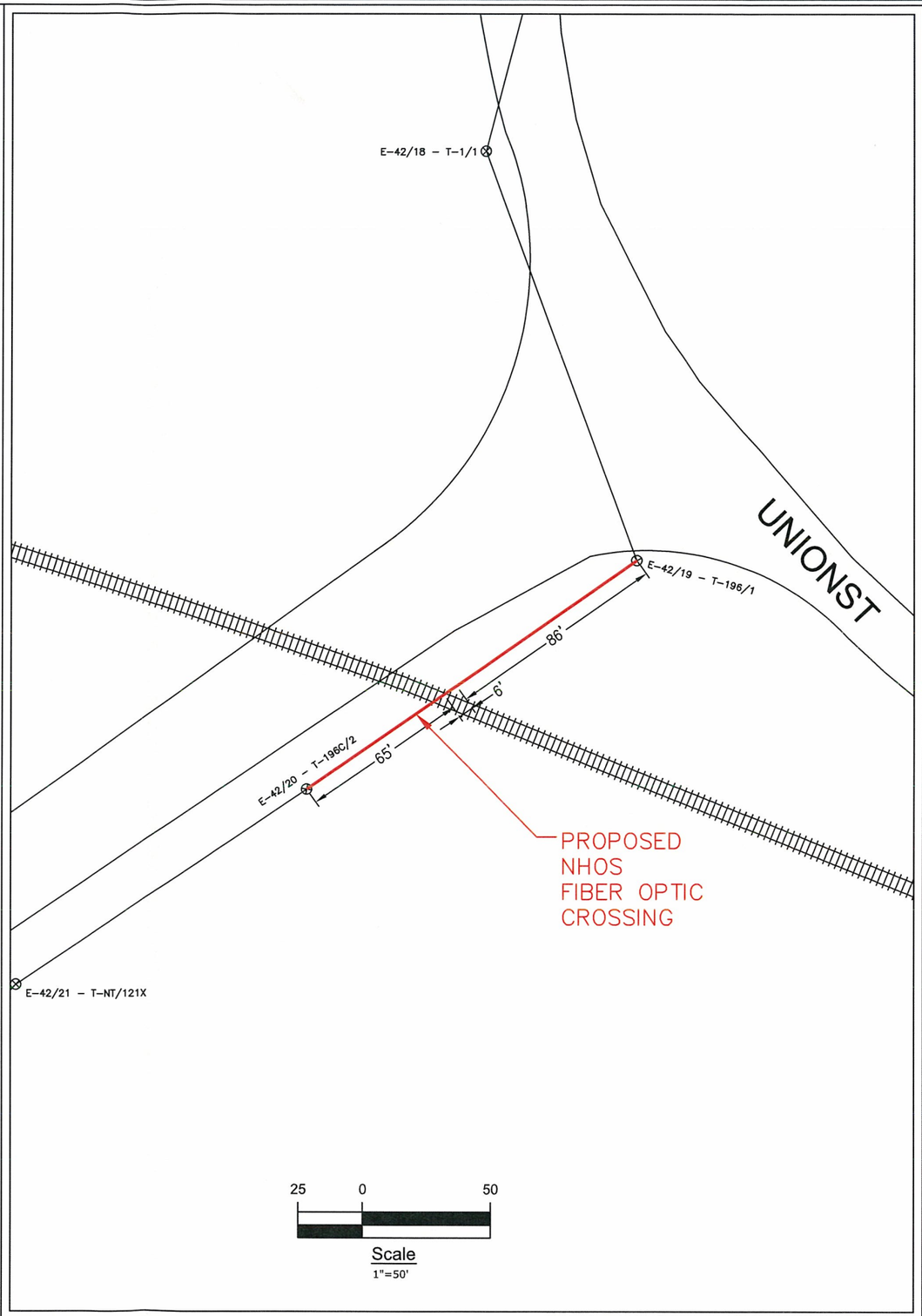

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New Hampshire Optical Systems
New Hampshire Optical Systems, Inc.
99 Pine Hill Rd.
Nashua, NH 03063
(603-821-6467)

Proposed
RailroadCrossing
Whitefield,NH

N
W E
S

ProjectTID-127-Primary6
DrawingAC-WHI-RR-1

Date:021312
Revision1

Proposed
RailroadCrossing
Whitefield,NH

Location:
LittletonBrookRd,WhitefieldNH
Nearestcrossstreet-DanielWebsterHwy.

