3 *Sizer: Column Mode* Tutorial 3 – Determine Column Size Based on given Loads (US)

3.1 Software Version and Standard

This tutorial was completed using WoodWorks® US 2019, and NDS 2018.

3.2 Introduction

Click here to download the Sizer file (.wwc) created from going through this tutorial.

3.3 Defining Column Parameters

1. Click on the ***New Column Mode File*** button on the toolbar.
2. Specify ***Height*** as ***9 (ft).***

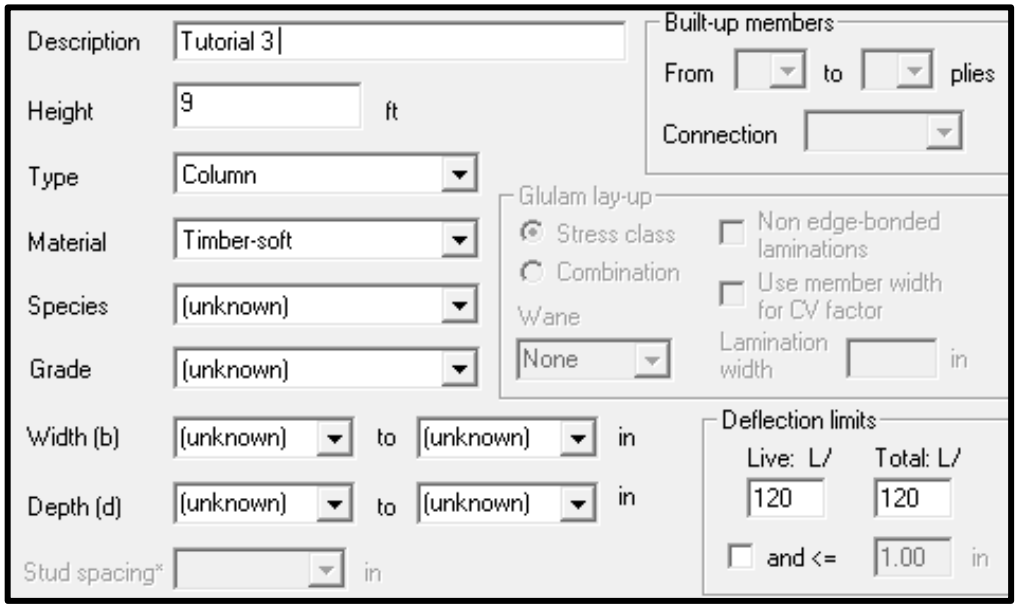


Figure 1: *Sizer: Column Mode – Tutorial 3 – Defining Height of Column*

3. Under the ***Lateral support*** section, specify ***continuous (in)*** as ***Spacing**** under the ***width (b)*** section.
4. Under the ***Lateral support*** section, specify ***At ends (in)*** as ***Spacing****under the ***depth (d)*** section.

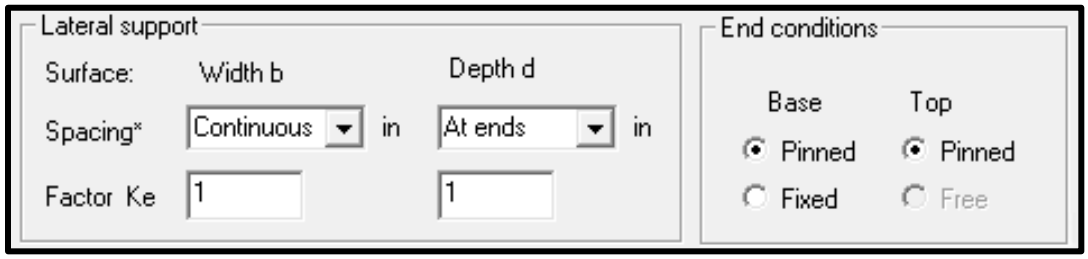


Figure 2: *Sizer: Column Mode – Tutorial 3 – Specifying Lateral Support*

3.4 Loading the Column

1. Click on the ***Loads View*** button on the toolbar.
2. Select ***Dead*** from the ***Type*** drop-down list.
3. Specify ***Axial*** from the ***Distribution*** drop-down list.
4. In the ***Magnitude*** field enter a value of ***5600 (lbs)***.
5. Click ***Add***.

