

APPENDIX 18: Overhead and Underground Municipal Highway Crossings

As set forth in Section 301.08 (c)(5) of the Application, the proposed route for the Applicant's Seacoast Reliability Project (Project) includes the overhead/aerial crossing of certain local municipal public highways, and the installation of underground line facilities within certain of those municipal highways. Public Service Company of New Hampshire d/b/a Eversource ("PSNH"), is requesting that the Site Evaluation Committee (SEC) approve PSNH's proposed route to include the installation of the Project, with related conduit, cable, wires, poles, structures and devices across, over, under and along certain locally maintained public highways within the Towns of Durham and Newington and the City of Portsmouth as detailed in this document.¹ As demonstrated by the pre-filed testimony of David Plante, James Jiottis, and Lynn Farrington, the construction and operation of the Project will not interfere with the safe, free and convenient use for public travel of the highway. See RSA 231:168.

The N.H. Department of Transportation adopted a *Utility Accommodation Manual* (Hereinafter UAM), dated February 24, 2010 to guide its process for accommodating and licensing utilities within highway corridors. For purposes of this application and to ensure consistency, the NHDOT Utility Accommodation Manual (UAM) is followed for crossings of municipally maintained highways since it sets forth substantive and restrictive design criteria and requirements.

AERIAL ROAD CROSSINGS

Construction of the PSNH Project requires 11 aerial crossings of municipally maintained highways. These crossings are located in the communities of Durham, Newington and Portsmouth. This Appendix provides the required information as set forth in the UAM Appendix G, Detail G2; *Pole Licensing Procedures Step-by-Step*. Part A of this Appendix to the Application contains a list of the aerial crossings of municipal highways. Appendix 5 to the SEC Application, contains a plan set titled *F107 Line and Structure Locations*, showing all of the aerial crossings. Additionally a traffic control plan consistent with the Manual on Uniform Traffic Control Devices (MUTCD) is included in Appendix 18, Part C as required in UAM Section V and Section XV, A, d, 1 to ensure all work performed will be conducted in manner to protect the public.

At all of the aerial crossing locations, distribution and/or transmission lines already exist. PSNH proposes to relocate or in some locations, remove the existing distribution line within the existing corridor in order to accommodate the Project. The proposed relocation of the existing line, as well as the installation of the new transmission line will exceed the minimum clearance standards set forth in the UAM.

UNDERGROUND INSTALLATIONS IN MUNICIPALLY MAINTAINED PUBLIC HIGHWAYS

¹ If PSNH's Project did not fall under SEC jurisdiction, the licensing of the use and occupancy of the municipal public highways for the Project would fall under the jurisdiction of the Board of Selectmen or City Council under RSA 231:160 and 231:161.

In addition to the aerial crossings, Public Service Company of New Hampshire proposes sections of underground installation situated within the right of way of municipally maintained highways in the towns of Durham and Newington. In the town of Durham an underground segment will be used to cross under Main Street (Route 155A). Construction of this crossing will utilize pipe jacking (tunneling) technique to cross the highway approximately 22 feet beneath the surface and will not disturb the pavement or traffic flow of Main Street. In the town of Newington, underground segments will be placed beneath the pavement of two highways: Gundalow Landing Circle and Little Bay Road. Construction of these segments will utilize trenching to install the conduit duct banks beneath the paved surfaces. Corresponding design plans for the underground installations are provided in Appendix 18, Part B.

The NHDOT Utility Accommodation Manual requires maintaining a minimum depth of 18" below the pavement subgrade for highway installations. PSNH proposes a minimum of 36" of cover above the duct banks. At these depths the underground sections will exceed NHDOT minimum standards for underground installations thereby avoiding future impacts on highway maintenance activities or improvements.

Additionally, a traffic control plan consistent with the Manual on Uniform Traffic Control Devices (MUTCD) is included in Appendix 18, Part C as required in UAM Section V and Section XV, A, d, 1 to ensure all work performed will be conducted in manner to protect the public.

Furthermore, in accordance with the UAM, photographs or videos in sufficient detail to show the existing condition of the area to be disturbed within the ROW shall be furnished to the Municipality prior to the start of work.

During the hours the job is inactive, a standby crew shall be available in case they are needed for the protection and maintenance of traffic. One or more telephone numbers, which will reach the standby crew, shall be furnished to the following people: local police chief and the local superintendent of public works or road agent.

In areas where the pavement is to be excavated, it shall be neatly and uniformly cut, with square edges by machine, at each side of all trenches. Every precaution shall be used to prevent undermining of the remaining pavement, utilizing sheeting as required, to prevent cave-in. Undermined areas inadvertently developed shall have the projecting pavement cut square and removed. Excavation and handling of material shall be performed in a manner that will minimize trench width and the possibility of cave-ins. The pavement and base course materials are to be discarded. All backfill material below the base courses will be thermally approved sand or concrete to dissipate heat from the underground cables. All backfill material in trenches and below base courses shall consist of excavated material suitable for backfill as defined in NHDOT Standard Specifications, Section 603. All backfill shall be compacted at or near optimum moisture content, in layers not exceeding six (6) inches compacted thickness, using pneumatic tampers, vibratory compactors, or other approved means. The material shall be compacted to not less than ninety five (95) percent of maximum density as determined by AASHTO T99 (Standard Proctor Test). Water shall be uniformly applied during compaction in the amount necessary for proper compaction.

Within paved areas, crushed gravel, NHDOT Standard Specifications Section 304, or approved equal to the existing gravel course, shall be placed in layers not exceeding six (6) inches compacted thickness, and thoroughly compacted. An approved bituminous plant mix, NHDOT Standard Specifications section 401, shall be placed the same day and carefully graded and rolled to the adjacent pavement grade, as a temporary patch. Just before completion of the project and after suitable exposure of temporary patches to traffic compaction, the pavement shall be sawn, as directed, on either side of the trench to provide a two (2) foot minimum overlap of the final patch on undisturbed material. Within the sawn limits, the existing pavement and temporary patch material shall be removed, the sawn edges tack coated, and the material replaced with an equal depth, but not less than four (4) inches, of hot bituminous concrete, placed as directed, and compacted to meet the existing pavement edge exactly. Shoulders, other than paved, disturbed during the construction, shall be restored by providing a similar depth of crushed bank run gravel which shall be graded and compacted on a slope to match the cross slope of the existing highway shoulder.

In other areas, the surface shall be restored, by placing similar material to a depth and quality equal to that existing before excavation. Reestablish existing grassland to equal what existed before excavation. Reestablish lawns to pre-construction condition, using a minimum of four (4) inches of loam, lime, fertilizer, similar seed, and mulch. The surface shall be reasonable smooth, free of stones larger than two (2) inches of debris, and be graded to drain.

Upon completion of the project a complete set of "as-built" drawings will be provided to the Municipality.

APPENDIX 18

PART A - Aerial Crossings of Municipally Maintained Highways

| Highway | Town | Structure Numbers | Height Above Highway (Ft) | Classification of Highway |
|-------------------|------------|-------------------|---------------------------|---------------------------|
| Mill Road | Durham | 33-34 | 20.3* | V |
| Timber Brook Lane | Durham | 63-64 | 33.8* | VI |
| Cutts Road | Durham | 67-68 | 21.2* | V |
| Ffrost Drive | Durham | 68-69 | 18.3* | V |
| Sandy Brook Drive | Durham | 70-71 | 25.6* | V |
| Sandy Brook Drive | Durham | 73-74 | 25.9* | V |
| Longmarsh Road | Durham | 89-90 | 29* | V |
| Durham Point Road | Durham | 95-96 | 45.3** | V |
| Nimble Hill Road | Newington | 111-112 | 43.6** | V |
| Fox Point Road | Newington | 114-115 | 41.02** | V |
| Gosling Road | Portsmouth | 147-148 | 39.4** | V |

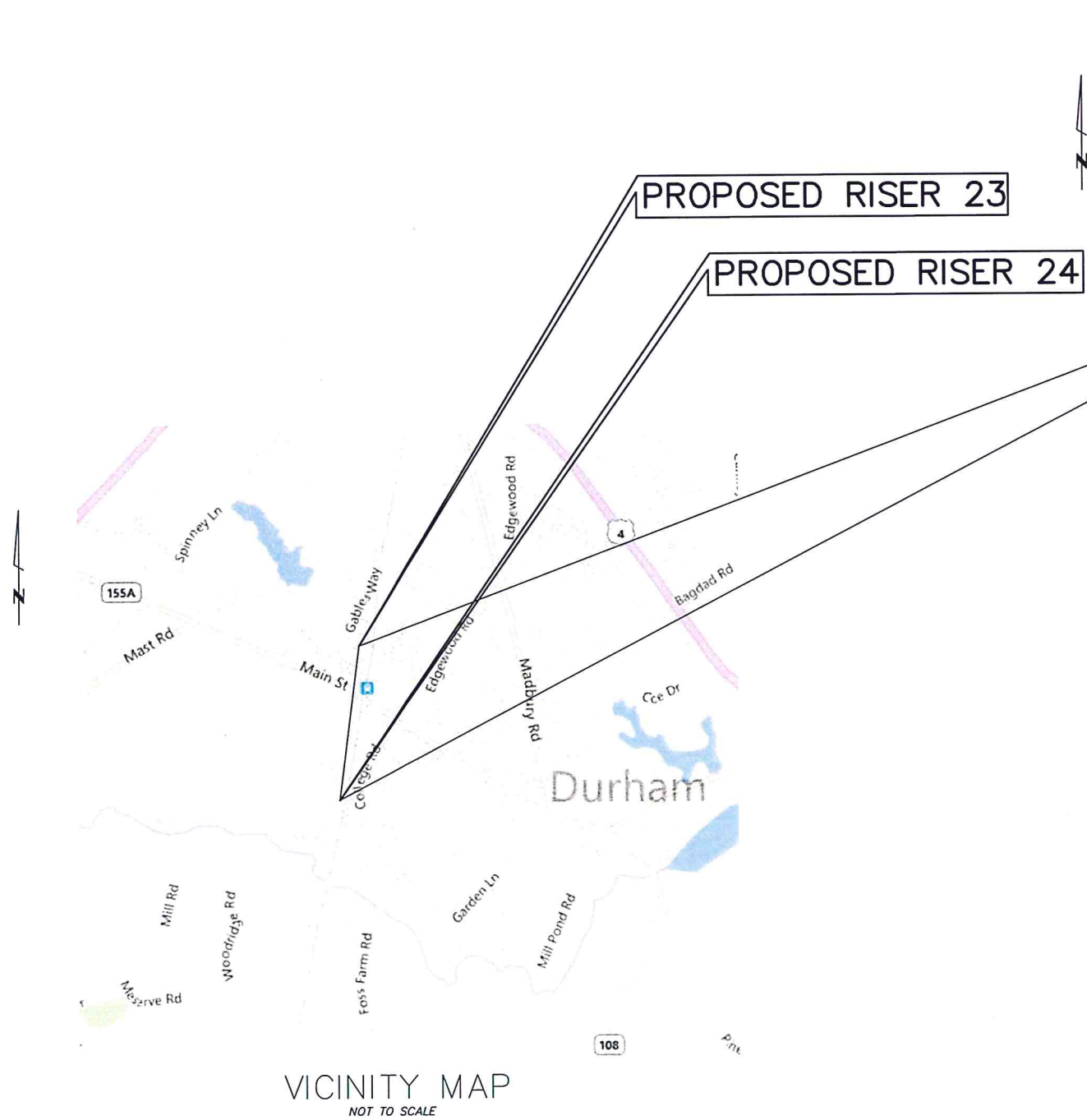
*Lowest wire is 0kV neutral conductor. 115kV and 34.5kV conductors and 0kV shield wire will be above this height.

**Lowest wire is 115kV conductor. 0kV shield wire(s) will be above this height.

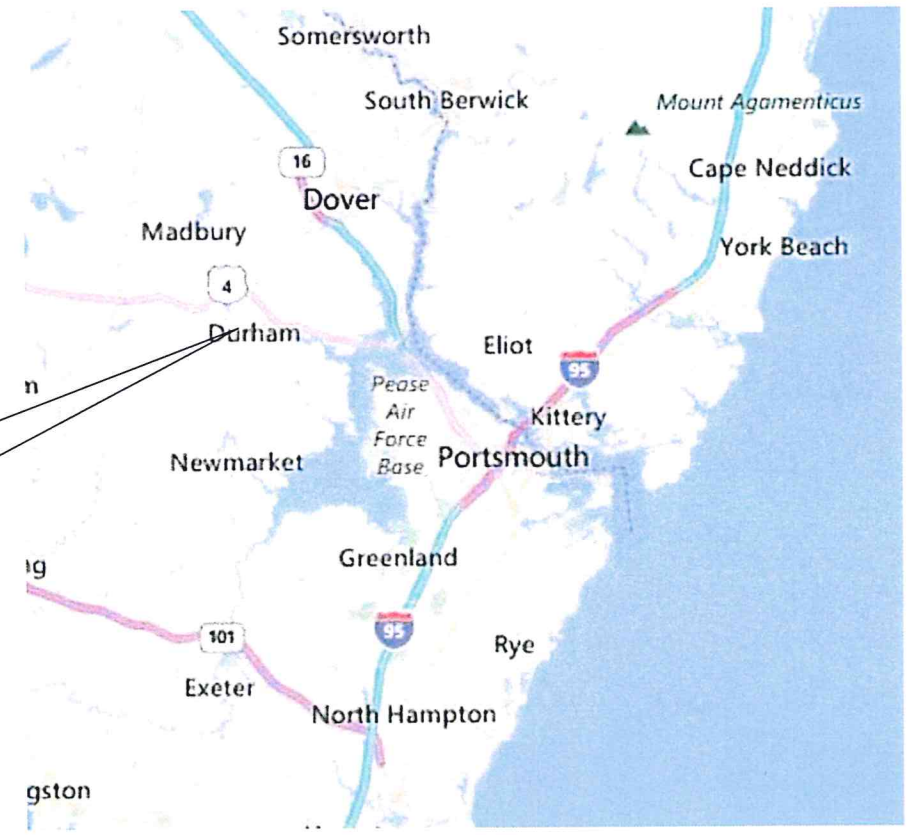
APPENDIX 18

Part B – Underground Crossings of Municipally Maintained Highways

PUBLIC SERVICE OF NEW HAMPSHIRE
 F-107
 UNH, DURHAM
 115 kV UNDERGROUND TRANSMISSION LINE



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AREA MAP
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- NOTES:
- EXISTING DEPTH OF UTILITY CROSSINGS ASSUMED.
 - THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG #811 OR #1-888-344-7233
 - ALL VERTICAL CURVES TO BE 400' UNLESS OTHERWISE NOTED.

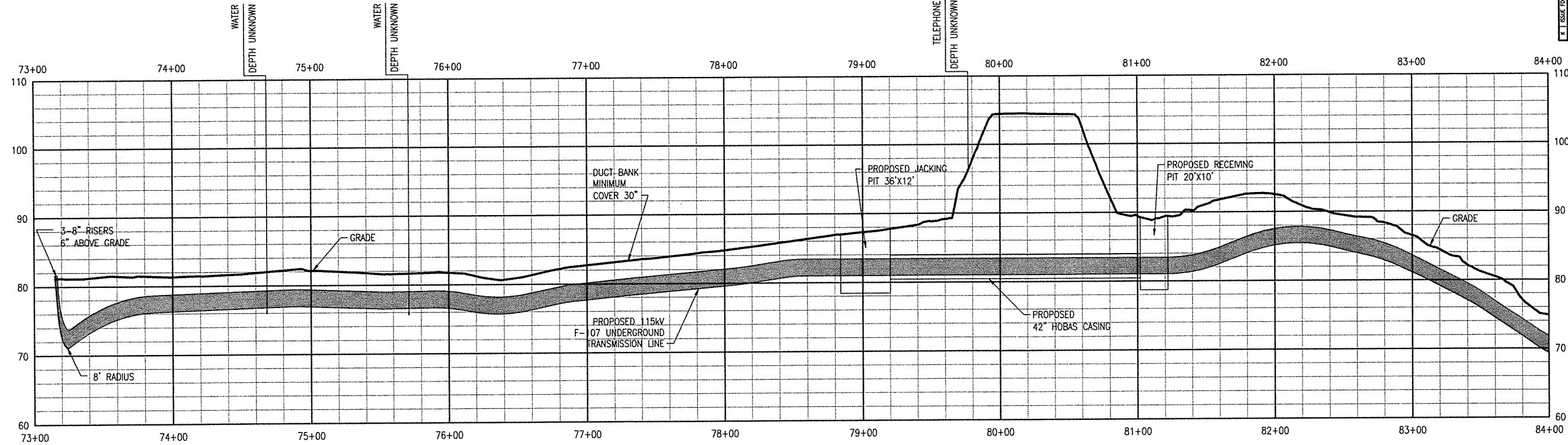
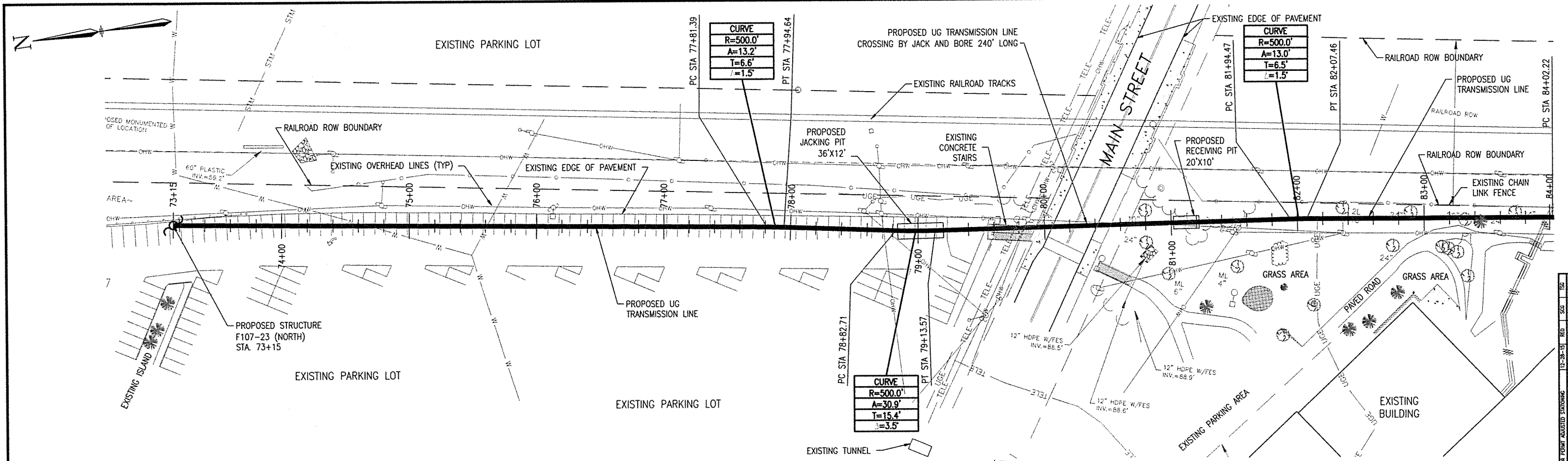
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| 4 | REVISED EXTENDED LAYOUT FOR UNH | 9-25-15 | RO | SG | TSJ |
| 5 | EXTENDED ALIGNMENT | 9-9-15 | REG | SG | TSJ |
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| 7 | REVISE LOC. REVERT RISER LOCATION | 8-27-15 | REG | SG | TSJ |
| 8 | UPDATED STATIONING | 8-27-15 | REG | SG | TSJ |
| 9 | PROFILE ADDED | 7/27/15 | REG | SG | TSJ |
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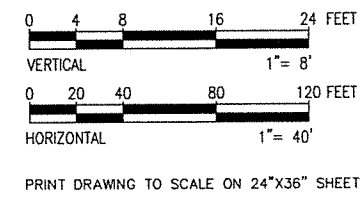
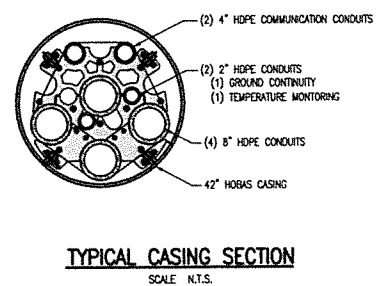
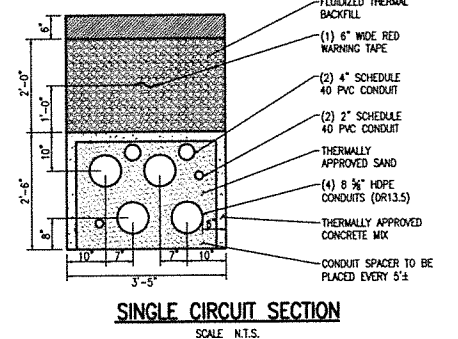
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115kV F107 UNDERGROUND
 TRANSMISSION LINE
 PLAN AND PROFILE VIEW
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DES: TSJ
 CHK: SG
 TOWN: DURHAM
 TRANSMISSION LINE: F107
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- General Notes**
1. THE UTILITIES HAVE NOT BEEN IDENTIFIED AND WILL IMPACT THE DESIGN OF THE UNDERGROUND TRANSMISSION LINE AT THE LOCATION OF ANY CROSSINGS.
 2. ALL PROPERTY LINE INFORMATION IS SHOWN APPROXIMATE AND BASED ON TOWN ASSessor'S PLATS ONLY. THE AERIAL TRANSMISSION EASEMENT HAS BEEN ESTABLISHED BY SURVEY.
 3. TOPOGRAPHY IS BASED ON AN AERIAL LIDAR SURVEY AND SATELLITE IMAGERY. THEREFORE GRADES ARE APPROXIMATE. AN ON THE GROUND DETAIL SURVEY WILL BE REQUIRED FOR DESIGN.
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 5. ALL EXISTING ROAD MARKINGS ARE ESTIMATED.
 6. CONTRACTOR IS RESPONSIBLE FOR PLACING SILT FENCE OR OTHER APPROVED EROSION CONTROL DEVICES. WETLANDS HAVE NOT BEEN DELINEATED AND HAVE NOT BEEN CONSIDERED FOR DESIGN.
 7. CONTRACTOR SHALL INSTALL SILT SACK OR APPROVED EQUAL TO ALL CATCH BASINS OR CURB INLETS WITHIN THE DEFINED WORK ZONE.
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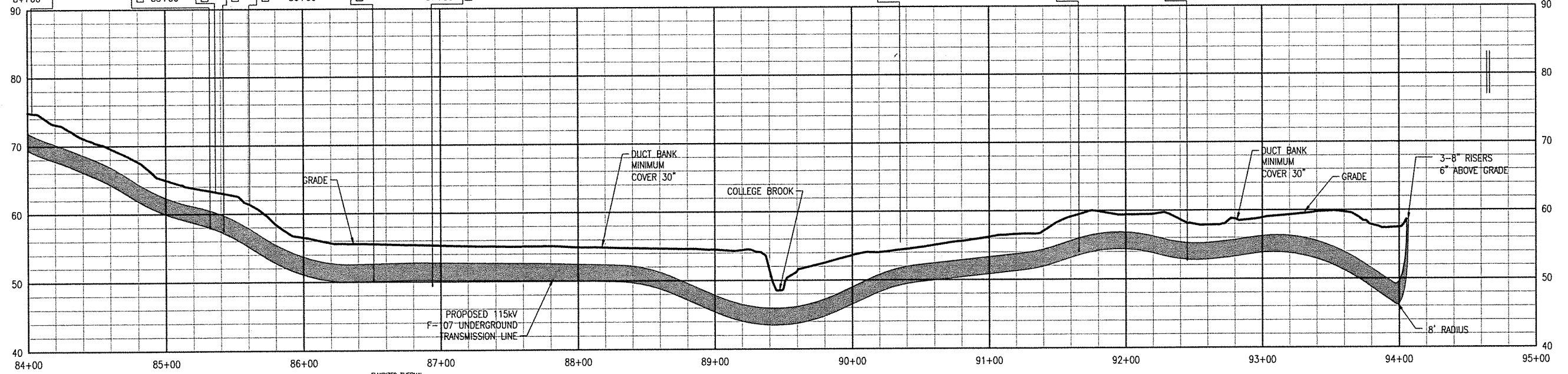
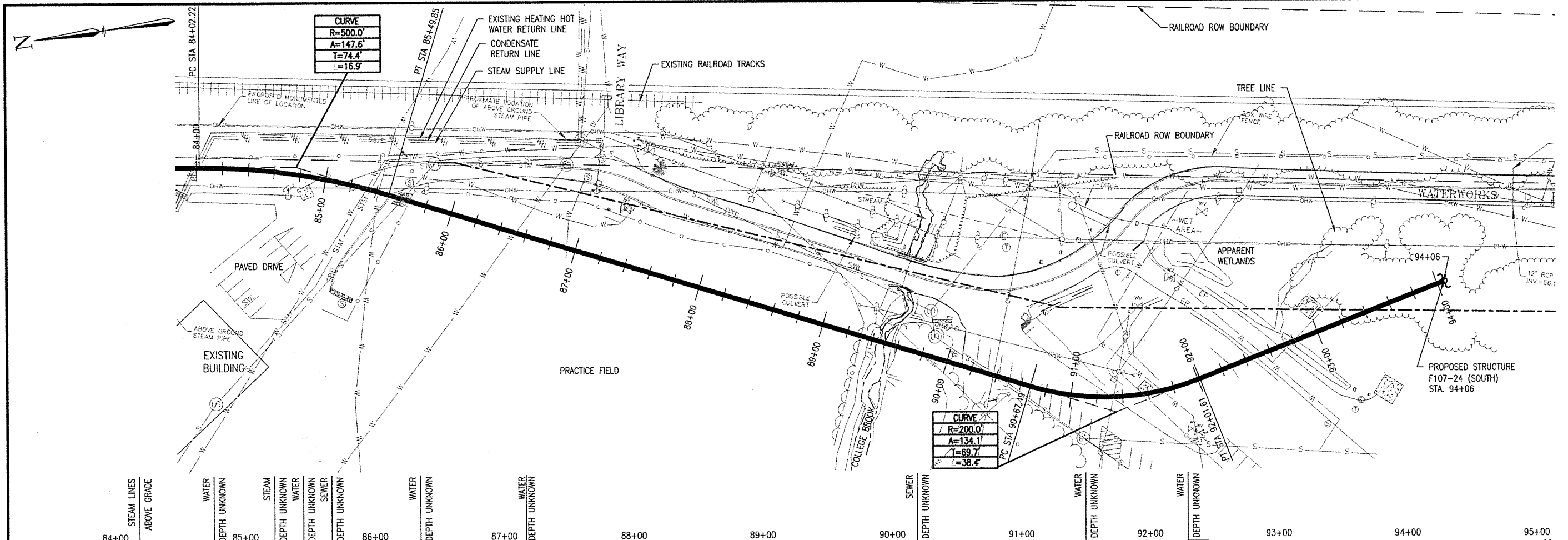
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115kV F107 UNDERGROUND TRANSMISSION LINE
PLAN AND PROFILE VIEW

