

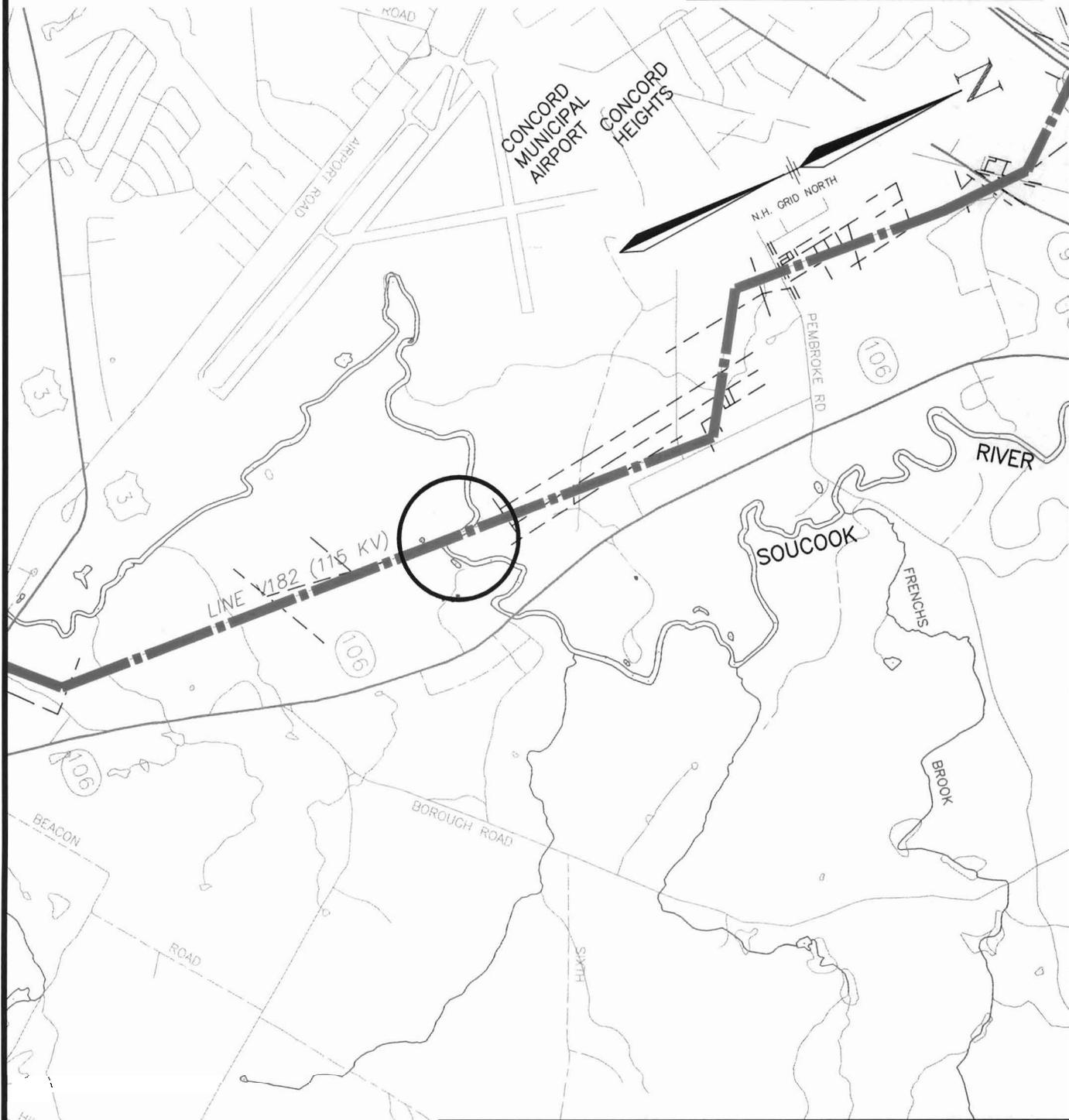
## APPENDIX C

### **V-182 SOUCOOK RIVER CONCORD - PEMBROKE, NH**

1. The location of this crossing is shown on the attached location map marked as Exhibit 5.
2. The design and proposed construction of this crossing is shown on the attached PSNH Transmission Drawing entitled "V-182 – 115 KV, SOUCOOK RIVER WATER CROSSING, CONCORD-PEMBROKE, NEW HAMPSHIRE" (Drawing No. 7649-421) marked as Exhibit 6.
3. Line V-182 will cross the Soucook River on 3-pole, wood dead end structures with a span of 1167.3'. The structure on the Pembroke side of the River will be an 85' dead end structure and the structure on the Concord side will be a 55' dead end structure. A detail of this structure has been provided with the Petition as FIGURE 1. As shown on FIGURE 1 the phase wires have a 14' separation at the structure. The OPGW and static wires are carried on the structure above the phase wires by support brackets approximately 7.5' above and 7' laterally from the phase wires. A special design tension of 14,000 lbs NESC Heavy has been used for the phase conductors and 5,200 lbs NESC for the static and OPGW of this span. Land along the shoreline between the structures of this crossing and the River is not traversable by vehicles. However, minimum distances to ground for truck traffic of 20.1' per the NESC have been met as 34.8' of clearance is provided.
4. Flood water elevations for the Soucook River were based on information contained in flood insurance rate maps provided by FEMA. The 100-year flood elevation for this portion of the River is approximately 253'. No information was available for the 10-year flood elevation for this portion of the River. However, it should be noted that the 100-year elevation, which these lines were designed to safely exceed, would be well above the 10-year flood elevation. The area of the crossing, as required by the NESC (Section 232), is approximately 121 acres. This is based on the total area of the River for a 1-mile stretch in either direction of the crossing (1,000' x 5,280')/43,560 sf/ac = 121 ac). As stated in paragraph 8 of the Petition, the minimum required 115 kV conductor clearance for water surface areas greater than 20-200 acres is 30.1'.