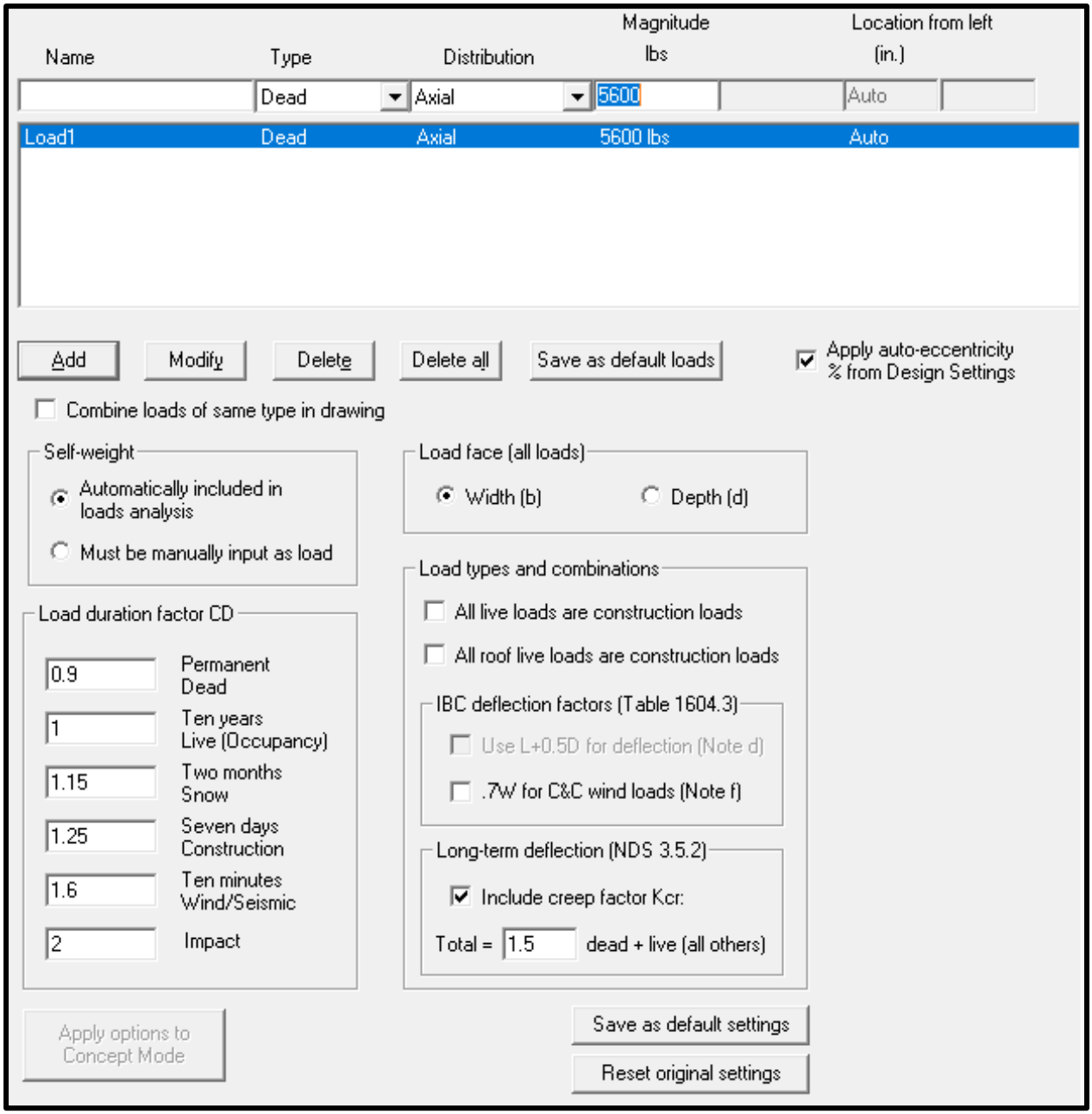


Figure 3: *Sizer: Column Mode – Tutorial 3 – Loading Column*

6. Repeat steps 2-5 for a ***Snow*** load type with ***Magnitude*** of ***8400 (lbs)*** and a ***Live*** load type with ***Magnitude*** of ***6750 (lbs)***.
7. Select ***Wind*** from the ***Type*** drop-down list.
8. Specify ***Full Uniform Line*** from the ***Distribution*** drop-down list.
9. In the ***Magnitude*** field enter a value of ***150 (plf)***.
10. Click ***Add***.

