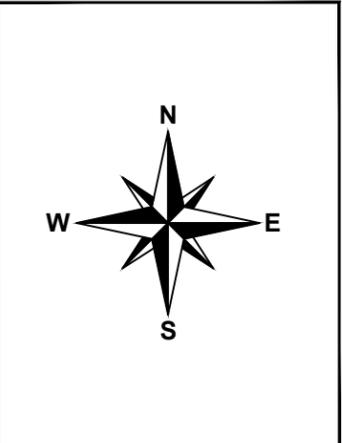


NHOS
 New Hampshire Optical Systems
 New Hampshire Optical Systems, Inc.
 99 Pine Hill Rd.
 Nashua, NH 03063
 (603-821-6467)

**Proposed Sugar River Crossing
 Newport, NH**

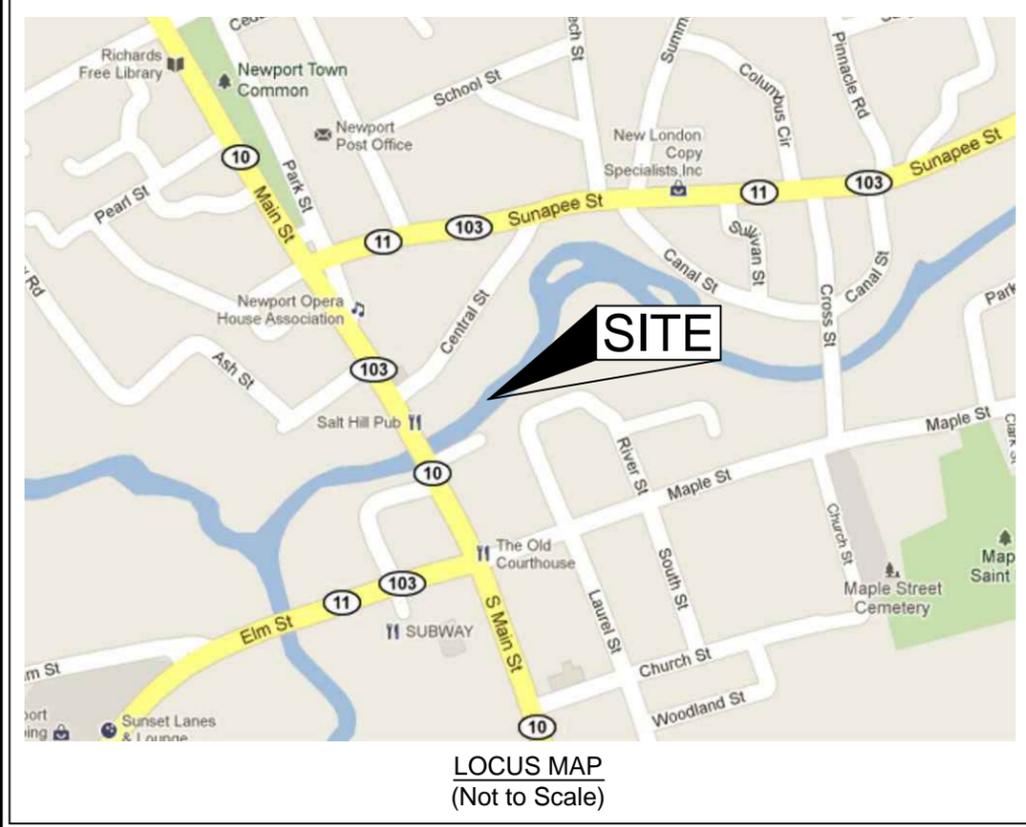


Project # TID-88-PRI-1
 Drawing # AC-NEW-RIV-1

Date: 02/02/12
 Revision # 1

**Proposed Sugar River Crossing
 Newport, NH**

Location:
 Laurel St, Newport, NH
 Nearest cross street- River Rd





Spanmaster® Release 3.1 Sag / Tension Computations
09/01/11 Waveguide

Waveguide
River and Rail Crossings

Selected Cables	X-SECT AREA (sq.in)	EFF MODULUS (psi)	NOMINAL DIAM (in)	EFF.EXP. COEFF. (1/F)	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	6650
ORF-O-144-LN Bundle	0.4307	3.50E+05	0.741	1.09E-05	0.1520	150720	640	640

