4 *Sizer: Column Mode* Tutorial 4 – Solid Sawn Column Check (US)

4.1 Software Version and Standard

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

4.2 Introduction

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

4.3 Defining Column Parameters

1. Click on the ***New Column Mode File*** button on the toolbar.
2. Specify ***Height*** as ***15 (ft).***
3. Specify ***Column*** from the ***Type*** drop-down list.
4. Specify ***Timber-soft*** from the ***Material*** drop-down list.
5. Specify ***Hem-Fir (N)*** from the ***Species*** drop-down list.
6. Specify ***6 (in)*** from the ***Width (b)*** drop-down list.
7. Specify ***6 (in)*** from the ***Depth (d)*** drop-down list.
8. Under the ***Modification factors*** section, select ***Wet*** from the ***Service conditions*** drop-down list.

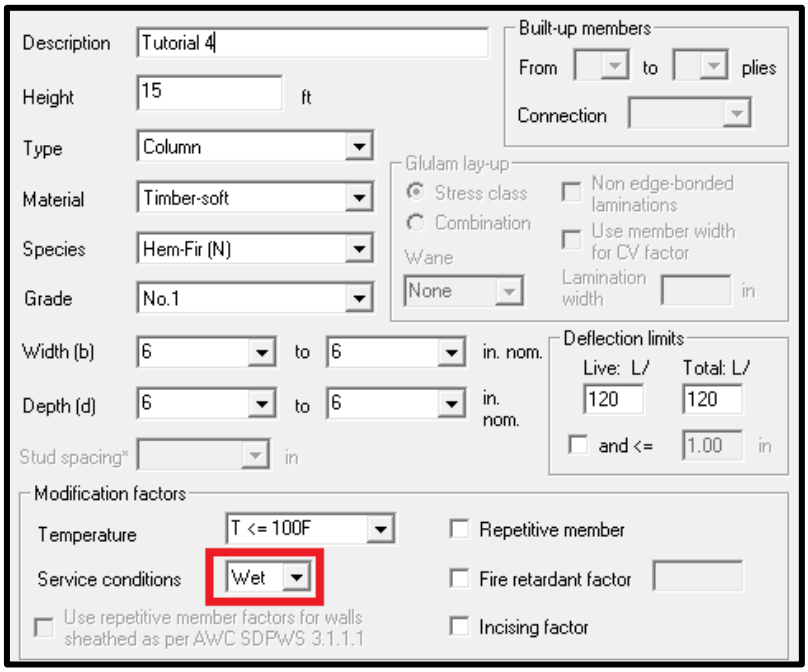

Figure 1: *Sizer: Column Mode – Tutorial 4 – Defining Height of Column*

9. Under the ***Lateral support*** section, specify ***At ends (in)*** as ***Lb*** under the ***Width (b)*** section.
10. Under the ***Lateral support*** section, specify ***At ends (in)*** as ***Lb*** under the ***Depth (d)*** section.
11. Under the ***Lateral support*** section, specify ***0.5*** as ***Factor Ke*** under the ***Width (d)*** section.
12. Under the ***Lateral support*** section, specify ***0.5*** as ***Factor Ke*** under the ***Depth (d)*** section.

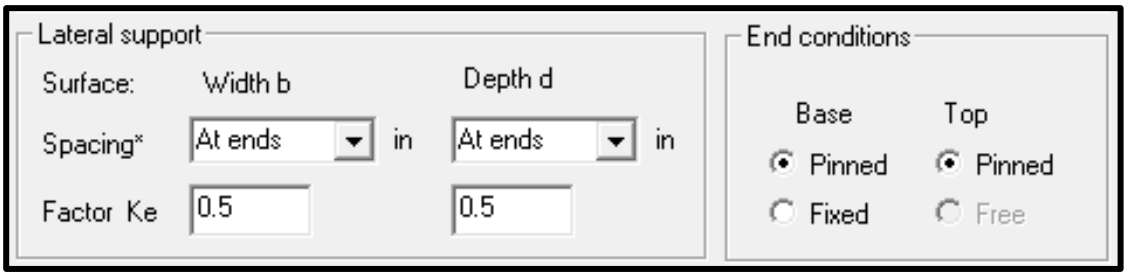

Figure 2: *Sizer: Column Mode – Tutorial 4 – Specifying Lateral Support*

4.4 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 ***8000 (lbs)***.
5. Click ***Add***.
6. Repeat steps 2-5 for a ***Snow*** load type with ***Magnitude*** of ***14000 (lbs)***.
7. Under the ***Self-weight*** section, select the ***Must be manually input as load*** option.
8. De-select the ***Apply auto-eccentricity % from Design Settings*** check box.

