# WoodWorks<sup>®</sup>

# **Design Office**

# Sizer | Shearwalls | Connections | Database Editor

# 2017 User Guide – Canadian Sizer Tutorial Instructions

For Canadian Design Office 9

Canadian Wood Council American Wood Council

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### **1** Beam Mode Tutorial **1** - Determine beam size based on given Loads (CDN)

The Sizer file (.wwb) created from going through this tutorial can be downloaded by clicking <u>here</u>.

#### 1.1 Defining the Parameters

- 1. Start the program in Beam mode.
- 2. Select the *Span* field and enter a span of *3 m*.
- 3. Click Add.
- 4. Repeat steps 2 and 3 for two additional spans of **3** *m* and **1** *m*.
- 5. Choose *Right* from the *Cantilever* drop-down list.
- 6. Although you can try different *Materials*, select *Timber* for this example.
- 7. Select species type **D.Fir-L**.

Spans	Cantilevers	Right	•	Туре	Beam	•
3 m	Pitch	0	/12	Material	Timber	•
3 m 1 m	Oblique angle	0	deg.	Species	D.Fir-L	•
	2			Grade	(unknown)	•
				Width*	(unknown) 💌	to (unk
Modify	Joist spacing*		💌 mm	Depth×	(unknown) 💌	to (unk
Span type	Load sharing	No	•	From	💌 to	🔄 plies
Design span 💌						

Figure 1: Tutorial 1 – Defining length of Beam and Materials

Full	<u>ــــــــــــــــــــــــــــــــــــ</u>			known		+
1.011	1.					1
Clear		unknown		unknown	unknown	1
	$\boxtimes$	Lb = unknown	Lb = unkr	10WN	Lb = unknown	-
	4	Lumber Beam,	Lumber B	leam,	Lumber Beam,	
Design	0	D.Fir.L No.2 3	D.Fir-L No	.2 6	D.Fir-L No.2 7	7 m

Figure 2: Tutorial 1 – Beam Length

- 8. Input *Supports for Bearing Design* applies to *All supports*.
- 9. Select *Beam* from *Type* list.
- 10. Select *Timber* from *Material* list.
- 11. Select *D.Fir-L Species* type.
- 12. Select No.2 Grade.
- 13. Select 140 (mm) Bearing length.
- 14. Select Same as joists for Bearing width.

-Supports for bearing and notch design						
Applies to All supports	For unknown bearing length					
Type Beam 💌	C Use exact minimum					
Material Timber 💽	closest					
Species D.Fir-L 💌	C From list of bearing length choices					
Grade No.2 💌	End supports: round C minimum; Interior; from					
Bearing where support ends or is highly stressed	bearing length choices					
Bearing length*	Bearing width*					
Main Lb <sup>×</sup> 140 💌	Same as bear 💌 mm					
Point load* = Lb 💌	Same as bear 💌 mm					
Notch at None 💌 No	tch depth mm					
Notch length: mm 🖡	Notch length = bearing length					
Laterally supported at support						

Figure 3: Tutorial 1 – Specifying Bearing Details

#### 1.2 Loading the Beam

- 1. Click the *loads* button on the toolbar.
- 2. Choose *Dead* from the *Type* drop-down list.
- 3. Ensuring that the *Distribution* field is *Full Uniform Line*, select the *Magnitude* field and enter a value of *1.5 (kN/m)*.
- 4. Click *Add*.

			Magnitude			Pattern
Name	Туре	Distribution	kN/m			loading
	Dead	▼ Full Uniform Line	<b>▼</b> 1.5			
Load1	Dead	Full Uniform Line	1.5 kN/m			
				4		
Add M	lodify De	ete Delete all	<u>R</u> epeating point	t load	Save as defau	t loads

Figure 4: Tutorial 1 – Loading Beam

- 5. Choose *Live* from the *Type* drop-down list.
- 6. Ensuring that the distribution field is Full Uniform Line, select the *Magnitude* field and enter a magnitude of *3 (kN/m)*.
- 7. Ensure that the *Pattern Loading* box is checked.
- 8. Click Add.
- 9. Changing the *Distribution* field to *Point Load*, select the *Magnitude* field and enter a magnitude of *1.6 (kN)*.
- 10. Select the *Location From Left* field and enter a distance of **7** m.
- 11. Choose *Live* from the *Type* drop-down list and click the *Pattern Loading* checkbox.
- 12. Click *Add*.



Figure 5: Tutorial 1 – Loaded Beam

#### 1.3 Designing the Beam

- 1. Click the *Run* button on the toolbar. *Sizer* automatically designs the member.
- 2. You will be asked to enter a file name for your project.

#### 1.4 View Design Summary

1. Use the scroll bar to look through the Design Summary output, which includes a list of sections which can resist the applied loads. Click <u>here</u> to download a pdf of the design summary.

🔯 WoodWorks® Sizer 9.3.2 - [Tutorial_1_CDN.wbd: Design Results] —	□ ×
送 File Mode Settings Design View Window Help	_ & ×
▲ ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ►	•
DESIGN DATA: Material: Timber Lateral support: top= at all supports, bottom= at all supports; Total length: 7.00 [m ] ====================================	~
LOADS: (force=kN, pressure=kN/m2, udl=kN/m, location=m ) >>Self-weight automatically included<<	
Load   Type  Distribution Pat-  Location   Magnitude  Unit      tern  Start End   Start End	
Load1 Dead Full UDL No 1.50 kN/m Load2 Live Full UDL Yes 3.00 kN/m Load3 Live Point Yes 7.13 1.60 kN	
SUGGESTED SECTIONS that PASSED the CODE CHECK:	
Species   bxd   Bending  Shear   Disp./   Volume   Grade   mm   Mf/Mr   Vf/Vr   Allow.   m^3 	
D.Fir-L 1 No.2 140x241 0.54 0.28 0.52 0.236 2 No.2 191x191 0.88 0.16 0.76 0.255 3 No.1 140x191 0.52 0.22 0.82 0.187 4 SS 140x191 0.39 0.22 0.82 0.187 >>For more detailed output, select a Suggested Section from the Data Bar.<<	
DESIGN NOTES:	
<ol> <li>WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC Part 4) and the CSA 086-09 Engineering Design in Wood standard, which includes Update No.1.</li> <li>Please verify that the default deflection limits are appropriate</li> </ol>	*

Figure 6: Tutorial 1 – Design Summary

#### **1.5** View Analysis Diagrams

Click the **Diagram** button on the toolbar to view reactions, shear, bending moments and deflection diagrams. Click <u>here</u> to download a pdf of the Analysis Diagrams.



Figure 7: Tutorial 1 – View Diagrams

#### **1.6** Perform a Detailed Design on a Specific Section

- 1. Use the *Select a section* drop down list in the toolbar to select a *D.Fir-L No.2* 191x191
- 2. *Sizer* will automatically perform a detailed design on the specific section chosen.

🔯 WoodWorks® Sizer 9.3.2 - [Tutorial_1_CDN.wbg: Beam Graphs]	_		×
₽ <sub>\$\$</sub> File Mode Settings Design View Window Help		- é	s ×
Image: Constraint of the section         Image		•	
View   Load combinations: Critical Results  View   Load combinations: Critical Results  View   Deflection Results:   Total  View   Total  View   Deflection Results:   Deflection Results:   Total  View   Deflection Results:   Total  View   Deflection Results:   Total  View   Deflection Results:   Deflection			
REACTION [kN] ANALYSIS DIAGRAMS (unknown section - no self-wD.FrLN0.1140x191 Maximum			
Uplift: 0 Bearing: 23.44			



3. The results for the specified section are now displayed as shown.

 You can repeat the above steps to perform a detailed design on any other sections listed in the *Suggested Beam Sections* drop-down list. Click <u>here</u> to download a pdf of the Design Results.

🐞 WoodWorks® Sizer 9	).3.2 - [Tutorial_	1_CDN.wbc: Design	Check]						_	
File Mode Setting	gs Design V	/iew Window He	lp							- 8 ×
		🔒 💋 🛄					D.Fi	-L No.2 191x19	91	•
	Woo	<b>d</b> Wc	orks®	COMP	ANY	PROJ	IECT			
		SOFTMAKE (OR	A CONSIGNATION OF THE OWNER OWNER OF THE OWNER OWN	Nov. 29	), 2016 13:35	Tutoria	al_1_C[	ON.wwb		
		Des	sign Check C WoodWork	s Sizer 9.	ion Sheet 3.2					
Loads:										
Load	Тур	e	Distributio	n Pat- tern	Location Start	[m] End	Mag Sta	nitude rt En	Unit nd	
Load1 Load2 Load3 Self-weight	Dead Live Live Dead		Full UDL Full UDL Point Full UDL	No Yes Yes No	7.13		1.5 3.0 1.6 0.1	0 0 0 8	kN/m kN/m kN kN/m	
Maximum Rea	actions (I	kN), Bearing	Resistances	<b>s (kN) a</b>	nd Bearing	g Leng	jths (n	וm) :		_
				1.10						
	⊠ 0			⊠ 3				⊠ 6	7 m	
Unfactored: Dead Live	2.15 4.60			5.86 11.25				3.91 9.83		
Factored: Total Pt. load Bearing:	9.59 0.85			24.20				19.63		
Resistance Beam Support Anal/Des	149.74 149.74		:	149.74 149.74				149.74 149.74		
Beam Support	0.06 0.06			0.16 0.16				0.13 0.13		•

Figure 9: Tutorial 1 – Design Check

# 2 Beam Mode Tutorial 2 - Determine Capacity of a pre-determined Beam Size (CDN)

The Sizer file (.wwb) created from going through this tutorial can be downloaded by clicking <u>here</u>.

