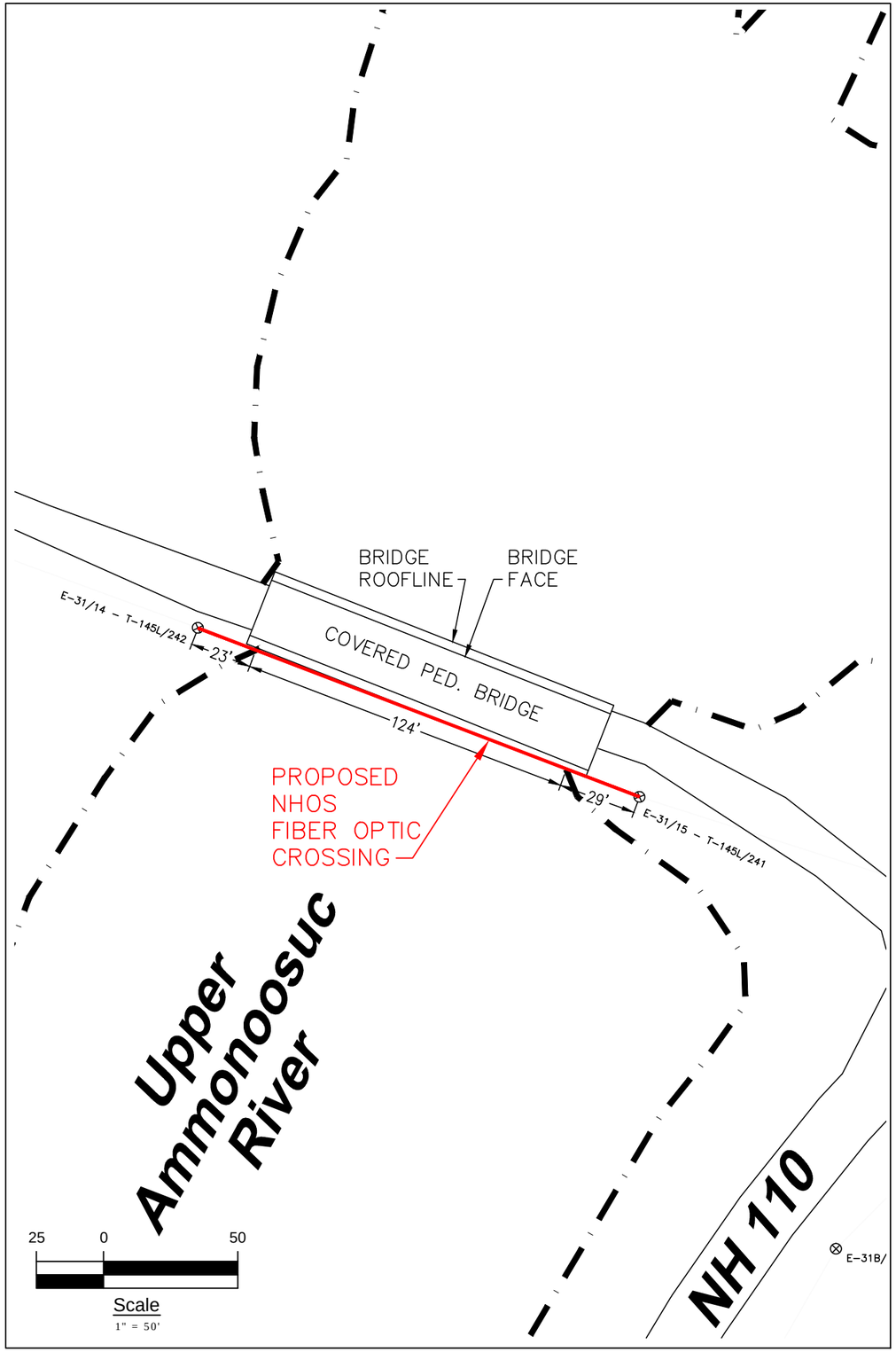

NHOS
New Hampshire Optical Systems
New Hampshire Optical Systems, Inc.
99 Pine Hill Rd.
Nashua, NH 03063
(603-821-6467)

Proposed
River Crossing
Northumberland, NH

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Project # TID-303 - Primary 16
Drawing # AR-NUM-RIV-1

Date: 2/20/13
Revision # 1

Proposed
River Crossing
Northumberland, NH

Location:
Berlin-Groveton Hwy, Northumberland, NH
Nearest cross street- Main St.

