

STATE OF NEW HAMPSHIRE

Inter-Department Communication

DATE: May 2, 2013
AT (OFFICE): NHPUC**FROM:** Leszek Stachow, Analyst **SUBJECT:** DT 12-112 New Hampshire Optical Systems, Inc.
Petition for Authority to Construct and maintain Fiber Optic
Communications Cable over and across one water and 2 different
railroads for Segment 6-from Littleton to Lancaster**TO:** Commission
Debra Howland, Executive Director

On April 24, 2012, New Hampshire Optical Systems, Inc. (NHOS) filed a petition pursuant to RSA 371:17 seeking approval for licenses to construct and maintain fiber optic communications cables over and across one public waterway and two railroads in a section of its cable line that begins in Littleton and ends in Lancaster. According to NHOS, the project is broken up into 17 segments across the state. The petition here seeks approval for crossings in Segment 6 of its project.

The locations of the crossings in this petition are as follows:

- Israel River in Lancaster, NH
 - Between Utility Pole E 23/2C-T-90B/3 and Pole E 23/2B-T90B/2 (TID 129), near Middle and Mechanic Streets in the vicinity of Main Street
- Union Street, across the New Hampshire Central railroad in Whitefield, NH
 - Between Utility Pole E 42/19-T-196/1 and Pole E 42/20-T-196C/2 (TID 127), parallel to Littleton Road and in the vicinity of Union Street
- Lancaster Road, across the New Hampshire Central railroad in Whitefield, NH
 - Between Utility Pole E 42/14-T-1/5 and Pole E 42/15-T-1/4.5 (TID 128), near the junction of Jefferson Road and King Square

The river crossing by the cables in this petition is listed as a public water in the Department of Environmental Services' official list of public waters and each railroad crosses state land and therefore requires a license pursuant to RSA 371:17.

1. Review of public need and public impact.

In its cover letter NHOS states that it has been contracted to construct and manage the Network New Hampshire Now (NH Now) middle mile fiber network, which will expand the availability of broadband to areas of NH with limited or no internet service. According to NHOS, construction of the fiber is necessary in order to meet reasonable requirements of service to the public. NHOS states in its petition, that no environmental permits are required of the crossings. NHOS states that the licenses petitioned for “may be exercised without affecting the rights of the public in the public waters of each river. Minimum safe line clearances above the water surface and affected shorelines will be maintained at all times. The use and enjoyment by the public of each waterway will not be diminished in any material respect as a result of the overhead line crossing.” Regarding the railroad crossings, NHOS states that the license petitioned for may be exercised without affecting the rights of the public in the public right of way and that minimum safe line clearances will be maintained at all times.

2. Review of NESC code requirements.

Following Staff’s initial investigation, it appeared that the two railroad crossings in Whitefield would require pole replacement to meet the NESC vertical clearance requirement. Staff advised NHOS and the pole owners, PSNH and FairPoint, by letters dated November 2, 2012, that the crossings may not be in compliance as proposed, and requested that they investigate the crossings. Ultimately, Staff was advised by the pole owners, in late March, that two poles had been replaced and that all transfers had been completed.

On April 25, 2013, NHOS submitted revised technical drawings that confirmed that the crossings were now in compliance and that technical inconsistencies outlined in the November 2, 2012 letter had been resolved.

According to the petition the crossings will be designed, constructed, maintained and operated according to the National Electrical Safety Code (NESC). Staff reviewed documents and data provided by NHOS, including detailed diagrams, descriptions, and maps of the crossings. After poles were replaced and NHOS updated its technical drawings, Staff confirmed the information provided in the filing complies with the requirements of the NESC. The attached worksheets provide a summary of Staff’s review.