#### 2.1 Defining the Parameters

- 1. Start the program in Beam mode.
- 2. Select the *Span* field and enter a span of *5 (m)*.
- 3. From the Span type drop-down menu select Full Span.
- 4. Click Add.
- 5. Select beam type *Roof joist*.
- 6. Select material *Lumber*.
- 7. Select species type S-P-F.
- 8. Select grade *No.1/No.2*.
- 9. Select 38 (mm) width and 184 (mm) depth.
- 10. Input a roof *Pitch* of *4*/12.
- 11. Select *Joist spacing* of *600 mm*.

Spans	Cantilevers	None	Туре	Roof Joist	•	Live = L/ Permanent = L/
5 m	Pitch	4 /12	Material	Lumber	-	Total = L/
	Oblique angle	0 deg.	Species	S-P-F	•	$\Box$ and <= $2$
			Grade	No.1/No.2	-	
Add Delete	_		Width*	38 💌	to 38	▼ mm
Modify	Joist spacing*	600 💌 mm	Depth×	184 💌	to 184	▼ mm
Span type	Load sharing	Case 2	From	to 📃	🚽 plies	
Full span 💌						

Figure 10: Tutorial 2 – Defining Length and Materials of Beam

- 12. Ensure that *Full* Lateral support is provided on the top of the roof joist, lateral support *At supports* for the bottom.
- 13. Input *Supports for Bearing Design* applies to *All supports*.
- 14. Select *Wall* from *Type* list.
- 15. Select *Lumber* from *Material* list.
- 16. Select **S-P-F Species** type.
- 17. Select No.1/No.2 Grade.
- 18. Select 89 (mm) Bearing length.
- 19. Select *Same as joists* for *Bearing width*.

Supports for bea	aring and notch desi	ign
Applies to All	supports 💌	For unknown bearing length
Type W	all	Use exact minimum     Bound     It/2"
Material Lu	mber 💌	closest
Species S-f	P-F ▼	C From list of bearing length choices
Grade No	o.1/No.2 ▼	End supports: round
Bearing w ends or is	here support highly stressed	bearing length choices
	Bearing length*	Bearing width*
Main Lb*	89 💌	Same as joist 💌 mm
Point load*	= Lb 💌	Same as joist 💌 mm
Notch at	None 💌 N	otch depth mm
Notch length:	mm	Notch length = bearing length
✓ Laterally s	upported at support	

Figure 11: Tutorial 2 – Bearing Length Parameters



Figure 12: Tutorial 2 – Beam Display

#### 2.2 Loading the Beam

- 1. Click the *loads* button on the toolbar.
- 2. Choose *Dead* from the *Type* drop-down list.
- 3. Ensuring that the *Distribution* field is *Full Uniform Area*, select the *Magnitude* field and enter a value of *0.5 (kN/m<sup>2</sup>)*.
- 4. Click *Add*.
- 5. Choose *Snow* from the *Type* drop-down list.
- 6. Ensuring that the *Distribution* field is *Full Uniform Area*, select the *Magnitude* field and enter a value of *2.0 (kN/m<sup>2</sup>)*.
- 7. Click *Add*.

			Magnitude	e Width	
Name	Туре	Distribution	kN/m2	mm	
	Snow	🝷 Full Uniform Area 💌	۰þ	600	
Load1	Dead	Full Uniform Area	0.5 kN/m2	600 mm	
Luauz	Snow	Full Onlionn Area	Z KN7111Z	600 mm	
Add	Modif <u>y</u> Delet	e Delete a <u>l</u> l	<u>R</u> epeating p	ooint load	Save as default loads

Figure 13: Tutorial 2 – Load Input

#### 2.3 Designing the Beam

- 1. Click the *Run* button on the toolbar. *Sizer* automatically designs the member.
- 2. You will be asked to enter a file name for your project.
- 3. Click <u>here</u> to download a pdf of the critical analysis diagrams.
- 4. Click <u>here</u> to download a pdf of the design results.

Supports: All - Lumber Wall, S-P-F No.1/No.2

Roof joist spaced at 600 mm c/c; Total length: 5.332 m; volume = 0.037 m^3; Pitch: 4/12; Load sharing: Case 2; Lateral support: top= full, bottom= at supports;

#### This section FAILS the design check

WARNING: This section violates the following design criteria: Bending and deflection

#### Force vs. Resistance and Deflection using CSA-086-09:

Criterion	Analysis Value	Design	Value	Unit	Analysis/Design
Shear	Vf @d = 4.74	Vr =	10.57	kN	Vf/Vr = 0.45
Moment (+)	Mf = 6.58	Mr =	5.35	kN-m	Mf/Mr = 1.23
Perm. Defl'n	13.4 = L/380	14.2 =	L/360	mm	0.95
Live Defl'n	41.9 = L/122	21.3 =	L/240	mm	1.96
Total Defl'n	55.3 = L/92	28.4 =	L/180	mm	1.95

#### Additional Data:

FACTORS:	f/E(MP	a) KD	KH	KZ	KL	KT	KS	KN	LC#
Fv	1.5	1.00	1.40	1.200	-	1.00	1.00	-	#2
Fb+	16.5	1.00	1.40	1.200	1.000	1.00	1.00	-	#2
Fcp	5.3	-	-	1.000	-	1.00	1.00	-	#-
Es	10500	-	-	-	-	1.00	1.00	-	#2
CRITICAL LO	AD COMBIN	VATIONS:							
Shear	: LC #2	= 1.2	5D + (1	.0)1.55					
Moment (+)	: LC #2	= 1.2	5D + (1	.0)1.5S					
Deflectio	n: LC #1	= 1.0	D (per	manent)					
	LC #2	= 1.0	D + (0.	9)1.0S	(live)				
	LC #2	= 1.0	D + (0.	9)1.0S	(total)				
Bearing	: Suppo	rt 1 - 1	LC #2 =	1.25D +	(1.0)1.	5 <b>S</b>			
	Suppo	rt 2 - 1	LC #2 =	1.25D +	(1.0)1.	55			

Load Types: D=dead W=wind S=snow H=earth,groundwater E=earthquake

L=live(use,occupancy) Ls=live(storage,equipment) f=fire All Load Combinations (LCs) are listed in the Analysis output

CALCULATIONS: Deflection: EI = 207e06 kN-mm2 "Live" deflection = Deflection from all non-dead loads (live, wind, snow...) Bearing: Factored compressive resistance at an angle to grain (Nr) calculated for each support as per 086 5.5.8

Figure 14: Tutorial 2 – Design Check (Failure)

#### 2.4 View Results

- 1. Use the scroll bar to look through the Design Results output.
- 2. The Selected section cannot resist the applied load, and *fails in bending and deflection*. Many alternative designs are possible. The following two design changes would allow for the beam to resist the applied load:

## a) Increase beam depth to 286 mm

Force vs. Resista	nce and Deflection	າ using CSA-O86	-09:				
Criterion	Analysis Value	Design Val	ue Unit	Analysis/Design			
Shear	Vf @d = 4.58	Vr = 13.	59 kN	Vf/Vr = 0.33	1		
Moment(+)	Mf = 6.64	Mr = 10.7	77 kN-m	Mf/Mr = 0.62			
Perm. Defl'n	3.8 = <l 999<="" td=""><td>14.2 = L/3</td><td>50 mm</td><td>0.26</td><td></td></l>	14.2 = L/3	50 mm	0.26			
Live Defl'n	11.2 = L/458	21.3 = L/2	10 mm	0.52			
Total Defl'n	14.9 = L/343	28.4 = L/1	30 mm.	0.52			
Additional Data: FACTORS: f/E(MPa) KD KH KZ KL KT KS KN LC# Fv 1.5 1.00 1.40 1.000 - 1.00 1.00 - #2 Fb+ 16.5 1.00 1.40 1.000 1.000 1.00 1.00 - #2 Fcp 5.3 1.000 - 1.00 1.00 - #- Es 10500 1.00 1.00 - #- CRITICAL LOAD COMBINATIONS: Shear : LC #2 = 1.25D + (1.0)1.55 Moment(+) : LC #2 = 1.25D + (1.0)1.55 Deflection: LC #1 = 1.0D (permanent) LC #2 = 1.0D + (0.9)1.0S (live) LC #2 = 1.0D + (0.9)1.0S (total)							
LC #2 = 1.0D + (0.9)1.0S (11Ve) LC #2 = 1.0D + (0.9)1.0S (total) Bearing : Support 1 - LC #2 = 1.25D + (1.0)1.5S Support 2 - LC #2 = 1.25D + (1.0)1.5S Load Types: D=dead W=wind S=snow H=earth,groundwater E=earthquake L=live(use,occupancy) Ls=live(storage,equipment) f=fire All Load Combinations (LCs) are listed in the Analysis output CALCULATIONS: Deflection: EI = 778e06 kN-mm2 "Live" deflection = Deflection from all non-dead loads (live, wind, snow) Bearing: Factored compressive resistance at an angle to grain (Nr) calculated							

Figure 15: Tutorial 2 – Design Check (Alternative 1)