Sheet1of2

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LOCUSMAP
(NottoScale)

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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	Result Load + Const lb/ft	Sag ft	Tension lb	% Len Chg From Input Conditions	Sag @ Point 78.5 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	3.18	1735	0.08	3.18	1.50	2.80	28.1
232A1	120.0	0.000	.00	.0	0.0	0.317	1.95	500	0.01	1.95	0.00	1.95	0.0

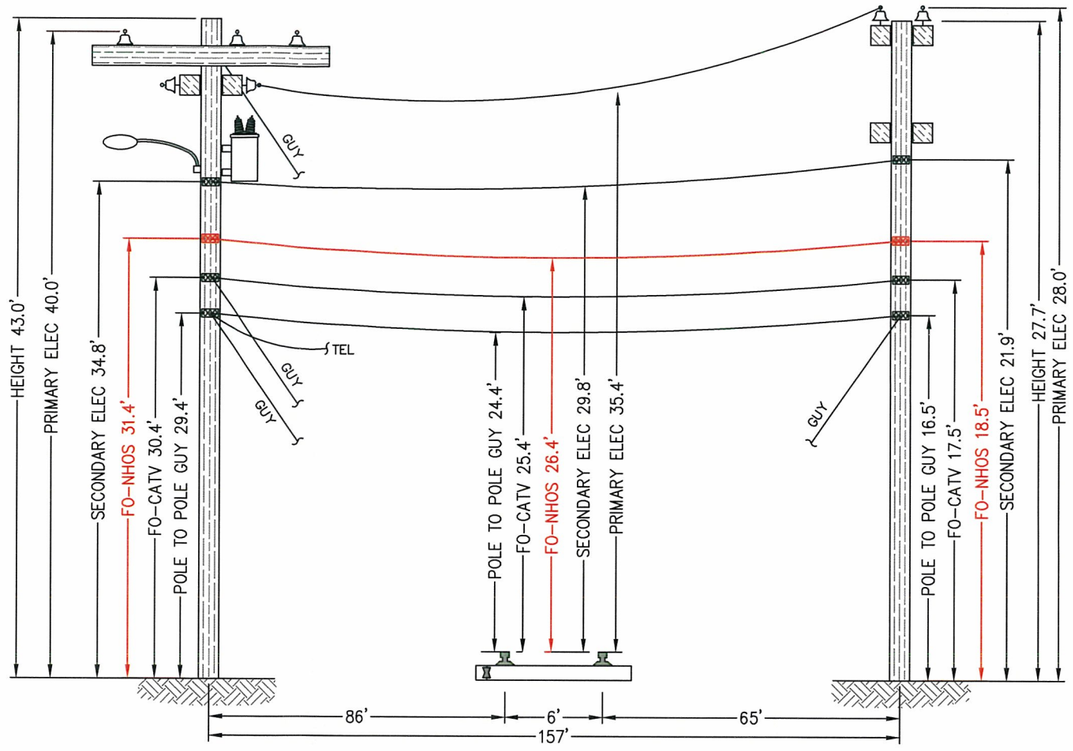
Span Length = 157.00 ft
Span Sag = 1.57 ft (18.8 in)
Span Tension = 622 lb
Max Load = 6,650 lb
Usable load (60%) = 3,990 lb
Catenary Length = 157.042 ft
Stress Free Length @
Installed Temperature = 156.935 ft

Unloaded Strand
Sag = .83 ft (10.0 in) 0.53 %
Tension = 447 lb

Temp (F)	Midspan Sag (ft)	Tension (lb)	% Length Change	Clearance
-40.0	.95	1,029	-0.02	N/A
-30.0	.99	986	-0.02	N/A
-20.0	1.03	944	-0.02	N/A
-10.0	1.08	902	-0.01	N/A
.0	1.13	862	-0.01	N/A
10.0	1.18	823	-0.01	N/A
20.0	1.24	786	-0.01	N/A
30.0	1.30	750	-0.01	N/A
40.0	1.36	715	-0.01	N/A
50.0	1.43	682	0.00	N/A
60.0	1.50	651	0.00	N/A
70.0	1.57	622	0.00	N/A
80.0	1.64	594	0.00	N/A
90.0	1.72	568	0.01	N/A
100.0	1.80	543	0.01	N/A
110.0	1.87	521	0.01	N/A
120.0	1.95	500	0.01	N/A
130.0	2.03	480	0.02	N/A
140.0	2.11	462	0.02	N/A