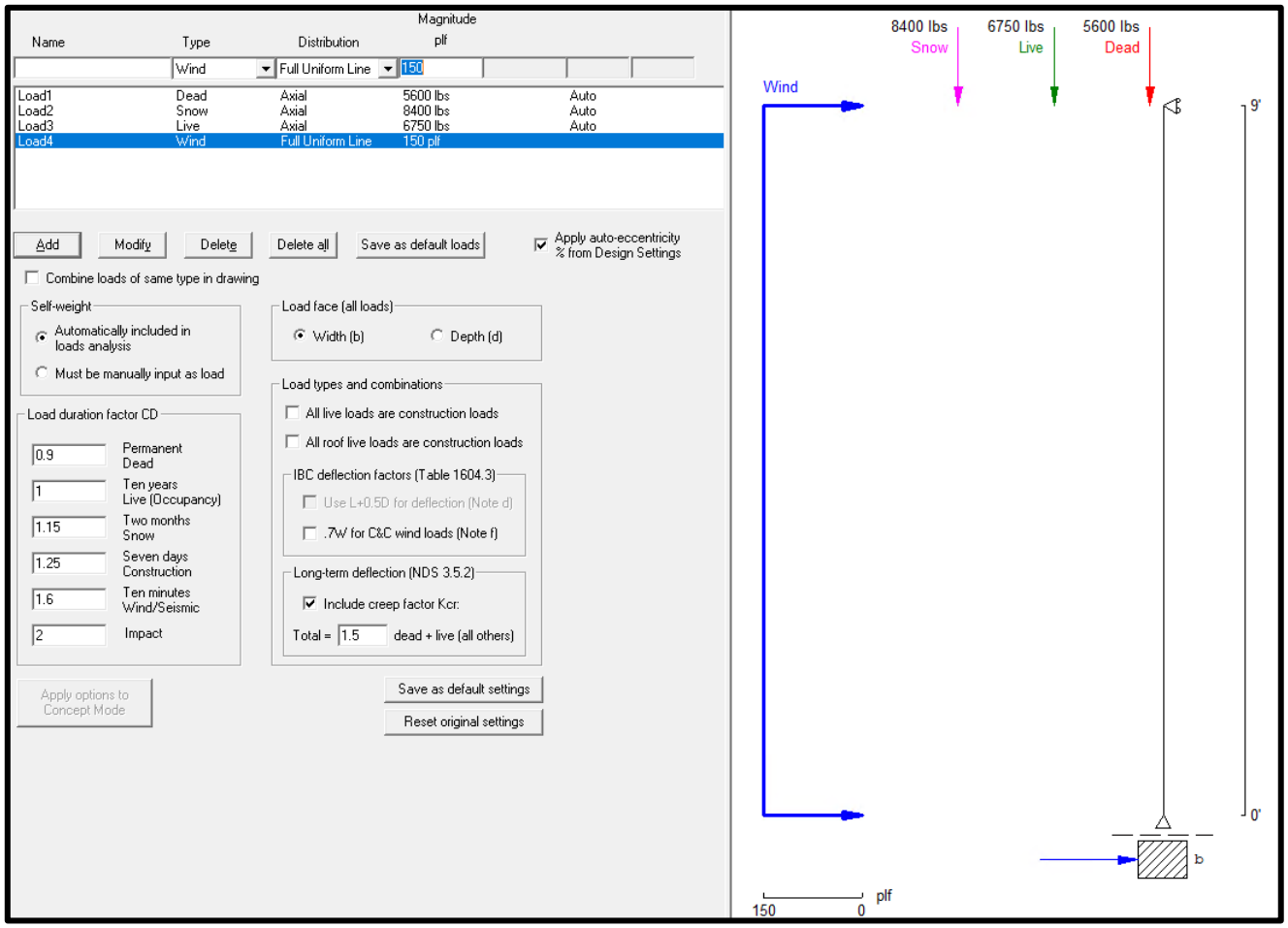


Figure 4: *Sizer: Column Mode – Tutorial 3 – Loaded Column*

3.5 Designing the Column

1. Click the ***Run*** button on the toolbar. *Sizer* automatically designs the member.

Note: *Sizer* will prompt you to save the project file.

