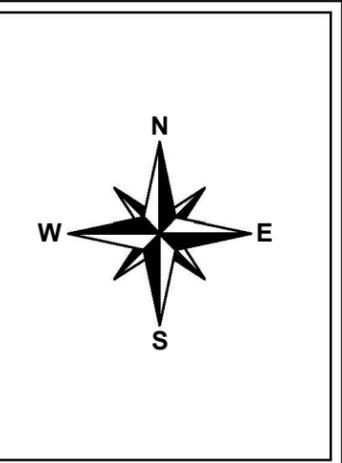


New Hampshire Optical Systems, Inc.
 99 Pine Hill Rd.
 Nashua, NH 03063
 (603-821-6467)

**Proposed
 River Crossing
 Nashua, NH**

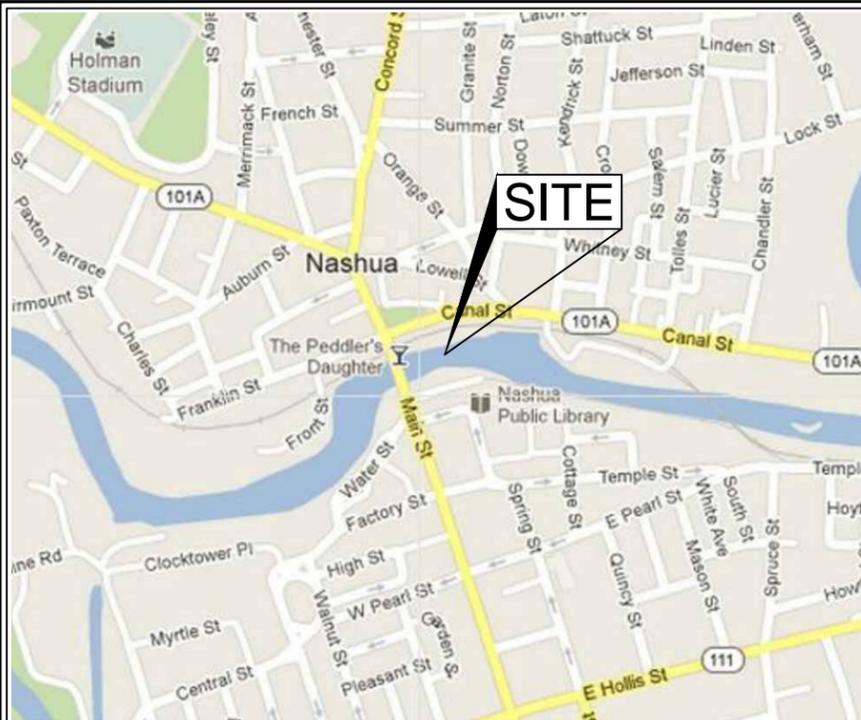


Project # TID-310 - Primary 18
 Drawing # AC-NAS-RIV-4

Date: 2/3/13
 Revision #

**Proposed
 River Crossing
 Nashua, NH**

Location:
 Canal St., Nashua, NH
 Nearest cross street- Main St.



LOCUS MAP
(Not to Scale)



