check Studs	Co =	100.0%				
		3404.24	lb	Try 2"x6" A	= 8.25	in^2
		412.64		Fc' = 2080	psi	Works
	ft =	412.64	psi	Fť = 1260	psi	Works
		Use No.	2 HF 2x6 @	wall ends		
Check Anchors	z =	1857.6	lb/bolt	(NDS Table 11E,	ts=1 1/2in, 5/8", HI	F)
	S =	3.36	ft			·
		Use 5/8i	n anchor bo	lts @ 36in		
Check Holddowns	Fto =	4069	lbs	Net Uplift		
		Use HD	U5			
Check Deflections	Ga =	14		Cd = 4	(ASCE 7-10 12.	8.6)
	Wall Deflection =	1.85	in	Allowable Deflect		1.92 in
		Masta d	affection or	toria		55.5

	East Wall (First Floor) (Segmented Method) (Seismic)						
	H =	8	ft	(Wall height)		ISSUED PERMIT Building Planning	
	VV =	20	ft	(Wall width)		Engineering Public Works Fire Traffic	
	Wf =	20	ft	(Wall width w/ full h	eight sheathing)	The Wishertance	
	F =	6383	lbs	(Horizontal load)			
	w =	119	lb/ft	(Vertical load)			
		F		(Attatchment)			
Check Shear	ρ=	1.3					
	v =	415	lb/ft	vs = 560	lb/ft (SDPWS Ta	ble 4.3A)	
		110	10/11	$\varphi = 0.8$,	
		1100 7/40	in cheathin				
		Use //10	sin sneathing	g w/ 8d nails@ 4in e	euge spacing		
Ohards Ohada	Co	100.0%					
Check Studs		2553.18	lb	Try 2"x6" A =	8.25	in^2	
	1=0=	2003.10	D	11y 2 x0 A -	0.23	11 2	
	fc =	309.48	psi	Fc' = 2080	psi	Works	
		309.48		Fť = 1260	psi	Works	
		Use No.	2 HF 2x6 @	wall ends			
Check Anchors	7 =	1857.6	lb/bolt	(NDS Table 11E, ts	s=1 1/2in, 5/8", HF	-)	
Oneck Anonors	100	4.48	ft	(100100100)		,	
	0-	4.40	it.				
		Use 5/8i	n anchor bo	lts @ 36in			
Check Holddowns	Fto =	3051	lbs	Net Uplift			
		Use HD	U5				
			_				
Check Deflections	Ga =	14		Cd = 4	(ASCE 7-10 12.8	8.6)	
Official Deficitions	Wall Deflection =		in	Allowable Deflectio		1.92	
						in	
			0	taria			

JOB SUMMARY REPORT

level				
Member Name	Results	Current Solution	Comments	
Floor: Joist 24'	Passed	1 piece(s) 14" TJI® 560 @ 16" OC		City of Puyallup
Floor: Joist 16'	Passed	1 piece(s) 14" TJI® 230 @ 16" OC	Dev	Velopment & Permitting Service
Floor: Joist 24' with cant.	Passed	1 piece(s) 14" TJI® 560 @ 16" OC		Building Planning Engineering Public Works

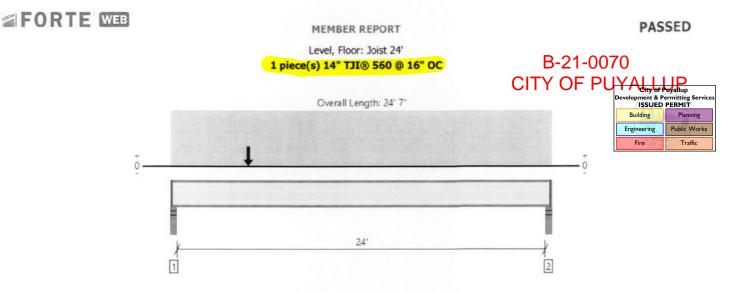
B-21-0070 CITY OF PUYALLUP



ForteWEB Software Operator	Job Notes
Nicholas Levengood	
N.L. Olson & Associates	
(360) 535-3705	
nlevengood17@gmail.com	



10/23/2020 2:59:52 PM UTC ForteWEB v3.0 File Name: Strobl



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)	
Member Reaction (lbs)	1045 @ 2 1/2"	1396 (2.25")	Passed (75%)	1.00	1.0 D + 1.0 L (All Spans)	
hear (lbs) 1032 @ 3 1/2" 2		2390	Passed (43%)	1.00	1.0 D + 1.0 L (All Spans)	
Moment (Ft-lbs)	Ft-lbs) 5678 @ 11' 6 15/16"		Passed (50%)	1.00	1.0 D + 1.0 L (All Spans)	
Live Load Defl. (in)	0.443 @ 12' 3 1/2"	0.604	Passed (L/654)	54) 1.0 D + 1.0 L (All Spans)		
Total Load Defl. (in)	0.653 @ 12' 1 3/8"	1.208	Passed (L/444)	1.0 D + 1.0 L (All Spans)		
T]-Pro [™] Rating	40	40	Passed			

System : Floor Member Type : Joist Building Use : Residential Building Code : IBC 2015 Design Methodology : ASD

Deflection criteria: LL (L/480) and TL (L/240).

Allowed moment does not reflect the adjustment for the beam stability factor.

A structural analysis of the deck has not been performed.

• Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.

Additional considerations for the TJ-Pro[™] Rating include: 1/2[™] Gypsum ceiling.

Supports	a lange to be an out	Bearing Length			Loads to Supports (lbs)				
	Total	Available	Required	Dead	Floor Live	Roof Live	Snow	Total	Accessories
1 - Stud wall - HF	3.50"	2.25"	1.75"	397	656	337	337	1727	1 1/4" Rim Board
2 - Stud wall - HF	3.50"	2.25"	1.75"	246	656	83	83	1068	1 1/4" Rim Board

Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8" 1" o/c	
Bottom Edge (Lu)	24' 5" o/c	

Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Roof Live (non-snow: 1.25)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 24' 7"	16"	12.0	40.0	-		Default Load
2 - Point (lb)	5	N/A	250		420	420	

Weyerhaeuser Notes

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Weverhaeuser

The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

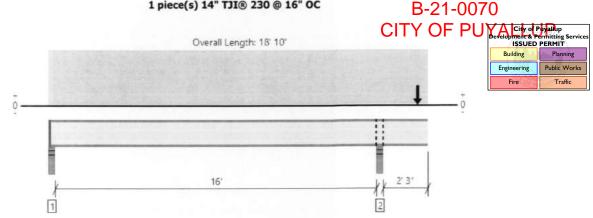
ForteWEB Software Operator	Job Notes
Nicholas Levengood	
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(360) 535-3705	
nlevengood17@gmail.com	

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MEMBER REPORT

Level, Floor: Joist 16' 1 piece(s) 14" TJI® 230 @ 16" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)	C.L.
Member Reaction (lbs)	544 @ 2 1/2"	1183 (2.25")	Passed (46%)	1.00	1.0 D + 1.0 L (Alt Spans)	
Shear (lbs)	563 @ 16' 3 1/2"	1945	Passed (29%)	1.00	1.0 D + 1.0 L (All Spans)	
Moment (Ft-lbs)	2075 @ 7' 11 3/8" 4		Passed (42%)	1.00	1.0 D + 1.0 L (Alt Spans)	
Live Load Defl. (in)	0.163 @ 8' 3 7/8"	0.406	5 Passed (L/999+) 1.0 D + 1.0 L (Alt 5		1.0 D + 1.0 L (Alt Spans)	
Total Load Defl. (in)	0.192 @ 8' 2 1/4"	0.811	Passed (L/999+) 1.0 D + 1.0 L (Alt Spans)		1.0 D + 1.0 L (Alt Spans)	
TJ-Pro [™] Rating	56	40	Passed		-	

iystem : Floor Member Type : Joist Muilding Use : Residential Muilding Code : IBC 2015 Design Methodology : ASD

Deflection criteria: LL (L/480) and TL (L/240).

FORTE WEB

Overhang deflection criteria: LL (2L/480) and TL (2L/240).

Allowed moment does not reflect the adjustment for the beam stability factor.

A structural analysis of the deck has not been performed.

Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.

Additional considerations for the TJ-Pro[™] Rating include: 1/2[®] Gypsum ceiling.

Supports		Bearing Length			Loads to Supports (lbs)				
	Total	Available	Required	Dead	Floor Live	Roof Live	Snow	Total	Accessories
1 - Stud wall - HF	3.50"	2.25"	1.75"	107	444/-4	-40	-40	551/-84	1 1/4" Rim Board
2 - Stud wall - HF	3.50"	3.50"	3.50"	394	570	380	380	1724	Blocking

Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
 Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 6" o/c	
Bottom Edge (Lu)	9' 3" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.

Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Roof Live (non-snow: 1.25)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 18' 10"	16"	12.0	40.0	-	12	Default Load
2 - Point (Ib)	18' 3 15/16"	N/A	200		340	340	

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator

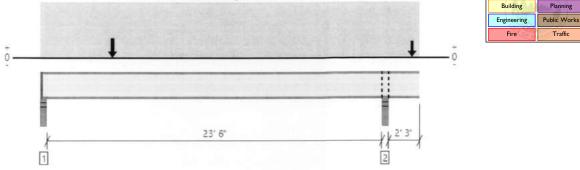
Nicholas Levengood N.L. Olson & Associates (360) 535-3705 nievengood17@gmail.com



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PASSED





All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)	
Member Reaction (lbs)	1003 @ 2 1/2"	1396 (2.25")	Passed (72%)	1.00	1.0 D + 1.0 L (Alt Spans)	
Shear (lbs)	990 @ 3 1/2"	2390	Passed (41%)	1.00	1.0 D + 1.0 L (Alt Spans)	
Moment (Ft-lbs)	5275 @ 11' 1 3/8"	11275	Passed (47%)	1.00	1.0 D + 1.0 L (Alt Spans)	
Live Load Defl. (in)	0.414 @ 12' 7/8"	0.593	Passed (L/688)		1.0 D + 1.0 L (Alt Spans)	
Total Load Defl. (in)	0.584 @ 11' 9 3/4"	1.186	Passed (L/487)		1.0 D + 1.0 L (Alt Spans)	
TJ-Pro [™] Rating	37	30	Passed		-	

System : Floor Member Type : Joist Building Use : Residential Building Code : IBC 2015 Design Methodology : ASD

Deflection criteria: LL (L/480) and TL (L/240).

Overhang deflection criteria: LL (2L/480) and TL (2L/240).

Allowed moment does not reflect the adjustment for the beam stability factor.

· A structural analysis of the deck has not been performed.

• Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge"* Panel (24" Span Rating) that is glued and nailed down.

Additional considerations for the TJ-Pro[™] Rating include: None.

Selected which the select	TANK BARRIE	Bearing Length			Loads to Supports (lbs)				
Supports	Total	Available	Required	Dead	Floor Live	Roof Live	Snow	Total	Accessories
1 - Stud wall - HF	3.50"	2.25"	1.75"	367	644/-1	305	305	1621/-1	1 1/4" Rim Board
2 - Stud wall - HF	3.50"	3.50"	3.50"	495	767	459	459	2180	Blocking

Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 5" o/c	
Bottom Edge (Lu)	14' 7" o/c	

- 131 juists are only analyzed using having in an international stating s

Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Roof Live (non-snow: 1.25)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 26' 4"	16"	12.0	40.0			Default Load
2 - Point (lb)	25' 9 15/16"	N/A	200	-	350	350	
3 - Point (lb)	5'	N/A	240	-	400	400	

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Weyerhaeuser

The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
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N.L. Olson & Associates	
(360) 535-3705	
nlevengood17@gmail.com	

Title Block Line 1 You can change this area using the "Settings" menu item and then using the "Printing & Title Block" selection. Title Block Line 6

Multiple Simple Beam

Lic. # : KW-06002029

Description : Roof Framing

Wood Beam Design : Ridge Beam

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10

BEAM Size :	5.5x15, GLB, F Using Load Resis			CE 7-10	Load Combinations, M	ajor Axis Bend	ding		
Wood Species :					Wood Grade : 24F				
Fb - Tension Fb - Compr		Fc - Prll Fc - Perp	1,650.0 psi 650.0 psi	Fv Ft		d- xx bend - xx	1,800.0 ksi E 950.0 ksi	Density	31.210 pcf
	t calculated and add								
Unif Load: D = 0).0150, Lr = 0.0250,	S = 0.0250 k/ft	t, Trib= 10.0 ft						
Design Summar	y		ſ						
Max fb/Fb Ratio	= 0.511	1			D(0	.150) Lr(0.250	0) S(0.250)		
fb : Actual :		at 10.830 ft	in Span # 1	e real	and the second sec	en de la com	In succession of the	CONTRACTOR OF	adam The
Fb : Allowable :				-		5.5x15			\$
Load Comb :	+1.20D+1.6	0Lr+0.50L+1.6	OH	-		21.660			1
Max fv/FvRatio						21.000	π		-
fv : Actual : Fv : Allowable :	457.92 psi								
Load Comb :	+1.20D+1.6	0Lr+0.50L+1.6	OH		Max Deflections				
Max Reactions (<u>Lr</u> <u>S</u>	<u>W</u> E	H	Transient Downwar	d 0.447 in	Total Downwa	ard	0.747 in
Left Support	1.82	2.71 2.71			Ratio	581	Ratio		347
Right Support	1.82	2.71 2.71			L	C: Lr Only		LC: +D	+Lr+H

Wood Beam Design : Rafters

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10

Ratio

Total Upward

BEAM Size :	2x12, Sawn, Fi Using Load Resis	ully Braced tance Factor D	Design with ASC	CE 7-10 I	Load Combinati	ions, Major Axis Be	ending		
Wood Species : Fb - Tension Fb - Compr	Hem-Fir	Fc - Prll Fc - Perp	1,300.0 psi 405.0 psi	Fv	Wood Grad 150.0 psi		1,300.0 ksi 470.0 ksi	Density	26.840 pcf

Transient Upward

Ratio

Applied Loads

Beam self weight calculated and added to loads

Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 2.0 ft

Design Summary

Max fb/Fb Ratio fb : Actual : Fb : Allowable : Load Comb :	1,46	58.80 p	sí at si	6.000 ft 50L+1.6		n # 1
Max fv/FvRatio = fv : Actual : Fv : Allowable : Load Comb :	2	59.20 p	si at 1 si	1.080 ft 50L+1.6		n # 1
Max Reactions (k) Left Support Right Support	D 0.20 0.20	Ē	<u>Lr</u> 0.30 0.30	<u>S</u> 0.30 0.30	W	Ē

