Versa-Lam® vs Steel Beam Conversions

Conversion Table 1

Steel Beam	Beam Length	Tributary width	Glulam 20f-E Spruce-Pine		Versa-Lam® 2.1E 3100		
			Width	Depth	Width	# of plies	Depth
	(ft)	(ft)	(in)	(in)	(in)		(in)
W4X13	8	5	3 1/8	6.0	1 3/4	2	5.50
W4X13	11	3	3 1/8	7.5	1 3/4	2	7.25
W4X13	13	4	3 1/8	9.0	1 3/4	2	9.25
W6X8.5	15	4	3 1/8	10.5	1 3/4	2	9.25
W5X16	17	4	3 1/8	12.0	1 3/4	2	11.25
W6X15	20	3	3 1/8	13.5	1 3/4	2	11.25
W6X20	22	3	3 1/8	15.0	1 3/4	2	14.00
W8X18	24	4	3 1/8	16.5	1 3/4	2	16.00
W10X16	26	4	3 1/8	18.0	1 3/4	2	16.00
W12X14	29	3	3 1/8	19.5	1 3/4	2	16.00
W10X22	31	3	3 1/8	21.0	1 3/4	2	18.00
W10X26	33	3	3 1/8	22.5	1 3/4	2	18.00
W4X13	8	8	5 1/8	6.0	1 3/4	3	5.50
W4X13	11	6	5 1/8	7.5	1 3/4	3	7.25
W6X8.5	13	6	5 1/8	9.0	1 3/4	3	9.25
W6X12	15	6	5 1/8	10.5	1 3/4	3	9.25
W8X13	17	7	5 1/8	12.0	1 3/4	3	11.25
W6X25	20	6	5 1/8	13.5	1 3/4	3	14.00
W8X21	22	6	5 1/8	15.0	1 3/4	3	14.00
W12X16	24	6	5 1/8	16.5	1 3/4	3	16.00
W10X22	26	6	5 1/8	18.0	1 3/4	3	16.00
W12X21	29	6	5 1/8	19.5	1 3/4	3	18.00
W14X22	31	6	5 1/8	21.0	1 3/4	3	20.00
W14X26	33	6	5 1/8	22.5	1 3/4	3	20.00
W16X26	35	6	5 1/8	24.0	1 3/4	3	22.00
W6X8.5	11	8	6 3/4	7.5	1 3/4	4	7.25
W5X16	13	9	6 3/4	9.0	1 3/4	4	9.25
W8X13	15	9	6 3/4	10.5	1 3/4	4	9.50
W8X15	17	9	6 3/4	12.0	1 3/4	4	11.25
W8X21	20	8	6 3/4	13.5	1 3/4	4	14.00
W12X16	22	8	6 3/4	15.0	1 3/4	4	14.00
W10X26	24	8	6 3/4	16.5	1 3/4	4	16.00

Steel Beam	Beam Length	Tributary width	Glulam 20f-E Spruce-Pine		Versa-Lam® 2.1E 3100		
			Width	Depth	Width	# of plies	Depth
	(ft)	(ft)	(in)	(in)	(in)		(in)
W12X26	26	9	6 3/4	18.0	1 3/4	4	18.00
W14X26	29	8	6 3/4	19.5	1 3/4	4	18.00
W16X26	31	8	6 3/4	21.0	1 3/4	4	20.00
W14X34	33	8	6 3/4	22.5	1 3/4	4	20.00
W16X31	35	8	6 3/4	24.0	1 3/4	4	22.00

Notes:

- Dry service conditions
- Simple spans uniformly loaded beams
- Live load = 40 psf
- Dead load = 30 psf
- Standard loading conditions (K_D = 1.0)
- Continuous lateral support (K_L = 1.0)
- Live load deflection limit = L/360
- Total load deflection limit = L/240
- Steel beams should meet the requirements for Grade 350W(metric)/50W(imperial) steel contained in CAN/CSA-G40.21 (yield strength = 350MPa/50ksi)
- Glued laminated timber beam sizes are based on a span to depth ratio, L/d, of 18. When the span to depth ratio is different, sizes should be determined by engineering calculations
- Glulam specified strengths and modulus of elasticity as per CSA 086-19 (Table 7.2)
- Versa-Lam® 2.1E 3100 design properties as per CCMC 12472-R