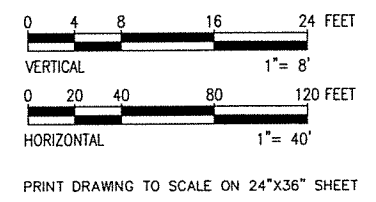
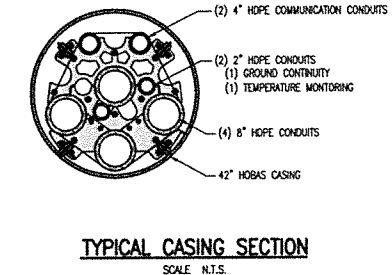
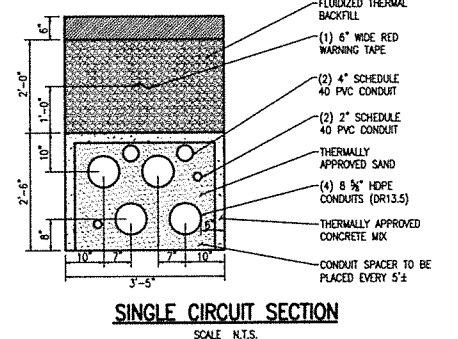
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Transmission Business

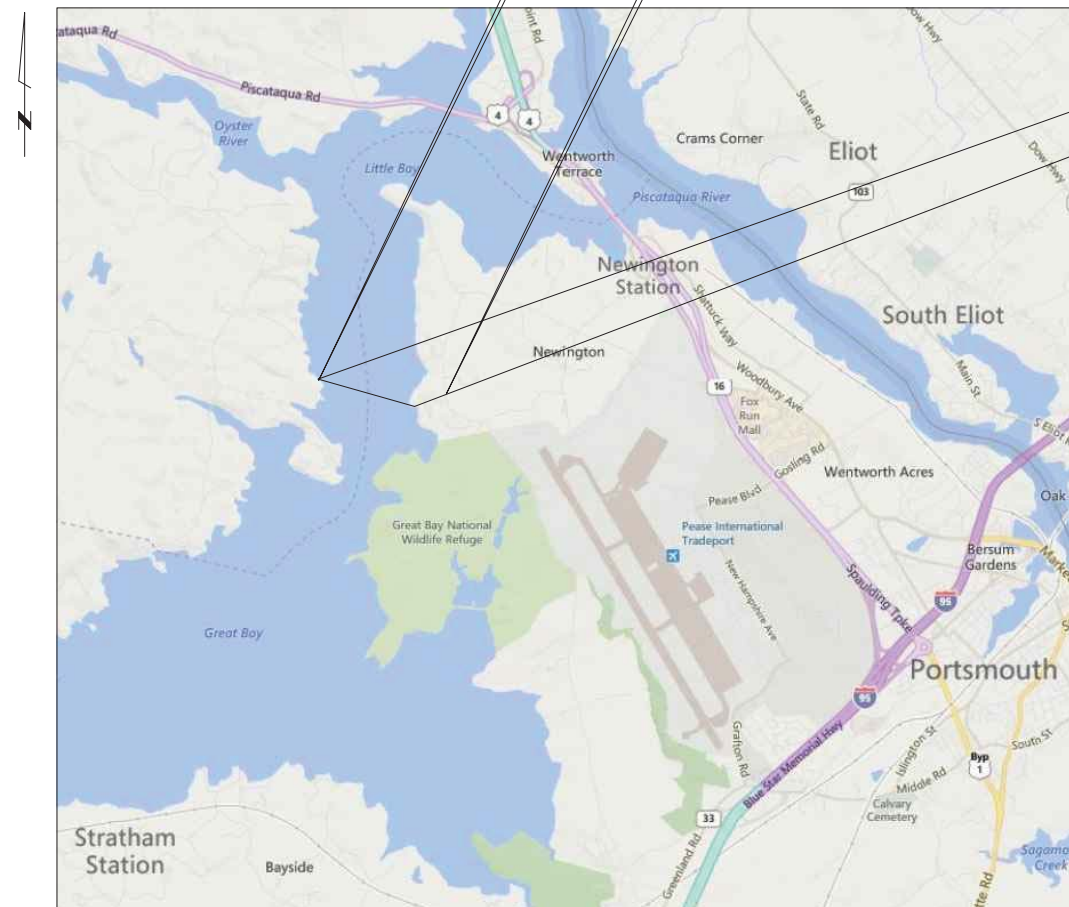
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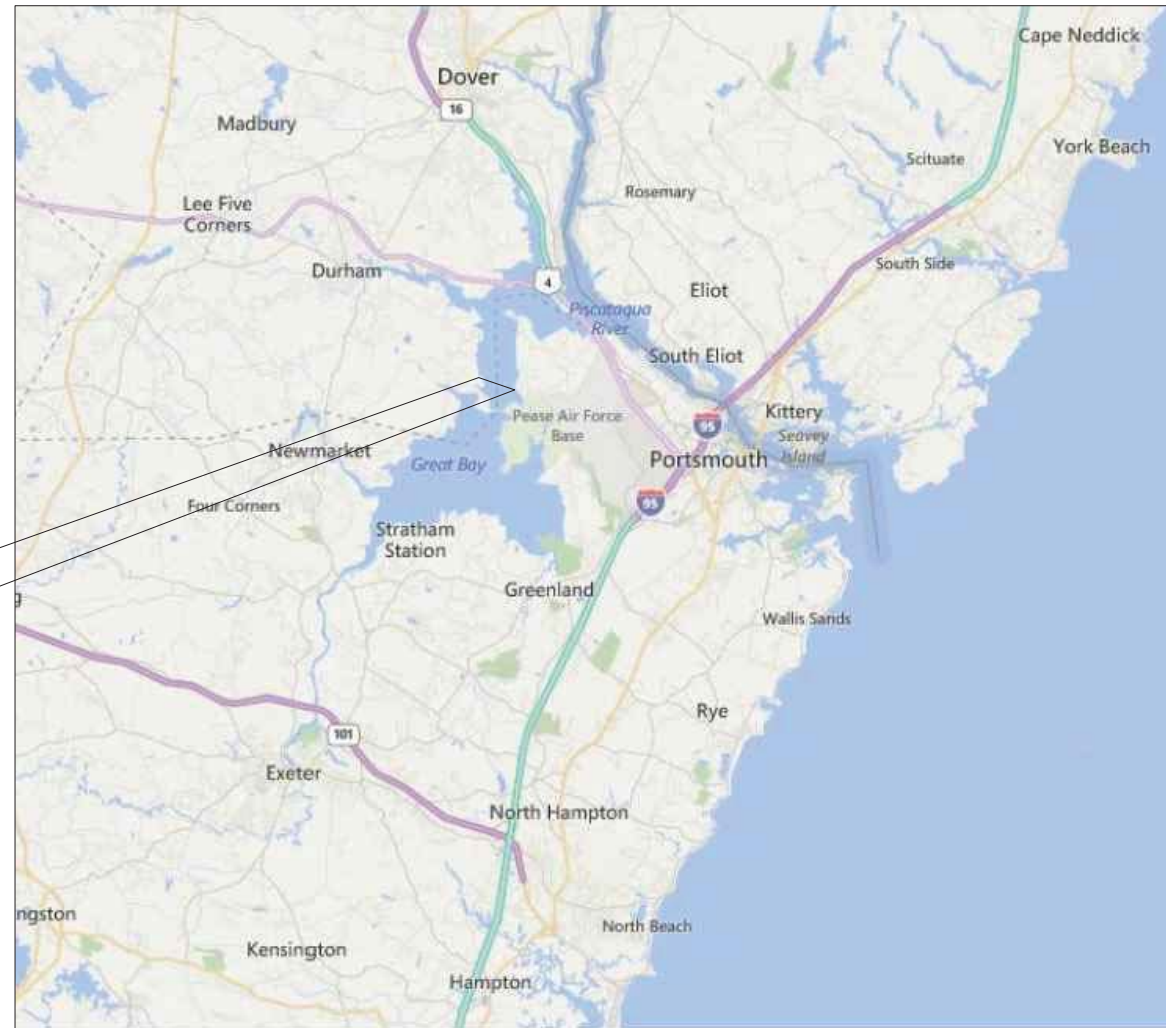
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 SHEET 3 OF 3
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 LITTLE BAY, PORTSMOUTH
 115 kV UNDERGROUND TRANSMISSION LINE



VICINITY MAP
 NOT TO SCALE



AREA MAP
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3. ALL VERTICAL CURVES TO BE 400' UNLESS OTHERWISE NOTED.

| NO. | REVISION | DATE | BY | CHKD | APPRV. |
|-----|------------------------------------|----------|-----|------|--------|
| 7 | ISSUED FOR PERMIT - RELOCATE RISER | 12/28/15 | REC | SCG | TSO |
| 6 | ISSUED FOR PERMIT | 12/14/15 | REC | SCG | TSO |
| 5 | ISSUED FOR PERMIT | 11/19/15 | REC | SCG | TSO |
| 4 | ISSUED FOR PERMIT - ALIGNMENT ADJ. | 5-18-15 | REC | SCG | TSO |
| 3 | ISSUED FOR PERMIT - ALIGNMENT ADJ. | 9-8-15 | REC | SCG | TSO |
| 2 | ISSUED FOR PERMIT - ALIGNMENT ADJ. | 10/14/14 | SCG | SCG | TSO |
| 1 | ISSUED FOR PERMIT | 8-25-14 | JED | TSO | CS |
| 0 | ISSUED FOR PERMIT | | | | |

Public Service
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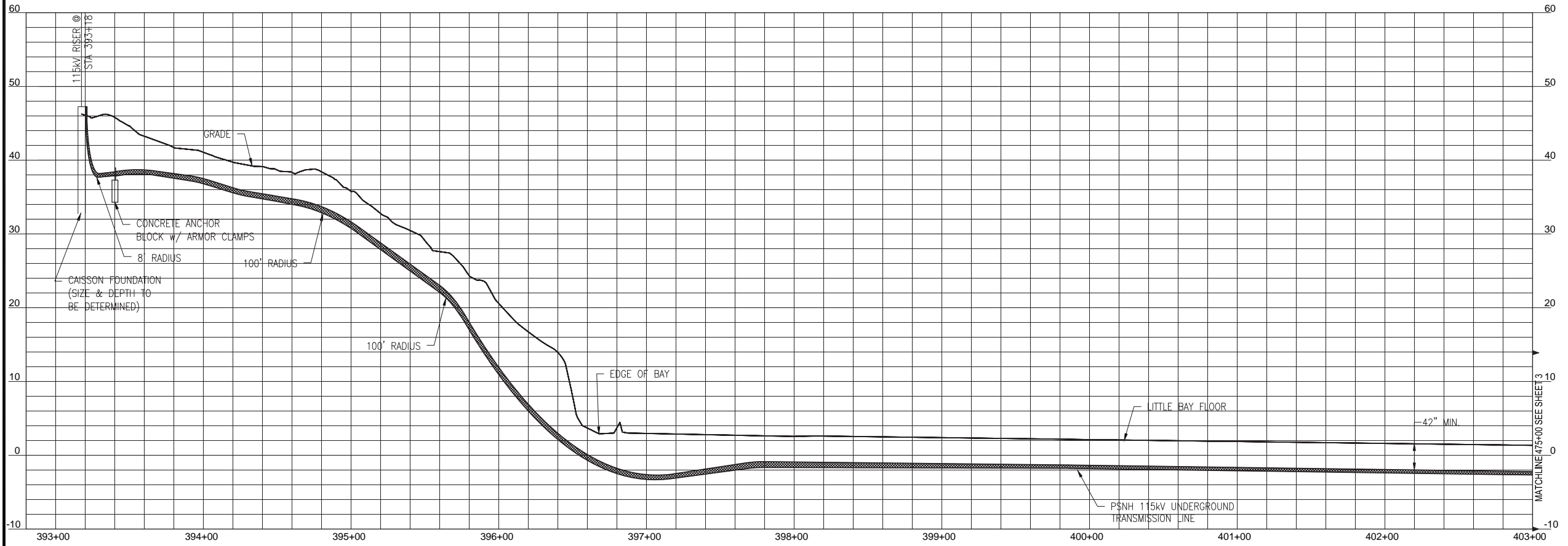
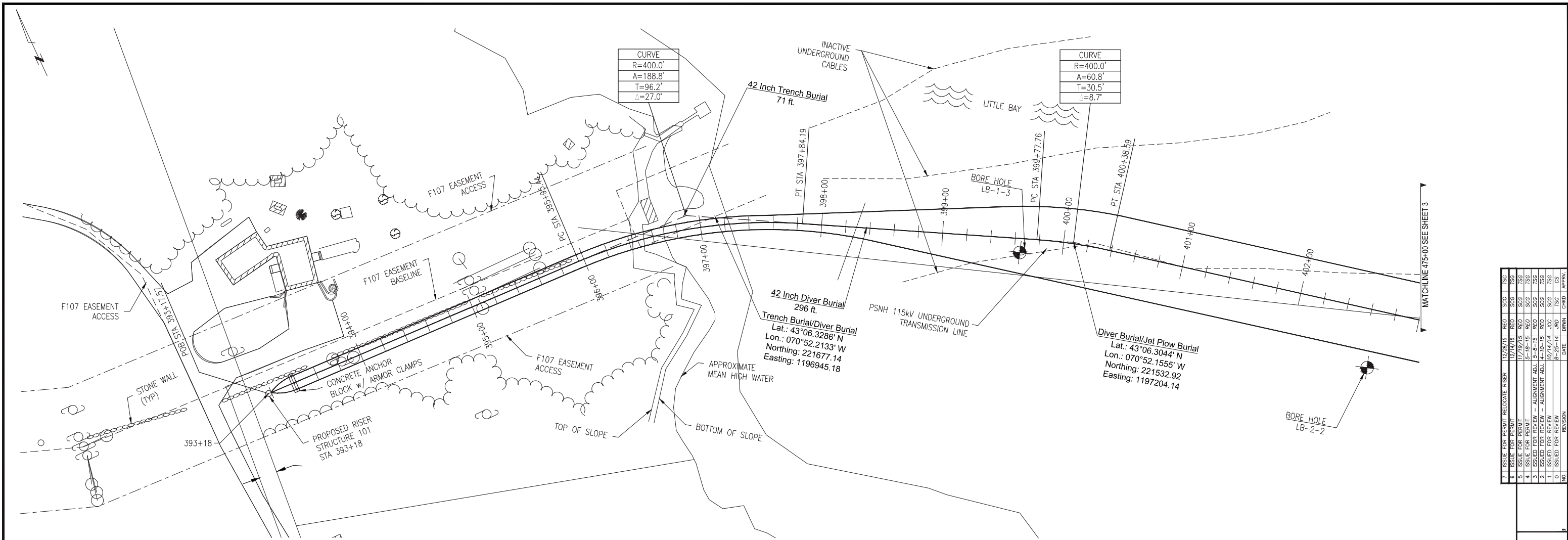
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UNDERGROUND TRANSMISSION
 PLAN & PROFILE
 SEACOAST RELIABILITY PROJECT
 SCALE: H. 1"=40', V. 1"=8'
 DATE: 8/25/2015

TOWN: NEWINGTON, NH
 TRANSMISSION LINE: F-107
 MILE NO.:
 DISCIPLINE/SHT NO.:
 SHEET 1 OF 12

COVER

REVISION: 01/23/2014



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 - ALL VERTICAL CURVES TO BE 400' UNLESS OTHERWISE NOTED.
 - ANCHOR BLOCK DESIGN, BY OTHERS, TO INCLUDE PULLING TENSIONS AND ACCIDENTAL ENTANGLEMENT BY PASSING VESSELS.

| NO. | REVISION | DATE | BY | CHKD | APPRV. |
|-----|-----------------------------------|----------|-----|------|--------|
| 7 | ISSUED FOR PERMIT | 12/28/15 | REG | SCG | TSG |
| 6 | ISSUE FOR PERMIT | 12/14/15 | REG | SCG | TSG |
| 5 | ISSUE FOR PERMIT | 11/19/15 | REG | SCG | TSG |
| 4 | ISSUE FOR REVIEW - ALIGNMENT ADJ. | 5-18-15 | REG | SCG | TSG |
| 3 | ISSUE FOR REVIEW - ALIGNMENT ADJ. | 9-8-15 | REG | SCG | TSG |
| 2 | ISSUE FOR REVIEW | 10/14/14 | SCG | SCG | CS |
| 1 | ISSUE FOR REVIEW | 8-25-14 | JRD | TSG | CS |
| 0 | ISSUED FOR REVIEW | | | | |