_	D(0.0	30) Lr(0.050) S(0.050)		
No.					-
	and the second se	2x12			
		12.0 ft			
H	Max Deflections Transient Downward	0.101 in	Total Downward	0.169	in
	Ratio	1420	Ratio	854	
	LC:	Lr Only	LC:	+D+Lr+H	
	Transient Upward	0.000 in	Total Upward	0.000	in
	Ratio	9999	Ratio	9999	
		LC		LC:	

0.000 in

9999

LC

Project Title: Engineer: Project ID: Project Descr:

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Printed 23 OCT 2020

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Project Title: Engineer: Project ID: Project Descr:

B-21-0070 **CITY OF PUYALLUP**

Title Block Line 6	Printed 23 OCT 202	0. 8 01AM
Multiple Simple Beam	Development	y of Puyallup at & Permitting Ser UED PERMIT
Lic. # : KW-06002029	OLS(IN Buildin	SOL Planning
	Engineen	ng Public Wor Traffic
Vood Beam Design : Dormer Header	Calculations per NDS 2015, IBC 2015, CBC 2016, J	ASCE 7-10
BEAM Size : 2-2x12, Sawn, Fully Braced Using Load Resistance Factor Design with AS Wood Species : Hem-Fir Fb - Tension Fb - Tension 850.0 psi Fb - Compr 850.0 psi Fc - Perp 405.0 psi		6.840 pcf
Applied Loads	1 Martinia Activitatio Controllo Vinter Laboratione - Laborational Control Activitation Control Activitatio Control Activitation Control Activitatio Control Activitation Cont	
Beam self weight calculated and added to loads Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 2.0 ft Point: D = 0.2250, Lr = 0.3750, S = 0.3750 k @ 2.50 ft		
Design Summary		
Max fb/Fb Ratio = 0.190; 1 fb: Actual: 279.44 psi at 2.500 ft in Span # 1 Fb: Allowable: 1,468.80 psi Load Comb: +1.20D+1.60Lr+0.50L+1.60H	D(0.030) Lr(0,050) S(0.050)	
Max fv/FvRatio = 0.108 : 1 fv : Actual : 27.94 psi at 4.067 ft in Span # 1 Fv : Allowable : 259.20 psi Load Comb : +1.20D+1.60Lr+0.50L+1.60H	2-2x12 + 5.0 ft	
Max Reactions (k) D L Lr S W E Left Support 0.20 0.31 0.3	H Transient Downward 0.005 in Total Downward 0.0	09 in 58
Right Support 0.20 0.31 0.31	LC: Lr Only LC: +D+Lr	
		00 in
	Ratio 9999 Ratio 99	
	LC: L	.C:
Vood Beam Design : Dbl Rafter	Calculations per NDS 2015 IBC 2015 CBC 2016	ASCE 7-10
BEAM Size 2-2x12 Sawn, Fully Braced	Calculations per NDS 2015, IBC 2015, CBC 2016, A	ASCE 7-10
BEAM Size : 2-2x12, Sawn, Fully Braced Using Load Resistance Factor Design with AS Wood Species : Hem-Fir Fb - Tension 850.0 psi Fc - Prll 1,300.0 psi	SCE 7-10 Load Combinations, Major Axis Bending Wood Grade : No.2 i Fv 150.0 psi Ebend- xx 1,300.0 ksi Density 2	ASCE 7-10
BEAM Size : 2-2x12, Sawn, Fully Braced Using Load Resistance Factor Design with AS Wood Species : Hem-Fir Fb - Tension Fb - Tension 850.0 psi Fb - Compr Fb - Compr 850.0 psi 850.0 psi Fc - Perp	SCE 7-10 Load Combinations, Major Axis Bending Wood Grade : No.2 i Fv 150.0 psi Ebend- xx 1,300.0 ksi Density 2	
BEAM Size : 2-2x12, Sawn, Fully Braced Using Load Resistance Factor Design with AS Wood Species : Hem-Fir Fb - Tension 850.0 psi Fb - Compr 850.0 psi Fc - Prll 1,300.0 psi Fb - Compr 850.0 psi Fc - Perp 405.0 psi Applied Loads Beam self weight calculated and added to loads Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 4.0 ft Point: D = 0.20, Lr = 0.310, S = 0.310 k @ 4.250 ft Design Summary Design Summary	SCE 7-10 Load Combinations, Major Axis Bending Wood Grade : No.2 i Fv 150.0 psi Ebend- xx 1,300.0 ksi Density 2 i Ft 525.0 psi Eminbend - xx 470.0 ksi	
BEAM Size : 2-2x12, Sawn, Fully Braced Using Load Resistance Factor Design with AS Wood Species : Hem-Fir Fb - Tension Fb - Tension 850.0 psi Fc - Prll 1,300.0 psi Fb - Compr 850.0 psi Fc - Perp 405.0 psi Applied Loads Beam self weight calculated and added to loads Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 4.0 ft Point: D = 0.20, Lr = 0.310, S = 0.310 k @ 4.250 ft Design Summary Max fb/Fb Ratio = Max fb/Fb Ratio 0.777 ; 1 fb : Actual : 1,141.13 psi at 4.920 ft in Span # 1	SCE 7-10 Load Combinations, Major Axis Bending Wood Grade : No.2 i Fv 150.0 psi Ebend- xx 1,300.0 ksi Density 2	
BEAM Size : 2-2x12, Sawn, Fully Braced Using Load Resistance Factor Design with AS Wood Species : Hem-Fir Fb - Tension 850.0 psi Fb - Compr 850.0 psi Fc - Prll 1,300.0 psi Applied Loads Beam self weight calculated and added to loads Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 4.0 ft Point: D = 0.20, Lr = 0.310, S = 0.310 k @ 4.250 ft Design Summary Max fb/Fb Ratio =	SCE 7-10 Load Combinations, Major Axis Bending Wood Grade : No.2 i Fv 150.0 psi Ebend- xx 1,300.0 ksi Density 2 i Ft 525.0 psi Eminbend - xx 470.0 ksi P(0.060) Lr(0.10) S(0.10)	5.840 pcf
BEAM Size :2-2x12, Sawn, Fully Braced Using Load Resistance Factor Design with ASWood Species :Hem-Fir Fb - Tension 850.0 psi Fc - Prll $1,300.0 \text{ psi}$ Fb - Compr850.0 psiFc - Perp 405.0 psi Applied LoadsBeam self weight calculated and added to loads Unif Load: $D = 0.0150$, Lr = 0.0250 , S = 0.0250 k/ft , Trib= 4.0 ft Point: $D = 0.20$, Lr = 0.310 , S = 0.310 k @ 4.250 ft Design Summary Max fb/Fb Ratio = 0.777 ; 1 1, 141.13 psi at 4.920 ft in Span # 1 Fb : Allowable :Fb :Allowable : $1.468.80 \text{ psi}$ Load Comb :Load Comb :+1.20D+1.60Lr+0.50L+1.60HMax fv/FvRatio = 0.290 ; 1	SCE 7-10 Load Combinations, Major Axis Bending Wood Grade : No.2 i Fv 150.0 psi Ebend- xx 1,300.0 ksi Density 2 i Ft 525.0 psi Eminbend - xx 470.0 ksi	
BEAM Size :2-2x12, Sawn, Fully Braced Using Load Resistance Factor Design with ASWood Species :Hem-Fir Fb - Tension 850.0 psi Fc - Prll $1,300.0 \text{ psi}$ Fb - Tension 850.0 psi Fc - Perp 405.0 psi Fb - Compr 850.0 psi Fc - Perp 405.0 psi Applied LoadsBeam self weight calculated and added to loadsUnif Load: $D = 0.0150$, Lr = 0.0250 , S = 0.0250 k/ft, Trib= 4.0 ftPoint: $D = 0.20$, Lr = 0.310 , S = 0.310 k @ 4.250 ftDesign SummaryMax fb/Fb Ratio = $0.777 \div 1$ fb : Actual : $1,141.13$ psi at 4.920 ft in Span # 1Fb : Allowable : $1,468.80$ psiLoad Comb : $+1.20D+1.60Lr+0.50L+1.60H$ Max fv/FvRatio = $0.290 \div 1$ fv : Actual : 75.21 psi at 0.000 ft in Span # 1Fv : Allowable : 259.20 psi	SCE 7-10 Load Combinations, Major Axis Bending Wood Grade : No.2 i Fv 150.0 psi Ebend- xx 1,300.0 ksi Density 2 i Ft 525.0 psi Eminbend - xx 470.0 ksi P(0.060) Lr(0.10) S(0.10) 2-2x12 12.0 ft	5.840 pcf
BEAM Size :2-2x12, Sawn, Fully Braced Using Load Resistance Factor Design with ASWood Species :Hem-Fir Fb - Tension 850.0 psi Fc - Prll $1,300.0 \text{ psi}$ Fb - Tension 850.0 psi Fc - Perp 405.0 psi Applied LoadsBeam self weight calculated and added to loads Unif Load: $D = 0.0150$, $Lr = 0.0250$, $S = 0.0250 \text{ k/ft}$, Trib= 4.0 ftPoint: $D = 0.20$, $Lr = 0.310$, $S = 0.310 \text{ k}$ @ 4.250 ft Design Summary Max fb/Fb Ratio = 0.777 ; 1 fb : Actual :fb : Actual : $1,141.13 \text{ psi}$ at 4.920 ft in Span # 1 Fb : Allowable :Has fv/FvRatio = 0.290 ; 1 fv : Actual :fv : Actual : 75.21 psi at 0.000 ft in Span # 1 Fv : Allowable :fv : Actual : 259.20 psi Load Comb :H : $20D+1.60Lr+0.50L+1.60H$	SCE 7-10 Load Combinations, Major Axis Bending Wood Grade : No.2 i Fv 150.0 psi Ebend- xx 1,300.0 ksi Density 2 i Ft 525.0 psi Eminbend - xx 470.0 ksi D(0.060) Lr(0.10) S(0.10) 2-2x12 12.0 ft Max Deflections	5.840 pcf
BEAM Size :2-2x12, Sawn, Fully Braced Using Load Resistance Factor Design with ASWood Species :Hem-Fir Fb - Tension 850.0 psi Fc - Prll $1,300.0 \text{ psi}$ Fb - Compr 850.0 psi Fc - Perp 405.0 psi Applied LoadsBeam self weight calculated and added to loads Unif Load: $D = 0.0150$, $Lr = 0.0250$, $S = 0.0250 \text{ k/ft}$, Trib= 4.0 ftPoint: $D = 0.20$, $Lr = 0.310$, $S = 0.310 \text{ k}$ @ 4.250 ftDesign Summary Max fb/Fb Ratio = 0.777 ; 1 1, 141.13 psi at 4.920 ft in Span # 1 Fb : Allowable :Tb : $A1468.80 \text{ psi}$ Load Comb : $1.20D+1.60Lr+0.50L+1.60H$ Max fv/FvRatio = $0.290: 1$ fv : Actual :Tb : 259.20 psi Load Comb : $1.20D+1.60Lr+0.50L+1.60H$ Max Reactions (k)DLLrMax Reactions (k)LLLSWELeft Support 0.53 0.80	SCE 7-10 Load Combinations, Major Axis Bending Wood Grade : No.2 i Fv 150.0 psi Ebend- xx 1,300.0 ksi Density 2 i Ft 525.0 psi Eminbend - xx 470.0 ksi P(0.060) Lr(0.10) S(0.10) 2-2x12 12.0 ft Max Deflections H Transient Downward 0.139 in Total Downward 0.2	5.840 pcf
BEAM Size :2-2x12, Sawn, Fully Braced Using Load Resistance Factor Design with ASWood Species :Hem-Fir Fb - Tension 850.0 psi Fc - Prll $1,300.0 \text{ psi}$ Fb - Tension 850.0 psi Fc - Perp 405.0 psi Applied LoadsBeam self weight calculated and added to loads Unif Load: $D = 0.0150$, $Lr = 0.0250$, $S = 0.0250 \text{ k/ft}$, Trib= 4.0 ftPoint: $D = 0.20$, $Lr = 0.310$, $S = 0.310 \text{ k}$ @ 4.250 ft Design Summary Max fb/Fb Ratio = $0.777 \div 1$ fb : Actual : $1.141.13 \text{ psi}$ at 4.920 ft in Span # 1Fb : Allowable : $1.468.80 \text{ psi}$ Load Comb : $+1.20D+1.60Lr+0.50L+1.60H$ Max fv/FvRatio = $0.290 \div 1$ fv : Actual : 75.21 psi at 0.000 ft in Span # 1Fv : Allowable : 259.20 psi Load Comb : $+1.20D+1.60Lr+0.50L+1.60H$ Max Reactions (k)DLLLSWE	SCE 7-10 Load Combinations, Major Axis Bending Wood Grade : No.2 i Fv 150.0 psi Ebend- xx 1,300.0 ksi Density 2 i Ft 525.0 psi Eminbend - xx 470.0 ksi P(0.060) Lr(0.10) S(0.10) 2-2x12 12.0 ft Max Deflections H Transient Downward 0.139 in Total Downward 0.2 Ratio 1039 Ratio 6 LC: Lr Only LC: +D+Lr	5.840 pcf
BEAM Size :2-2x12, Sawn, Fully Braced Using Load Resistance Factor Design with ASWood Species :Hem-Fir Fb - Tension 850.0 psi Fc - Prll $1,300.0 \text{ psi}$ Fb - Compr 850.0 psi Fc - Perp 405.0 psi Applied LoadsBeam self weight calculated and added to loads Unif Load: $D = 0.0150$, $Lr = 0.0250$, $S = 0.0250 \text{ k/ft}$, Trib= 4.0 ftPoint: $D = 0.20$, $Lr = 0.310$, $S = 0.310 \text{ k}$ @ 4.250 ftDesign Summary Max fb/Fb Ratio = 0.777 ; 1 1, 141.13 psi at 4.920 ft in Span # 1 Fb : Allowable :Tb : $A1468.80 \text{ psi}$ Load Comb : $1.20D+1.60Lr+0.50L+1.60H$ Max fv/FvRatio = 0.290 ; 1 fv : Actual : 75.21 psi at 0.000 ft in Span # 1 Fv : Allowable : 259.20 psi Load Comb :H : $20D+1.60Lr+0.50L+1.60H$ Max Reactions (k) D L L LMax Reactions (k) D L L LLeft Support 0.53 0.80	SCE 7-10 Load Combinations, Major Axis Bending Wood Grade : No.2 i Fv 150.0 psi Ebend- xx 1,300.0 ksi Density 2 i Ft 525.0 psi Eminbend - xx 470.0 ksi P(0.060) Lr(0.10) S(0.10) 2-2x12 12.0 ft Max Deflections H Transient Downward 0.139 in Total Downward 0.2 Ratio 1039 Ratio 6 LC: Lr Only LC: +D+Lr Transient Upward 0.000 in Total Upward 0.000	5.840 pcf

Title Block Line 1 You can change this area using the "Settings" menu item and then using the "Printing & Title Block" selection. Title Block Line 6