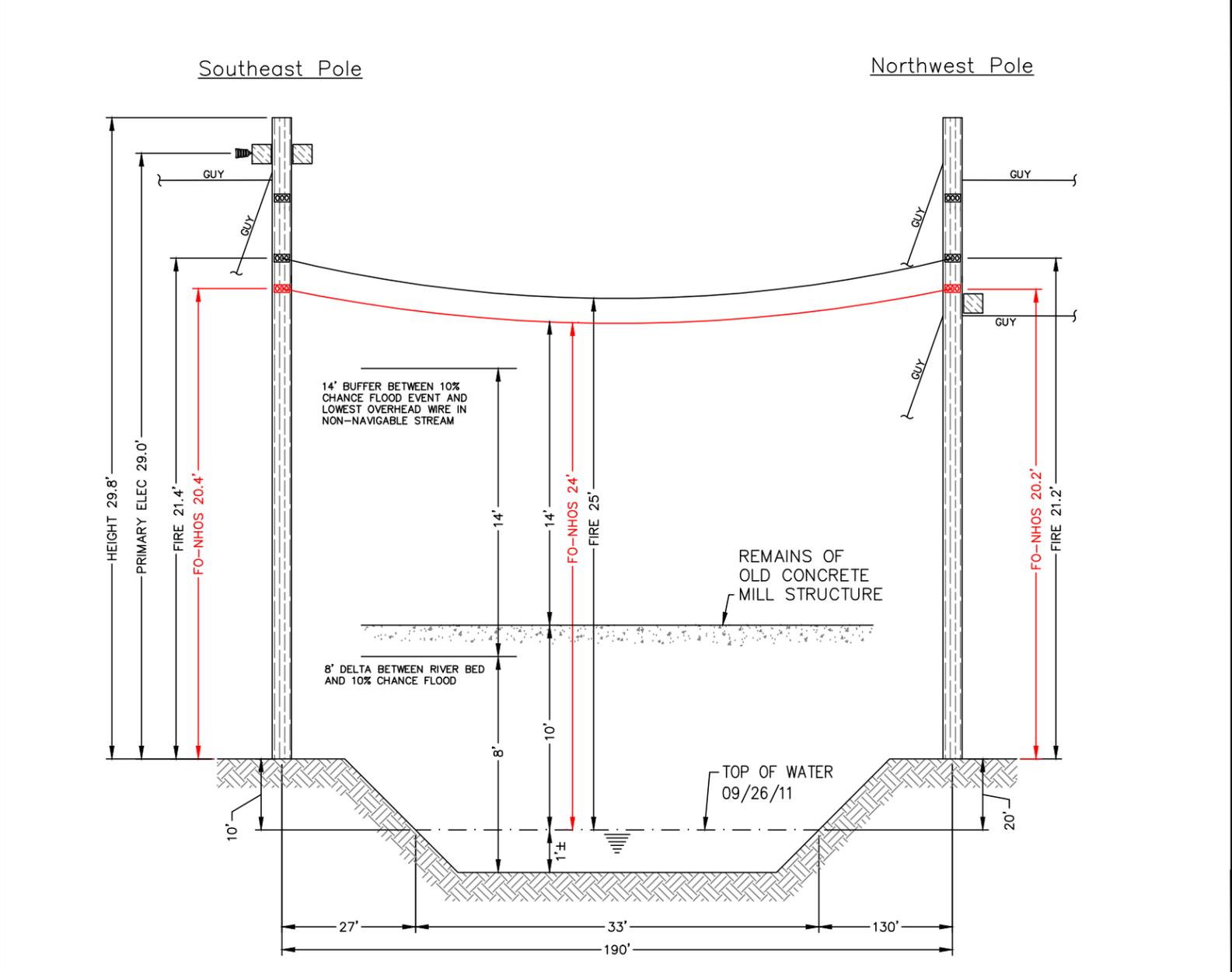
NESC RESULTS

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 95 ft	Horz Sag Comp (ft)	Vert Sag Comp (ft)	Vector Angle Deg
Rule 251 - Heavy 232A1	0.0	0.927	.50	.3	4.0	1.671	4.04	1864	0.09	4.05	1.95	3.53	28.9
	120.0	0.000	.00	.0	0.0	0.273	2.36	523	0.01	2.36	0.00	2.36	0.0