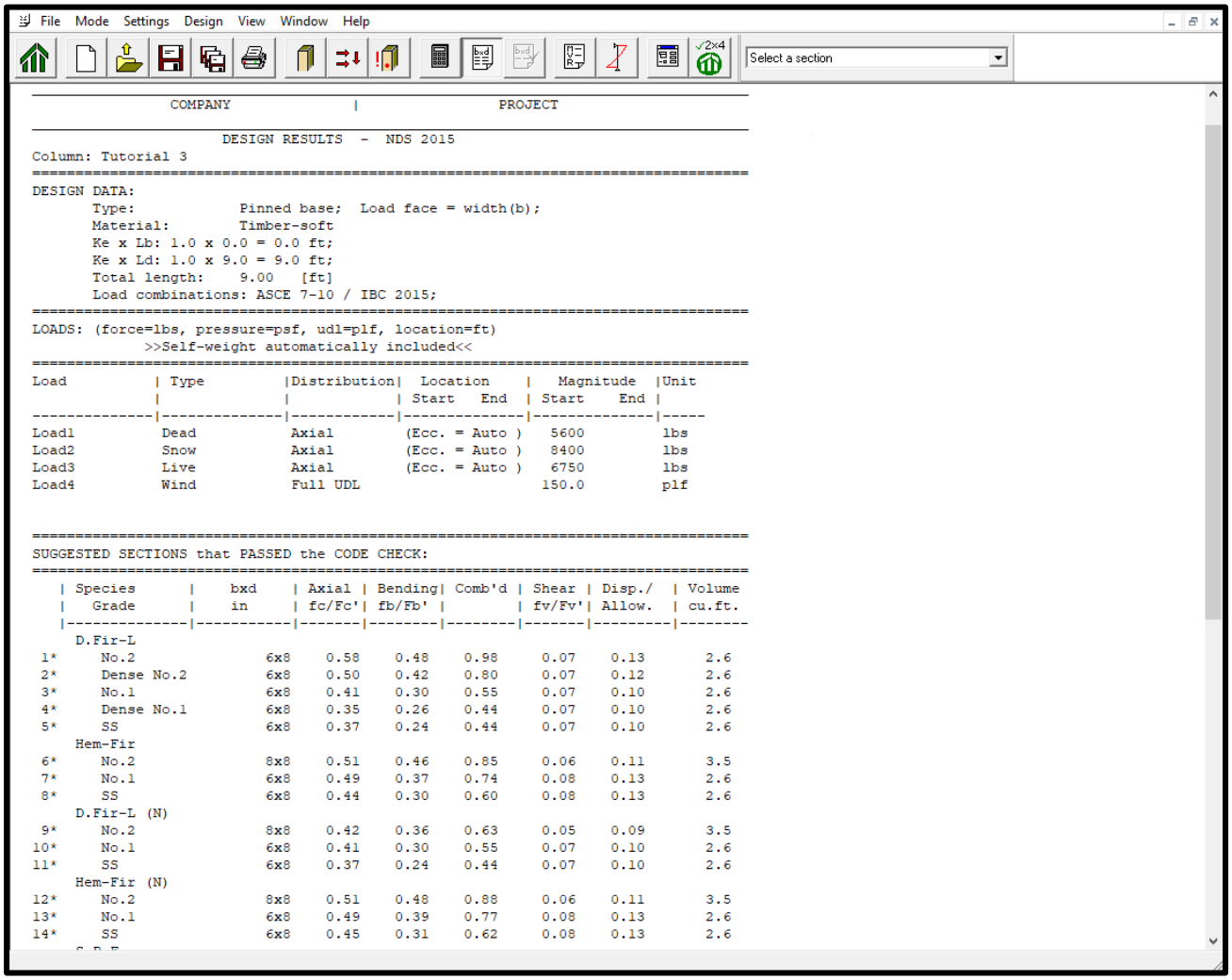
Sizer will complete the design, and will automatically generate the ***Design Summary***, ***Analysis Results***, and ***Analysis Diagrams.*** These buttons are displayed on the toolbar

Figure 5: *Sizer: Column Mode – Tutorial 3 – Column Design*

3.6 View Design Summary

The ***Design Summary*** includes a list of sections which can resist the applied loads.