Northeast Pole
(Existing 40' pole to be replaced with 50' pole)

Southwest Pole



E-42/19 – T-196/1
(Existing joint owned utility pole (PSNH/Fairpoint) in existing Right-of-Way)

E-42/20 – T-196C/2
(Existing joint owned utility pole (PSNH/Fairpoint) in existing Right-of-Way)

E-42/19 – T-196/1

ConstructionNotes:

NHOS proposes to install a ¼ inch metal supporting strandbetweentheexistingutilitypoleshown abovethatwilltraversetherailroad.Thestrand willbeinstalledatttheproposedheight(see above).Thesupportingstrandwillbesecuredto eachpoleusingdoubledeadendattachmentsto preventanysaginthewireandmaintainproper clearances.NHOSwilllashaoneinchdiameter fiberopticcable(PVCjacket)tothestrandusinga duallashmethodtoprovidesecurityofthefiber overtherightofway.Thefiberwillbetaggedwith twentyfourhourcontactinformationateachpole clamp.NHOSwillemploythepropersafety personnelduringthecrossinginstallation.The proposedinstallwillmeetallproperclearances fromotherUtilities.(seeabove).Additionalpole guyswillbeaddedperNESCRule264andas directedbypoleowners.

E-42/20 – T-196C/2

NHOS
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Proposed RailroadCrossing Whitefield,NH

Notes:

1. Theheightsofstructuresshownhereonare basedonfieldmeasurementstakenwitha Nikon362totalstationduringasitesurveyon 101211.
2. Verticaldistancesarerepresentativeof attachmentheightsafterutilitymakeready movesarecompleted.

ProjectTID-127-Primary6
DrawingAC-WHI-RR-1

Date:021312
Revision1

Proposed RailroadCrossing Whitefield,NH

Location:
LittletonBrookRd,WhitefieldNH
Nearestcrossstreet-DanielWebsterHwy.