Project Title: Engineer: Project ID: Project Descr:

B-21-0070 CITY OF PUYALLUP

Multiple Simp	le Beam					1000			Developm	City of Puyallup ent & Permitting
Lic. # : KW-06002029	ne Deam	COLUMN COLUMN	CLOUT ODMINIST	and the second	S	oftware co	pyright ENE	RCALC, INC. 1983-20	D20 Build	ing Plan
							Sector Contractor		Engine	
Nood Beam De	esian : Rid	ne Roard				_				SHOTA
	July 100	ge board			Calc	ulations	per NDS	2015, IBC 2015, C	BC 2016	, ASCE 7-
	x12, Sawn, F		esian with AS	CE 7-10	Load Combinatio	one Maio	r Avis Ren	udina		
Wood Species : He	em-Fir			JE 110	Wood Grade					
Fb - Tension Fb - Compr	850.0 psi 850.0 psi	Fc - Pril Fc - Perp	1,300.0 psi 405.0 psi	Fv Ft	150.0 psi 525.0 psi	Ebend- Eminbe		1,300.0 ksi De 470.0 ksi	ensity	26.840 pc
Applied Loads										
Beam self weight ca Unif Load: D = 0.01			, Trib= 2.50 ft							
Design Summary					0	0(0.03750) Lr(0.062	250) S(0.06250)		
Max fb/Fb Ratio		;1 i at 6.000 ft	in Span # 1	to an		and the second	and the second second			
Fb : Allowable :	1,468.80 ps	l	8	A STATE		THE REAL PROPERTY OF	2x12		and the second	*
Load Comb : Max fv/FvRatio =	+1.20D+1.6 0.259	0Lr+0.50L+1.6	UH	-			12.0			4
fv : Actual : Fv : Allowable :	67.18 ps 259.20 ps	i at 11.080 ft i		•			12.0			
Load Comb :		0Lr+0.50L+1.6		н	Max Deflections Transient Do		0.127 in	Total Downwar	d f	.209 in
Max Reactions (k) Left Support	<u>D</u> <u>L</u> 0.24	<u>Lr S</u> 0.38 0.38	<u>W</u> E	Ξ	Ratio	WIWdiu	1136	Ratio		688
Right Support	0.24	0.38 0.38			T GUO	LC:	Lr Only		LC: +D+	
					Transient Up		0.000 in	Total Upward	C	0.000 in
					Ratio		9999	Ratio		9999
							LC:			LC:
Nood Beam De	esign : Lov	ver Rafters								
					Calc	ulations	per NDS	2015, IBC 2015, C	BC 2016	, ASCE 7-
BEAM Size : 20	k6, Sawn, Fu	Ily Braced	esion with AS	CE 7-10	Load Combinatio	one Maio	r Avis Bon	idina		
Wood Species : He		stance ractor L	resign with AS	GE /-10	Wood Grade			lung		
Fb - Tension	850.0 psi	Fc - Prll	1,300.0 psi	Fv	150.0 psi	Ebend-			ensity	26.840 pc
Fb - Compr	850.0 psi	Fc - Perp	405.0 psi	Ft	525.0 psi	Eminbe	na - xx	470.0 ksi		
Applied Loads										
Beam self weight ca Unif Load: D = 0.01			, Trib= 2.0 ft							
Design Summary						D(0.03	30) Lr(0.05	50) S(0.050)		
Max fb/Fb Ratio		; 1 at 2.500 ft	in Span # 1		A WARDEN AND A MARKED				-	
Fb : Allowable :	1.909.44 ps	1	80095-0000 D	1000	and the second second	Same.	10		and the second	
Load Comb :		0Lr+0.50L+1.6	OH	à			2x6			2
Max fv/FvRatio = fv : Actual : Fv : Allowable :	259.20 ps	i at 4.550 ft		•			5.0 f	t		•
Load Comb :		0Lr+0.50L+1.6		н	Max Deflections Transient Do		0.026 in	Total Downwar	d f	0.043 in
Max Reactions (k) Left Support	D L 0.08	<u>Lr S</u> 0.13 0.13	<u>W</u> <u>E</u>	ū	Ratio	and a	2294	Ratio		1407
Right Support	0.08	0.13 0.13			Tatio	10	Lr Only		LC: +D+	
					Transient Up		0.000 in			0.000 in
					Ratio		9999	Ratio		9999
					1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.		10			10

LC

LC

Title Block Line 1 Project Title: You can change this area Engineer: B-21-0070 Project ID: using the "Settings" menu item Project Descr: **CITY OF PUYALLUP** and then using the "Printing & Title Block" selection. ROTAM Title Block Line 6 Printed: 23 OCT 20 Software copyright ENERCALC, INC. 1983-2020 Build ISSUED PERMIT Multiple Simple Beam Building OLSO Planni Lic. # : KW-06002029 Public Works Engineering Fire Traffi Wood Beam Design : Typical Second Floor Header Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10 BEAM Size : 2-2x8, Sawn, Fully Braced Using Load Resistance Factor Design with ASCE 7-10 Load Combinations, Major Axis Bending Wood Grade : No.2 Wood Species : Hem-Fir 1,300.0 ksi Density 26.840 pcf Ebend- xx 150.0 psi Fb - Tension 850.0 psi Fc - Prll 1,300.0 psi Fv Eminbend - xx 470.0 ksi Fb - Compr 850.0 psi Fc - Perp 405.0 psi Ft 525.0 psi Applied Loads Beam self weight calculated and added to loads Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 10.0 ft Design Summary D(0.150) Lr(0.250) S(0.250) 0.759 1 1,337.54 psi at 3.165 ft in Span # 1 1,762.56 psi Max fb/Fb Ratio = fb : Actual Fb : Allowable +1.20D+1.60Lr+0.50L+1.60H 2-2x8 Load Comb ж Max fv/FvRatio = 0.401:1 6.330 ft 103.83 psi at 5.739 ft in Span # 1 259.20 psi fv : Actual : Fv : Allowable : +1.20D+1.60Lr+0.50L+1.60H Max Deflections Load Comb : 0.073 in Total Downward 0.118 in Transient Downward Max Reactions (k) D Lr S W E Н L 641 0.49 0.79 0.79 Ratio 1036 Ratio Left Support 0.79 0.79 0.49 **Right Support** LC: Lr Only LC: +D+Lr+H 0.000 in Transient Upward 0.000 in Total Upward 9999 9999 Ratio Ratio LC LC Wood Beam Design : Gable Second Floor Header Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10 BEAM Size : 6x10, Sawn, Fully Braced Using Load Resistance Factor Design with ASCE 7-10 Load Combinations, Major Axis Bending Wood Grade : No.2 Wood Species : Hem-Fir 150.0 psi 26.840 pcf Ebend- xx 1,300.0 ksi Density 850.0 psi Fc - Prll 1,300.0 psi Fv Fb - Tension 470.0 ksi Ft 525.0 psi Eminbend - xx Fb - Compr 850.0 psi Fc - Perp 405.0 psi Applied Loads Beam self weight calculated and added to loads Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 2.0 ft Point: D = 1.70, Lr = 2.80, S = 2.80 k @ 1.50 ft Design Summary Max fb/Fb Ratio = 0.782;1 1.148.11 psi at 1.498 ft in Span #1 D(0.030) Lr(0.050) S(0.050) fb : Actual : Fb : Allowable : 1,468.80 psi +1.20D+1.60Lr+0.50L+1.60H Load Comb 6x10 0.585:1 Max fv/FvRatio = 151.56 psi at 0.000 ft in Span # 1 259.20 psi 6.330 ft fv : Actual : Fv : Allowable Max Deflections +1.20D+1.60Lr+0.50L+1.60H Load Comb : 0.037 in Total Downward 0.060 in Transient Downward S E Н Max Reactions (k) D L Lr W 2 29 2.29 Ratio 1256 Left Support 1.42 Ratio 2042 0.82 0.53 0.82 **Right Support**

LC: Lr Only

0.000 in

9999

LC

Transient Upward

Ratio

LC: +D+Lr+H

Total Upward

Ratio

0.000 in

9999

LC

Title Block Line 1 You can change this area using the "Settings" menu item and then using the "Printing & Title Block" selection.

Project Title: Engineer: Project ID: Project Descr:

Title Block" selection. Title Block Line 6							City of Puyallup
Multiple Simple Beam			Softwar	e copyright EN	ERCALC, INC. 19		ISSUED PERMIT
Lic. # : KW-06002029	10.1					OLSON	Building Plannir ngineering Public W
							Fire
Vood Beam Design : Stair Dormer Header	ŧ.			100			40 ACCE 7 40
			Calculatio	ons per NDS	2015, IBC 201	15, CBC 20	16, ASCE 7-10
BEAM Size : 6x8, Sawn, Fully Braced Using Load Resistance Factor Design	with ASC	CE 7-10			nding		
	0.0 psi 5.0 psi	Fv Ft		nd- xx inbend - xx	1,300.0 ksi 470.0 ksi	Density	26.840 pcf
Applied Loads							
Beam self weight calculated and added to loads Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 3	3.0 ft						
Design Summary	ſ		D(C	0.0450) Lr(0.07	750) S(0.0750)		
Max fb/Fb Ratio = 0.091 ; 1 fb : Actual : 133.26 psi at 2.500 ft in Spa	n # 1						
Fb : Allowable : 1,468.80 psi		100	****				
Load Comb : +1.20D+1.60Lr+0.50L+1.60H Max fv/FvRatio = 0.048 : 1		2		6x8			Â
fv: Actual : 12.55 psi at 4.383 ft in Spa Fv: Allowable : 259.20 psi	n # 1	ł		5.0	ft		-
Load Comb : +1.20D+1.60Lr+0.50L+1.60H	-		Max Deflections Transient Downwa	ard 0.004 in	Total Dow	nward	0.007 in
Max Reactions (k) D L Lr S W Left Support 0.13 0.19	E	Ħ	Ratio	9999	Ratio	IWalu	8354
Right Support 0.13 0.19 0.19				LC: Lr Only		LC: +D	
			Transient Upward	0.000 in	Total Upw	ard	0.000 in
			Ratio	9999	Ratio		9999
				LC:			LC:

Title Block Line 1 You can change this area using the "Settings" menu item and then using the "Printing & Title Block" selection. Title Block Line 6

Project Title: Engineer: Project ID: Project Descr:

							Printed 16	City of Puyallup
Multiple Sim	ple Beam	Xi Cara			Software	copyright ENER	RCALC, INC. 1983-2020	evelopment & Permitting Se
.ic. # : KW-06002029		经非利用 目前需	·王·金王·西	10 10 10			OLSO	Building Planning Engineering Public Wo
								Fire Traffic
escription :	Floor Framing							<u>_</u>
	Design : Gar	age Door H	leader					
	J				Calculation	s per NDS 2	2015, IBC 2015, CBC	2016, ASCE 7-10
	3.5x10.5, GLB,			OE 7 10	Load Combinations, Ma		ting	
Wood Species :		tance Factor L	Jesign with ASU	JE /-10	Wood Grade : 24F-		ang	
Fb - Tension	2,400.0 psi	Fc - Prll	1,650.0 psi	Fv	265.0 psi Ebeno		1,800.0 ksi Densit	y 31.210 pcf
Fb - Compr	1,850.0 psi	Fc - Perp	650.0 psi	Ft	1,100.0 psi Eminb	end - xx	950.0 ks i	
Applied Loads		o						
	.0150, Lr = 0.0250, .0120, L = 0.040 k/f		, Trib= 15.0 ft					
Design Summary		t, 110- 12.0 it	r			1991 0002000		
Max fb/Fb Ratio		1		-	D(0.22	B69 1449375	8,49(0.3750)	-
fb : Actual :	3,261.34 psí	at 5.000 ft	in Span # 1	-				The state of the
Fb : Allowable : Load Comb :	4,147.20 psi +1.20D+0.50	0Lr+1.60L+1.6	он	-		3.5x10.	5	
Max fv/FvRatio =				-		10.0 ft		
fv : Actual : Fv : Allowable :	235.90 psi 457.92 psi	at 9.133 ft	in Span # 1	•				-
Load Comb :		0Lr+1.60L+1.6	он	-	Max Deflections			
Max Reactions ()		Lr S	<u>W</u> E	H	Transient Downward		Total Downward	0.376 in
Left Support Right Support		1.88 1.88 1.88 1.88			Ratio	671	Ratio C: +D+0.750Lr+0	319
5					Transient Upward	C: L Only 0.000 in	Total Upward	0.000 in
								0.000 11
								9999
					Ratio	9999 LC:	Ratio	9999 LC:
Vood Beam I	Design: 6'h	eader (Nort	h Wall)		Ratio	9999 LC:	Ratio	LC:
					Ratio	9999 LC:		LC:
BEAM Size :	3-2x12. Sawn.	Fully Brace	ed	CE 7-10	Ratio Calculation	9999 LC: s per NDS 2	Ratio 2015, IBC 2015, CBC 2	LC:
BEAM Size :	3-2x12. Sawn.	Fully Brace tance Factor D	ed Design with AS		Ratio Calculation Load Combinations, Ma Wood Grade : No.2	9999 LC: s per NDS 2 jor Axis Bend	Ratio	LC: 2016, ASCE 7-10
BEAM Size : Wood Species : Fb - Tension	3-2x12, Sawn, Using Load Resis Douglas Fir-Larch 900.0 psi	Fully Brace tance Factor D Fc - Pril	ed Design with AS(1,350.0 psi	Fv	Ratio Calculation Load Combinations, Ma Wood Grade : No.2 180.0 psi Ebeno	9999 LC: s per NDS 2 or Axis Benc I- xx	Ratio 2015, IBC 2015, CBC 2 ding 1,600.0 ksi Densit	LC: 2016, ASCE 7-10
BEAM Size : Wood Species : Fb - Tension Fb - Compr	3-2x12, Sawn, Using Load Resist Douglas Fir-Larch	Fully Brace tance Factor D	ed Design with AS		Ratio Calculation Load Combinations, Ma Wood Grade : No.2 180.0 psi Ebeno	9999 LC: s per NDS 2 jor Axis Bend	Ratio	LC: 2016, ASCE 7-10
BEAM Size : Wood Species : Fb - Tension Fb - Compr Applied Loads	3-2x12, Sawn, Using Load Resis Douglas Fir-Larch 900.0 psi 900.0 psi	Fully Brace tance Factor D Fc - Pril Fc - Perp	ed Design with AS(1,350.0 psi 625.0 psi	Fv	Ratio Calculation Load Combinations, Ma Wood Grade : No.2 180.0 psi Ebeno	9999 LC: s per NDS 2 or Axis Benc I- xx	Ratio 2015, IBC 2015, CBC 2 ding 1,600.0 ksi Densit	LC: 2016, ASCE 7-10
BEAM Size : Wood Species : Fb - Tension Fb - Compr Applied Loads Unif Load: D = 0.	3-2x12, Sawn, Using Load Resis Douglas Fir-Larch 900.0 psi 900.0 psi .0150, Lr = 0.0250,	Fully Brace tance Factor D Fc - Prll Fc - Perp S = 0.0250 k/ft	ed Design with AS(1,350.0 psi 625.0 psi	Fv	Ratio Calculation Load Combinations, Ma Wood Grade : No.2 180.0 psi Ebeno	9999 LC: s per NDS 2 or Axis Benc I- xx	Ratio 2015, IBC 2015, CBC 2 ding 1,600.0 ksi Densit	LC: 2016, ASCE 7-10
BEAM Size : Wood Species : Fb - Tension Fb - Compr Applied Loads Unif Load: D = 0. Unif Load: D = 0.	3-2x12, Sawn, Using Load Resis: Douglas Fir-Larch 900.0 psi 900.0 psi .0150, Lr = 0.0250, .0120, L = 0.040 k/f	Fully Brace tance Factor D Fc - Prll Fc - Perp S = 0.0250 k/ft ft, Trib= 12.0 ft	ed Design with AS(1,350.0 psi 625.0 psi	Fv	Ratio Calculation Load Combinations, Ma Wood Grade : No.2 180.0 psi Ebeno	9999 LC: s per NDS 2 or Axis Benc I- xx	Ratio 2015, IBC 2015, CBC 2 ding 1,600.0 ksi Densit	LC: 2016, ASCE 7-10
BEAM Size : Wood Species : Fb - Tension Fb - Compr Applied Loads Unif Load: D = 0. Unif Load: D = 0. Point: D = 1.50,	3-2x12, Sawn, Using Load Resis: Douglas Fir-Larch 900.0 psi 900.0 psi .0150, Lr = 0.0250, .0120, L = 0.040 k/f Lr = 2.50, S = 2.50	Fully Brace tance Factor D Fc - Prll Fc - Perp S = 0.0250 k/ft ft, Trib= 12.0 ft	ed Design with AS(1,350.0 psi 625.0 psi	Fv	Ratio Calculation Load Combinations, Ma Wood Grade : No.2 180.0 psi Ebeno	9999 LC: s per NDS 2 or Axis Benc I- xx	Ratio 2015, IBC 2015, CBC 2 ding 1,600.0 ksi Densit	LC: 2016, ASCE 7-10
BEAM Size : Wood Species : Fb - Tension Fb - Compr Applied Loads Unif Load: D = 0. Unif Load: D = 0. Point: D = 1.50, Design Summary Max fb/Fb Ratio	3-2x12, Sawn, Using Load Resis Douglas Fir-Larch 900.0 psi 900.0 psi .0150, Lr = 0.0250, .0120, L = 0.040 k/f Lr = 2.50, S = 2.50 Y = 0.860 :	Fully Brace tance Factor D Fc - Prll Fc - Perp S = 0.0250 k/ft ft, Trib= 12.0 ft k @ 1.670 ft	ed Design with AS(1,350.0 psi 625.0 psi t, Trib= 10.0 ft	Fv	Ratio Calculation Load Combinations, Ma Wood Grade : No.2 180.0 psi Ebeno 575.0 psi Emint	9999 LC: s per NDS 2 or Axis Bend I- xx pend - xx	Ratio 2015, IBC 2015, CBC 2 ding 1,600.0 ksi Densit 580.0 ksi	LC: 2016, ASCE 7-10
BEAM Size : Wood Species : Fb - Tension Fb - Compr Applied Loads Unif Load: D = 0. Unif Load: D = 0. Point: D = 1.50, Design Summan Max fb/Fb Ratio fb : Actual :	3-2x12, Sawn, Using Load Resis: Douglas Fir-Larch 900.0 psi 900.0 psi 0150, Lr = 0.0250, 0120, L = 0.040 k/f Lr = 2.50, S = 2.50 Y = 0.860 1,337.09 psi	Fully Brace tance Factor D Fc - Pril Fc - Perp S = 0.0250 k/ft ft, Trib= 12.0 ft k @ 1.670 ft 1 at 1.680 ft	ed Design with AS(1,350.0 psi 625.0 psi t, Trib= 10.0 ft	Fv	Ratio Calculation Load Combinations, Ma Wood Grade : No.2 180.0 psi Ebeno 575.0 psi Emint	9999 LC: s per NDS 2 or Axis Benc I- xx	Ratio 2015, IBC 2015, CBC 2 ding 1,600.0 ksi Densit 580.0 ksi	LC: 2016, ASCE 7-10
BEAM Size : Wood Species : Fb - Tension Fb - Compr Ipplied Loads Unif Load: D = 0. Unif Load: D = 0. Point: D = 1.50, Design Summary Max fb/Fb Ratio	3-2x12, Sawn, Using Load Resist Douglas Fir-Larch 900.0 psi 900.0 psi .0150, Lr = 0.0250, .0120, L = 0.040 k/f Lr = 2.50, S = 2.50 Y = 0.860 1,337.09 psi 1,555.20 psi	Fully Brace tance Factor D Fc - Pril Fc - Perp S = 0.0250 k/ft ft, Trib= 12.0 ft k @ 1.670 ft 1 at 1.680 ft	ed Design with AS(1,350.0 psi 625.0 psi t, Trib= 10.0 ft in Span # 1	Fv	Ratio Calculation Load Combinations, Ma Wood Grade : No.2 180.0 psi Ebeno 575.0 psi Emint	9999 LC: s per NDS 2 or Axis Bend I- xx pend - xx	Ratio 2015, IBC 2015, CBC 2 ding 1,600.0 ksi Densit 580.0 ksi	LC: 2016, ASCE 7-10
BEAM Size : Wood Species : Fb - Tension Fb - Compr Splied Loads Unif Load: D = 0. Unif Load: D = 0. Point: D = 1.50, Design Summary Max fb/Fb Ratio fb : Actual : Fb : Allowable : Load Comb : Max fv/FvRatio :	3-2x12, Sawn, Using Load Resist Douglas Fir-Larch 900.0 psi 900.0 psi .0150, Lr = 0.0250, .0120, L = 0.040 k/f Lr = 2.50, S = 2.50 Y = 0.860 1,337.09 psi 1,555.20 psi +1.20D+1.60 = 0.595 :	Fully Brace tance Factor D Fc - Prll Fc - Perp S = 0.0250 k/ft t, Trib= 12.0 ft k @ 1.670 ft at 1.680 ft DLr+0.50L+1.6	ed Design with AS(1,350.0 psi 625.0 psi t, Trib= 10.0 ft in Span # 1 0H	Fv	Ratio Calculation Load Combinations, Ma Wood Grade : No.2 180.0 psi Ebeno 575.0 psi Emint	9999 LC: s per NDS 2 or Axis Bend - xx bend - xx	Ratio 2015, IBC 2015, CBC 2 ding 1,600.0 ksi Densit 580.0 ksi	LC: 2016, ASCE 7-10
BEAM Size : Wood Species : Fb - Tension Fb - Compr Applied Loads Unif Load: D = 0. Unif Load: D = 0. Unif Load: D = 0. Point: D = 1.50, Design Summary Max fb/Fb Ratio fb : Actual : Fb : Allowable : Load Comb : Max fv/FvRatio : fv : Actual :	3-2x12, Sawn, Using Load Resis Douglas Fir-Larch 900.0 psi 900.0 psi .0150, Lr = 0.0250, .0120, L = 0.040 k/f Lr = 2.50, S = 2.50 Y = 0.860 1,337 09 psi 1,555.20 psi +1.20D+1.60 = 0.595 : 185.21 psi	Fully Brace tance Factor D Fc - Prll Fc - Perp S = 0.0250 k/ft t, Trib= 12.0 ft k @ 1.670 ft 1 at 1.680 ft DLr+0.50L+1.6 1 at 0.000 ft	ed Design with AS(1,350.0 psi 625.0 psi t, Trib= 10.0 ft in Span # 1 0H	Fv	Ratio Calculation Load Combinations, Ma Wood Grade : No.2 180.0 psi Ebeno 575.0 psi Emint	9999 LC: s per NDS 2 or Axis Benc I- xx pend - xx	Ratio 2015, IBC 2015, CBC 2 ding 1,600.0 ksi Densit 580.0 ksi	LC: 2016, ASCE 7-10
BEAM Size : Wood Species : Fb - Tension Fb - Compr Applied Loads Unif Load: D = 0. Unif Load: D = 0. Point: D = 1.50, Design Summary Max fb/Fb Ratio fb : Actual : Fb : Allowable : Load Comb : Max fv/FvRatio :	3-2x12, Sawn, Using Load Resis: Douglas Fir-Larch 900.0 psi 900.0 psi 0150, Lr = 0.0250, 0120, L = 0.040 k/f Lr = 2.50, S = 2.50 Y = 0.860 1,337.09 psi 1,555.20 psi +1.20D+1.60 = 0.595 185.21 psi 311.04 psi	Fully Brace tance Factor D Fc - Prll Fc - Perp S = 0.0250 k/ft t, Trib= 12.0 ft k @ 1.670 ft 1 at 1.680 ft 0Lr+0.50L+1.6 at 0.000 ft 0Lr+0.50L+1.6	ed Design with AS(1,350.0 psi 625.0 psi t, Trib= 10.0 ft in Span # 1 0H in Span # 1	Fv Ft	Ratio Calculation Load Combinations, Ma Wood Grade : No.2 180.0 psi Ebeno 575.0 psi Emint	9999 LC: s per NDS 2 or Axis Benc I- xx pend - xx	Ratio 2015, IBC 2015, CBC 2 ding 1,600.0 ksi Densit 580.0 ksi 9,580/250)	LC: 2016, ASCE 7-10 y 31.210 pcf
BEAM Size : Wood Species : Fb - Tension Fb - Compr Applied Loads Unif Load: D = 0. Unif Load: D = 0. Unif Load: D = 0. Point: D = 1.50, Design Summary Max fb/Fb Ratio fb : Actual : Fb : Allowable : Load Comb : Max fv/FvRatio fv : Actual : Fv : Allowable : Load Comb : Max Reactions (f)	3-2x12, Sawn, Using Load Resis: Douglas Fir-Larch 900.0 psi 900.0 psi 900.0 psi 0150, Lr = 0.0250, 0120, L = 0.040 k/f Lr = 2.50, S = 2.50 Y = 0.860 1,337.09 psi 1,555.20 psi +1.20D+1.60 = 0.595 185.21 psi 311.04 psi +1.20D+1.60 k) D L	Fully Brace tance Factor D Fc - Pril Fc - Perp S = 0.0250 k/ft ft, Trib= 12.0 ft k @ 1.670 ft 1 at 1.680 ft 0Lr+0.50L+1.6 1 at 0.000 ft 0Lr+0.50L+1.6 Lr S	ed Design with AS(1,350.0 psi 625.0 psi t, Trib= 10.0 ft in Span # 1 0H in Span # 1	Fv	Ratio Calculation Load Combinations, Ma Wood Grade : No.2 180.0 psi Ebeno 575.0 psi Emint S75.0 psi Emint	9999 LC: s per NDS 2 or Axis Benc I- xx pend - xx or Axis Benc I- xx pend - xx 3-2x12 6.0 ft 0.026 in	Ratio 2015, IBC 2015, CBC : ding 1,600.0 ksi Densit 580.0 ksi 9, ईस्व)250)	LC: 2016, ASCE 7-10 y 31.210 pcf 0.052 in
BEAM Size : Wood Species : Fb - Tension Fb - Compr Applied Loads Unif Load: D = 0. Unif Load: D = 0. Unif Load: D = 0. Point: D = 1.50, Design Summary Max fb/Fb Ratio fb : Actual : Fb : Allowable : Load Comb : Max fv/FvRatio = fv : Actual : Fv : Allowable : Load Comb :	3-2x12, Sawn, Using Load Resist Douglas Fir-Larch 900.0 psi 900.0 psi .0150, Lr = 0.0250, .0120, L = 0.040 k/f Lr = 2.50, S = 2.50 Y = 0.860 1,337.09 psi 1,555.20 psi +1.20D+1.60 = 0.595 .185.21 psi .311.04 psi +1.20D+1.60 k) D L 1.96 1.44	Fully Brace tance Factor D Fc - Prll Fc - Perp S = 0.0250 k/ft t, Trib= 12.0 ft k @ 1.670 ft 1 at 1.680 ft 0Lr+0.50L+1.6 at 0.000 ft 0Lr+0.50L+1.6	ed Design with AS(1,350.0 psi 625.0 psi t, Trib= 10.0 ft in Span # 1 0H in Span # 1	Fv Ft	Ratio Calculation Load Combinations, Ma Wood Grade : No.2 180.0 psi Ebend 575.0 psi Emint S75.0 psi Emint Max Deflections Transient Downward Ratio	9999 LC: s per NDS 2 for Axis Bend I- xx pend - xx opend - xx 3-2x12 6.0 ft 0.026 in 2781	Ratio 2015, IBC 2015, CBC 2 ding 1,600.0 ksi Densit 580.0 ksi 9,580.0 ksi	LC: 2016, ASCE 7-10 y 31.210 pcf 0.052 in 1380
BEAM Size : Wood Species : Fb - Tension Fb - Compr Applied Loads Unif Load: D = 0. Unif Load: D = 0. Point: D = 1.50, Design Summary Max fb/Fb Ratio fb : Actual : Fb : Allowable : Load Comb : Max fv/FvRatio : fv : Actual : Fv : Allowable : Load Comb : Max Reactions (f) Left Support	3-2x12, Sawn, Using Load Resist Douglas Fir-Larch 900.0 psi 900.0 psi .0150, Lr = 0.0250, .0120, L = 0.040 k/f Lr = 2.50, S = 2.50 Y = 0.860 1,337.09 psi 1,555.20 psi +1.20D+1.60 = 0.595 311.04 psi +1.20D+1.60 k) D L 1.96 1.44	Fully Brace tance Factor D Fc - Prll Fc - Perp S = 0.0250 k/ft ft, Trib= 12.0 ft k @ 1.670 ft 1 at 1.680 ft 0Lr+0.50L+1.6 1 at 0.000 ft 0Lr+0.50L+1.6 Lr S 2.55 2.55	ed Design with AS(1,350.0 psi 625.0 psi t, Trib= 10.0 ft in Span # 1 0H in Span # 1	Fv Ft	Ratio Calculation Load Combinations, Ma Wood Grade : No.2 180.0 psi Ebend 575.0 psi Emint S75.0 psi Emint Max Deflections Transient Downward Ratio	9999 LC: s per NDS 2 for Axis Benc I- xx pend - xx oend - xx 3-2x12 6.0 ft 1 0.026 in 2781 2: Lr Only	Ratio 2015, IBC 2015, CBC 2 3 3 4 4 5 8 0.0 ksi Densit 5 8 0.0 ksi 9 5 8 0.0 ksi 5 8 0.0 ksi 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	LC: 2016, ASCE 7-10 y 31.210 pcf 0.052 in 1380 0.750L+H
BEAM Size : Wood Species : Fb - Tension Fb - Compr Applied Loads Unif Load: D = 0. Unif Load: D = 0. Point: D = 1.50, Design Summary Max fb/Fb Ratio fb : Actual : Fb : Allowable : Load Comb : Max fv/FvRatio : fv : Actual : Fv : Allowable : Load Comb : Max Reactions (f) Left Support	3-2x12, Sawn, Using Load Resist Douglas Fir-Larch 900.0 psi 900.0 psi .0150, Lr = 0.0250, .0120, L = 0.040 k/f Lr = 2.50, S = 2.50 Y = 0.860 1,337.09 psi 1,555.20 psi +1.20D+1.60 = 0.595 311.04 psi +1.20D+1.60 k) D L 1.96 1.44	Fully Brace tance Factor D Fc - Prll Fc - Perp S = 0.0250 k/ft ft, Trib= 12.0 ft k @ 1.670 ft 1 at 1.680 ft 0Lr+0.50L+1.6 1 at 0.000 ft 0Lr+0.50L+1.6 Lr S 2.55 2.55	ed Design with AS(1,350.0 psi 625.0 psi t, Trib= 10.0 ft in Span # 1 0H in Span # 1	Fv Ft	Ratio Calculation Load Combinations, Ma Wood Grade : No.2 180.0 psi Ebend 575.0 psi Emint S75.0 psi Emint Max Deflections Transient Downward Ratio	9999 LC: s per NDS 2 for Axis Bend I- xx pend - xx opend - xx 3-2x12 6.0 ft 0.026 in 2781	Ratio 2015, IBC 2015, CBC 2 ding 1,600.0 ksi Densit 580.0 ksi 9,580.0 ksi	LC: 2016, ASCE 7-10 y 31.210 pcf 0.052 in 1380

