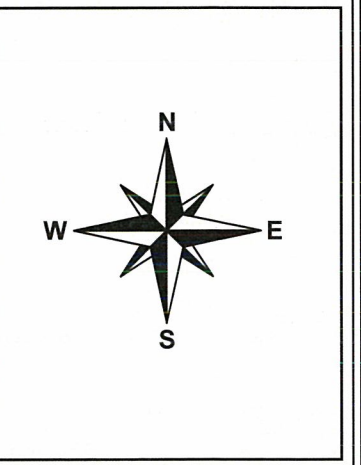


NHOS
 New Hampshire Optical Systems
 New Hampshire Optical Systems, Inc.
 10 N Southwood Dr.
 Nashua, NH 03063
 (603-821-6467)

**Proposed
 Railroad Crossing
 Berlin, NH**



Project # TID-147 - Primary 7
 Drawing # AC-BER-RR-1

Date: 11/21/13
 Revision #2

**Proposed
 Railroad Crossing
 Berlin, NH**

Location:
 Exchange St., Berlin, NH
 Nearest cross street- Western Ave.

Proposed Railroad Crossing Berlin, NH

Notes:

- Vertical distances are representative of attachment heights after utility make ready moves are completed.

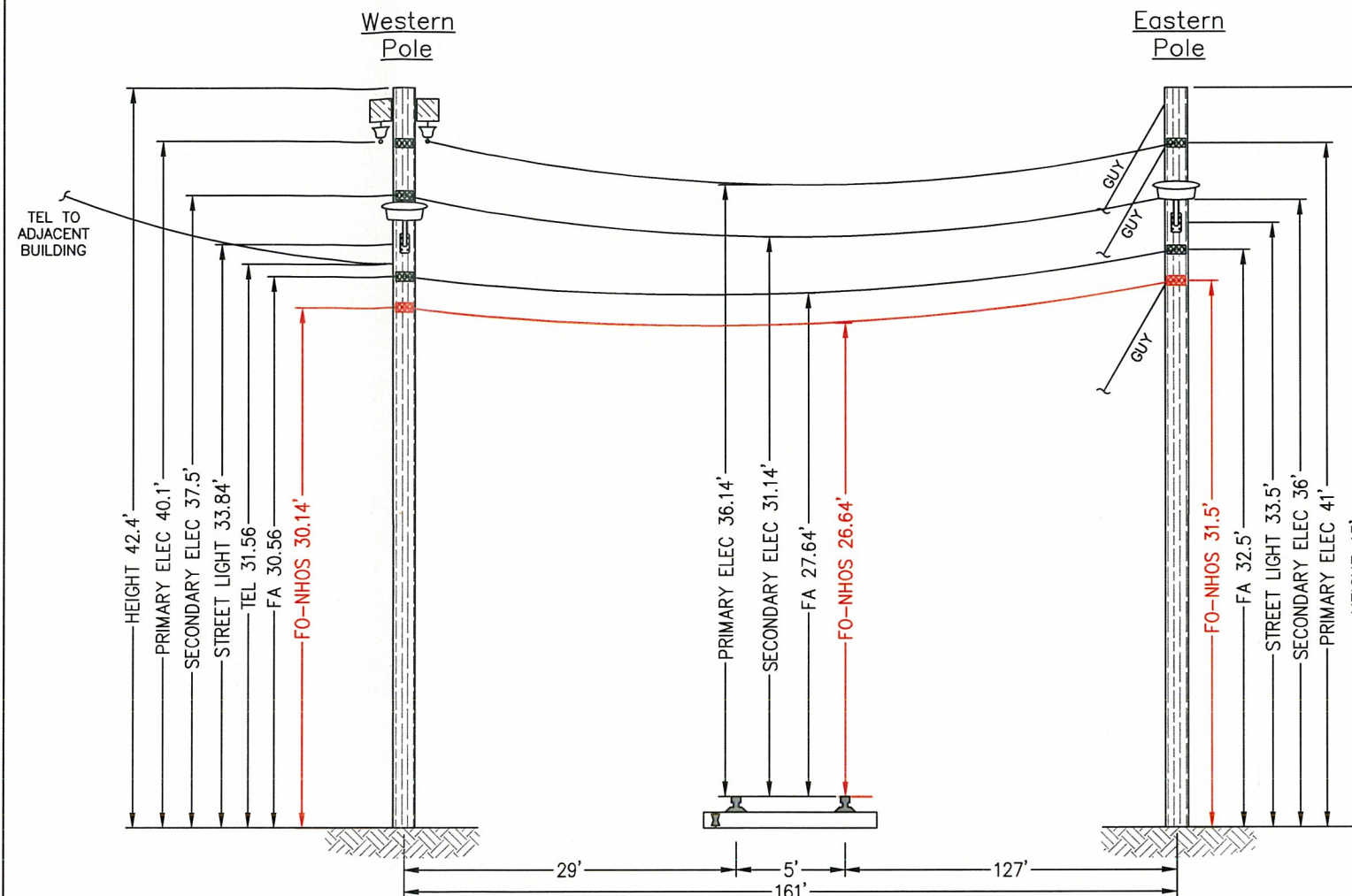
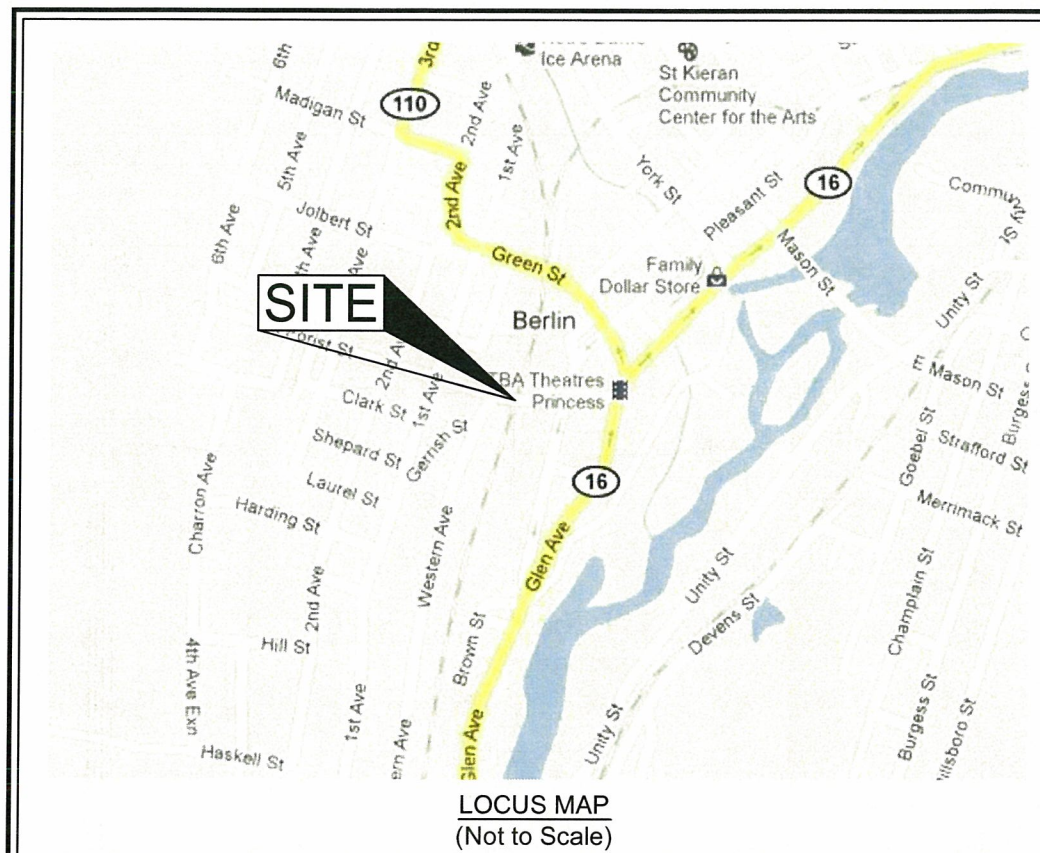
Project # TID-147 - Primary 7
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Proposed Railroad Crossing Berlin, NH

