

Letter of Transmittal



247 Station Drive
Southeast 210
Westwood, MA 02090

Date: May 23, 2018
Project No.: West Roxbury to Needham DCT Separation Project
Re: Town of Needham Grant of Location Petition Package

To:

Town of Needham
Board of Selectmen
Sandra J. Cincotta
Support Services Manager

We are sending you:

Attached Under separate cover via: _____

The following items:

Copies	Date	Ref. No.	Description
1	05/23.2018		Cover Letter (2 pages)
1	05/23/2018		Grant of Location Petition (1 page)
1	05/23/2018		Grant of Location Order (1 page)
1	05/23/2018		1"=6,000' Ariel Locus Map (2 pages)
1	05/23/2018		Project Plan and Profile Drawings dated May 10, 2018 (41 pages)
1	05/23/2018		Exhibit List (5 pages)

Remarks:

Received by:

--

Signature and date received:



May 23, 2018

Town of Needham
Board of Selectmen
1471 Highland Avenue
Needham, MA 02492
Attn: Sandra J. Cincotta

RE: Petition for Grant of Location in Town Ways

Dear Mrs. Cincotta:

Pursuant to G.L. c. 166 § 22, NSTAR Electric Company d/b/a Eversource Energy (hereinafter the "Petitioner" or "Eversource"), a company incorporated for the transmission of electricity for lighting, heating or power, hereby submits this Petition for a Grant of Location ("GOL") to the Town of Needham, MA. See attached Exhibit A. The Petitioner respectfully requests the Town of Needham by order to issue the GOL to the Petitioner for construction of a new electric transmission line within public ways as provided for herein. See attached Exhibit B.

Project Description

Approximately 15,000-feet of new underground transmission line cable are proposed to be installed within the public ways of the Town of Needham. The proposed underground transmission line will consist of a "duct bank" with electric transmission cables installed within individual High-Density Polyethylene ("HDPE") conduits. The duct bank will consist of four 8⁵/₈-inch-diameter HDPE conduits, as well as two 4-inch-diameter Polyvinyl Chloride ("PVC") conduits, and two 2-inch-diameter PVC conduits to carry communications lines and ground continuity conductors.

Project Route

In the Town of Needham, the underground project route along public ways commences at a point located at 15 Valley Road and continues west then south for approximately $\frac{1}{4}$ of a mile then turns to the southwest at the intersection of Peacedale Road. It follows Peacedale Road for approximately $\frac{1}{4}$ of a mile to the intersection of Great Plain Avenue where it turns to the northwest. Then it continues for approximately $\frac{2}{10}$ of a mile to the intersection of South Street then turns to the South. Then it follows along South Street for approximately $1\frac{4}{10}$ miles to the intersection of High Rock Street where the route turns slightly to the north. Then it follows along High Rock Street for approximately $\frac{5}{10}$ of a mile to the point where the existing Eversource Transmission Line right-of-way is located. See Exhibit C for a 1"= 6,000' scale aerial locus map of the project.

Grant of Location Request
West Roxbury to Needham DCT Separation Project

Project Design

The HDPE and PVC conduits placed in the duct bank will be encased in a thermal concrete envelope. The typical duct bank trench will be approximately four feet wide and five feet deep. Manholes will be installed along the underground cable route spaced approximately 1,500 to 1,800 feet apart. Each manhole will be approximately 8 feet wide by 8 feet high and 24 feet long. See attached Exhibit D for project plan and profile drawings for the proposed duct bank, duct bank cross section data, trench backfill specifications.

Municipal Permits

Upon issuance of the requested GOL, Eversource's contractor shall obtain all required local municipal permits prior to beginning work within the Town (e.g., street opening, curb cut, trench permits, etc.). The Contractor shall work with the Town's engineering and public works departments to ensure that all disturbances to the public are avoided and/or minimized to the greatest extent possible. Eversource will provide contact information for appropriate personnel for use by Town officials and concerned citizens during construction activities. Lastly, please see the attached Exhibit E for a list of abutters that has been provided by the Town.

As such, Eversource respectfully requests the Town to issue a GOL as set forth above. If you have any questions or require additional information, please contact me at your earliest convenience.

Sincerely,



Theresa Feuersanger
Supervisor
T & D Rights and Survey
Eversource Energy
247 Station Drive SE210
Westwood, MA 02090

Email: Theresa.Feuersanger@eversource.com
Office: (781) 441-8277
Fax: (781)441-8909

Grant of Location Request
West Roxbury to Needham DCT Separation Project

Grant of Location Request
West Roxbury to Needham DCT Separation Project

Exhibit A
Grant of Location Petition

**PETITION FOR GRANT OF LOCATION FOR
WIRES, CABLES, POLES, PIERS, ABUTMENTS, CONDUITS OR FIXTURES**

Town of Needham, Massachusetts
Board of Selectmen
Date: May 23, 2018

RESPECTFULLY represents **NSTAR ELECTRIC COMPANY d/b/a/ EVERSOURCE ENERGY** (hereinafter known as the PETITIONER) a company incorporated for the transmission of electricity, lighting, heating or power, that it desires to construct upon, along, under or across the public way(s) of the Town of Needham, wires, cables, poles, piers, abutments, conduits or fixtures.

WHEREFORE, your PETITIONER prays that, after due notice and public hearing as provided by law, the Board of Selectmen may by Order grant to the PETITIONER permission to construct, in accordance with plan(s) dated **May 10, 2018**, the following (describe work):

Installation of new 115 kV underground transmission line beneath and within the public ways of the Town of Needham along Valley Road, Peacedale Road, Great Plain Avenue, South Street and High Rock Street. The underground transmission line will consist of a "duct bank" with electric transmission cables installed within individual High-Density Polyethylene ("HDPE") conduits. The duct bank will consist of four 8 5/8 -inch-diameter HDPE conduits, as well as two 4-inch-diameter Polyvinyl Chloride ("PVC") conduits, and two 2-inch-diameter PVC conduits to carry communications lines and ground continuity conductors.

The PETITIONER understands and agrees that:

1. PETITIONER shall locate and complete all work as specified and approved by the Town.
2. PETITIONER shall comply with the requirements of existing ordinances and such as may hereafter be adopted governing the construction.
3. PETITIONER shall perform all work to the requirements and satisfaction of the Department of Public Works or other such officer(s) as may be hereafter appointed by the Town.
4. PETITIONER shall not commence work until after the Energy Facility Siting Board issues the final decision authorizing the work.

For the PETITIONER:

By: 
Theresa Feuersanger
Supervisor, T&D Rights & Survey

Date: May 23, 2018

Town of **NEEDHAM**, Massachusetts
Received and filed _____, 2018
By: _____
Title: _____

Grant of Location Request
West Roxbury to Needham DCT Separation Project

Exhibit B
Order for Grant of Location

**ORDER FOR GRANT OF LOCATION FOR
WIRES, CABLES, POLES, PIERS, ABUTMENTS, CONDUITS OR FIXTURES**

Town of Needham, Massachusetts
Board of Selectmen
Date: June 12, 2018

WHEREAS, **NSTAR ELECTRIC COMPANY d/b/a/ EVERSOURCE ENERGY** (hereinafter known as the PETITIONER) has petitioned for permission to construct a line for the transmission of electricity for lighting, heating or power upon, along, under or across the public way(s) of the Town of Needham, the following (describe work):

Installation of new 115 kV underground transmission line beneath and within the public ways of the Town of Needham along Valley Road, Peacedale Road, Great Plain Avenue, South Street and High Rock Street. The underground transmission line will consist of a "duct bank" with electric transmission cables installed within individual High-Density Polyethylene ("HDPE") conduits. The duct bank will consist of four 8 5/8 -inch-diameter HDPE conduits, as well as two 4-inch-diameter Polyvinyl Chloride ("PVC") conduits, and two 2-inch-diameter PVC conduits to carry communications lines and ground continuity conductors.

AND WHEREAS, notice has been given and a hearing held on said petition as provided by law;

NOW THEREFORE BE IT ORDERED that the PETITIONER be and hereby is granted permission to construct and a location for the construction described above, all in accordance with the following conditions:

1. PETITIONER shall locate and complete all work as shown by plan(s) dated **May 10, 2018**, and as may have been amended by the Town.
2. PETITIONER shall comply with the requirements of existing ordinances and such as may hereafter be adopted governing the construction.
3. PETITIONER shall perform all work to the requirements and satisfaction of the Board of Selectmen or other such officer(s) as may be hereafter appointed by the Town.
4. PETITIONER shall not commence work until after the Energy Facility Siting Board issues the final decision authorizing the work.

1. _____
2. _____
3. _____
4. _____
5. _____

Board of Selectmen
the Town of
NEEDHAM

CERTIFICATE

We hereby certify that the foregoing Order was adopted by the Board of Selectmen on the _____ day of _____, 2018 after due notice and public hearing as prescribed by Section 22 of Chapter 166 of the General Laws and any additions or amendments thereto, after written notice of the time and place of the hearing mailed at least seven days prior to the date of the hearing by the Selectmen to all owners of real estate abutting upon that part of the way(s) upon _____, along or across which the line is to be constructed under said Order, as determine by the last preceding assessment for taxation, and public hearing held on the _____ day of _____ 2018 at _____ in said Town.

- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____

Board of Selectmen
the Town of
NEEDHAM

CERTIFICATE

I hereby certify that the foregoing are true copies of the Order of the Board of Selectmen of the Town of NEEDHAM, Massachusetts, duly adopted on the _____ day of _____, 2018, and recorded with the records of location Orders of said Town, in Book _____, Page _____ and of the certificate of notice of hearing thereon required by Section 22 of Chapter 166 of the General Laws and any additions thereto or amendments thereof, as the same appear of record.

Certified Attest: _____ Date: _____
Clerk of the Town of **NEEDHAM**, Massachusetts

Grant of Location Request
West Roxbury to Needham DCT Separation Project

Exhibit C

1"=6,000' Scale Aerial Locus Map



LEGEND

- Proposed Manhole Location
- Underground Route Along Public Ways

Scale 1:6,000
1 inch = 500 feet

Needham

Dedham

Route leaves High Rock Street and enters Eversource ROW

Needham Station 148



West Roxbury to Needham Reliability Project

EVERSOURCE

Grant of Location Request
West Roxbury to Needham DCT Separation Project

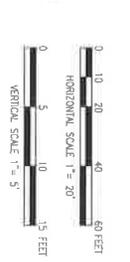
Exhibit D
Project Plan and Profile Drawings

THREE MINUTES OR LESS BEFORE YOU BE CALLED
MASSACHUSETTS 811
 TOLL FREE
 811 or 1-888-344-7233

EVERSOURCE ENERGY
 ENGINEERS

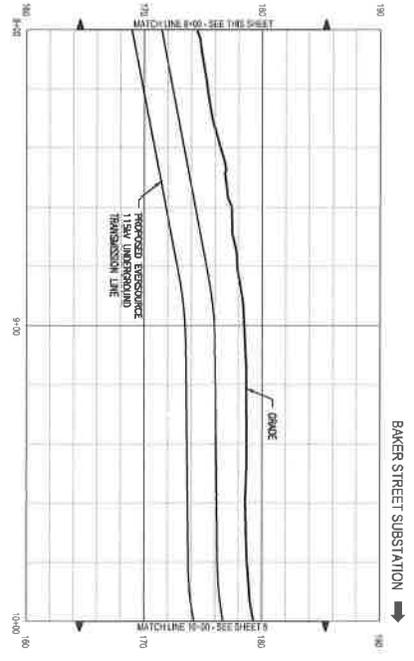
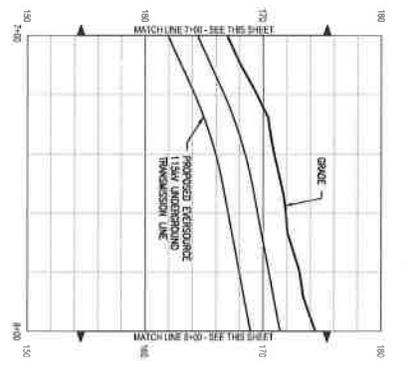
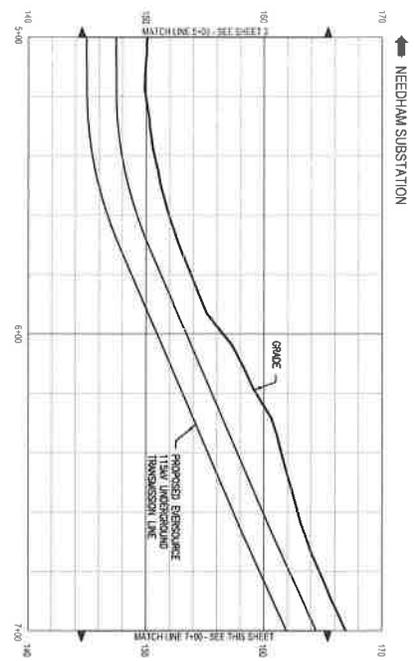
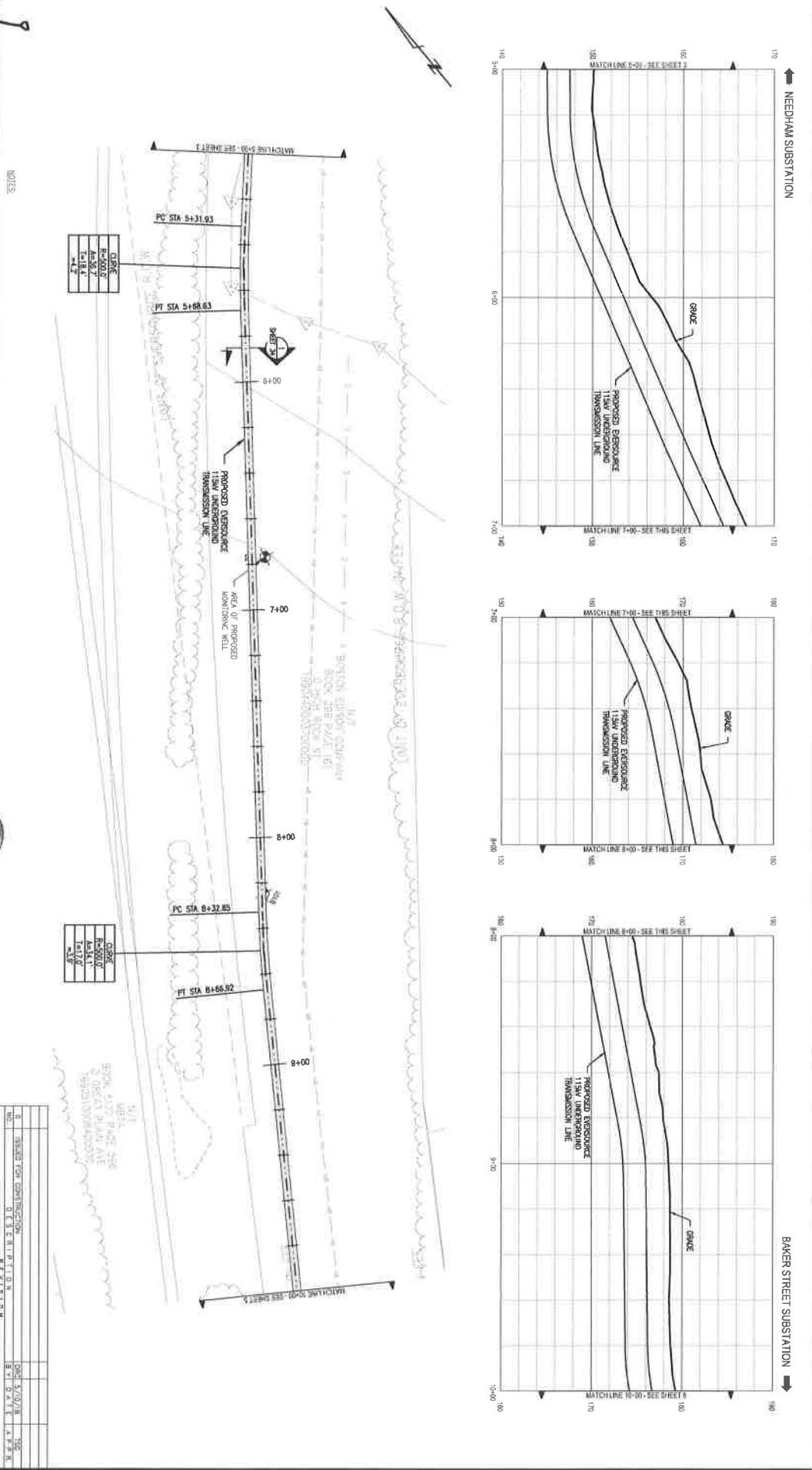
NOTES:

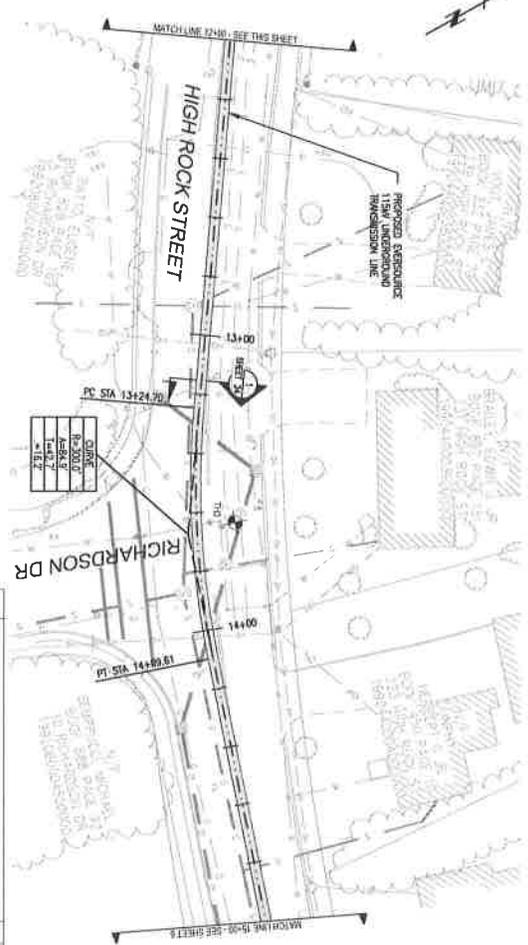
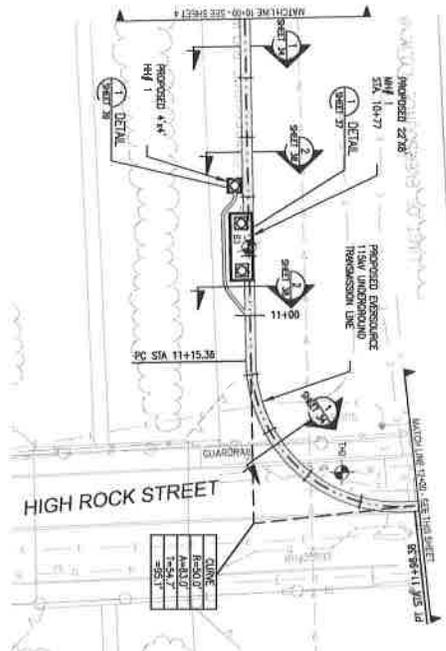
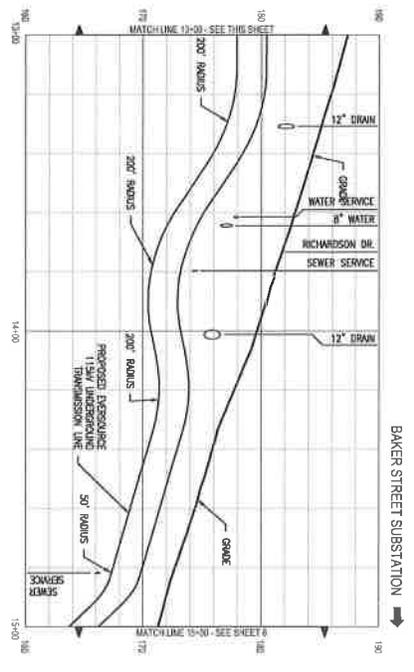
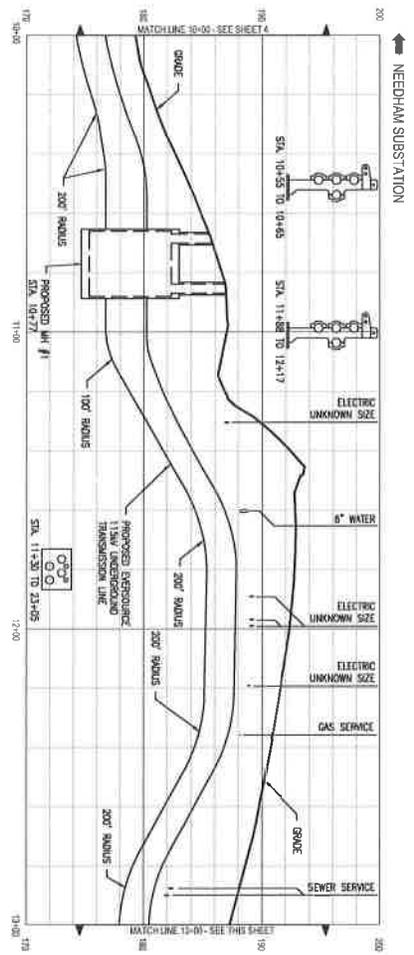
1. BE AWARE THAT THE DESIGN AND CONSTRUCTION OF THIS PROJECT MAY BE SUBJECT TO PERMITS AND RECORDS REQUIREMENTS. THE CONTRACTOR SHALL VERIFY THE RECORDS THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL OBTAIN RECORDS FROM THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG - 1-888-344-7233.
2. PROPERTY BOUNDARIES AND TOWN WAYS HAVE BEEN SURVEYED FROM TOWN OF NEEDHAM GIS AND THE NOT SHOWN ON A GRADE SURVEY. REVISED PLANS WILL BE SUBMITTED TO THE TOWN OF NEEDHAM FOR REVIEW AND APPROVAL. ANY AMENDMENTS TO THE PLAN WILL BE SUBMITTED IN CONSULTATION WITH THE TOWN OF NEEDHAM.