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Transmission Business

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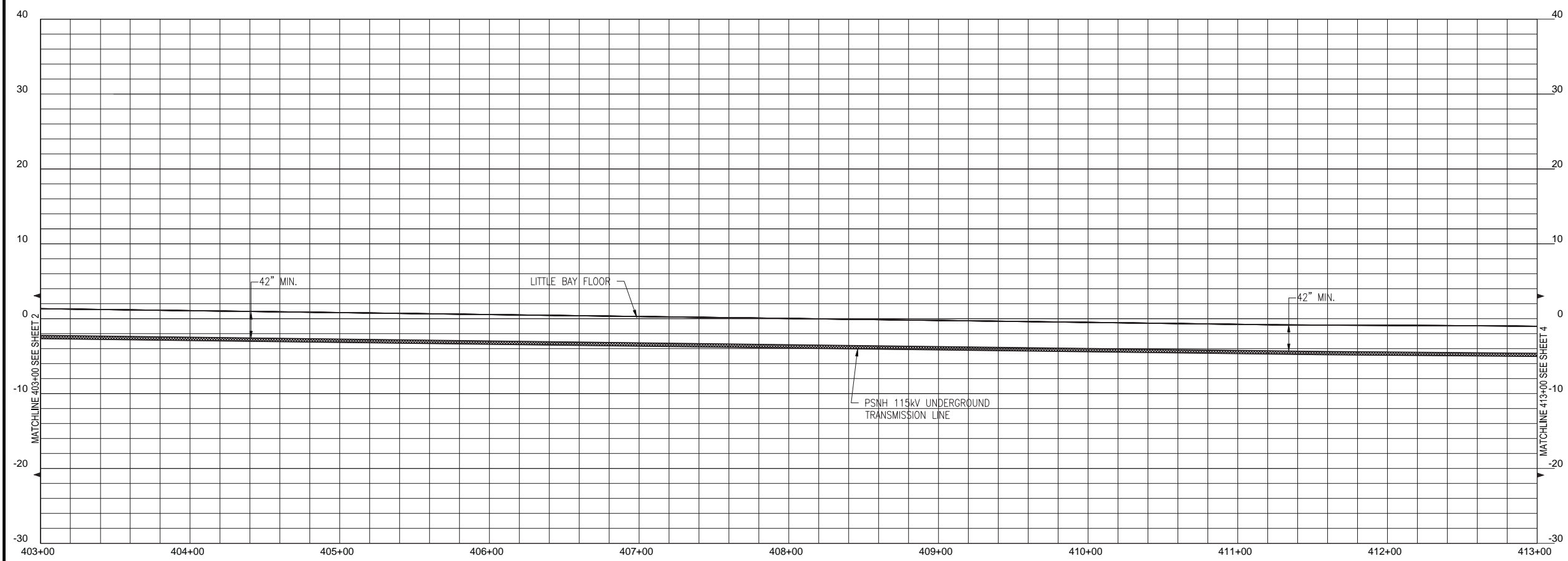
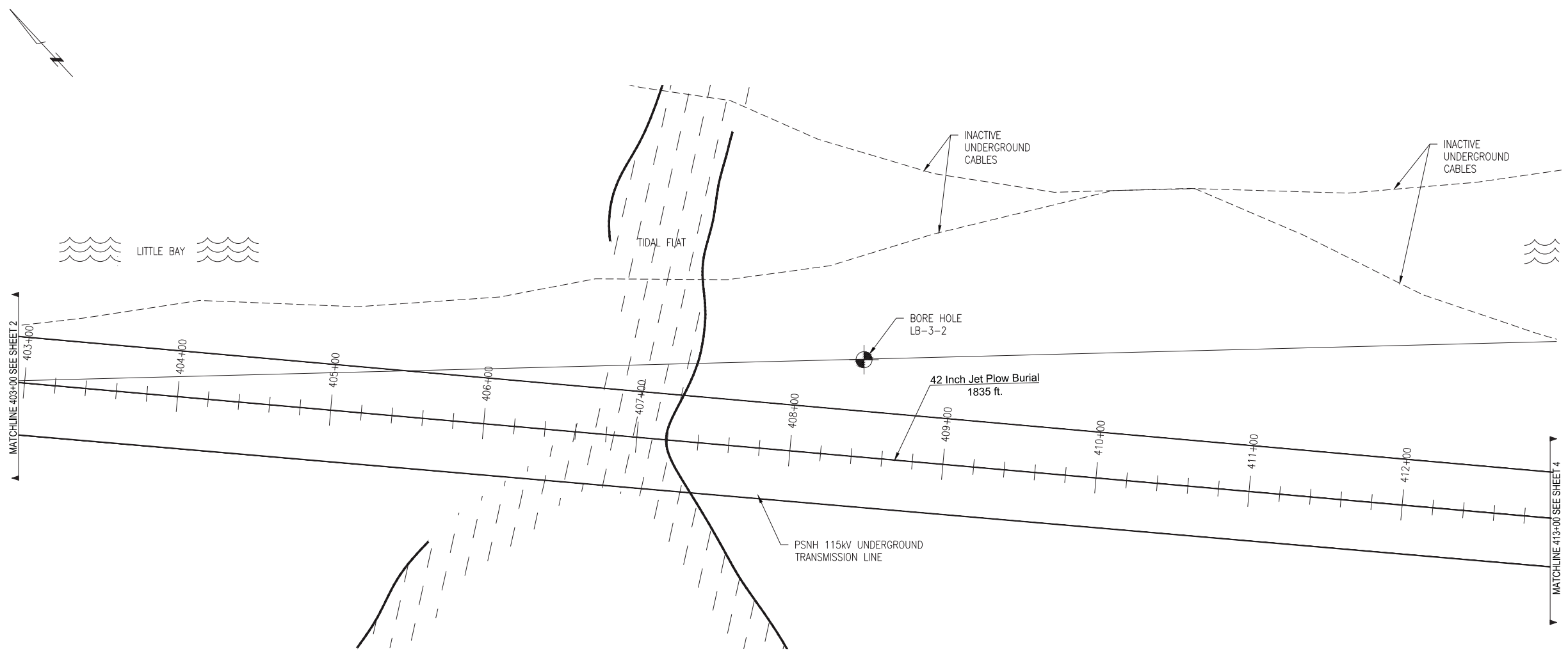
UNDERGROUND TRANSMISSION PLAN & PROFILE
SEACOAST RELIABILITY PROJECT
SCALE: H. 1"=40', V. 1"=8'

DES: TSG
CHKD: JRD
DRAW: REG
APR:

TOWN: NEWINGTON, NH
TRANSMISSION LINE: F-107
MILE NO: 8
DISCIPLINE/SHT NO.

SHEET 2 OF 12
2 OF 12

REVISION: 01/23/2014



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| 3 | ISSUED FOR REVIEW - ALIGNMENT ADJ. | 5-18-15 | REC | SCG | TSG |
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| 1 | ISSUED FOR REVIEW | 10/14/14 | SCG | SCG | TSG |
| 0 | ISSUED FOR REVIEW | 8-25-14 | JRD | TSG | CS |

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Business

UNDERGROUND TRANSMISSION
PLAN & PROFILE
SEACOAST RELIABILITY PROJECT

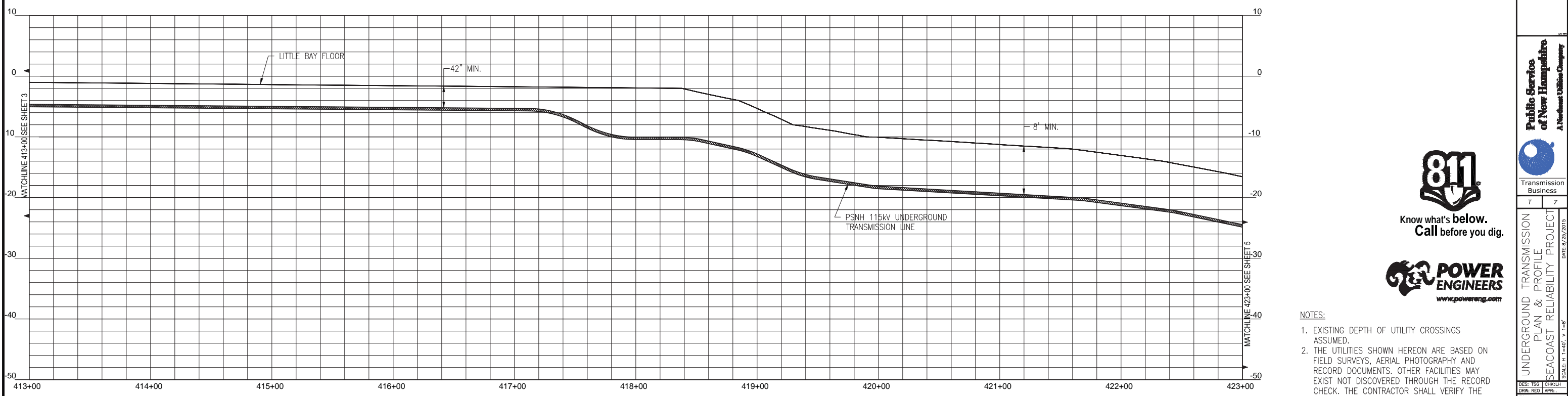
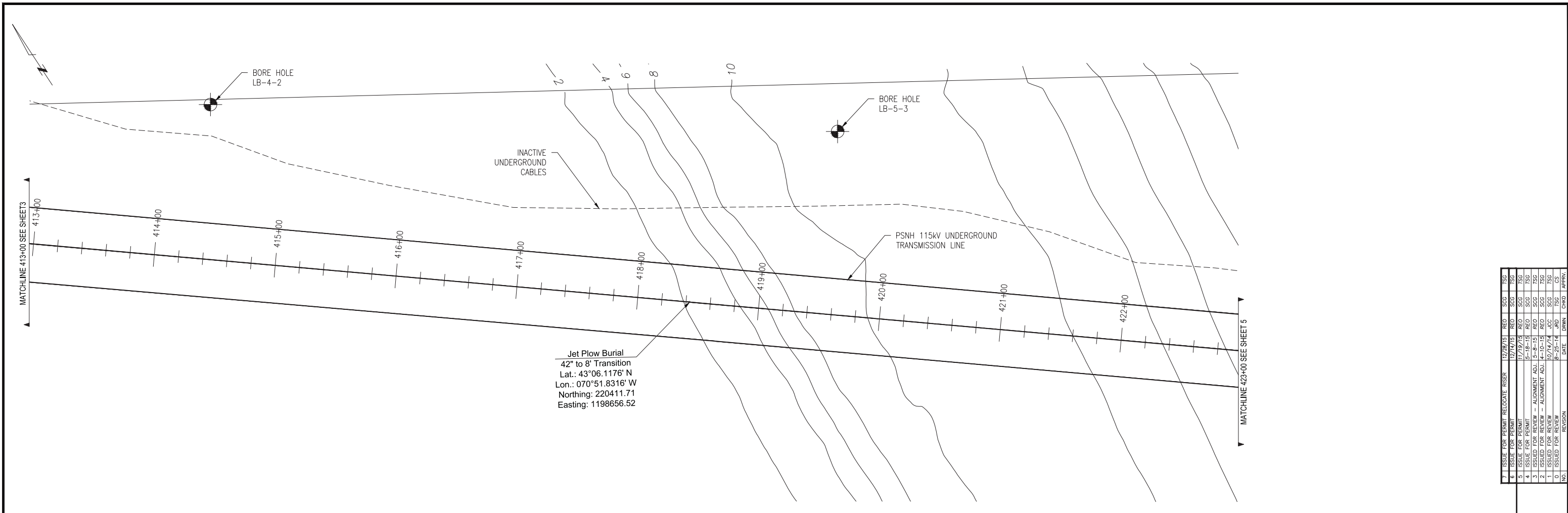
DATE: 8/25/2015
SCALE: H: 1"=40', V: 1"=8'

DES: TSG
CHKD: T
DRW: REC
APR: T

TOWN: NEWINGTON, NH
TRANSMISSION LINE: F-107
MILE NO: 8
DISCIPLINE/SHT NO.

SHEET 3 OF 12
3 OF 12

REVISION: 01/23/2014



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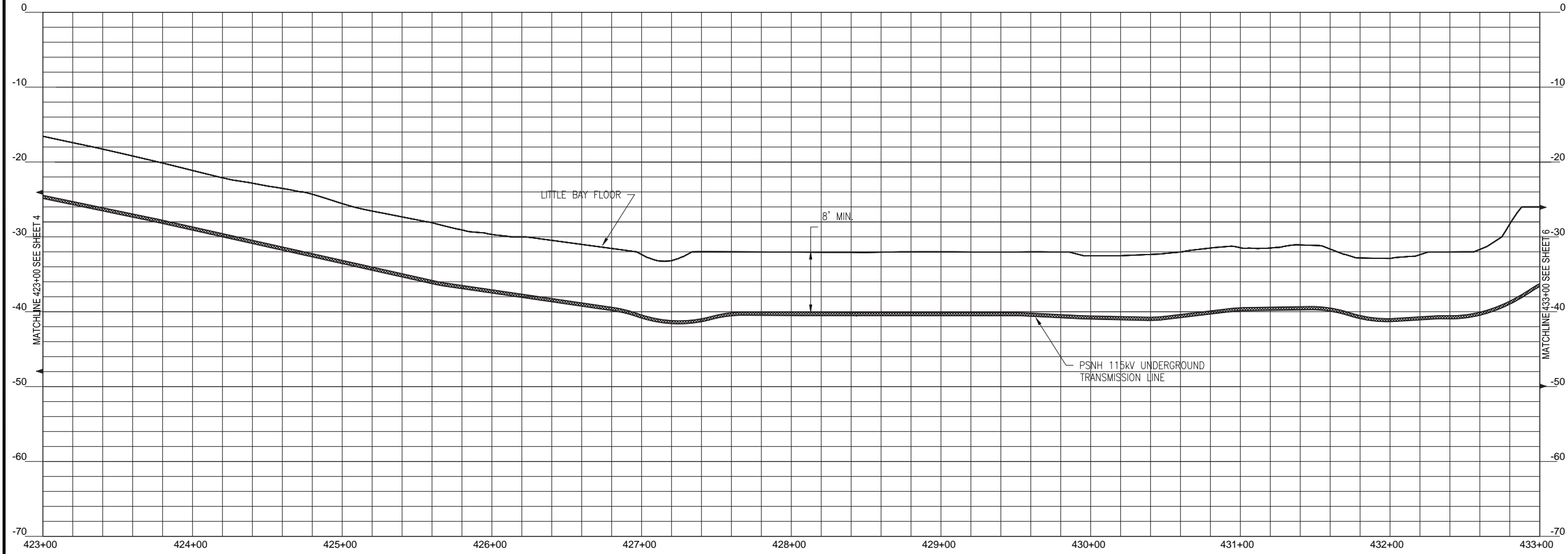
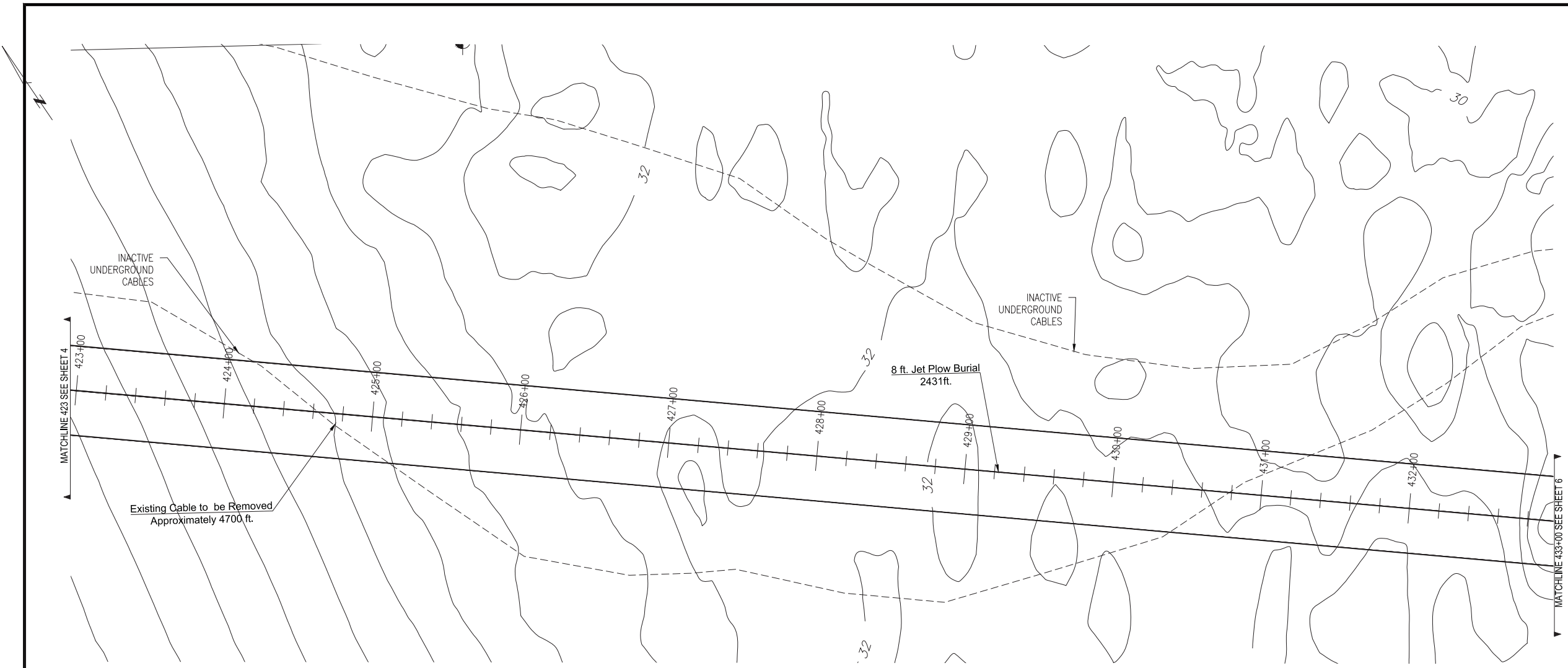
| NO. | REVISION | DATE | BY | CHKD | APPRV. |
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| 7 | ISSUE FOR PERMIT RELOCATE RISER | 12/28/15 | REO | SCG | TSG |
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| 1 | ISSUE FOR PERMIT | 10/24/14 | SCG | SCG | TSG |
| 0 | ISSUE FOR PERMIT | 8-25-14 | JRD | TSG | CS |

Public Service of New Hampshire
A Newmarket Utilities Company

Transmission Business

UNDERGROUND TRANSMISSION PLAN & PROFILE
SEACOAST RELIABILITY PROJECT
DATE: 8/25/2015
SCALE: H: 1"=40', V: 1"=8'

TOWN: NEWINGTON, NH
TRANSMISSION LINE: F-107
MILE NO: 8
DISCIPLINE/SHT NO.
SHEET 4 OF 12
4 OF 12

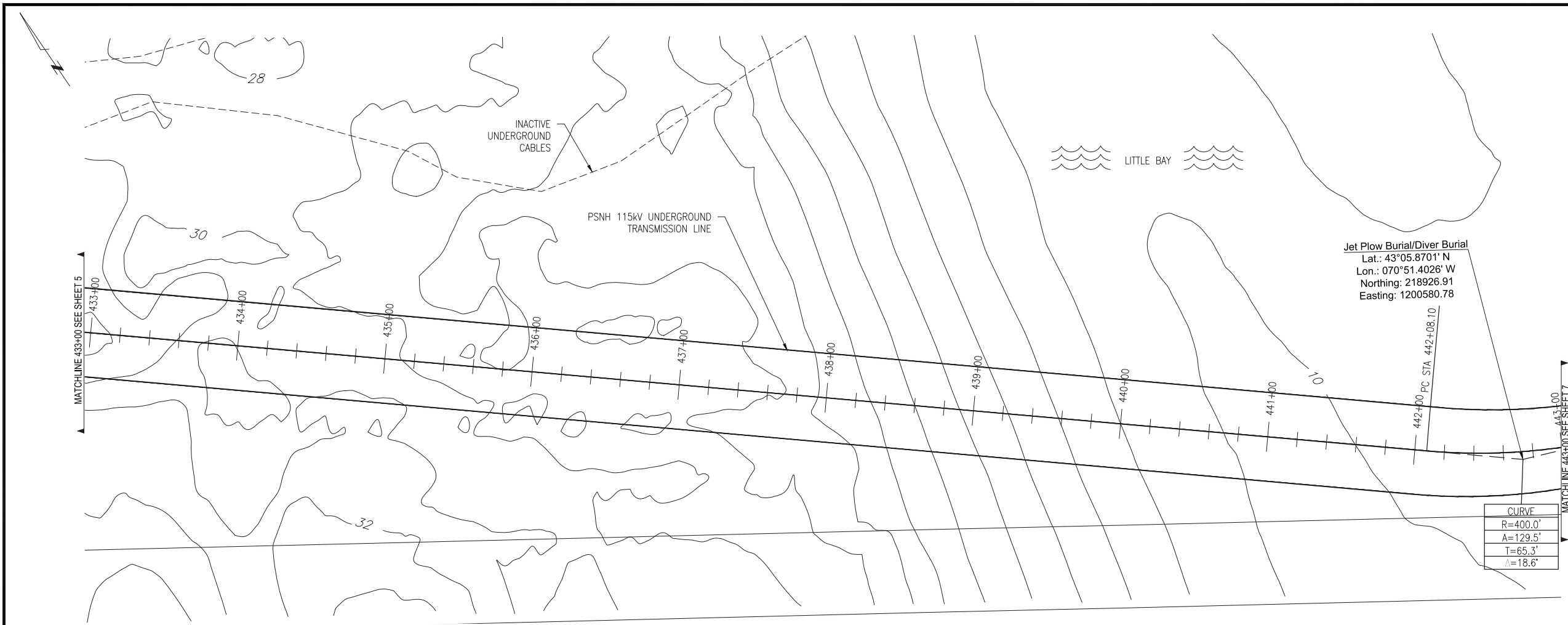


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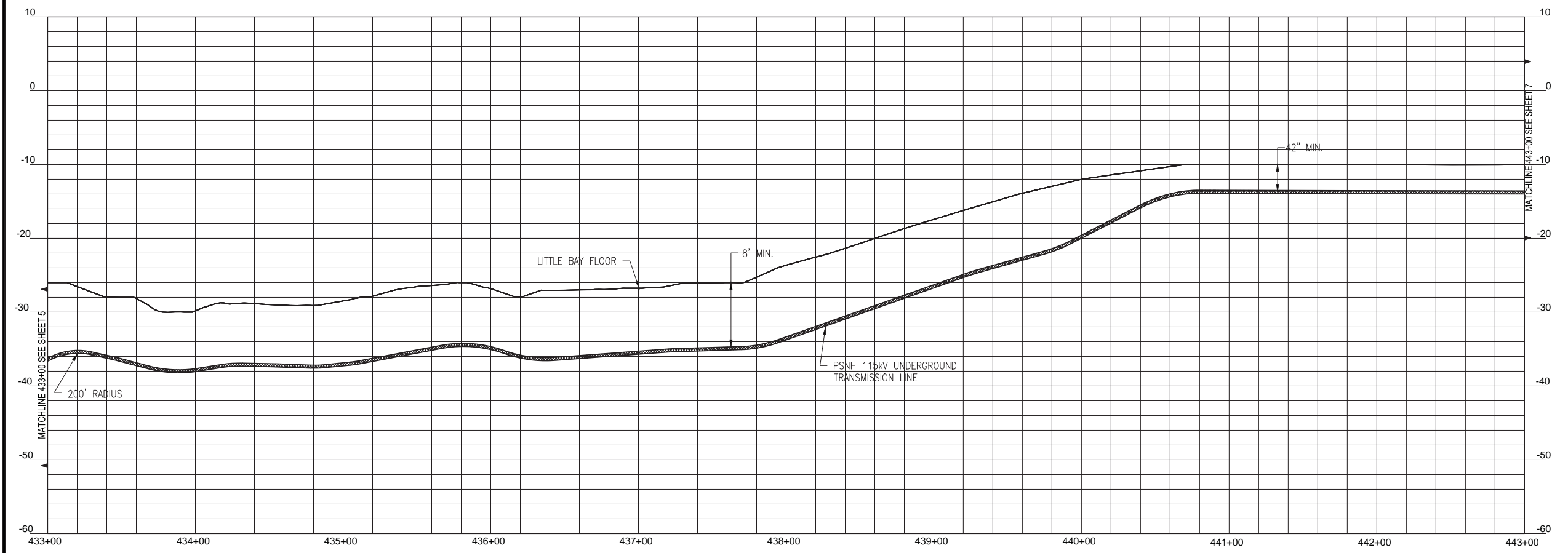
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Public Services of New Hampshire
A Newmarket Utilities Company
Transmission Business