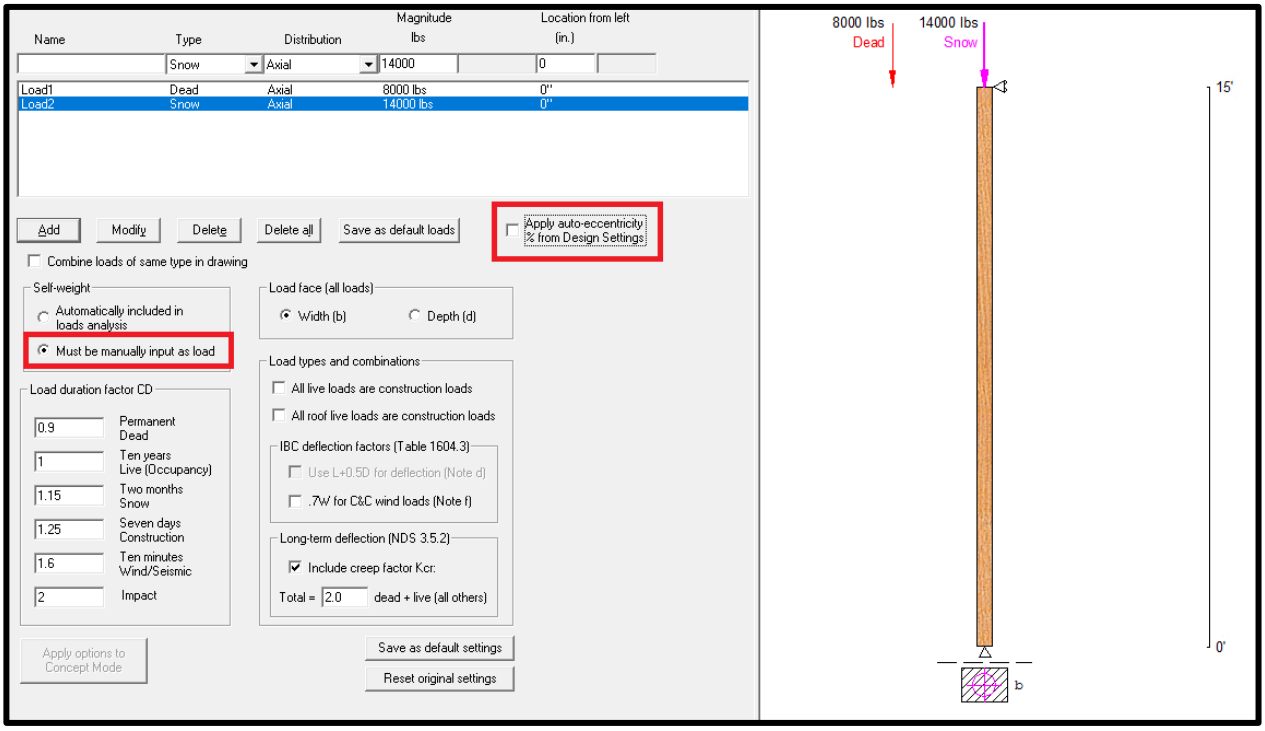

Figure 3: *Sizer: Column Mode – Tutorial 4 – Loading Column*

4.5 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 4: *Sizer: Column Mode – Tutorial 4 – Column Design*

4.6 View the Design Check Calculation Sheet

The ***Design Check Calculation Sheet*** will appear and summarizes the loads, maximum reactions, bearing resistances, bearing lengths, force vs. resistance and deflection information, additional data and most importantly if the section passes of fails the design.

Note: The selected section ***passes*** the design code check.

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

Click here to download a PDF of the analysis results.

Click here to download a PDF of the analysis diagrams

Tutorial 4

Timber-soft, Hem-Fir (N), No.1, 6x6 (5-1/2"x5-1/2")

Support: Non-wood

Total length: 15.0'; volume = 3.2 cu.ft.; Post and timber

Pinned base; Service: wet; Ke x Lb: 0.5 x 15.0 = 7.5 ft; Ke x Ld: 0.5 x 15.0 = 7.5 ft;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2015 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Axial	fc = 727	Fc' = 736	psi	fc/Fc' = 0.99
Axial Bearing	fc = 727	Fc* = 890	psi	fc/Fc* = 0.82*

*Column requires a bearing plate at top as per NDS 3.10.1.3

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CF	Cfu	Cr	Cfrt	Ci	LC#
Fc'	850	1.15	0.91	1.00	0.828	1.000	-	-	1.00	1.00	2
Fc*	850	1.15	0.91	1.00	-	1.000	-	-	1.00	1.00	2

CRITICAL LOAD COMBINATIONS:

Axial : LC #2 = D+S, P = 22000 lbs

D=dead L=live S=snow W=wind I=impact Lr=roof live Lc=concentrated E=earthquake

All LC's are listed in the Analysis output

Load combinations: ASCE 7-10 / IBC 2015

Figure 5: *Sizer: Column Mode – Tutorial 4 – Design Check Calculation Sheet (Pass)*