NO.	REVISION	DATE
1	ISSUED FOR CONSTRUCTION	5/10/18
2	REVISION	5/10/18
3	REVISION	5/10/18

EVERSOURCE ENERGY
 PLAN AND PROFILE STA. 5+00 TO 10+00
 WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 NEEDHAM - WEST ROXBURY, MASSACHUSETTS
 SCALE: GENERAL REFERENCE 1" = 40'
 HORIZONTAL SCALE 1" = 20'
 VERTICAL SCALE 1" = 5'
 DATE: 05/10/18
 DMC: [Signature]
 TPR: [Signature]
 DESIGNED BY: [Signature]
 CHECKED BY: [Signature]

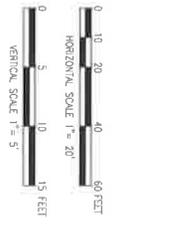




POWER ENGINEERS INC.

THESE SERVICES MAY BE PROVIDED BY THE FIELD SERVICE ENGINEER.
 MASSACHUSETTS 811
 TOLL FREE
 811 or 1-888-344-7233

NOTES:
 1. THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHS, AND RECORD DRAWINGS. THE FIELD SERVICE ENGINEER HAS CONDUCTED VISUAL INSPECTIONS OF THE UTILITIES SHOWN AND HAS FOUND THEM TO BE CORRECT. THE FIELD SERVICE ENGINEER HAS CONDUCTED VISUAL INSPECTIONS OF THE UTILITIES SHOWN AND HAS FOUND THEM TO BE CORRECT. THE FIELD SERVICE ENGINEER HAS CONDUCTED VISUAL INSPECTIONS OF THE UTILITIES SHOWN AND HAS FOUND THEM TO BE CORRECT.



NO.	REVISION	DATE
1	ISSUED FOR CONSTRUCTION	5/10/18
EVERSOURCE ENERGY		
PLAN AND PROFILE STA. 10+00 TO 15+00		
WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT		
115kV UNDERGROUND TRANSMISSION LINE		
NEEDHAM - WEST ROXBURY, MASSACHUSETTS		
SCALE: UNDERGROUND	DATE: 03/28/18	ISSUED: 5/10/18
1" = 20' V. 1" = 5'	DWG. NO. 179	ISSUED NO. 0
		5 OF 41

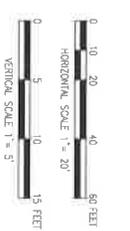


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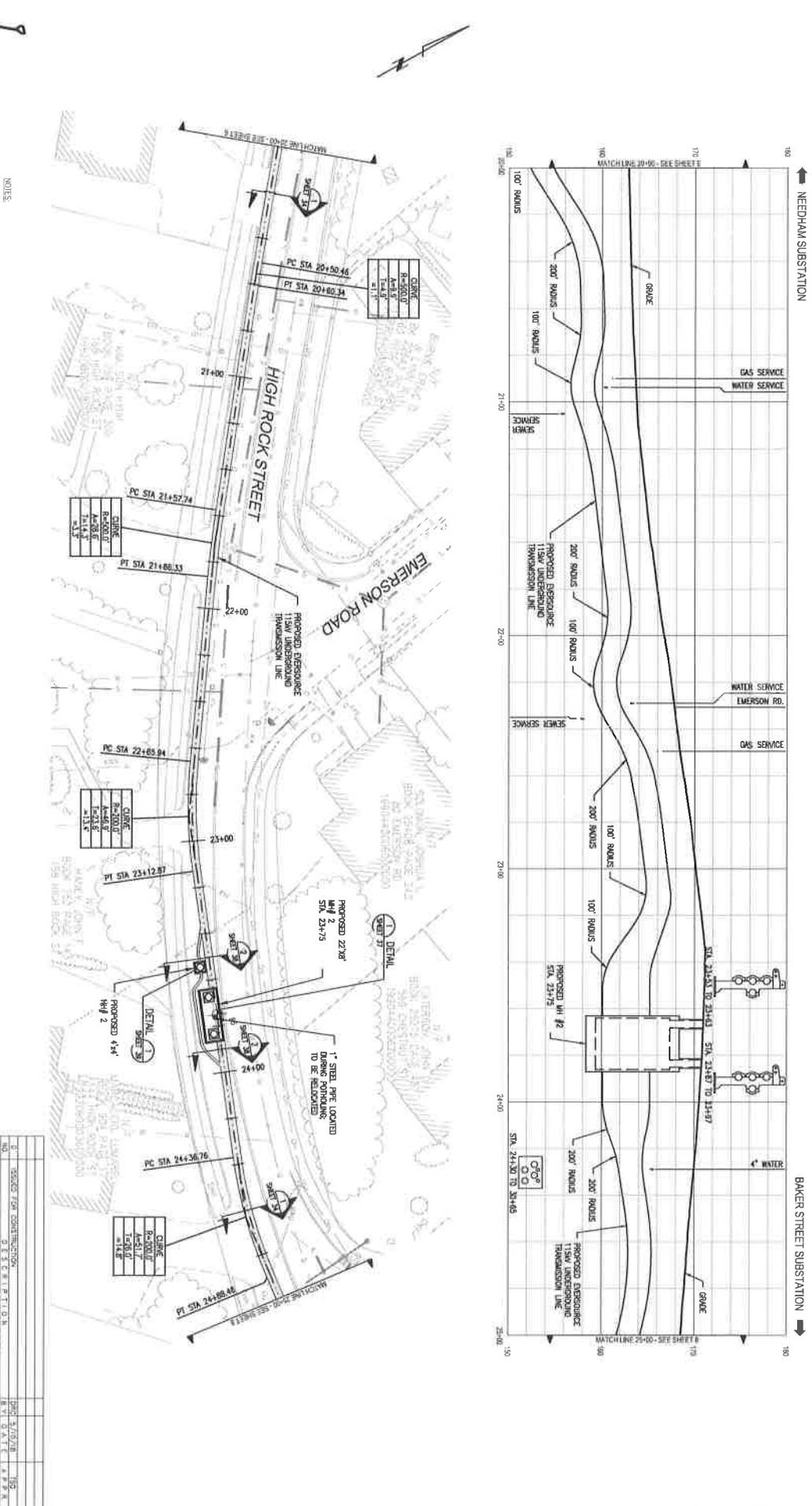
- THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEY, AERIAL, AND DISCONNECTED THROUGH THE RECORD SYSTEM OF THE UTILITIES. THE EXACT LOCATION, SIZE, DEPTH, AND VERTICAL OF ALL UTILITIES IS TO BE DETERMINED BY THE CONTRACTOR. CALL BEFORE YOU DIG - 1-888-344-7233.
- PROPOSED CONDUITS AND TOWNSHIP LINE ARE SHOWN FROM THE PLAN OF THE PROJECT. THE TOWNSHIP LINE IS SHOWN FROM THE RECORD SYSTEM OF THE UTILITIES. THE TOWNSHIP LINE IS SHOWN FROM THE RECORD SYSTEM OF THE UTILITIES.

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NO.	DESCRIPTION	DATE	BY
0	ISSUED FOR CONSTRUCTION	08/27/2018	TRP
EVERSOURCE ENERGY			
PLAN AND PROFILE STA 20+00 TO 25+00			
WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT			
115KV UNDERGROUND TRANSMISSION LINE			
NEEDHAM - WEST ROXBURY, MASSACHUSETTS			
SCALE: unless noted	DATE: 08/27/18	APP: TRP	ISSUED: 08/27/18
BY: TRP	CHK: TRP	APP: TRP	REV: 7 OF 41



CLIMATE	REGION	TYPE	DEPTH
CLIMATE	REGION	TYPE	DEPTH
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CLIMATE	REGION	TYPE	DEPTH



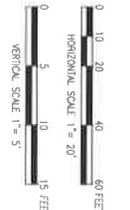
THE UNDERSIGNED HAS REVIEWED THE DESIGN AND CONSTRUCTION OF THE PROJECT AND HAS FOUND IT TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE MASSACHUSETTS 811 ACT AND THE REGULATIONS THEREUNDER. THE CONTRACTOR SHALL VERIFY THE ACCURACY OF THE INFORMATION PROVIDED TO THE UNDERSIGNED THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG - 1-888-344-7233.

PROPERTY BOUNDARIES AND TOWN WAYS HAVE BEEN OBTAINED FROM TOWN OF WEST ROXBURY AND THE TOWN ENGINEER. THE CONTRACTOR SHALL VERIFY THE ACCURACY OF THE INFORMATION PROVIDED TO THE UNDERSIGNED THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG - 1-888-344-7233.

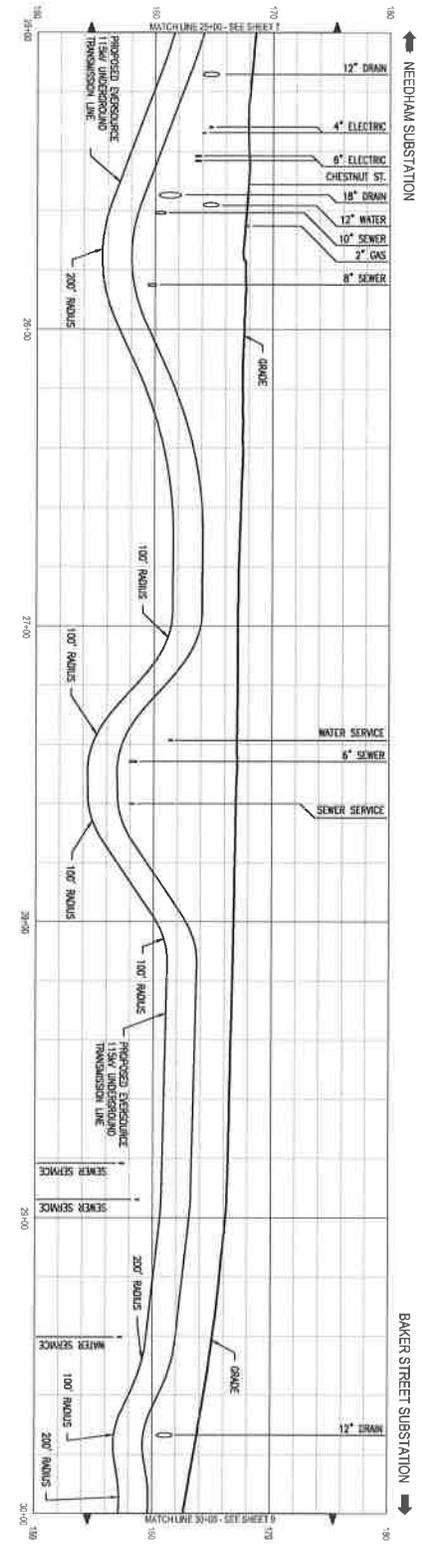
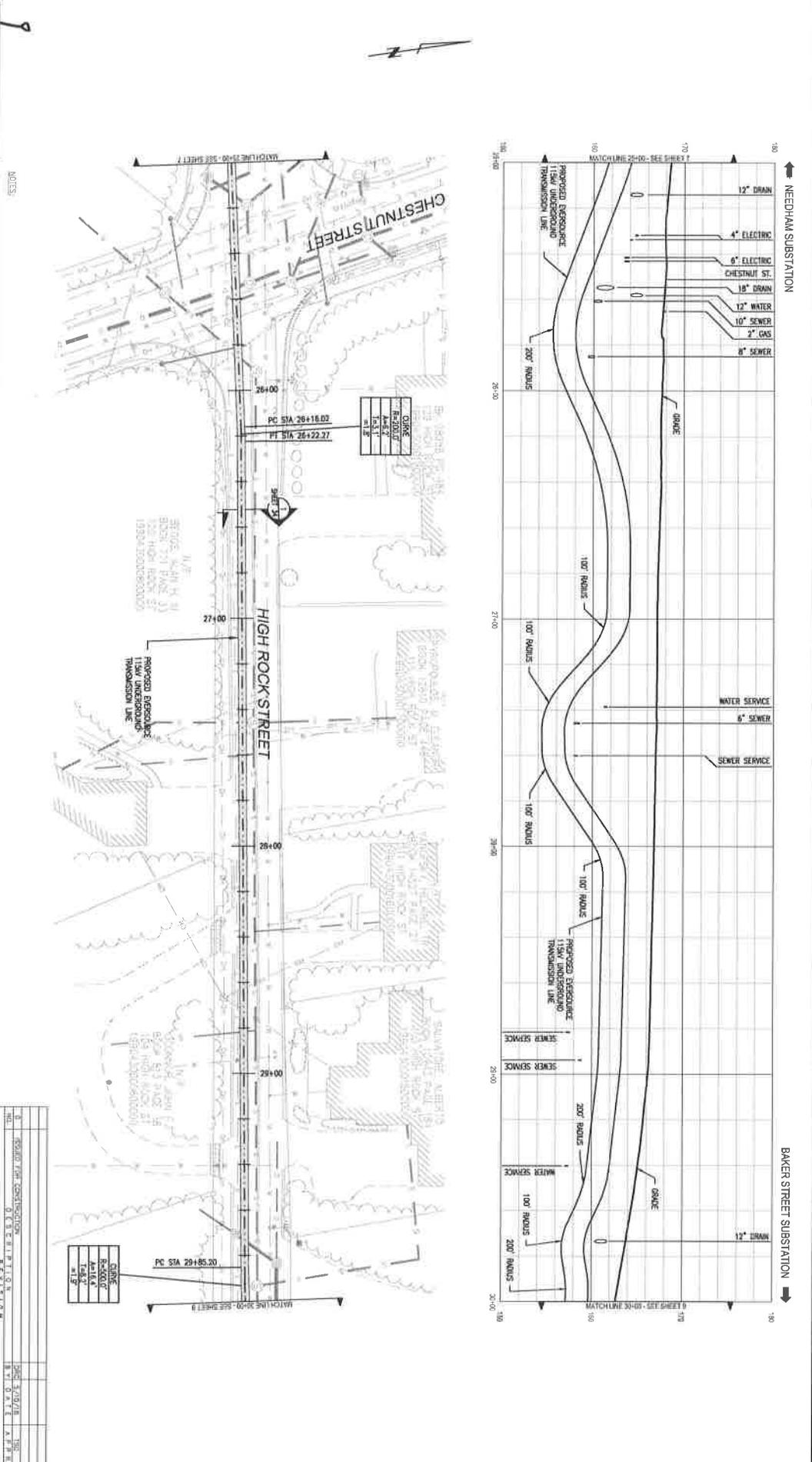
NOTES:

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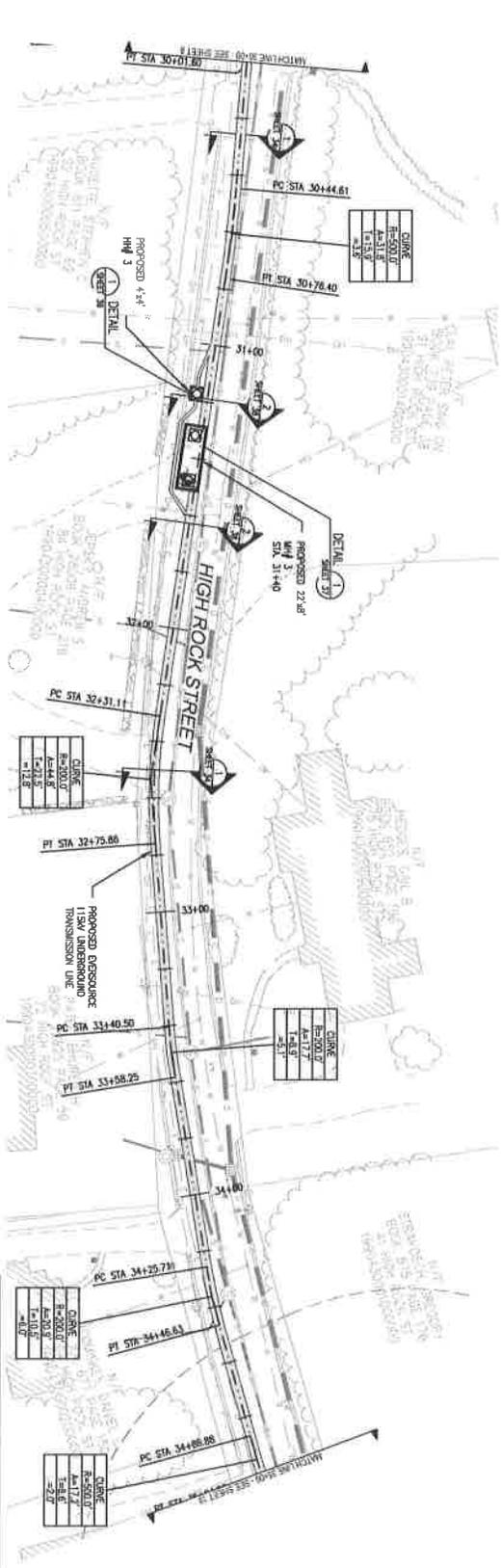
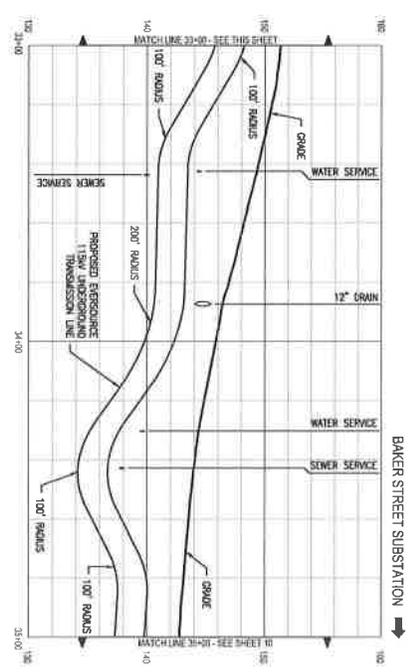
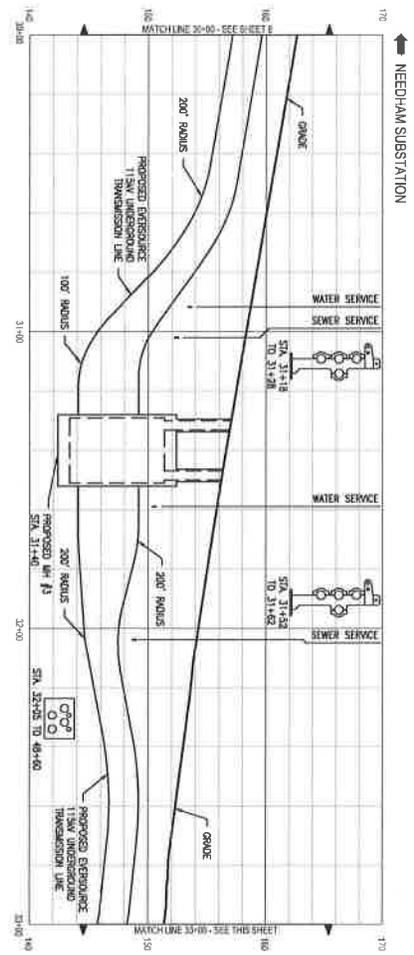
DATE: 08/14/18
 SCALE: 1" = 40'
 SHEET: 8 OF 41



PROJECT: WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT	DATE: 08/14/18	SCALE: 1" = 40'	SHEET: 8 OF 41
CLIENT: WEST ROXBURY, MASSACHUSETTS	DESIGNER: EVERSOURCE ENERGY	PROJECT NO: 115CV UNDERGROUND TRANSMISSION LINE	PROJECT NO: 115CV UNDERGROUND TRANSMISSION LINE
PROJECT NO: 115CV UNDERGROUND TRANSMISSION LINE	PROJECT NO: 115CV UNDERGROUND TRANSMISSION LINE	PROJECT NO: 115CV UNDERGROUND TRANSMISSION LINE	PROJECT NO: 115CV UNDERGROUND TRANSMISSION LINE



DATE: 08/14/18	SCALE: 1" = 40'	SHEET: 8 OF 41
DESIGNER: EVERSOURCE ENERGY	PROJECT NO: 115CV UNDERGROUND TRANSMISSION LINE	PROJECT NO: 115CV UNDERGROUND TRANSMISSION LINE



CHINE
H=500.0'
L=431.5'
E=11.5'
A=1.5°

CHINE
H=500.0'
L=431.5'
E=11.5'
A=1.5°

CHINE
H=500.0'
L=431.5'
E=11.5'
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CHINE
H=500.0'
L=431.5'
E=11.5'
A=1.5°

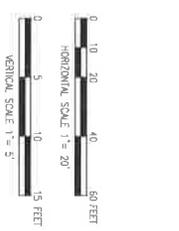
CHINE
H=500.0'
L=431.5'
E=11.5'
A=1.5°

THESE DRAWINGS HAVE BEEN PREPARED BY THE ENGINEER AND HIS STAFF FOR THE PROJECT DESCRIBED HEREIN. THE CLIENT HAS REVIEWED AND APPROVED THESE DRAWINGS FOR THE PROJECT DESCRIBED HEREIN. THE CLIENT HAS REVIEWED AND APPROVED THESE DRAWINGS FOR THE PROJECT DESCRIBED HEREIN.