As noted on the worksheets, the information provided by NHOS did not verify a minimum clearance of 75 percent of the distance required at the supports at every point in the span (30 inches between electric neutral and the proposed attachment) required by NESC 235C2b, or a minimum 4 inch clearance between the proposed attachment and any

conductor, cable or equipment of adjacent communications attachments at every point in the span required by NESC 235H. As these particular requirements of the NESC are not likely to affect the public rights in the waterway or across the railroad track, rather than deny the license, Staff recommends these requirements be made conditions of the license to ensure there will be no adverse impact to adjacent utility facilities.

Additionally, Staff was unable to confirm whether other utility crossings at these locations are licensed and also comply with the NESC. To the extent other utilities or pole owners with attachments beneath the NHOS attachments seek a license in the future and it is discovered that those attachments do not meet NESC requirements, NHOS may be required to rearrange its attachments. In the event NHOS is required for any reason to relocate an attachment, it should be required to file the proposed alteration prior to making such alteration.

3. Recommendations and Conclusions.

Based upon Staff's analysis, the proposed crossings will not substantially affect the public rights in the waters and lands and Staff concludes that NHOS has demonstrated a public need for the proposed crossings. Accordingly, Staff recommends that the Commission grant the licenses for the NHOS segment 6 crossings in this petition, with the following conditions;

1. NHOS will file proposed alterations to this crossing prior to making any such alternation.
2. NHOS to maintain proper clearances between its cables and those adjacent to it at all times across the entire span pursuant to NESC 235C2b and 235H.
3. NHOS to construct, operate and maintain the attachments at all times in accordance with both the 2002 and 2007 editions of the NESC as required by NH Admin. Code Puc 433.01 and 1303.07.

Info provided is intended to be used in conjunction with the NESC and does not in any way supersede or replace the NESC. The NESC should always be considered as the primary basis for making clearance determinations.

Telecommunications Fiber Optic Cable¹ Water Crossing Checklist

Docket #: DT 12-112

Applicant: NHOS

Date: April 24, 2012

Analyst: Stachow

Location: Israel River, Lancaster, NH (TID 129) between Middle and
Mechanic Streets, in the vicinity of Main Street
E 23/2C-T-90B/3 ; E 23/2B-T-90B/2

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| 1 | Yes | Is water body on DES list: http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/olpw.pdf |
| 2 | N/A | If Merrimack River from the MA-NH State line to Concord, NH; Lake Umbagog within NH; or the Connecticut River to Pittsburg, NH., has Army Corps of Engineers approved? |
| 3 | Not needed | Does petition indicate DOT or DES approvals needed? |
| 4 | N/A | If DOT or DES approvals needed, ask applicant for contact at applicable state agency and call to determine status of approvals. Are DOT or DES approvals expected? |
| 5 | Yes | Compare facts stated in petition to "as built" drawings. Are facts consistent? Check things like pole numbers, span length, location, water body. |
| 6 | Yes | Compare make ready requirements from pole owner to "as built" drawing. Confirm necessary appurtenances (e.g. guys) are included in drawing and all existing attachments are depicted. |
| 7 | Yes | Does petition attest the proposed crossing is designed and will be built and maintained in accordance with the NESC? |
| 8 | Not | Are existing attachments licensed? If not, notify existing attachers in writing |

