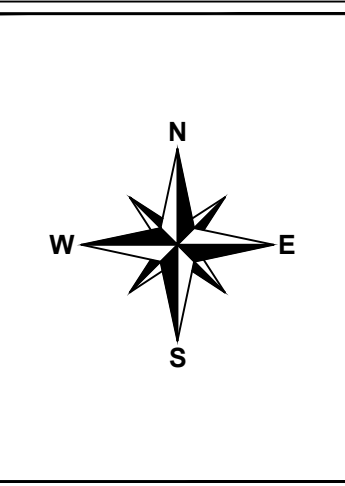


New Hampshire Optical Systems
 New Hampshire Optical Systems, Inc.
 99 Pine Hill Rd.
 Nashua, NH 03063
 (603-821-6467)

**Proposed
 River Crossing
 Lancaster, NH**



Project # TID-129
 Drawing # AC-LANC-RIV-1

Date: 03/05/12
 Revision #

**Proposed
 River Crossing
 Lancaster, NH**

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



LOCUS MAP
(Not to Scale)



Spanmaster® Release 3.1 Sag / Tension Computations

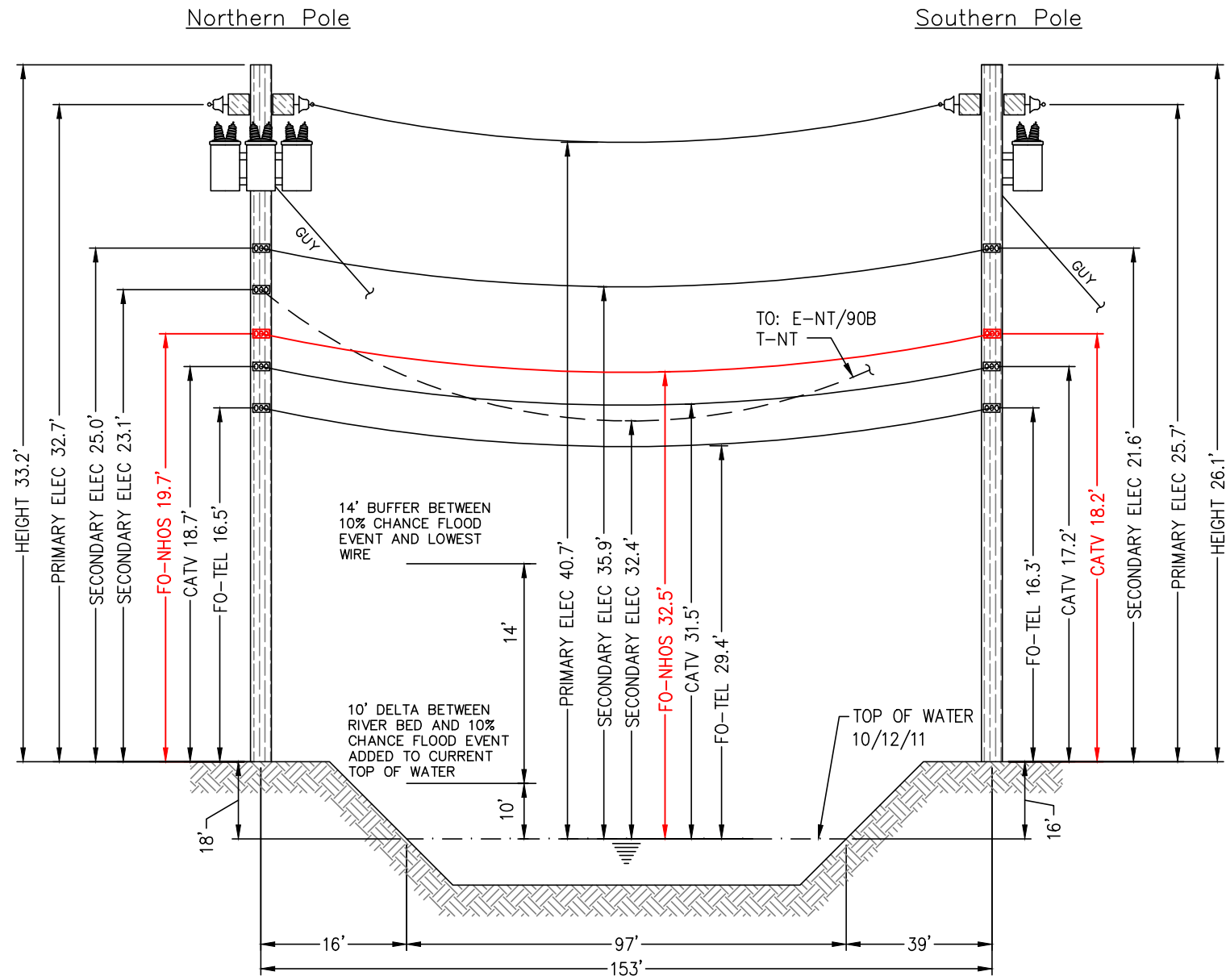
Waveguide
River and Rail Crossings

| 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 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 Const (lb/ft) | Horz Wind Load (lb/sq ft) | Result Load + Const (lb/ft) | Sag (ft) | Tension (lb) | % Len Chg From Input Conditions | Sag @ 76.5 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 | 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 |

| | Temp (F) | Midspan Sag (ft) | Tension (lb) | % Length Change | Clearance |
|------------------------------------|----------|------------------|--------------|-----------------|-----------|
| Span Length = 153.00 ft | | | | | |
| Span Sag = 1.53 ft (18.4 in) | | | | | |
| Span Tension = 606 lb | | | | | |
| Max Load = 6,650 lb | -40.0 | .92 | 1,012 | -0.02 | N/A |
| Usable load (60%) = 3,990 lb | -30.0 | .96 | 969 | -0.02 | N/A |
| Catenary Length = 153.041 ft | -20.0 | 1.00 | 926 | -0.02 | N/A |
| Stress Free Length @ | -10.0 | 1.05 | 885 | -0.01 | N/A |
| Installed Temperature = 152.939 ft | .0 | 1.10 | 845 | -0.01 | N/A |
| Unloaded Strand | 10.0 | 1.15 | 806 | -0.01 | N/A |
| Sag = .82 ft (9.8 in) 0.54 % | 20.0 | 1.20 | 769 | -0.01 | N/A |
| Tension = 432 lb | 30.0 | 1.26 | 733 | -0.01 | N/A |
| | 40.0 | 1.33 | 699 | -0.01 | N/A |
| | 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-23/2C - T-90B/3
(Existing joint owned utility pole (PSNH/Fairpoint) in existing Right-of-Way)

E-23/2B - T-90B/2
(Existing joint owned utility pole (PSNH/Fairpoint) in existing Right-of-Way)



E-23/2C - T-90B/3

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.



E-23/2B - T-90B/2



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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 10/12/11.
- The horizontal distance between the nearest bridge edge and the existing overhead wires is over 200' away.
- The waterway is classified as unsuitable 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 Israel River (Page 100P) a conservative 10 year flood elevation was calculated by adding the delta between the river bed and the 10 year flood elevation to the surveyed water level and then a 14' buffer (for non-navigable streams) was added to that. Based on the FEMA Flood Profile the stream bed elevation is 848' and the 10 year flood elevation is 858'.
- Vertical distances are representative of attachment heights after utility make ready moves are completed.

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