MASSACHUSETTS 811
TOLL FREE
811 or 1-888-344-7233

NOTES:
1. THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEYS, ASBESTOS, AND OTHER RECORDS. THE ENGINEER HAS CONDUCTED VISUAL INSPECTIONS OF THE EXISTING UTILITIES AND HAS REVIEWED THE RECORDS. THE EXACT LOCATION, DEPTH, AND CHARACTER OF ALL UTILITIES IS NOT KNOWN. THE CLIENT IS ADVISED THAT THE UTILITIES SHOWN ON THESE DRAWINGS ARE NOT GUARANTEED TO BE ACCURATE. THE CLIENT IS ADVISED THAT THE UTILITIES SHOWN ON THESE DRAWINGS ARE NOT GUARANTEED TO BE ACCURATE.

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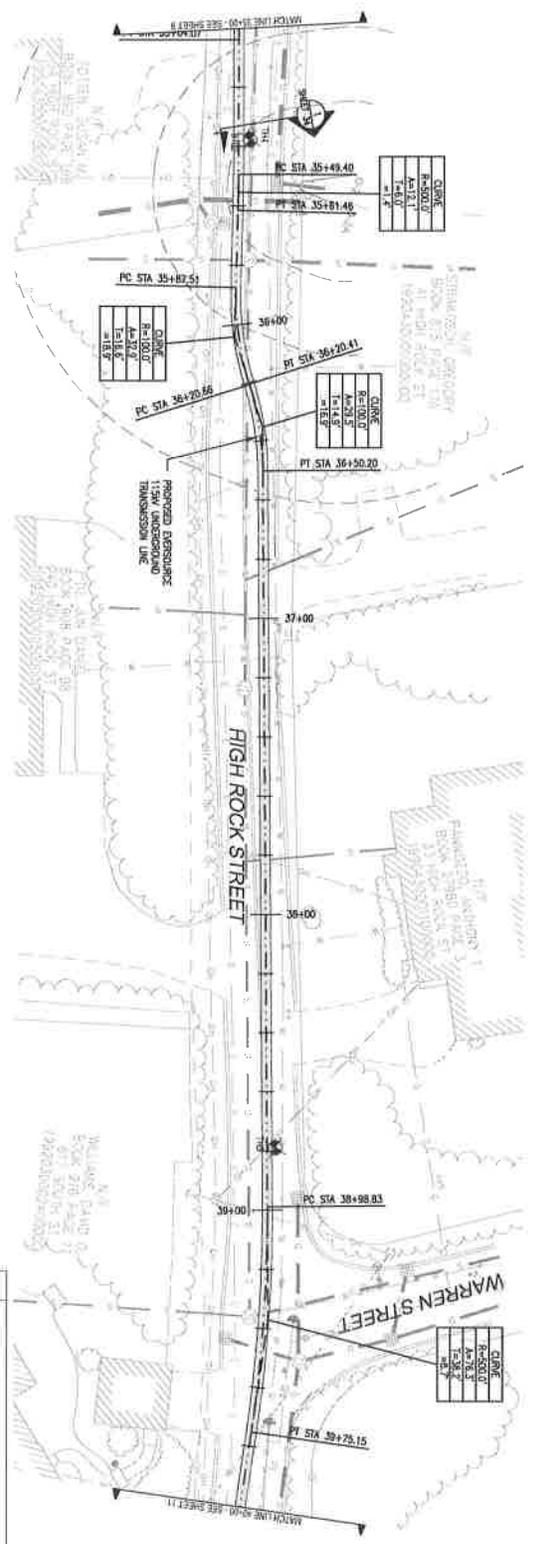
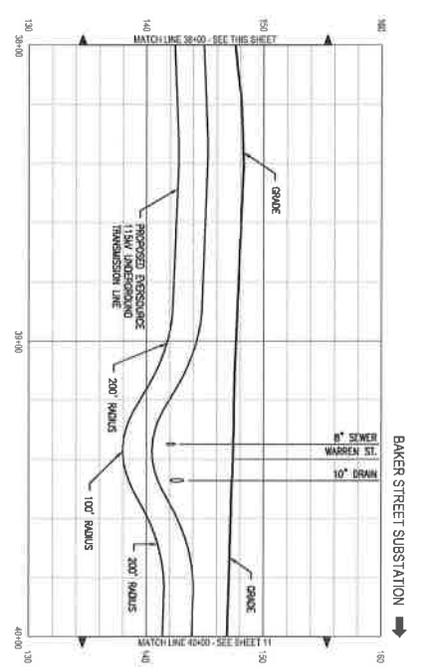
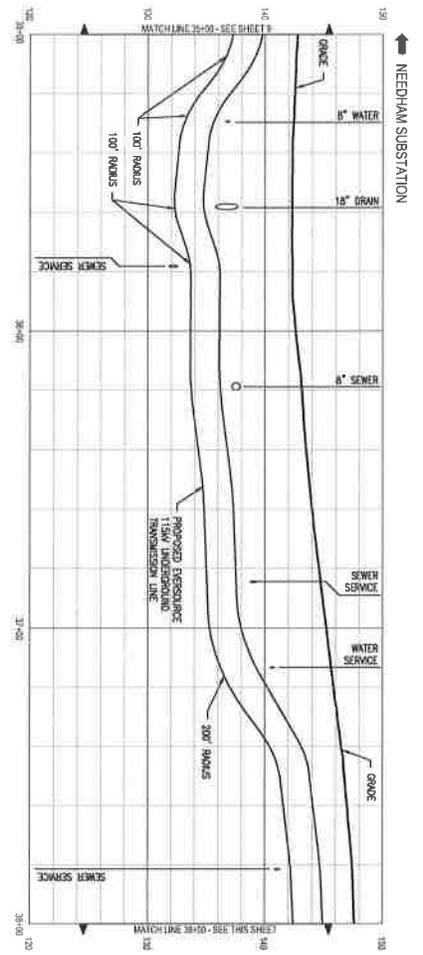


NO.	DESCRIPTION	DATE
0	ISSUED FOR CONSTRUCTION	5/10/18
1	REVISED	5/10/18
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4	REVISED	5/10/18
5	REVISED	5/10/18
6	REVISED	5/10/18
7	REVISED	5/10/18
8	REVISED	5/10/18
9	REVISED	5/10/18
10	REVISED	5/10/18
11	REVISED	5/10/18
12	REVISED	5/10/18
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20	REVISED	5/10/18

EVERSOURCE ENERGY

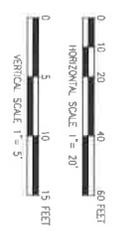
PLAN AND PROFILE STA. 30+00 TO 35+00
WEST ROXBURY 115KV UNDERGROUND TRANSMISSION LINE
NEEDHAM - WEST ROXBURY, MASSACHUSETTS

GATE ORRAN, ERK B, A P P K
DRAWING NO. 185
3 OF 41



- NOTES:**
- THE UTILITIES SHOWN ABOVE ARE BASED ON FIELD SURVEYS, RECORDS, AND RECORD DOCUMENTS. OTHER UTILITIES MAY EXIST NOT SHOWN HEREON. THE CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH, AND CHARACTERISTICS OF ALL UTILITIES SHOWN HEREON. THE APPLICABLE UTILITY COMPANIES' CALL BEFORE YOU DIG - 1-888-314-7233.
 - PROPERTY BOUNDARIES AND TOWN WAYS HAVE BEEN OBTAINED FROM TOWN OF NEEDHAMHAM RECORDS AND FIELD SURVEYS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND CHARACTERISTICS OF ALL UTILITIES SHOWN HEREON. THE APPLICABLE UTILITY COMPANIES' CALL BEFORE YOU DIG - 1-888-314-7233.

THOMAS BROWN ENGINEERS AND ARCHITECTS
MASSACHUSETTS 811
 TOLL FREE
 811 or 1-888-344-7233

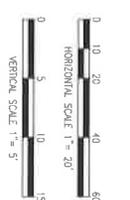


PROJECT	RELIABILITY ENHANCEMENT
CLIENT	WEST ROXBURY AND NEEDHAM STA. 35+00 TO 40+00
LOCATION	WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
DATE	08/18/18
SCALE	1" = 20' V. 1" = 5'
DESIGNED BY	THOMAS BROWN
CHECKED BY	THOMAS BROWN
DATE	08/18/18
SCALE	1" = 20' V. 1" = 5'
PROJECT	RELIABILITY ENHANCEMENT
CLIENT	WEST ROXBURY AND NEEDHAM STA. 35+00 TO 40+00
LOCATION	WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
DATE	08/18/18
SCALE	1" = 20' V. 1" = 5'
DESIGNED BY	THOMAS BROWN
CHECKED BY	THOMAS BROWN
DATE	08/18/18

EVERSOURCE ENERGY


POWER ENGINEERS
 811 or 1-888-344-7233
 MASSACHUSETTS 811
 TOLL FREE
 1-888-344-7233

NOTES
 1 THE UTILITIES SHOWN BELOW ARE BASED ON FIELD SURVEY DATA. THE CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH AND TYPE OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH AND TYPE OF ALL UTILITIES PRIOR TO CONSTRUCTION. SEE SHEET 10 FOR THE LOCATION OF UTILITIES.
 2 PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN SUPERIMPOSED OVER THE PLAN AND PROFILE. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. SEE SHEET 10 FOR THE LOCATION OF UTILITIES.



EVERSOURCE ENERGY
 WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 115KV UNDERGROUND TRANSMISSION LINE
 NEEDHAM - WEST ROXBURY, MASSACHUSETTS
 SHEET 9 OF 11
 DATE: 5/12/18
 SCALE: 1" = 5'

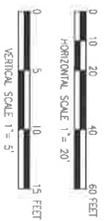
0 10 20 40 60 FEET
 HORIZONTAL SCALE 1" = 20'
 0 5 10 15 FEET
 VERTICAL SCALE 1" = 5'

10



WEH ENGINEERS HAVE REVIEWED THIS PLAN FOR COMPLIANCE WITH MASSACHUSETTS 811 TOLL FREE 811 OR 1-888-344-7233

- NOTES**
- THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEY, AERIAL, AND RECORD DRAWINGS. THE EXACT LOCATION, DEPTH, DIRECTION, AND VERTICAL OF ALL UTILITIES IS TO BE DETERMINED BY THE CONTRACTOR SHALL VERIFY THE EXISTING UTILITIES USING CAMELS, GULL BUNCH, TDD OR OTHER APPROPRIATE METHODS.
 - PROPERTY OWNERS AND TOWN WAYS HAVE BEEN ADVISED FROM THE PLAN OF THE PROPOSED TRANSMISSION LINE. SERVICE PLANS OF ALL UTILITIES LOCATED IN THE FIELD.

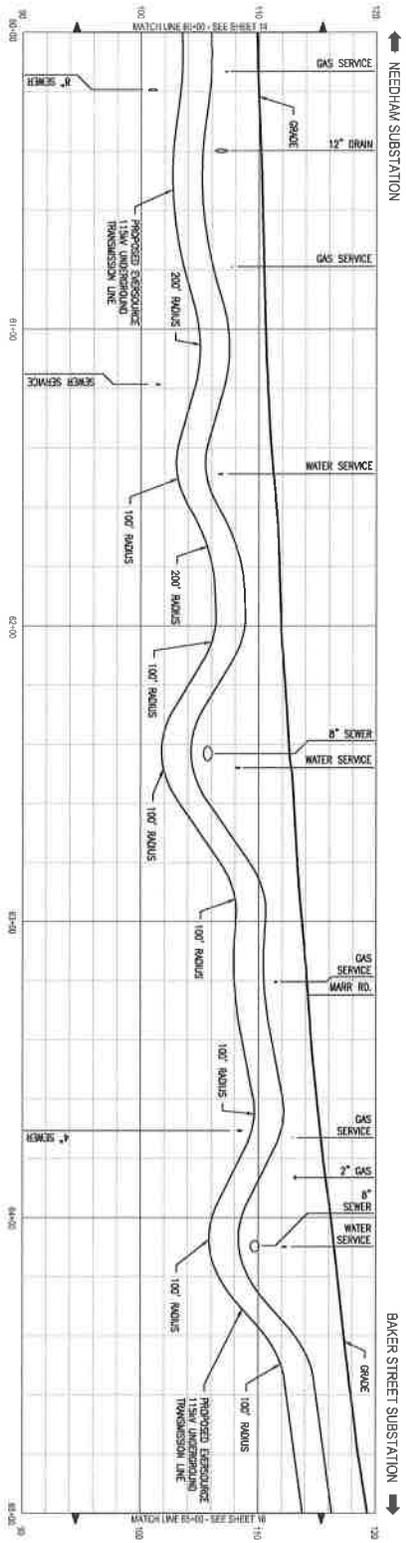
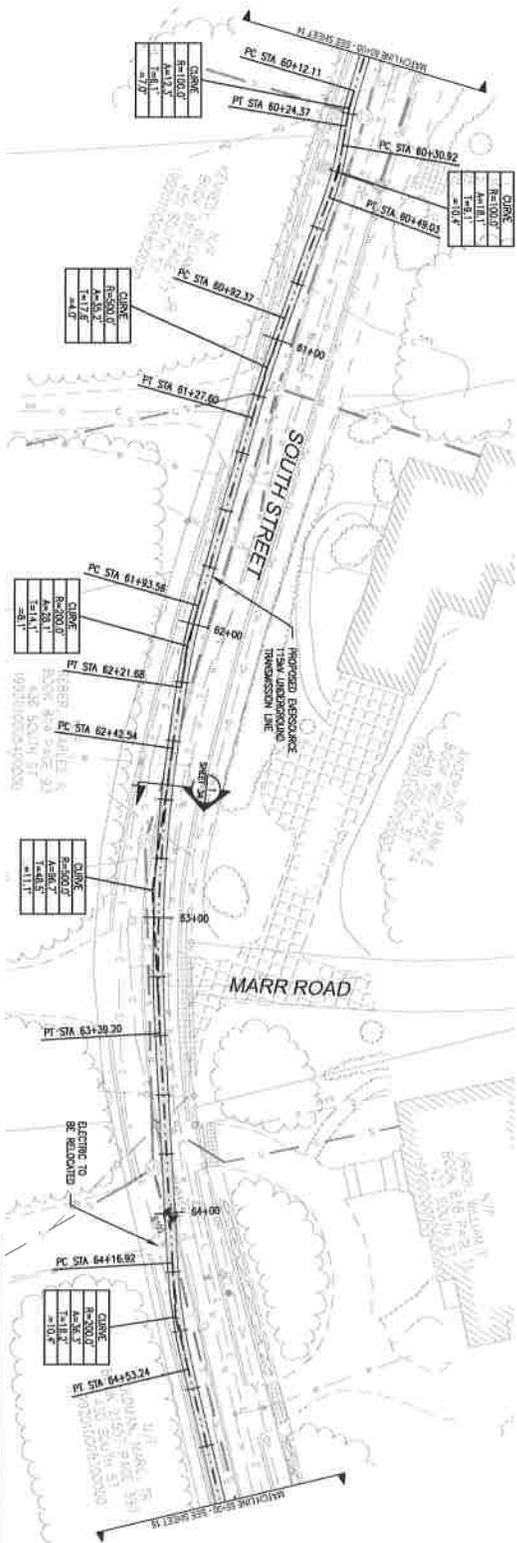


NO.	REVISION	DATE
1	ISSUED FOR CONSTRUCTION	05/20/18
2	DESIGN REVISION	06/01/18
3	REVISED	06/01/18
4	REVISED	06/01/18
5	REVISED	06/01/18
6	REVISED	06/01/18
7	REVISED	06/01/18
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9	REVISED	06/01/18
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11	REVISED	06/01/18
12	REVISED	06/01/18
13	REVISED	06/01/18
14	REVISED	06/01/18
15	REVISED	06/01/18
16	REVISED	06/01/18
17	REVISED	06/01/18
18	REVISED	06/01/18
19	REVISED	06/01/18
20	REVISED	06/01/18

EVERSOURCE ENERGY

PLAN AND PROFILE STA. 60+00 TO 65+00
WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
115KV UNDERGROUND TRANSMISSION LINE
NEEDHAM WEST ROXBURY, MASSACHUSETTS

SCALE: SHEET NUMBER DATE OF PAPER CHECKED BY DRAWN BY
SCALE: SHEET NUMBER DATE OF PAPER CHECKED BY DRAWN BY



THREE BUSINESS DAYS BEFORE YOU BE CALLED TO MASSACHUSETTS 811 TOLL FREE 811 OR 1-888-344-7233

1 THE UTILITIES OWNERS SHOULD BE NOTIFIED BY PHONE, PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FEATURES MAY NOT BE SHOWN. THE RECORD CHECK THE CONTRACTOR SHALL VERIFY THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG - 1-888-344-7233

2 PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN SUPERIMPOSED FROM TOWN OF NEEDHAM AND BAKERSFIELD. THE CONTRACTOR SHALL VERIFY THE LOCATION OF BOUNDARIES AND ADJUST PROPERTY IN CONSULTATION WITH ADJACENTS LOCATED IN THE FIELD.

NOTES

1 THE UTILITIES OWNERS SHOULD BE NOTIFIED BY PHONE, PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FEATURES MAY NOT BE SHOWN. THE RECORD CHECK THE CONTRACTOR SHALL VERIFY THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG - 1-888-344-7233

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2 PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN SUPERIMPOSED FROM TOWN OF NEEDHAM AND BAKERSFIELD. THE CONTRACTOR SHALL VERIFY THE LOCATION OF BOUNDARIES AND ADJUST PROPERTY IN CONSULTATION WITH ADJACENTS LOCATED IN THE FIELD.

NOTES

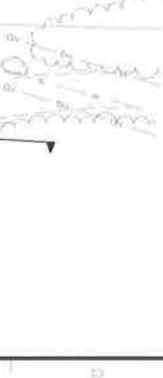
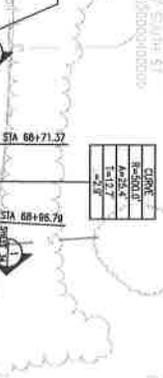
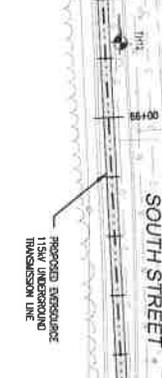
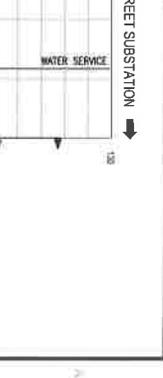
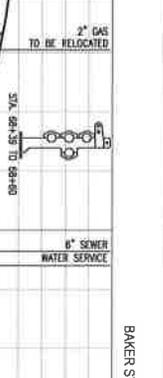
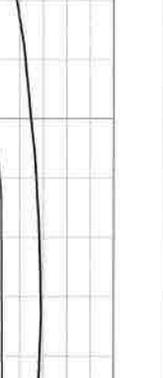
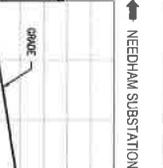
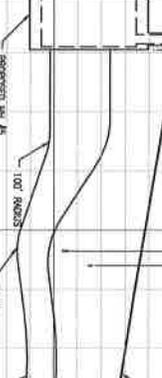
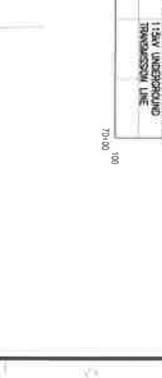
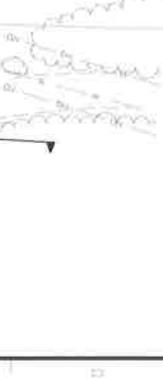
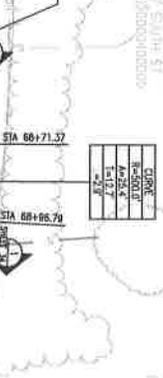
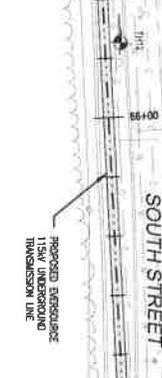
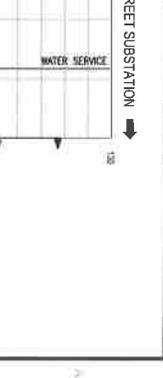
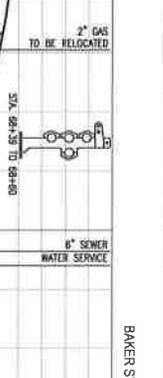
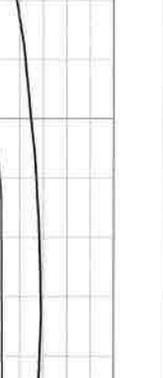
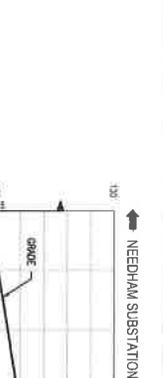
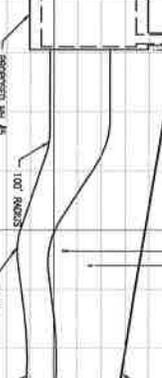
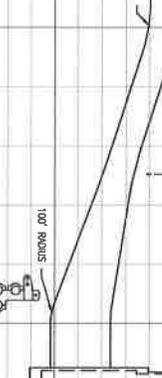
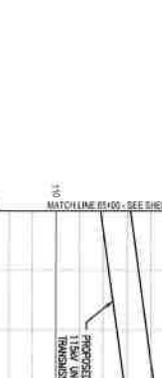
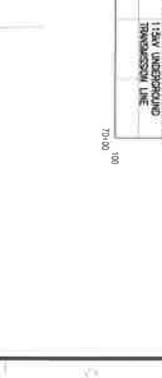
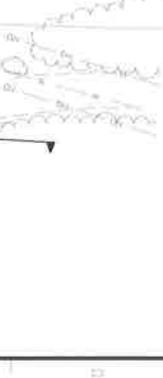
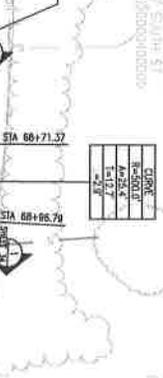
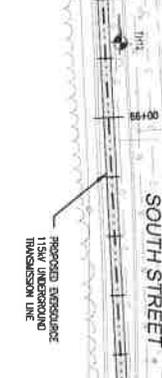
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2 PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN SUPERIMPOSED FROM TOWN OF NEEDHAM AND BAKERSFIELD. THE CONTRACTOR SHALL VERIFY THE LOCATION OF BOUNDARIES AND ADJUST PROPERTY IN CONSULTATION WITH ADJACENTS LOCATED IN THE FIELD.