# b) Decrease roof joist spacing to 300 mm on center

Lumber, S-P-F, SS, 38x184 mm Supports: All - Lumber Wall, S-P-F No.1/No.2 Roof joist spaced at 300 mm c/c; Total length: 5.332 m; volume = 0.037 m^3; Pitch: 4/12; Load sharing: Case 2; Lateral support: top= full, bottom= at supports;									
Force vs. Resistance and Deflection using CSA-086-09:									
Criterion	Analysis	Value	Design	Value	Unit		Analysis/I	Design	7
Shear	Vf @d =	2.41	Vr =	10.57	kN		Vf/V1	c = 0.23	7
Moment (+)	Mf =	3.32	Mr =	5.35	kN-m		Mf/M1	r = 0.62	
Perm. Defl'n	7.2 =	L/707	14.2 =	L/360	mm			0.51	
Live Defl'n	20.7 =	L/246	21.3 =	L/240	mm			0.97	
Total Defl'n	27.9 =	L/182	28.3 =	L/180	mm			0.98	
Additional Data: FACTORS: f/E (MPa) KD KH KZ KL KT KS KN LC#									
Fb+ 16.5	1.00	1.40	1.200	1.000	1.00	1.00	) –	#2	
Fcp 5.3	_	_	1.000	_	1.00	1.00		#-	
Es 10500	-	-	_	_	1.00	1.00	) –	#2	
CRITICAL LOAD COM	BINATIONS:								
Shear : LC	#2 = 1.2	5D + (1.	0)1.55						
Moment(+) : LC	#2 = 1.2	5D + (1.	0)1.55						
Deflection: LC	<b>#1 = 1.0</b>	D (perm	anent)						
LC ‡	#2 = 1.0	D + (0.9	)1.0S (1	live)					
LC	<b>#</b> 2 = 1.0	D + (0.9	)1.05 (t	cotal)					
Bearing : Supp	port 1 - 3	LC #2 =	1.25D +	(1.0)1.5	S				
Supp	port 2 - 3	LC #2 =	1.25D +	(1.0)1.5	S				
Load Types: D=de	ead W=wi	nd S=sn	ow H=ear	rth,grou	ndwater	E=e	earthquake		
L=live(use,occupancy) Ls=live(storage,equipment) f=fire									
All Load Combina	All Load Combinations (LCs) are listed in the Analysis output								
CALCULATIONS:			_						
Deflection: EI	= 207	e06 kN-m	m2						
"Live" deflectio	on = Defl	ection f	rom all r	ion-dead	loads	(live	e, wind, sr	now)	
Bearing: Factore	ed compre	ssive re	sistance	at an a	ngle to	grai	ın (Nr) cal	lculated	
for each support	t as per (	086 5.5.	8						

Figure 16: Tutorial 2 – Design Check (Alternative 2)

# 3 Column Mode Tutorial 3 – Determine Column Size Based on Given Loads (CDN)

The Sizer file (.wwc) created from going through this tutorial can be downloaded by clicking here.

#### 3.1 Defining the Parameters

- 1. Start the program in Column mode.
- 2. Select the *Height* field and enter a height of **3** (*m*).

Description			
Height	3 m	Built-up members	5
Туре	Column	From     From     Connection	▼ to ▼ plies
Material	Timber		
Species	(unknown)	-	Deflection limits Live = L/ 180
Grade	(unknown)	•	Permanent = L/ 360
Width	(unknown) 💌 to (t	unknown) 💌 mm	Total = L/ 180
Depth	(unknown) 💌 to (t	unknown) 💌 mm	□ and <= 25.4 mm
Stud spacing*	mm		

Figure 17: Tutorial 3 – Defining Length of Column

Under Lateral Support Spacing for KeL, select Width (b) field and enter 1000 (mm) for the unbraced length in the narrow direction.

Lateral Support Spacing for KeL									
For width (b)	For depth (d)	End conditions							
		Base Top							
		💿 Pinned 🛛 💿 Pinned							
Ke 1	Ke 1	C Fixed C Free							

Figure 18: Tutorial 3 – Specifying Lateral Support

#### 3.2 Loading the Column

- 1. Click *load* on the toolbar.
- 2. Choose *Dead* from the *Type* drop-down list.
- 3. Specify *Axial* as the load *Distribution*.
- 4. Select the *Magnitude* field and enter a magnitude of *25 (kN)*.
- 5. Click *Add*.

File Mode Settings Design View Window Help          Image: Settings Design View Window Help       Image: Settings Design View Window Help         Image: Settings Design View Window Help       Image: Settings Design View Window Help         Image: Settings Design View Window Help       Image: Settings Design View View View View View View View View	👹 WoodWorks® Sizer 9.3.2 - [Column1: Column	Loads]	×
Image:	∰ File Mode Settings Design View Wir	ndow Help	_ <i>&amp;</i> ×
Magnitude       Eccentricity         Image: Dead       Aciai         Dead       Aciai         Cadd       Dead         Aciai       25 kM         Aciai       Aciai         Cadi       Modiy         Delete all       Save as default loads       7         Storage, equipment [15,10]       Importance factor not included in the input load       Importance factor not included in the input load         Importance factor not included in the input load       Importance factor not included in the input load       Importance factor not included in the input load         Importance factor not included in the input load       Importance factor not included in the input load       Importance factor not included in the input load         Importance		¶ ➡ ♬ 🖩 🖼 🖽 🖪 🖉 🖪	No sections generated
Leading       Dead       Axial       251N       Auto         Add       Modig       Delete       Bave as default loads               Apply-auto-eccentricity           Add       Modig       Delete       Bave as default loads              Apply-auto-eccentricity          Suttained five loads due        Importance category and factor               Self-weight	Name Type Dis Dead Vaxial	Magnitude     Eccentricity       tribution     kN       ✓     25	25 kN Dead
Specify load properties then add load or modify selected load.	Dead       Axial         Load1       Dead       Axial         Add       Modify       Delete       D         Sustained live loads due       to (principal, companion)       Storage, equipment (1.5, 1.0)       Importance category and factor         Importance category and factor       Importance factor not included in the input load       Magnitude - the program applies this factor later.         Apply options to       Concept Mode       Save as         Specify load properties then add load or modify sel       Save as	Auto     Auto	

Figure 19: Tutorial 3 – Loading Column

6. Repeat steps 2 to 5 for the following:

Snow, 37 (kN)

Live, 30 (kN)

- 7. Choose *Full Uniform Line* from the *Distribution* pull-down.
- 8. Select the *Magnitude* field and enter a magnitude of 2.2 (kN/m).
- 9. Choose *Wind* from the *Type* drop-down list.
- 10. Click Add.

🕡 WoodWorks® Sizer 9.3.2 - [Column 1: Column Loads]		- C X
	No sections generated	
Image: Self weight       Image: Self weight         Importance category and factor       Image: Self weight         Importance category and factor       Image: Self weight         Importance category and factor       Image: Self weight         Importance factor not included in the input load       Image: Self weight         Importance factor not included in the input load       Image: Self weight         Importance factor not included in the input load       Image: Self weight         Importance factor not included in the input load       Image: Self weight         Importance factor not included in the input load       Image: Self weight         Importance factor not included in the input load       Image: Self weight         Importance factor not included in the input load       Image: Self weight         Importance factor not included in the input load       Image: Self weight         Importance factor not included in the input load       Image: Self weight <td>No sections generated</td> <td>25 kN Dead</td>	No sections generated	25 kN Dead
Specify load properties then add load or modify selected load; or delete selected load.	Δ.	ctivate Windows

Figure 20: Tutorial 3 – Loaded Column

#### 3.3 Designing the Column

- 1. Click the *Run* button on the toolbar. *Sizer* automatically designs the member.
- 2. You will be asked to enter a file name for your project.

#### 3.4 View Design Summary

c) Use the scroll bar to look through the results. Click <u>here</u> to download a pdf of the design summary.

₩ood ∰ File	<sup>™</sup> WoodWorks® Sizer 9.3.2 - [Tutorial_3_column_CDN.wcd: Design Results] <sup>™</sup> File Mode Settings Design View Window Help									□ × - ₽×
俞	D 🕹 🖬 🖷	<b>∂</b>   <b>∩</b>   <b>⇒</b> ₊   <b>Ω</b>			7	V2×4 Select a	section	•		III
==== Load	 1   T	 ?ype  I	)istribut:	ion  Loc	ation	Magi	nitude	Unit		^
				Star	t End	Start	End			
Load	il De	ead I	xial	Ecc.	= Auto	) 25.00		kN		
Load	12 Sr	now I	xial	(Ecc.	= Auto	) 37.00		kN		
Load	13 Li	ve I	xial	(Ecc.	= Auto	) 30.00		kN		
Load	14 Wi	nd H	ull UDL			2.20		kN/m		
Load	d magnitude d	loes not includ	le Normal	Importan	ice facto	or from O	86 Table	4.2.3.2, w	hich	
is a	applied during	g analysis.								
====										
SUGG	SESTED SECTION	IS that PASSED	the CODE	CHECK:						
====	Creates			Dendingl	Comble					
	Species		AXIdi	Benuing	COMP. a	Silear	DISP./			
	Grade		PI/Pr	MI/ME		VI/Vr	ALLOW.	m^3		
	D Fir-I.									
1	No 2	191-191	0 48	0 46	0 69	0 10	0 14	0 109		
2	No.1	140x191	0.43	0.27	0.05	0.14	0 15	0.080		
3	55	140x140	0.43	0.36	0.78	0.19	0.39	0.059		
	Hem-Fir	140/140	0.05	0.00	0.70	0.15	0.00	0.000		
4	No.2	191×191	0.58	0.61	0.97	0.13	0.17	0.109		
5	No.1	140x191	0.51	0.37	0.66	0.18	0.18	0.080		
6	SS	140x191	0.45	0.28	0.49	0.18	0.18	0.080		
Ŭ	S-P-F	11011101	0.10	0.20	0.15	0.10	0.10	0.000		
7	No.2	191x241	0.51	0.49	0.80	0.11	0.10	0.138		
8	No.1	140x191	0.59	0.39	0.79	0.18	0.22	0.080		
9	SS	140x191	0.52	0.30	0.58	0.18	0.22	0.080		
-	Northern									
10	No.2	241x241	0.52	0.42	0.73	0.11	0.09	0.174		
11	No.1	191x191	0.54	0.31	0.61	0.15	0.17	0.109		
12	SS	140x191	0.66	0.31	0.78	0.21	0.23	0.080		
Con	nb'd = (Pf/Pr)	$^{2} + Mf/(Mr(1-$	Pf/Pe)).							
>>Fc	or more detail	led output, sel	ect a Sug	gested S	ection f	from the 1	Data Bar	.<<		
View ee c	• • • • • • • • • • • • • • • • • • •									~
new or prir	it suggested column sectio	ns and their design performal	inclusion in the second					$\wedge$	tivate Minc	IONIC /

Figure 21: Tutorial 3 – Design Summary

#### 3.5 View Analysis Diagrams

1. Click *diagram* in the toolbar to view reactions, shear, bending moments and deflection diagrams. Click <u>here</u> to download a pdf of the critical analysis diagrams.