¹As defined by NESC 230 F 1e and NESC 230 F 2

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| | Known | and request license application. |
| 9 | Yes | If lowest attachment is not licensed, verify minimum water clearances plus one foot per attachment beneath proposed attachment are met under Heavy Load conditions and recommend conditional approval. (e.g if water is not suitable for sailing and there are 2 existing attachments below proposed, add 2 feet to 14 foot clearance requirement and determine if proposed attachment with maximum sag is greater than 16 feet from water surface). If water suitable for sailing, use 10 year flood elevation. |
| 10 | Not Known | If lowest attachment is licensed, does make ready indicate lowest attachment will be moved closer to water? (If no, skip to step 15. If yes, what is max sag of lowest attachment at 0 deg F, 0.5 inch ice, 4 psf wind?) |
| 11 | No | Is water suitable for sailing? |
| 12 | Not known | If not suitable for sailing is there 14 feet clearance from lowest point in sag of lowest attachment to water surface under Heavy Load conditions? (preferably measured from water surface at 10 year flood elevation, but not required) NESC Table 232-1, 6 |
| 13 | N/A | If suitable for sailing is there appropriate clearance from lowest point in sag of lowest attachment to water surface under Heavy Load conditions at 10 year flood elevation. Size of rivers and streams based upon largest surface area of any 1 mile segment that includes the crossing (circle applicable standard) <ul style="list-style-type: none"> a. Less than 20 acres: 17.5 feet b. Over 20 to 200 acres: 25.5 feet c. Over 200 to 2000 acres: 31.5 feet d. Over 2000 acres: 37.5 feet NESC Table 232-1, 7 and notes 18 and 19. |
| 14 | Yes | Is there a minimum of 40 inches between electric neutral and proposed attachment on each pole? NESC Table 235-5 1a |
| 15 | Not Specified | Is there a minimum 75% of distance required at supports at every point in the span (30 inches between electric neutral and proposed attachment) under all conditions? NESC 235C2b |
| 16 | 3.07 | What is maximum sag of proposed attachment under Heavy Load Conditions? NESC Table 250-1 |

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| 17 | Correct | Run tension numbers to verify maximum sag calculation. |
| 18 | Yes | Is there a minimum 12 inch clearance between proposed attachment and adjacent communications attachments at each pole? NESC 235H1 |
| 19 | Not known | Is there a minimum 4 inch clearance between proposed attachment and any conductor, cable or equipment of adjacent communications attachments at every point in the span under Heavy Load conditions? NESC 235H2 |

NOTE: If the crossing is within 10 feet horizontally of an existing bridge structure that may already limit use of the waterway, a simplified drawing may be submitted with vertical distances measured to the bridge deck. If bridge deck is 15 feet above water surface, water is not suitable for sailing, and height of lowest crossing is above the bridge deck, clearance to water does not need to be measured. In this instance, flood elevation information is not required.

NOTES:

None

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Telecommunications Fiber Optic Cable¹ Railroad Crossing on State Land Checklist

Docket #: DT 12-112

Applicant: NHOS

Date: April 24, 2012

Analyst: Stachow

Location: Parallel to Lancaster Road, across New Hampshire Central railroad in Whitefield, NH (TID 128),near the junction of Jefferson Road and King Sq.

E-42/14-T-1/5; E 42/15-T-1/4.5

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| 1 | Yes | Is Railroad on state land? http://www.nh.gov/dot/org/aerorailtransit/railandtransit/documents/RailRoad by Owner State 2011.pdf |
| 2 | Not Needed | Does petition indicate DOT or DES approvals needed? |
| 3 | N/A | If DOT or DES approvals needed, ask applicant for contact at applicable state agency and call to determine status of approvals. Are DOT or DES approvals expected? |
| 4 | Yes | Compare facts stated in petition to "as built" drawings. Are facts consistent? Check things like pole numbers, span length, location, railroad. |
| 5 | Yes | Compare make ready requirements from pole owner to "as built" drawing. Confirm necessary appurtenances (e.g. guys) are included in drawing and all existing attachments are depicted. |
| 6 | Yes | Does petition attest the proposed crossing is designed and will be built and maintained in accordance with the NESC? |
| 7 | Not Known | Are existing attachments licensed? If not, notify existing attachers in writing and request license application. |
| 8 | Not | Is lowest attachment 23.5 feet above rail track under Heavy Load |