NOTES

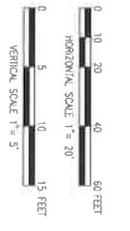
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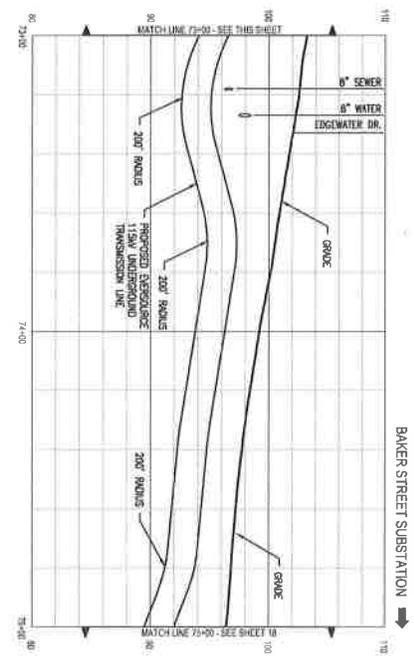
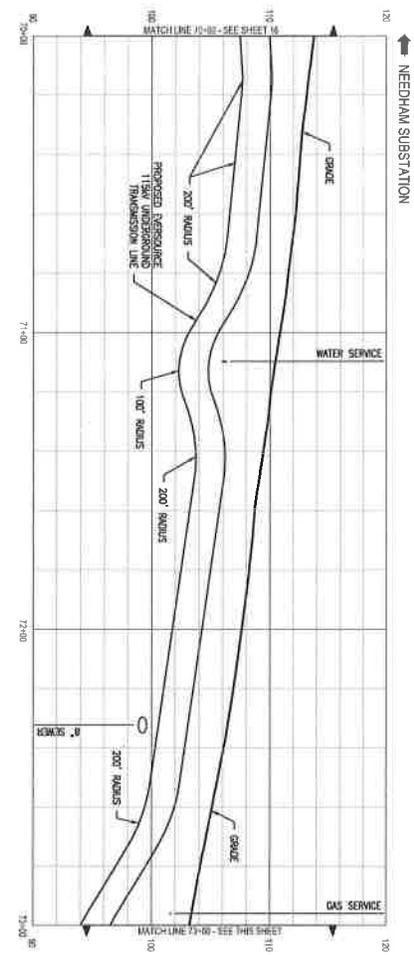
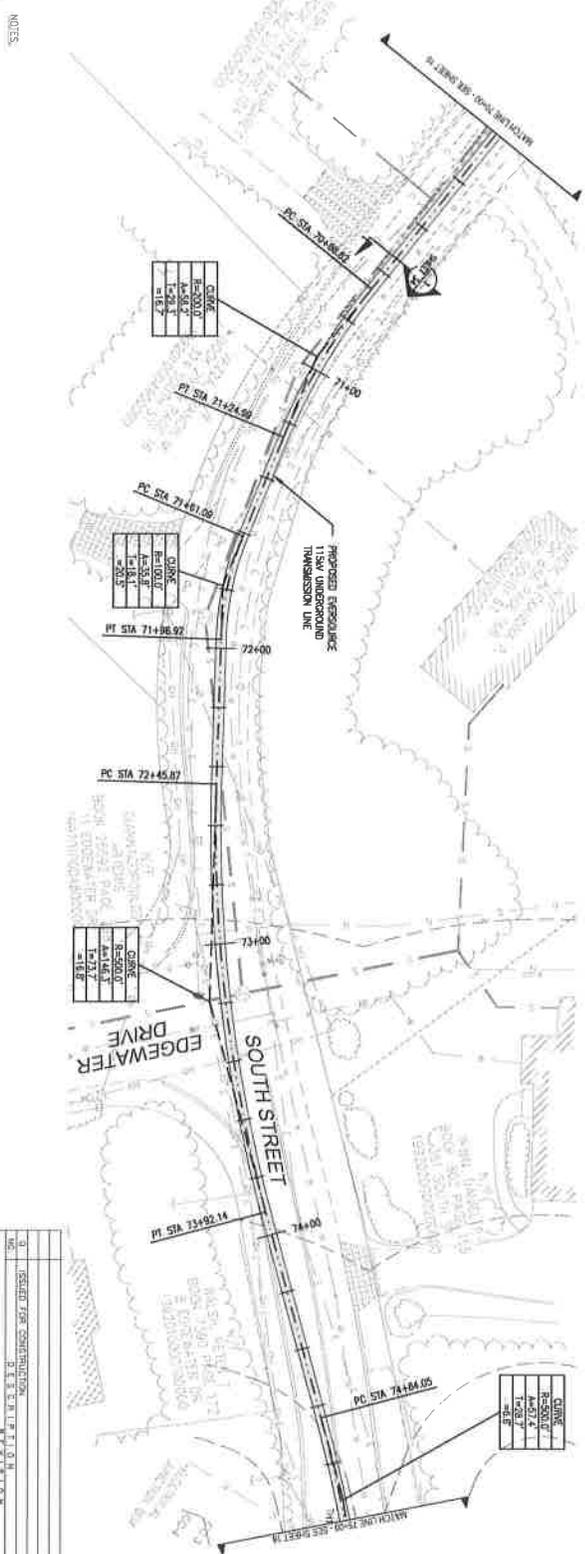


POWER ENGINEERS
 811 or 1-888-344-7233
 MASSACHUSETTS 811
 TOLL FREE
 POWER ENGINEERS

NOTES:
 1 THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEY DATA. THE UTILITIES SHOWN HEREON ARE NOT TO BE CONSIDERED AS A GUARANTEE OF THE LOCATION, DEPTH, OR CHARACTERISTICS OF ANY UTILITIES. THE CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH, AND CHARACTERISTICS OF ALL UTILITIES SHOWN HEREON PRIOR TO CONSTRUCTION. SEE SHEET 05.00 FOR 1-888-344-7233.
 2 PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN SUPERIMPOSED FROM THE RECORD AS SHOWN AND ARE NOT TO BE USED AS A GUARANTEE. PROPERTY BOUNDARIES AND TOWN MAPS ARE SHOWN FOR INFORMATION ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND CHARACTERISTICS OF ALL UTILITIES SHOWN HEREON PRIOR TO CONSTRUCTION. SEE SHEET 05.00 FOR 1-888-344-7233.



NO.	ISSUED FOR CONSTRUCTION	DATE	BY
01	ISSUED FOR CONSTRUCTION	08/11/11	J.P.B.
EVERSOURCE ENERGY			
PLAN AND PROFILE STA. 70+00 TO 75+00			
WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT			
115KV UNDERGROUND TRANSMISSION LINE			
NEEDHAM - WEST ROXBURY, MASSACHUSETTS			
SCALE: Vertical 1"=5'	DATE: 08/11/11	PROJECT NO: 17 OF 41	8
11"=20' v. 1"=5'	08/11/11	17 OF 41	8




POWER ENGINEERS
 REGISTERED PROFESSIONAL ENGINEERS
 MASSACHUSETTS 811
 TOLL FREE
 811 or 1-888-344-7233

NOTES:
 1. THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHS, RECORD DRAWINGS AND OTHER AVAILABLE RECORDS. THE CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH AND CHARACTER OF ALL UTILITIES THROUGHOUT THE PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY RECORDS AND PERMITS FROM THE APPROPRIATE AGENCIES. SEE SPECIFICATIONS AND LOCAL ORDINANCES.
 2. PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN SUPERIMPOSED FROM TOWN OF NEEDHAM AND TOWN OF BAKER STREET. THE CONTRACTOR SHALL VERIFY THE LOCATION AND CHARACTER OF ALL UTILITIES THROUGHOUT THE PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY RECORDS AND PERMITS FROM THE APPROPRIATE AGENCIES. SEE SPECIFICATIONS AND LOCAL ORDINANCES.

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PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN SUPERIMPOSED FROM TOWN OF NEEDHAM AND TOWN OF BAKER STREET. THE CONTRACTOR SHALL VERIFY THE LOCATION AND CHARACTER OF ALL UTILITIES THROUGHOUT THE PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY RECORDS AND PERMITS FROM THE APPROPRIATE AGENCIES. SEE SPECIFICATIONS AND LOCAL ORDINANCES.

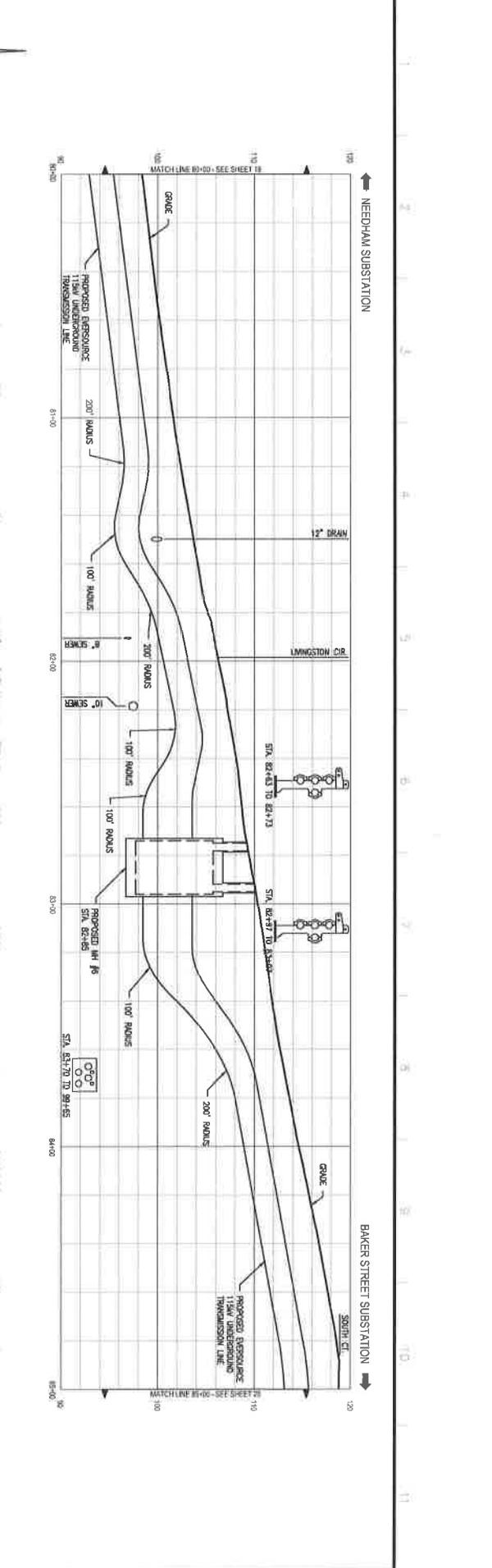
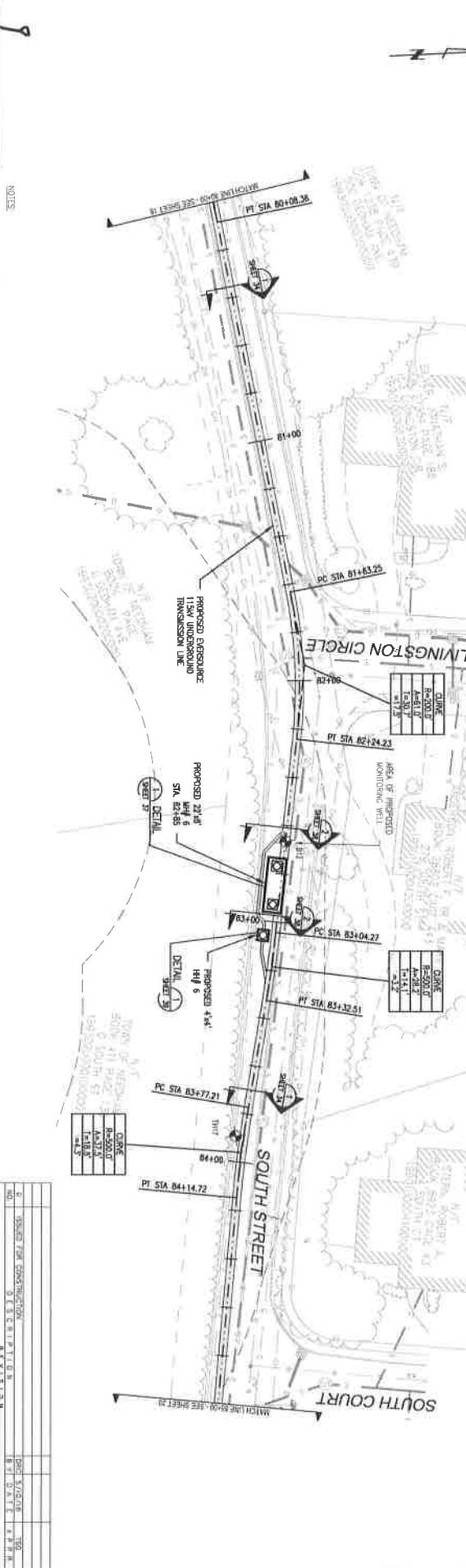
THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHS, RECORD DRAWINGS AND OTHER AVAILABLE RECORDS. THE CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH AND CHARACTER OF ALL UTILITIES THROUGHOUT THE PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY RECORDS AND PERMITS FROM THE APPROPRIATE AGENCIES. SEE SPECIFICATIONS AND LOCAL ORDINANCES.

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NO.	REVISION	DATE	BY	CHKD.
1	ISSUED FOR CONSTRUCTION	5/11/18

EVERSOURCE ENERGY
 PLAN AND PROFILE STA. 83+00 TO 85+00
 WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 115kV UNDERGROUND TRANSMISSION LINE
 NEEDHAM - WEST ROXBURY, MASSACHUSETTS
 DATE: 5/10/18
 SCALE: AS SHOWN
 SHEET: 19 OF 41

SCALE: 1"=20' HORIZONTALLY, 1"=5' VERTICALLY
 DATE: 5/10/18
 SHEET: 19 OF 41

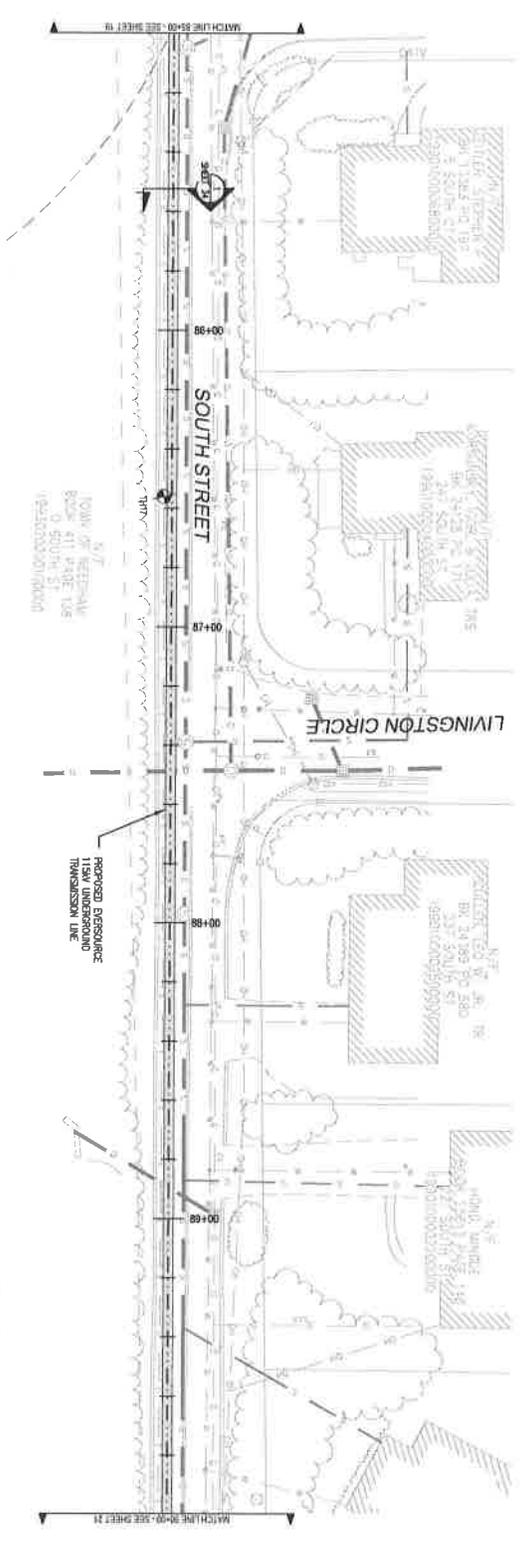
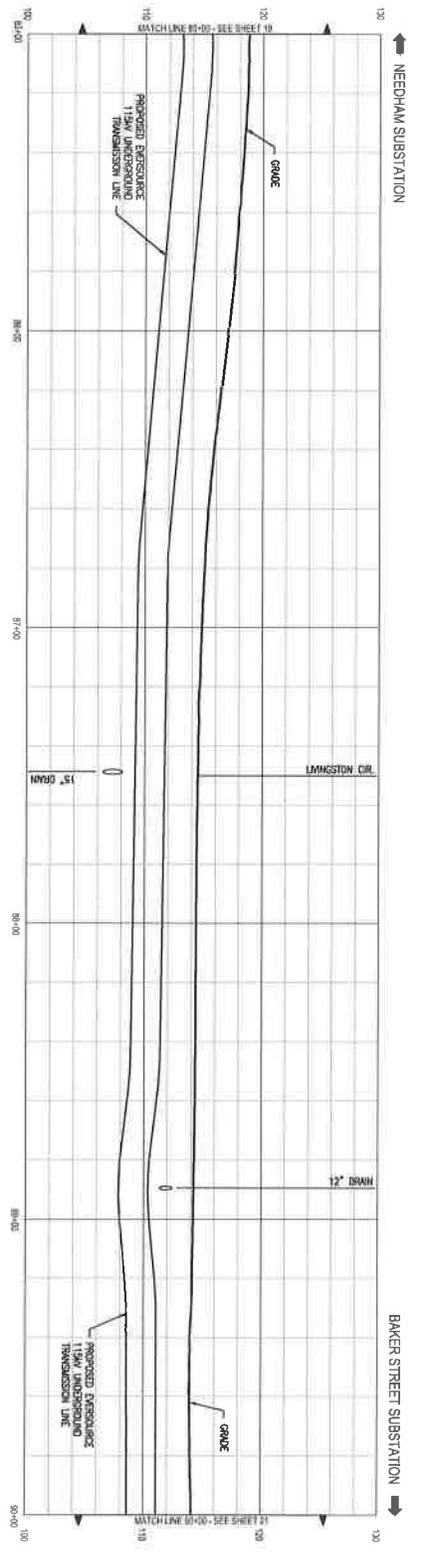
PROJECT: WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 115kV UNDERGROUND TRANSMISSION LINE
 NEEDHAM - WEST ROXBURY, MASSACHUSETTS
 DATE: 5/10/18
 SHEET: 19 OF 41

PROJECT: WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 115kV UNDERGROUND TRANSMISSION LINE
 NEEDHAM - WEST ROXBURY, MASSACHUSETTS
 DATE: 5/10/18
 SHEET: 19 OF 41

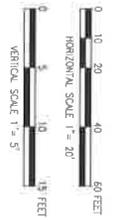
PROJECT: WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 115kV UNDERGROUND TRANSMISSION LINE
 NEEDHAM - WEST ROXBURY, MASSACHUSETTS
 DATE: 5/10/18
 SHEET: 19 OF 41

PROJECT: WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 115kV UNDERGROUND TRANSMISSION LINE
 NEEDHAM - WEST ROXBURY, MASSACHUSETTS
 DATE: 5/10/18
 SHEET: 19 OF 41

PROJECT: WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 115kV UNDERGROUND TRANSMISSION LINE
 NEEDHAM - WEST ROXBURY, MASSACHUSETTS
 DATE: 5/10/18
 SHEET: 19 OF 41



- NOTES**
1. THE UTILITY DATA WERE OBTAINED FROM THE RECORD DRAWING AND FIELD SURVEY. THE CONSTRUCTION SHALL VERIFY THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG - 1-888-344-7233.
 2. PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN OBTAINED FROM THE TOWN OF NEEDHAM AND THE TOWN OF BOSTON. THE CONSTRUCTION SHALL VERIFY THE LOCATION OF BOUNDARIES AND ADJACENT PROPERTY IN CONSULTATION WITH OWNERS/AGENTS LOCATED IN THE FIELD.



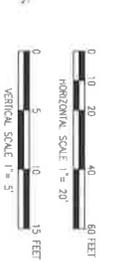
EVERSOURCE ENERGY	
PROJECT NO. 155457 FOR CONSTRUCTION	DATE 5/19/18
PROJECT NAME WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT	DRAWING NO. 20 OF 41
PROJECT LOCATION NEEDHAM - WEST ROXBURY, MASSACHUSETTS	SHEET NO. 20 OF 41
DATE 5/10/18	DRAWING NO. 20 OF 41
SCALE HORIZONTAL 1" = 20' VERTICAL 1" = 5'	PROJECT NO. 155457

THESE SERVICES HAVE BEEN PROVIDED BY OUR FIRM, EVERSOURCE ENGINEERS, INC., A PROFESSIONAL ENGINEERING FIRM IN THE STATE OF MASSACHUSETTS. CALL BEFORE YOU DIG - 1-888-344-7233.