5. The sags and clearances to the water surface during a 100-year flood event for this crossing are as follows;

- Shield wires – Due to the fact that the OPGW and static wires are located above the phase wires, its clearance to the water surface will always exceed the minimum required NESC distance.
- NESC Heavy Loading - The maximum conductor sag for this weather case will be 44.6' with a clearance to the water surface of 56.2'.
- -20 degrees F - The maximum conductor sag for this weather case will be 40.5' with a clearance to the water surface of 58.7'.
- 285 degrees F – Max operating temperature (Phase wires) based on PSNH transmission standards - The maximum conductor sag for this weather case will be 58.1' with a clearance to the water surface of 41.9'. This condition produces the greatest sag in the phase wires and therefore the minimum clearance to the water surface. This design will exceed the minimum clearance requirement of 30.1' by 11.8' under temporary emergency conditions during a 100-yr storm event.
- Minimum phase to OPGW and static wire clearance – The weather case that would produce the minimum clearance between the phase wires and OPGW wires would be a combination of winter weather factors. First, the phase wires would have to be at 30 deg. F just after an ice storm and would have just dropped their ice. The OPGW and static wires would also be at 30 deg. F and would still be iced with 1" of radial ice. Under these conditions the clearance would be 5.4' vertically and 7.0' horizontally from the shield wires to the closest phase wire. Based on Section 235.C.2.a.1 and Table 235-6 section 2.a of the NESC, the minimum clearance required is 57.4", or approximately 4'-10" [ $29'' + (121 \text{ kV} - 50 \text{ kV}) \times 0.4''$ ].