Title Block Line 1 Project Title: You can change this area Engineer: B-21-0070 Project ID: using the "Settings" menu item **CITY OF PUYALLUP** Project Descr: and then using the "Printing & Title Block" selection. Printed 16 JUL 2020 3:04PM Title Block Line 6 City of Puyallup Development & Permitting Ser Multiple Simple Beam Software copyright ENERCALC, INC. 1983-2020 Builtssuep PERMIT OLSONBuilding S() Planning Lic. #: KW-06002029 Public Works Engineering Fire Traffic Wood Beam Design: 3' header (North Wall) Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10 BEAM Size : 2-2x6, Sawn, Fully Braced Using Load Resistance Factor Design with ASCE 7-10 Load Combinations, Major Axis Bending Wood Grade : No.2 Wood Species : Hem-Fir 1.300.0 ksi Density 26.840 pcf Fv 150.0 psi Ebend- xx Fb - Tension 850.0 psi Fc - Prll 1,300.0 psi 470.0 ksi Fb - Compr 850.0 psi Fc - Perp 405.0 psi Ft 525.0 psi Eminbend - xx Applied Loads Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 10.0 ft Unif Load: D = 0.0120. L = 0.040 k/ft, Trib= 12.0 ft Design Summary D(0.958) 1449 2509 588 250) 0.582 ; 1 1,111.95 psi at 1.500 ft in Span # 1 Max fb/Fb Ratio = fb : Actual 1,909.44 psi Fb : Allowable +1.20D+0.50Lr+1.60L+1.60H Load Comb : 2-2x6 0.459:1 Max fv/FvRatio = 3.0 ft 118.92 psi 259.20 psi fv : Actual : Fv : Allowable : at 2.550 ft in Span # 1 60L+1.60H Max Deflections +1.20D+0.50Lr+1 Load Comb : 0.016 in Total Downward 0.029 in Transient Downward Max Reactions (k) D L Lr S W E H 1262 0.44 0.72 0.38 0.38 Ratio 2213 Ratio Left Support 0.44 0.72 0.38 0.38 **Right Support** LC: L Only C: +D+0.750Lr+0.750L+H 0.000 in Transient Upward 0.000 in Total Upward 9999 9999 Ratio Ratio LC LC Wood Beam Design : South Wall header Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10 2-2x12, Sawn, Fully Braced Using Load Resistance Factor Design with ASCE 7-10 Load Combinations, Major Axis Bending BEAM Size : Wood Grade : No.2 Wood Species : Douglas Fir-Larch 1,600.0 ksi 31.210 pcf 180.0 psi Ebend- xx Density 900.0 psi Fc - Prll 1,350.0 psi Fv Fb - Tension Eminbend - xx 580.0 ksi Ft 575.0 psi Fb - Compr 900.0 psi Fc - Perp 625.0 psi Applied Loads Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 12.0 ft Unif Load: D = 0.0120, L = 0.040 k/ft, Trib= 12.0 ft Point: D = 0.90. Lr = 1.40. S = 1.40 k @ 1.750 ft Design Summary 0.561 ; 1 872.84 psi at 1.750 ft in Span # 1 1,555.20 psi Max fb/Fb Ratio = D(09(80)4490,509,588)30) fb : Actual : Fb : Allowable : +1.20D+1.60Lr+0.50L+1.60H Load Comb : 0.367:1 114.02 psi at 2.567 ft in Span #1 Max fv/FvRatio = 2-2x12 3.50 ft fv : Actual : Fv : Allowable : 311.04 psi Max Deflections +1.20D+1.60Lr+0.50L+1.60H Load Comb : 0.006 in Total Downward 0.011 in Transient Downward S E Н Max Reactions (k) D L Lr W 0.84 7498 Ratio 3914 1.02 1.23 23 Ratio Left Support 1.23 1.23 1.02 0.84 Right Support LC: Lr Only C: +D+0.750Lr+0.750L+H Transient Upward 0.000 in Total Upward 0.000 in

Ratio

9999

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Title Block Line 1 You can change this area using the "Settings" menu item and then using the "Printing & Title Block" selection. Title

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Project Title: Engineer: Project ID: Project Descr:

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Aultiple Simple Beam		Software	opyright ENE	RCALC, INC. 1983-2020	ISSUED PERMIT
.ic. # : KW-06002029			S 107 4	OL	Building
					Fire Fire Traffic
Vood Beam Design: North Wall header 8'		Calculation	s per NDS 2	2015, IBC 2015, CBC 2	2016, ASCE 7-1
BEAM Size : 3-2x12, Sawn, Fully Braced					
Using Load Resistance Factor Design with AS Wood Species : Douglas Fir-Larch Fb - Tension 900.0 psi Fc - Prll 1,350.0 psi Fb - Compr 900.0 psi Fc - Perp 625.0 psi	Fv	Wood Grade : No.2 180.0 psi Ebeno		ding 1,600.0 ksi Densit 580.0 ksi	y 31.210 pcf
Applied Loads					
Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 10.0 ft Unif Load: D = 0.0120, L = 0.040 k/ft, Trib= 12.0 ft Point: D = 1.50, Lr = 2.50, S = 2.50 k @ 1.250 ft					
Design Summary					
Max fb/Fb Ratio = 0.974 · 1 fb : Actual : 1.514.64 psi at 3.093 ft in Span # 1 Fb : Allowable : 1.555.20 psi Load Comb : +1.20D+1.60Lr+0.50L+1.60H		D(C	. P50) 14(0)25	69.49(8)250)	
Max fv/FvRatio = 0.756:1 fv: Actual: 235.21 psi at 0.000 ft in Span #1 Fv: Allowable: 311.04 psi		*	3-2x12 8.0 ft		
Load Comb : +1.20D+1.60Lr+0.50L+1.60H Max Reactions (k) D L Lr S W E	н	Max Deflections Transient Downward	0.052 in	Total Downward	0.125 in
Left Support 2.44 1.92 3.11 3.11	11	Ratio	1844	Ratio	769
Right Support 1.41 1.92 1.39 1.39		L	C: L Only	C: +D+0.750Lr+0	.750L+H
		Transient Upward	0.000 in	Total Upward	0.000 in
		Transient Upward Ratio	9999	Total Upward Ratio	9999
Vood Beam Design : Floor Beam 1		Ratio	9999 LC:		9999 LC:
-	Fv	Ratio Calculation 0 Load Combinations, Ma Wood Grade : Para 190.0 psi Ebend	9999 LC: s per NDS 2 jor Axis Ben Ilam PSL 1	Ratio 2015, IBC 2015, CBC 2 ding	9999 LC: 2016, ASCE 7-1
BEAM Size : 3.5x14, VersaLam, Fully Braced Using Load Resistance Factor Design with AS Wood Species : iLevel Truss Joist Fb - Tension 2,400.0 psi Fb - Compr 2,400.0 psi Fc - Perp 425.0 psi	Fv	Ratio Calculation 0 Load Combinations, Ma Wood Grade : Para 190.0 psi Ebend	9999 LC: s per NDS 2 jor Axis Ben Ilam PSL 1.	Ratio 2015, IBC 2015, CBC 2 ding 8E 1,800.0 ksi Densit	9999 LC: 2016, ASCE 7-1
BEAM Size : 3.5x14, VersaLam, Fully Braced Using Load Resistance Factor Design with AS Wood Species : iLevel Truss Joist Fb - Tension 2,400.0 psi Fc - Prll 2,500.0 psi Fb - Compr 2,400.0 psi Fc - Perp 425.0 psi Applied Loads Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 8.50 ft Unif Load: D = 0.0120, L = 0.040 k/ft, Trib= 9.0 ft Point: D = 0.70, Lr = 1.10, S = 1.10 k @ 12.250 ft Design Summary Max fb/Fb Ratio = 0.849; 1	Fv	Ratio Calculation 0 Load Combinations, Ma Wood Grade : Para 190.0 psi Ebeno 1,755.0 psi Emint	9999 LC: s per NDS 2 jor Axis Ben Ilam PSL 1. J- xx vend - xx	Ratio 2015, IBC 2015, CBC 2 ding 8E 1,800.0 ksi Densit	9999 LC: 2016, ASCE 7-1
BEAM Size : 3.5x14, VersaLam, Fully Braced Using Load Resistance Factor Design with AS Wood Species : iLevel Truss Joist Fb - Tension 2,400.0 psi Fc - Prll 2,500.0 psi Fb - Compr 2,400.0 psi Fc - Perp 425.0 psi Applied Loads Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 8.50 ft Unif Load: D = 0.0120, L = 0.040 k/ft, Trib= 9.0 ft Point: D = 0.70, Lr = 1.10, S = 1.10 k @ 12.250 ft Design Summary Max fb/Fb Ratio = 0.849; 1 fb : Actual : 3,519.84 psi at 8.320 ft in Span # 1 Fb : Allowable : 4,147.20 psi	Fv	Ratio Calculation 0 Load Combinations, Ma Wood Grade : Para 190.0 psi Ebeno 1,755.0 psi Emint	9999 LC: s per NDS 2 for Axis Ben Ilam PSL 1. L- xx bend - xx	Ratio 2015, IBC 2015, CBC 2 ding 8E 1,800.0 ksi Densit 914.88 ksi 29,796(0.2125)	9999 LC: 2016, ASCE 7-1
BEAM Size : 3.5x14, VersaLam, Fully Braced Using Load Resistance Factor Design with AS Wood Species : iLevel Truss Joist Fb - Tension 2,400.0 psi Fc - Prll 2,500.0 psi Fb - Compr 2,400.0 psi Fc - Perp 425.0 psi Applied Loads Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 8.50 ft Unif Load: D = 0.0120, L = 0.040 k/ft, Trib= 9.0 ft Point: D = 0.70, Lr = 1.10, S = 1.10 k @ 12.250 ft Design Summary Max fb/Fb Ratio = 0.849 ; 1 fb : Actual : 3,519.84 psi at 8.320 ft in Span # 1 Fb : Allowable : 4,147.20 psi Load Comb : +1.20D+0.50Lr+1.60L+1.60H	Fv	Ratio Calculation 0 Load Combinations, Ma Wood Grade : Para 190.0 psi Ebeno 1,755.0 psi Emint	9999 LC: s per NDS 2 ior Axis Ben Ilam PSL 1. L- xx yend - xx	Ratio 2015, IBC 2015, CBC 2 ding 8E 1,800.0 ksi Densit 914.88 ksi (9)36(0.2125)	9999 LC: 2016, ASCE 7-1
BEAM Size : 3.5x14, VersaLam, Fully Braced Using Load Resistance Factor Design with AS Wood Species : iLevel Truss Joist Fb - Tension 2,400.0 psi Fc - Prll 2,500.0 psi Fb - Tension 2,400.0 psi Fc - Perp 425.0 psi Applied Loads Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 8.50 ft Unif Load: D = 0.0120, L = 0.040 k/ft, Trib= 9.0 ft Point: D = 0.70, Lr = 1.10, S = 1.10 k @ 12.250 ft Design Summary Max fb/Fb Ratio = 0.849 ; 1 fb : Actual : 3,519.84 psi at 8.320 ft in Span # 1 Fb : Allowable : 4,147.20 psi Load Comb : +1.20D+0.50Lr+1.60L+1.60H Max fv/FvRatio = 0.718 : 1 fv : Actual : 235.79 psi at 14.880 ft in Span # 1 Fv : Allowable : 328.32 psi	Fv	Ratio Calculation 0 Load Combinations, Ma Wood Grade : Para 190.0 psi Ebeno 1,755.0 psi Emint	9999 LC: s per NDS 2 for Axis Ben Ilam PSL 1. L- xx bend - xx	Ratio 2015, IBC 2015, CBC 2 ding 8E 1,800.0 ksi Densit 914.88 ksi (9)36(0.2125)	9999 LC: 2016, ASCE 7-1
BEAM Size : 3.5x14, VersaLam, Fully Braced Using Load Resistance Factor Design with AS Wood Species : iLevel Truss Joist Fb - Tension 2,400.0 psi Fc - Prll 2,500.0 psi Fc - Perp Polied Loads 2,400.0 psi Fc - Perp 425.0 psi Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 8.50 ft Unif Load: D = 0.0120, L = 0.040 k/ft, Trib= 9.0 ft Point: D = 0.70, Lr = 1.10, S = 1.10 k @ 12.250 ft Design Summary Max fb/Fb Ratio = 0.849 : 1 Max fb/Fb Ratio = 0.849 : 1 1 5.19.84 psi at 8.320 ft in Span # 1 Fb : Allowable: +1.47.20 psi 2.35.79 psi at 14.880 ft in Span # 1 Max fv/FvRatio = 0.718 : 1 7.718 : 1 fv : Actual : 328.32 psi 14.880 ft in Span # 1 Load Comb : +1.20D+0.50Lr+1.60L+1.60H 1.28.32 psi	Fv	Ratio Calculation 0 Load Combinations, Ma Wood Grade : Para 190.0 psi Ebeno 1,755.0 psi Emint	9999 LC: s per NDS 2 ior Axis Ben Ilam PSL 1. I- xx bend - xx Pft) ER(9212 3.5x14 16.0 f	Ratio 2015, IBC 2015, CBC 2 ding 8E 1,800.0 ksi Densit 914.88 ksi (9)36(0.2125)	9999 LC: 2016, ASCE 7-1
BEAM Size : 3.5x14, VersaLam, Fully Braced Using Load Resistance Factor Design with AS Wood Species : iLevel Truss Joist Fb - Tension 2,400.0 psi Fc - PrIl 2,500.0 psi Fb - Compr 2,400.0 psi Fc - Perp 425.0 psi Applied Loads Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 8.50 ft Unif Load: D = 0.0120, L = 0.040 k/ft, Trib= 9.0 ft Point: D = 0.70, Lr = 1.10, S = 1.10 k @ 12.250 ft Design Summary Max fb/Fb Ratio = 0.849 ; 1 Max fb/Fb Ratio = 0.849 ; 1 Fb : Actual : 3,519.84 psi at 8.320 ft in Span # 1 Fb : Allowable : 4,147.20 psi Load Comb : +1.20D+0.50Lr+1.60L+1.60H Max fv/FvRatio = 0.718 : 1 fv : Actual : 235.79 psi at 14.880 ft in Span # 1 Fv : Allowable : +1.20D+0.50Lr+1.60L+1.60H Max Reactions (k) D L Lr S W E Left Support 2.05 2.88 1.96 1.96	Fv Ft	Ratio Calculation O Load Combinations, Ma Wood Grade : Para 190.0 psi Ebend 1,755.0 psi Emint D(0.12 D(0.12 Max Deflections Transient Downward Ratio	9999 LC: s per NDS 2 ior Axis Ben Ilam PSL 1. I- xx bend - xx 3.5x14 16.0 f 0.370 in 518	Ratio 2015, IBC 2015, CBC 2 ding 8E 1,800.0 ksi Densit 914.88 ksi 28)35(0.2125) 4 t Total Downward Ratio	9999 LC: 2016, ASCE 7-1 y 45.070 pcf 0.787 in 244
BEAM Size : 3.5x14, VersaLam, Fully Braced Using Load Resistance Factor Design with AS Wood Species : iLevel Truss Joist Fb - Tension 2,400.0 psi Fc - Prll 2,500.0 psi Fb - Compr 2,400.0 psi Fc - Perp 425.0 psi Applied Loads Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 8.50 ft Unif Load: D = 0.0120, L = 0.040 k/ft, Trib= 9.0 ft Point: D = 0.70, Lr = 1.10, S = 1.10 k @ 12.250 ft Design Summary Max fb/Fb Ratio = 0.849 ; 1 Max fb/Fb Ratio = 0.849 ; 1 Fb : Allowable : 4,147.20 psi Load Comb : +1.20D+0.50Lr+1.60L+1.60H Max fv/FvRatio = 0.718 : 1 fv : Actual : 328.32 psi Load Comb : +1.20D+0.50Lr+1.60L+1.60H Max Reactions (k) D L Lr S W E	Fv Ft	Ratio Calculation O Load Combinations, Ma Wood Grade : Para 190.0 psi Ebend 1,755.0 psi Emint D(0.1: Max Deflections Transient Downward Ratio	9999 LC: s per NDS 2 ior Axis Ben Ilam PSL 1. I- xx bend - xx 9 576) ER(921: 3.5x14 16.0 f 1 0.370 in 518 C: L Only	Ratio 2015, IBC 2015, CBC 2 ding 8E 1,800.0 ksi Densit 914.88 ksi 26)35(0.2125) 4 t Total Downward Ratio C: +D+0.750Lr+0	9999 LC: 2016, ASCE 7-1 y 45.070 pcf 0.787 in 244 0.750L+H
BEAM Size : 3.5x14, VersaLam, Fully Braced Using Load Resistance Factor Design with AS Wood Species : iLevel Truss Joist Fb - Tension 2,400.0 psi Fc - Prll 2,500.0 psi Fc - Perp Applied Loads 2,400.0 psi Fb - Compr Fc - Perp 425.0 psi Unif Load: D = 0.0150, Lr = 0.0250, S = 0.0250 k/ft, Trib= 8.50 ft Unif Load: D = 0.0120, L = 0.040 k/ft, Trib= 9.0 ft Point: D = 0.70, Lr = 1.10, S = 1.10 k @ 12.250 ft Design Summary Max fb/Fb Ratio = 0.849 ; 1 fb : Actual : 3,519.84 psi at 8.320 ft in Span # 1 Fb : Allowable : 4,147.20 psi Load Comb : +1.20D+0.50Lr+1.60L+1.60H Max fv/FvRatio = 0.718 : 1 fv : Actual : 235.79 psi at 14.880 ft in Span # 1 Fv : Allowable : +1.20D+0.50Lr+1.60L+1.60H Max Reactions (k) D L Lr S W E Left Support 2.05 2.88 1.96 1.96	Fv Ft	Ratio Calculation O Load Combinations, Ma Wood Grade : Para 190.0 psi Ebend 1,755.0 psi Emint D(0.12 D(0.12 Max Deflections Transient Downward Ratio	9999 LC: s per NDS 2 ior Axis Ben Ilam PSL 1. I- xx bend - xx 3.5x14 16.0 f 0.370 in 518	Ratio 2015, IBC 2015, CBC 2 ding 8E 1,800.0 ksi Densit 914.88 ksi 28)35(0.2125) 4 t Total Downward Ratio	9999 LC: 2016, ASCE 7-1 y 45.070 pcf 0.787 in 244

