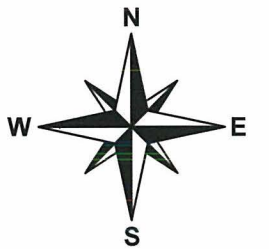


NHOS
 New Hampshire Optical Systems
 New Hampshire Optical Systems, Inc.
 99 Pine Hill Rd.
 Nashua, NH 03063
 (603-821-6467)

**Proposed
 Railroad Crossing
 Lancaster, NH**



Project # TID-137 - Primary 7
 Drawing # AC-LANC-RR-4

Date: 7/9/13
 Revision #1

**Proposed
 Railroad Crossing
 Lancaster, NH**

Location:
 Mechanic St., Lancaster, NH
 Nearest cross street- Middle St.



LOCUS MAP
(Not to Scale)



Spanmaster® Release 3.1 Sag / Tension Computations

Waveguide
River and Rail Crossings

09/01/11 Waveguide

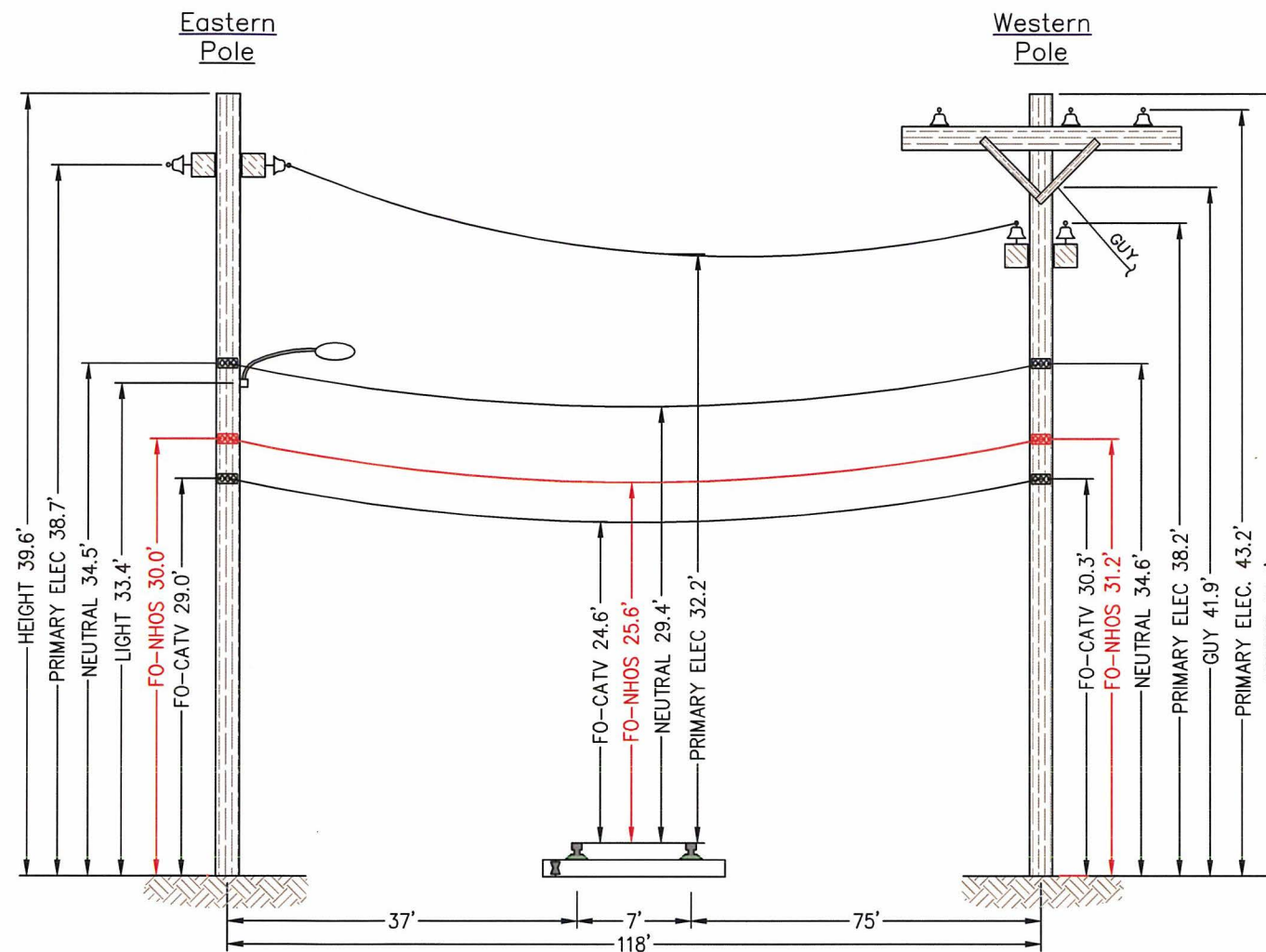
Selected Cables	X-SECT AREA (sq.in)	EFF MODULUS (psi)	NOMINAL DIAM (in)	EFF.EXP. COEFF. (1/F)	CABLE WEIGHT (lb/ft)	E'A LOAD BEARING CAPACITY (lbs)	MAX. RATED LOAD (lbs)
1/4*6mEHS	0.0352	2.60E+07	0.250	5.60E-06	0.1210	914940	6650
ORF-O-288-LN Bundle	0.5782	2.70E+05	0.858	1.13E-05	0.1960	155982	651
			1.108		0.3170		