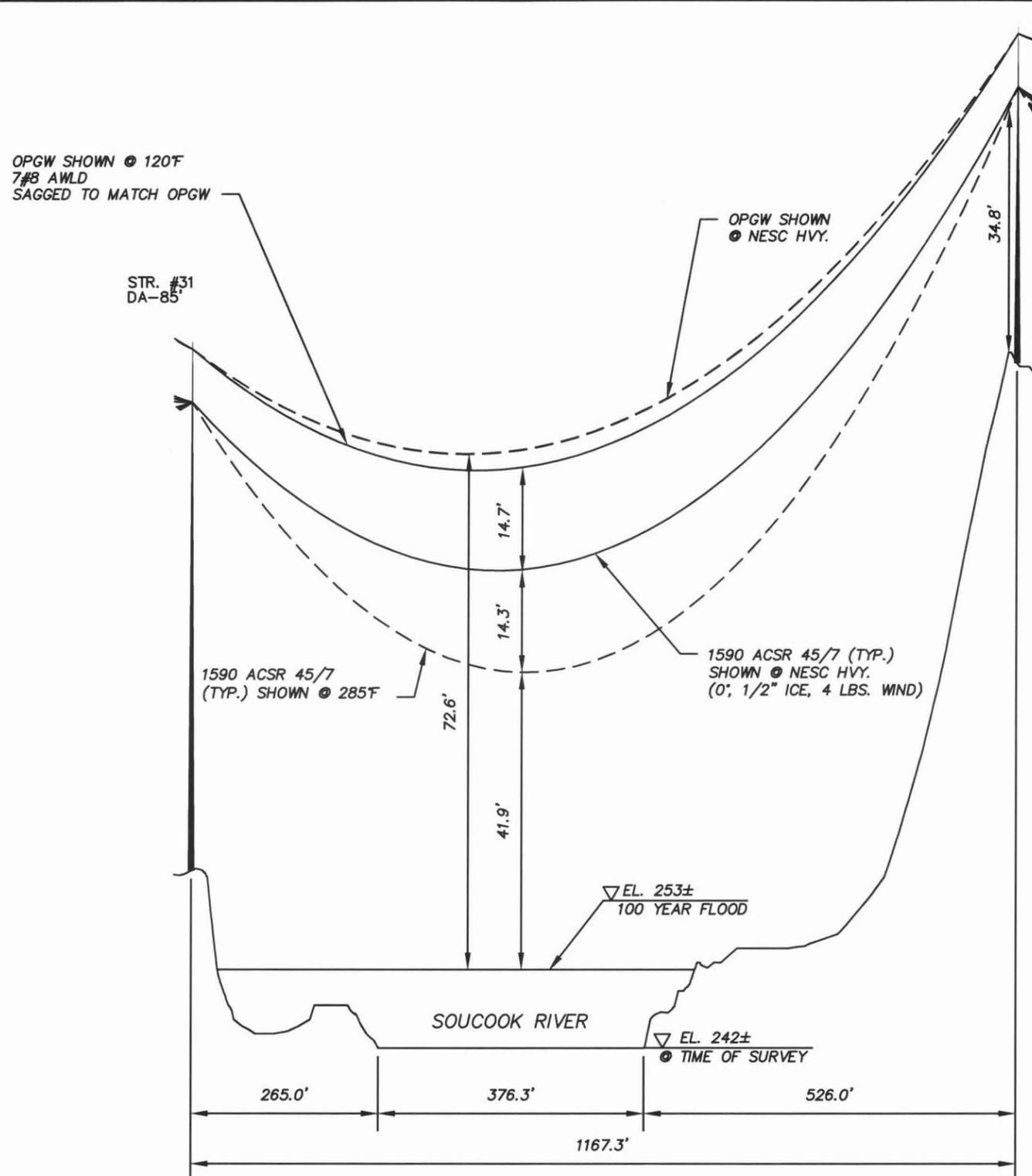
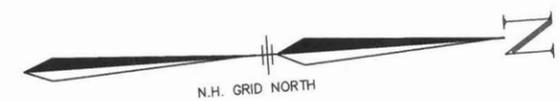
THIS PLAN IS FOR REFERENCE ONLY.  
 NO REPRESENTATION OR WARRANTY IS  
 MADE AS TO LOCATION OF BOUNDARIES  
 OR OTHER POINTS OF REFERENCE



**EXHIBIT 5**

|     |                      |        |      |                 |  |          |   |             |           |
|-----|----------------------|--------|------|-----------------|--|----------|---|-------------|-----------|
|     |                      |        |      |                 |  |          |   |             |           |
|     |                      |        |      | DRAWN<br>JLQ    | <b>Public Service<br/>         of New Hampshire</b>  |          | <b>Transmission<br/>         Business</b> |             |           |
|     |                      |        |      | DESIGNED<br>JMD | <b>V182 LINE - 115 KV</b><br><b>SOUCOOK RIVER WATER CROSSING</b><br><b>CONCORD-PEMBROKE, NEW HAMPSHIRE</b> |          |   |             |           |
|     |                      |        |      | CHECKED<br>SKP  |  |          |   |             |           |
|     |                      |        |      | APPROVED<br>*   |  |          |   |             |           |
| 0   | ISSUED FOR LICENSING | 9/2007 | JLQ  | JMD             | SCALE  | DATE     | SHEET                                     | DRAWING NO. |           |
| NO. | REVISION             | DATE   | DRWN | CHK             | APPR   | AS NOTED | 08/08/07                                  | 5 of 13     | 7649-421A |