THE UTILITIES SHOWN ARE BASED ON FIELD SURVEY, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES SHOWN ARE NOT GUARANTEED. THE EXACT LOCATION, DEPTH, HORIZONTAL AND VERTICAL OF ALL UTILITIES IS TO BE DETERMINED BY FIELD SURVEY. THE ENGINEER SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED IN THIS PLAN. THE ENGINEER SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED IN THIS PLAN. THE ENGINEER SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED IN THIS PLAN.

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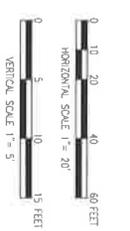
NO.	DESCRIPTION	DATE	BY	CHKD.
0	ISSUED FOR CONSTRUCTION	5/10/20	BRV	DRM
1	DESIGN	5/10/20	BRV	DRM
2	REVISED			
3	REVISED			
4	REVISED			
5	REVISED			
6	REVISED			
7	REVISED			
8	REVISED			
9	REVISED			
10	REVISED			

EVERSOURCE ENERGY
 PLANNING AND PROJECTS DIVISION
 WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 NEEDHAM WEST ROXBURY, MASSACHUSETTS
 SCALE: VERTICAL SCALE 1" = 5'
 HORIZONTAL SCALE 1" = 20'
 DATE: 5/10/20
 DRAWN BY: BRV
 CHECKED BY: DRM
 PROJECT NO.: 115W-UR-20-001
 SHEET NO.: 811 OF 11

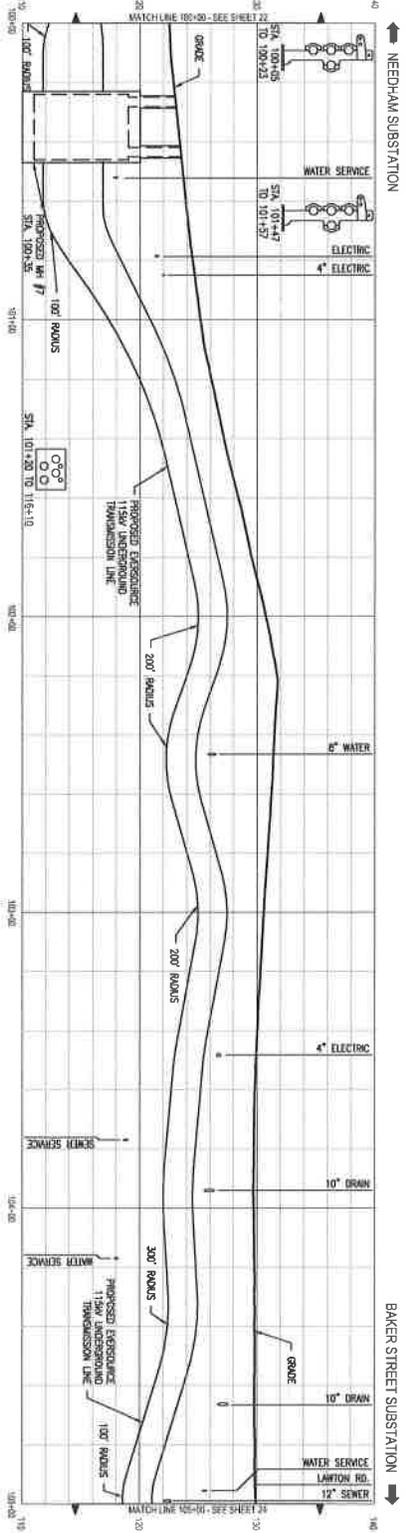
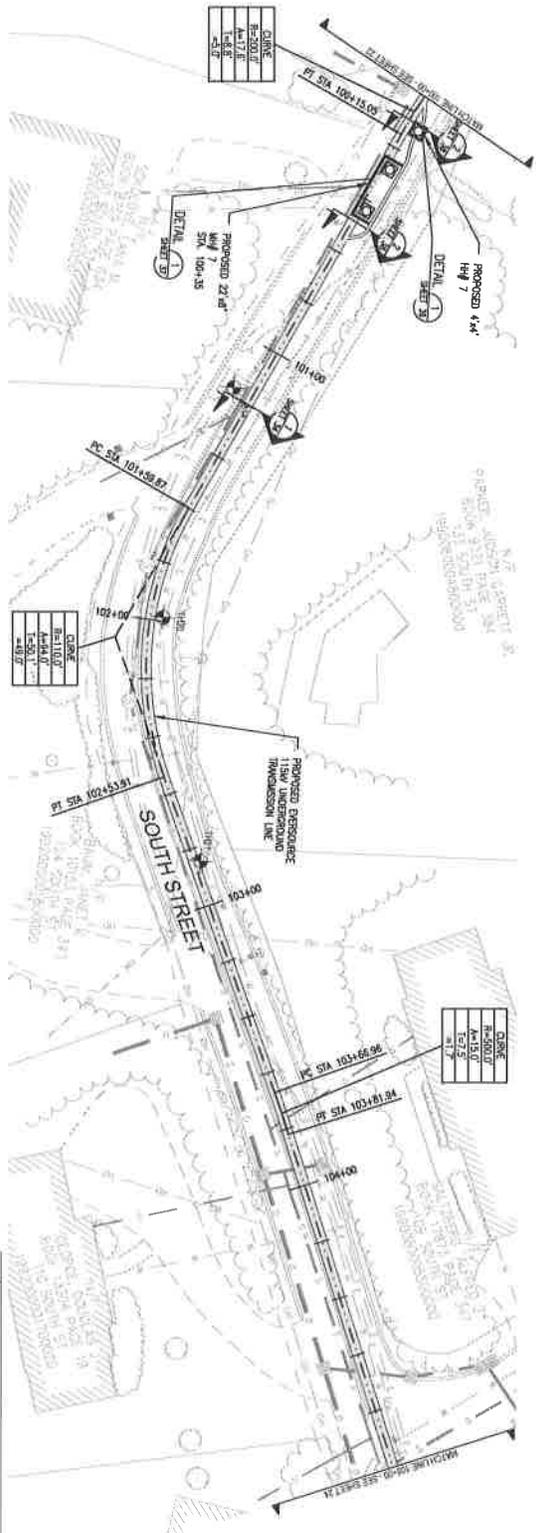


THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEY, AERIAL PHOTOGRAPHS, RECORD DRAWINGS, AND OTHER AVAILABLE INFORMATION. THE EXACT LOCATION, DEPTH, AND VERTICAL ALIGNMENT OF ALL UTILITIES IS NOT KNOWN. THE ENGINEER HAS CONDUCTED VISUAL SURVEY OF THE EXISTING UTILITIES LOCATED IN THE FIELD. THE ENGINEER HAS NOT CONDUCTED ANY TESTS TO VERIFY THE LOCATION, DEPTH, OR VERTICAL ALIGNMENT OF THE UTILITIES SHOWN ON THIS PLAN. THE ENGINEER HAS NOT CONDUCTED ANY TESTS TO VERIFY THE LOCATION, DEPTH, OR VERTICAL ALIGNMENT OF THE UTILITIES SHOWN ON THIS PLAN. THE ENGINEER HAS NOT CONDUCTED ANY TESTS TO VERIFY THE LOCATION, DEPTH, OR VERTICAL ALIGNMENT OF THE UTILITIES SHOWN ON THIS PLAN.

- NOTES:
- THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEY, AERIAL PHOTOGRAPHS, RECORD DRAWINGS, AND OTHER AVAILABLE INFORMATION. THE EXACT LOCATION, DEPTH, AND VERTICAL ALIGNMENT OF ALL UTILITIES IS NOT KNOWN. THE ENGINEER HAS CONDUCTED VISUAL SURVEY OF THE EXISTING UTILITIES LOCATED IN THE FIELD. THE ENGINEER HAS NOT CONDUCTED ANY TESTS TO VERIFY THE LOCATION, DEPTH, OR VERTICAL ALIGNMENT OF THE UTILITIES SHOWN ON THIS PLAN. THE ENGINEER HAS NOT CONDUCTED ANY TESTS TO VERIFY THE LOCATION, DEPTH, OR VERTICAL ALIGNMENT OF THE UTILITIES SHOWN ON THIS PLAN. THE ENGINEER HAS NOT CONDUCTED ANY TESTS TO VERIFY THE LOCATION, DEPTH, OR VERTICAL ALIGNMENT OF THE UTILITIES SHOWN ON THIS PLAN.
 - PROPERTY OWNERS AND TOWN WAYS HAVE BEEN NOTIFIED BY MAIL OF THE LOCATION AND DEPTH OF THE UTILITIES SHOWN ON THIS PLAN. THE ENGINEER HAS NOT CONDUCTED ANY TESTS TO VERIFY THE LOCATION, DEPTH, OR VERTICAL ALIGNMENT OF THE UTILITIES SHOWN ON THIS PLAN. THE ENGINEER HAS NOT CONDUCTED ANY TESTS TO VERIFY THE LOCATION, DEPTH, OR VERTICAL ALIGNMENT OF THE UTILITIES SHOWN ON THIS PLAN. THE ENGINEER HAS NOT CONDUCTED ANY TESTS TO VERIFY THE LOCATION, DEPTH, OR VERTICAL ALIGNMENT OF THE UTILITIES SHOWN ON THIS PLAN.

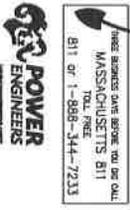


NO.	DESCRIPTION	DATE	BY
01	ISSUED FOR CONSTRUCTION	5/10/18	RS
EVERSOURCE ENERGY			
WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT			
NEEDHAM - WEST ROXBURY, MASSACHUSETTS			
SCALE: SHEET NUMBER	DATE	BY	REVISION
10145	5/10/18	RS	1



NEEDHAM SUBSTATION

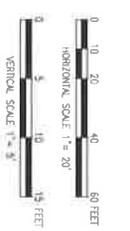
BAKER STREET SUBSTATION



WEED BARRAGE DATE BEFORE YOU OR CALL MASSACHUSETTS 811 TOLL FREE 1-888-344-7233

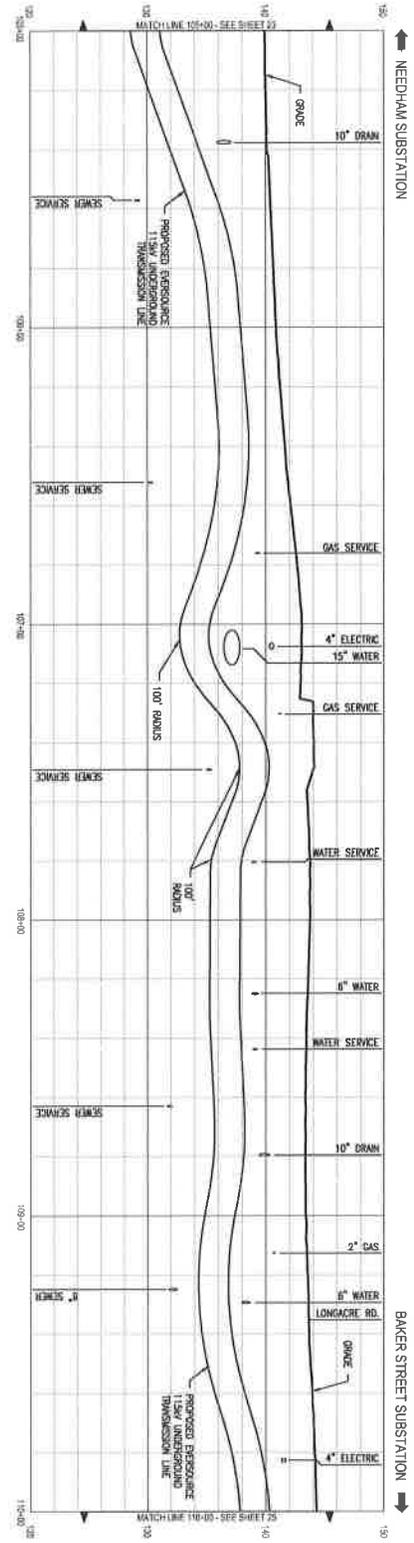
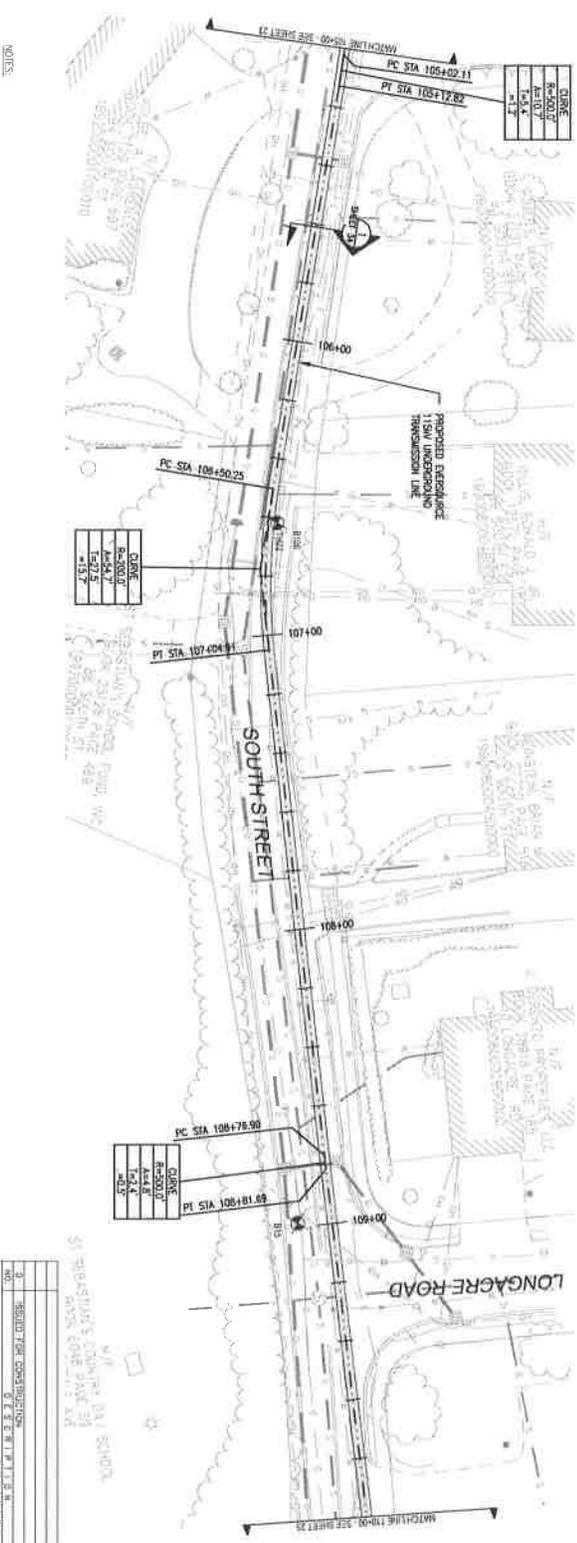
NOTES:
 1. THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHS AND RECORD DRAWINGS. THE EXACT LOCATION, SIZE, DEPTH AND VERTICAL ALIGNMENT OF ALL UTILITIES SHALL BE DETERMINED BY FIELD SURVEY. THE ENGINEER SHALL BE RESPONSIBLE FOR THE LOCATION OF ALL UTILITIES. THE ENGINEER SHALL BE RESPONSIBLE FOR THE LOCATION OF ALL UTILITIES. THE ENGINEER SHALL BE RESPONSIBLE FOR THE LOCATION OF ALL UTILITIES.

2. PROPOSED ROADS AND TOWNS MAPS ARE NOT TO BE CONSIDERED AS A BASIS FOR THE DESIGN OF THE TOWNS MAPS. THE TOWNS MAPS WILL BE REVISIONED TO REFLECT THE PROPOSED ROADS AND TOWNS MAPS. THE TOWNS MAPS WILL BE REVISIONED TO REFLECT THE PROPOSED ROADS AND TOWNS MAPS.



NO.	REVISION	DATE
1	ISSUED FOR CONSTRUCTION	05/07/19
2	DESIGN REVISIONS	05/07/19
3	REVISED FOR CONSTRUCTION	05/07/19

SCALE: HORIZONTAL SCALE 1" = 20' VERTICAL SCALE 1" = 5'

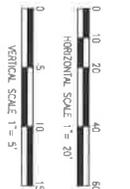


EVERSOURCE ENERGY
 WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 115KV UNDERGROUND TRANSMISSION LINE
 NEEDHAM WEST ROXBURY, MASSACHUSETTS

POWER ENGINEERS
 811 or 1-888-344-7233
 MASSACHUSETTS 811
 TOLL FREE
 811 or 1-888-344-7233

NOTES:

- THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEY DATA. THE EXACT LOCATION, SIZE, DEPTH, AND VERTICAL OF ALL UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. SEE SHEETS 110-00 TO 115-00 FOR ADDITIONAL NOTES.
- REPORTS, RECORDS, AND DRAWINGS HAVE BEEN SUPPLIED FROM THE FIELD OF RECORD AS AND ARE NOT BASED ON A DETAILED SURVEY. REPRODUCED PLANS AND PROFILES ARE THE PROPERTY OF POWER ENGINEERS. NO PARTS OR PORTIONS OF THIS DRAWING SHALL BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT PERMISSION IN WRITING FROM POWER ENGINEERS.



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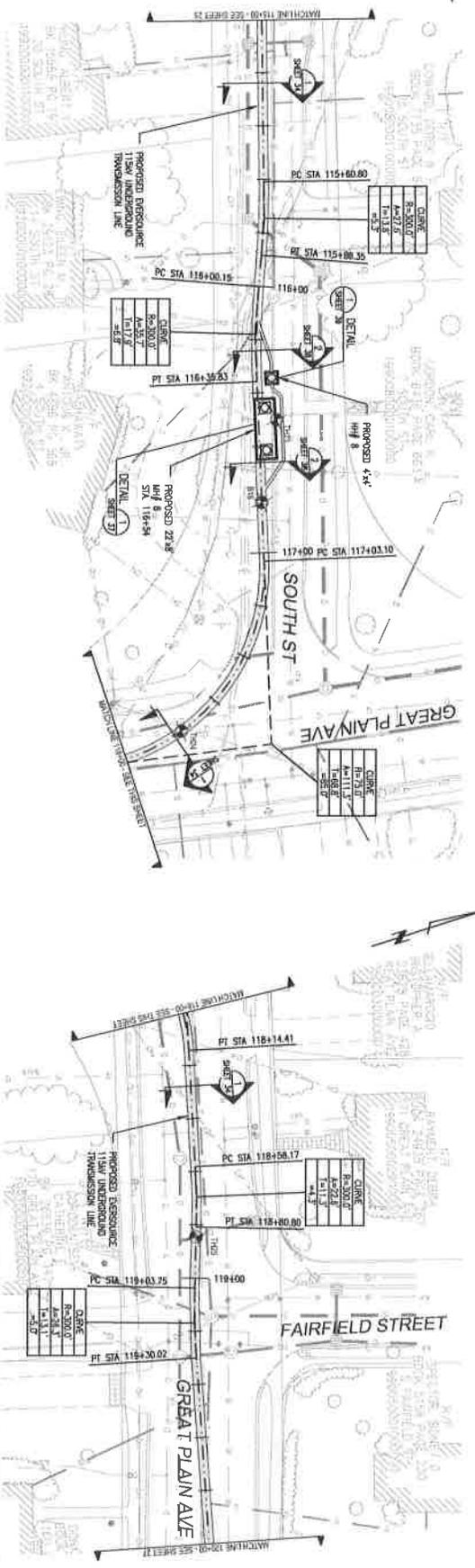
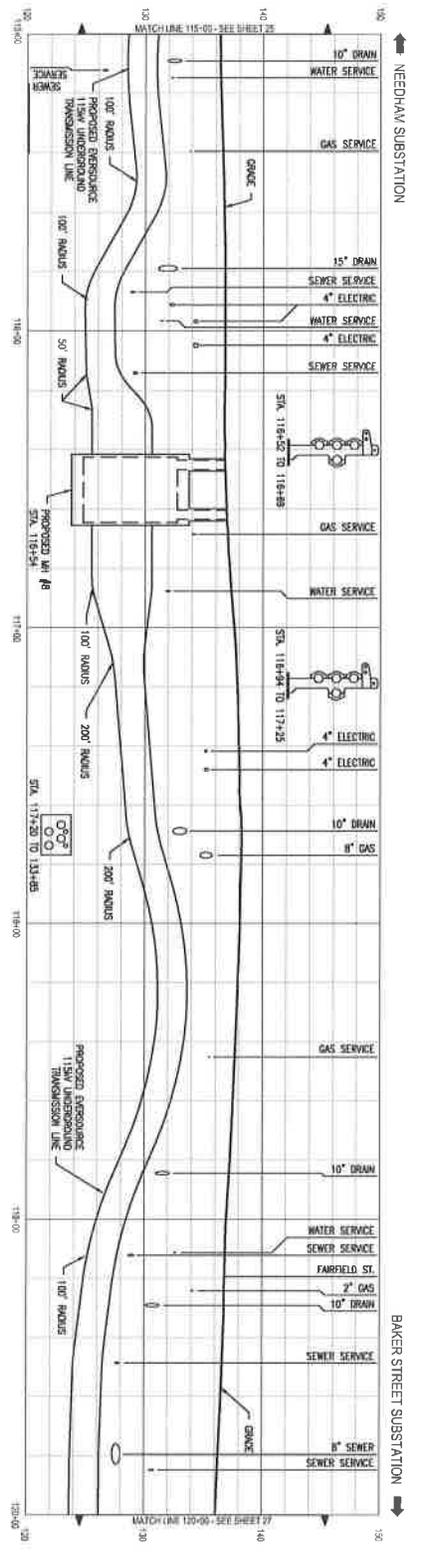
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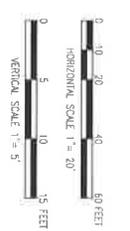
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- NOTES:**
1. THE UTILITIES SHOWN WERE NOT BASED ON DATA OBTAINED FROM THE FIELD. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES THROUGHOUT THE PROJECT. THE CONTRACTOR SHALL VERIFY THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG - 1-888-344-7233.
 2. PROPOSED MANHOLES AND TRENCHES SHALL BE CONSTRUCTED TO THE DEPTH OF THE UNDERGROUND TRANSMISSION LINE. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES THROUGHOUT THE PROJECT. THE CONTRACTOR SHALL VERIFY THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG - 1-888-344-7233.



