



INNOVATIVE IDEAS  
EXCEPTIONAL DESIGN  
UNMATCHED CLIENT SERVICE

Clark County Signals Study  
Final Tech Memo

## Appendix H: Preliminary SWISS Calculations



# SWISS

Version 1.2.3  
Span Wire Signal Support Design

## PROJECT DETAIL

### Clark County Signals

**Project Date:** 07/11/2014

**Author:** DLZ

**Last Revision Date:** 07/11/2014

**Filename:** Leffel & Selma Existing.xml

**Comments:**



# S W I S S

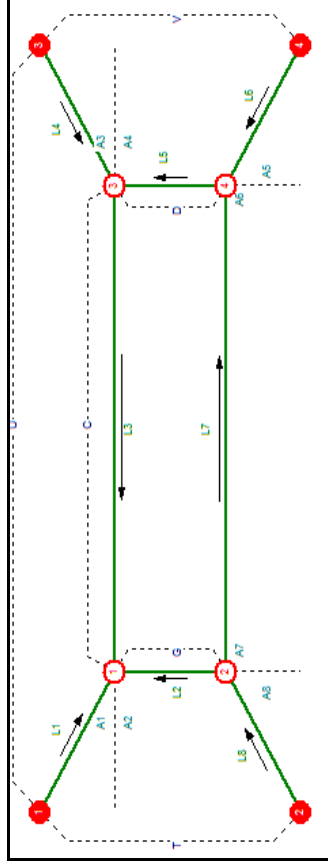
Version 1.2.3  
Span Wire Signal Support Design

## INPUT VALUES

Sequence #: 1

Configuration Type: Box

Problem Identification: Box



		Angles (Degrees)							
[ A 1 ]	[ A 2 ]	[ A 3 ]	[ A 4 ]	[ A 5 ]	[ A 6 ]	[ A 7 ]	[ A 8 ]		
47.00	91.00	51.00	89.00	38.00	91.00	42.00	89.00		

		Span Lengths (ft)							
[ L 1 ]	[ L 2 ]	[ L 3 ]	[ L 4 ]	[ L 5 ]	[ L 6 ]	[ L 7 ]	[ L 8 ]		
8.90	62.00	55.20	8.90	63.30	13.10	55.80	7.20		

		Elevation Differences (ft)			
[ C ]	[ D ]	[ G ]			
0.00	0.00	0.00			

		Base Elevations (ft)			
[ Pavement ]	[ Pole 1 ]	[ Pole 2 ]	[ Pole 3 ]	[ Pole 4 ]	
0.00	0.00	0.00	0.00	0.00	

**Signals and Signs**  
(Distance (ft) / Weight (lbs))

**Wire Weights (lbs)**  
(Assumed)

- Span 1** No signals or signs attached at this span.
- Span 2** (33.50/55.00), (45.30/34.00)
- Span 3** (8.20/34.00), (20.00/34.00)
- Span 4** No signals or signs attached at this span.
- Span 5** (9.80/34.00), (21.60/55.00)
- Span 6** No signals or signs attached at this span.
- Span 7** (22.00/34.00), (33.80/34.00)
- Span 8** No signals or signs attached at this span.

- Span 1** 8.90
- Span 2** 62.00
- Span 3** 55.20
- Span 4** 8.90
- Span 5** 63.30
- Span 6** 13.10
- Span 7** 55.80
- Span 8** 7.20

----- Design Data -----

<b>Min. SAG (ft):</b>	2.56	<b>Max. SAG (ft):</b>	4.27	<b>Minimum Clearance (ft):</b>	20.60	<b>Wire Weight (lbs/ft):</b>	1.00
<b>Sum of Loads (lbs):</b>	314.00	<b>Sum of Areas (ft):</b>	14.20	<b>Wind Pressure (psf):</b>	42.00	<b>Box Warp Enabled:</b>	No