Figure 22: Tutorial 3 – View Diagrams

#### 3.6 Perform a Detailed Design on a Specific Section

1. Choose *D.Fir-L SS* 140x140 from the *Suggested Sections* drop-down list on the status bar. *Sizer* automatically performs a detailed design for this section.

∡ File Mode Settings Design View Wind	ow Help					
Image: Contract of the second secon	⇒+ !,, [		Deflection Results:	✓ III √2×4 (Total ▼	Select a section Select a section D. FirL No.2 191x191 D. FirL No.2 1140x191	•
REACTION [kN] +Rmax: 5.15 -Rmax: -1.08 Bearing: 101.75	SHEAR [kN] +Vf max: -Vf max:	5.15 -4.09		BENDING [ kN-m +Mf max:	D. Firel. SS 140x140 Hem-Fir No.2 191x191 Hem-Fir No.2 191x191 Hem-Fir SS 140x191 S-P-F No.2 191x241 S-P-F No.1 140x191 S-P-F SS 140x191 Northern No.2 241x241 Northern No.1 191x191 Northern SS 140x191	[mm Liv Iot Per

Figure 23: Tutorial 3 – Selecting Alternative Columns

- 2. Use the scroll bar to look through the results.
- Repeat step 1 to perform a detailed design on any other section listed in the *Suggested sections* drop-down list. Click <u>here</u> to download a pdf of the Design Results.

👹 WoodWorks® Sizer 9.3.2 - [Tut	orial_3_column_CDN	l.wcc: Design Ch	eck]							– 🗆 ×
😰 File Mode Settings Design View Window Help									_ & ×	
		Tir	nber, D.F	ir-L, SS, <sup>,</sup>	140x140 r	nm				^
			Supp	oort: Non-w	vood					
	Tota	al length: 3	3.0 m; volu	me = 0.05	9 m^3; Po	st and	d timber;			
Pinned b	base; Load fa	ace = width	n(b); Ke x l	_b: 1.0 x 1	.0 = 1.0 [m	]; Ke	e x Ld: 1.0 x	3.0 = 3.0 [n	n ];	
Force vs. Resista	nce and De	eflection	using CS	A-086-09	:					
Criterion	Analysis	Value	Design	Value	Unit		Analysis/	Design		
Shear	Vf =	5.01	Vr =	26.37	kN		Vf/V	r = 0.19		
Moment(+)	Mf =	4.07	Mr =	11.26	kN-m		Mf/M	ir = 0.36		
Axial b	Pf = 1	.02.10	Pr =	274.88	kN					
Axial d	Pf = 1	.02.10	Pr =	161.55	kN		Pf/F	Pr = 0.63		
Combined	Mf =	2.38	Mr =	9.79	kN-m		Mf/M	ir = 0.24		
Combined	Pf = 1	.02.10	Pr =	161.55	kN		Pf/P	r = 0.63		
Combined			(1	Pf/Pr)^2	+ (M1/M	r)*]	/(l-Pf/Pe	= 0.78		
Perm. Defl'n	0.9 = <	L/999	8.3 =	L/360	mm			0.11		
Live Defl'n	5.1 =	L/588	16.7 =	L/180	mm			0.31		
Total Dell'n	6.0 =	Ц/503	16./ =	L/180	mm			0.36		
Additional Data:										
FACTORS: f/E(	MPa) KD	KH	KZ	KC	KL	KI	KS KS	LC#		
Fv 1.5	1.15	1.00	1.300	-	-	1.0	0 1.00	#10		
Fb+ 18.3	1.15	1.00	1.300	-	1.000	1.0	0 1.00	#10		
Es 12000	-	-	-	-	-	1.0	0 1.00	#10		
E05 8000	-	-	-	-	-	1.0	0 1.00	#7		
Fcb 13.8	1.00	1.00	1.300	0.977	-	1.0	0 1.00	#7		
Fcd 13.8	1.00	1.00	1.170	0.638	-	1.0	0 1.00	#7		
Comb'd Fc 13.8	1.00	1.00	1.170	0.638	-	1.0	0 1.00	#7		
Comb'd Fb 18.3	1.00	1.00	1.300	-	1.000	1.0	0 1.00	#7		
CRITICAL LOAD CO	DMBINATION	IS:								
Shear : LC	#10 = 1.25	D + (1.0	))1.4W +	(1.0)0.	5S					
Moment(+) : LC	#10 = 1.25	D + (1.0	))1.4W +	(1.0)0.	5S					
Deflection: LC	#1 = 1.00	) (perma	anent)							
LC	#10 = 1.00	) + (0.7	5)1.0W +	(0.9)0.	5S (liv	e)				~
									Active	to Windows

Figure 24: Tutorial 3 – Design Check

## 4 Column Mode Tutorial 4 - Solid Sawn Column Check (CDN)

This is the same problem of Example 3 on page 118 of the Wood Design Manual 2015. To recreate the example it will be necessary to run the design using the CSA O86-14. Go to the settings design tab to ensure you are running the model using the correct design standard. The Sizer file (.wwc) created from going through this tutorial can be downloaded by clicking <u>here</u>.

#### 4.1 Defining the Parameters

- 1. Start the program in Column mode.
- 2. Select the *Height* field and enter a height of **7** (*m*).
- 3. Select *Column* from the *Type* list.
- 4. Select *Glulam-c* from the *Material* list.
- 5. Select *Spruce-Pine* from the *Species* list.
- 6. Select *No.1* from the *Grade* list.
- 7. Select 175 (mm) for the width and 228 (mm) for the depth of the column.

Description		
Height	7 m	Built-up members
Туре	Column	From to plies
Material	Glulam-c 💌	
Species	Spruce-Pine	Deflection limits Live = L/ 180
Comb'n	12c-E 💌	Permanent = L/ 360
Width	175 <b>•</b> to 175	▼ mm Total = L/ 180
Depth	228 💌 to 228	▼ mm
Stud spacing*	mm	
Modification I	actors	
Load sharing	None 💌	Treatment None 💌
Service con	ditions Dry 💌	Fire-retardant factor

Figure 25: Tutorial 4 – Defining Length of Column

- 9. Under Lateral Support for *KeL*, ensure that the spacing for the width and depth are both specified as *unbraced*, and that the end-conditions are specified as *Pinned-Pinned*.
- 10. Under *Lateral Support Spacing for KeL*, select *Width (b)* field and enter *3500 (mm)* for the unbraced length in the narrow direction.

Lateral Support Spacing for KeL									
For width (b)	For depth (d)	End con	ditions						
		Base	Тор						
		Pinned	Pinned						
Ke 1	Ke 1	C. Fixed	C. Free						
1	1		. 1100						

Figure 26: Tutorial 4 – Lateral Support Input

#### 4.2 Loading the Column

- 1. Click *load* on the toolbar.
- 2. Choose *Dead* from the *Type* drop-down list.
- 3. Specify *Axial* as the load *Distribution*.
- 4. Select the *Magnitude* field and enter a magnitude of *45 (kN)*.
- 5. Click *Add*.
- 6. Repeat steps 2 to 5 for the following: *Snow, 105 (kN)*.
- 7. In the Self-Weight dialog box select *must be manually input as load*.
- 8. Under the load input window, ensure the *Apply auto-eccentricity % from Design Settings* is not toggled.

👹 WoodWorks® Sizer 9.3.2 - [Tutorial_4_CDN.wwc:	Column Loads]	- 🗆 ×
File Mode Settings Design View Window	W Help	- 8 ×
Name Type Distrib	Magnitude Eccentricity 45 kN 105 kN ution kN (mm) Dead Snow	
Snow Axial	▼ 105 0	
Load1 Dead Axial	45 kN 0 mm	7 ر
Add     Modify     Delete     Delete       Sustained live loads due to (principal, companion)     S       Storage, equipment (1.5, 1.0)     Importance category and factor       Importance category and factor       Importance factor not included in the input load       Magnitude - the program applies this factor later.       Concept Mode       Save as de	te all Save as default loads Apply auto-eccenticity ell-weight Automatically included in loads analysis Automatically included in loads analysis Must be manually input as load ad face (all loads) Wridth (b) Depth (d) plions Combine loads of same type in drawing Live and sown loads come directly from exteriors surface fault settings Reset original settings	

Figure 27: Tutorial 4 – Loading Column

#### 4.3 Designing the Column

- 1. Click the *Run* button on the toolbar. *Sizer* automatically designs the member.
- 2. You will be asked to enter a file name for your project.
- 3. Click <u>here</u> to download a pdf of the critical analysis diagrams.

#### 4.4 View Results

- 1. Use the scroll bar to look through the results.
- 2. To print these results, click the *print* button on the toolbar. Click <u>here</u> to download a pdf of the design results.