Title Block Line 1 You can change this area using the "Settings" menu item and then using the "Printing & Title Block" selection. Title Block Line 6

Project Title: Engineer: Project ID: Project Descr:

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Aultiple Simp	le Ream	- N. 196 10		and a basis				City of Puyallup Development & Permitting
ic. # : KW-06002029	le Deam	NOT BOOM DATE		Section State	Software co	pyright ENER	CALC, INC. 1983-2020, OLSI	Building
								Engineering Public V
								Fire
Vood Beam De	sign: Floo	r Beam 2			Calculations	per NDS 2	015, IBC 2015, CBC	2016, ASCE 7-1
BEAM Size : 3-1	1.75x14, Micro	ollam LVL, F	ully Brace	ed	Load Combinations, Majo	Avie Bond	ing	
Wood Species : iLe		ance Factor De	sign with AS	CE /-10	Wood Grade : Microl	am LVL 1.	9 E	
Fb - Tension	2600 psi	Fc - Prll	2510 psi	Fv	285 psi Ebend- 1555 psi Eminbe		1900 ksi Densi 965.71 ksi	ty 42.01 pcf
Fb - Compr	2600 ps i	Fc - Perp	750 ps i	Ft	1555 psi Eminbe	nu - XX	503.71 KSI	
pplied Loads	In the deside adds	d to loads						
Beam self weight cal Unif Load: D = 0.015 Unif Load: D = 0.012	50, Lr = 0.0250, 3 20, L = 0.040 k/ft,	S = 0.0250 k/ft, Trib= 1.330 ft	0.0 ft to 5.0 ft,	Trib= 3.0	ft			
Point: D = 0.60, Lr =	= 1.0, S = 1.0 k (a	υ 19.0 π						
Design Summary Max fb/Fb Ratio =	0.205	1		D/0.044	01 40 07501 540 07501	D(0.01596)	L(0.05320)	
fb : Actual :	919.84 psi	at 13.600 ft i	n Span # 1	D(0.045	0) Lr(0.0750) S(0.0750)	and and a	Concerning States	
Fb : Allowable :	4,492.80 psi	Lr+1.60L+1.60	н	3		3-1.7	5x14	
Load Comb : Max fv/FvRatio =	0.112:					24.0	0 ft	
fv : Actual :	55.20 psi	at 22.880 ft i	n Span # 1					
Fv : Allowable : Load Comb :	492.48 psi +1.20D+1.60	Lr+0.50L+1.60	н		Max Deflections		and an an an an an	
Max Reactions (k)	and the second	Lr S	<u>W</u> <u>E</u>	H	Transient Downward	0.175 in	Total Downward	0.463 in
		0.54 0.54 0.83 0.83			Ratio	1645	Ratio	621
right Support	0.00	0.00				L Only 0.000 in	C: +D+0.750Lr+ Total Upward	0.750L+H 0.000 in
					Transient Upward Ratio	9999	Ratio	9999
					Hatto	LC	(acro	LC
lood Beam De	sian · Trip	le Rim South	h					
Vood Beam De	sign : Tripl	le Rim Soutl	h		Calculations	per NDS 2	015, IBC 2015, CBC	2016, ASCE 7-1
REAM Size 3	5x14 X-Beam	Fully Brac	ed					2016, ASCE 7-1
BEAM Size : 3.	5x14, X-Beam	Fully Brac	ed	CE 7-10	Load Combinations, Majo	r Axis Bend	ling	2016, ASCE 7-1
REAM Size 3	5x14, X-Beam	, Fully Brac ance Factor De Fc - Prll	ed esign with AS 2,050.0 psi	Fv	Load Combinations, Majo Wood Grade : Timbe 310.0 psi Ebend-	r Axis Benc rStrand LS xx	ling L 1.55E 1,550.0 ksi Densi	
BEAM Size : 3.9 Us Wood Species : i.Le	5x14, X-Beam sing Load Resista	, Fully Brac ance Factor De	ed esign with AS		Load Combinations, Majo Wood Grade : Timbe	r Axis Benc rStrand LS xx	ling L 1.55E	
BEAM Size : 3. Us Wood Species : iLe Fb - Tension Fb - Compr	5x14, X-Beam sing Load Resist evel Truss Joist 2,325.0 psi	, Fully Brac ance Factor De Fc - Prll	ed esign with AS 2,050.0 psi	Fv	Load Combinations, Majo Wood Grade : Timbe 310.0 psi Ebend-	r Axis Benc rStrand LS xx	ling L 1.55E 1,550.0 ksi Densi	
BEAM Size : 3.9 Us Wood Species : iLe Fb - Tension Fb - Compr Applied Loads Beam self weight ca	5x14, X-Beam sing Load Resista evel Truss Joist 2,325.0 psi 2,325.0 psi alculated and adde	, Fully Brac ance Factor De Fc - Prll Fc - Perp ed to loads	ed esign with AS 2,050.0 psi	Fv	Load Combinations, Majo Wood Grade : Timbe 310.0 psi Ebend-	r Axis Benc rStrand LS xx	ling L 1.55E 1,550.0 ksi Densi	
BEAM Size : 3. Us Wood Species : iLe Fb - Tension Fb - Compr Applied Loads Beam self weight ca Unif Load: D = 0.01	5x14, X-Beam sing Load Resista evel Truss Joist 2,325.0 psi 2,325.0 psi alculated and adde	, Fully Brac ance Factor De Fc - Prll Fc - Perp ed to loads	ed esign with AS 2,050.0 psi	Fv	Load Combinations, Majo Wood Grade : Timbe 310.0 psi Ebend-	r Axis Benc rStrand LS xx	ling L 1.55E 1,550.0 ksi Densi	
BEAM Size : 3.9 Us Wood Species : iLe Fb - Tension Fb - Compr Applied Loads Beam self weight ca Unif Load: D = 0.01 Design Summary	5x14, X-Beam sing Load Resista evel Truss Joist 2,325.0 psi 2,325.0 psi alculated and adde 20, L = 0.040 k/ft	, Fully Brac ance Factor De Fc - Prll Fc - Perp ed to loads , Trib= 7.50 ft	ed esign with AS 2,050.0 psi	Fv	Load Combinations, Majo Wood Grade : Timbe 310.0 psi Ebend-	r Axis Benc rStrand LS xx	ling L 1.55E 1,550.0 ksi Dens i 787.82 ksi	
BEAM Size : 3.9 Us Wood Species : iLe Fb - Tension Fb - Compr Applied Loads Beam self weight ca Unif Load: D = 0.01 Design Summary Max fb/Fb Ratio = fb : Actual :	5x14, X-Beam sing Load Resista evel Truss Joist 2,325.0 psi 2,325.0 psi elculated and adde 20, L = 0.040 k/ft = 0.604 ; 2,425.58 psi	, Fully Brac ance Factor De Fc - Prll Fc - Perp ed to loads , Trib= 7.50 ft	eed asign with AS 2,050.0 psi 800.0 psi	Fv	Load Combinations, Majo Wood Grade : Timbe 310.0 psi Ebend- 1,070.0 psi Eminbe	r Axis Benc rStrand LS xx md - xx D(0.090) L	ling L 1.55E 1,550.0 ksi Dens i 787.82 ksi	ity 45.010 pcf
BEAM Size : 3.4 Us Wood Species : iLe Fb - Tension Fb - Compr Applied Loads Beam self weight ca Unif Load: D = 0.01: Design Summary Max fb/Fb Ratio = fb : Actual : Fb : Allowable :	5x14, X-Beam sing Load Resista evel Truss Joist 2,325.0 psi 2,325.0 psi alculated and adde 20, L = 0.040 k/ft = 0.604 ; 2,425.58 psi 4,017.60 psi	, Fully Brac ance Factor De Fc - Prll Fc - Perp ad to loads , Trib= 7.50 ft 1 at 8.775 ft i	ed esign with AS 2,050.0 psi 800.0 psi	Fv	Load Combinations, Majo Wood Grade : Timbe 310.0 psi Ebend- 1,070.0 psi Eminbe	r Axis Benc rStrand LS xx and - xx D(0.090) L	ling L 1.55E 1,550.0 ksi Dens i 787.82 ksi	ity 45.010 pcf
BEAM Size : 3.4 Us Wood Species : iLe Fb - Tension Fb - Compr Applied Loads Beam self weight ca Unif Load: D = 0.01 Design Summary Max fb/Fb Ratio = fb : Actual : Fb : Allowable : Load Comb :	5x14, X-Beam sing Load Resista evel Truss Joist 2,325.0 psi alculated and adde 20, L = 0.040 k/ft = 0.604 : 2,425.58 psi 4,017.60 psi +1.20D+0.50 0,306 :	, Fully Brac ance Factor De Fc - Prll Fc - Perp ed to loads , Trib= 7.50 ft 1 at 8.775 ft i ILr+1.60L+1.60	eed 2,050.0 psi 800.0 psi in Span # 1	Fv	Load Combinations, Majo Wood Grade : Timbe 310.0 psi Ebend- 1,070.0 psi Eminbe	r Axis Benc rStrand LS xx md - xx D(0.090) L	ling L 1.55E 1,550.0 ksi Dens i 787.82 ksi	ity 45.010 pcf
BEAM Size : 3.9 Us Wood Species : iLe Fb - Tension Fb - Compr Applied Loads Beam self weight ca Unif Load: D = 0.01 Design Summary Max fb/Fb Ratio = fb : Actual : Fb : Allowable : Load Comb : Max fv/FvRatio = fv : Actual :	5x14, X-Beam sing Load Resista evel Truss Joist 2,325.0 psi 2,325.0 psi alculated and adde 20, L = 0.040 k/ft = 0.604 ; 2,425.58 psi 4,017.60 psi +1.20D+0.50 0,306 ; 163.70 psi	, Fully Brac ance Factor De Fc - Pril Fc - Perp ed to loads , Trib= 7.50 ft 1 at 8.775 ft i ILr+1.60L+1.60	eed 2,050.0 psi 800.0 psi in Span # 1	Fv	Load Combinations, Majo Wood Grade : Timbe 310.0 psi Ebend- 1,070.0 psi Eminbe	r Axis Benc rStrand LS xx and - xx D(0.090) L	ling L 1.55E 1,550.0 ksi Dens i 787.82 ksi	ity 45.010 pcf
BEAM Size : 3.9 Us Wood Species : iLe Fb - Tension Fb - Compr Applied Loads Beam self weight ca Unif Load: D = 0.01 Design Summary Max fb/Fb Ratio = fb : Actual : Fb : Allowable : Load Comb : Max fv/FvRatio =	5x14, X-Beam sing Load Resista evel Truss Joist 2,325.0 psi 2,325.0 psi acculated and adde 20, L = 0.040 k/ft = 0.604 ; 2,425.58 psi 4,017.60 psi +1.20D+0.50 0.306 ; 163.70 psi 535.68 psi	, Fully Brac ance Factor De Fc - Prll Fc - Perp ed to loads , Trib= 7.50 ft 1 at 8.775 ft i ILr+1.60L+1.60	eed 2,050.0 psi 800.0 psi in Span # 1 H in Span # 1	Fv	Load Combinations, Majo Wood Grade : Timbe 310.0 psi Ebend- 1,070.0 psi Eminbe 3.5 18.6 Max Deflections	D(0.090) L	ling L 1.55E 1,550.0 ksi Densi 787.82 ksi (0.30)	ty 45.010 pcf 3.5x14 4.750 ft
BEAM Size : 3.9 Us Wood Species : iLe Fb - Tension Fb - Compr Applied Loads Beam self weight ca Unif Load: D = 0.01 Design Summary Max fb/Fb Ratio = fb : Actual : Fb : Allowable : Load Comb : Max fv/FvRatio = fv : Actual : Fv : Allowable : Load Comb : Max Reactions (k)	5x14, X-Beam sing Load Resistance evel Truss Joist 2,325.0 psi 2,325.0 psi elculated and adde 20, L = 0.040 k/ft = 0.604 ; 2,425.58 psi 4,017.60 psi +1.20D+0.50 0,306 ; 163.70 psi 535.68 psi +1.20D+0.50 D L	, Fully Brac ance Factor De Fc - PrII Fc - Perp ed to loads , Trib= 7.50 ft 1 at 8.775 ft i ILr+1.60L+1.60 1 at 17.550 ft i	eed 2,050.0 psi 800.0 psi in Span # 1 H in Span # 1	Fv	Load Combinations, Majo Wood Grade : Timbe 310.0 psi Ebend- 1,070.0 psi Eminbe 3.5 18.6 Max Deflections Transient Downward	n Axis Benc In Strand LS XX Ind - XX D(0.090) L D(0.090) L D(0.090) L D(0.090) L D(0.090) L D(0.090) L D(0.090) L D(0.090) L D(0.090) L D(0.090) L	ling L 1.55E 1,550.0 ksi Densi 787.82 ksi (0.30) Total Downward	ty 45.010 pcf 3.5x14 4.750 ft 0.761 in
BEAM Size : 3.9 Wood Species : iLe Fb - Tension Fb - Compr Applied Loads Beam self weight ca Unif Load: D = 0.01 Design Summary Max fb/Fb Ratio = fb : Actual : Fb : Allowable : Load Comb : Max fv/FvRatio = fv : Actual : Fv : Allowable : Load Comb : Max Reactions (k) Left Support	5x14, X-Beam sing Load Resista evel Truss Joist 2,325.0 psi 2,325.0 psi alculated and adde 20, L = 0.040 k/ft = 0.604 : 2,425.58 psi 4,017.60 psi 1,20D+0.50 0,306 : 163.70 psi 535.68 psi +1.20D+0.50 D L 0.92 2.62	, Fully Brac ance Factor De Fc - PrII Fc - Perp ad to loads , Trib= 7.50 ft 1 at 8.775 ft i Lr+1.60L+1.60 1 at 17.550 ft i	eed 2,050.0 psi 800.0 psi in Span # 1 H in Span # 1	Fv Ft	Load Combinations, Majo Wood Grade : Timbe 310.0 psi Ebend- 1,070.0 psi Eminbe 3.5 18.6 Max Deflections Transient Downward Ratio	D(0.090) L 0.563 in 397	ling L 1.55E 1.550.0 ksi Densi 787.82 ksi (0.30) Total Downward Ratio	ity 45.010 pcf 3.5x14 4.750 ft 0.761 in 294
BEAM Size : 3.9 Wood Species : iLe Fb - Tension Fb - Compr Applied Loads Beam self weight ca Unif Load: D = 0.01 Design Summary Max fb/Fb Ratio = fb : Actual : Fb : Allowable : Load Comb : Max fv/FvRatio = fv : Actual : Fv : Allowable : Load Comb : Max Reactions (k) Left Support	5x14, X-Beam sing Load Resistance evel Truss Joist 2,325.0 psi 2,325.0 psi elculated and adde 20, L = 0.040 k/ft = 0.604 ; 2,425.58 psi 4,017.60 psi +1.20D+0.50 0,306 ; 163.70 psi 535.68 psi +1.20D+0.50 D L	, Fully Brac ance Factor De Fc - PrII Fc - Perp ad to loads , Trib= 7.50 ft 1 at 8.775 ft i Lr+1.60L+1.60 1 at 17.550 ft i	eed 2,050.0 psi 800.0 psi in Span # 1 H in Span # 1	Fv Ft	Load Combinations, Majo Wood Grade : Timbe 310.0 psi Ebend- 1,070.0 psi Eminbe 3.5 18.6 Max Deflections Transient Downward Ratio LC	r Axis Benc r Strand LS xx ind - xx D(0.090) L 0.563 in 397 L Only	ling L 1.55E 1.550.0 ksi Densi 787.82 ksi (0.30) Total Downward Ratio LC	ity 45.010 pcf 3.5x14 4.750 ft 0.761 in 294 2 +D+L+H
BEAM Size : 3.9 Wood Species : iLe Fb - Tension Fb - Compr Applied Loads Beam self weight ca Unif Load: D = 0.01 Design Summary Max fb/Fb Ratio = fb : Actual : Fb : Allowable : Load Comb : Max fv/FvRatio = fv : Actual : Fv : Allowable : Load Comb : Max Reactions (k) Left Support	5x14, X-Beam sing Load Resista evel Truss Joist 2,325.0 psi 2,325.0 psi alculated and adde 20, L = 0.040 k/ft = 0.604 : 2,425.58 psi 4,017.60 psi 1,20D+0.50 0,306 : 163.70 psi 535.68 psi +1.20D+0.50 D L 0.92 2.62	, Fully Brac ance Factor De Fc - PrII Fc - Perp ad to loads , Trib= 7.50 ft 1 at 8.775 ft i Lr+1.60L+1.60 1 at 17.550 ft i	eed 2,050.0 psi 800.0 psi in Span # 1 H in Span # 1	Fv Ft	Load Combinations, Majo Wood Grade : Timbe 310.0 psi Ebend- 1,070.0 psi Eminbe 3.5 18.6 Max Deflections Transient Downward Ratio	D(0.090) L 0.563 in 397	ling L 1.55E 1.550.0 ksi Densi 787.82 ksi (0.30) Total Downward Ratio	ty 45.010 pcf 3.5x14 4.750 ft 0.761 in 294