Temp (F)	Midspan Sag (ft)	Tension (lb)	% Length Change	Clearance
10.0	1.44	852	-0.01	N/A
20.0	1.51	814	-0.01	N/A
30.0	1.58	778	-0.01	N/A
40.0	1.66	743	-0.01	N/A
50.0	1.73	709	0.00	N/A
60.0	1.82	678	0.00	N/A
70.0	1.90	648	0.00	N/A
80.0	1.99	620	0.00	N/A
90.0	2.08	593	0.01	N/A
100.0	2.17	568	0.01	N/A
110.0	2.26	545	0.01	N/A
120.0	2.36	523	0.01	N/A
130.0	2.45	503	0.02	N/A
140.0	2.55	484	0.02	N/A

Span Length = 190.00 ft
Span Sag = 1.90 ft (22.8 in)
Span Tension = 648 lb
Max Load = 6,650 lb
Usable load (60%) = 3,990 lb
Catenary Length = 190.051 ft
Stress Free Length @ Installed Temperature = 189.916 ft

Unloaded Strand
Sag = 1.12 ft (13.4 in) 0.59 %
Tension = 489 lb



E-216A/4A - T-NT/NT
(Existing joint owned utility pole (PSNH) in existing Right-of-Way)

Not to Scale

E-34/1 - T-54/5S
(Existing joint owned utility pole (PSNH/Fairpoint) in existing Right-of-Way)



Construction Notes:

NHOS proposes to install a 1/4 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.