WoodWorks® Sizer 9.3.2 - [Tutorial_4_CDN.wcc: Design Check]	-	
🕼 File Mode Settings Design View Window Help		_ 8 ×
		^
Lateral Reactions (kN):		
7 m —	4	
8	a →	
	, 윤	
0 7	m	
	m	
Glulam-c. Spruce-Pine, 12c-E, 175x228 mm		
175mm maximum Jamination width		
Support: Non-wood		
Total lends 7.0 m volume = 0.279 m <sup>A</sup> 3		
Diameter base Load face = width (b): Ke v Lb: $10 x 35 = 355 \text{ m}^{-1}$ ; Ke v Ld: $10 x 70 = 70 \text{ m}^{-1}$ ;		
Finited base, Load lace – width(b), Ne X Eb. 1.0 X 0.0 – 0.0 [in ], Ne X Ed. 1.0 X 1.0 – 1.0 [in ],		
Force via Registence and Reflection using CRA COS 00:		
Criterion Analysis Value Design Value Unit Analysis/Design		
Axial b Pf = 213.75 Pr = 417.12 kN		
Axial d Pf = 213.75 Pr = 216.53 kN Pf/Pr = 0.99		
Axial d         Pf = 213.75         Pr = 216.53         kN         Pf/Pr = 0.99		
Axial d         Pf = 213.75         Pr = 216.53         kN         Pf/Pr = 0.99           Additional Data:		
Axial d         Pf = 213.75         Pr = 216.53         kN         Pf/Pr = 0.99           Additional Data:         FACTORS:         f/E (MPa) KD         KH         KZ         KC         KL         KT         KS         Cv         LC#		
Axial d         Pf = 213.75         Pr = 216.53         kN         Pf/Pr = 0.99           Additional Data:         FACTORS:         f/E (MPa) KD         KH         KZ         KC         KL         KT         KS         CV         LC#           E05         8439         -         -         -         -         1.00         1.00         -         #2		
Axial d       Pf = 213.75       Pr = 216.53       kN       Pf/Pr = 0.99         Additional Data:       FACTORS:       f/E (MPa) KD       KH       KZ       KC       KL       KT       KS       CV       LC#         E05       8439       -       -       -       -       1.00       1.00       -       #2         Fcb       25.2       1.00       1.00       0.803       0.646       -       1.00       1.00       -       #2		
Axial d       Pf = 213.75       Pr = 216.53       kN       Pf/Pr = 0.99         Additional Data:       FACTORS:       f/E (MPa) KD       KH       KZ       Kc       KL       KT       KS       CV       LC#         E05       8439       -       -       -       -       1.00       1.00       -       #2         Fcb       25.2       1.00       1.00       0.803       0.646       -       1.00       1.00       -       #2         Fcd       25.2       1.00       1.00       0.803       0.335       -       1.00       1.00       -       #2		
Axial d       Pf = 213.75       Pr = 216.53       kN       Pf/Pr = 0.99         Additional Data:       FACTORS:       f/E (MPa) KD       KH       KZ       Kc       KL       KT       KS       CV       LC#         E05       8439       -       -       -       -       1.00       1.00       -       #2         Fcb       25.2       1.00       1.00       0.803       0.646       -       1.00       1.00       -       #2         Fcd       25.2       1.00       1.00       0.803       0.335       -       1.00       1.00       -       #2         CRITICAL LOAD COMBINATIONS:       -       -       -       -       -       #2       -		
Axial d       Pf = 213.75       Pr = 216.53       kN       Pf/Pr = 0.99         Additional Data:         FACTORS:       f/E (MPa) KD       KH       KZ       KC       KL       KT       KS       CV       LC#         E05       8439       -       -       -       -       1.00       1.00       -       #2         Fcb       25.2       1.00       1.00       0.803       0.646       -       1.00       1.00       -       #2         Fcd       25.2       1.00       1.00       0.803       0.335       -       1.00       1.00       -       #2         CRITICAL LOAD COMBINATIONS:       Axial       : LC #2       =       1.25D + (1.0)1.5S       Load       Function for the second Manual for the second Manual for the second for the sec		
Axial d       Pf = 213.75       Pr = 216.53       kN       Pf/Pr = 0.99         Additional Data:         FACTORS:       f/E (MPa) KD       KH       KZ       KC       KL       KT       KS       CV       LC#         E05       8439       -       -       -       -       1.00       1.00       -       #2         Fcb       25.2       1.00       1.00       0.803       0.646       -       1.00       1.00       -       #2         Fcd       25.2       1.00       1.00       0.803       0.335       -       1.00       1.00       -       #2         Fcd       25.2       1.25D       + (1.0)1.55       -       -       -       #2         CRITICAL LOAD COMBINATIONS:       -       -       -       -       -       -       #2         Axial       : LC #2       = 1.25D + (1.0)1.55       -       -       -       -       -       #2         Load Types:       D=dead W=wind S=snow       H=earth, groundwater       E=earthquake       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -		
Axial d       Pf = 213.75       Pr = 216.53       kN       Pf/Pr = 0.99         Additional Data:         FACTORS:       f/E (MPa) KD       KH       KZ       KC       KL       KT       KS       CV       LC#         E05       8439       -       -       -       -       1.00       1.00       -       #2         Fcb       25.2       1.00       1.00       0.803       0.646       -       1.00       1.00       -       #2         Fcd       25.2       1.00       1.00       0.803       0.335       -       1.00       1.00       -       #2         Fcd       25.2       1.00       1.00       0.803       0.335       -       1.00       1.00       -       #2         CRITICAL LOAD COMBINATIONS:       Axial       : LC #2       =       1.25D + (1.0)1.5S       Load Types: D=dead W=wind S=snow H=earth, groundwater E=earthquake L=live(use, occupancy) Ls=live(storage, equipment) f=fire         All Load Combinations       [LCS]       are listed in the Analysis output       f=fire		
Axial d       Pf = 213.75       Pr = 216.53       kN       Pf/Pr = 0.99         Additional Data:       FACTORS:       f/E (MPa) KD       KH       KZ       KC       KL       KT       KS       Cv       LC#         E05       8439       -       -       -       -       1.00       1.00       -       #2         Fcb       25.2       1.00       1.00       0.803       0.646       -       1.00       1.00       -       #2         Fcd       25.2       1.00       1.00       0.803       0.335       -       1.00       1.00       -       #2         CRITICAL LOAD COMBINATIONS:       Axial       :       LC #2       = 1.25D + (1.0)1.5S       Load Types: D=dead W=wind S=snow H=earth, groundwater E=earthquake L=live(use, occupancy)       Ls=live(storage, equipment) f=fire         All Load Combinations (LCs) are listed in the Analysis output       CALCULATIONS:       CALCULATIONS:		
Axial d       Pf = 213.75       Pr = 216.53       kN       Pf/Pr = 0.99         Additional Data:         FACTORS:       f/E (MPa) KD       KH       KZ       KC       KL       KT       KS       CV       LC#         E05       8439       -       -       -       -       1.00       1.00       -       #2         Fcb       25.2       1.00       1.00       0.803       0.646       -       1.00       1.00       -       #2         Fcd       25.2       1.00       1.00       0.803       0.335       -       1.00       1.00       -       #2         CRITICAL LOAD COMBINATIONS:       Axial       :       LC #2       = 1.25D + (1.0)1.5S       1.00       1.00       -       #2         Load Types:       D=dead W=wind S=snow H=earth, groundwater E=earthquake L=live(use, occupancy) Ls=live(storage, equipment) f=fire       All Load Combinations (LCs) are listed in the Analysis output         CALCULATIONS:       "Live" deflection = Deflection from all non-dead loads (live, wind, snow )       Nind       Snow )		
Axial d       Pf = 213.75       Pr = 216.53       kN       Pf/Pr = 0.99         Additional Data:         FACTORS:       f/E (MPa) KD       KH       KZ       KC       KL       KT       KS       CV       LC#         E05       8439       -       -       -       -       1.00       1.00       -       #2         Fcb       25.2       1.00       1.00       0.803       0.646       -       1.00       1.00       -       #2         Fcd       25.2       1.00       1.00       0.803       0.335       -       1.00       1.00       -       #2         CRITICAL LOAD COMBINATIONS:       Axial       :       LC #2       = 1.25D + (1.0)1.5S       1.00       1.00       -       #2         Load Types:       D=dead       W=wind S=snow       H=earth, groundwater       E=earthquake       L=live(use, occupancy)       Ls=live(storage, equipment)       f=fire         All Load Combinations (LCS) are listed in the Analysis output       CALCULATIONS:       "Live" deflection = Deflection from all non-dead loads (live, wind, snow)         Axial d governs;       CCD = 20.0;       CCd = 30.7		

Figure 28: Tutorial 4 – Design Check

### 5 Concept Mode Tutorial 5 – Two Storey House (CDN)

The Sizer file (.wwa) created from going through this tutorial can be downloaded by clicking here.

#### 5.1 Introduction

In this tutorial you will create and design a commercial two-story wood-frame structure with a pitched roof as shown (in cross-section) below.



Figure 29: Concept Mode Tutorial 5 – Side View

To begin, ensure that you are in the Concept mode by selecting *Concept* from the *Mode* menu.

#### 5.2 Company Information

- 1. Click *Settings* to open the settings window.
- 2. Navigate to the Company Information tab and enter relevant company information.