# S W I S S

Version 1.2.3  
Span Wire Signal Support Design

## RESULT OF FINAL CALCULATION [MAX SAG]

Sequence #:	1	Configuration Type:	Box	Problem Identification:	Box				
Span Results									
		[ SPAN 1 ]	[ SPAN 2 ]	[ SPAN 3 ]	[ SPAN 4 ]	[ SPAN 5 ]	[ SPAN 6 ]	[ SPAN 7 ]	[ SPAN 8 ]
Tension Relations:		1.49425	1.09299	1.00000	1.55549	1.20902	1.55549	0.95780	0.74570
Elevation Differences (ft)		1.19	0.00	0.00	1.17	0.00	2.06	0.00	1.87
Reaction at the end of the span (lbs)		130.53	-85.56	-44.97	133.91	-55.68	158.52	-61.90	127.34
Distance from end to low point (ft)		0.00	28.50	35.20	0.00	41.70	0.00	27.90	0.00
SAG below end of span (ft)		0.00	2.21	1.43	0.00	1.78	0.00	1.76	0.00
Pole Results									
		[ POLE 1 ]	[ POLE 2 ]	[ POLE 3 ]	[ POLE 4 ]				
Stringing Tension (lbs):		1008.71	503.39	1050.05	1050.05				
Attachment Height above pole base (ft)		24.00	24.68	23.98	24.87				
Attachment Elevation (ft)		24.00	24.68	23.98	24.87				
Base Moment (ft/lbs)		57165.98	29338.84	59463.62	61661.81				
Other information									
						Calculated Design Factor :	2.36		
						For system balance rotate pole two 29.74 degree(s) counterclockwise			
						Distance between Highest and Lowest Point (ft) :	4.27		
						Max. Wire Load (lbs):	2512.26		

Height of each signal or sign attachment point above the lowest (ft) -----

- Span 1 No signals or signs attached at this span.
- Span 2 (0.00), (0.46)
- Span 3 (1.31), (0.78)
- Span 4 No signals or signs attached at this span.
- Span 5 (1.11), (0.43)
- Span 6 No signals or signs attached at this span.
- Span 7 (0.48), (0.48)
- Span 8 No signals or signs attached at this span.





# SWISS

Version 1.2.3  
Span Wire Signal Support Design

## PROJECT DETAIL

**Project Date:** 07/11/2014

**Author:**

**Last Revision Date:** 07/11/2014

**Filename:** Leffel & Selma Proposed.xml

**Comments:**



# S W I S S

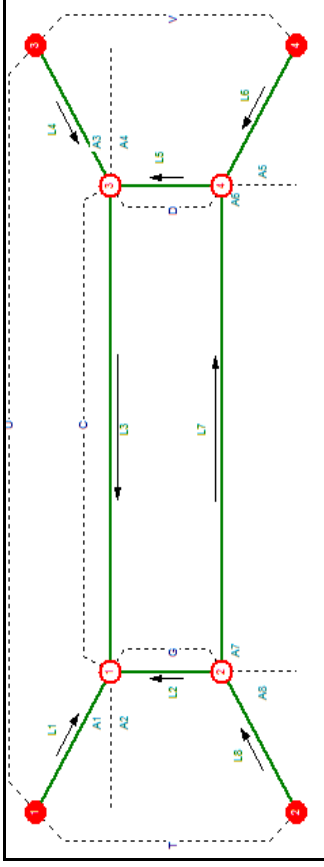
Version 1.2.3  
Span Wire Signal Support Design

## INPUT VALUES

Sequence #: 1

Configuration Type: Box

Problem Identification: Box



		Angles (Degrees)							
[ A 1 ]	[ A 2 ]	[ A 3 ]	[ A 4 ]	[ A 5 ]	[ A 6 ]	[ A 7 ]	[ A 8 ]		
47.00	91.00	51.00	89.00	38.00	91.00	42.00	89.00		

		Span Lengths (ft)							
[ L 1 ]	[ L 2 ]	[ L 3 ]	[ L 4 ]	[ L 5 ]	[ L 6 ]	[ L 7 ]	[ L 8 ]		
8.90	62.00	55.20	8.90	63.30	13.10	55.80	7.20		

		Elevation Differences (ft)				
[ C ]	[ D ]	[ G ]	[ Pole 1 ]	[ Pole 2 ]	[ Pole 3 ]	[ Pole 4 ]
0.00	0.00	0.00	0.00	0.00	0.00	0.00

		Base Elevations (ft)			
[ Pavement ]	[ Pole 1 ]	[ Pole 2 ]	[ Pole 3 ]	[ Pole 4 ]	
0.00	0.00	0.00	0.00	0.00	

**Signals and Signs**  
(Distance (ft) / Weight (lbs))

- Span 1** No signals or signs attached at this span.
- Span 2** (33.50/73.00), (45.30/49.30)
- Span 3** (8.20/49.30), (20.00/49.30)
- Span 4** No signals or signs attached at this span.
- Span 5** (9.80/49.30), (21.60/73.00)
- Span 6** No signals or signs attached at this span.
- Span 7** (22.00/49.30), (33.80/49.30)
- Span 8** No signals or signs attached at this span.