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

Proposed Sugar River Crossing Newport, NH

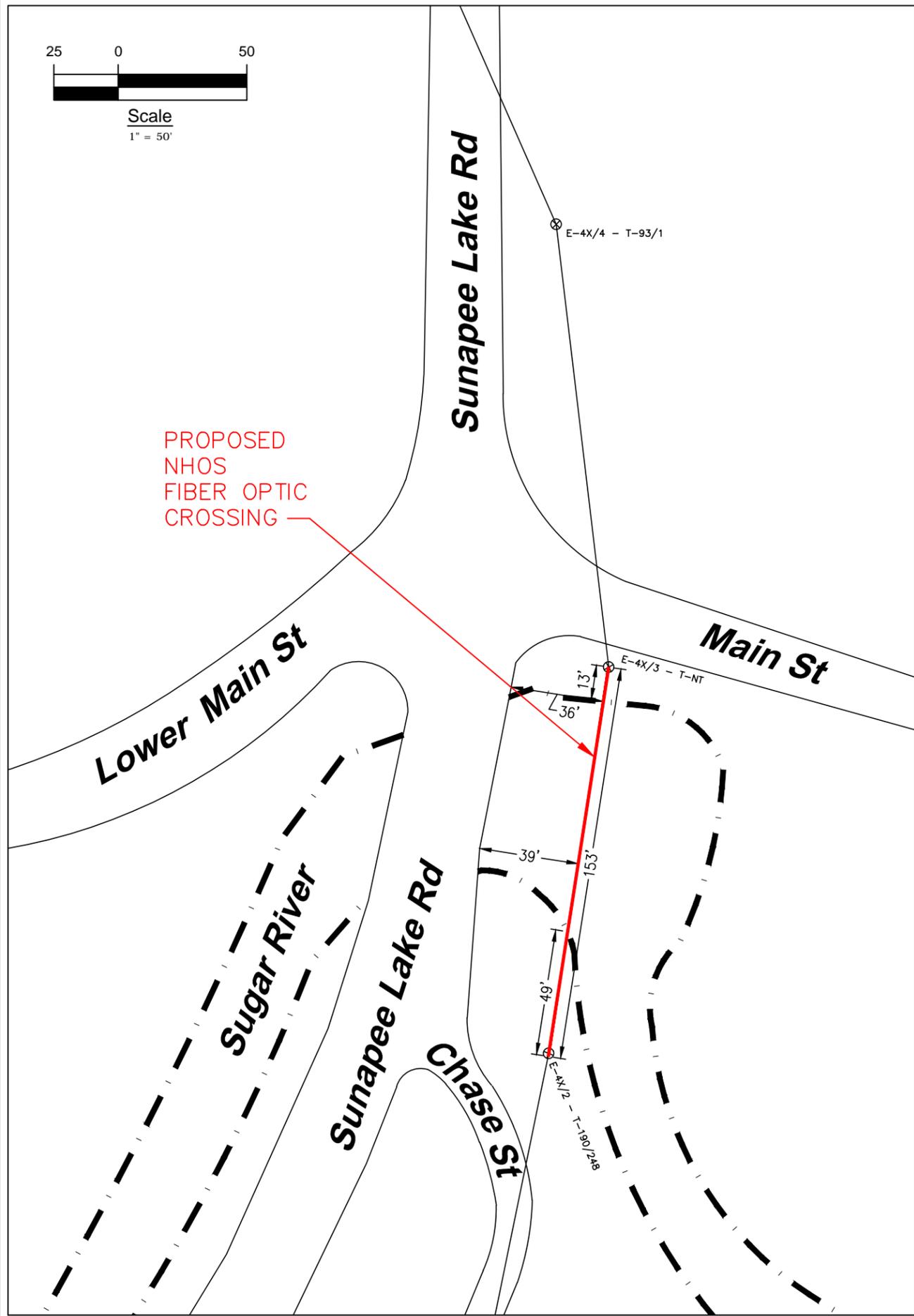
- Notes:**
- The heights of structures shown hereon are based on field measurements taken with a Nikon 362 total station during a site survey on 9/26/11.
 - The horizontal distance between the top of the remains of the concrete mill structure and the existing overhead wires is approximately 17'.
 - The smallest vertical distance from the top of the remains of the concrete mill structure to the lowest existing overhead wires is approximately 14'.
 - The waterway is classified as not suitable for sail boating and per NESC Table 232-1 a vertical clearance of 14' must be maintained between the lowest conductor and 10 year floodplain.
 - Based on the FEMA Flood Profile for the Sugar River (Page 67P) the distance between the river bed and the 10% chance flood event is 8'. A 14' buffer (for non-navigable streams) between the 10% chance flood event and the lowest overhead wire was added to that. Based on the FEMA Flood Profile the stream bed elevation is 784' and the 10 year flood event elevation is 792'.
 - Vertical distances are representative of attachment heights after utility make ready moves are completed.

Project # TID-88-PRI-1
Drawing # AC-NEW-RIV-1

Date: 02/02/12
Revision # 1

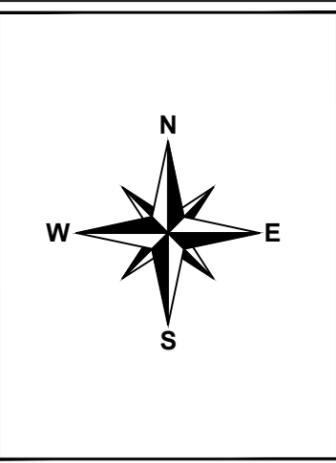
Proposed Sugar River Crossing Newport, NH

Location:
Laurel St, Newport, NH
Nearest cross street- River Rd



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

**Proposed Sugar River Crossing
 Sunapee, NH**



Project # TID-91-PRI-1
 Drawing # AC-SUN-RIV-2

Date: 02/02/12
 Revision # 1

**Proposed Sugar River Crossing
 Sunapee, NH**

Location:
 Rt 11, Sunapee, NH
 Nearest cross street- Main St.