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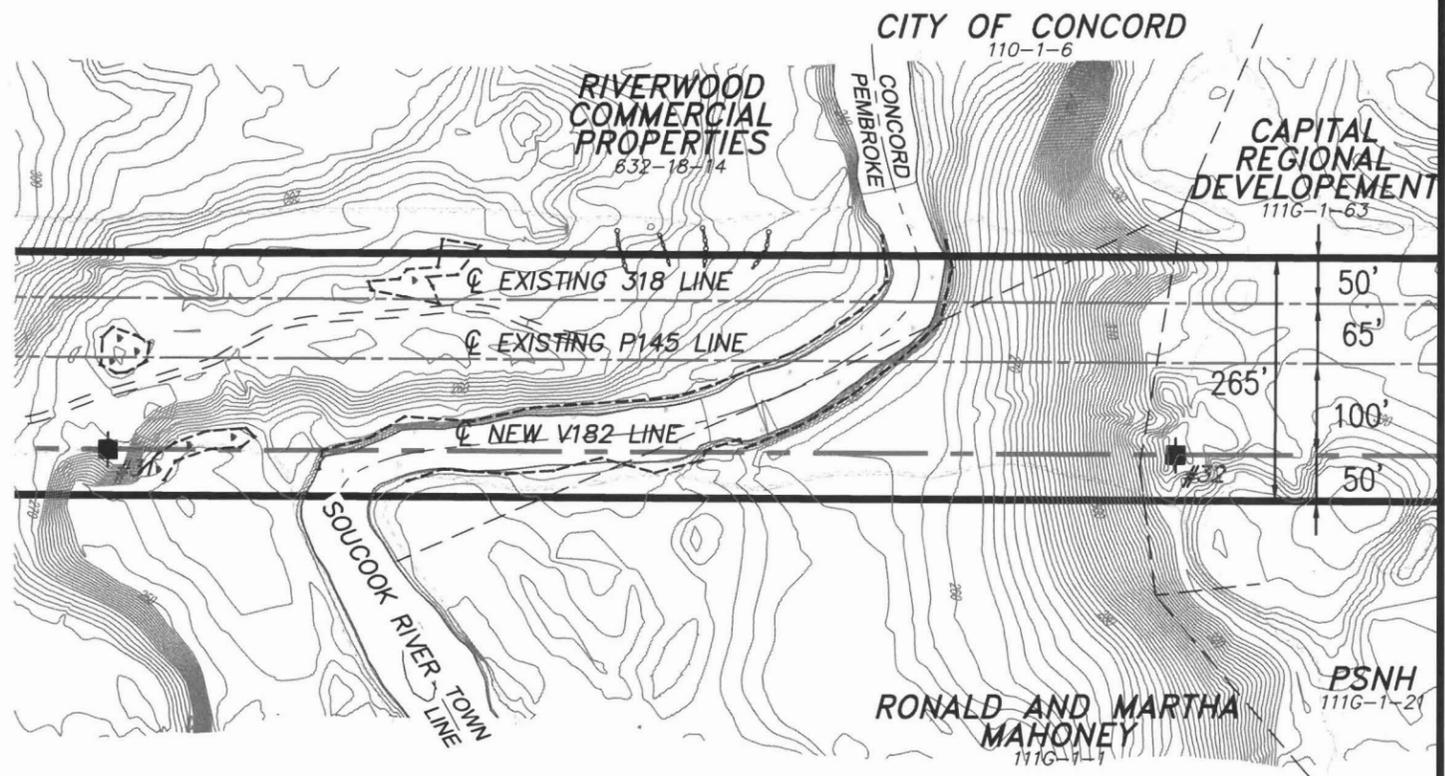


**PROFILE**

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



GRAPHIC SCALE  
(Feet)



**PLAN VIEW**

SCALE: 1"=200'

**EXHIBIT 6**

|                  |                  |  |                         |
|------------------|------------------|--|-------------------------|
|                  |                  | Transmission Business  |                         |
| DRAWN<br>JLQ     |                  | <b>V182 LINE - 115 KV</b><br><b>SOUCOOK RIVER WATER CROSSING</b><br><b>CONCORD-PEMBROKE, NEW HAMPSHIRE</b> |                         |
| DESIGNED<br>JMD  |                  |  |                         |
| CHECKED<br>SKP   |                  |  |                         |
| APPROVED<br>*    |                  |  |                         |
| SCALE<br>1"=200' | DATE<br>08/08/07 | SHEET<br>6 of 13   | DRAWING NO.<br>7649-421 |

| NO. | REVISION             | DATE   | DRWN | CHK | APPR |
|-----|----------------------|--------|------|-----|------|
| 0   | ISSUED FOR LICENSING | 9/2007 | JLQ  | JMD |      |