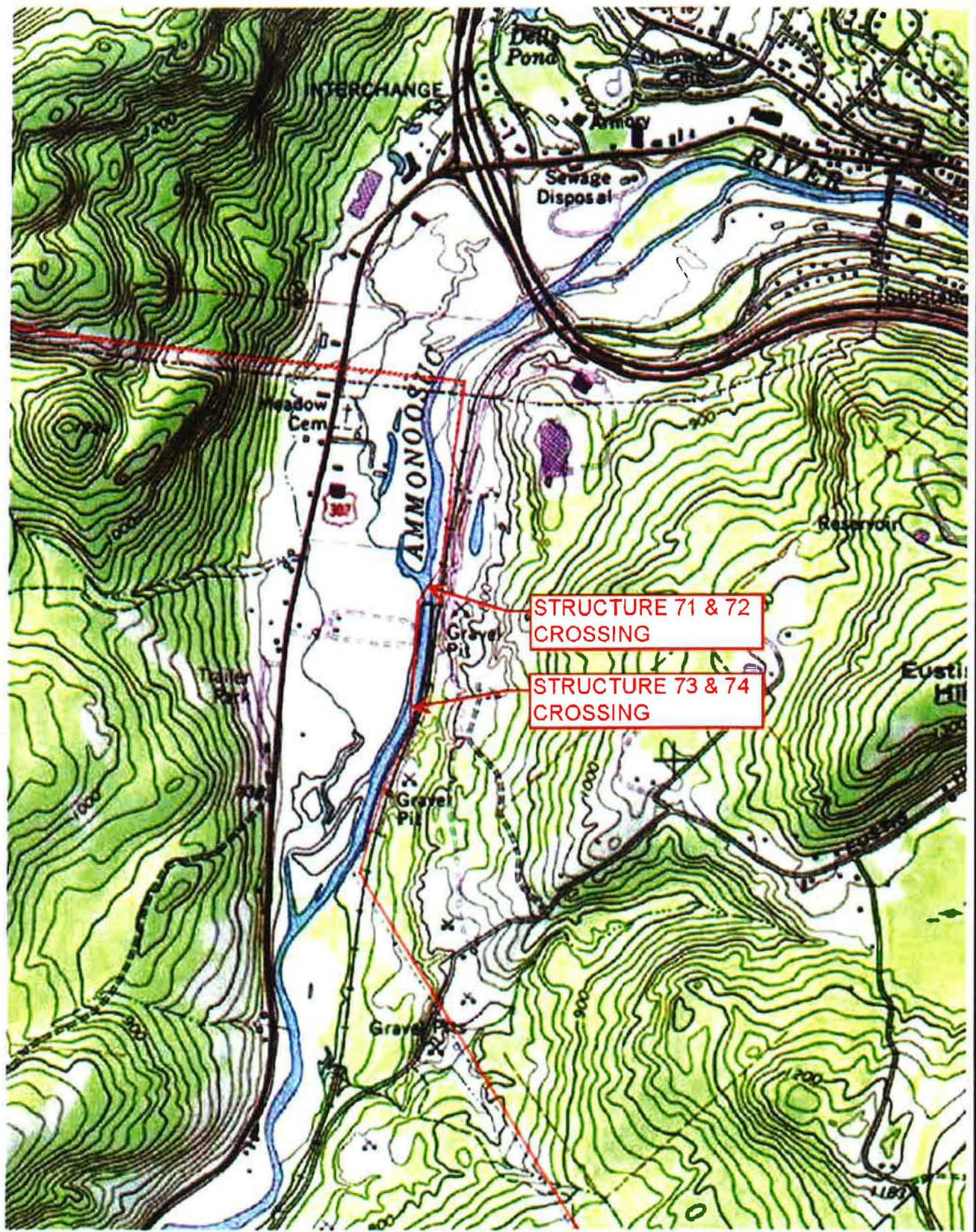


Appendix A
U199 Line – Structure 73-74
Ammonoosuc River Crossing
Littleton, NH

1. The design and proposed construction of this crossing is shown on the attached PSNH Transmission Drawing entitled *U199 LINE (115kV) CROSSING BETWEEN STR. 73 & 74, AMONOOSUC RIVER, LITTLETON, NEW HAMPSHIRE*.
2. The U199 Line is proposed to cross the Ammonoosuc River on a 65 foot RAX H-frame steel pole type structure on the west side and a 75 foot WDE-Vertical single steel pole type structure on the east side. Detailed drawings of these structures have been provided with this appendix.
3. The proposed structure on the west side – shown as Structure 73 on the attached Crossing Plan – will be relocated approximately 130 feet south (closer to the Ammonoosuc River) from the existing structure location.
4. A total of three phase conductor wires and two static wires currently span this crossing. All wires will be replaced as part of this project and the total quantity of wires will remain the same. The design tension of the proposed phase conductors is 10,000 pounds at National Electrical Safety Code (NESC) Rule 250B Heavy Loading. The static wires are designed for a tension of 4,500 pounds while at NESC Rule 250B Heavy Loading conditions.
5. Minimum distances to ground in the non-water-crossing portions of the span for truck traffic of 20.1 feet for the 115 kilovolt open supply per the NESC have been met as 34.5 feet of clearance is provided for the conductor wires.