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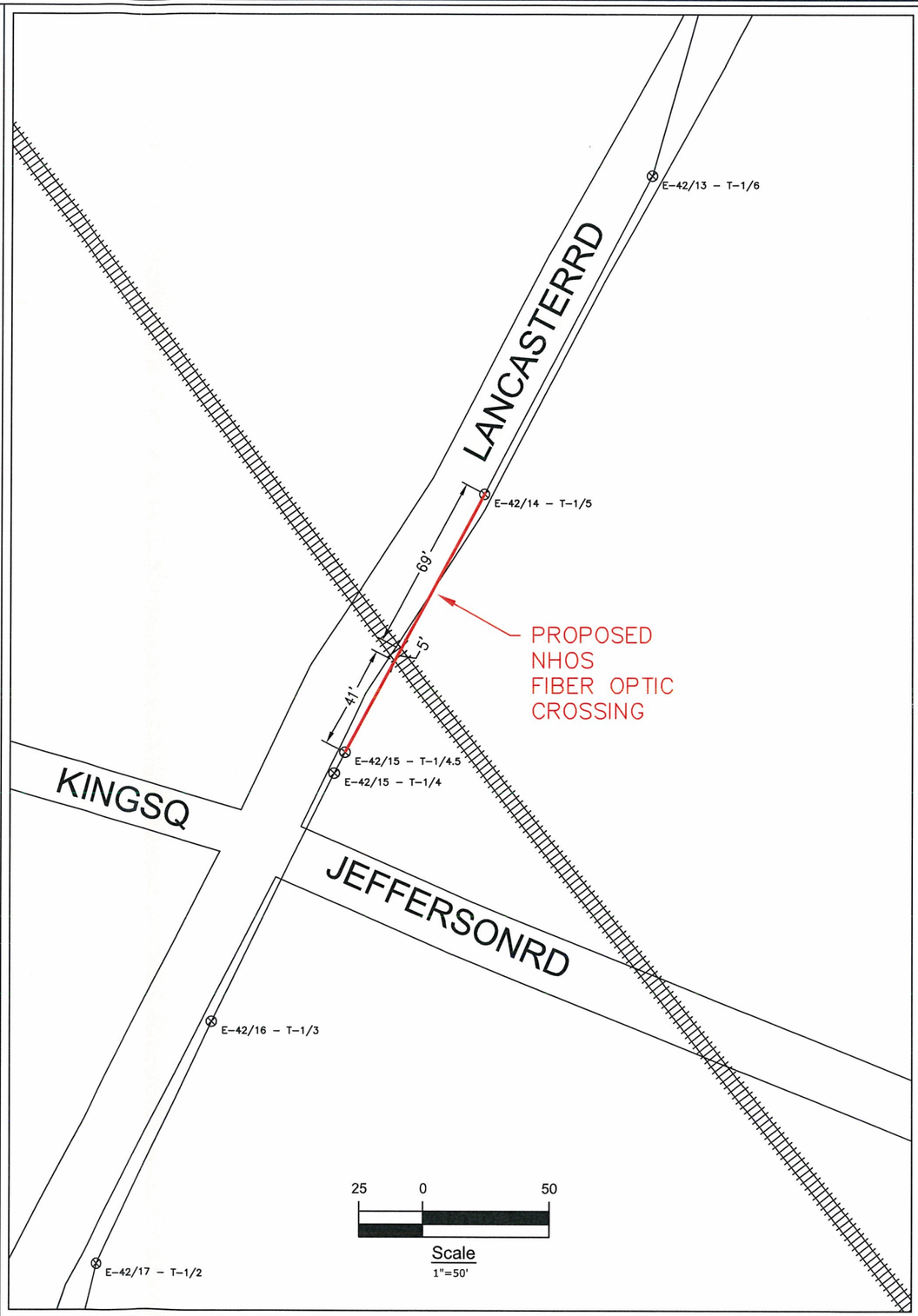

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Proposed
RailroadCrossing
Whitefield,NH

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ProjectTID-128-Primary6
DrawingAC-WHI-RR-2

Date:111611
Revision

Proposed
RailroadCrossing
Whitefield,NH

Location:
LancasterRd,WhitefieldNH
Nearestcrossstreet-JeffersonRd.

Sheet1of2

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LOCUS MAP
(Not to Scale)

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Waveguide
River and Rail Crossings

09/01/11 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-288-LN	0.5782	2.70E+05	0.858	1.13E-05	0.1960	155982	651
Bundle			1.108		0.3170		