LOCUS MAP
(Not to Scale)



Spanmaster® Release 3.1 Sag / Tension Computations

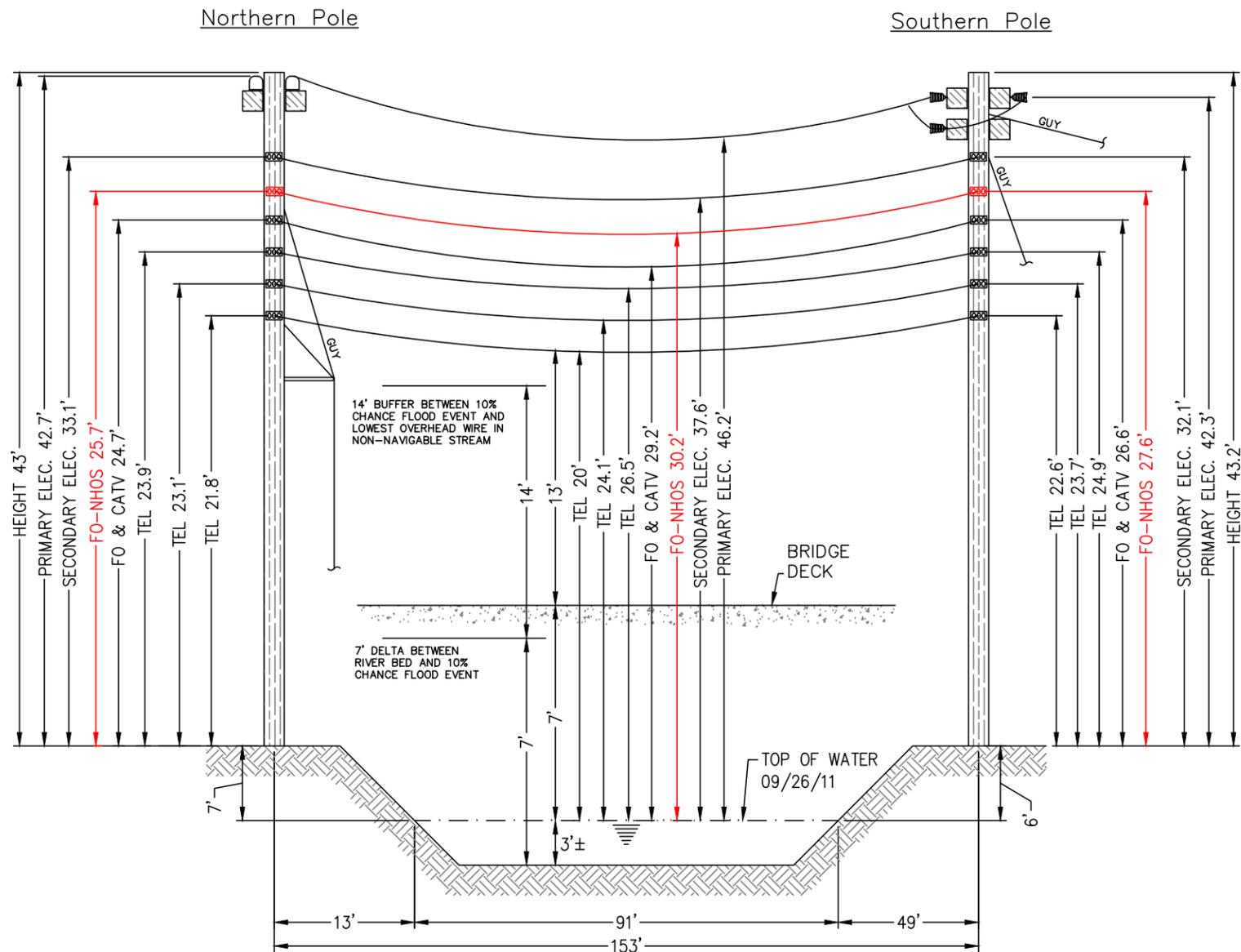
Waveguide
River and Rail Crossings

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.mEHS	0.0352	2.60E+07	0.250	5.60E-06	0.1210	914940	6650
ORF-O-288-LN Bundle	0.5782	2.70E+05	1.108	1.13E-05	0.1960	155982	651