¹As defined by NESC 230 F 1e and NESC 230 F 2

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| | known | conditions? NESC Table 232-1 |
| 9 | Yes | Is there a minimum of 40 inches between electric neutral and proposed attachment on each pole? NESC Table 235-5 1a |
| 10 | Yes | Is there a minimum 12 inch clearance between proposed attachment and adjacent communications attachments at each pole? NESC 235H1 |
| 11 | 2.2 | What is maximum sag of proposed attachment under Heavy Load conditions? NESC Table 250-1 |
| 12 | Correct | Run tension numbers to verify maximum sag calculation. |
| 13 | Yes | If data not available on lowest attachment, is proposed attachment, under Heavy Load conditions, at least 23.5 feet plus 1 foot per attachment below proposed attachment? (e.g if two existing attachments are below proposed attachment, is clearance under Heavy Load of proposed attachment at least 25.5 ft?) |
| 14 | Not Specified | Is there a minimum 75% of distance required at supports at every point in the span (30 inches between electric neutral and proposed attachment) under all conditions? NESC 235C2b |
| 15 | Not specified | Is there a minimum 4 inch clearance between proposed attachment and any conductor, cable or equipment of adjacent communications attachments at every point in the span under Heavy Load conditions? NESC 235H2 |

NOTES:

None

Info provided is intended to be used in conjunction with the NESC and does not in any way supersede or replace the NESC. The NESC should always be considered as the primary basis for making clearance determinations.

Telecommunications Fiber Optic Cable¹ Railroad Crossing on State Land Checklist

Docket #: DT 12-112

Applicant: NHOS

Date: April 24, 2012

Analyst: Stachow

Location: Union Street, across New Hampshire Central railroad in Whitefield, NH(TID 127),Parallel to Littleton Road in the vicinity of Union Street

E-42/19-T-196/1; E 42/20-T-196C/2

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| 1 | Yes | Is Railroad on state land? http://www.nh.gov/dot/org/aerorailtransit/railandtransit/documents/RailRoad by Owner State 2011.pdf |
| 2 | Not Needed | Does petition indicate DOT or DES approvals needed? |
| 3 | N/A | If DOT or DES approvals needed, ask applicant for contact at applicable state agency and call to determine status of approvals. Are DOT or DES approvals expected? |
| 4 | No | Compare facts stated in petition to "as built" drawings. Are facts consistent? Check things like pole numbers, span length, location, railroad. |
| 5 | Yes | Compare make ready requirements from pole owner to "as built" drawing. Confirm necessary appurtenances (e.g. guys) are included in drawing and all existing attachments are depicted. |
| 6 | Yes | Does petition attest the proposed crossing is designed and will be built and maintained in accordance with the NESC? |
| 7 | Not Known | Are existing attachments licensed? If not, notify existing attachers in writing and request license application. |
| 8 | Not | Is lowest attachment 23.5 feet above rail track under Heavy Load |

¹As defined by NESC 230 F 1e and NESC 230 F 2

Info provided is intended to be used in conjunction with the NESC and does not in any way supersede or replace the NESC. The NESC should always be considered as the primary basis for making clearance determinations.

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| | known | conditions? NESC Table 232-1 |
| 9 | Yes | Is there a minimum of 40 inches between electric neutral and proposed attachment on each pole? NESC Table 235-5 1a |
| 10 | Yes | Is there a minimum 12 inch clearance between proposed attachment and adjacent communications attachments at each pole? NESC 235H1 |
| 11 | 3.16 | What is maximum sag of proposed attachment under Heavy Load conditions? NESC Table 250-1 |
| 12 | Correct | Run tension numbers to verify maximum sag calculation. |
| 13 | Yes | If data not available on lowest attachment, is proposed attachment, under Heavy Load conditions, at least 23.5 feet plus 1 foot per attachment below proposed attachment? (e.g if two existing attachments are below proposed attachment, is clearance under Heavy Load of proposed attachment at least 25.5 ft?) |
| 14 | Not Specified | Is there a minimum 75% of distance required at supports at every point in the span (30 inches between electric neutral and proposed attachment) under all conditions? NESC 235C2b |
| 15 | Not specified | Is there a minimum 4 inch clearance between proposed attachment and any conductor, cable or equipment of adjacent communications attachments at every point in the span under Heavy Load conditions? NESC 235H2 |

NOTES:

None