Click here to download a PDF of the design summary.



File Mode Settings Design View Window Help

Select a section

COMPANY | PROJECT

DESIGN RESULTS - NDS 2015

Column: Tutorial 3

DESIGN DATA:
Type: Pinned base; Load face = width(b);
Material: Timber-soft
Ke x Lb: 1.0 x 0.0 = 0.0 ft;
Ke x Ld: 1.0 x 9.0 = 9.0 ft;
Total length: 9.00 [ft]
Load combinations: ASCE 7-10 / IBC 2015;

LOADS: (force=lbs, pressure=psf, udl=plf, location=ft)
>>Self-weight automatically included<<

Load	Type	Distribution	Location Start	Location End	Magnitude Start	Magnitude End	Unit
Load1	Dead	Axial	(Ecc. = Auto)		5600		lbs
Load2	Snow	Axial	(Ecc. = Auto)		8400		lbs
Load3	Live	Axial	(Ecc. = Auto)		6750		lbs
Load4	Wind	Full UDL			150.0		plf

SUGGESTED SECTIONS that PASSED the CODE CHECK:

	Species / Grade	bxd in	Axial fc/Fc'	Bending fb/Fb'	Comb'd	Shear fv/Fv'	Disp./ Allow.	Volume cu.ft.
	D.Fir-L							
1*	No.2	6x8	0.58	0.48	0.98	0.07	0.13	2.6
2*	Dense No.2	6x8	0.50	0.42	0.80	0.07	0.12	2.6
3*	No.1	6x8	0.41	0.30	0.55	0.07	0.10	2.6
4*	Dense No.1	6x8	0.35	0.26	0.44	0.07	0.10	2.6
5*	SS	6x8	0.37	0.24	0.44	0.07	0.10	2.6
	Hem-Fir							
6*	No.2	8x8	0.51	0.46	0.85	0.06	0.11	3.5
7*	No.1	6x8	0.49	0.37	0.74	0.08	0.13	2.6
8*	SS	6x8	0.44	0.30	0.60	0.08	0.13	2.6
	D.Fir-L (N)							
9*	No.2	8x8	0.42	0.36	0.63	0.05	0.09	3.5
10*	No.1	6x8	0.41	0.30	0.55	0.07	0.10	2.6
11*	SS	6x8	0.37	0.24	0.44	0.07	0.10	2.6
	Hem-Fir (N)							
12*	No.2	8x8	0.51	0.48	0.88	0.06	0.11	3.5
13*	No.1	6x8	0.49	0.39	0.77	0.08	0.13	2.6
14*	SS	6x8	0.45	0.31	0.62	0.08	0.13	2.6

Figure 6: *Sizer: Column Mode – Tutorial 3 – Design Summary*

3.7 View Analysis Results

Click the ***Analysis Results*** button on the toolbar to view the applied loads, load combinations, shear and bending values and vertical reactions.

Click here to download a PDF of the analysis results.