UNDERGROUND TRANSMISSION PLAN & PROFILE
SEACOAST RELIABILITY PROJECT
SCALE: H. 1"=40', V. 1"=8'
DATE: 8/25/2015
TOWN: NEWINGTON, NH
TRANSMISSION LINE: F-107
MILE NO: 8
DISCIPLINE/SHT NO.
SHEET 5 OF 12
5 OF 12



Jet Plow Burial/Diver Burial
 Lat.: 43°05.8701' N
 Lon.: 070°51.4026' W
 Northing: 218926.91
 Easting: 1200580.78



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Public Services of New Hampshire
 A Newmarket Utilities Company

Transmission Business

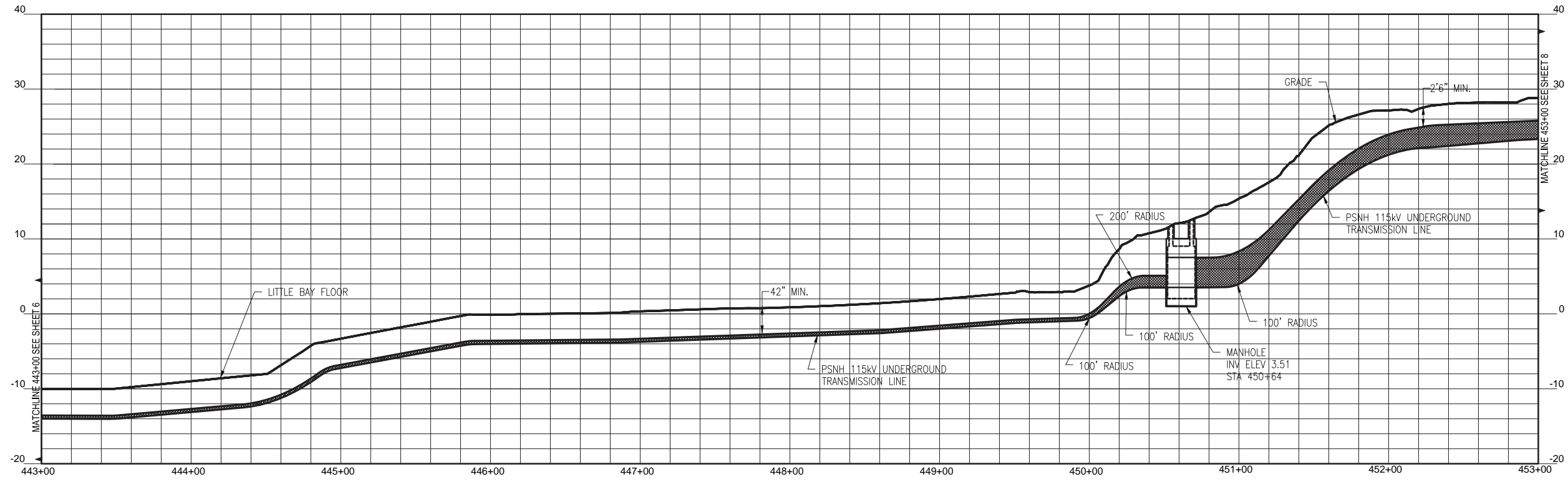
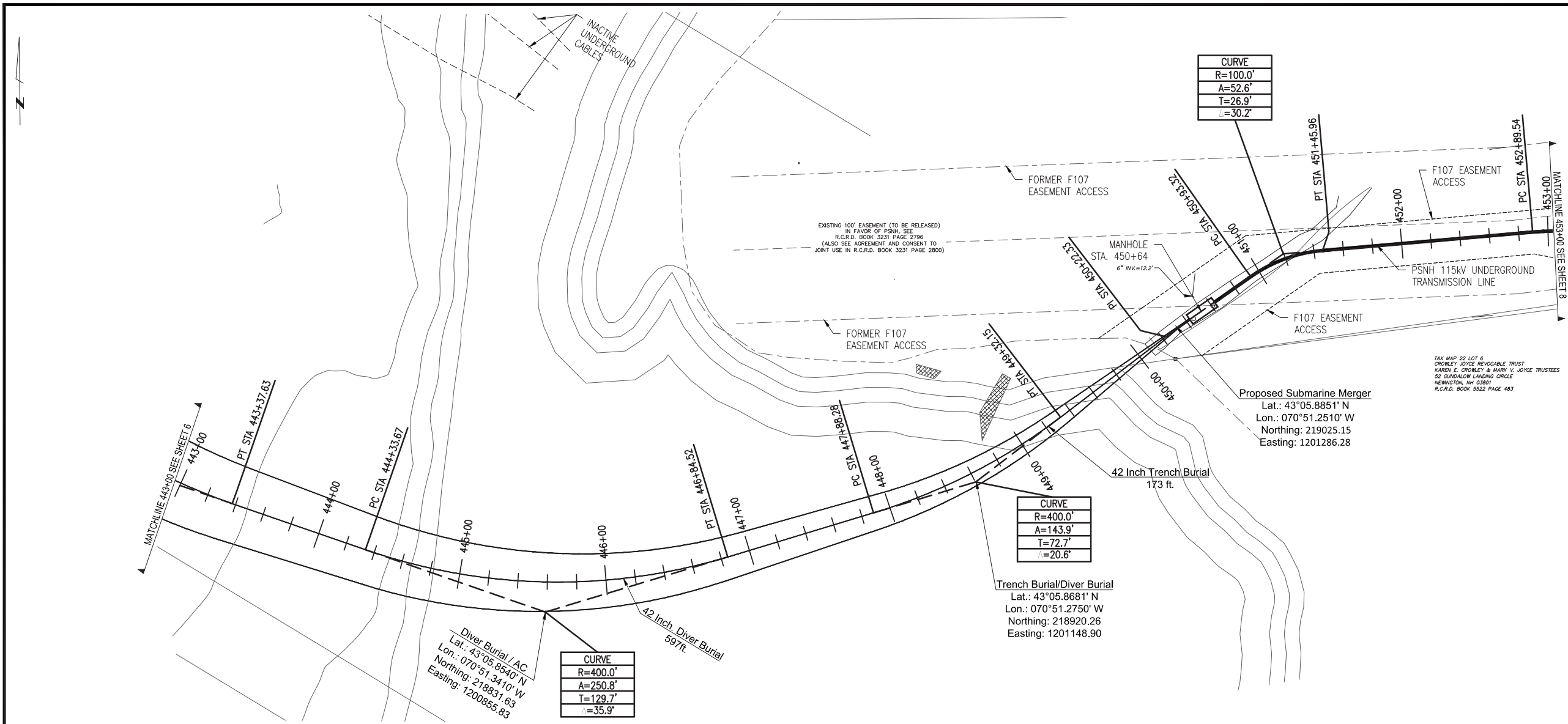
UNDERGROUND TRANSMISSION PLAN & PROFILE
 SEACOAST RELIABILITY PROJECT
 DATE: 8/25/2015
 SCALE: H: 1"=40', V: 1"=8'

DES: TSG
 CHECKED: TSG
 DRAWN: REC
 APPROVED: APR.

TOWN: NEWINGTON, NH
 TRANSMISSION LINE: F-107
 MILE NO: 9
 DISCIPLINE/SHT NO.

SHEET 6 OF 12
6 OF 12

REVISION: 01/23/2014



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| 1 | ISSUE FOR PERMIT | 8-25-14 | REG | SCG | TSG |
| 0 | ISSUE FOR PERMIT | | | | |

Public Service of New Hampshire
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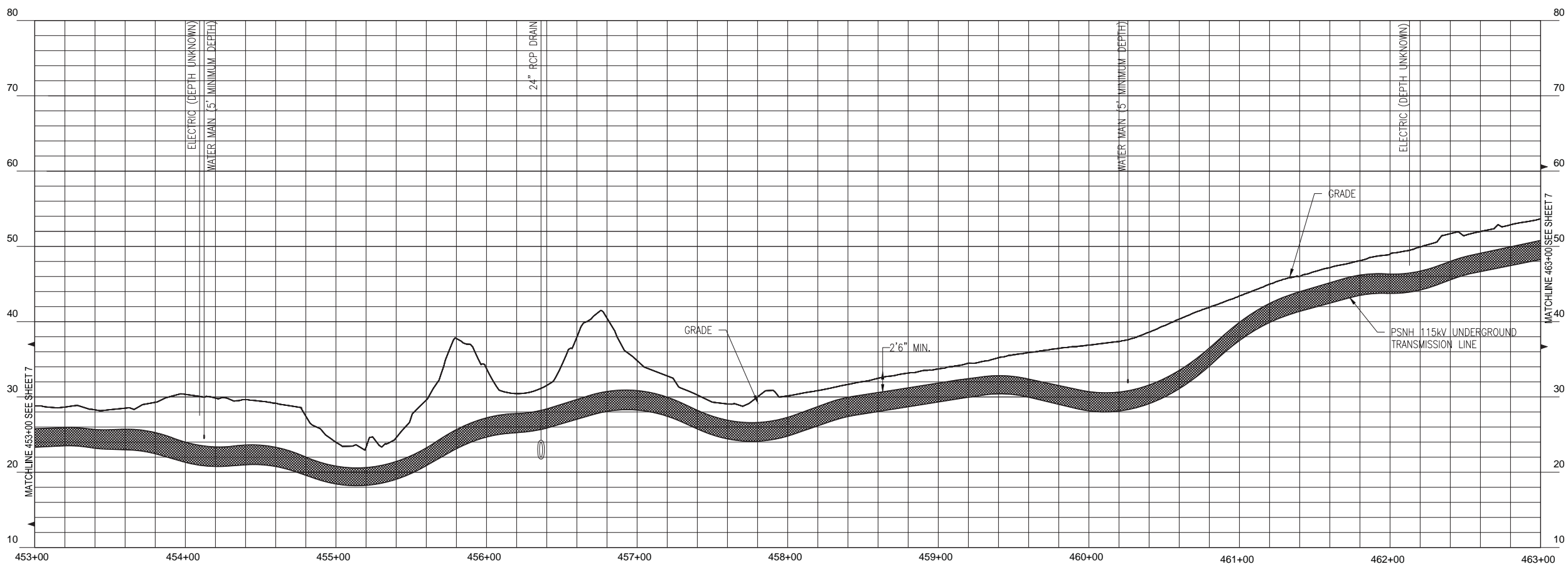
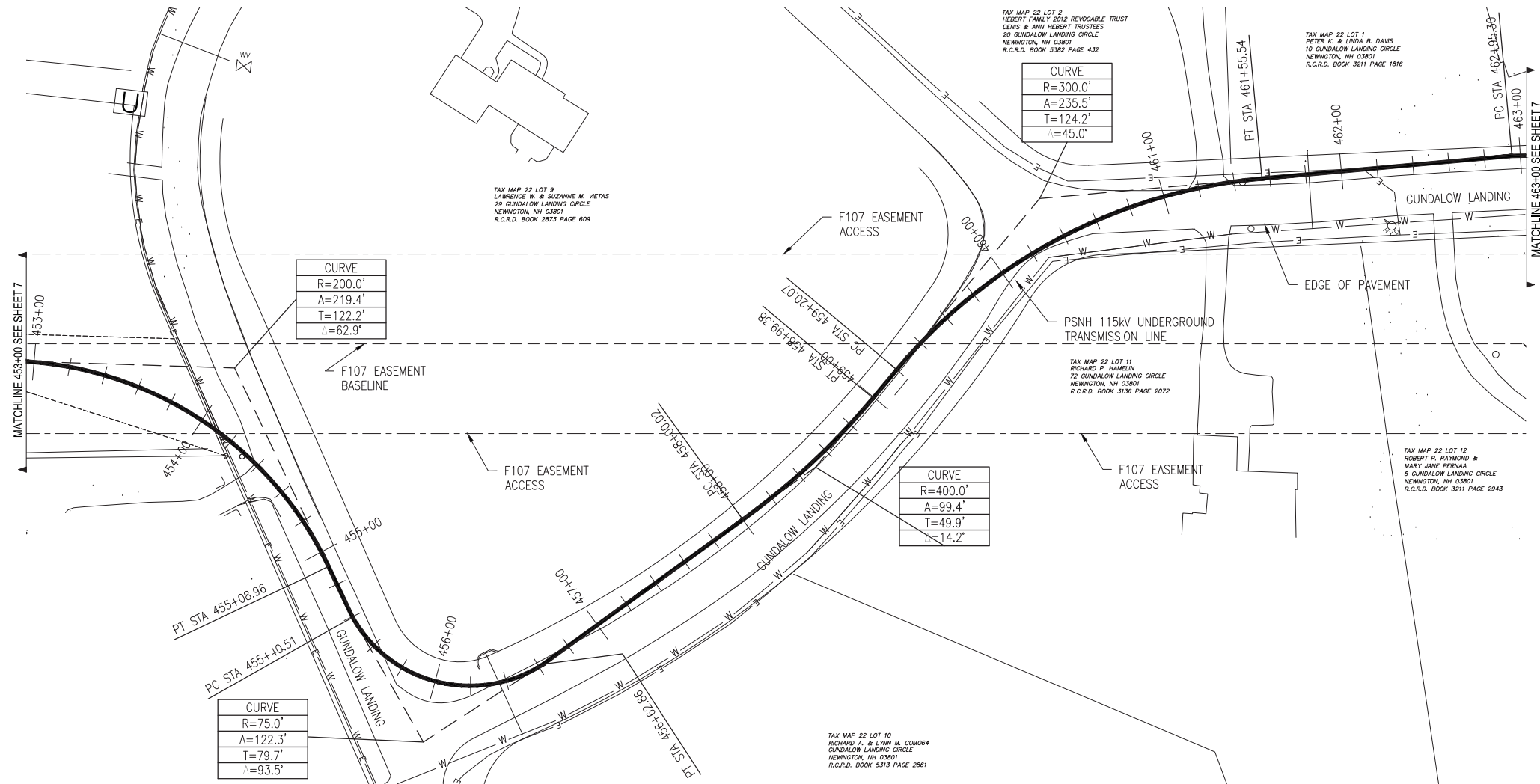
Transmission Business

UNDERGROUND TRANSMISSION PLAN & PROFILE
SEACOAST RELIABILITY PROJECT
SCALE: H. 1"=40', V. 1"=8'

TOWN: NEWINGTON, NH
TRANSMISSION LINE: F-107
MILE NO: 9
DISCIPLINE/SHT NO.

SHEET 7 OF 12
7 OF 12

REVISION: 01/23/2014



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| 7 | ISSUE FOR PERMIT RELOCATE RISER | 12/28/15 | REO | SCG | TSG |
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Transmission Business

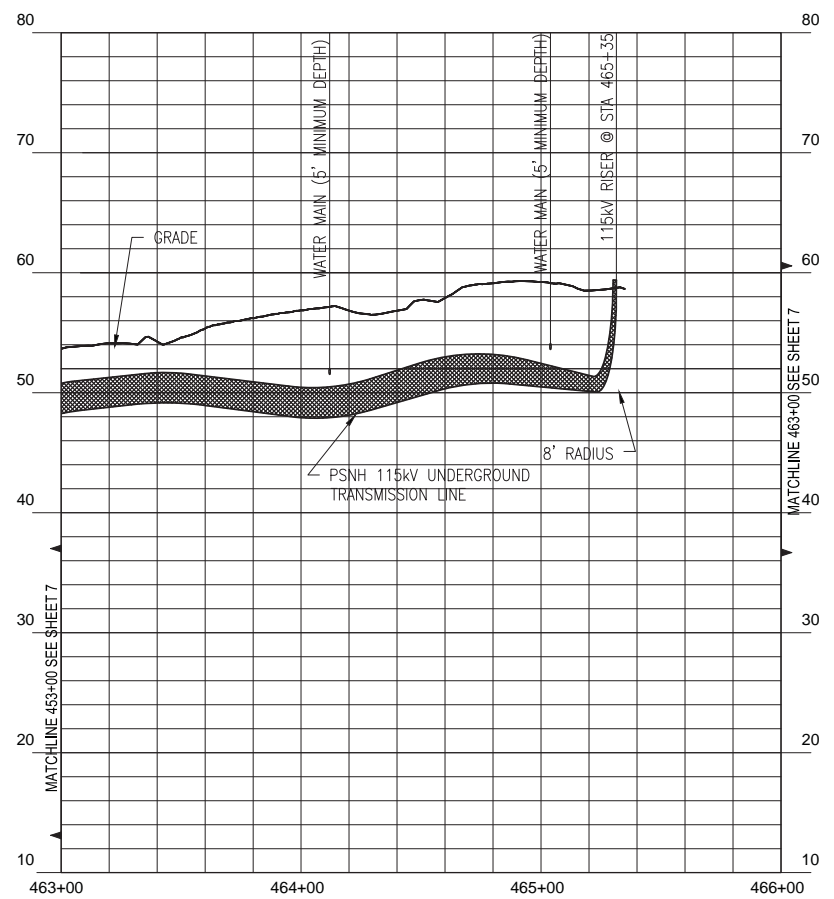
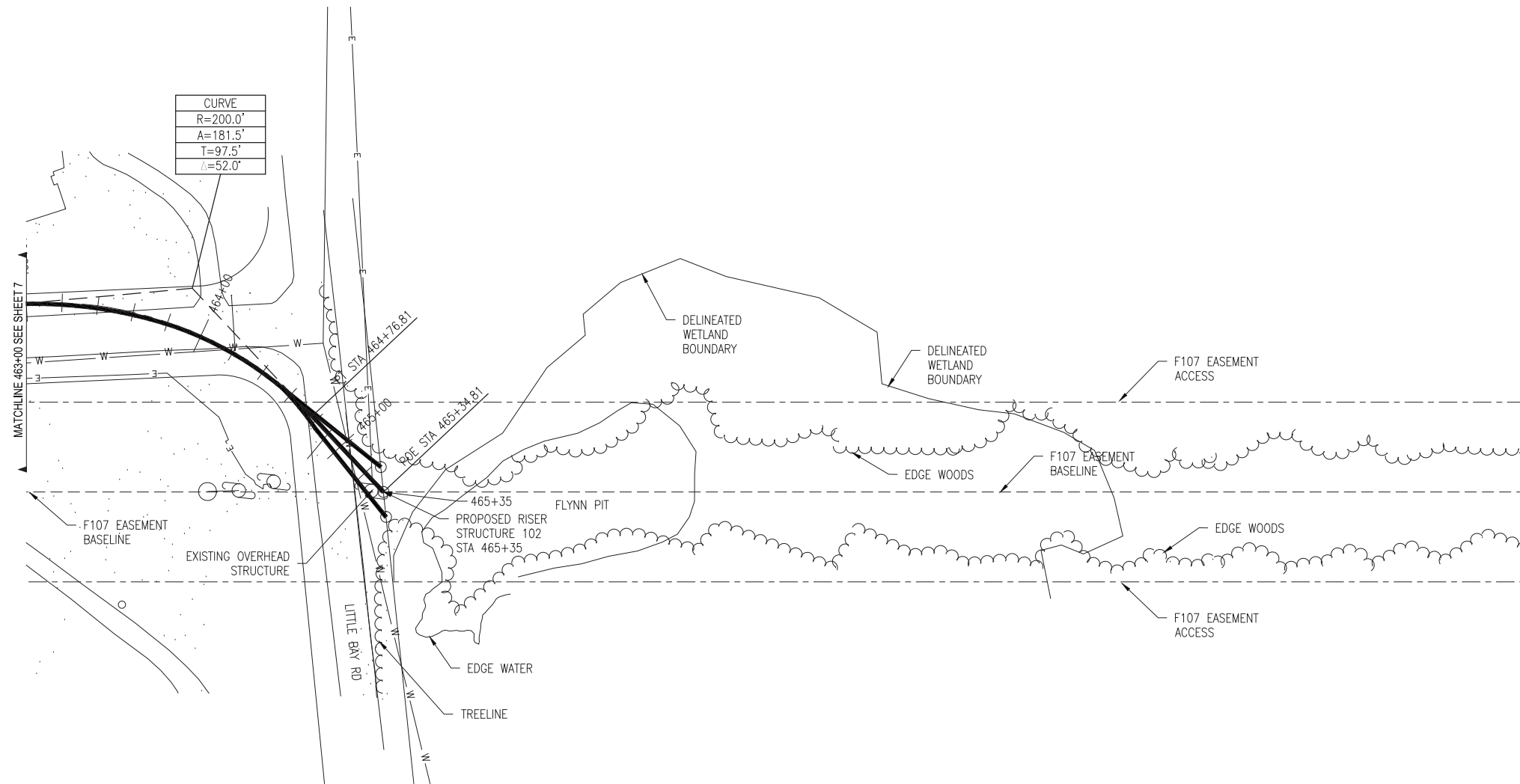
UNDERGROUND TRANSMISSION PLAN & PROFILE
SEACOAST RELIABILITY PROJECT
SCALE: H. 1"=40', V. 1"=8'

DES: TSG
CHKD: TSG
DRAW: REO
APR: TSG

TOWN: NEWINGTON, NH
TRANSMISSION LINE: F-107
MILE NO: 9
DISCIPLINE/SHT NO.