Title Block Line 1 You can change this area using the "Settings" menu item and then using the "Printing & Title Block" selection.

Project Title: Engineer: Project ID: Project Descr:

Title Block Line 6	Printed: 16 JUL 2020, 3 04PM
Multiple Simple Beam	Ectro of Buyalup Development & Permitting Som Software copyright ENERCALC, INC. 1983-2020, BuiltSSUED PERMIT
Lic. # : KW-06002029	OLS OLBuilding St CLPlanning
	Engineering Public Works
	Fire
Wood Beam Design: Triple Rim North	Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
BEAM Size : 3.5x14, X-Beam, Fully Braced	

Wood Species : iLevel Truss Joist	Design with AS		Wood Grade : T	imberStrand L	SL 1.55E	
Fb - Tension 2,325.0 psi Fc - Prll Fb - Compr 2,325.0 psi Fc - Perp	2,050.0 psi 800.0 psi	Fv Ft		end- xx ninbend - xx	1,550.0 ksi De 787.82 ksi	nsity 45.010 pc
pplied Loads Beam self weight calculated and added to loads Unif Load: D = 0.0120, L = 0.040 k/ft, Trib= 3.0 ft						
esign Summary	ſ			D/0.0360)	1 (0 120)	
Max fb/Fb Ratio = 0.252; 1 fb:Actual: 1.014.34 psi at 8.775 ft	in Span # 1	the second	and the second se	D(0.0360)	L(0.120)	×
Fb : Allowable : 4,017.60 psi		1000		3.5x14	and the second se	3.5x14
Load Comb : +1.20D+0.50Lr+1.60L+1.6	OH			18.670 ft		4.750 ft
Max fv/FvRatio = 0.144 : 1 fv : Actual : 77.15 psi at 18.670 ft Fv : Allowable : 535.68 psi	in Span # 1	ł		10.070 1		+
Load Comb : +1.20D+0.50Lr+1.60L+1.6			Max Deflections			
Max Reactions (k) D L Lr S	<u>W</u> E	H	Transient Downw	ard 0.225 in		
Left Support 0.45 1.05			Ratio	994	Ratio	696
Right Support 0.75 1.76				LC: L Only		LC: +D+L+H
			Transient Upward	-0.149 in	Total Upward	-0.213 in
			Ratio	764	Ratio	536
				LC: L Only		LC: +D+L+H

N.L. Olson & Associates, Inc. 2453 Bethel Road Port Orchard, WA 98367 (360) 876-2284

General Footing

Lic. # : KW-06002029 30" Ftg Description :

Code References

Calculations per ACI 318-14, IBC 2015, CBC 2016, ASCE 7-10 Load Combinations Used : ASCE 7-10

General Information

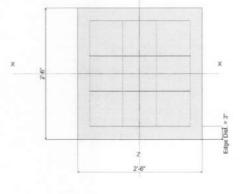
Material Pro	perties			
fc : Concrete	e 28 day strength	=	2	.50 ksi
fy : Rebar Yi	eld	=	6	0.0 ksi
Éc : Concret	e Elastic Modulus	=	3,12	2.0 ksi
Concrete De		=	14	5.0 pcf
φ Values	Flexure	=	0	.90
10 T . (10 10 10 10 10 10 10 10 10 10 10 10 10 1	Shear	=	0.7	750
Analysis Se	ttings			
Min Steel %	Bending Reinf.		=	
Min Allow %	Temp Reinf.		=	0.00180
Min. Overtur	ning Safety Factor		=	1.0 : 1
	Safety Factor		=	1.0 : 1
Add Ftg Wt f	or Soil Pressure		1	Yes
•	r stability, moments & shears			Yes
Add Pedesta	al Wt for Soil Pressure		2	No
Use Pedesta	al wt for stability, mom & shear		1	No
Dimension	e and the second second second second		1000	

Soil Design Values Allowable Soil Bearing	=	1.50 ksf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30
Increases based on footing Depth		
Footing base depth below soil surface	=	0.0 ft
Allow press. increase per foot of depth	=	0.0 ksf
when footing base is below	=	0.0 ft
Increases based on footing plan dimension Allowable pressure increase per foot of depth		
	=	0.0 ksf
when max. length or width is greater than		12.00
	=	0.0 ft



Width parallel to X-X Axis	=	2.50 ft
Length parallel to Z-Z Axis	=	2.50 ft
Footing Thickness	=	8.0 in

Pedestal dimensions		
px : parallel to X-X Axis	=	0.0 in
pz : parallel to Z-Z Axis	=	0.0 in
Height	=	0.0 in
Rebar Centerline to Edge of C at Bottom of footing	oncrete =	3.0 in



2

Reinforcing

Bars parallel to X-X Axis Number of Bars	=		40
Reinforcing Bar Size	=	#	4
Bars parallel to Z-Z Axis			
Number of Bars	=		4
Reinforcing Bar Size	=	#	4
Bandwidth Distribution Che	eck (ACI 15.4.4.2)		
Direction Requiring Closer S	Separation		
			n/a
# Bars required within zone			n/a
# Bars required on each side	e of zone		n/a



X-X Section Looking to +2

2-2 Section Looking to +X

Applied Loads										
		D	Lr	L	S	w	E	н		
P : Column Load OB : Overburden	=	2.520 0.0	2.040 0.0	2.880 0.0	2.040 0.0	0.0 0.0	0.0 0.0	0.0 k 0.0 ksf		
M-xx M-zz	= =	0.0 0.0	0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 k-ft 0.0 k-ft		
V-x V-z	=	0.0 0.0	0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 k 0.0 k		

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Fire

Public Works

Traffic

General Footing

Lic. # : KW-06002029 Description : 30" Ftg.