NO.	REVISION	DATE
1	ISSUED FOR CONSTRUCTION	05/10/18
2	REVISED FOR FIELD	05/10/18

EVERSOURCE ENERGY

PLANNING AND PROJECTS DIVISION
 WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 115kV UNDERGROUND TRANSMISSION LINE
 NEEDHAM - WEST ROXBURY, MASSACHUSETTS

DATE: 05/10/18
 DRAWN: C. DICKINSON
 CHECKED: J. B. BROWN
 SCALE: 1" = 20' V, 1" = 5' H

NEEDHAM SUBSTATION

BAKER STREET SUBSTATION

POWER ENGINEERS

MASSACHUSETTS 811

811 or 1-888-344-7233

THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AS NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, DEPTH, HORIZONTAL AND VERTICAL, OF ALL UTILITIES. THE CONTRACTOR SHALL VERIFY THE EXISTING UTILITIES THROUGH FIELD SURVEYS. SEE SHEET 100-00-1 FOR THE PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN SPICED FROM THE TOWN RECORDS. THE BOUNDARIES OF THE TOWN MAPS SHALL BE THE BOUNDARIES SHOWN ON THE TOWN MAPS. THE BOUNDARIES SHOWN ON THE TOWN MAPS SHALL BE THE BOUNDARIES SHOWN ON THE TOWN MAPS.

NOTES:
 1. THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AS NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, DEPTH, HORIZONTAL AND VERTICAL, OF ALL UTILITIES. THE CONTRACTOR SHALL VERIFY THE EXISTING UTILITIES THROUGH FIELD SURVEYS. SEE SHEET 100-00-1 FOR THE PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN SPICED FROM THE TOWN RECORDS. THE BOUNDARIES OF THE TOWN MAPS SHALL BE THE BOUNDARIES SHOWN ON THE TOWN MAPS. THE BOUNDARIES SHOWN ON THE TOWN MAPS SHALL BE THE BOUNDARIES SHOWN ON THE TOWN MAPS.

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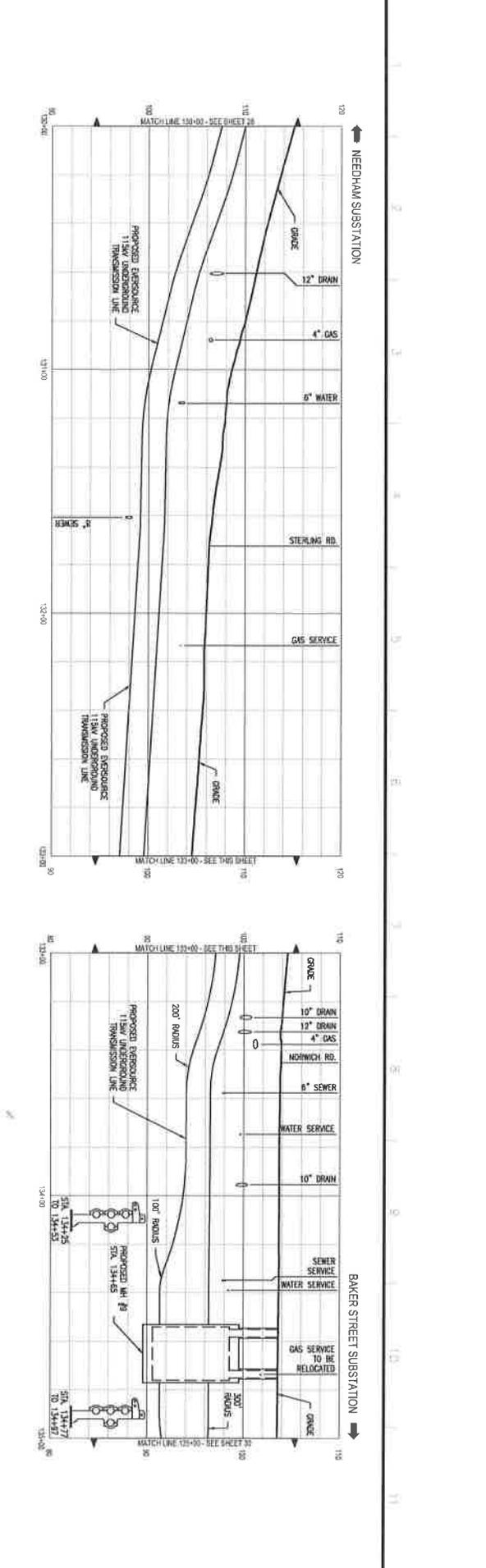
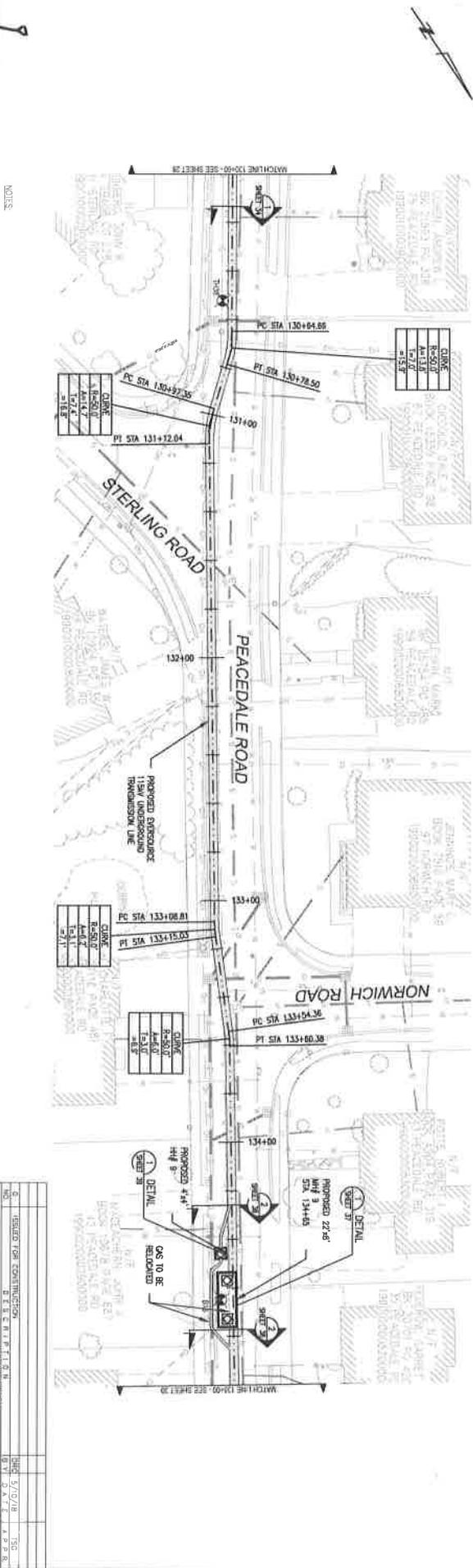
4. THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AS NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, DEPTH, HORIZONTAL AND VERTICAL, OF ALL UTILITIES. THE CONTRACTOR SHALL VERIFY THE EXISTING UTILITIES THROUGH FIELD SURVEYS. SEE SHEET 100-00-1 FOR THE PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN SPICED FROM THE TOWN RECORDS. THE BOUNDARIES OF THE TOWN MAPS SHALL BE THE BOUNDARIES SHOWN ON THE TOWN MAPS. THE BOUNDARIES SHOWN ON THE TOWN MAPS SHALL BE THE BOUNDARIES SHOWN ON THE TOWN MAPS.

5. THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AS NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, DEPTH, HORIZONTAL AND VERTICAL, OF ALL UTILITIES. THE CONTRACTOR SHALL VERIFY THE EXISTING UTILITIES THROUGH FIELD SURVEYS. SEE SHEET 100-00-1 FOR THE PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN SPICED FROM THE TOWN RECORDS. THE BOUNDARIES OF THE TOWN MAPS SHALL BE THE BOUNDARIES SHOWN ON THE TOWN MAPS. THE BOUNDARIES SHOWN ON THE TOWN MAPS SHALL BE THE BOUNDARIES SHOWN ON THE TOWN MAPS.

6. THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AS NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, DEPTH, HORIZONTAL AND VERTICAL, OF ALL UTILITIES. THE CONTRACTOR SHALL VERIFY THE EXISTING UTILITIES THROUGH FIELD SURVEYS. SEE SHEET 100-00-1 FOR THE PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN SPICED FROM THE TOWN RECORDS. THE BOUNDARIES OF THE TOWN MAPS SHALL BE THE BOUNDARIES SHOWN ON THE TOWN MAPS. THE BOUNDARIES SHOWN ON THE TOWN MAPS SHALL BE THE BOUNDARIES SHOWN ON THE TOWN MAPS.

7. THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AS NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, DEPTH, HORIZONTAL AND VERTICAL, OF ALL UTILITIES. THE CONTRACTOR SHALL VERIFY THE EXISTING UTILITIES THROUGH FIELD SURVEYS. SEE SHEET 100-00-1 FOR THE PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN SPICED FROM THE TOWN RECORDS. THE BOUNDARIES OF THE TOWN MAPS SHALL BE THE BOUNDARIES SHOWN ON THE TOWN MAPS. THE BOUNDARIES SHOWN ON THE TOWN MAPS SHALL BE THE BOUNDARIES SHOWN ON THE TOWN MAPS.

8. THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AS NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, DEPTH, HORIZONTAL AND VERTICAL, OF ALL UTILITIES. THE CONTRACTOR SHALL VERIFY THE EXISTING UTILITIES THROUGH FIELD SURVEYS. SEE SHEET 100-00-1 FOR THE PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN SPICED FROM THE TOWN RECORDS. THE BOUNDARIES OF THE TOWN MAPS SHALL BE THE BOUNDARIES SHOWN ON THE TOWN MAPS. THE BOUNDARIES SHOWN ON THE TOWN MAPS SHALL BE THE BOUNDARIES SHOWN ON THE TOWN MAPS.



NO.	REVISION	DATE	BY	CHKD.	APP.
1	ISSUED FOR CONSTRUCTION	5/7/18	BVI	J.P.R.	T.S.G.

EVERSOURCE ENERGY
 WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 11.5W UNDERGROUND TRANSMISSION LINE
 NEEDHAM WEST ROXBURY, MASSACHUSETTS

SCALE: unless noted DATE: 5/7/18 DRAWN: BVI
 PROJECT NO.: 100-00-1 SHEET NO.: 100-00-1-100

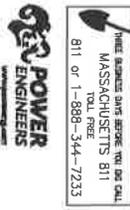
DATE: 5/7/18
 DRAWN: BVI
 PROJECT NO.: 100-00-1
 SHEET NO.: 100-00-1-100

DATE: 5/7/18
 DRAWN: BVI
 PROJECT NO.: 100-00-1
 SHEET NO.: 100-00-1-100

DATE: 5/7/18
 DRAWN: BVI
 PROJECT NO.: 100-00-1
 SHEET NO.: 100-00-1-100

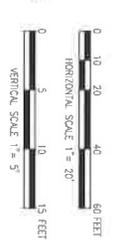
DATE: 5/7/18
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 PROJECT NO.: 100-00-1
 SHEET NO.: 100-00-1-100

DATE: 5/7/18
 DRAWN: BVI
 PROJECT NO.: 100-00-1
 SHEET NO.: 100-00-1-100



THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEY DATA DISCOVERED THROUGH THE NEEDHAM CHECK. THE CONVICTION SHALL VERIFY THE EXACT LOCATION, SIZE, HORIZONTAL AND VERTICAL OF ALL UTILITIES. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, SIZE, HORIZONTAL AND VERTICAL OF ALL UTILITIES. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, SIZE, HORIZONTAL AND VERTICAL OF ALL UTILITIES. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, SIZE, HORIZONTAL AND VERTICAL OF ALL UTILITIES.

PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN SUPERIMPOSED FROM TOWN OF NEEDHAM AND ARE NOT BASED ON A DEDICATED SURVEY. ADDED PLANS OF RECORDS OF RECORDS AND ADJACENT PROPERTY IN CONSIDERATION WITH MONUMENTS LOCATED IN THE FIELD.



NO.	REVISION	DATE
1	ISSUED FOR CONSTRUCTION	05/12/18
2	REVISED FOR CONSTRUCTION	05/12/18
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4	REVISED FOR CONSTRUCTION	05/12/18
5	REVISED FOR CONSTRUCTION	05/12/18
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8	REVISED FOR CONSTRUCTION	05/12/18
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10	REVISED FOR CONSTRUCTION	05/12/18

EVERSOURCE ENERGY
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 WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 T15V UNDERGROUND TRANSMISSION LINE
 NEEDHAM - WEST ROXBURY, MASSACHUSETTS

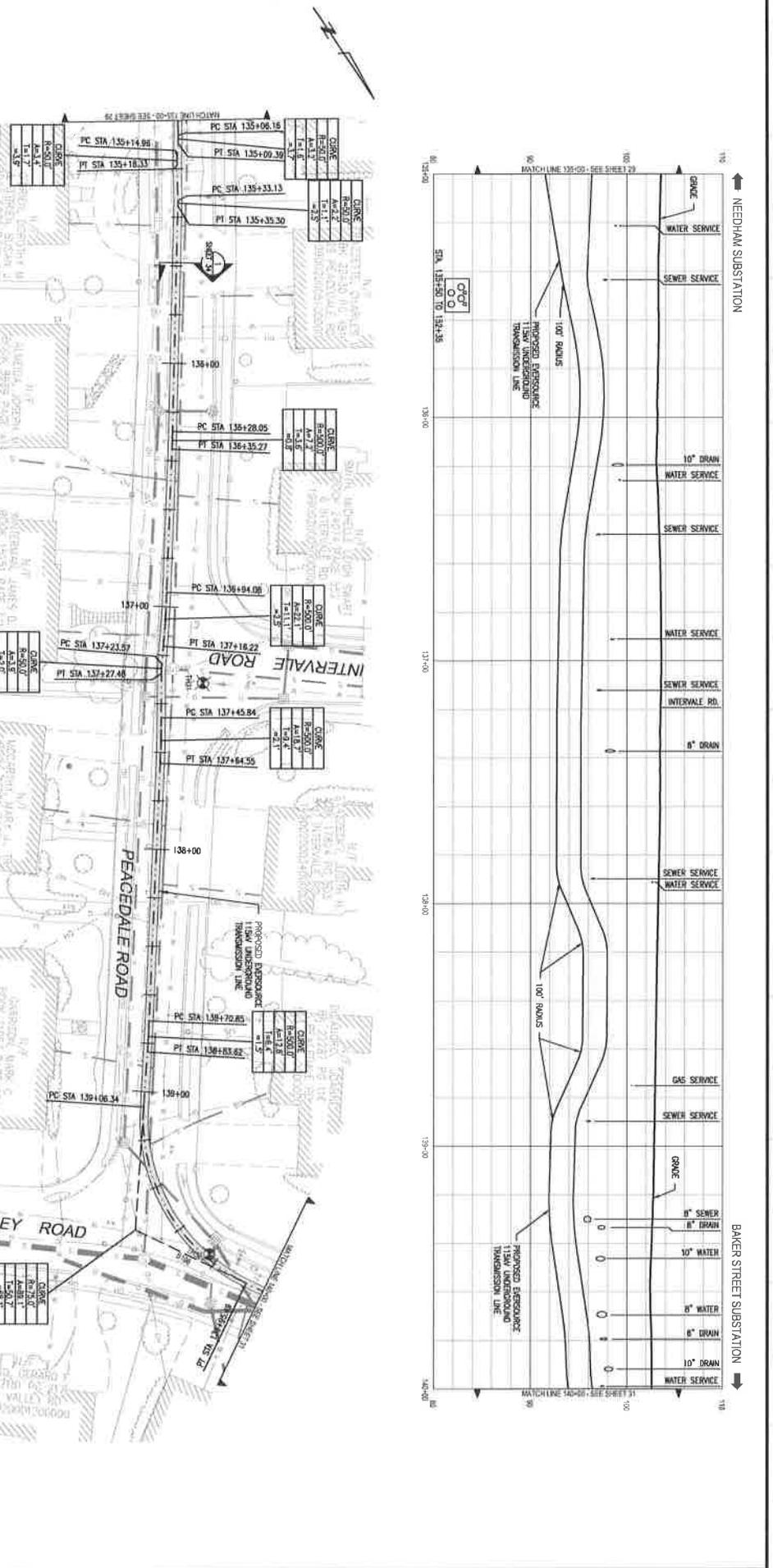
DATE: 05/12/18
 DRAWN: C. O'CONNOR
 CHECKED: J. O'CONNOR
 SCALE: 1" = 20' HORIZONTAL, 1" = 5' VERTICAL

PROJECT: WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 T15V UNDERGROUND TRANSMISSION LINE
 NEEDHAM - WEST ROXBURY, MASSACHUSETTS

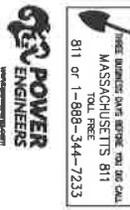
PROJECT: WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 T15V UNDERGROUND TRANSMISSION LINE
 NEEDHAM - WEST ROXBURY, MASSACHUSETTS

PROJECT: WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 T15V UNDERGROUND TRANSMISSION LINE
 NEEDHAM - WEST ROXBURY, MASSACHUSETTS

PROJECT: WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 T15V UNDERGROUND TRANSMISSION LINE
 NEEDHAM - WEST ROXBURY, MASSACHUSETTS



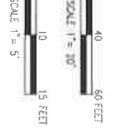
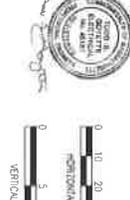
NO.	REVISION	DATE
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2	REVISED FOR CONSTRUCTION	05/12/18
3	REVISED FOR CONSTRUCTION	05/12/18
4	REVISED FOR CONSTRUCTION	05/12/18
5	REVISED FOR CONSTRUCTION	05/12/18
6	REVISED FOR CONSTRUCTION	05/12/18
7	REVISED FOR CONSTRUCTION	05/12/18
8	REVISED FOR CONSTRUCTION	05/12/18
9	REVISED FOR CONSTRUCTION	05/12/18
10	REVISED FOR CONSTRUCTION	05/12/18



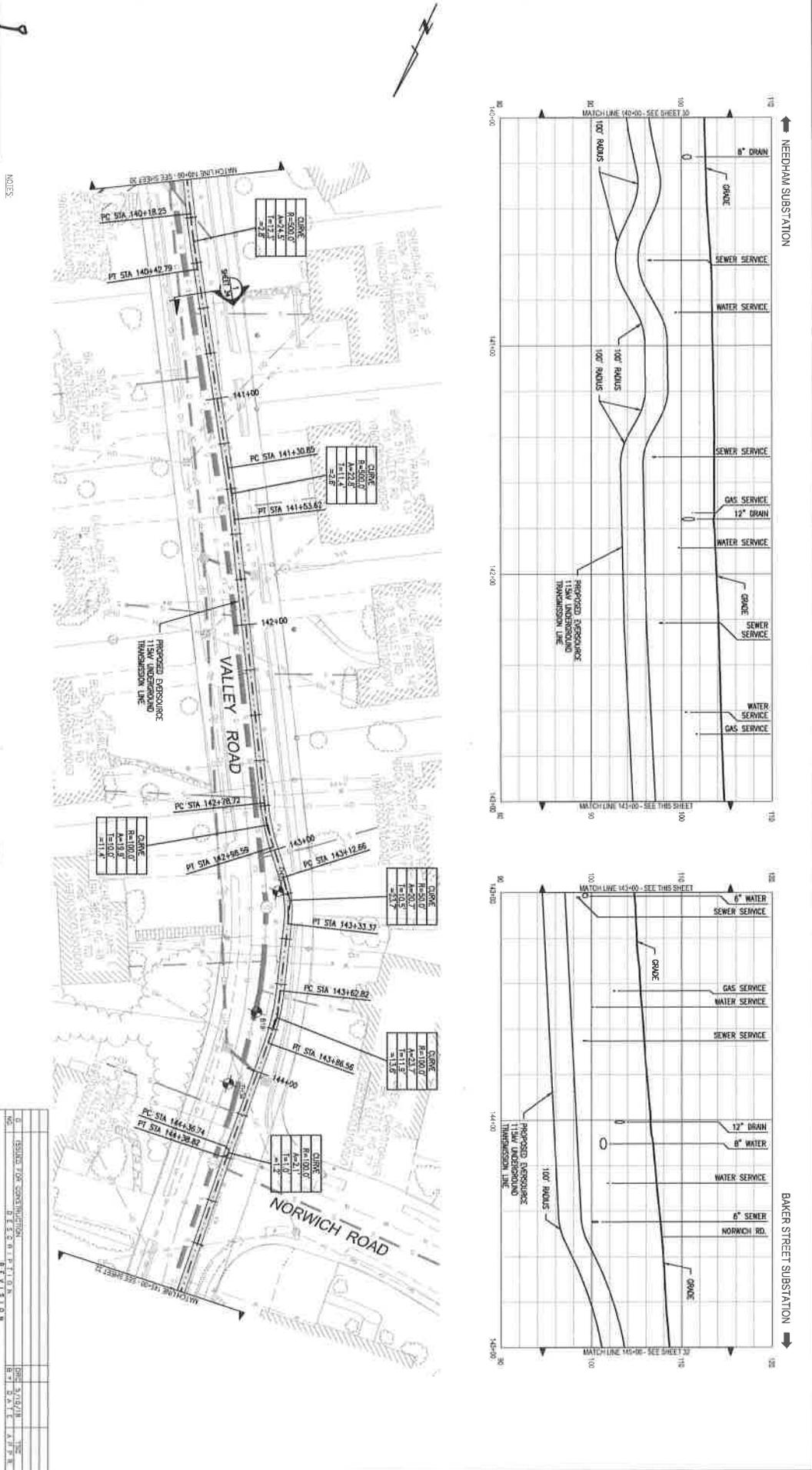
THESE DRAWINGS HAVE BEEN PREPARED BY THE ENGINEER OR ARCHITECT AND ARE NOT TO BE USED FOR ANY OTHER PROJECT WITHOUT THE WRITTEN CONSENT OF THE ENGINEER OR ARCHITECT. THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS, HORIZONTAL AND VERTICAL, OF ALL UTILITIES AND RECORD THEM ON THE DRAWINGS. THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS, HORIZONTAL AND VERTICAL, OF ALL UTILITIES AND RECORD THEM ON THE DRAWINGS. THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS, HORIZONTAL AND VERTICAL, OF ALL UTILITIES AND RECORD THEM ON THE DRAWINGS.