SHEET 8 OF 12
8 OF 12

REVISION: 01/23/2014



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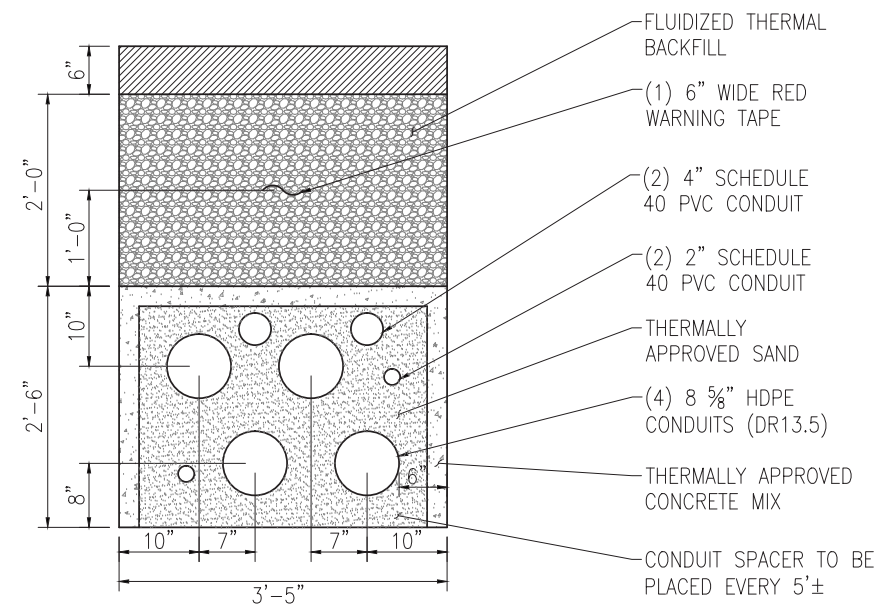
UNDERGROUND TRANSMISSION PLAN & PROFILE
SEACOAST RELIABILITY PROJECT
SCALE: H. 1"=40', V. 1"=8'

DES: TSG
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DRW: REC
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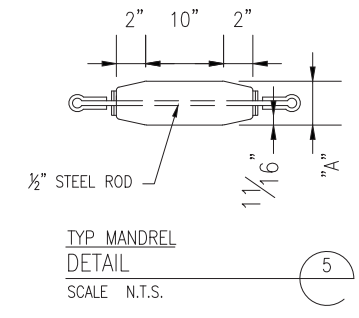
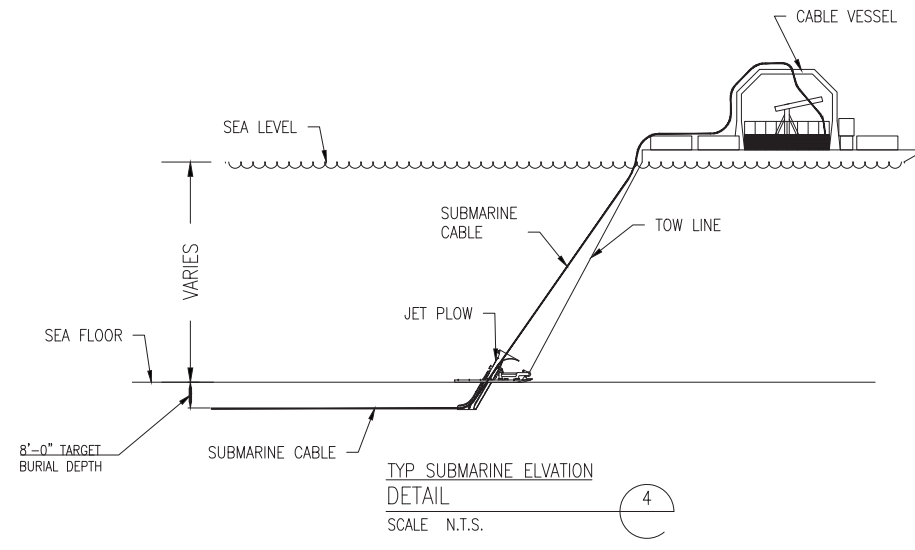
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SHEET 8 OF 12
9 OF 12

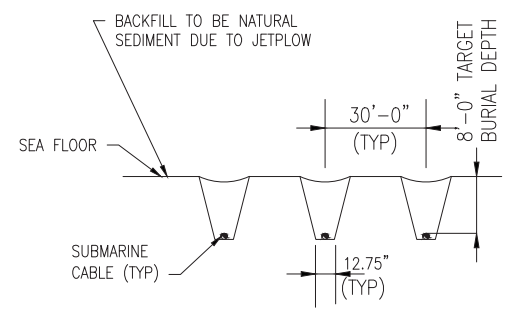
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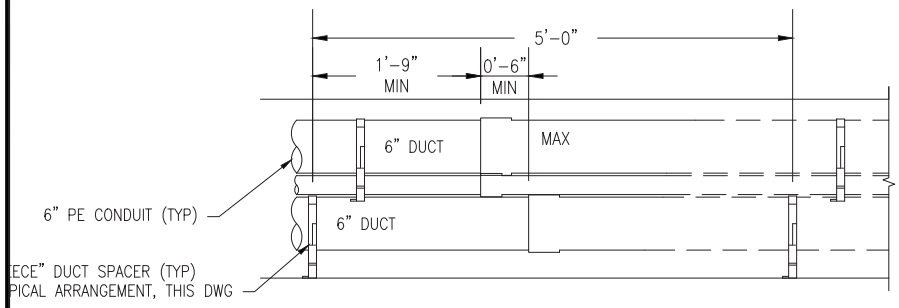
TYP TRENCH DETAIL
 SCALE N.T.S.



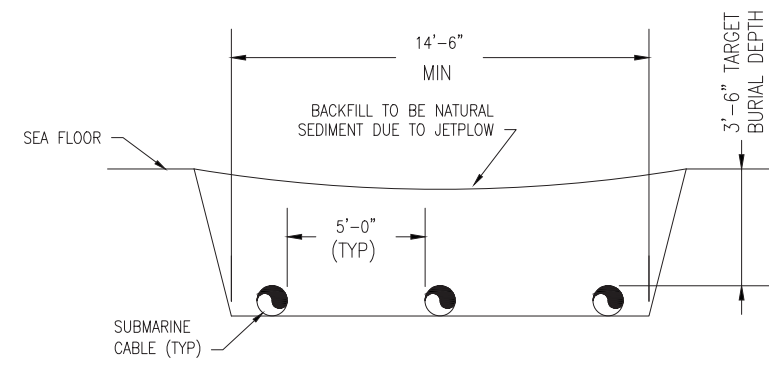
DIMENSION "A" TO BE 1/2" LESS THAN THE INSIDE DIAMETER OF THE SPECIFIED SIZE CONDUIT.



TYP SUBMARINE CROSS SECTION DETAIL
 SCALE N.T.S.



TYP DUCT ELEVATION DETAIL
 SCALE N.T.S.



WEST BANK SUBMARINE CROSS SECTION DETAIL
 SCALE N.T.S.

NOTES:

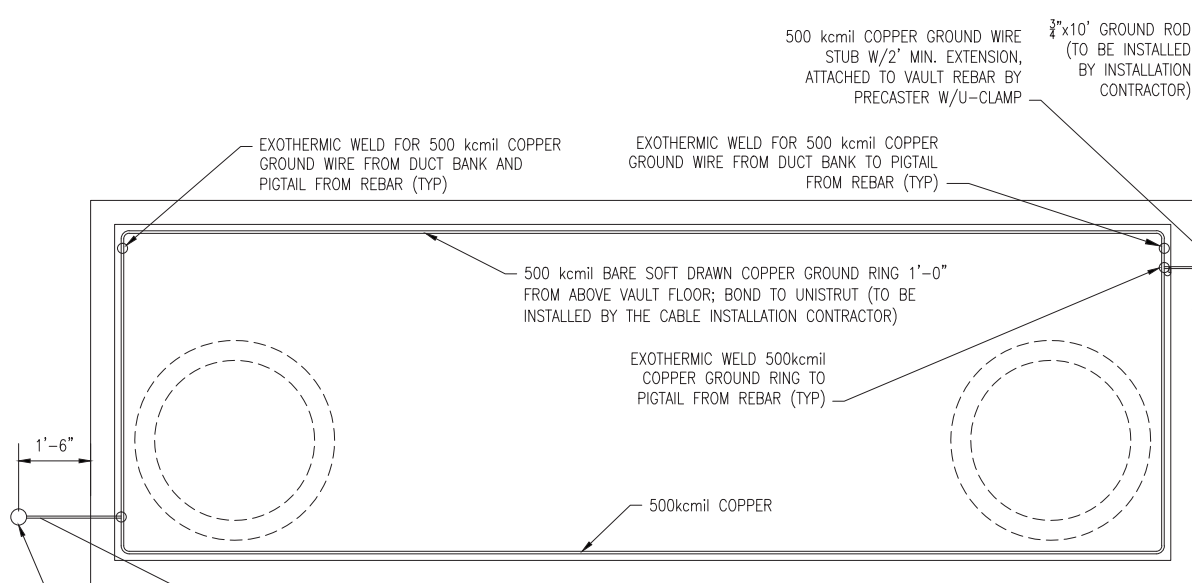
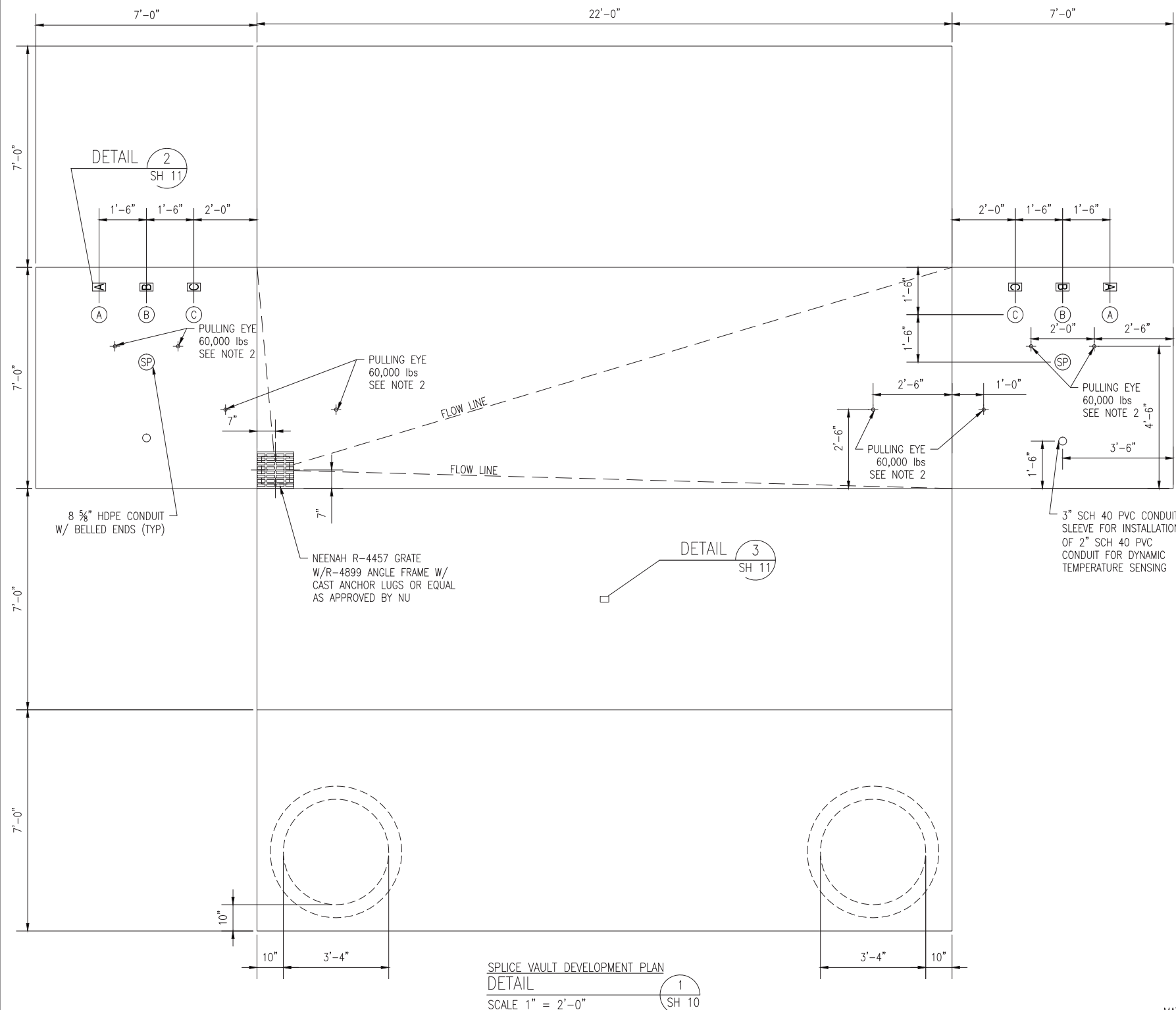
- NOTES:
 1. STAGGER BELL ENDS.
 2. AVOID STANDING ON CONDUIT.
 3. BELL ENDS SHALL BE INSTALLED ALL IN THE SAME DIRECTION BETWEEN TERMINATIONS. (SEE PULL DIRECTION DETAIL.)
 4. ALL TRENCH DETAILS AND PHASING SHOWN AS LOOKING AHEAD STATIONS.
 5. ALL DUCT SPACERS ARE UNDERGROUND DEVICES "WUNPEECE" SPACERS, OR APPROVED EQUIVALENT.

| NO. | REVISION | DATE | DRWN | CHKD | APPRV |
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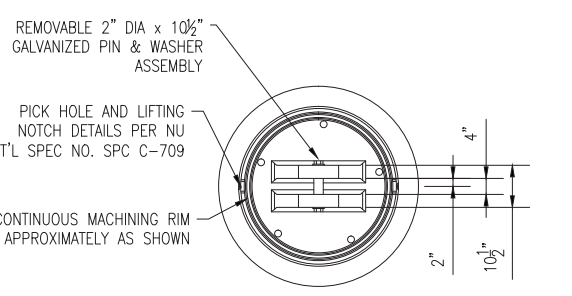
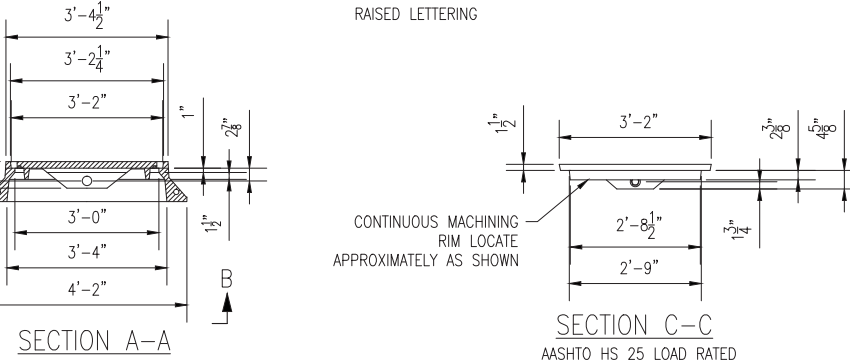
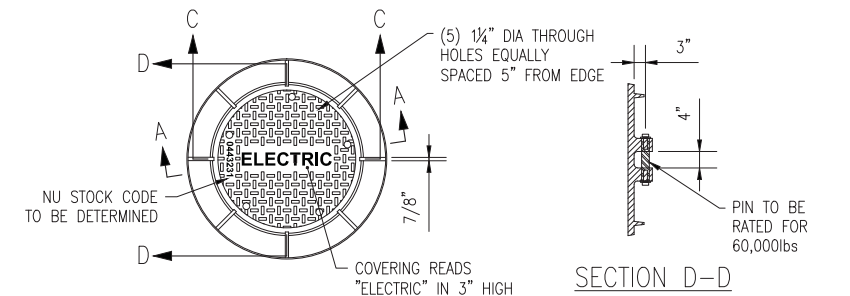
Public Service of New Hampshire
 A New England Utilities Company
 Transmission Business

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UNDERGROUND TRANSMISSION PLAN & PROFILE
 SEACOAST RELIABILITY PROJECT
 DATE: 6/25/2015
 SCALE: AS NOTED
 TOWN: NEWINGTON, NH
 TRANSMISSION LINE: F-107
 MILE NO:
 DISCIPLINE/SHT NO:
 SHEET 10 OF 12
 DETAILS



DETAIL 6 (SH 11) SPlice VAULT GROUNDING DETAIL
SCALE 1" = 2'-0"



DETAIL 3 (SH 10) SPlice VAULT FRAME DETAIL
SCALE 1" = 2'-0"

DETAIL 4 (SH 11) TETHERED SPlice VAULT LID
SCALE 1" = 2'-0"

- NOTES:**
- ALL DIMENSIONS ARE INSIDE DIMENSIONS.
 - PULLING HARDWARE SHALL BE GOOD FOR 60,000lbs OF TENSION, MINIMUM.
 - SUMP SHALL BE CAPABLE OF HANDLING SUMP PUMP, MINIMUM 4" DEEP.
 - CONDUITS MUST ALWAYS BE INSTALLED IN THE SAME DIRECTION (BELL END FLUSH WITH INTERIOR WALL OF VAULT).
 - CABLE & ACCESSORIES CONTRACTOR TO FIELD VERIFY ACTUAL SPlice VAULT DEPTHS. CONTRACTOR IS RESPONSIBLE FOR ALL SAFETY & ENTRY/EXIT REQUIREMENTS.
 - ALL CHIMNEY RINGS SHALL BE MORTARED OR OTHERWISE "KEYED" TO PREVENT HORIZONTAL DISPLACEMENT AND SHALL BE SECURELY MORTARED TO SPlice VAULT ROOF.
 - MANHOLE RING SHALL BE SECURELY FASTENED TO THE SPlice VAULT ROOF OR CHIMNEY USING INSERTS AND BOLTS OR OTHER MEANS WITH PRIOR APPROVAL.