DESIGN SUMMARY

Project Title: Engineer: Project ID: Project Descr:

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Fire

Design OK

Traffic

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.7267	Soil Bearing	1.090 ksf	1.50 ksf	+D+0.750L+0.750S+0.5250E+H about Z-
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.1624	Z Flexure (+X)	1.082 k-ft/ft	6.658 k-ft/ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1624	Z Flexure (-X)	1.082 k-ft/ft	6.658 k-ft/ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1624	X Flexure (+Z)	1.082 k-ft/ft	6.658 k-ft/ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1624	X Flexure (-Z)	1.082 k-ft/ft	6.658 k-ft/ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.2538	1-way Shear (+X)	19.034 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.2538	1-way Shear (-X)	19.034 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.2538	1-way Shear (+Z)	19.034 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.2538	1-way Shear (-Z)	19.034 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.5620	2-way Punching	84.305 psi	150.0 psi	+1.20D+0.50Lr+1.60L+1.60H
Detailed Re	sults	A THE REAL PROPERTY OF			

Soil Bearing

Soil Bearing Rotation Axis &		Xec	c Ze	CC	Actual Soil Bearing Stress @ Location				Actual / Allow	
Load Combination	Gross Allowable		(in)		Bottom, -2		Top, +Z	Left, -X	Right, +X	Ratio
X-X. +D+H	1.50	г	/a	0.0	0.4999	9	0.4999	n/a	n/a	0.333
X-X. +D+L+H	1.50	r	/a	0.0	0.960	7	0.9607	n/a	n/a	0.641
X-X. +D+Lr+H	1.50	r	/a	0.0	0.826	3	0.8263	n/a	n/a	0.551
X-X. +D+S+H	1.50	Г	la	0.0	0.826	3	0.8263	n/a	n/a	0.551
X-X. +D+0.750Lr+0.750L+H	1.50	r	/a	0.0	1.09	0	1.090	n/a	n/a	0.727
X-X. +D+0.750L+0.750S+H	1.50	r	/a	0.0	1.09	0	1.090	n/a	n/a	0.727
X-X. +D+0.60W+H	1.50		/a	0.0	0.499	9	0.4999	n/a	n/a	0.333
X-X. +D+0.70E+H	1.50	r	la	0.0	0.499		0.4999	n/a	n/a	0.333
X-X. +D+0.750Lr+0.750L+0.450W+H			la	0.0	1.09	0	1.090	n/a	n/a	0.727
X-X. +D+0.750L+0.750S+0.450W+H			la	0.0	1.09	0	1.090	n/a	n/a	0.727
X-X. +D+0.750L+0.750S+0.5250E++			/a	0.0	1.09		1.090	n/a	n/a	0.727
X-X. +0.60D+0.60W+0.60H	1.50		la	0.0	0.299		0.2999	n/a	n/a	0.200
X-X, +0.60D+0.70E+0.60H	1.50		/a	0.0	0.299		0.2999	n/a	n/a	0.200
Z-Z. +D+H	1.50		.0	n/a	n/		n/a	0.4999	0.4999	0.333
Z-Z. +D+L+H	1.50		.0	n/a	n/		n/a	0.9607	0.9607	0.641
Z-Z, +D+Lr+H	1.50		.0	n/a	n/		n/a	0.8263	0.8263	0.551
Z-Z. +D+CI+H Z-Z. +D+S+H	1.50		0.0	n/a	n/		n/a	0.8263	0.8263	0.551
Z-Z. +D+0.750Lr+0.750L+H	1.50	103	0.0	n/a	n/	55.6	n/a	1.090	1.090	0.727
Z-Z. +D+0.750L+0.750L+H	1.50		0.0	n/a	n/	-	n/a	1.090	1.090	0.727
	1.50		0.0	n/a	n/		n/a	0.4999	0.4999	0.333
Z-Z. +D+0.60W+H Z-Z. +D+0.70E+H	1.50		0.0	n/a	n/		n/a	0.4999	0.4999	0.333
Z-Z. +D+0.70E+H Z-Z. +D+0.750Lr+0.750L+0.450W+H			0.0	n/a	n/		n/a	1.090	1.090	0.333
			0.0	n/a	n/		n/a	1.090	1.090	0.727
Z-Z. +D+0.750L+0.750S+0.450W+H			0.0	n/a	n/		n/a	1.090	1.090	0.727
Z-Z. +D+0.750L+0.750S+0.5250E+H	1 1.50		0.0	n/a	n/		n/a	0.2999	0.2999	0.200
Z-Z. +0.60D+0.60W+0.60H			0.0		n/		n/a	0.2999	0.2999	0.200
Z-Z, +0.60D+0.70E+0.60H Footing Flexure	1.50		1.0	n/a	TV.	d	Ti/d	0.2999	0.2999	0.200
Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface		As Req'd		rn. As	Actual As	Phi*Mn k-ft	Status
		-		8		1225 C-223			2010-00 2010-00-00	
X-X, +1.40D+1.60H	0.4410	+Z	Bottom		0.1728	Min Te		0.320	6.658	OK
X-X, +1.40D+1.60H	0.4410	-Z	Bottom		0.1728	Min Te		0.320	6.658	OK
X-X. +1.20D+0.50Lr+1.60L+1.60H	1.082	+Z	Bottom		0.1728	Min Te		0.320	6.658	OK
X-X. +1.20D+0.50Lr+1.60L+1.60H	1.082	-Z	Bottom		0.1728	Min Te		0.320	6.658	OK
X-X. +1.20D+1.60L+0.50S+1.60H	1.082	+Z	Bottom		0.1728	Min Te		0.320	6.658	OK
X-X, +1.20D+1.60L+0.50S+1.60H	1.082	-Z	Bottom		0.1728	Min Te		0.320	6.658	OK
X-X, +1.20D+1.60Lr+0.50L+1.60H	0.9660	+Z	Bottom		0.1728	Min Te	emp %	0.320	6.658	OK
X-X. +1.20D+1.60Lr+0.50L+1.60H	0.9660	-Z	Bottom		0.1728	Min Te	emp %	0.320	6.658	OK
X-X. +1.20D+1.60Lr+0.50W+1.60H	0.7860	+Z	Bottom		0.1728	Min Te		0.320	6.658	OK
X-X, +1.20D+1.60Lr+0.50W+1.60H	0.7860	-Z	Bottom		0.1728	Min Te		0.320	6.658	OK

N.L. Olson & Associates, Inc. 2453 Bethel Road Port Orchard,WA 98367 (360) 876-2284

General Footing

Lic. # : KW-06002029 Description : 30" Ftg.

Footing Flexure

Footing Flexure									
Flexure Axis & Load Combination	Mu k-ft	Side	Tension		Gvrn. As in^2	Actual in^2		*Mn -ft	Status
X-X, +1.20D+0.50L+1.60S+1.60H	0.9660	+Z	Bottom	0.1728	Min Temp?	6 0.32	n	6.658	OK
X-X. +1.20D+0.50L+1.60S+1.60H	0.9660	-Z	Bottom	0.1728	Min Temp?	10000		6.658	OK
X-X. +1.20D+1.60S+0.50W+1.60H	0.7860	+7	Bottom	0.1728	Min Temp?			6.658	OK
X-X. +1.20D+1.60S+0.50W+1.60H	0.7860	+Z -Z	Bottom	0.1728	Min Temp 9			6.658	OK
X-X, +1.20D+0.50Lr+0.50L+W+1.60H		+7	Bottom	0.1728	Min Temp 9			6.658	OK
X-X. +1.20D+0.50Lr+0.50L+W+1.60H		+Z -Z	Bottom	0.1728	Min Temp 9			6.658	OK
X-X. +1.20D+0.50L+0.50S+W+1.60H		+Z -Z	Bottom	0.1728	Min Temp 9	6 0.32	20	6.658	OK
X-X. +1.20D+0.50L+0.50S+W+1.60H		-Z	Bottom	0.1728	Min Temp 9	6 0.32	0	6.658	OK
X-X. +1.20D+0.50L+0.20S+E+1.60H	0.6090	+Z -Z	Bottom	0.1728	Min Temp 9			6.658	OK
X-X, +1.20D+0.50L+0.20S+E+1.60H	0.6090	-Z	Bottom	0.1728	Min Temp 9			6.658	OK
X-X, +0.90D+W+0.90H	0.2835	+Z -Z	Bottom	0.1728	Min Temp 9			6.658	OK
X-X. +0.90D+W+0.90H	0.2835	-Z	Bottom	0.1728	Min Temp?			6.658	OK
X-X. +0.90D+E+0.90H	0.2835	+Z -Z	Bottom	0.1728	Min Temp?			6.658	OK
X-X. +0.90D+E+0.90H	0.2835	-2	Bottom	0.1728	Min Temp?			6.658	OK
Z-Z. +1.40D+1.60H	0.4410	-X	Bottom	0.1728	Min Temp?			6.658	OK
Z-Z. +1.40D+1.60H Z-Z. +1.20D+0.50Lr+1.60L+1.60H	0.4410 1.082	+X -X	Bottom	0.1728 0.1728	Min Temp? Min Temp?			6.658 6.658	OK
Z-Z. +1.20D+0.50Lr+1.60L+1.60H	1.082	-^ +X	Bottom	0.1728	Min Temp?			6.658	OK
Z-Z, +1.20D+0.50L+1.50L+1.60H	1.082	-X	Bottom	0.1728	Min Temp?			6.658	OK
Z-Z. +1.20D+1.60L+0.50S+1.60H	1.082	+X	Bottom	0.1728	Min Temp 9		0	6.658	OK
Z-Z, +1.20D+1.60Lr+0.50L+1.60H	0.9660	-X	Bottom	0.1728	Min Temp 9			6.658	OK
Z-Z. +1.20D+1.60Lr+0.50L+1.60H	0.9660	+X	Bottom	0.1728	Min Temp 9			6.658	OK
Z-Z, +1.20D+1.60Lr+0.50W+1.60H	0.7860	-X	Bottom	0.1728	Min Temp 9			6.658	OK
Z-Z. +1.20D+1.60Lr+0.50W+1.60H	0.7860	+X	Bottom	0.1728	Min Temp 9			6.658	OK
Z-Z. +1.20D+0.50L+1.60S+1.60H	0.9660	-X	Bottom	0.1728	Min Temp 9			6.658	OK
Z-Z. +1.20D+0.50L+1.60S+1.60H	0.9660	+X	Bottom	0.1728	Min Temp 9	6 0.32	0	6.658	OK
Z-Z, +1.20D+1.60S+0.50W+1.60H	0.7860	-X	Bottom	0.1728	Min Temp 9			6.658	OK
Z-Z. +1.20D+1.60S+0.50W+1.60H	0.7860	+X	Bottom	0.1728	Min Temp 9			6.658	OK
Z-Z. +1.20D+0.50Lr+0.50L+W+1.60H		-X	Bottom	0.1728	Min Temp 9			6.658	OK
Z-Z, +1.20D+0.50Lr+0.50L+W+1.60H	0.6855	+X	Bottom	0.1728	Min Temp?			6.658	OK
Z-Z. +1.20D+0.50L+0.50S+W+1.60H	0.6855	-X	Bottom	0.1728	Min Temp 9			6.658	OK
Z-Z. +1.20D+0.50L+0.50S+W+1.60H	0.6855	+X	Bottom	0.1728	Min Temp?			6.658	OK OK
Z-Z. +1.20D+0.50L+0.20S+E+1.60H	0.6090	-X	Bottom	0.1728	Min Temp?			6.658 6.658	OK
Z-Z, +1.20D+0.50L+0.20S+E+1.60H	0.6090 0.2835	+X -X	Bottom	0.1728 0.1728	Min Temp? Min Temp?			6.658	OK
Z-Z. +0.90D+W+0.90H	0.2835	+X	Bottom	0.1728	Min Temp?			6.658	OK
Z-Z. +0.90D+W+0.90H Z-Z. +0.90D+E+0.90H	0.2835	-X	Bottom	0.1728	Min Temp?			6.658	OK
Z-Z. +0.90D+E+0.90H	0.2835	+X	Bottom	0.1728	Min Temp?			6.658	OK
One Way Shear	0.2000		Dottom	0.1120	init fortio	0.02		0.000	UN
Load Combination	Vu @ -X	Vu @	+X \	/u@-Z V	'u @ +Z	Vu:Max	Phi Vn N	/u / Phi*Vn	Status
+1.40D+1.60H	7.76 ps		7.76 psi	7.76 psi	7.76 psi	7.76 psi	75.00 psi	0.10	OK
+1.20D+0.50Lr+1.60L+1.60H	19.03 ps		19.03 psi	19.03 psi	19.03 psi	19.03 psi	75.00 psi	0.25	OK
+1.20D+1.60L+0.50S+1.60H	19.03 DS		19.03 psi	19.03 psi	19.03 psi	19.03 psi	75.00 psi		OK
+1.20D+1.60Lr+0.50L+1.60H	17.00 DS		17.00 psi	17.00 psi	17.00 psi	17.00 psi	75.00 psi		OK
+1.20D+1.60Lr+0.50W+1.60H	13.83 DS		13.83 psi	13.83 psi	13.83 psi	13.83 psi	75.00 psi		OK
+1.20D+0.50L+1.60S+1.60H	17.00 DS		17.00 psi	17.00 psi	17.00 psi	17.00 psi	75.00 psi		OK
+1.20D+1.60S+0.50W+1.60H	13.83 DS		13.83 psi	13.83 psi	13.83 psi		75.00 psi		OK
+1.20D+0.50Lr+0.50L+W+1.60H	12.07 ps		12.07 psi	12.07 psi	12.07 psi		75.00 psi		OK
+1.20D+0.50L+0.50S+W+1.60H	12.07 DS		12.07 psi	12.07 psi	12.07 psi		75.00 psi		OK
+1.20D+0.50L+0.20S+E+1.60H	10.72 DS		10.72 psi	10.72 psi	10.72 psi		75.00 psi		OK
+0.90D+W+0.90H	4.99 ps		4.99 psi	4.99 psi	4.99 psi		75.00 psi		OK
			4.99 psi	4.99 psi	4.99 psi		75.00 psi		OK
+0.90D+E+0.90H Two-Way "Punching" Shear	4.99 DS		4.33 051	4.55 051	4.00 001	4.55 051	75.00 051	All units	
Load Combination		Vu		Phi*Vn		Vu / Phi*Vn			Status
+1.40D+1.60H			8 psi	150.0		0.2292			OK
+1.20D+0.50Lr+1.60L+1.60H			1 DSI	150.0		0.562			OK
+1.20D+0.50E+1.60E+1.60H			1 DSI	150.0		0.562			OK
+1.20D+1.60Lr+0.50L+1.60H			0 psi	150.0		0.502			OK
+1.20D+1.60Lr+0.50W+1.60H			7 DSi	150.0		0.4085			OK
+1.20D+0.50L+1.60S+1.60H			0 osi	150.0		0.502			OK

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Project Title: Engineer: Project ID: Project Descr: N.L. Olson & Associates, Inc. 2453 Bethel Road Port Orchard, WA 98367 (360) 876-2284

Project Title: Engineer: Project ID: Project Descr:

General Footing Lic. # : KW-06002029 Description : 30° Ftg.	Printed 20 File = \\server-host\Users\nleveng Software copyright ENERCALC, INC. 1983-20 Licensee : OLSO	19 Durision		
Two-Way "Punching" Shear		All units k		
Load Combination	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.20D+1.60S+0.50W+1.60H +1.20D+0.50Lr+0.50L+W+1.60H +1.20D+0.50L+0.50S+W+1.60H +1.20D+0.50L+0.20S+E+1.60H +0.90D+W+0.90H +0.90D+E+0.90H	61.27 psi 53.44 psi 53.44 psi 47.47 psi 22.10 psi 22.10 psi	150.00 psi 150.00 psi 150.00 psi 150.00 psi 150.00 psi 150.00 psi	0.4085 0.3562 0.3562 0.3165 0.1473 0.1473	OK OK OK OK