Settings	×		
Preferences Design Default Values Format Company Information Project Description Design Notes			
Your company logo appears in the enhanced text output for all projects. Enter the location of a JPEG, GIF, BMP, or PNG file.			
Logo Browse			
Lines 1-4 appear in all other text output files, and in the enhanced design check if a logo is not found.			
Line 1 Company Name			
Line 2 Company Address			
Line 3 Company Telephone Number			
Line 4 Company E-mail Adress			
Save as default for new files			
Note: This information is not saved to individual member or Concept files.			
	OK Cancel		

Figure 30: Concept Mode Tutorial 5 – Company Information

#### 5.3 Project Description

- 1. Now click on the *Project Description* tab.
- 2. Enter relevant project information.

Settings		×
Preferences   Design   Default Values   Format   View   Company Information   Project Description   Design Notes		
Lines 1-4 will appear on text output for this file only. Enter a brief description, client name, job number, etc. Maximum 36 characters per line.		
Line 1 Building 1		
Line 2 Ottawa, ON, Canada		
Line 3 Mr. WoodWorks		
Line 4 JobNumber01		
Use the "Window" menu item to navigate between open member files		
Save as default for new files		
Note: This information is saved to the project file and to individual member and Concept files.		
	ОК	Cancel

Figure 31: Concept Mode Tutorial 5 – Company Information

#### 5.4 Snap Increment and Display Options

- 1. Click on the *View* tab.
- In the Viewing Area field, increase the North-South limit to 20 (m) and the East-West limit to 32 (m).
- 3. Enter North-South and East-West Snap Increments of 400 (cm).
- 4. Switch the **Display...** Group Names option to on, so that an ' $\checkmark$ ' appears in this field.

Settings	×
Preferences Design Default Values Format View Company Information Project Description Design Notes	
Viewing area	
North-South 20 m These settings apply to Concept Mode, Plan View	
East-West 32 m	
Display	
Snap increment Snapped co-ordinate in status bar	
North-South 400 cm I Member names	
East-West 400 cm Group names Gridpoint elevations	
Save as default for new files Reset original settings	
Note: This information is saved to the Concept mode file.	
OK Cancel	

Figure 32: Concept Mode – Tutorial 5 View Settings

- 5. Click *OK*.
- 6. (Optional) To save these settings as default settings, select *Save New Settings* under the *Settings* menu.

#### 5.5 Levels Above Grade

- 1. Click on the *Levels* button from the main toolbar.
- 2. Enter a roof elevation of *6 (m)*. Click *Add*. Click *OK*.
- Click on *Floor 1* so that it is highlighted. Click *OK*. (This will change the current level to *Floor 1*).

群 File Mode Settings Edit Design View Window Help	
	Le
Floor and Roof Levels	
10	

Figure 33: Concept Mode Tutorial 5 – Floor and Roof Levels

#### 5.6 Gridlines

- 1. Click on the *Grid* button from the main toolbar.
- 2. Click at the following **X** and **Y** locations on the grid:

X = 0 (m)	Y = 0 (m)
X = 4 (m)	Y = 4 (m)
X = 8 (m)	Y = 8 (m)
X = 12 (m)	Y = 12 (m)
X = 16 (m)	Y = 16 (m)
X = 20 (m)	Y = near edge of scale

<u>Note:</u> If you do not get the gridlines in the correct location when clicking, you can modify their locations in the Gridline input window beside the level selection.



Figure 34: Concept Mode Tutorial 5 – Gridline Placement

#### 5.7 Floor Level

#### 5.7.1 Columns

- 1. Click *Column* on the toolbar.
- 2. Click on the *Material Design Groups* Tab to define an additional column group.
- 3. Enter a new name in the *Name* field: *Centre*.
- 4. Click Add.
- 5. Click *Yes* in the warning window.
- 6. Press **OK** to exit the Column Design Groups window.



Figure 35: Concept Mode Tutorial 5 – Material Design Groups

Name Centre	✓ This group to be designed by WoodWorks Sizer		
Column1 Centre	Material     Timber     Deflection Limits       Species     D.Fir-L     Live:     L/     180       Grade     No.2     Total:     L/     180		
	Width (unknown) 💌 to (unknown) 💌 mm		
Add	Depth (unknown) 💌 to (unknown) 💌 mm		
Delete	Spacing mm		
Rename	Load transfer # 0		
	Laterally supported (b)		
ОК	Laterally supported (d)     Case 2 load sharing     Fire resistance		
Cancel	No. of sides exposed 0 v (0 = no rating) Fire endurance rating 0 min.		
	Fire protection None		

Figure 36: Concept Mode Tutorial 5 – Column Design Groups

- 6. In the main menu, choose *Centre* from the *Groups* drop-down list on the data bar.
- 7. Ensure the *Level* is set to *Floor 1*.
- 8. Click gridpoints *A-3*, *B-3*, *C-3*, *D-3*, *E-3*, and *F-3*.
- 9. Choose *Column1* from the *Group* drop-down list on the data bar.
- 10. Click all remaining gridpoints.



Figure 37: Concept Mode Tutorial 5 – Column Locations Level 1

#### 5.7.2 Walls

- 1. Click *Walls* on the toolbar.
- 2. Click *Design, Design Groups* to define an additional wall group.
- 3. Enter a new name in the *Name* field: *Wall2*.
- 4. Click *Add*.
- 5. Click **Yes** in the warning window.
- 6. Click **OK** to exit Wall Design Groups Window.

Wall Design Groups	
Name Wall2	This group to be designed by WoodWorks Sizer
Wall1 Wall2	Material Lumber
	Species S-P-F
	Grade No.1/No.2
	Width* 38 💌 to 38 💌 mm
Add	Depth* (unknown) 💌 to (unknown) 💌 mm
Delete	Spacing 600 mm
Rename	Load transfer # 0
	✓ Laterally supported (b) ✓ Dry service
ОК	Laterally supported (d)     Case 2 load sharing
	Fire resistance
Lancel	No. of sides exposed 0 v (0 = no rating)
	Fire endurance rating 0 min.
	Fire protection None 💌

Figure 38: Concept Mode Tutorial 5 – Wall Design Groups

- 7. Choose *Wall1* from the *Group* drop-down list on the data bar.
- 8. Point to gridpoint *F-1*, click and drag a wall to *F-3*.
- 9. Choose *Wall2* from the *Group* drop-down list on the data bar.
- 10. Point to gridpoint *F-3*, click and drag a wall to *F-5*.



Figure 39: Concept Mode Tutorial 5 – Wall Locations Level 1

#### 5.7.3 Beams

- 1. Click *Beam* on the toolbar.
- 2. Click *Design Groups* to add a beam group.
- 3. Select the *Glulam-E* material type in the *Material* field.
- 4. Select the *Name* field and enter a new name: *Purlin*.
- 5. Enter a value of **1** in the *Load Transfer* box.
- 6. Click *Add*.
- 7. Click **Yes** in the warning window.
- 8. Click **OK** to exit Beam Design Groups Window.

Beam Design Groups			
Name Purlin	▼ This group to be designed by WoodWorks Sizer		
Beam1 Purlin	Material Glulam-E		
	Species D. Fir-L		
	Comb'n 20f-E Total: L/ 180		
	Width* (unknown) 💌 to (unknown) 💌 mm		
Add	Depth* (unknown) 💌 to (unknown) 💌 mm		
Delete	Spacing mm		
Rename	Load transfer # 1		
	✓ Laterally supported (top)		
οκ	Laterally supported (bottom) Case 2 load sharing		
	Fire resistance		
Cancel	No. of sides exposed 3 💌 (0 = no rating)		
	Fire endurance rating 45 min.		
	Fire protection None		

Figure 40: Concept Mode Tutorial 5 – Beam Design Groups

9. Click on gridpoint *A-1*, click and drag a beam to *A-3*.

10. Repeat step 9 to create beams spanning in the North-South direction as seen below.



Figure 41: Concept Mode Tutorial 5 – Beam1 Locations Level 1

- 11. Choose *Purlin* from the *Group* drop-down list on the status bar.
- 12. Point to gridpoint *A-1*, click and drag a beam to *B-1*.
- 13. Repeat step 11 to create single span beams spanning in the East-West direction as seen below.



Figure 42: Concept Mode Tutorial 5 – Purlin Locations Level 1

#### 5.7.4 Joists

- 1. Click on the *Joist* button.
- 2. Click gridpoints *A-1*, *B-1*, *B-3* and *A-3* to create the first joist area.
- 3. Repeat step 2 to create the joist areas as shown above.
- 4. Click gridpoints *E-5*, *E-4*, *D-4* and *D-5*.

<u>Note</u>: In this case, the joists could span either North-South or East-West. You can change the direction you wish the joists to span by highlighting the joist area and then changing the direction indicated in the Direction field of the data bar.



Figure 43: Concept Mode Tutorial 5 - Placing Floor Joists Level 1

5. Repeat step 4 to create the remaining joist areas as shown above.

<u>Note</u>: The Concept Mode Data bar can be moved to a different location on screen for ease of use by clicking on the Data Bar and while holding the mouse button down, dragging the Data Bar around the screen.



Figure 44: Concept Mode Tutorial 5 – Floor Joist Locations and Orientations Level 1

#### 5.8 Loads

- 1. Click *Load* on the toolbar.
- 2. The *Load Type* should be set to *Dead Area*. Enter a load magnitude of *1 (kN/m2)* in the right most field of the data bar.
- 3. Click gridpoints *A-1*, *F-1*, *F-5*, and *A-5* to load the area.



Figure 45: Concept Mode Tutorial 5 – Applying Dead Load to Level 1

- 4. Choose Live Area from the Load Type drop-down list on the data bar.
- 5. Enter a load magnitude of **2.5** (*kN/m2*) in the data bar.
- 6. Click gridpoints *A-1*, *F-1*, *F-5*, and *A-5* to load the area.