NESC RESULTS

Loading Condition	Temp. (F)	Ice Load (lb/ft)	Ice Thick (in)	Wind Constant (lb/ft)	Horz Load (lb/ft)	Result Load + Const (lb/ft)	Sag (ft)	Tension (lb)	% Len Chg From Input Conditions	Sag @ Point 59 (ft)	Horz Sag Comp (ft)	Vert Sag Comp (ft)	Vector Angle Deg
Rule 251 - Heavy	0.0	1.000	.50	.3	4.0	1.793	2.19	1422	0.07	2.19	1.03	1.93	28.1
232A1	120.0	0.000	.00	.0	0.0	0.317	1.51	366	0.02	1.51	0.00	1.51	0.0

Temp (F)	Midspan Sag (ft)	Tension (lb)	% Length Change	Clearance
-40.0	.64	858	-0.02	N/A
-30.0	.68	815	-0.02	N/A
-20.0	.71	773	-0.02	N/A
-10.0	.75	732	-0.02	N/A
.0	.80	693	-0.01	N/A
10.0	.84	655	-0.01	N/A
20.0	.89	618	-0.01	N/A
30.0	.94	584	-0.01	N/A
40.0	1.00	552	-0.01	N/A
50.0	1.06	522	-0.01	N/A
60.0	1.12	493	0.00	N/A
70.0	1.18	467	0.00	N/A
80.0	1.24	443	0.00	N/A
90.0	1.31	421	0.01	N/A
100.0	1.38	401	0.01	N/A
110.0	1.44	383	0.01	N/A
120.0	1.51	366	0.02	N/A
130.0	1.57	351	0.02	N/A
140.0	1.64	336	0.02	N/A

Span Length = 118.00 ft
Span Sag = 1.18 ft (14.2 in)
Span Tension = 468 lb
Max Load = 6,650 lb
Usable load (60%) = 3,990 lb
Catenary Length = 118.031 ft
Stress Free Length @ Installed Temperature = 117.971 ft
Unloaded Strand Sag = .69 ft (8.2 in) 0.58 % Tension = 306 lb



E-23/16 - T-406/4
(Existing joint owned utility pole (PSNH/Fairpoint) in existing Right-of-Way)

E-232/1 - T-NT
(Existing sole owned utility pole (PSNH) in existing Right-of-Way)



E-23/16 - T-406/4

Construction Notes:

NHOS proposes to install a 1/4 inch metal supporting strand between the existing utility poles shown above that will traverse the Railroad. The strand will be installed at the proposed height (see above). The supporting strand will be secured to each pole using double dead end attachments to prevent any sag in the wire and maintain proper clearances. NHOS will lash a one inch diameter fiber optic cable (PVC jacket) to the strand using a dual lash method to provide security of the fiber over the right of way. The fiber will be tagged with twenty four hour contact information at each pole clamp. NHOS will employ the proper safety personnel during the crossing installation. The proposed install will meet all proper clearances from other Utilities. (see above). Additional pole guys will be added per NESC Rule 264 and as directed by pole owners.



E-232/1 - T-NT



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Notes:

- The heights of structures shown hereon are based on field measurements taken with a Nikon 362 total station during a site survey on 6/27/13.
- Vertical distances are representative of attachment heights after utility make ready moves are completed.

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