Conversion Table 2

Steel Beam	Beam Length	Tributary width	Glulam24f-E Douglas Fir-Larch		Versa-Lam® 2.1E 3100		
			Width	Depth	Width	# of plies	Depth
	(ft)	(ft)	(in)	(in)	(in)		(in)
W4X13	8	6	3 1/8	6.0	1 3/4	2	5.50
W4X13	11	4	3 1/8	7.5	1 3/4	2	7.25
W6X8.5	13	5	3 1/8	9.0	1 3/4	2	9.25
W5X16	15	5	3 1/8	10.5	1 3/4	2	11.25
W6X15	17	5	3 1/8	12.0	1 3/4	2	11.25
W8X13	20	4	3 1/8	13.5	1 3/4	2	14.00
W6X25	22	4	3 1/8	15.0	1 3/4	2	14.00
W8X21	24	5	3 1/8	16.5	1 3/4	2	16.00
W12X16	26	5	3 1/8	18.0	1 3/4	2	18.00
W10X22	29	4	3 1/8	19.5	1 3/4	2	18.00
W10X26	31	4	3 1/8	21.0	1 3/4	2	20.00
W12X21	33	4	3 1/8	22.5	1 3/4	2	20.00
W4X13	8	10	5 1/8	6.0	1 3/4	3	7.25
W4X13	11	7	5 1/8	7.5	1 3/4	3	7.25
W5X16	13	8	5 1/8	9.0	1 3/4	3	9.25
W8X10	15	8	5 1/8	10.5	1 3/4	3	11.25
W8X14	17	8	5 1/8	12.0	1 3/4	3	11.88
W8X18	20	7	5 1/8	13.5	1 3/4	3	14.00
W10X16	22	7	5 1/8	15.0	1 3/4	3	14.00
W10X26	24	8	5 1/8	16.5	1 3/4	3	16.00
W12X21	26	8	5 1/8	18.0	1 3/4	3	18.00
W14X22	29	7	5 1/8	19.5	1 3/4	3	20.00
W14X26	31	7	5 1/8	21.0	1 3/4	3	20.00
W16X26	33	7	5 1/8	22.5	1 3/4	3	22.00
W16X31	35	8	5 1/8	24.0	1 3/4	3	24.00
W6X8.5	11	10	6 3/4	7.5	1 3/4	4	7.25
W5X19	13	11	6 3/4	9.0	1 3/4	4	9.25
W6X20	15	11	6 3/4	10.5	1 3/4	4	11.25
W8X18	17	11	6 3/4	12.0	1 3/4	4	11.88
W12X14	20	10	6 3/4	13.5	1 3/4	4	14.00
W10X22	22	10	6 3/4	15.0	1 3/4	4	16.00
W12X21	24	10	6 3/4	16.5	1 3/4	4	16.00
W12X26	26	10	6 3/4	18.0	1 3/4	4	18.00
W16X26	29	10	6 3/4	19.5	1 3/4	4	20.00

Steel Beam	Beam Length	Tributary width	Glulam24f-E Douglas Fir-Larch		Versa-Lam® 2.1E 3100		
			Width	Depth	Width	# of plies	Depth
	(ft)	(ft)	(in)	(in)	(in)		(in)
W14X34	31	10	6 3/4	21.0	1 3/4	4	20.00
W18X35	33	10	6 3/4	22.5	1 3/4	4	22.00
W18X35	35	10	6 3/4	24.0	1 3/4	4	24.00

Notes:

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- Simple spans uniformly loaded beams
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- Live load deflection limit = L/360
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