

Appendix D: Determining Sag-Tension on Single Span, Original Design Known

Situation: Sag & tension information is available for a particular section of line, but more information is required for a single span within that ruling span, perhaps to modify the line (such as adding marker balls, changing the supporting structure, etc.).

For this example, the following assumptions were made:

- Conductor: 795.0 kcmil 26/7 ACSR "Drake"
- Ruling Span: 1000.00 ft
- Loading District: NESC 261.H.1.b *EXCEPTION 1* Heavy

Step #1

Select the conductor in the **Conductor Selection** screen.

Step #2

Enter the original design criteria into the loading table.

Loading Table

	°F	in	lb/ft ²	Limit	Type	Usage	
*	Cond. Temp	Ice	Wind				
▶	0.0	0.50	4.00	60.0	%	Initial	▲
	32.0	0.50					
	-20.0						
	0.0						
	30.0						
	60.0			35.0	%	Initial	
	60.0			25.0	%	Final	
	60.0					Creep	
	90.0						
	120.0						
	167.0						
	212.0						

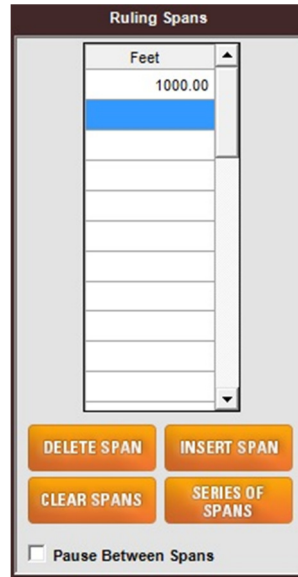
°C °F
* Right click on a row button to Insert or Delete a row

OPEN
CLEAR
SAVE AS

File

Step #3

Enter the actual ruling span for the section of line.



Step#4

Click the **Calculate Sag & Tension** button. In the output, note the final tension at 60.0°F. This will be your final design limit at 60.0°F in the single span sag & tension calculations.

Loading Limits										
Cond. Temp	Ice	Wind	K	Limit	Usage					
*F	*C	in	lb/ft*	lb/ft						
0.0	-17.8	0.50G	4.00	0.30	60.0 %	Initial				
60.0	15.6	0.00	0.00	0.00	35.0 %	Initial				
60.0	15.6	0.00	0.00	0.00	25.0 %*	Final				
60.0	15.6	0.00	0.00	0.00		Creep				
Design Points										
Cond. Temp	Ice	Wind	K	Weight	Final		Initial			
*F	*C	in	lb/ft*	lb/ft	Sag	Tension	Sag	Tension		
				lb/ft	ft	lb	ft	lb		
0.0	-17.8	0.50G	4.00	0.30	2.508	20.84	15067	20.59	15250	
32.0	0.0	0.50G	0.00	0.00	2.093	20.81	12591	19.56	13393	
-20.0	-28.9	0.00	0.00	0.00	1.093	12.33	11086	11.01	12412	
0.0	-17.8	0.00	0.00	0.00	1.093	13.49	10136	11.69	11695	
30.0	-1.1	0.00	0.00	0.00	1.093	15.37	8897	12.84	10648	
60.0	15.6	0.00	0.00	0.00	1.093	17.37	7875*	14.16	9658	
90.0	32.2	0.00	0.00	0.00	1.093	19.42	7046	15.63	8750	
120.0	48.9	0.00	0.00	0.00	1.093	21.46	6377	17.23	7939	
167.0	75.0	0.00	0.00	0.00	1.093	24.41	5610	19.90	6875	
212.0	100.0	0.00	0.00	0.00	1.093	25.76	5319	22.54	6074	
* Design Condition										
G Glazed Ice Density of 57.0 lb/ft ³										

Step #5

Create a new project file using the tension obtained above as the only design condition.

* Cond. Temp	in Ice	lb/ft ² Wind	Limit	Type	Usage
0.0	0.50	4.00			
32.0	0.50				
-20.0					
0.0					
30.0					
60.0					
60.0			7875	lb	Final
60.0					Creep
90.0					
120.0					
167.0					
212.0					

°C °F
 * Right click on a row button to Insert or Delete a row

 File:

Step #6

Use the span length for which further information is requested. For this example, 1134.00 ft will be used. The sag & tension output will be for the specific span in question, not for the ruling span.