**Wire Weights (lbs)**  
(Assumed)

- Span 1** 8.90
- Span 2** 62.00
- Span 3** 55.20
- Span 4** 8.90
- Span 5** 63.30
- Span 6** 13.10
- Span 7** 55.80
- Span 8** 7.20

**Design Data**

<b>Min. SAG (ft):</b>	2.56	<b>Max. SAG (ft):</b>	4.27	<b>Wire Weight (lbs/ft):</b>	1.00
<b>Sum of Loads (lbs):</b>	441.80	<b>Sum of Areas (ft):</b>	37.60	<b>Box Warp Enabled:</b>	No
		<b>Minimum Clearance (ft):</b>	20.60	<b>Wire Weight (lbs/ft):</b>	1.00
		<b>Wind Pressure (psf):</b>	42.00	<b>Box Warp Enabled:</b>	No



# S W I S S

Version 1.2.3  
Span Wire Signal Support Design

## RESULT OF FINAL CALCULATION [MAX SAG]

Sequence #:	1	Configuration Type:	Box	Problem Identification:	Box							
				Span Results								
				[ SPAN 1 ]	[ SPAN 2 ]	[ SPAN 3 ]	[ SPAN 4 ]	[ SPAN 5 ]	[ SPAN 6 ]	[ SPAN 7 ]	[ SPAN 8 ]	
Tension Relations:				1.49425	1.09299	1.00000	1.55549	1.20902	1.55549	0.95780	0.74570	
Elevation Differences (ft)				1.16	0.00	0.00	1.15	0.00	2.05	0.00	1.82	
Reaction at the end of the span (lbs)				159.25	-106.46	-52.79	165.21	-64.19	198.61	-77.20	155.04	
Distance from end to low point (ft)				0.00	28.50	35.20	0.00	41.70	0.00	27.90	0.00	
SAG below end of span (ft)				0.00	2.22	1.47	0.00	1.77	0.00	1.83	0.00	
----- Pole Results -----												
				[ POLE 1 ]	[ POLE 2 ]	[ POLE 3 ]	[ POLE 4 ]					Other information
Stringing Tension (lbs):				1259.81	628.70	1311.44	1311.44					4.08
Attachment Height above pole base (ft)				23.98	24.64	23.97	24.87					For system balance rotate pole two 29.74 degree(s) counterclockwise
Attachment Elevation (ft)				23.98	24.64	23.97	24.87					Distance between Highest and Lowest Point (ft) :
Base Moment (ft/lbs)				123330.	63242.06	128357.	133165.					4.27
												Max. Wire Load (lbs):
												5423.78

----- Height of each signal or sign attachment point above the lowest (ft) -----

- Span 1 No signals or signs attached at this span.
- Span 2 (0.00), (0.44)
- Span 3 (1.28), (0.75)
- Span 4 No signals or signs attached at this span.
- Span 5 (1.10), (0.45)
- Span 6 No signals or signs attached at this span.
- Span 7 (0.42), (0.42)
- Span 8 No signals or signs attached at this span.





# S W I S S

Version 1.2.3  
Span Wire Signal Support Design

## RESULT OF FINAL CALCULATION [MIN SAG]

Sequence #:	1	Configuration Type:	Box	Problem Identification:	Box							
				Span Results								
				[ SPAN 1 ]	[ SPAN 2 ]	[ SPAN 3 ]	[ SPAN 4 ]	[ SPAN 5 ]	[ SPAN 6 ]	[ SPAN 7 ]	[ SPAN 8 ]	
Tension Relations:				1.49425	1.09299	1.00000	1.55549	1.20902	1.55549	0.95780	0.74570	
Elevation Differences (ft)				0.69	0.00	0.00	0.69	0.00	1.23	0.00	1.09	
Reaction at the end of the span (lbs)				159.25	-106.46	-52.79	165.21	-64.19	198.61	-77.20	155.04	
Distance from end to low point (ft)				0.00	28.50	35.20	0.00	41.70	0.00	27.90	0.00	
SAG below end of span (ft)				0.00	1.33	0.88	0.00	1.06	0.00	1.09	0.00	
----- Pole Results -----												
				[ POLE 1 ]	[ POLE 2 ]	[ POLE 3 ]	[ POLE 4 ]					Other information
Stringing Tension (lbs):				2101.32	1048.65	2187.44	2187.44					4.08
Attachment Height above pole base (ft)				22.62	23.02	22.62	23.16					For system balance rotate pole two 29.74 degree(s) counterclockwise
Attachment Elevation (ft)				22.62	23.02	22.62	23.16					Distance between Highest and Lowest Point (ft) : 2.56
Base Moment (ft/lbs)				194107.	98563.17	202035.	206843.					Max. Wire Load (lbs): 8972.80

----- Height of each signal or sign attachment point above the lowest (ft) -----

- Span 1 No signals or signs attached at this span.
- Span 2 (0.00), (0.27)
- Span 3 (0.77), (0.45)
- Span 4 No signals or signs attached at this span.
- Span 5 (0.66), (0.27)
- Span 6 No signals or signs attached at this span.
- Span 7 (0.25), (0.25)
- Span 8 No signals or signs attached at this span.