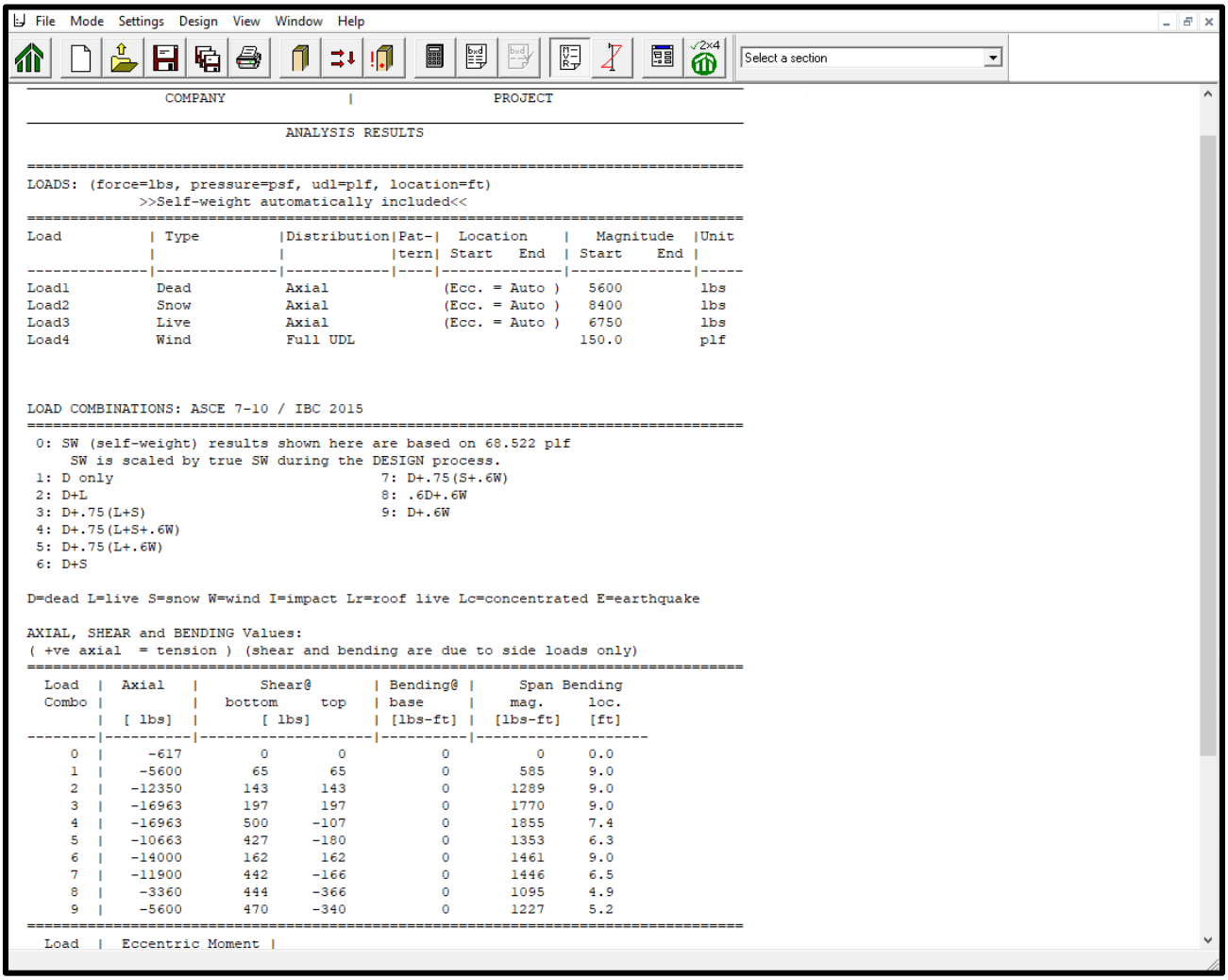


Figure 7: *Sizer: Column Mode – Tutorial 3 – Analysis Results*

3.8 View Analysis Diagrams

Click the ***Analysis Diagram*** button on the toolbar to view reactions, shear, bending moments and deflection diagrams.

Click here to download a PDF of the analysis diagrams.