Figure 46: Concept Mode Tutorial 5 – Applying Live Load to Level 1

#### 5.9 Roof Level

#### 5.9.1 Gridlines

- 1. Click the right mouse button. Click on *Roof* to change the current level.
- 2. Press **OK**.

Floor and	d Roof L	evels	
	Level	Elevation 6	m
I I	Eloor 1	3 m	
	Roof	6 m	
	· · · · · · · · · · · · · · · · · · ·		
	.opy sele	ctea level wi	nen adding
Ad	bb	Modify	Delete
	OK		Cancel

Figure 47: Concept Mode Tutorial 5 – Roof Level

- 3. Click on *Grid* from the toolbar.
- 4. Select gridpoint *A-3* so that it is highlighted in red (both gridline *A* and *3* should appear in red).
- 5. Select the *Gridpoint Elevation* field from the data bar and enter an elevation of **7** (*m*) and press **Enter**.
- 6. Press **OK** in the warning screen to move the gridpoint to an elevation of 7 m.
- 7. Create elevations of **7** *m* at the following locations: **B-3**, **C-3**, **D-3**, **E-3**, and **F-3**.



Figure 48: Concept Mode Tutorial 5 – Adjusting Roof Height

#### 5.9.2 Columns

- 1. Click *Column* on the toolbar.
- 2. Choose *Centre* from the *Group* drop-down list on the data bar.
- 3. Click gridpoints A-3, B-3, C-3, D-3, E-3, and F-3.



Figure 49: Concept Mode Tutorial 5 – Placing Columns at Roof level

#### 5.9.3 Walls

- 1. Click *Wall* on the toolbar.
- 2. Choose *Wall1* from the *Group* drop-down list on the data bar.
- 3. Point to gridpoint *F-1*, click and drag a wall to gridpoint *F-3*.
- 4. In a similar manner, create the remaining walls as shown on the left screen.

<u>Note</u>: You cannot define a continuous stud wall for either the North or South walls since the beams that support these walls from below are not continuous over the columns.



Figure 50: Concept Mode Tutorial 5 – Placing Walls at Roof

#### 5.9.4 Beams

- 1. Click *Beam* on the toolbar.
- 2. Click *Design Groups* to define an additional beam group.
- 3. Select the *Name* field and enter a new name: *Ridge*.
- 4. Choose *Glulam-E* from the *Material* drop-down list.
- 5. Click *Add*.
- 6. Click Yes in the warning screen.
- 7. Click *OK*.
- 8. Choose *Ridge* from the *Group* drop-down list on the data bar.

Beam Design Groups	
Name Ridge	✓ This group to be designed by WoodWorks Sizer
Beam1 Purlin	Material Glulam-E
Ridge	Species D. Fir-L
	Comb'n 20f-E Total: L/ 180
	Width* (unknown) 💌 to (unknown) 💌 mm
Add	Depth* (unknown) 💌 to (unknown) 💌 mm
Delete	Spacing mm
Rename	Load transfer # 1
	✓ Laterally supported (top)
ок	Laterally supported (bottom) Case 2 load sharing
	Fire resistance
Cancel	No. of sides exposed 0 💌 (0 = no rating)
	Fire endurance rating 0 min.
	Fire protection None

Figure 51: Concept Mode Tutorial 5 - Adding Ridge Beam to Beam Design Group

- 8. Point to grid point *A-3*, click and drag a beam to *B-3*.
- 9. Repeat step 8 to create beams between: *B-3* and *C-3*, *C-3* and *D-3*, *D-3* and *E-3*, *E-3* and *F-3*.



Figure 52: Concept Mode Tutorial 5 – Ridge Beam Locations at Roof

#### 5.9.5 Joists

- 1. Click *Joist* on the toolbar.
- 2. Click *Design Groups* to define an additional joist group.
- 3. Select *Roof Joist* in the *Type* field.
- 4. Select the *Name* field and enter a new name: *Parall.Truss.*
- 5. Click the check box beside **To Be Designed**. (This tells *Sizer* not to size the members belonging to this group. Use this feature to model trusses or non-wood load-bearing members in the structure.)
- 6. Click *Add* and then click *OK*.
- 7. Click **Yes** in the warning screen.
- 8. Choose *Parall.Truss* from the *Group* drop-down list in the status bar.

Litt Deline Course						
Joist Design Groups						
Group Type						
Roof Joists	This group to be designed by WoodWorks SIZER					
C Floor Joists	Material Lumber					
Roof Groups	Species S-P-F Live: L/ 240					
Name Parall.Truss.	Grade No.1/No.2 Total: L/ 180					
Parall. Truss.	Width* (unknown) 💌 to (unknown) 💌 mm					
	Depth* (unknown) 💌 to (unknown) 💌 mm					
Add	Spacing 600 💌 mm					
Benama	Laterally supported (top)					
Tendine	□ Laterally supported (bottom) □ Case 2 load sharing					
OK	Floor Joist Vibration					
	Sheathing thickness					
Cancel	Lateral support					
	Connection of subfloor					

Figure 53: Concept Mode Tutorial 5 – Adding Parallel Truss to Joist Design Groups

8. Click gridpoints *A-1*, *B-1*, *B-3*, and *A-3* to create the first joist area.



9. Repeat step 8 to create the remaining joist areas as shown on the left screen.

Figure 54: Concept Mode Tutorial 5 – Truss Locations and Orientations at Roof

#### 5.9.6 Elevation View

- 1. Click on the *Grid* button from the toolbar.
- 2. Click on gridline **A** so that it is highlighted in red.
- 3. Click on *Elev. View* from the toolbar.
- 4. The elevation view along the North-South gridline "A" is now shown.
- 5. To see successive views along gridlines *B*, *C*, *D*, *etc*. click the *Grid* button, and repeat Steps 1 and 2.
- 6. To return to the main window, click any of the toolbar buttons.



Figure 55: Concept Mode Tutorial 5 – Elevation View along Gridline A

#### 5.9.7 Loads

- 1. Click *Load* on the toolbar.
- 2. Choose *Dead Area* from the *Type* drop-down list on the data bar.
- 3. Enter a load magnitude of *1 (kN/m2)* in the data bar.
- 4. Click gridpoints *A-1*, *F-1*, *F-5* and *A-5* to load the area.



Figure 56: Concept Mode Tutorial 5 – Applying Dead Load to Roof

#### 5.10 Design the Members

1. Click *Design* on the toolbar. *Sizer* designs all of the members in your structure and then displays the results.

#### 5.11 View Results

- 1. Use the scroll bar to look through the results.
- 2. To close the results window, click on any of the *View* toolbar buttons.
- 3. Click <u>here</u> to download a pdf of the material list.
- 4. Click <u>here</u> to download a pdf of the reactions at base.
- 5. Click <u>here</u> to download the results by group.
- 6. Click <u>here</u> to download the results by member.

👹 WoodWorks® Sizer 9.	3.2 - [Tutorial_5_CDN	wd: Results by Group]							- 🗆 ×	(
≝ File Mode Setting	ıs Edit Design Vi	ew Window Help							- 5	×
<b>M (#)</b> == #	ŧ 🗊 🔟 💋		1 🗊 🖨 👸	4						
W o Tutorial_5_CDN	odWorks	SIZER- Sizer 9.3	Software for 3.2	Wood Design 7 Dec,2016 1	0:10					^
	COMPANY	I Devide and	PRO	JECT						
		Duild	ing i • ON Canada							
		Mr. W	odWorks							
		JobNur	nber01							
	RESULTS by	GROUP - CSA-OR	36-14							
	1000210 0									
SUGGESTED SECTIO	ONS by GROUP fo	or LEVEL 2 - RO	OOF							
Parall.Truss.	Lumber	S-P-F	No.1/No.2	No section found						
Ridge	Glulam-E	D. Fir-L	20f-E	80x342						
Centre	Timber	D.Fir-L	No.2	140x140						
Wall1	Lumber	S-P-F	No.1/No.2	38x89 @600						
SUGGESTED SECTIO	ONS BY GROUP to	or LEVEL 1 - FI	LOOR							
Floor Jet1	Lumber	S-D-F	No. 1/No. 2	64×184 0488						
Beam1	Timber	D Fir-L	No.2	241 2394						
Purlin	Glulam-E	D. Fir-L	20f-E	80x418						
Column1	Timber	D.Fir-L	No.2	140×191						
Centre	Timber	D.Fir-L	No.2	140x191						
Wall1	Lumber	S-P-F	No.1/No.2	38x89 @600						
Wall2	Lumber	S-P-F	No.1/No.2	38x89 @600						
CRITICAL MEMBER:	S and DESIGN CH	RITERIA								
Group	Member	Criterion	Analysis/Dea	sign Values						
Parall.Truss.	No section f	tound.		0.70						
Ficor_Jst1	]7 b2	Bending		0.78						
Durlin	ມວ b16	Bending		0.96						
Ridge	b29	Bending		0.98						
Column1	c20	Axial		0.79						
Centre	c2	Axial		0.85						
Wall1	w2	Axial		0.53						
Wall2	wl	Axial		0.53						
DESIGN NOTES:										
<ol> <li>Please veri: for your apprendicts</li> </ol>	fy that the dep plication.	fault deflection	h limits are a	appropriate						
2 DESTON CONT	D OCCUER ON MIT	TTOTE TEVETS.	the lower les	ral ragult						~
View or print suggested sec	ctions and design valu	es for critical sections.					Roof: 6 m	X: 4 m	Y: 16 m	1

Figure 57: Concept Mode Tutorial 5 – Results by Group

#### 5.12 More Practice

To further familiarize yourself with Concept mode, try the following:

- 1. Move some gridlines and click *Design* on the toolbar to re-design the structure.
- 2. Try using transfer beams (columns supported on a beam).
- 3. Create an addition to your project.