Location:
Exchange St., Berlin, NH
Nearest cross street- Western Ave.

Sheet 2 of 2



E-109/1 - T-171/1
(Existing joint owned utility pole (PSNH/Fairpoint) in existing Right-of-Way.)

(Proposed Attachment Heights)

E-107/5 - T-NT
(Propose utilities place 50' class 2 pole)



Spanmaster® Release 3.1 Sag / Tension Computations
11/21/13 TID 147

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"6.6mEHS	0.0352	2.60E+07	0.250	5.60E-06	0.1210	914940	6650
ORF-O-144-LN Bundle	0.4307	3.50E+05	0.741	1.09E-05	0.1520	150720	640
			0.991		0.2730		

NESC RESULTS

Loading Condition	Temp. (F)	Ice Load (lb/ft)	Ice Thick (in)	Wind Constant (lb/ft)	Horiz Wind Load (lb/ft)	Result Load + Const (lb/ft)	Sag (ft)	Tension (lb)	% Len Ctg From Input Conditions	Sag @ 50.00 ft	Horiz Sag Comp (ft)	Vert Sag Comp (ft)	Vector Angle Deg
Rule 251 - Heavy	0.0	0.927	.50	.3	4.0	1.671	3.19	1694	0.08	1.23	1.55	2.79	28.9
232A1	120.0	0.000	.00	.0	0.0	0.273	1.91	463	0.01	0.74	0.00	1.91	0.0

Span Length = 161.00 ft	Temp (F)	Midspan Sag (ft)	Tension (lb)	% Length Change	Clearance
Span Sag = 1.61 ft (19.3 in)	-40.0	.87	1,011	-0.02	N/A
Span Tension = 549 lb	-30.0	.91	967	-0.02	N/A
Max Load = 6,650 lb	-20.0	.96	923	-0.02	N/A
Usable load (60%) = 3,990 lb	-10.0	1.00	881	-0.02	N/A
Catenary Length = 161.043 ft	.0	1.05	839	-0.02	N/A
Stress Free Length @ Installed Temperature = 160.946 ft	10.0	1.11	799	-0.01	N/A
	20.0	1.16	760	-0.01	N/A
Unloaded Strand	30.0	1.22	722	-0.01	N/A
Sag = .99 ft (11.8 in) 0.61 %	40.0	1.29	686	-0.01	N/A
Tension = 397 lb	50.0	1.36	652	-0.01	N/A
	60.0	1.43	619	-0.01	N/A
	70.0	1.50	589	0.00	N/A
	80.0	1.58	560	0.00	N/A
	90.0	1.66	533	0.00	N/A
	100.0	1.74	508	0.00	N/A
	110.0	1.82	485	0.01	N/A
	120.0	1.91	463	0.01	N/A
	130.0	1.99	444	0.01	N/A
	140.0	2.08	425	0.02	N/A

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). 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).



E-109/1 - T-171/1



E-107/5 - T-NT