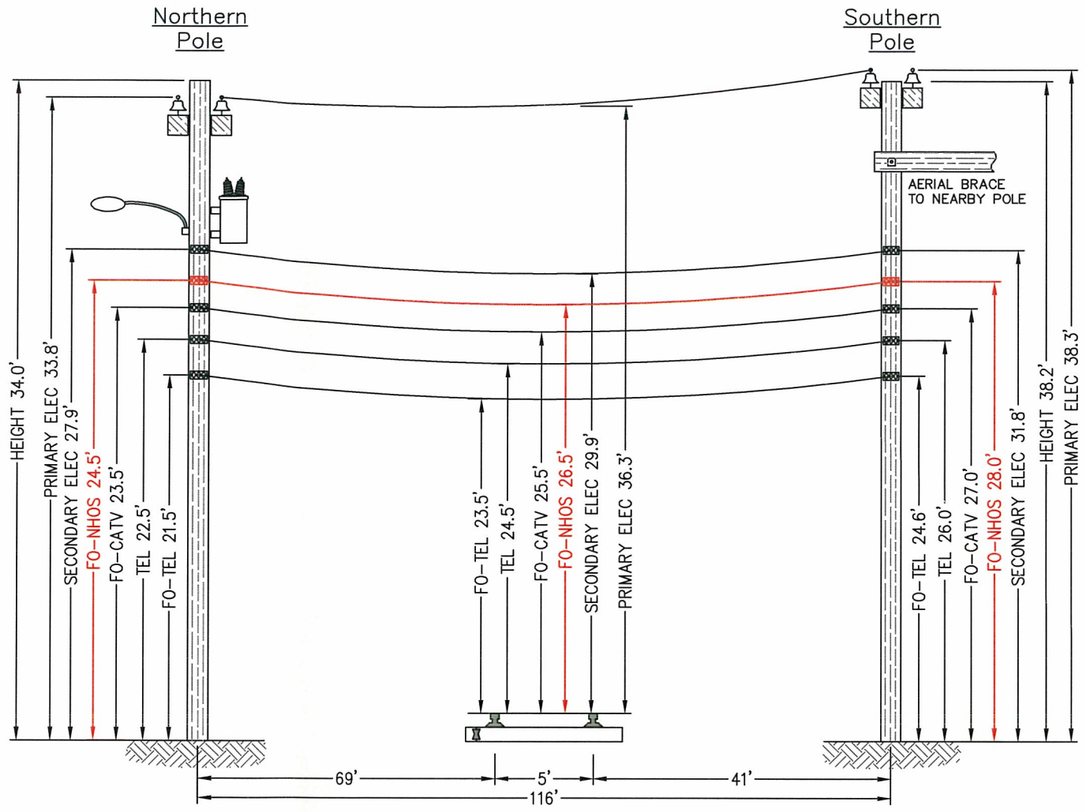
NESC RESULTS

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 58 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	2.14	1406	0.06	2.15	1.01	1.89	28.1
232A1	120.0	0.000	.00	.0	0.0	0.317	1.48	359	0.02	1.48	0.00	1.48	0.0

Span Length = 116.00 ft
Span Sag = 1.16 ft (13.9 in)
Span Tension = 460 lb
Max Load = 6,650 lb
Usable load (60%) = 3,990 lb
Catenary Length = 116.031 ft
Stress Free Length @
Installed Temperature = 115.973 ft

Unloaded Strand
Sag = .68 ft (8.2 in) 0.59 %
Tension = 299 lb

Temp (F)	Midspan Sag (ft)	Tension (lb)	% Length Change	Clearance
-40.0	.63	850	-0.02	N/A
-30.0	.66	806	-0.02	N/A
-20.0	.70	764	-0.02	N/A
-10.0	.74	723	-0.02	N/A
.0	.78	684	-0.01	N/A
10.0	.82	646	-0.01	N/A
20.0	.87	610	-0.01	N/A
30.0	.93	576	-0.01	N/A
40.0	.98	543	-0.01	N/A
50.0	1.04	513	-0.01	N/A
60.0	1.10	485	0.00	N/A
70.0	1.16	459	0.00	N/A
80.0	1.22	436	0.00	N/A
90.0	1.29	414	0.01	N/A
100.0	1.35	394	0.01	N/A
110.0	1.42	376	0.01	N/A
120.0	1.48	359	0.02	N/A
130.0	1.55	344	0.02	N/A
140.0	1.62	330	0.03	N/A



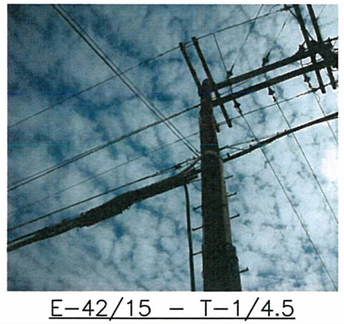
E-42/14 – T-1/5
(Existing joint owned utility pole (PSNH/Fairpoint) in existing Right-of-Way)

E-42/15 – T-1/4.5
(Existing joint owned utility pole (PSNH/Fairpoint) in existing Right-of-Way)

E-42/14 – T-1/5

Construction Notes:

NHOS proposes to install a ¼ 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). 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-42/15 – T-1/4.5

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Proposed Railroad Crossing Whitefield, 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 10/12/11.
2. Vertical distances are representative of attachment heights after utility make ready moves are completed.

Project # TID-128 - Primary 6
Drawing # AC-WHI-RR-2

Date: 11/16/11
Revision #

Proposed Railroad Crossing Whitefield, NH

Location:
Lancaster Rd, Whitefield NH
Nearest cross street- Jefferson Rd.

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