NEC RESULTS

Loading Condition	Temp. (F)	Ice Load (lb/ft)	Ice Thick (in)	Wind Constant (lb/ft)	Horz Wind Load (lb/ft)	Result Load + Const (lb/ft)	Sag (ft)	Tension (lb)	% Len Chg From Input Conditions	Sag @ 76.5 ft (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	3.07	1704	0.08	3.08	1.45	2.71	28.1
232A1	120.0	0.000	.00	.0	0.0	0.317	1.91	486	0.01	1.91	0.00	1.91	0.0

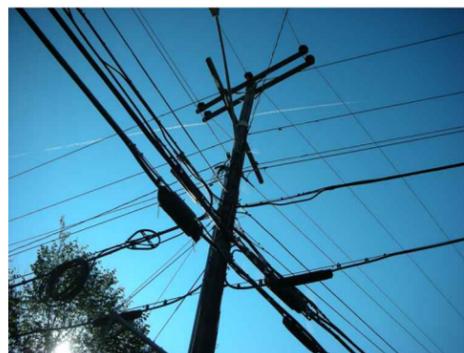
Span Length = 153.00 ft	Temp (F)	Midspan Sag (ft)	Tension (lb)	% Length Change	Clearance
Span Sag = 1.53 ft (18.4 in)					
Span Tension = 606 lb	-40.0	.92	1,012	-0.02	N/A
Max Load = 6,650 lb	-30.0	.96	969	-0.02	N/A
Usable load (60%) = 3,990 lb	-20.0	1.00	926	-0.02	N/A
Catenary Length = 153.041 ft	-10.0	1.05	885	-0.01	N/A
Stress Free Length @ Installed Temperature = 152.939 ft	.0	1.10	845	-0.01	N/A
	10.0	1.15	806	-0.01	N/A
	20.0	1.20	769	-0.01	N/A
Unloaded Strand	30.0	1.26	733	-0.01	N/A
Sag = .82 ft (9.8 in) 0.54 %	40.0	1.33	699	-0.01	N/A
Tension = 432 lb	50.0	1.39	666	0.00	N/A
	60.0	1.46	635	0.00	N/A
	70.0	1.53	606	0.00	N/A
	80.0	1.60	578	0.00	N/A
	90.0	1.68	553	0.01	N/A
	100.0	1.75	529	0.01	N/A
	110.0	1.83	506	0.01	N/A
	120.0	1.91	486	0.01	N/A
	130.0	1.99	467	0.02	N/A
	140.0	2.07	449	0.02	N/A



E-4X/3 - T-NT
(Existing joint owned utility pole (PSNH/Fairpoint) in existing Right-of-Way)

Not to Scale

E-4X/2 - T-190/248
(Existing joint owned utility pole (PSNH/Fairpoint) in existing Right-of-Way)



E-4X/3 - T-NT

Construction Notes:

NHOS proposes to install a 1/4 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 NEC Rule 264 and as directed by pole owners.



E-4X/2 - T-190/248



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

Proposed Sugar River Crossing
Sunapee, NH

Notes:

- The heights of structures shown hereon are based on field measurements taken with a Nikon 362 total station during a site survey on 9/27/11.
- The horizontal distance between the nearest bridge edge and the existing overhead wires ranges from 36' to 39'.
- The smallest vertical distance from the top of existing bridge deck to the lowest existing overhead wires is 13'.
- The vertical distance between the top of water and bridge deck is approximately 7'.
- The waterway is classified as not suitable for sail boating and per NESC Table 232-1 a vertical clearance of 14' must be maintained between the lowest conductor and the 10% chance flood event.
- Based on the FEMA Flood Profile for the Sugar River (Page 71P) for Sullivan County the difference in elevation between the stream bed and the 10% chance flood event is 7'. Based on the FEMA Flood Profile the stream bed elevation is 1,006 and the 10% chance flood event elevation is 1,013'.
- Vertical distances are representative of attachment heights after utility make ready moves are completed.

Project # TID-91-PRI-1
Drawing # AC-SUN-RIV-2

Date: 02/02/12
Revision # 1

Proposed Sugar River Crossing
Sunapee, NH

Location:
Rt 11, Sunapee, NH
Nearest cross street- Main St.