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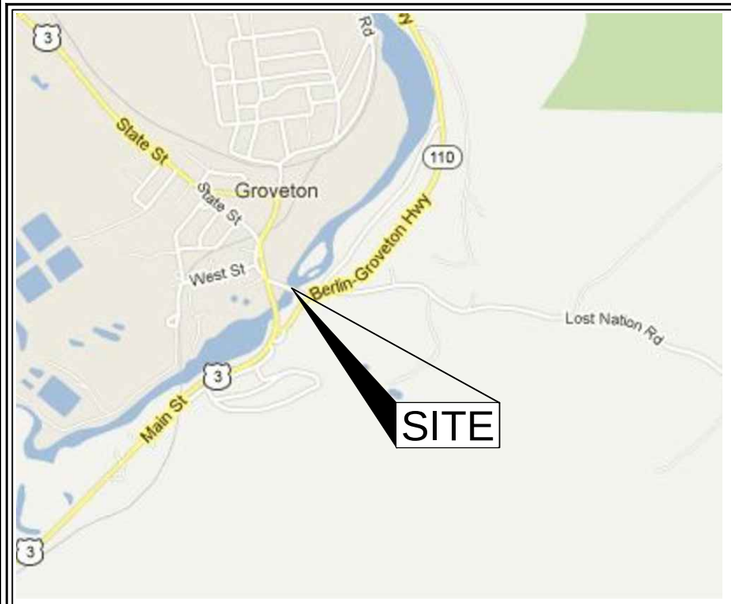


LOCUS MAP
(Not to Scale)

CommScope®

Spanmaster ® Release 3.1 Sag / Tension Computations

Waveguide 09/01/11 Waveguide
River and Rail Crossings

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-288-LN	0.5782	2.70E+05	0.858	1.13E-05	0.1960	155982	651
Bundle			1.108		0.3170		