- REINFORCING STEEL SHALL BE BONDED TO 500kcmil SOFT DRAWN BARE COPPER BONDING JUMPERS.
- MULTISECTION SPlice VAULTS SHALL INCORPORATE EITHER SHIPLAP OR TONGUE AND GROOVE JOINTS UTILIZING APPROPRIATE SILICONE, POLYMERIC OR ELASTOMERIC SEALANTS.
- ALL UNISTRUT TO BE GROUNDING BY CONTRACTOR.
- ALL EXTERNAL SURFACES OF VAULT SHALL BE SEALED USING SONNEDORN HYDROCID 700 OR OWNER APPROVED EQUIVALENT.
- NO STEEL REINFORCING BAR MAY ENCAPSULATE ANY INDIVIDUAL CONDUIT.
- INSTALL CIRCUIT IDENTIFICATION LABELS ON VAULT WALL AND INSTALL DANGER WARNING SIGN IN CHIMNEY.
- CONTRACTOR SHALL PROVIDE RACKING FOR 50' OF DYNAMIC TEMPERATURE SENSING CABLE TO BE COILED ON THE WALL OPPOSITE THE CABLE SPLICES.

| NO. | REVISION | DATE | CHG | APPRV. | ISS | ISS | ISS | ISS | ISS |
|-----|-------------------|----------|-----|--------|-----|-----|-----|-----|-----|
| 1 | ISSUED FOR PERMIT | 11-19-14 | REG | SGS | TSG | TSG | TSG | TSG | TSG |
| 2 | ISSUED FOR PERMIT | 5-18-15 | REG | SGS | TSG | TSG | TSG | TSG | TSG |
| 3 | ISSUED FOR PERMIT | 5-18-15 | REG | SGS | TSG | TSG | TSG | TSG | TSG |
| 4 | ISSUED FOR PERMIT | 5-18-15 | REG | SGS | TSG | TSG | TSG | TSG | TSG |
| 5 | ISSUED FOR PERMIT | 10-17-15 | REG | SGS | TSG | TSG | TSG | TSG | TSG |
| 6 | ISSUED FOR PERMIT | 10-17-15 | REG | SGS | TSG | TSG | TSG | TSG | TSG |
| 7 | ISSUED FOR PERMIT | 12-24-14 | REG | SGS | TSG | TSG | TSG | TSG | TSG |
| 8 | ISSUED FOR PERMIT | 12-24-14 | REG | SGS | TSG | TSG | TSG | TSG | TSG |
| 9 | ISSUED FOR PERMIT | 12-24-14 | REG | SGS | TSG | TSG | TSG | TSG | TSG |
| 10 | ISSUED FOR PERMIT | 12-24-14 | REG | SGS | TSG | TSG | TSG | TSG | TSG |

Public Service of New Hampshire
A Vermont Utilities Company

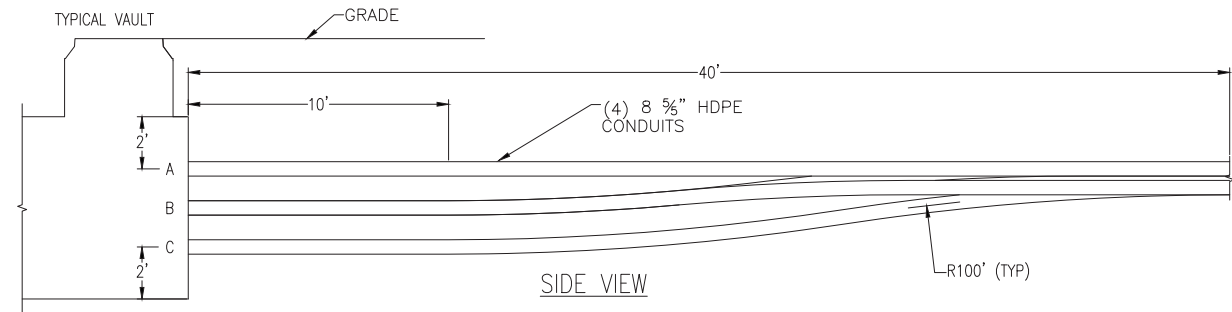
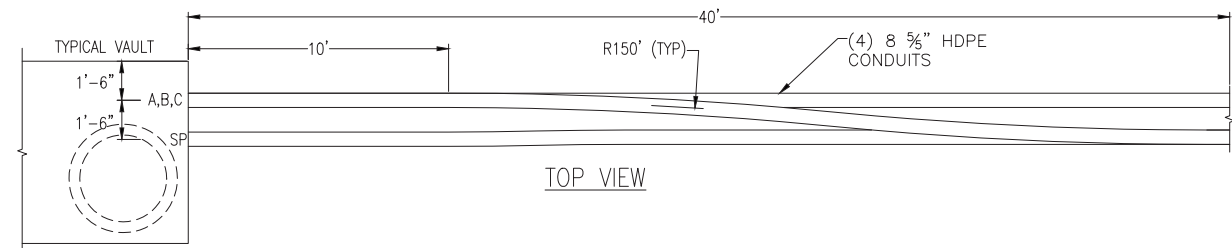
Transmission Business

UNDERGROUND TRANSMISSION PLAN & PROFILE
SEACOAST RELIABILITY PROJECT
SCALE: AS NOTED

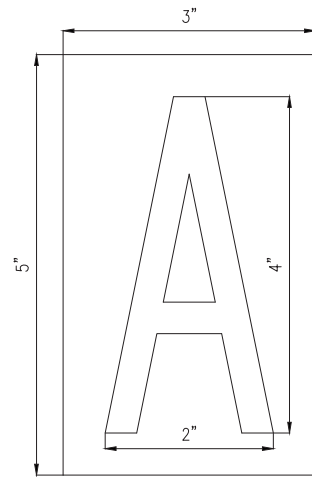
TOWN: NEWINGTON, NH
TRANSMISSION LINE: F-107
MILE NO:
DISCIPLINE/SH/ NO.
SHEET 11 OF 12
DATE: 8/25/2015

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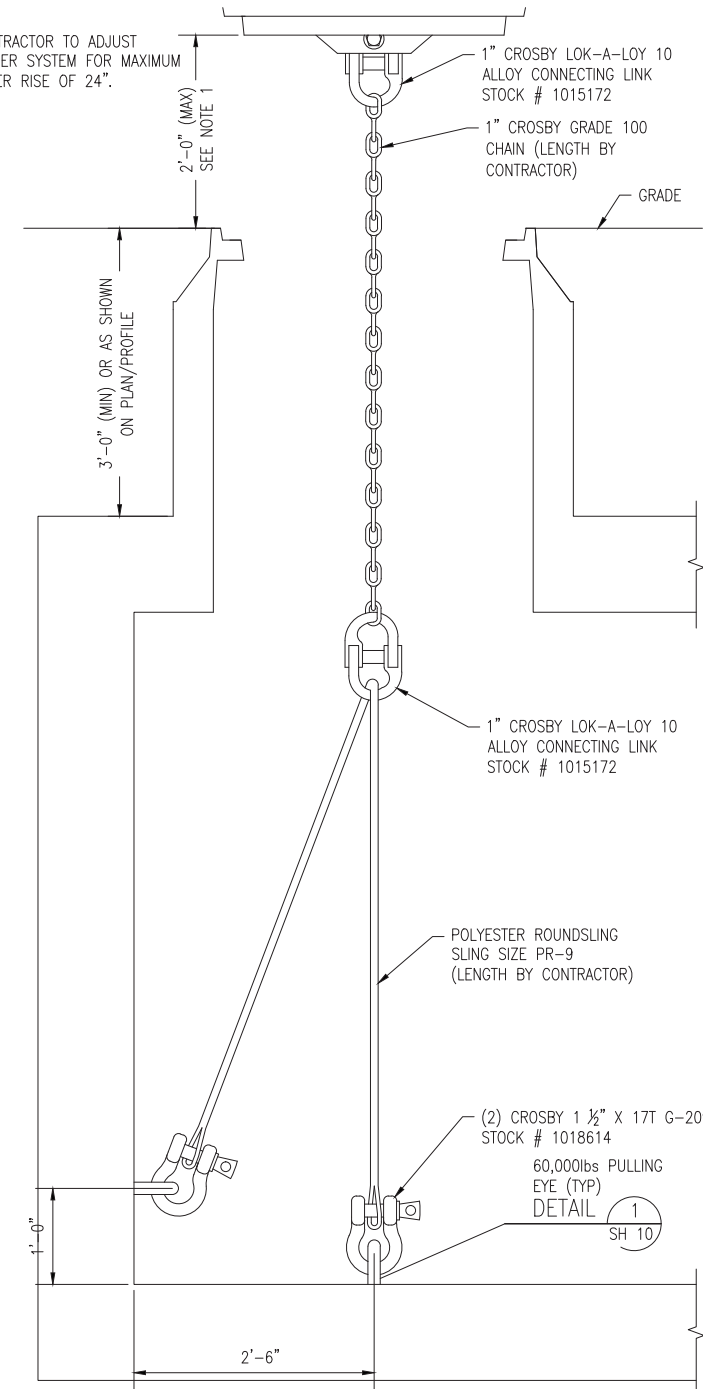
SPLICE VAULT TRANSITION DETAIL
DETAIL 1
NTS SH 11



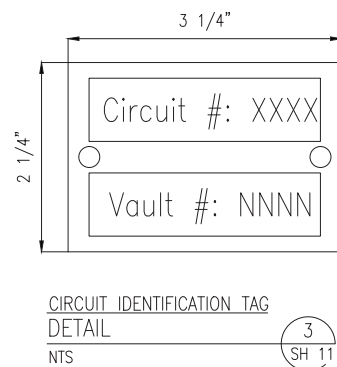
PHASE IDENTIFICATION TAG
DETAIL 2
NTS SH 11

- NOTES
- CHARACTER SHALL BE 4" HIGH BOLD TYPE.
 - CHARACTER SHALL BE CENTERED ON SIGN.
 - BACKGROUND: WHITE
LETTERING: BLACK
CHARACTERS: A, B & C AS SHOWN

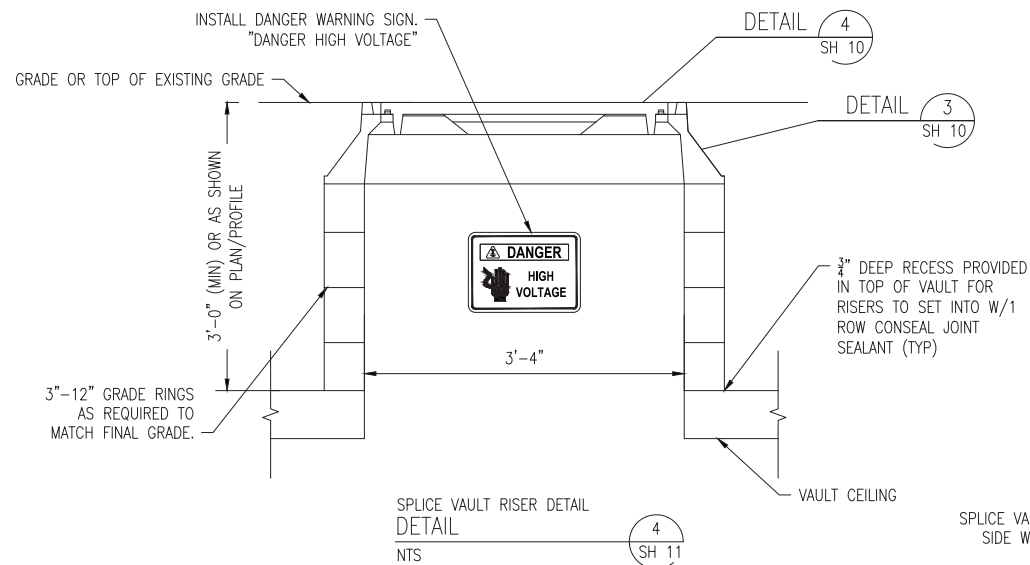
NOTE:
1. CONTRACTOR TO ADJUST TETHER SYSTEM FOR MAXIMUM COVER RISE OF 24".



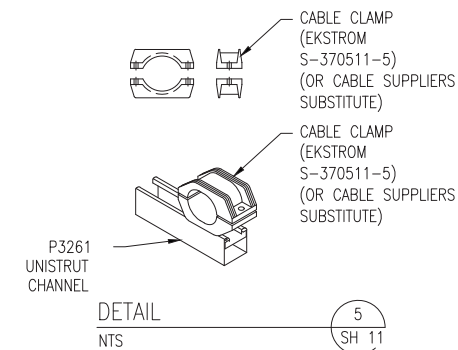
MANHOLE TETHER DETAIL
DETAIL 8
NTS SH 11



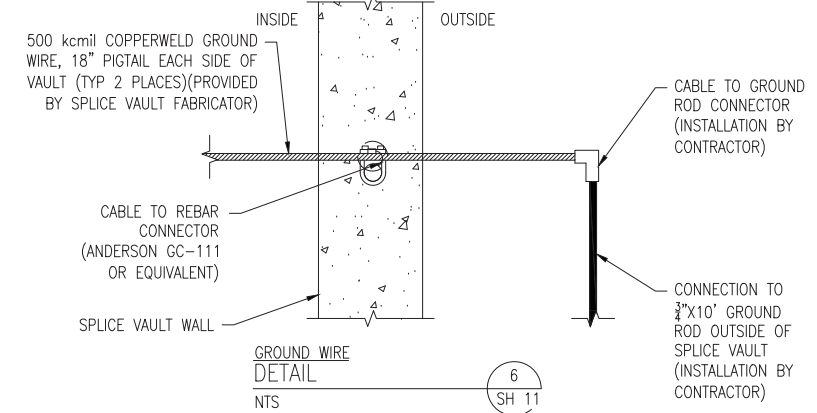
CIRCUIT IDENTIFICATION TAG
DETAIL 3
NTS SH 11



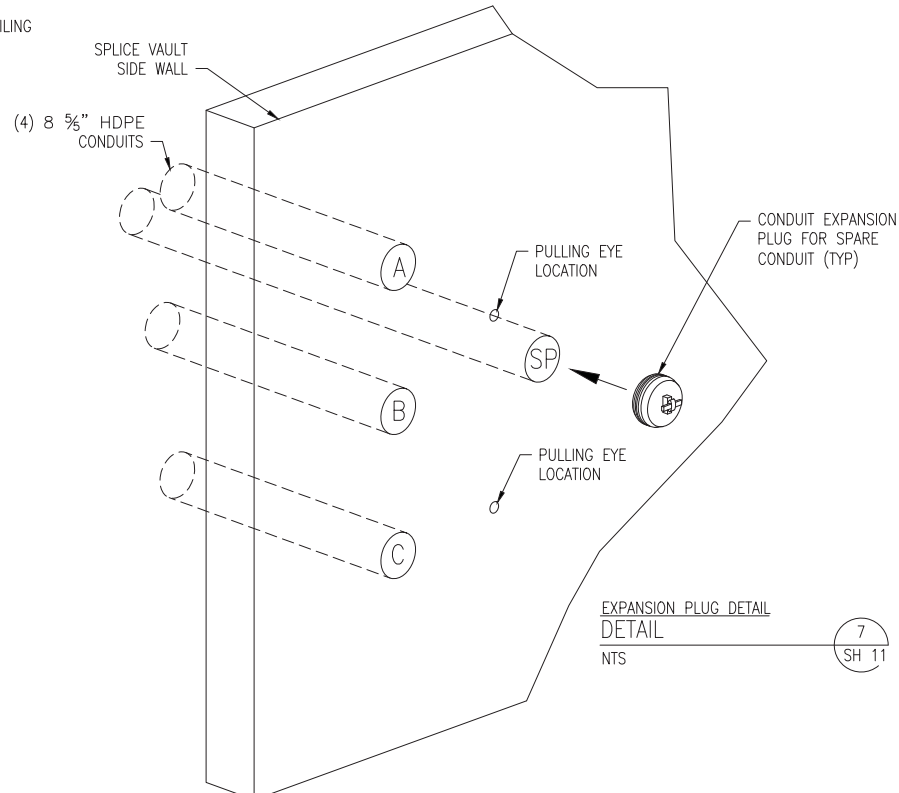
SPLICE VAULT RISER DETAIL
DETAIL 4
NTS SH 11



DETAIL 5
NTS SH 11



GROUND WIRE
DETAIL 6
NTS SH 11



EXPANSION PLUG DETAIL
DETAIL 7
NTS SH 11

| NO. | REVISION | DATE | DRWN | CHKD | APPRV. |
|-----|-----------------------------------|----------|------|------|--------|
| 7 | ISSUE FOR PERMIT RELOCATE RISER | 12/28/15 | REO | SCG | TSG |
| 6 | ISSUE FOR PERMIT | 12/14/15 | REO | SCG | TSG |
| 5 | ISSUE FOR PERMIT | 11-19-15 | REO | SCG | TSG |
| 4 | ISSUE FOR REVIEW - ALIGNMENT ADJ. | 5-18-15 | REO | SMG | TSG |
| 3 | ISSUE FOR REVIEW - ALIGNMENT ADJ. | 5-8-15 | REO | SMG | TSG |
| 2 | ISSUE FOR REVIEW - ALIGNMENT ADJ. | 10/14/14 | SCG | SMG | TSG |
| 1 | ISSUE FOR REVIEW | 8-25-14 | JED | TSG | CS |
| 0 | ISSUE FOR REVIEW | | | | |

Public Service of New Hampshire
A Versant Utilities Company

Transmission Business

UNDERGROUND TRANSMISSION
PLAN & PROFILE
SEACOAST RELIABILITY PROJECT

DES: TSG
CHKD: TSG
DRW: REO
APR: TSG

TOWN: NEWINGTON, NH
TRANSMISSION LINE: F-107
MILE NO:
DISCIPLINE/SHT NO:
SHEET 12 OF 12
DATE: 8/25/2015
SCALE: AS NOTED

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APPENDIX 18

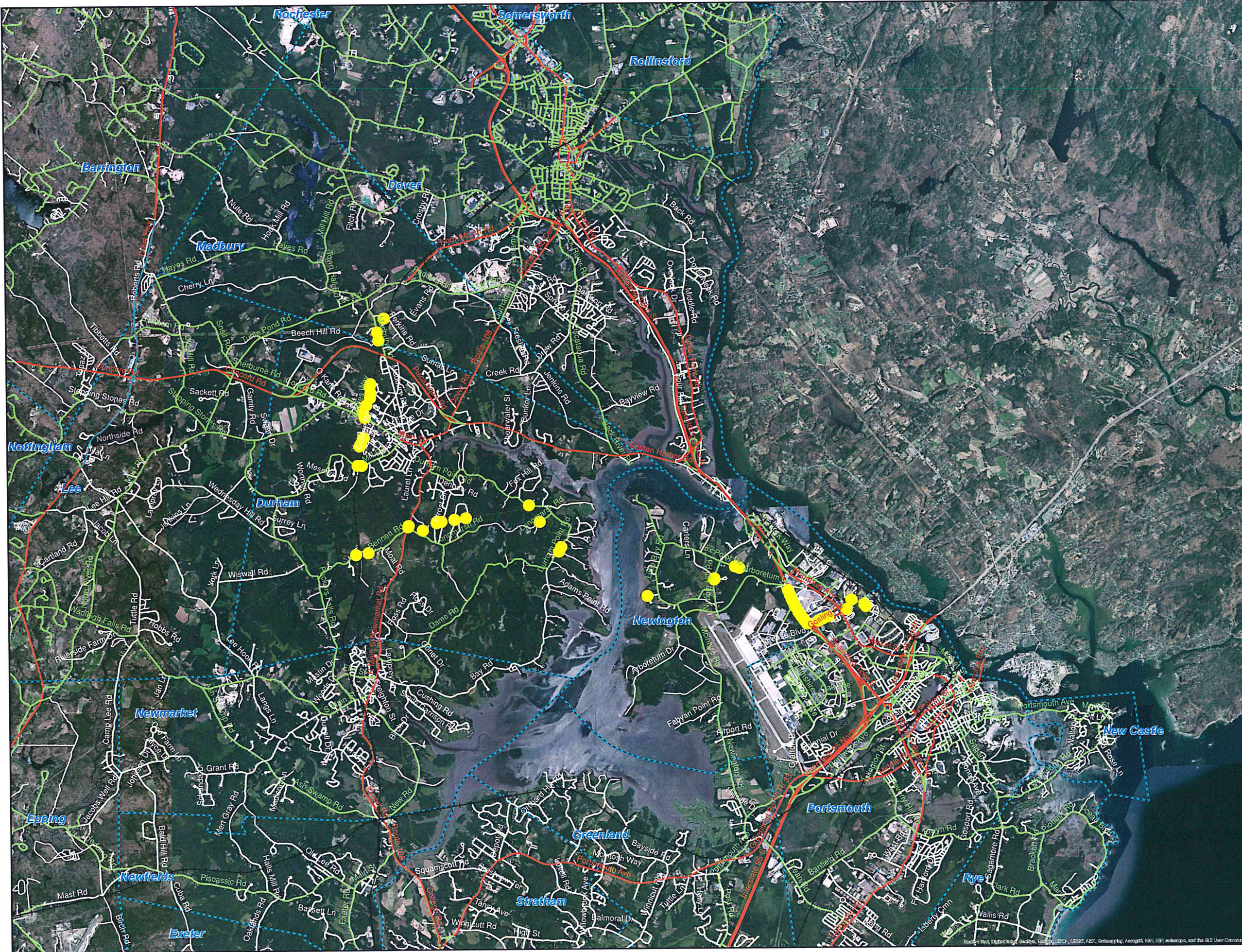
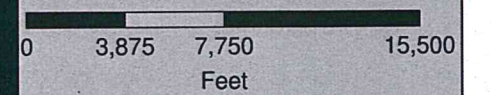
Part C – Traffic Control Plans

Seacoast Reliability Project

Access Points Exhibit
Route Selection based on AADT

Legend

- Access Points
- Railroad
- Town/City Boundary
- Heavy Commuter Traffic
(Avoid 6-9 AM and 3-6PM)
- Light Commuter Traffic
(Use Anytime)
- Residential Traffic
(Avoid 7 PM - 8 AM)



Seacoast Reliability Project

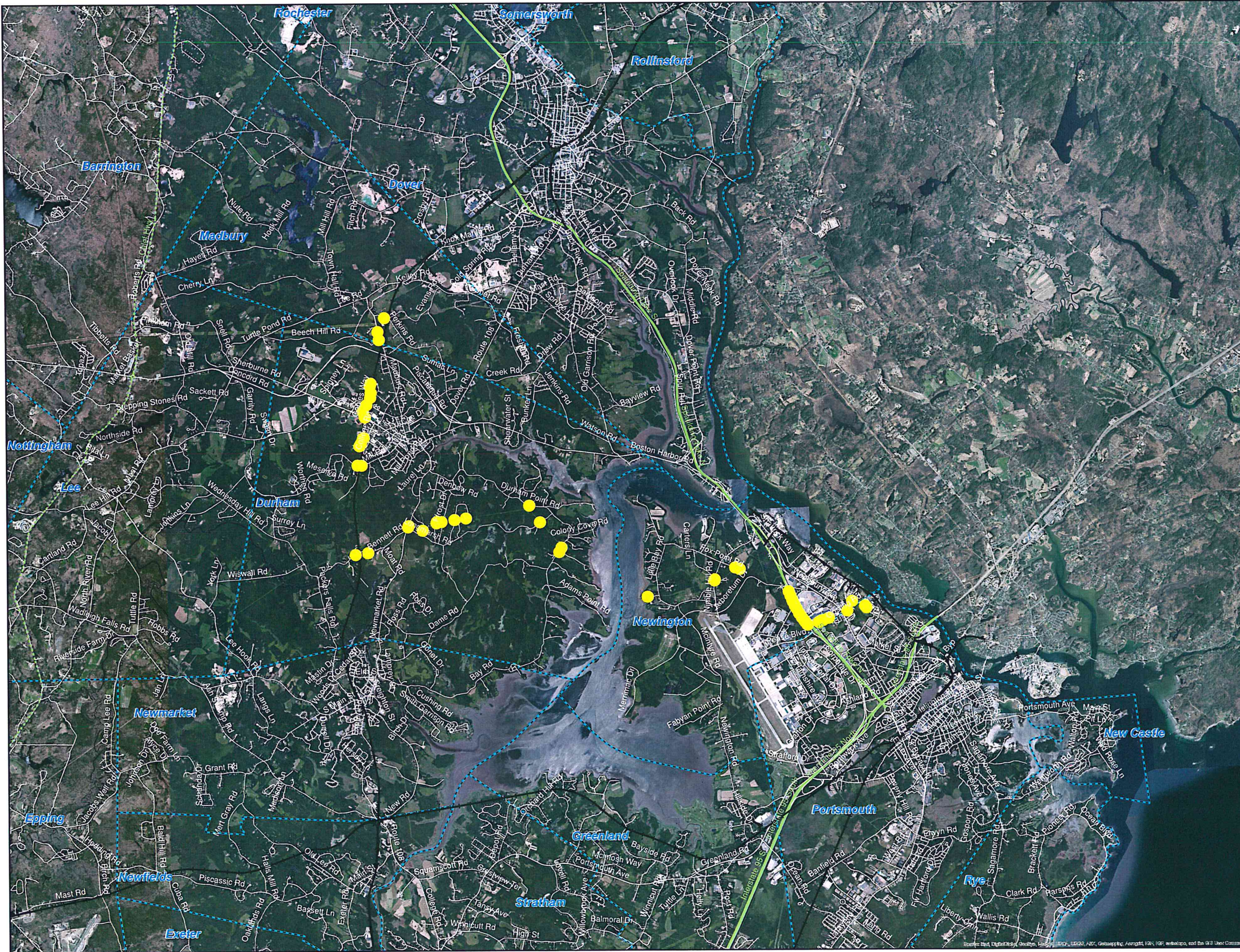
Authorized Overheight & Overweight Routes