6. The 100 year flood level for the crossing is approximately 711 feet as determined from FEMA developed flood maps. The Ammonoosuc River has been determined as not suitable for sailboating due to the nature of the waterway – its depth, flow of water, and accessibility. Therefore, the minimum required clearance for 115 kilovolt conductor above water surfaces of this river as required by the NESC (Section 232) is 18.6 feet. Note that the NESC required clearances are applicable to 10 year flood levels, while the clearances to 100 year flood levels are conservatively applied below.
7. The proposed sags and clearances to the water surface measured to the 100 year flood level are as follows:
 - Static Wires – Due to the fact that the static wires are located above the phase wires, their clearances to the water surface will always be in excess of the conductor wire's. This allows for the static wires to always exceed the minimum required NESC distance.
 - Phase Wires (Conductors) – The maximum sag for the conductor will occur under the maximum conductor temperature for which the line is designed to operate. This occurs when the internal temperature of the conductor is at 285 degrees Fahrenheit as is allowed by PSNH under temporary emergency loading conditions. This condition produces the greatest sag and therefore the minimum clearance to the water surface. The clearance to water surface exceeds the minimum requirement of 18.6 feet with a proposed clearance measuring 26.5 feet.



Northeast Utilities

**U199 LINE (115KV) CROSSING
LOCUS MAP
AMMONOOSUC RIVER, LITTLETON, NH**

Transmission Business

DRAWN
JFH

DATE
5/2014

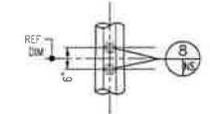
APPROVED

DRAWING NO.
EXHIBIT 1

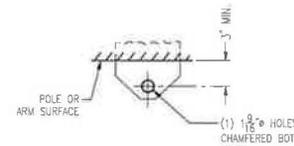
SHIELD WIRE PLAN VIEW



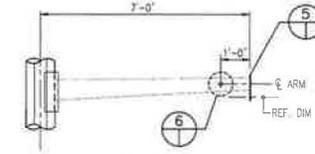
CONDUCTOR PLAN VIEW



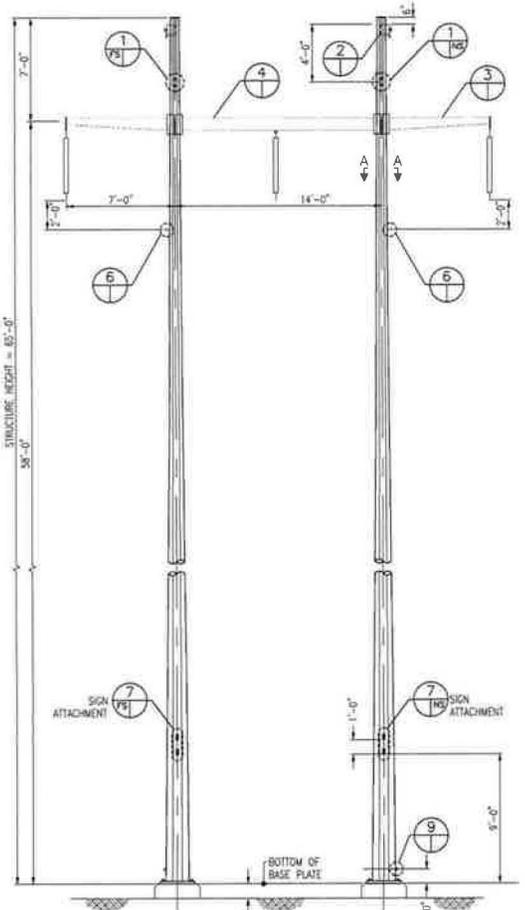
AERIAL MARKER ATTACHMENT (2 PLACES)