NOTES:
 1. THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEY DATA AND ARE NOT TO BE USED FOR ANY OTHER PROJECT WITHOUT THE WRITTEN CONSENT OF THE ENGINEER OR ARCHITECT. THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS, HORIZONTAL AND VERTICAL, OF ALL UTILITIES AND RECORD THEM ON THE DRAWINGS. THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS, HORIZONTAL AND VERTICAL, OF ALL UTILITIES AND RECORD THEM ON THE DRAWINGS.

2. PROPERTY BOUNDARIES AND TOWN LINES HAVE BEEN SHOWN FROM TOWN OF NEEDHAM AND ARE NOT TO BE USED FOR ANY OTHER PROJECT WITHOUT THE WRITTEN CONSENT OF THE ENGINEER OR ARCHITECT. THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS, HORIZONTAL AND VERTICAL, OF ALL UTILITIES AND RECORD THEM ON THE DRAWINGS. THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS, HORIZONTAL AND VERTICAL, OF ALL UTILITIES AND RECORD THEM ON THE DRAWINGS.



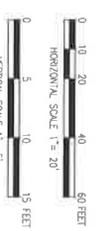
DATE	DESCRIPTION	BY	CHECKED
01/15/20	ISSUED FOR CONSTRUCTION	J. J. B. / J. J. B.	J. J. B. / J. J. B.
EVERSOURCE ENERGY			
PLAN AND PROFILE STA 140+00 TO 145+00			
WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT			
NEEDHAM - WEST ROXBURY, MASSACHUSETTS			
SCALE	DATE	BY	CHECKED
H: 1" = 30' V: 1" = 5'	01/15/20	J. J. B. / J. J. B.	J. J. B. / J. J. B.



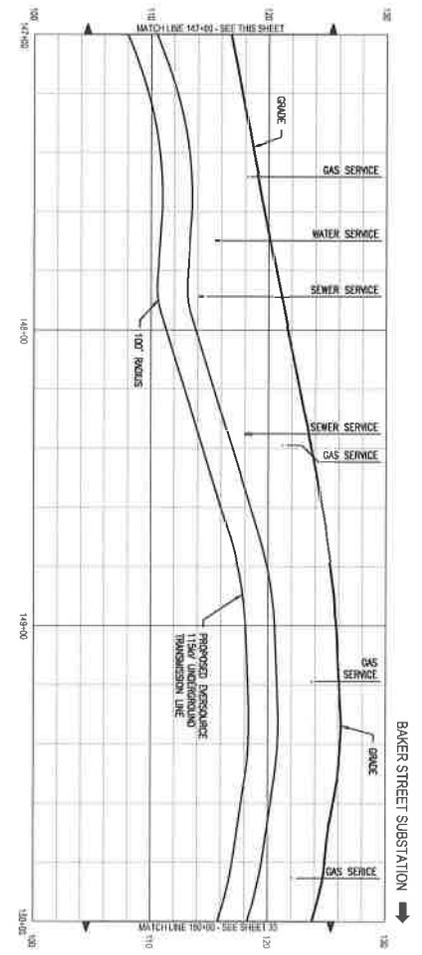
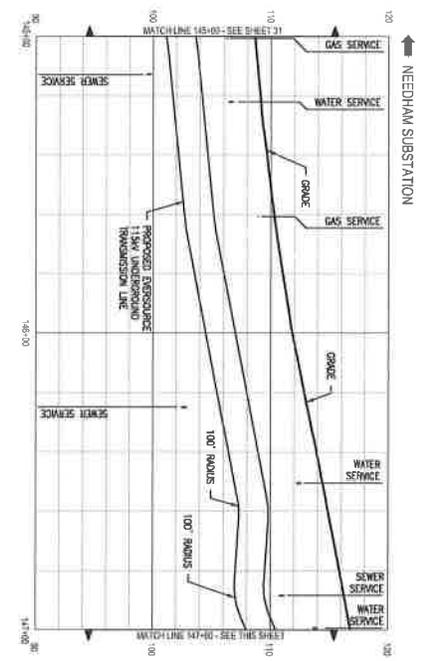
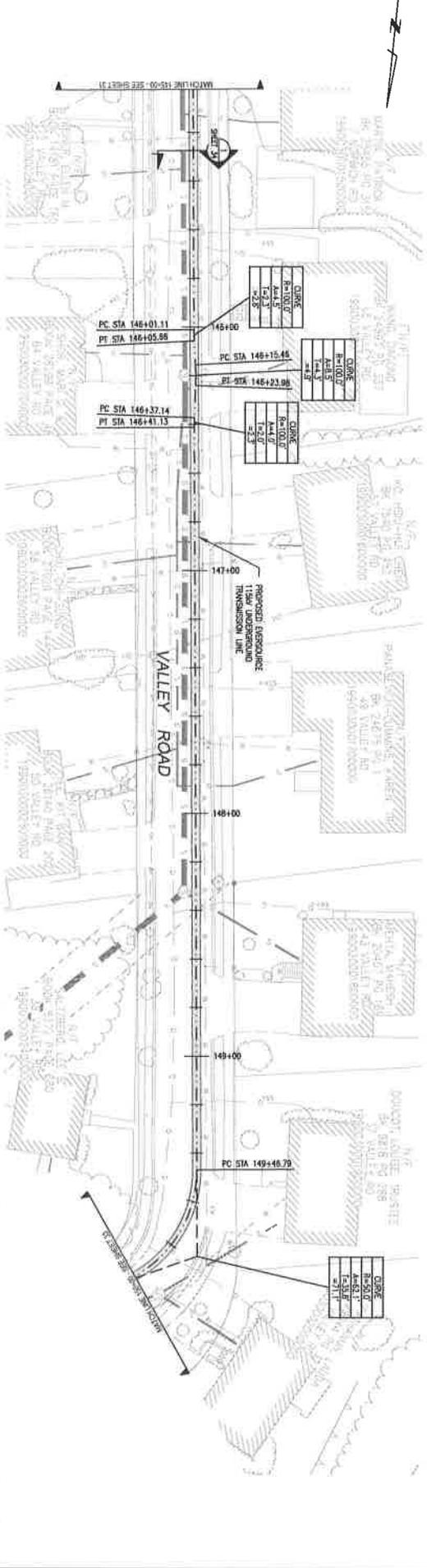


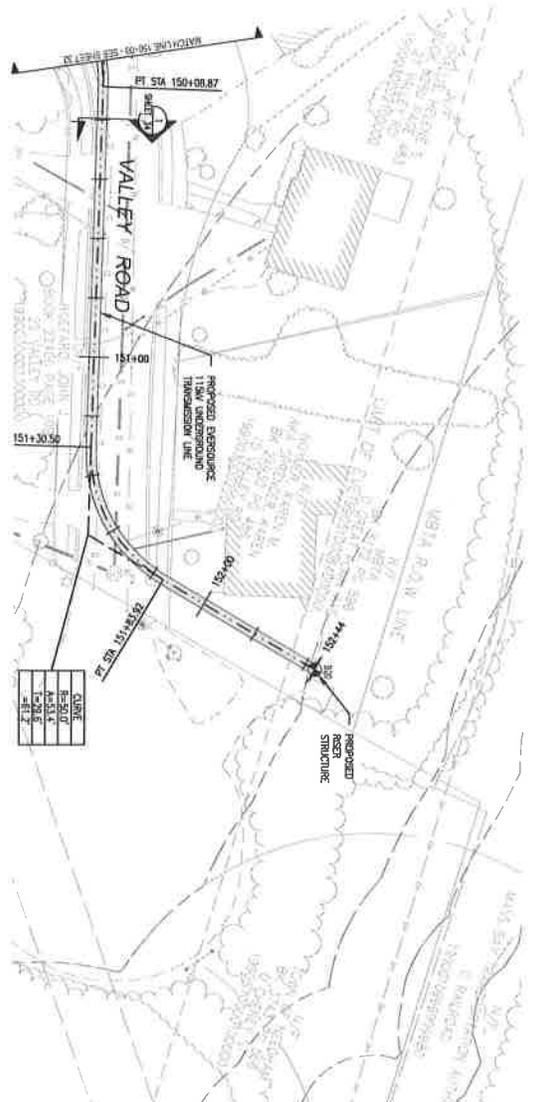
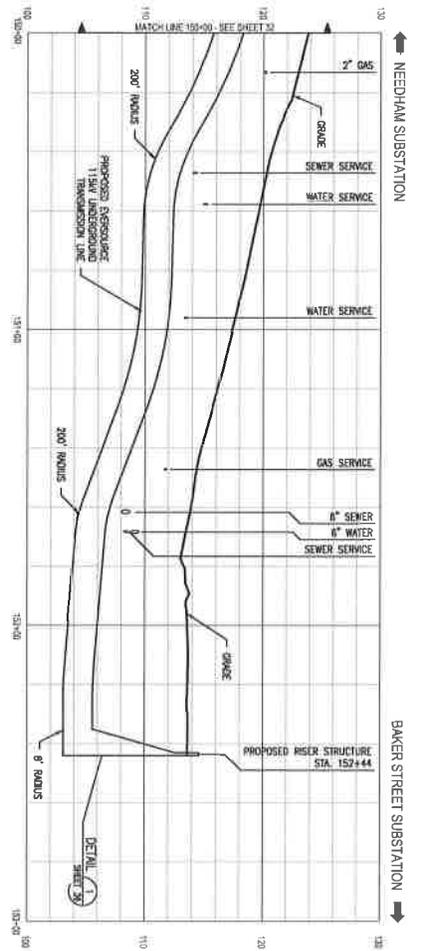
THESE SERVICES SHALL BE PROVIDED BY THE CALL MASSACHUSETTS 811 TOLL FREE 811 OR 1-888-344-7233

- NOTES**
- THE UTILITIES SHOWN HEREON ARE BASED ON THE UTILITIES RECORDS AND RECORD DRAWINGS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THROUGH THE APPROPRIATE UTILITY COMPANIES. SEE THE RECORD DRAWINGS FOR THE LOCATION AND DEPTH OF ALL UTILITIES.
 - PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN SUPERIMPOSED FROM TOWN OF NEEDHAM AND TOWN OF WEST ROXBURY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THROUGH THE APPROPRIATE UTILITY COMPANIES. SEE THE RECORD DRAWINGS FOR THE LOCATION AND DEPTH OF ALL UTILITIES.



0	ISSUED FOR CONSTRUCTION	DATE	5/10/20	SCALE	AS SHOWN
1	REVISED	DATE	5/10/20	SCALE	AS SHOWN
2	REVISED	DATE	5/10/20	SCALE	AS SHOWN
3	REVISED	DATE	5/10/20	SCALE	AS SHOWN
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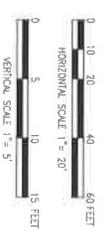




DATE	DESCRIPTION
5/10/18	REVISED FOR CONSTRUCTION
5/10/18	ISSUED FOR CONSTRUCTION

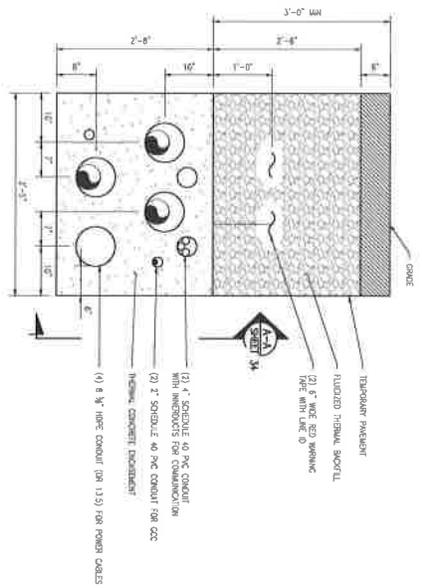
- NOTES
1. THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEY DATA. PROPERTY AND RECORD DOCUMENTS, OTHER FACILITIES MAY EXIST, NOT DISCLOSED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THROUGH THE APPLICABLE UTILITY COMPANIES' CALL BEFORE YOU GO - 1-888-544-7233.
 2. PROPERTY BOUNDARIES AND TOWN MAPS HAVE BEEN SURVEYED FROM TOWN OF NEEDHAM GIS AND ARE NOT BASED ON A GROUND SURVEY. ADJACENT PLANS AND RECORDS OF RECORDS AND ADJACENT PROPERTY IN CONSULTATION WITH RECORDS CHECKED IN THE FIELD.

POWER ENGINEERS
 MASSACHUSETTS 811
 TOLL FREE
 811 OR 1-888-544-7233

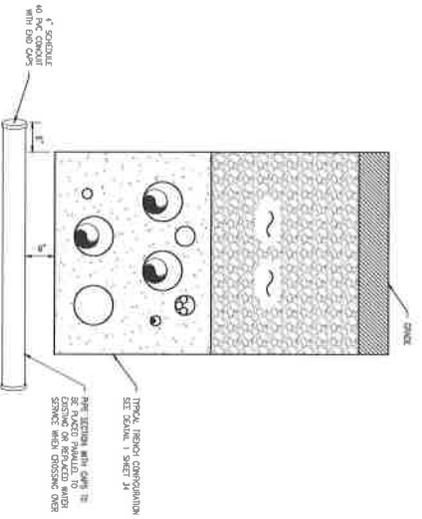


DATE	DESCRIPTION	BY	CHK
5/10/18	ISSUED FOR CONSTRUCTION	DRG	5/10/18
5/10/18	REVISED FOR CONSTRUCTION	DRG	5/10/18

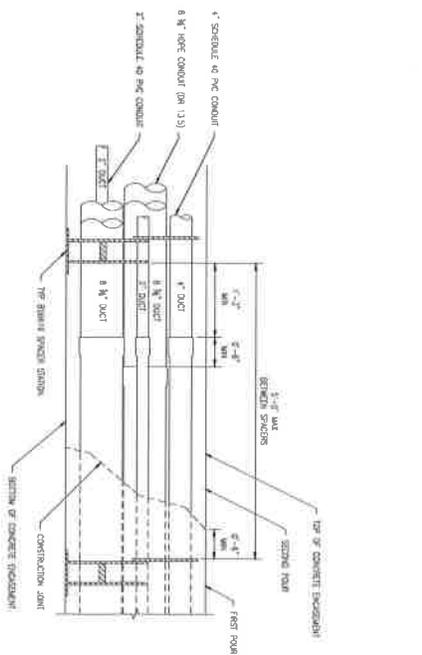
EVERSOURCE ENERGY
 PLAN AND PROFILE STA. 150+00 TO 153+00
 WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 NEEDHAM - WEST ROXBURY, MASSACHUSETTS
 DATE: 5/10/18
 SCALE: HORIZ. 1"=20' V. 1"=5'
 152 153 154 155 156 157 158 159 160



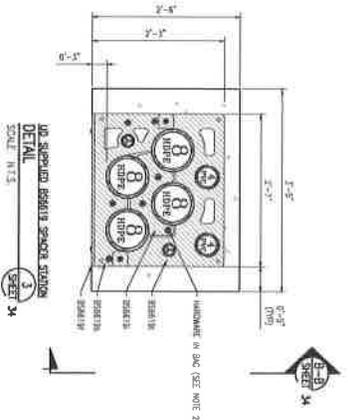
TRENCH CONSTRUCTION
DETAIL
SCALE: N.T.S.
SHEET 34



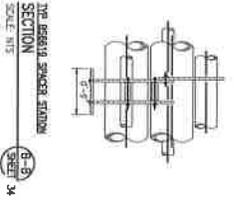
TRENCH CONSTRUCTION OVER WATER SERVICE
DETAIL
SCALE: N.T.S.
SHEET 34



TOP AND SIDE PROFILE
SECTION
SCALE: N.T.S.
SHEET 34



UN-SUPPORTED DUCTS SPACING
DETAIL
SCALE: N.T.S.
SHEET 34

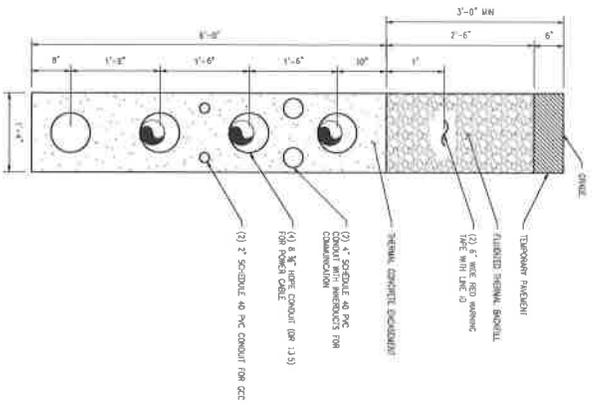


TOP AND SIDE PROFILE
SECTION
SCALE: N.T.S.
SHEET 34

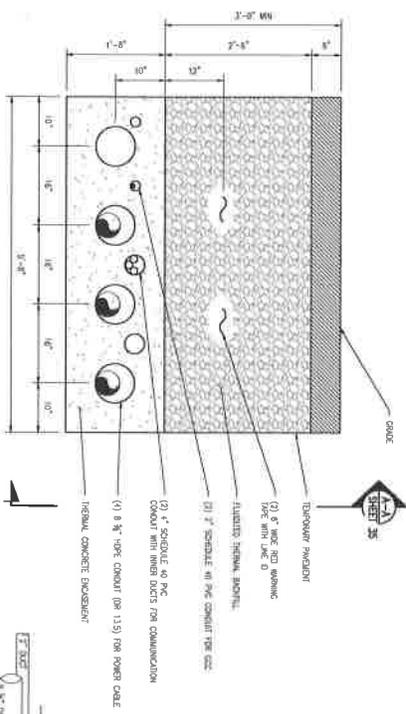
- NOTES:
1. MATERIAL:
 - a. 5000 PSI CONCRETE
 - b. COOLING BRICKS
 2. THE NUTS, BOLTS, AND WASHERS REQUIRED TO SECURE THE TOP SPACER ARE 1/4" DIA. AND ARE TO BE PLACED TO THE TOP SPACER.