## 6 Concept Mode Tutorial 6 – Example from Concept Mode Demo (CDN)

The Sizer file (.wwa) created from going through this tutorial can be downloaded by clicking here.

#### 6.1 Introduction

This tutorial provides instructions for completing the Concept mode model from the following demonstration video (<u>https://www.youtube.com/watch?v=g6d7Z6Gduo8</u>).

#### 6.2 Snap Increment

- 7. Enter Concept Mode by clicking on the *New Concept Mode File* button.
- 8. Click the *Settings* icon.
- 9. Click on the *View* tab.
- 10. In the *Viewing Area* field, modify the *North-South* limit to *15 (m)* and the *East-West* limit to *24 (m)*.
- 11. Enter North-South and East-West Snap Increments of 100 (cm).
- 12. Click *OK*.

Settings		Х				
Preferences Design Default Values Viewing area North-South 15 m East-West 24 m	s Format View Company Information Project Description Design Notes These settings apply to Concept Mode, Plan View Display					
Snap increment	Snapped co-ordinate in status bar					
North-South 100 cm	✓ Member names					
East-West 100 cm	<ul> <li>☐ Group names</li> <li>☑ Gridpoint elevations</li> </ul>					
Save as default for new files Reset original settings						
Note: This information is saved to the Concept mode file.						
	OK Cano	el				

Figure 58: Concept Mode Tutorial 6 – View Settings

#### 6.3 Levels Above Grade

- 4. Click on the *Levels* button from the main toolbar.
- 5. Structure will consist of one storey. Modify the *Roof* elevation to *3.2 (m)*, by inputting the new elevation and clicking *Modify*.
- 6. Press **OK**.

🛱 File Mode Set	tings Edit Design View Window Help
<b>1</b>	
2	Floor and Roof Levels
14	Level Elevation
-	3.2 m
13	Roof 3 m
5	
12	
-	Copy selected level when adding
11	Add Modify Delete
11	
10	

Figure 59: Concept Mode Tutorial 6 – Floor and Roof Levels

#### 6.4 Gridlines

1. Click on *Edit, Generate Grid* button from the main toolbar to create a grid based on the specified snap increment



Figure 60: Concept Mode Tutorial 6 – Gridline Placement

#### 6.5 Columns

Note: In the case of the columns in this model, the default Column Design group Column1 will be specified.



- 1. Click *Column* on the toolbar.
- 2. Click gridpoints *E-10* and *H-10*.

Figure 61: Concept Mode Tutorial 6 – Column Locations

#### 6.6 Walls

*Note: In the case of the walls in this model, the default Wall Design group Wall1 will be specified.* 

- 1. Click *Walls* on the toolbar.
- 2. Draw a wall by clicking on gridpoint *B-5*, holding the left mouse key and dragging a line to gridpoint *J-5*.



Figure 62: Concept Mode Tutorial 6 – Wall Locations

#### 6.7 Beams

*Note: In the case of the beams in this model, the default Beam Design group Beam1 will be specified.* 

- 14. Click *Beam* on the toolbar.
- 15. Draw a beam by clicking on gridpoint *B-10*, holding the left mouse key and dragging a line to gridpoint *J-10*.



Figure 63: Concept Mode Tutorial 6 – Beam Locations

#### 6.8 Joists

- 6. Click on the *Joist* button.
- 7. Click gridpoints *B-11*, *J-11*, *J-4* and *B-4* to create a roof joist area.



Figure 64: Concept Mode Tutorial 6 - Placing Roof Joists

#### 6.9 Modify Gridline Elevations

- 8. Click on *Grid* from the toolbar.
- 9. Select gridpoint *D-10* so that it is highlighted in red (both gridline *D* and *10* should appear in red).
- 10. Select the *Gridpoint Elevation* field from the data bar and enter an elevation of *3.6 (m)* and press **Enter**.
- 11. Press **OK** in the warning screen to move the gridpoint to an elevation of 3.6 m.
- 12. Complete steps 2 to 4 for Gridpoint *H-10*.



Figure 65: Concept Mode Tutorial 6 – Adjusting Roof Height

#### 6.9.1 Elevation View

- 7. Click on the *Grid* button from the toolbar.
- 8. Click on gridline *H* so that it is highlighted in red.
- 9. Click on *Elev. View* from the toolbar.
- 10. The elevation view along the North-South gridline "H" is now shown.
- 11. To return to the main window, click any of the toolbar buttons.



Figure 66: Concept Mode Tutorial 6 – Elevation View along Gridline H

#### 6.10 Loads

- 5. Click *Load View* on the toolbar.
- 6. Choose *Dead Area* from the *Type* drop-down list on the data bar.
- 7. Enter a load magnitude of **0.3** (kN/m2) in the data bar.
- 8. Click gridpoints *B-11*, *J-11*, *J-4* and *B-4* to load the area.



Figure 67: Concept Mode Tutorial 6 – Applying Dead Load to Roof

- 9. Choose *Snow Area* from the *Type* drop-down list on the data bar.
- 10. Enter a load magnitude of **2** (*kN/m2*) in the data bar.
- 11. Click gridpoints **B-11**, **J-11**, **J-4** and **B-4** to load the area.
- 12. Choose *Wind Area* from the *Type* drop-down list on the data bar.
- 13. Enter a load magnitude of -0.2 (kN/m2) in the data bar.
- 14. Click gridpoints *B-11*, *J-11*, *J-4* and *B-4* to load the area.



Figure 68: Concept Mode Tutorial 6 – Applying Snow and Wind Load to Roof

#### 6.11 Design the Members

2. Click *Design* on the toolbar. *Sizer* designs all of the members in your structure and then displays the results.

#### 6.12 View Results

- 7. Use the scroll bar to look through the results.
- 8. Click <u>here</u> to download a pdf of the material list.
- 9. Click here to download a pdf of the reactions at base.
- 10. Click here to download the results by group.
- 11. Click<u>here</u> to download the results by member.
- 12. To close the results window, click on any of the *View* toolbar buttons.

😈 WoodWorks® Sizer 9.3.2 - [CDN_Tutorial_6.wd: Results by Group]			– 🗆 ×
≝ File Mode Settings Edit Design View Window Help			_ 8 ×
Wood Works SIZER - Software for Wood Design CDN_Tutorial_6 Sizer 9.3.2 7 Dec,2016 14:01			
COMPANY   PROJECT			
RESULTS by GROUP - CSA-086-09			
SUGGESTED SECTIONS by GROUP for LEVEL 1 - ROOF			
Roof_Jstl         Lumber         S-P-F         No.1/No.2         38x286 @600           Beaml         Timber         D.Fir-L         No.2         140x394           Column1         Timber         D.Fir-L         No.2         140x140           Wall1         Lumber         S-P-F         No.1/No.2         38x89 @600			
CRITICAL MEMBERS and DESIGN CRITERIA Group Member Criterion Analysis/Design Values			
Roof_Jstl         j1         Bending         0.71           Beaml         b1         Bending         0.94           Column1         c1         Axial         0.63           Wall1         w1         Axial         0.73			
<ul> <li>DESIGN NOTES:</li> <li>DESIGN NOTES:</li> <li>DESIGN GROUP OCCURS ON MULTIPLE LEVELS: the lower level result is considered the final design and appears in the Materials List.</li> <li>Live and snow loads entered on roof level are considered on exterior surface and not combined. Add an empty roof level to bypass this interpretation.</li> <li>BERAING: the designer is responsible for ensuring that adequate bearing is provided.</li> <li>WALLS: a Case 2 system factor is used when wall studs are spaced not more than 610 mm (24 in.) apart.</li> <li>WILS: a Case 2 system factor is used when lumber joists are spaced not more than 610 mm (24 in.) apart.</li> <li>BERMS require restraint against lateral displacement and rotation at points of bearing (086 5.5.4.2.1).</li> <li>KL calculated as per 086 6.5.6.4</li> </ul>			
	Roof: 3.2 m	X: 7 m	Y: 13 m

Figure 69: Concept Mode Tutorial 6 – Results by Group

#### 6.13 Transfer Member into Beam Mode

- 1. Click on *Beam View*.
- 2. Click on Beam **b1**.
- 3. Transfer member into beam mode by clicking *alt+B*.

₩ WoodWorks® Sizer 9.3.2 - [b1: Beam Input]	– 🗆 X
Hile Mode Settings Design View Window Help	_ <i>8</i> ×
A □ △ □ △ □ → □ → □ → □ → □ → □ → □ → □ →	
Description       [51]         Spans       Cantilevers         Both       Type         Beam       Live =         Live =       L/360         Permanent = L/360         Total =       L/180         Permanent = L/360         Total =       L/180         Prevent angle       Description         Image       Grade         No       First         Vridth*       furknown)         Vridth*       furknown)         Vridth*       furknown)         Voidth*       furknown)         Spaning*       mm         Design span       No         * You can select these items or enter your own value	Supports for bearing and notch design Apples to All supports I For u Type Column I For u Type Column I For u Type Column I For u Species D. FirL I For F Grade No.2 F Bearing where support Bearing where support Bearing here support Bearing length Bearing Main Lb <sup>*</sup> [unknown] Same Notch det None Notch det Notch length mm Notch I Laterally supported at support V Laterally supported at support
Full       unknown       unknown       unknown         Clear       Ib = unknown       Ib = unknown       Ib = unknown         Image: Image	iknown I. 8 m

Figure 70: Concept Mode Tutorial 6 – Transfer member into Beam Mode