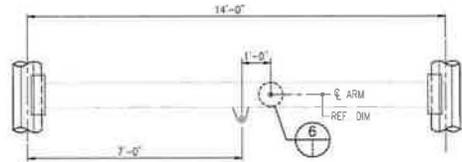
SUSP VANG (3 PLACES)



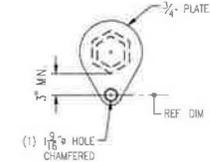
115KV 7' CONDUCTOR ARM ASSEMBLY (2 PLACES)



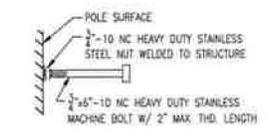
ELEVATION



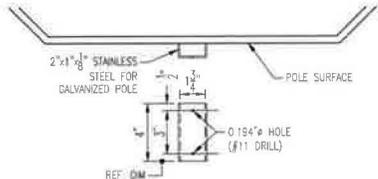
115KV 14' CONDUCTOR ARM ASSEMBLY (1 PLACES)



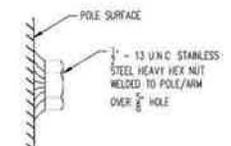
SUSP PLATE (2 PLACES)



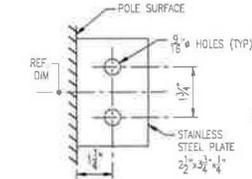
REMOVABLE GROUNDING BOLT (5 PLACES) SEE NOTE 7



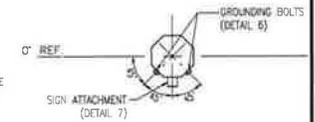
SIGN ATTACHMENT (2 PLACES)



AERIAL MARKER LUG (4 PLACES)



GROUNDING PLATE DETAIL (2 PLACES)

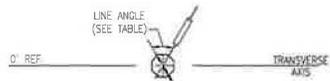


SECTION A-A

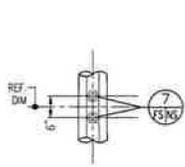


ADDITIONS

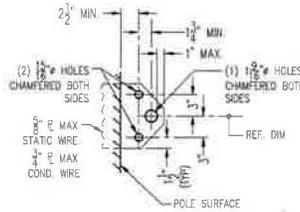
<p>Public Service of New Hampshire A Northern Utilities Company</p>		T 2
<p>U-199 LINE 115KV TRANSMISSION LINE H-FRAME STRUCTURE STEEL POLE CONCEPTUAL DRAWING</p>		<p>DATE: 02/14</p>
<p>ROLL: NONE</p>		<p>REVISIONS:</p>