Legend

- Access Points
- Railroad
- ▭ Town/City Boundary
- Authorized Routes
— With No Restrictions
- Authorized Routes
— with Temporary Restrictions
- Authorization Required

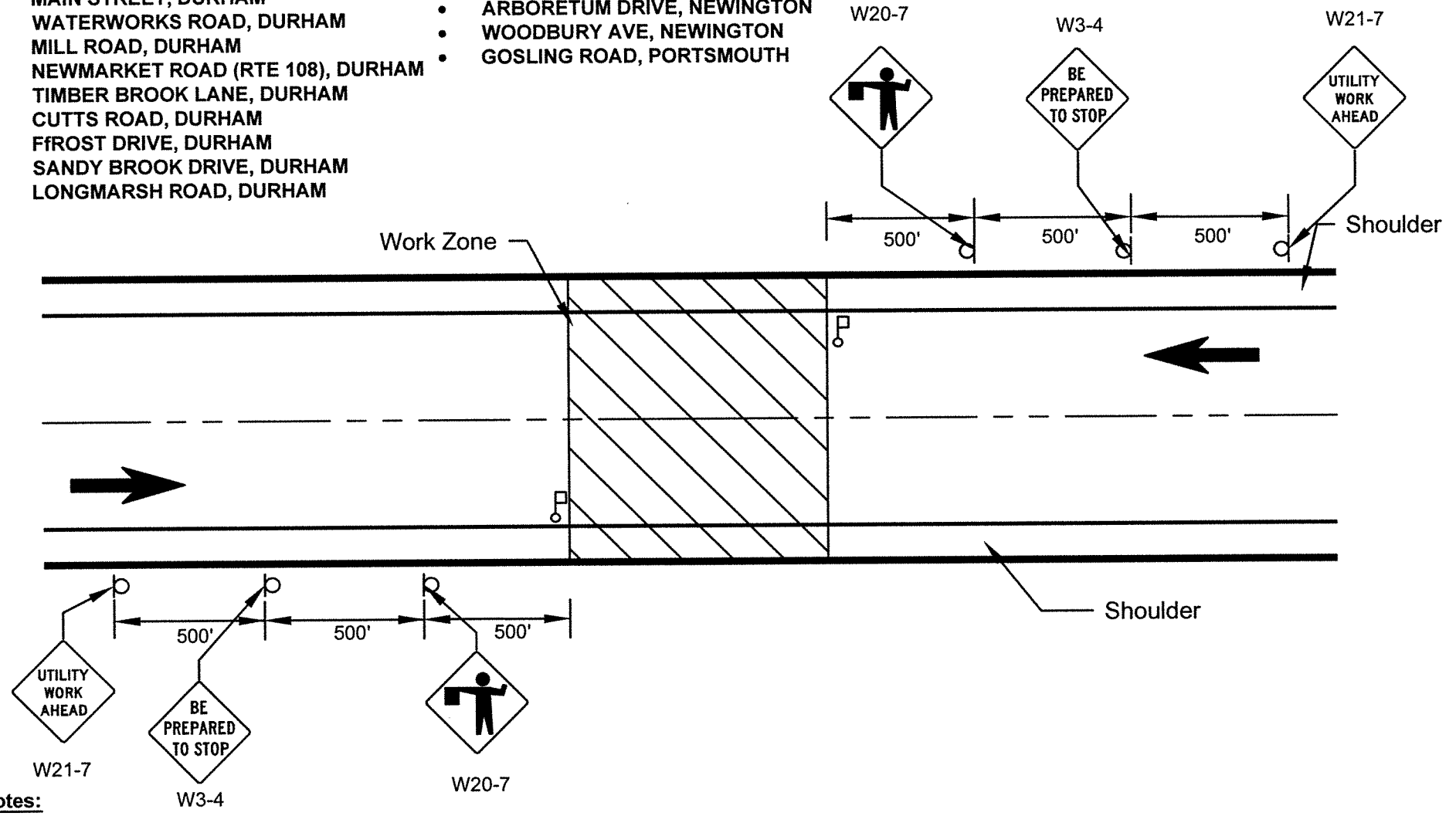


0 3,875 7,750 15,500
Feet



PROPOSED LOCATIONS FOR IMPLEMENTATION

- MADBURY ROAD, MADBURY
- ROUTE 4, DURHAM
- MAIN STREET, DURHAM
- WATERWORKS ROAD, DURHAM
- MILL ROAD, DURHAM
- NEWMARKET ROAD (RTE 108), DURHAM
- TIMBER BROOK LANE, DURHAM
- CUTTS ROAD, DURHAM
- FROST DRIVE, DURHAM
- SANDY BROOK DRIVE, DURHAM
- LONGMARSH ROAD, DURHAM
- DURHAM POINT ROAD, DURHAM
- NIMBLE HILL ROAD, NEWINGTON
- FOX POINT ROAD, NEWINGTON
- ARBORETUM DRIVE, NEWINGTON
- WOODBURY AVE, NEWINGTON
- GOSLING ROAD, PORTSMOUTH



Notes:

1. Traffic will only need to be stopped in the event that the line being pulled bellies down into the roadway. A traffic controller will be stationed at the crossing until the pull is complete.
2. All lane closures shall be in conformance with the latest edition of the MUTCD manual.

NOT TO SCALE
Louis Berger
 Manchester, New Hampshire
 (603) 644 5200

| | | | |
|--|-------------|-----------|--------------|
| PUBLIC SERVICE OF NEW HAMPSHIRE A NORTHEAST UTILITES COMPANY | | | |
| SEACOAST RELIABILITY PROJECT TYPICAL TEMPORARY CLOSURE FOR AERIAL INSTALLATIONS TWO WAY ROADWAYS | | | |
| DGN | PROJECT NO. | SHEET NO. | TOTAL SHEETS |
| TRAFFIC CONTROL PLAN.DWG | 2004421.01 | 1 | 9 |

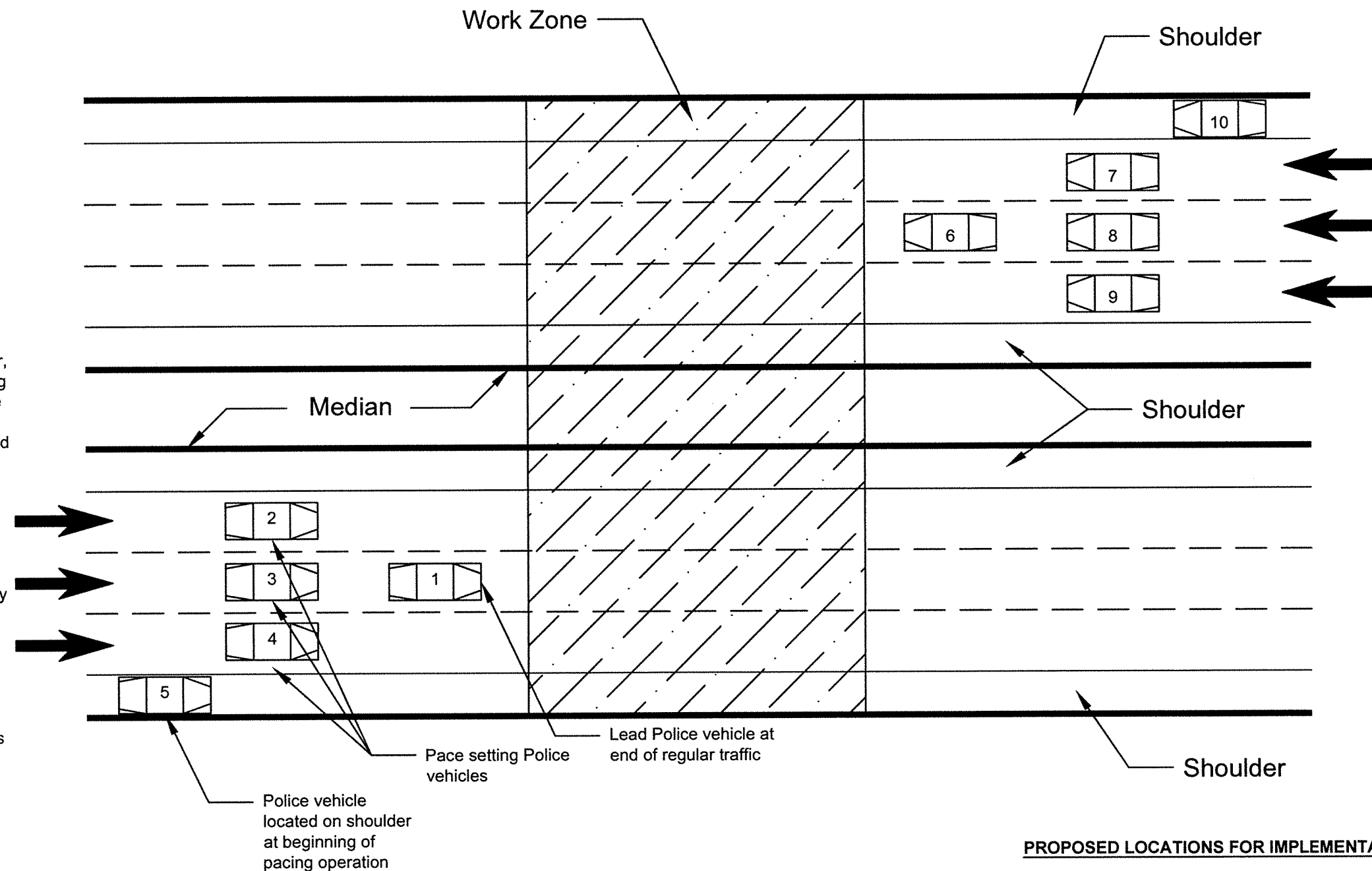
Pacing Distance is defined as the total distance for which officers pace or slow the traffic to a low speed to allow for overhead construction. Calculated total pacing distance for 10 mph pacing speed and a 25 minute roadway closure is **4 miles**.

Stage 1 of the operation begins with all vehicles in the rolling roadblock operation being positioned on the right shoulder of the road at the total pacing distance from the work area with flashing lights off.

Stage 2 begins, after receiving the signal from the lead coordinator, with the pacing and lead vehicles entering the traffic stream. During this stage, the pacing vehicles get into side-by-side positions in the travel lanes, slowing traffic behind them. Once in position, the pacing vehicles turn their flashing lights on and slow to the specified pacing speed (**10 mph**).

Stage 3 begins when the lead vehicle, which has its lights off, reaches the work area and stops prior to the work area to block any errant vehicle which may have circumvented the pace setting vehicles. At this point, the lead vehicle turns its flashing lights on.

Stage 4 begins when the pace setting vehicles are within two miles of the work area, at which point they must notify the lead coordinator of their position. If the work is completed and the work space is cleared, the pace setting vehicles would proceed through the cleared work area and immediately move to the right shoulder.



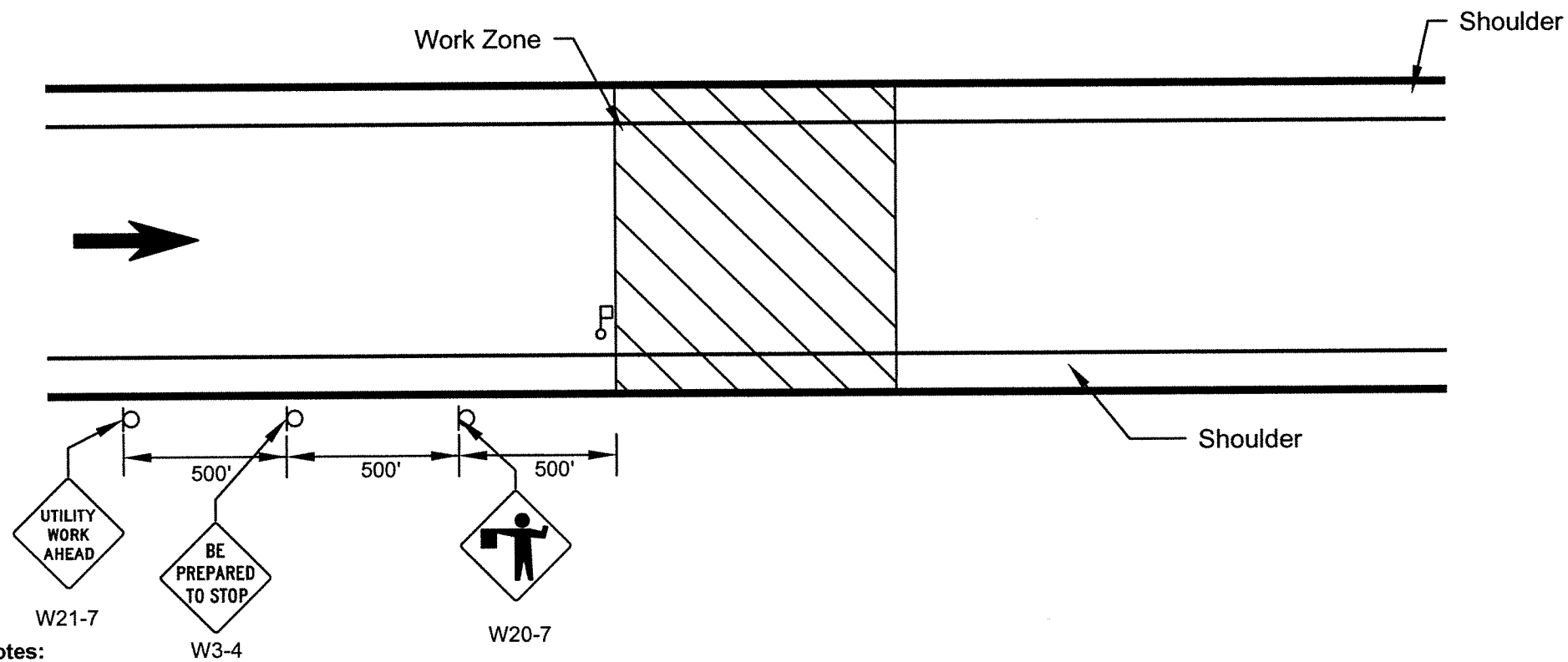
PROPOSED LOCATIONS FOR IMPLEMENTATION

- SPAULDING TURNPIKE

Notes:

1. On-ramps within 4 miles of the work zone will be closed prior to the lead vehicle at the end of regular traffic reaching the merge of the on-ramp and will remain closed until the pace setting vehicle passes.

| | | | |
|---|-------------|-----------|--------------|
| PUBLIC SERVICE OF NEW HAMPSHIRE A NORTHEAST UTILITIES COMPANY | | | |
| SEACOAST RELIABILITY PROJECT TYPICAL ROLLING CLOSURE FOR AERIAL INSTALLATIONS CONTROLLED ACCESS HIGHWAY | | | |
| DGN | PROJECT NO. | SHEET NO. | TOTAL SHEETS |
| TRAFFIC CONTROL PLAN.DWG | 2884421.01 | 2 | 9 |



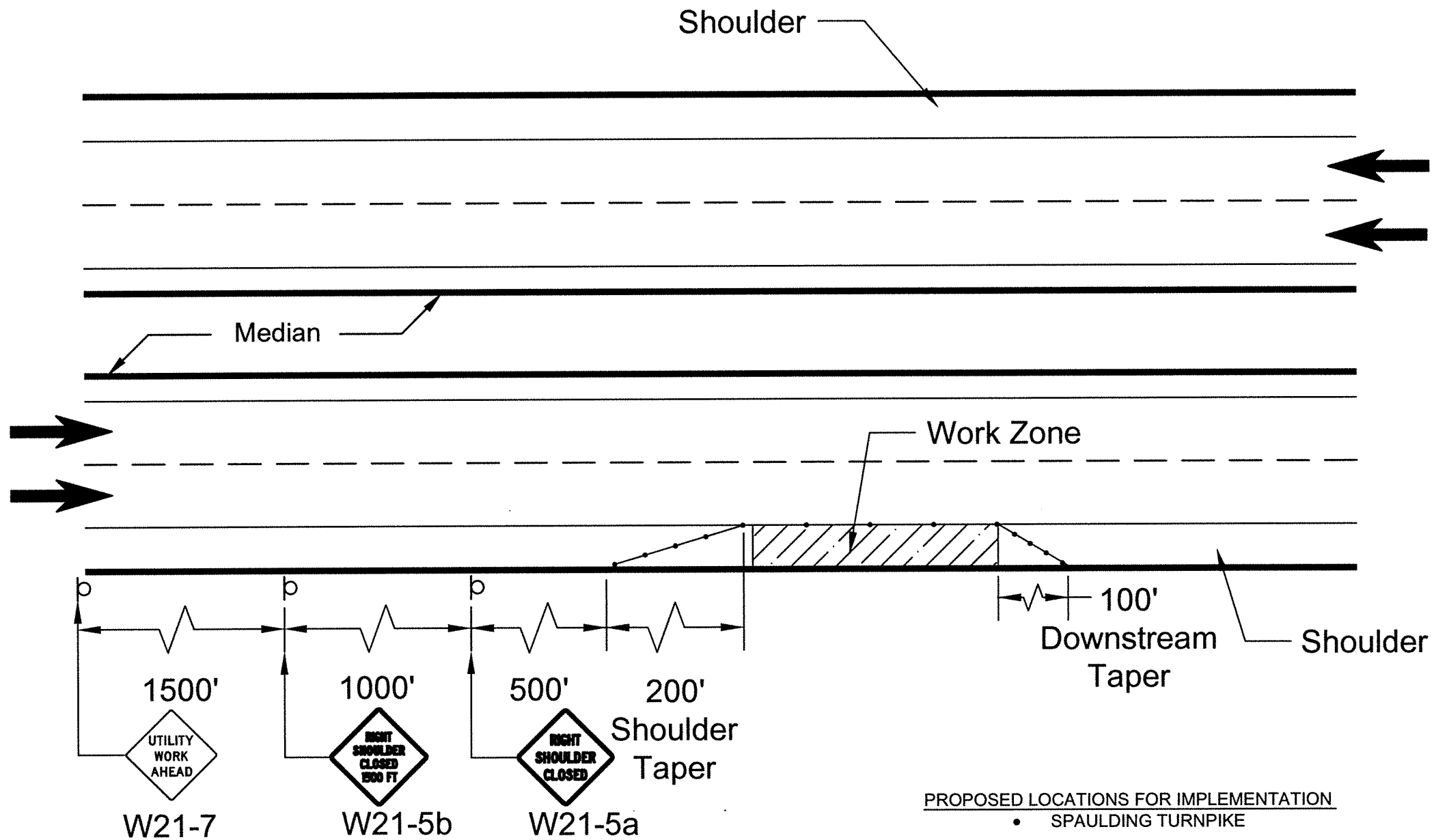
Notes:

1. Traffic will only need to be stopped in the event that the line being pulled bellies down into the roadway. A traffic controller will be stationed at the crossing until the pull is complete.
2. All lane closures shall be in conformance with the latest edition of the MUTCD manual.