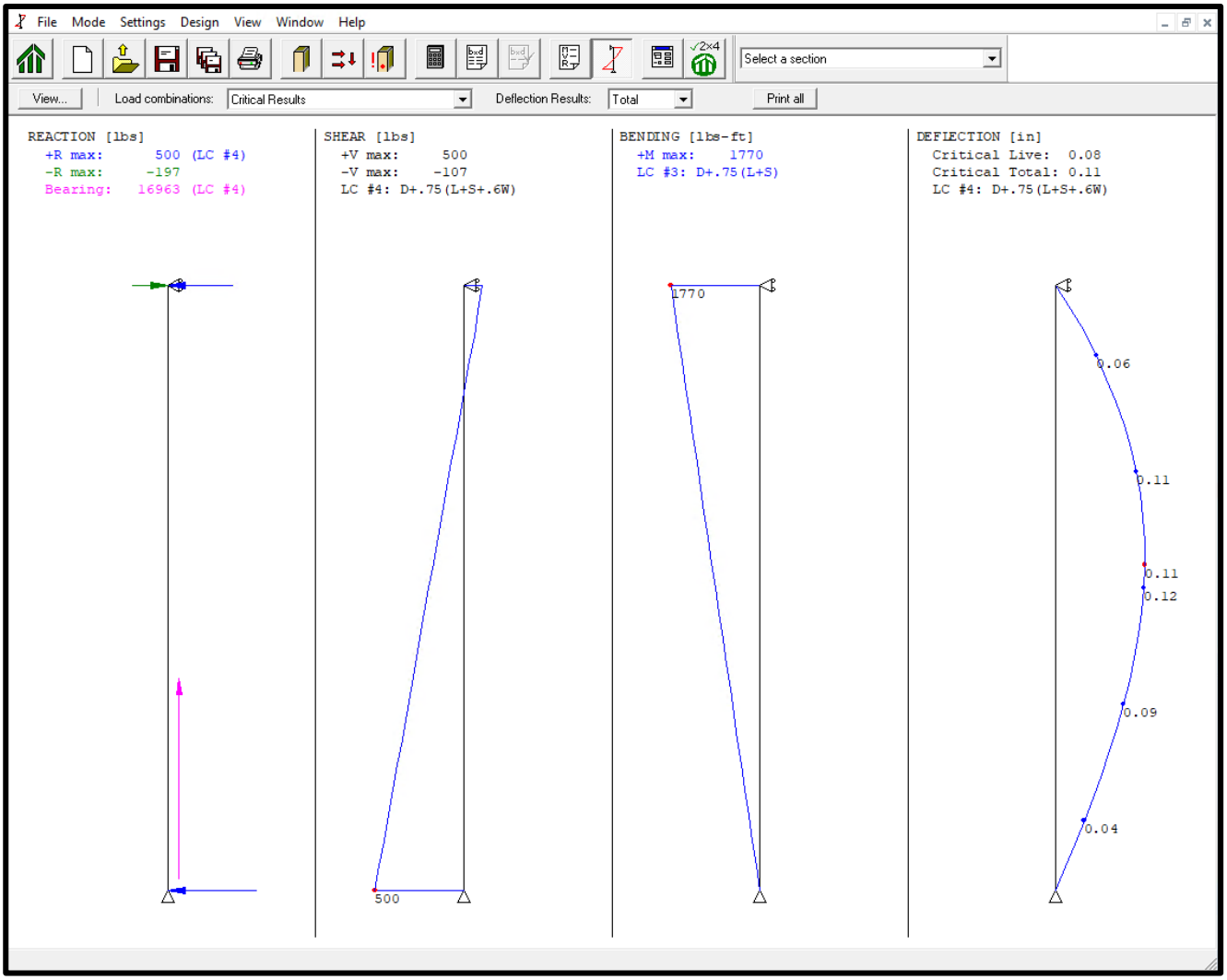


Figure 8: *Sizer: Column Mode – Tutorial 3 – Analysis Diagrams*

3.9 Perform a Detailed Design on a Specific Section

1. From the ***Select a section*** drop-down list in the toolbar, select ***D.Fir-L No.2 6x8***.

Sizer will complete a detailed design, and will automatically generate the ***Design Summary***, ***Design Check Calculation Sheet, Analysis Results***, and ***Analysis Diagrams*** for this specific section.

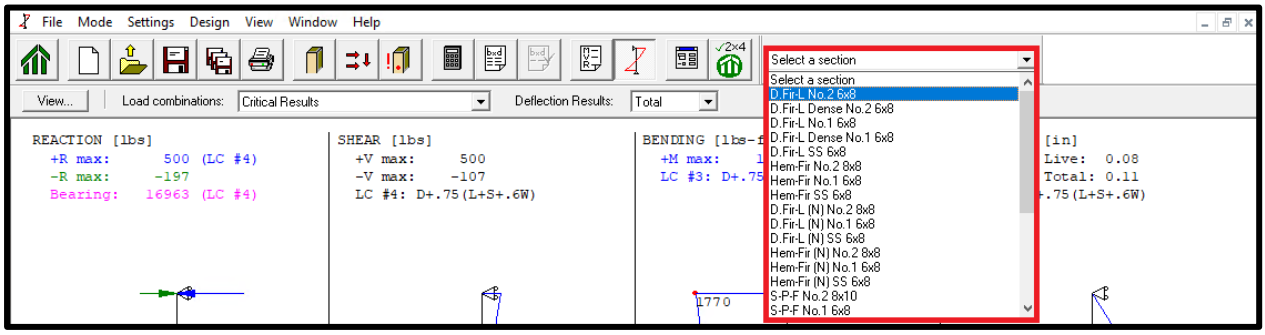


Figure 9: *Sizer: Column Mode – Tutorial 3 – Select a Specific Section*

2. Repeat step 1 to perform a detailed design on any other sections listed in the ***Select a section*** drop-down list.

Click here to download a PDF of the design check calculation sheet.