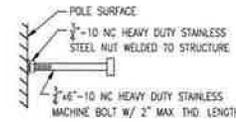
PLAN VIEW



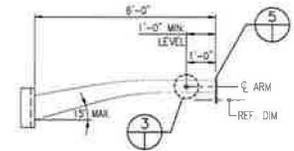
AERIAL MARKER ATTACHMENT (2 PLACES) 1



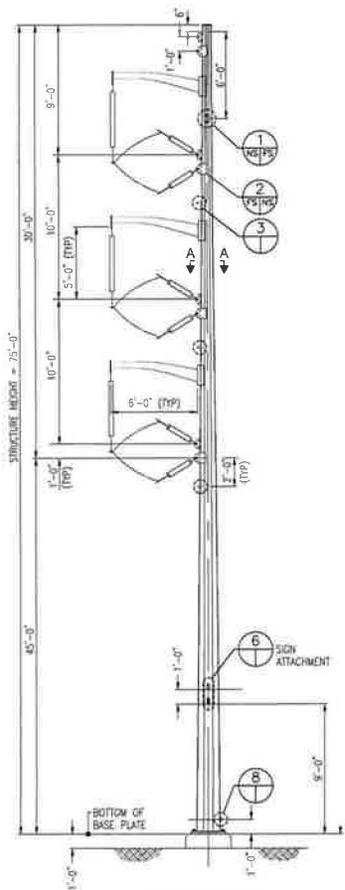
DEADEND VANG (6 PLACES) 2



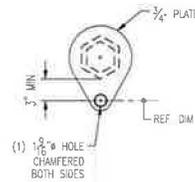
REMOVABLE GROUNDING BOLT (6 PLACES) SEE NOTE 7 3



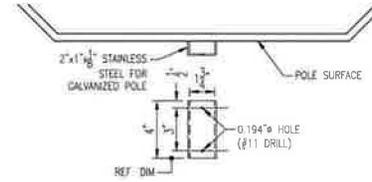
115KV 6' JUMPER ARM ASSEMBLY (3 PLACES) 4