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| | | | |
|---|-------------|-----------|--------------|
| PUBLIC SERVICE OF NEW HAMPSHIRE A NORTHEAST UTILITES COMPANY | | | |
| SEACOAST RELIABILITY PROJECT TYPICAL TEMPORARY CLOSURE FOR AERIAL INSTALLATIONS SPAULDING TURNPIKE ON AND OFF RAMPS | | | |
| DGN | PROJECT NO. | SHEET NO. | TOTAL SHEETS |
| TRAFFIC CONTROL PLAN.DWG | 2004421.01 | 3 | 9 |



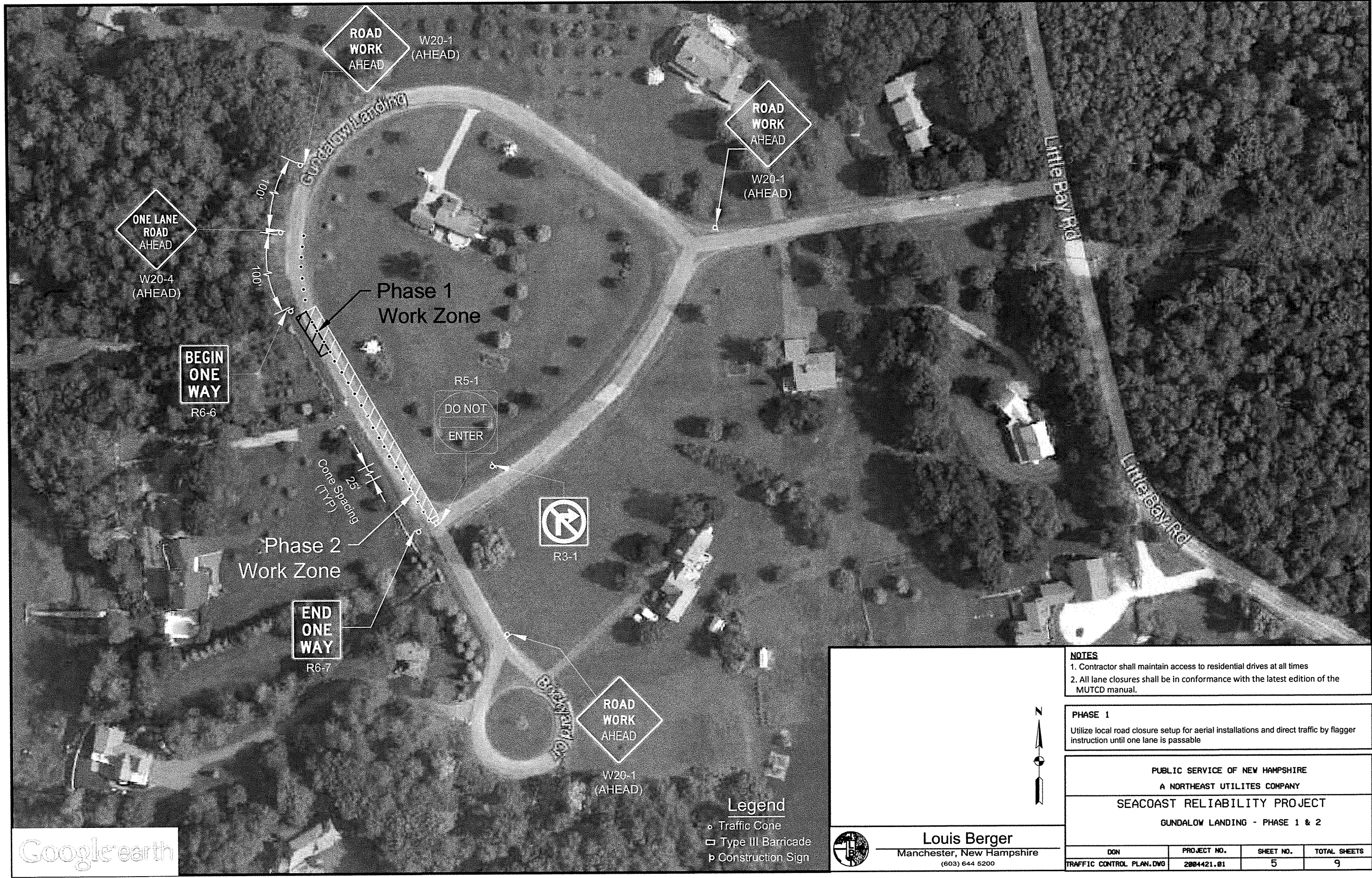
Notes:

1. All lane closures shall be in conformance with the latest edition of the MUTCD manual.

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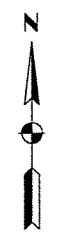
| | | | |
|--|-------------|-----------|--------------|
| PUBLIC SERVICE OF NEW HAMPSHIRE A NORTHEAST UTILITES COMPANY | | | |
| SEACOAST RELIABILITY PROJECT TYPICAL SHOULDER CLOSURE FOR DIVIDED HIGHWAY SPAULDING TURNPIKE | | | |
| DGN | PROJECT NO. | SHEET NO. | TOTAL SHEETS |
| TRAFFIC CONTROL PLAN.DWG | 2884421.01 | 4 | 9 |



Google earth

Legend

- Traffic Cone
- Type III Barricade
- ⬮ Construction Sign



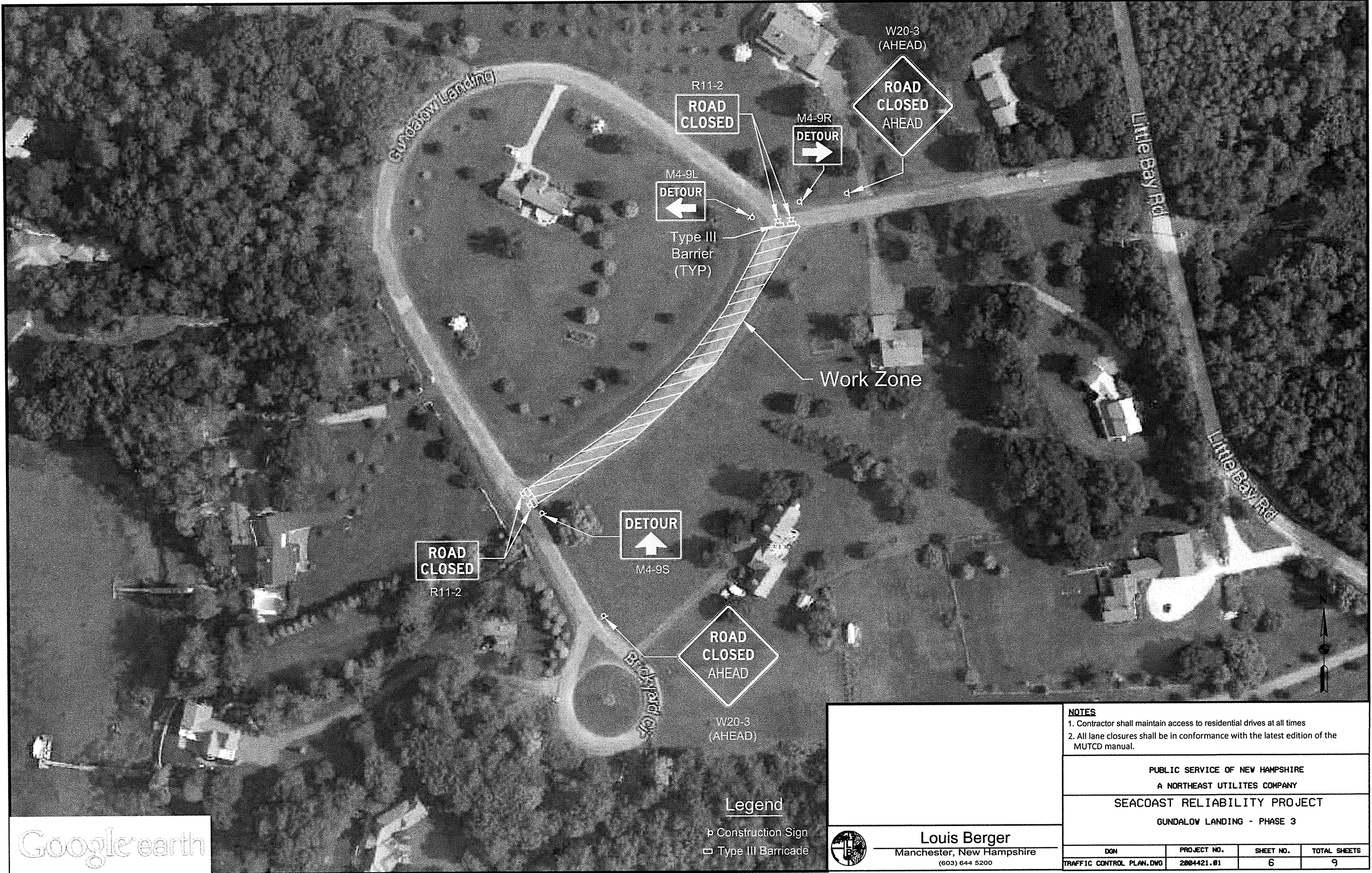
NOTES
 1. Contractor shall maintain access to residential drives at all times
 2. All lane closures shall be in conformance with the latest edition of the MUTCD manual.

PHASE 1
 Utilize local road closure setup for aerial installations and direct traffic by flagger instruction until one lane is passable

PUBLIC SERVICE OF NEW HAMPSHIRE
 A NORTHEAST UTILITES COMPANY
SEACOAST RELIABILITY PROJECT
 GUNDALOW LANDING - PHASE 1 & 2

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| DGN | PROJECT NO. | SHEET NO. | TOTAL SHEETS |
|--------------------------|-------------|-----------|--------------|
| TRAFFIC CONTROL PLAN.DWG | 2884421.01 | 5 | 9 |



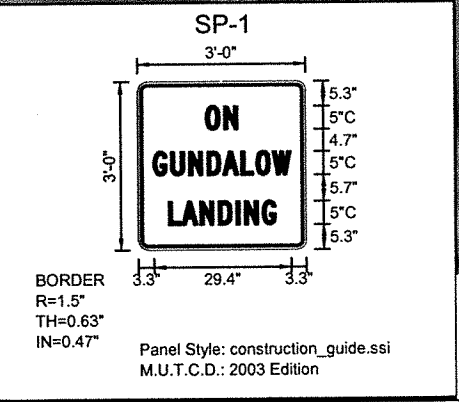
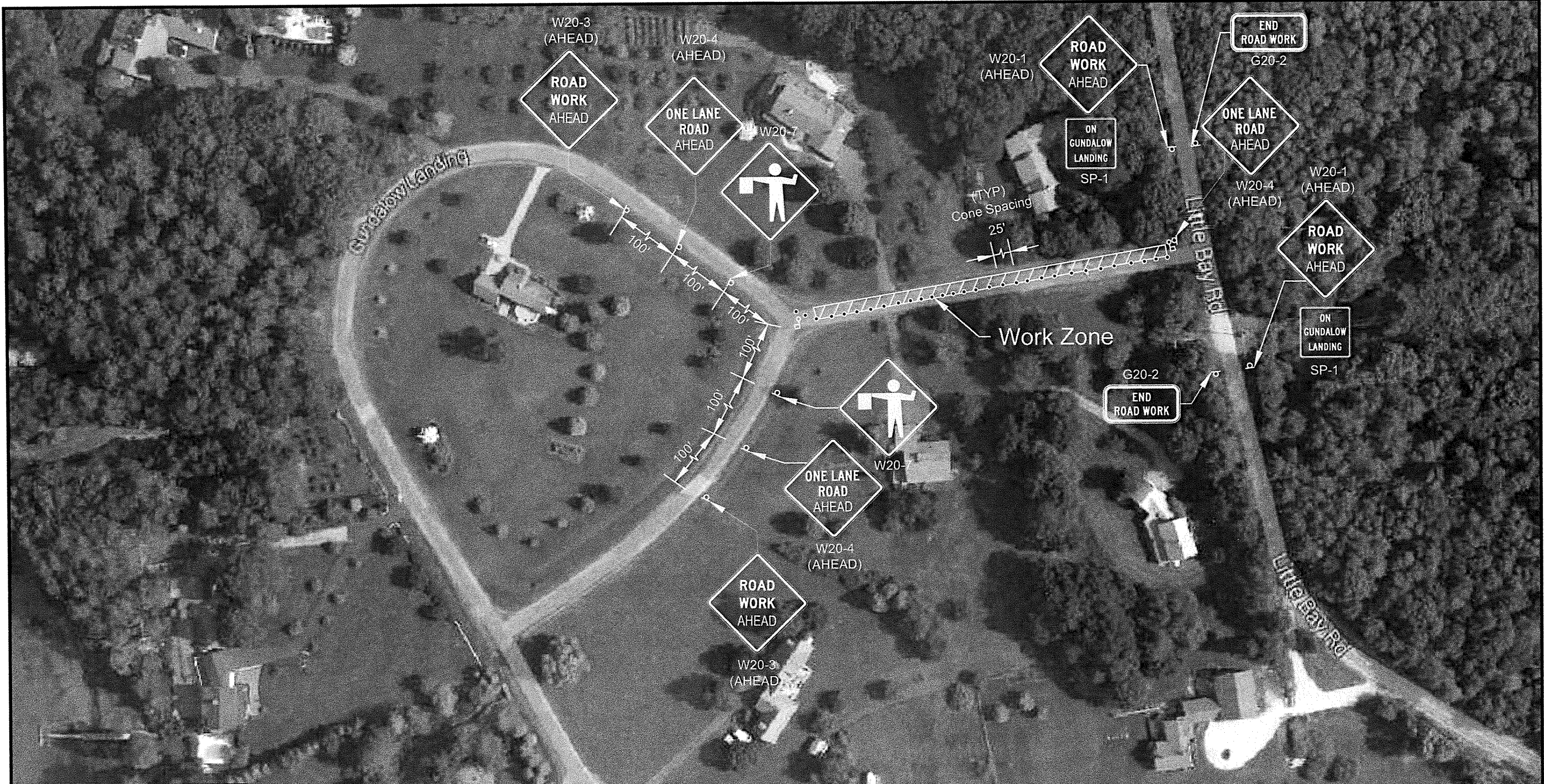
Legend

- ▬ Construction Sign
- ▭ Type III Barricade

| | | | | | | | |
|--|--------------------------------------|---------------------------|------------------------------|---|--|--|--|
| <p>NOTES</p> <p>1. Contractor shall maintain access to residential drives at all times</p> <p>2. All lane closures shall be in conformance with the latest edition of the MUTCD manual.</p> | | | | | | | |
| | | | | <p>PUBLIC SERVICE OF NEW HAMPSHIRE A NORTHEAST UTILITES COMPANY</p> | | | |
| | | | | <p>SEACOAST RELIABILITY PROJECT GUNDALOW LANDING - PHASE 3</p> | | | |
| <p>DGN</p> <p>TRAFFIC CONTROL PLAN.DWG</p> | <p>PROJECT NO.</p> <p>2884421.01</p> | <p>SHEET NO.</p> <p>6</p> | <p>TOTAL SHEETS</p> <p>9</p> | | | | |



Louis Berger
Manchester, New Hampshire
(603) 644 5200



Google earth

Legend
 ○ Traffic Cone
 □ Flagger
 p Construction Sign

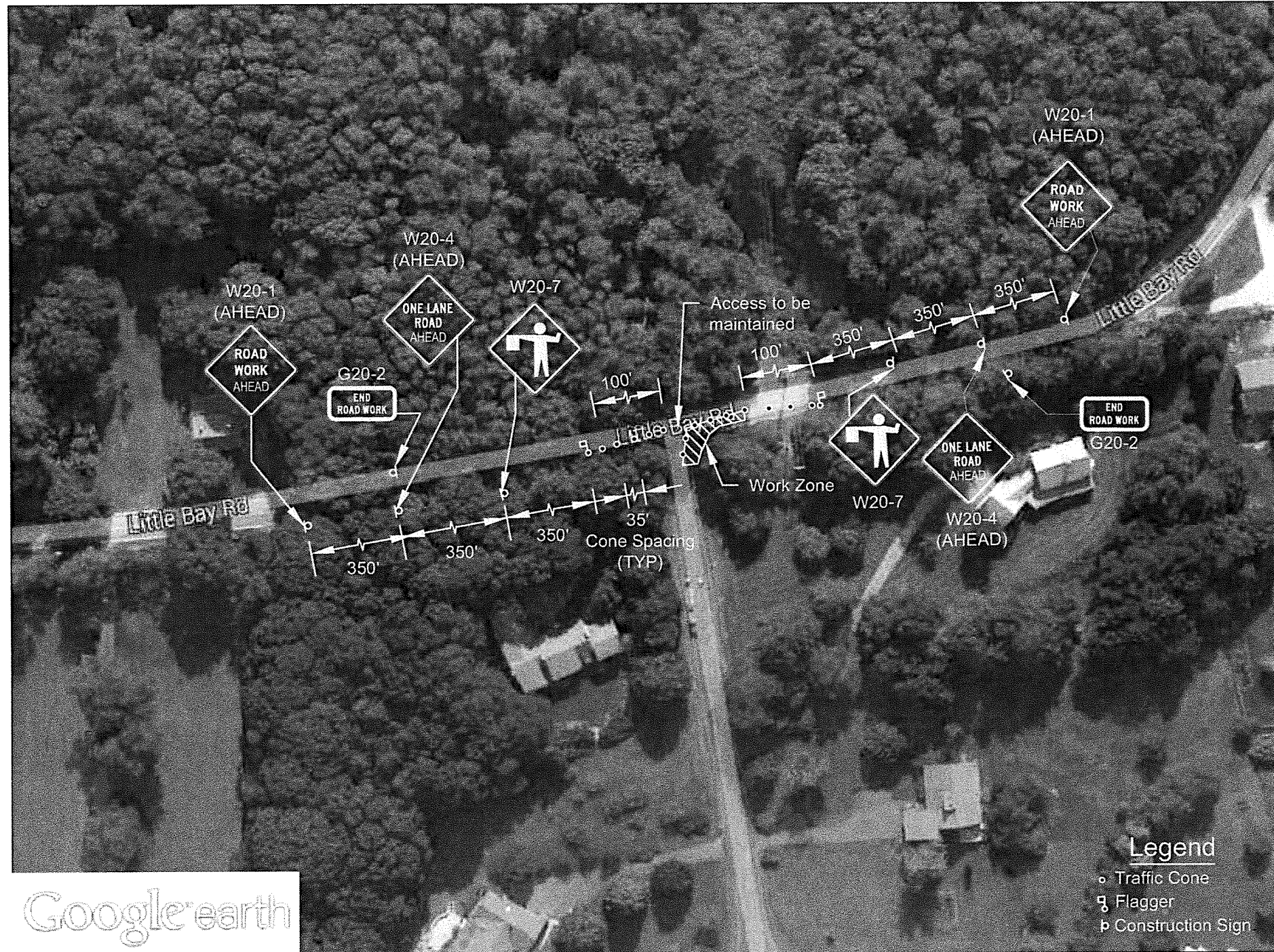
NOTES
 1. Contractor shall maintain access to residential drives at all times
 2. All lane closures shall be in conformance with the latest edition of the MUTCD manual.

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 A NORTHEAST UTILITES COMPANY

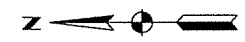
SEACOAST RELIABILITY PROJECT
 GUNDALOW LANDING - PHASE 4

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| DGN | PROJECT NO. | SHEET NO. | TOTAL SHEETS |
|--------------------------|-------------|-----------|--------------|
| TRAFFIC CONTROL PLAN.DWG | 2884421.81 | 7 | 9 |



Google earth

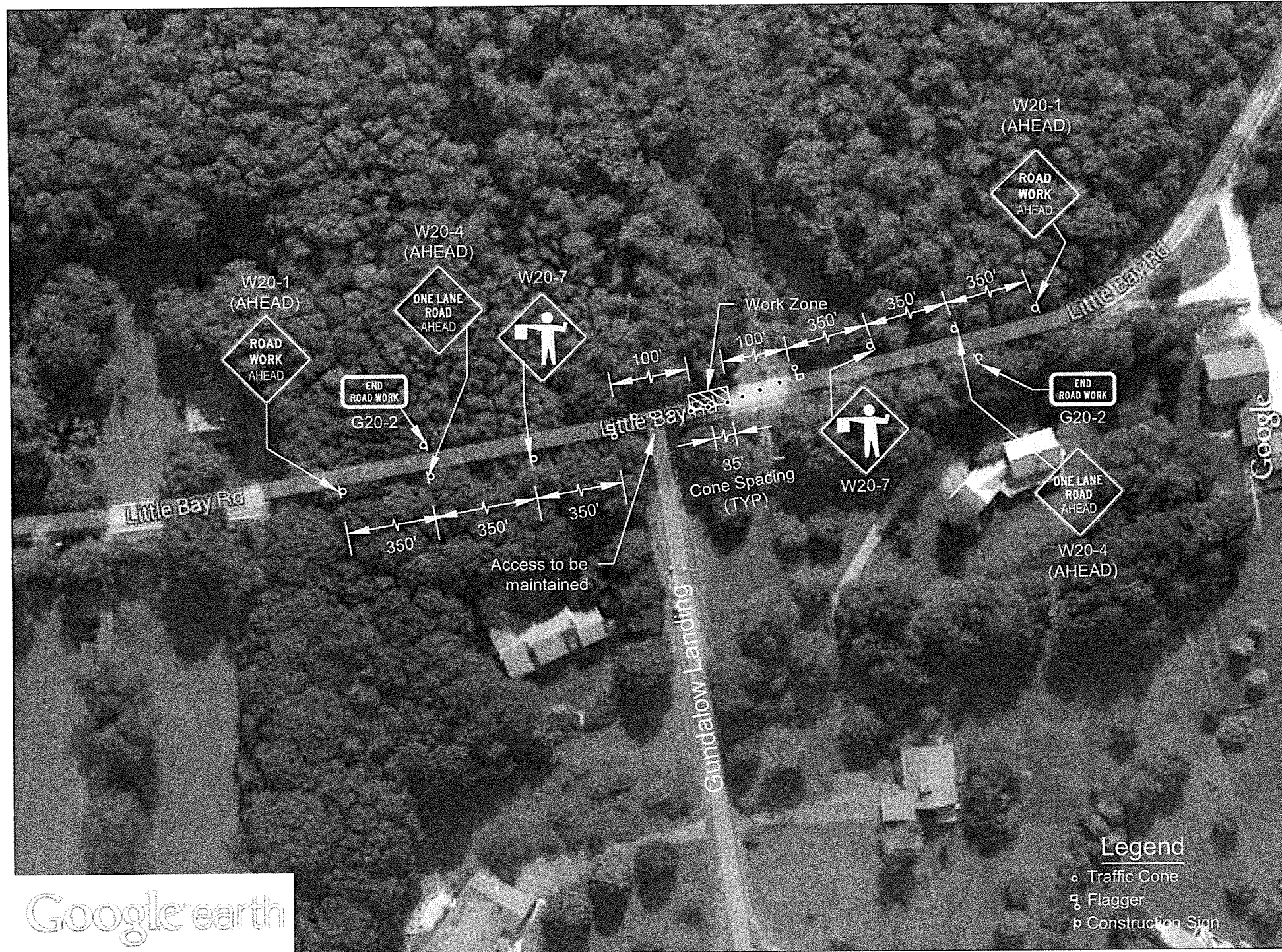


NOTES

- Contractor shall maintain access to residential drives at all times
- All lane closures shall be in conformance with the latest edition of the MUTCD manual.

| | | | |
|---|-------------|-----------|--------------|
| PUBLIC SERVICE OF NEW HAMPSHIRE A NORTHEAST UTILITES COMPANY | | | |
| SEACOAST RELIABILITY PROJECT LITTLE BAY ROAD - PHASE 1 | | | |
| DGN | PROJECT NO. | SHEET NO. | TOTAL SHEETS |
| TRAFFIC CONTROL PLAN.DWG | 2884421.01 | 8 | 9 |

Louis Berger
Manchester, New Hampshire
(603) 644 5200



Google earth

Legend

- o Traffic Cone
- W20-7 Flagger
- p Construction Sign



NOTES

1. Contractor shall maintain access to residential drives at all times
2. All lane closures shall be in conformance with the latest edition of the MUTCD manual.

PUBLIC SERVICE OF NEW HAMPSHIRE
 A NORTHEAST UTILITES COMPANY
 SEACOAST RELIABILITY PROJECT
 LITTLE BAY ROAD - PHASE 2



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| DGN | PROJECT NO. | SHEET NO. | TOTAL SHEETS |
|--------------------------|-------------|-----------|--------------|
| TRAFFIC CONTROL PLAN.DWG | 2004421.01 | 9 | 9 |