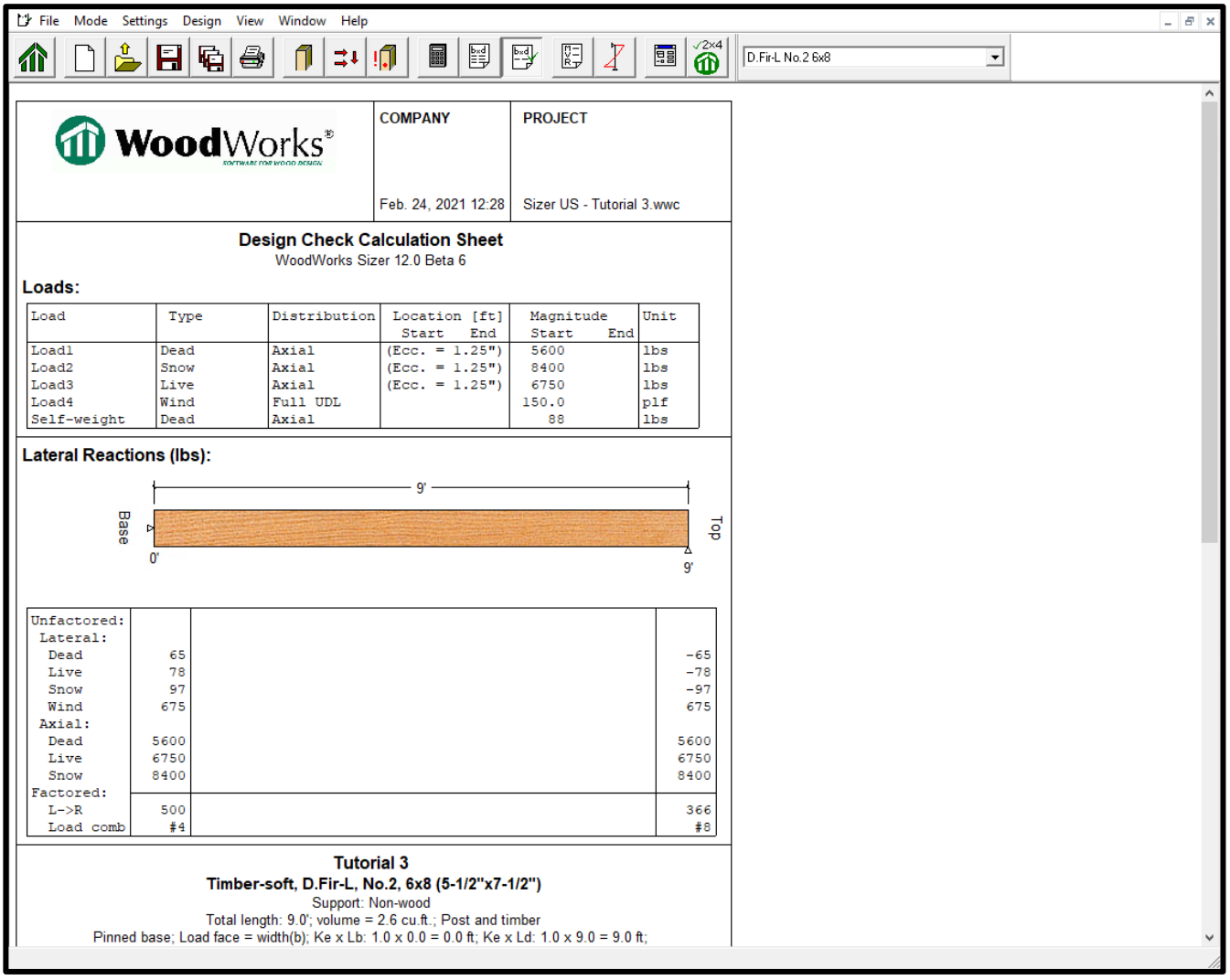


Figure 10: *Tutorial 3 – Design Check Calculation Sheet*