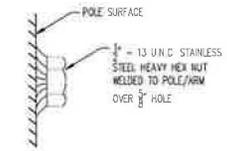
ELEVATION



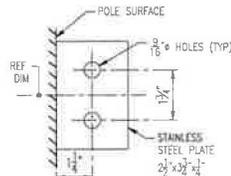
SUSP PLATE (3 PLACES) 5



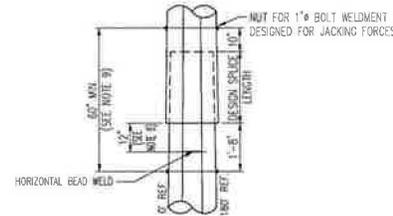
SIGN ATTACHMENT (2 PLACES) 6



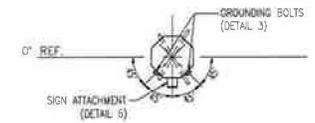
AERIAL MARKER LUG (4 PLACES) 7



GROUNDING PLATE DETAIL (1 PLACE) 8



SLIP JOINT DETAILS & JACKING NUT LOCATIONS



SECTION A-A

STRUCTURE DATA		
STRUCTURE #	STRUCTURE HEIGHT	LINE ANGLE
71	75'	26°
74	75'	20°

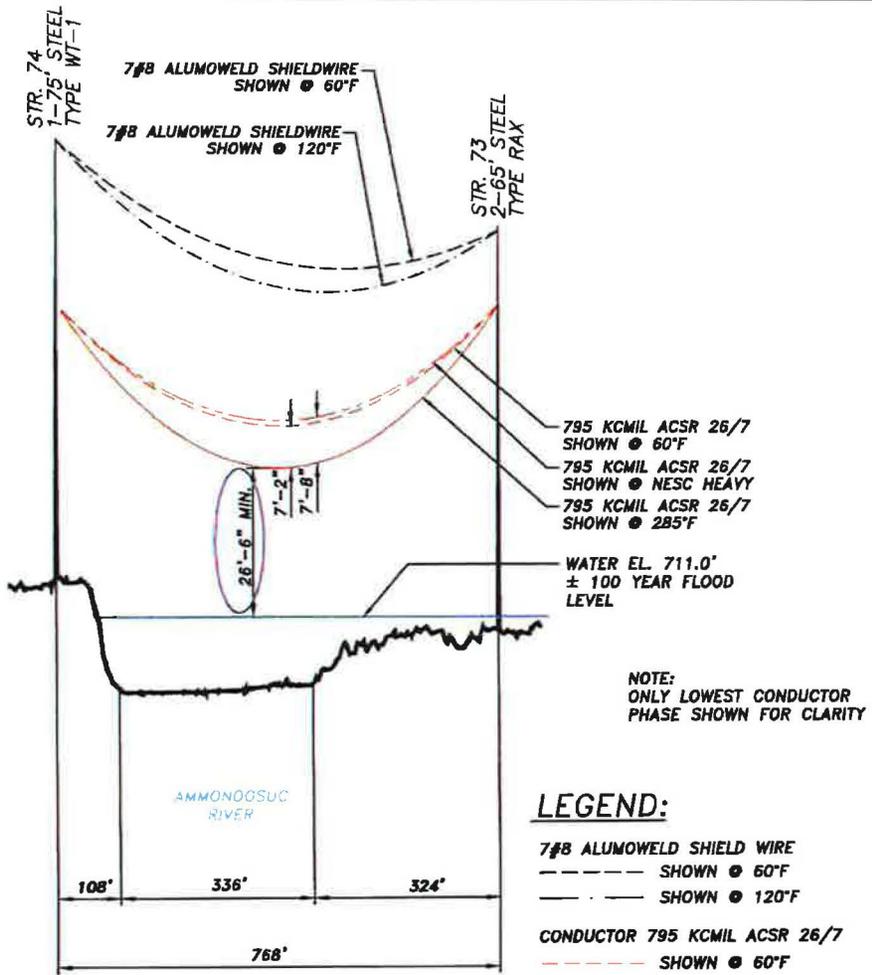


ADDITIONS

NO.	DESCRIPTION	DATE	BY	CHKD	APPD	DATE	BY	CHKD	APPD
1	ISSUE FOR PERMIT								
2	ISSUE FOR CONSTRUCTION								
3	ISSUE FOR RECORD								
4	ISSUE FOR AS-BUILT								

		T 1 T 2
Public Service of New Hampshire A Nonbean Utilities Company		DRAWN: JFH CHECKED: JFH APPROVED: RPL DATE: 02/14
U-199 LINE 115KV TRANSMISSION LINE WDE-1 VERTICAL STRUCTURE STEEL POLE CONCEPTUAL DRAWING		DRAWING NO: B-8424-4

THIS PLAN IS FOR REFERENCE ONLY.
NO REPRESENTATION OR WARRANTY IS
MADE AS TO LOCATION OF BOUNDARIES
OR OTHER POINTS OF REFERENCE.

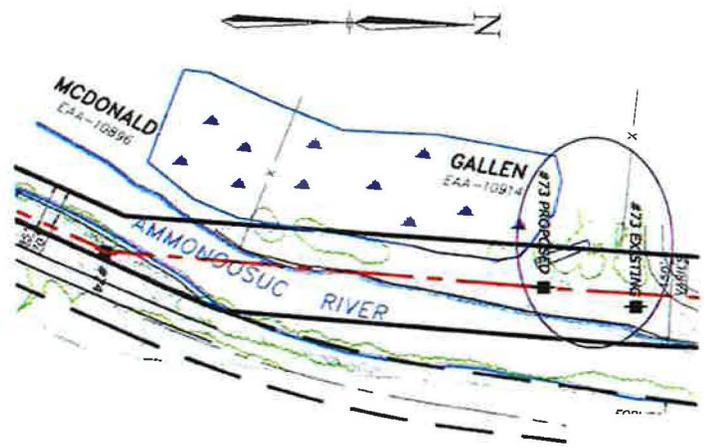


NOTE:
ONLY LOWEST CONDUCTOR
PHASE SHOWN FOR CLARITY

LEGEND:

- 7#8 ALUMOWELD SHIELD WIRE
- SHOWN @ 60°F
- SHOWN @ 120°F
- CONDUCTOR 795 KCMIL ACSR 26/7
- SHOWN @ 60°F
- SHOWN @ NESC HEAVY
- SHOWN @ 285°F

PROFILE VIEW
SCALE: 1"=200' HORIZ.
SCALE: 1"=20' VERT.



PLAN VIEW
SCALE: 1"=200'

1	FC W/ ADDENDUM 1, WDG T1244A1	12/14	JFH	JFH	RPL
0	100% WDG T1244A1	06/04	2000	RM	000
REV	REVISION	DATE	BY	CHKD	APPR

 Public Service of New Hampshire A Northeast Utilities Company	TRANSMISSION BUSINESS		#
	U199 LINE (115kV) CROSSING BETWEEN STR. 74 & STR. 73 AMMONOOSUC RIVER CROSSING LITTLETON, NEW HAMPSHIRE		
DRAWN RER	ENGINEER JFH	CHECKED JFH	APPROVED RPL
SCALE AS SHOWN	DATE 05/24	SHEET 1 OF 2	DRAWING NO. EXHIBIT #