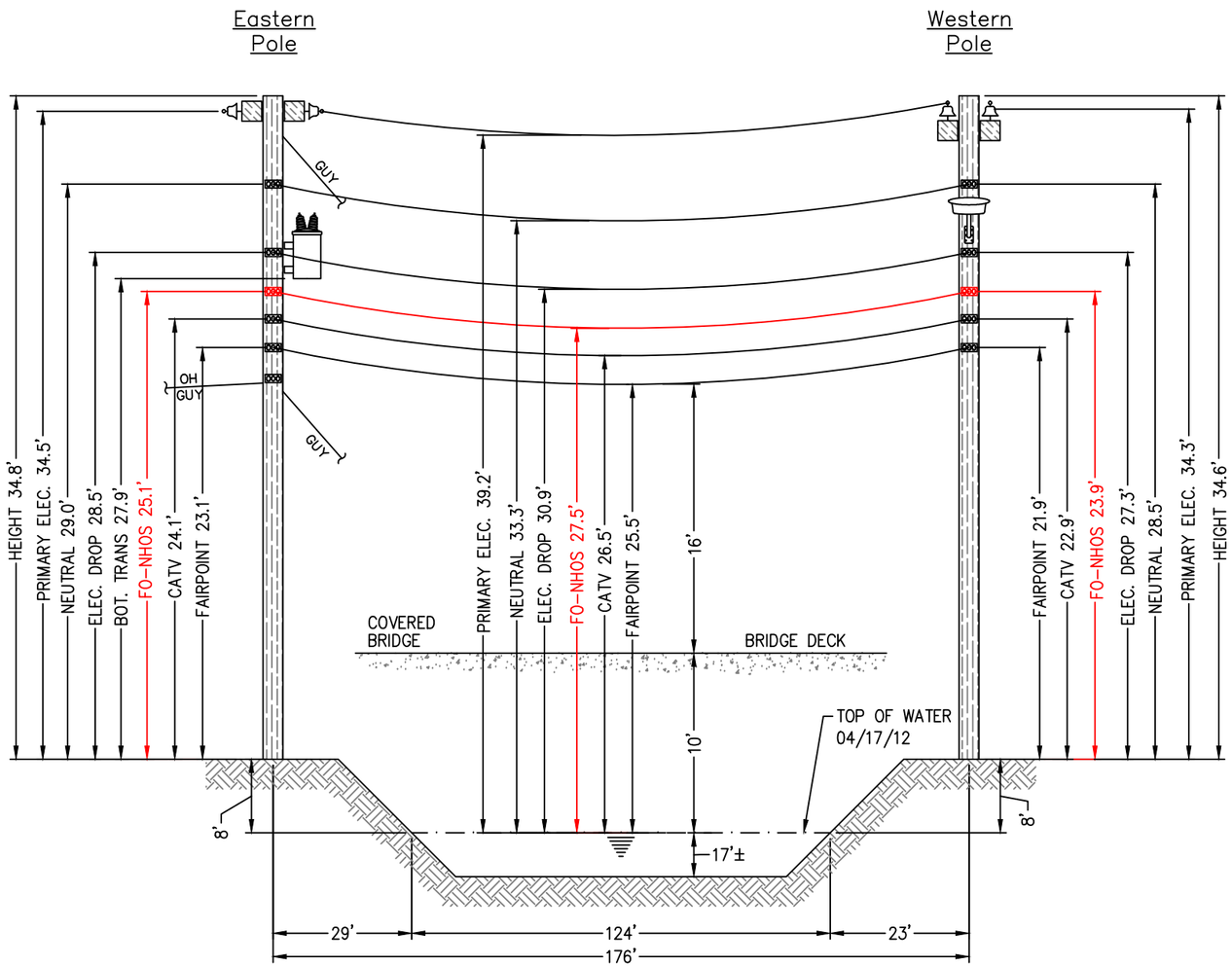
NESC RESULTS

Loading Condition	Temp. (F)	Ice Load lb/ft	Ice Thick in	Wind Constant lb/ft	Horz Wind Load lb/sq ft	Result Load + Const lb/ft	Sag ft	Tension lb	% Len Chg From Input Conditions	Sag @ Point 88 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	3.69	1880	0.09	3.69	1.74	3.25	28.1
232A1	120.0	0.000	.00	.0	0.0	0.317	2.17	566	0.01	2.17	0.00	2.17	0.0

Span Length = 176.00 ft
Span Sag = 1.76 ft (21.1 in)
Span Tension = 697 lb
Max Load = 6,650 lb
Usable load (60%) = 3,990 lb
Catenary Length = 176.047 ft
Stress Free Length @
Installed Temperature = 175.913 ft

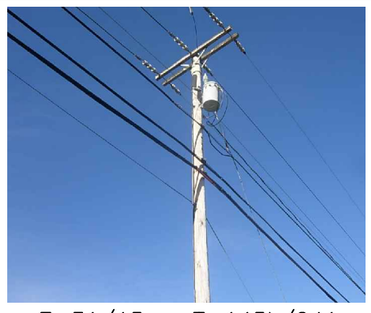
Unloaded Strand
Sag = .90 ft (10.9 in) 0.51 %
Tension = 518 lb

Temp (F)	Midspan Sag (ft)	Tension (lb)	% Length Change	Clearance
-40.0	1.10	1,111	-0.02	N/A
-30.0	1.15	1,068	-0.02	N/A
-20.0	1.19	1,025	-0.01	N/A
-10.0	1.25	984	-0.01	N/A
.0	1.30	944	-0.01	N/A
10.0	1.36	904	-0.01	N/A
20.0	1.41	866	-0.01	N/A
30.0	1.48	829	-0.01	N/A
40.0	1.54	794	-0.01	N/A
50.0	1.61	760	0.00	N/A
60.0	1.69	728	0.00	N/A
70.0	1.76	697	0.00	N/A
80.0	1.84	667	0.00	N/A
90.0	1.92	640	0.00	N/A
100.0	2.00	614	0.01	N/A
110.0	2.08	589	0.01	N/A
120.0	2.17	566	0.01	N/A
130.0	2.25	545	0.02	N/A
140.0	2.34	525	0.02	N/A



E-31/15 - T-145L/241
(Existing joint owned utility pole (PSNH/Fairpoint) in existing Right-of-Way)

E-31/14 - T-145L/242
(Existing joint owned utility pole (PSNH/Fairpoint) in existing Right-of-Way)



E-31/15 - T-145L/241

Construction Notes:

NHOS proposes to install a ¼ inch metal supporting strand between the existing utility poles shown above that will traverse the river. 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-31/14 - T-145L/242

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Proposed River Crossing Northumberland, NH

Notes:

1. The heights of structures shown hereon are based on field measurements taken with a Nikon 362 total station during a site survey on 04/17/12.
2. The horizontal distance between the nearest bridge edge and the existing overhead wires is approximately 4'.
3. Because of the close horizontal proximity to the existing bridge structure, the simplified drawing is submitted with vertical distances measured to the structure. This process simplifies the preparation and review of the crossing without jeopardizing its intent to protect the safe usage of the waterway
4. The smallest vertical distance from the top of existing bridge deck to the lowest existing overhead wires is 16'.
5. The vertical distance between the top of water and bridge deck is approximately 10'.
6. Vertical distances are representative of attachment heights after utility make ready moves are completed.

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