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

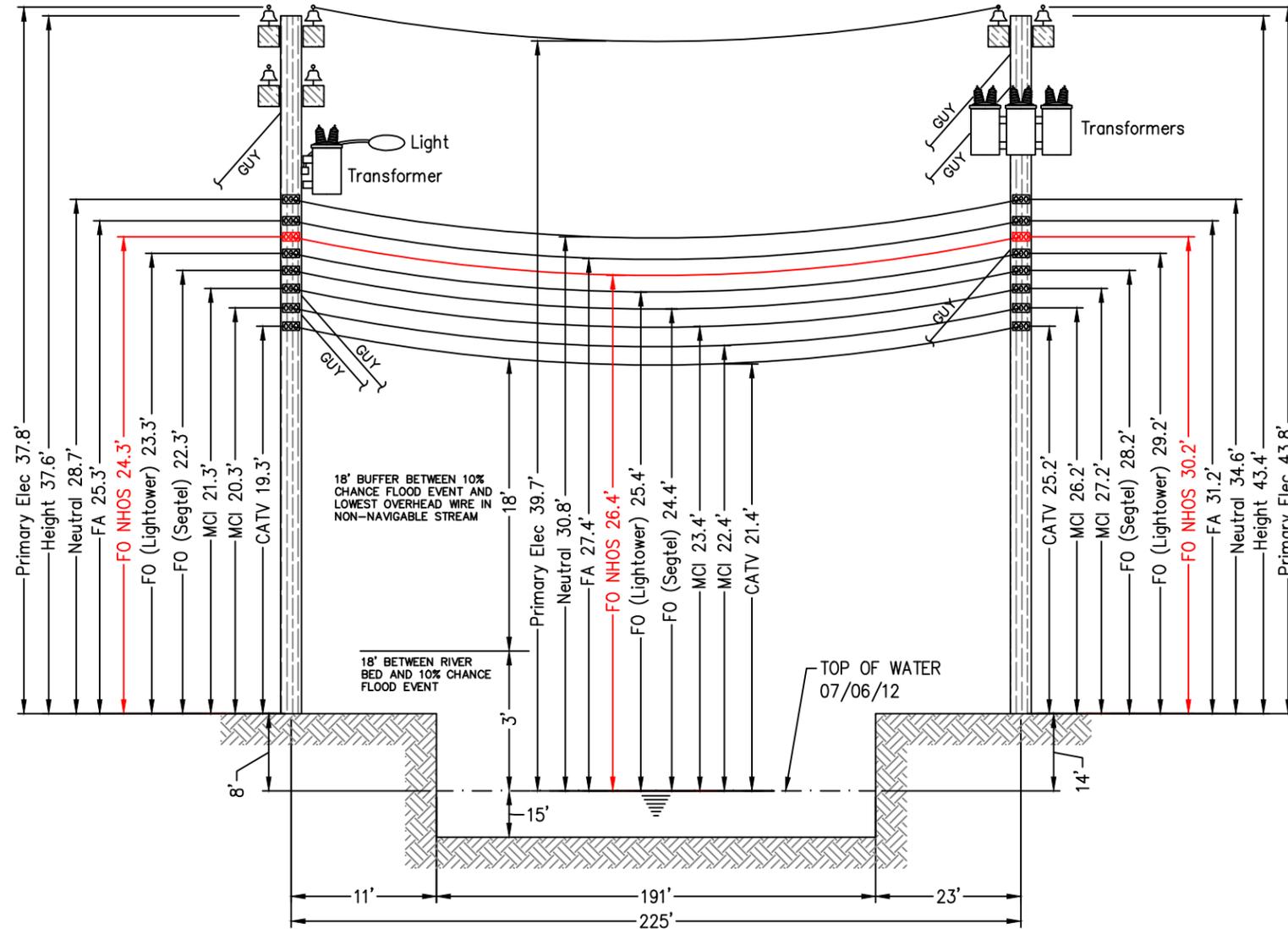
Waveguide
River and Rail Crossings

Selected Cables	X-SECT AREA (sq.in)	EFF MODULUS (psi)	NOMINAL DIAM (in)	EFF.EXP. COEFF. (1/F)	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)	Resultant Load + Const (lb/ft)	Sag (ft)	Tension (lb)	% Len Chg From Input Conditions	Sag @ Point 112.5 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	5.06	2237	0.11	5.07	2.38	4.46	28.1
232A1	120.0	0.000	.00	.0	0.0	0.317	2.70	742	0.01	2.70	0.00	2.70	0.0

Span Length = 225.00 ft	Temp (F)	Midspan Sag (ft)	Tension (lb)	% Length Change	Clearance
Span Sag = 2.25 ft (27.0 in)					
Span Tension = 892 lb	-40.0	1.52	1,319	-0.01	N/A
Max Load = 6,650 lb	-30.0	1.57	1,276	-0.01	N/A
Usable load (60%) = 3,990 lb	-20.0	1.62	1,233	-0.01	N/A
Catenary Length = 225.060 ft	-10.0	1.68	1,191	-0.01	N/A
Stress Free Length @ Installed Temperature = 224.841 ft	.0	1.74	1,150	-0.01	N/A
Unloaded Strand	10.0	1.80	1,110	-0.01	N/A
Sag = 1.09 ft (13.0 in) 0.48 % Tension = 704 lb	20.0	1.87	1,071	-0.01	N/A
	30.0	1.94	1,032	-0.01	N/A
	40.0	2.01	995	-0.01	N/A
	50.0	2.09	959	0.00	N/A
	60.0	2.17	924	0.00	N/A
	70.0	2.25	890	0.00	N/A
	80.0	2.33	858	0.00	N/A
	90.0	2.42	827	0.00	N/A
	100.0	2.51	797	0.01	N/A
	110.0	2.61	769	0.01	N/A
	120.0	2.70	742	0.01	N/A
	130.0	2.80	717	0.01	N/A
	140.0	2.90	692	0.02	N/A



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

E-201/9-1 - T-NT
(PSNH owned utility pole in existing Right-of-Way)



E-NT/1 - T-NT

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-201/9-1 - T-NT



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Proposed River Crossing Nashua, 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 07/06/12.
- The horizontal distance between the nearest bridge edge and the existing overhead wires is over 200' away.
- The smallest vertical distance between the lowest wire and the 10% chance flood event is 18'.
- 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 Nashua River (Page 161P) and the Flood Insurance Rate Map for Hillsborough County (Map Number 33011C0514E) dated April 18, 2011, the delta between the river bed and the 10 year flood elevation is 18'. Based on the Flood Profile for the Nashua River (page 161P) the elevation of the stream bed is 103' and the elevation of the 10% Chance Flood event is 121'.
- Vertical distances are representative of attachment heights after utility make ready moves are completed.

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