NO.	REVISION	DATE
1	ISSUED FOR CONSTRUCTION	5/10/09
2	REVISED FOR FIELD	5/11/09
PROJECT INFORMATION		
EVERSOURCE ENERGY		
DUCT BANK AND TRENCH DETAILS		
WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT		
115KV UNDERGROUND TRANSMISSION LINE		
NEEDHAM - WEST ROXBURY, MASSACHUSETTS		
SCALE:	GATE DRAWING SHEET NO.	DATE
N.T.S.	708	5/10/09



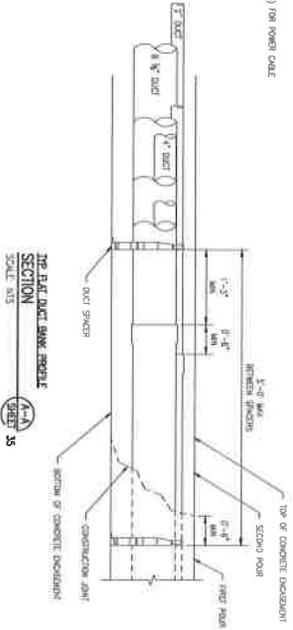
TOP VIEW OF DUCT BANK
DETAIL
SCALE: N.T.S.
SHEET 25



SIDE VIEW OF DUCT BANK
DETAIL
SCALE: N.T.S.
SHEET 25



LONGITUDINAL DUCT SPACERS
DETAIL
SCALE: N.T.S.
SHEET 25



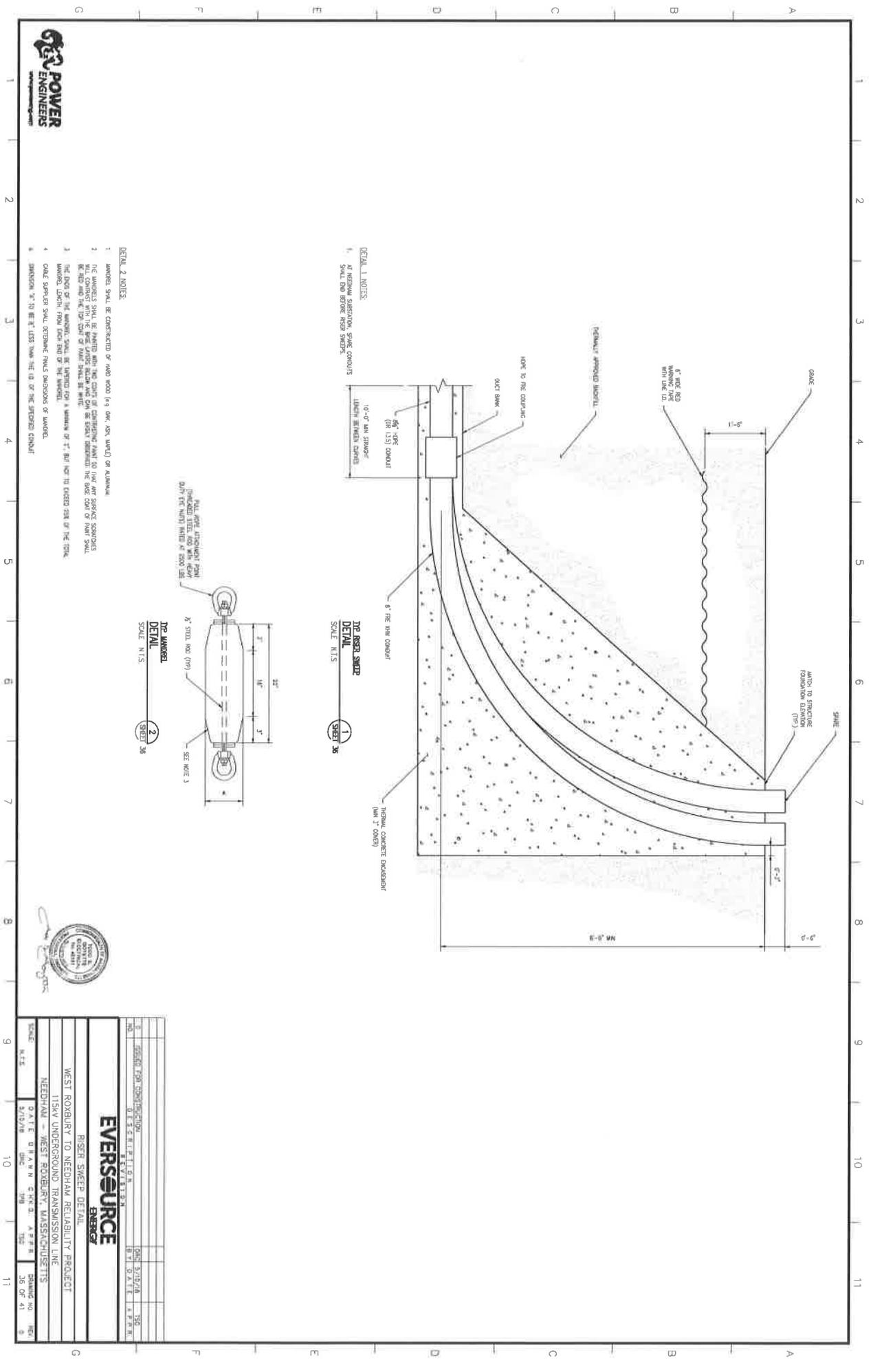
DUCT BANK ASSEMBLY
SECTION
SCALE: N.T.S.
SHEET 25



NO.	0	ISSUED FOR CONSTRUCTION	DATE	5/10/18
DESIGNER	WESTON	DATE	5/10/18	
PROJECT	DUCT BANK AND TRENCH DETAILS			
CLIENT	WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT			
LOCATION	NEEDHAM - WEST ROXBURY, MASSACHUSETTS			
SCALE	N.T.S.	DATE	5/10/18	DRG. NO. 152
				TORNOFF NO. 25 OF 21

1 2 3 4 5 6 7 8 9 10 11

A B C D E F G



NO.	DESCRIPTION	DATE	BY
1	ISSUED FOR CONSTRUCTION	09/27/2018	DAVID C. RYAN
2	REVISION		
3			
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11			

EVERSOURCE ENERGY

RISE/SWEEP DETAIL

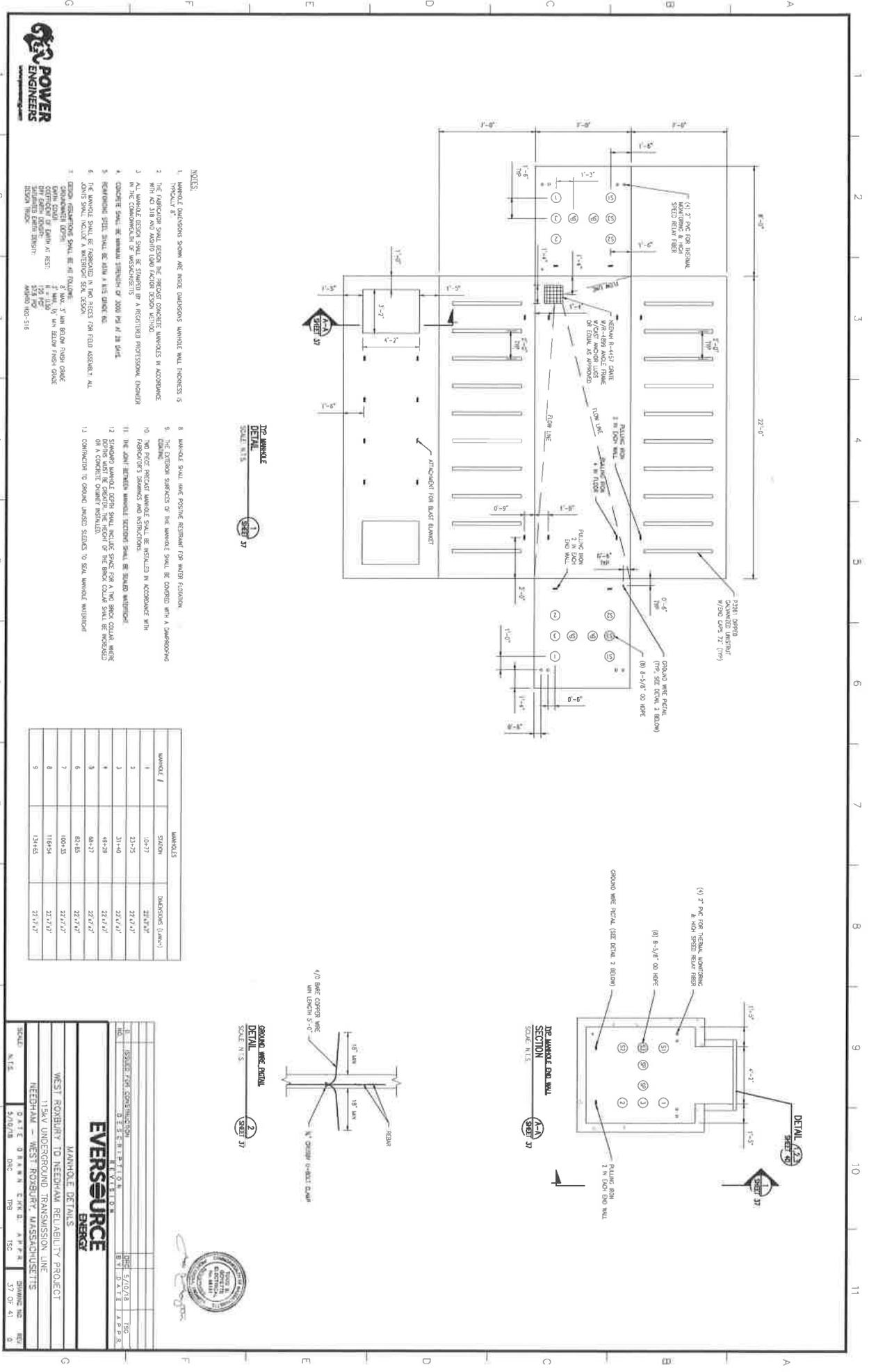
WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT

115KV UNDERGROUND TRANSMISSION LINE

NEEDHAM - WEST ROXBURY, MASSACHUSETTS

DATE: 01/11/18
BY: DAVID C. RYAN
SCALE: N.T.S.

PROJECT NO.: 18-001
SHEET NO.: 36 OF 41



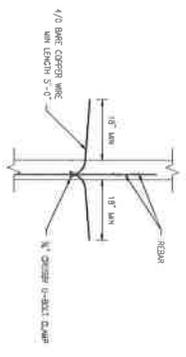
- NOTES:
- MANHOLE DIMENSIONS SHOWN ARE INSIDE DIMENSIONS UNLESS OTHERWISE NOTED.
 - THE FABRICATION SHALL DESIGN THE PRECAST CONCRETE MANHOLES IN ACCORDANCE WITH ALL APPLICABLE CODES AND STANDARDS.
 - ALL MANHOLE REBAR SHALL BE INSTALLED BY A REGISTERED PROFESSIONAL ENGINEER AND SHALL BE SHOWN ON THE REBAR PLAN.
 - CONCRETE SHALL BE FURNISHED WITH A MINIMUM OF 2000 PSI AT 28 DAYS.
 - REINFORCING STEEL SHALL BE ASTM A615 GRADE 60.
 - THE MANHOLE SHALL BE FABRICATED IN TWO PIECES FOR FIELD ASSEMBLY. ALL JOINTS SHALL INCLUDE A WEARSTOP SEAL DESIGN.
 - DESIGN REINFORCING SHALL BE AS FOLLOWS:
 - ALL 7" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 8" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 10" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 12" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 14" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 16" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 18" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 20" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 22" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 24" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 26" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 28" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 30" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 32" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 34" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
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 - ALL 40" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
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 - ALL 44" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
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 - ALL 74" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 76" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 78" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 80" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 82" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 84" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 86" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 88" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 90" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 92" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 94" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 96" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 98" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.
 - ALL 100" DIA. MANHOLE REBAR SHALL BE 4" DIA. REBAR.

TOP MANHOLE
DETAIL
SCALE: N.T.S.
SHEET 37

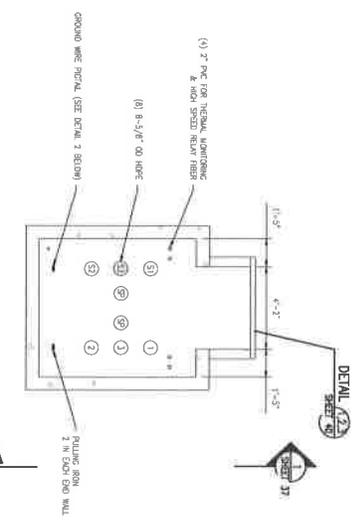
- MANHOLE SHALL HAVE FLOORING REBAR FOR WATER PROOFING.
- THE EXTERIOR SURFACES OF THE MANHOLE SHALL BE COVERED WITH A WATERPROOFING MEMBRANE.
- THE JOINT BETWEEN MANHOLE SECTIONS SHALL BE SEALED WITH AN EPDM RUBBER GASKET.
- STANDARD MANHOLE DEPTH SHALL INCLUDE SPACE FOR A TWO BRICK COLAR WHERE APPLICABLE.
- CONNECTION TO GROUND UNLESS SPECIFIED TO BEAL UNLESS OTHERWISE NOTED.

MANHOLE / STATION	DIMENSIONS (LxWxH)
1	22'x7'x7'
2	22'x7'x7'
3	22'x7'x7'
4	22'x7'x7'
5	22'x7'x7'
6	22'x7'x7'
7	22'x7'x7'
8	22'x7'x7'
9	22'x7'x7'

GROUND LEVEL PROFILE
DETAIL
SCALE: N.T.S.
SHEET 37

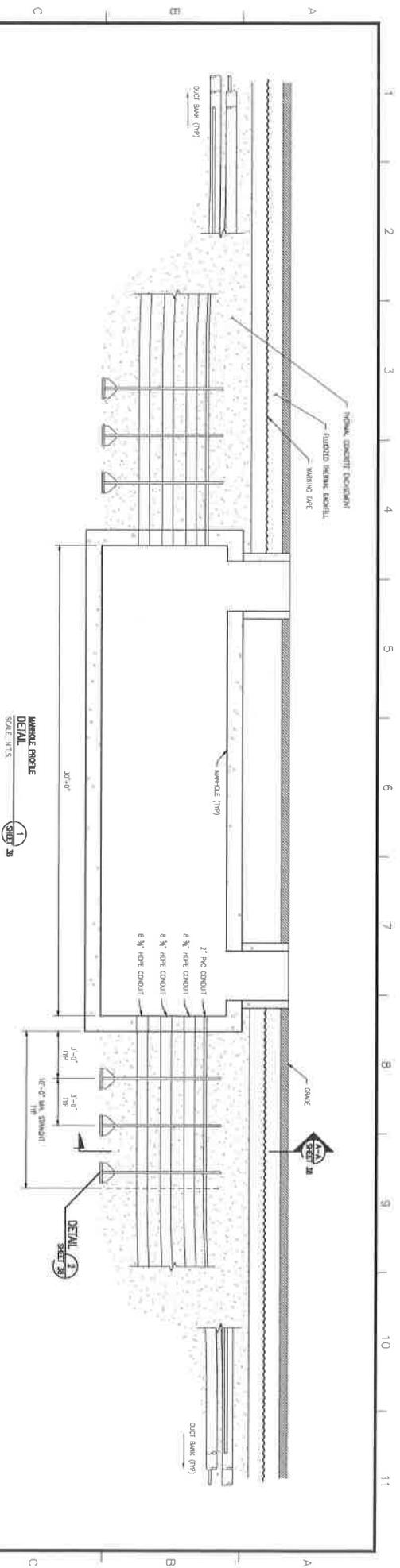


TOP MANHOLE END WALL
SECTION
SCALE: N.T.S.
SHEET 37

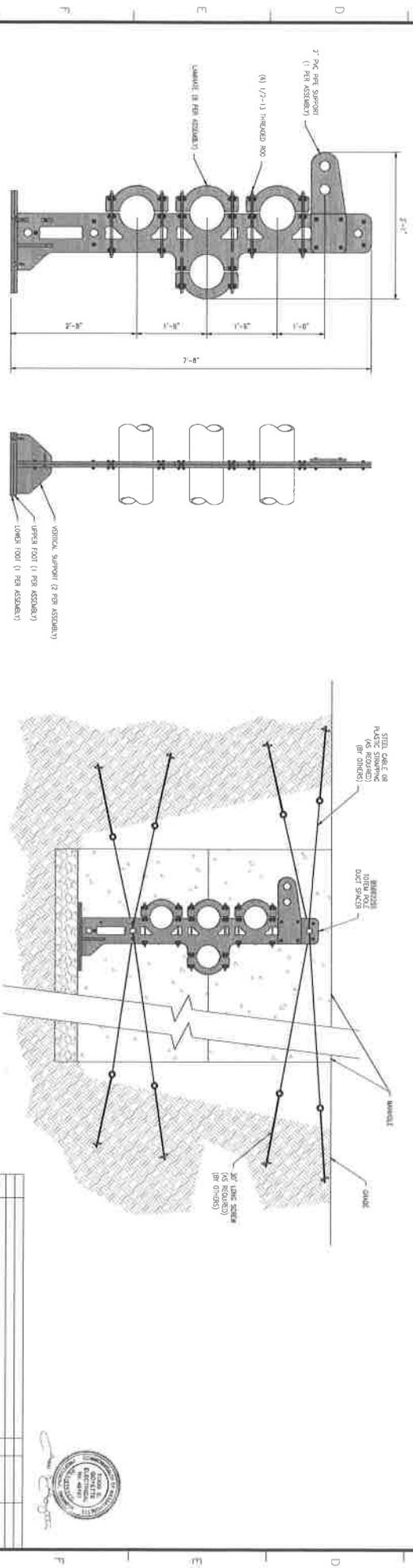


EVERSOURCE ENERGY
 WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
 115KV UNDERGROUND TRANSMISSION LINE
 NEEDHAM - WEST ROXBURY, MASSACHUSETTS
 DATE: 2/02/18
 DRAWN BY: TPB
 CHECKED BY: TSS
 SHEET NO.: 37 OF 41
 SCALE: N.T.S.



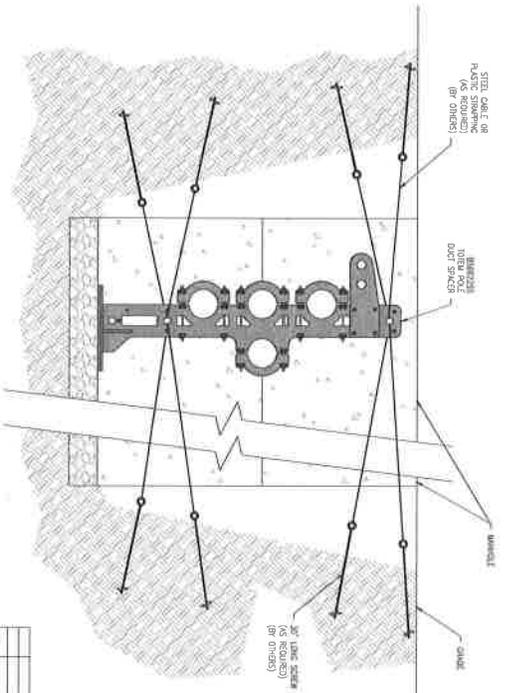


MANHOLE PROFILE DETAIL
SCALE: N.T.S. **1** SHEET 38



FRONT

SIDE



THE TOP OF THE DUCT BANK DETAIL
SCALE: N.T.S. **2** SHEET 38

THE TOP OF THE CONCRETE SLAB DETAIL
SCALE: N.T.S. **3** SHEET 38

EVERSOURCE ENERGY

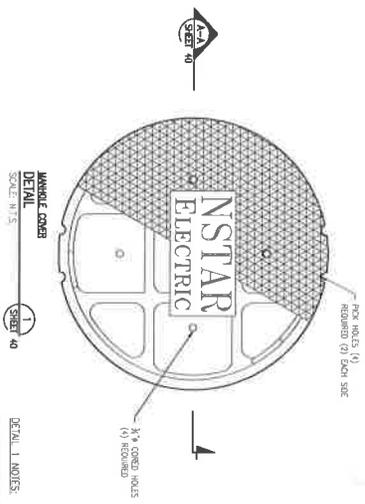
MANHOLE PROFILE DETAILS

WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT

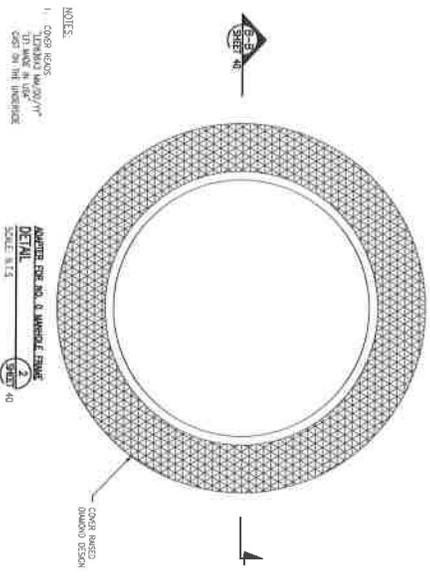
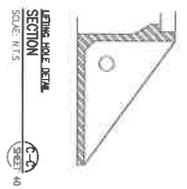
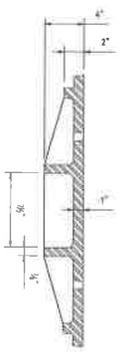
NEEDHAM - WEST ROXBURY TRANSMISSION LINE

DATE: 08/14/18
DRAWN: C.M.P. D. A.F.R. R. 152
BY: S.M.W.M. INC. 198

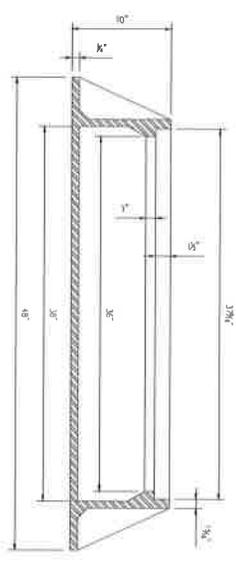
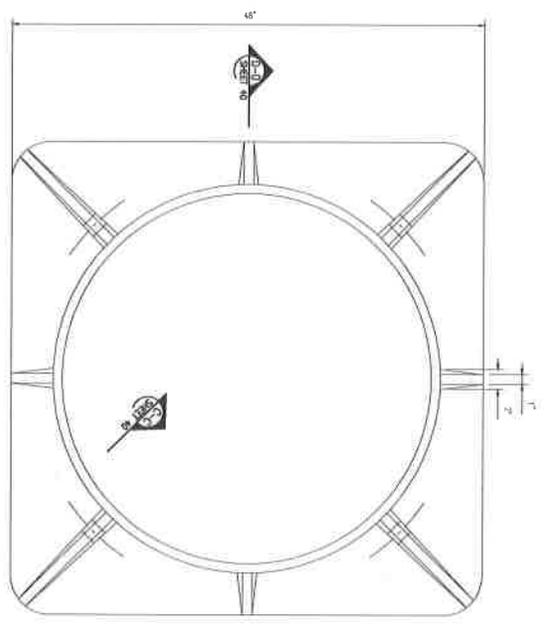
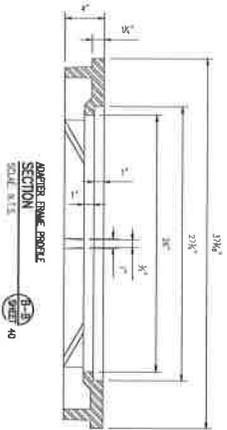
SCALE: N.T.S.



- DETAIL 1 NOTES:**
1. COVER HOLE SHOWN
 2. 1/2" DIA. COVER HOLES (1) REQUIRED
 3. 1/2" DIA. PICK HOLES (2) REQUIRED



- NOTES:**
1. COVER RING TO BE 1/2" DIA. TO MATCH HOLE
 2. COVER RING TO BE 1/2" THICK



NO. 1	REVISION FOR CORRECTION	DATE	BY
NO. 2	REVISION FOR CORRECTION	DATE	BY
NO. 3	REVISION FOR CORRECTION	DATE	BY
NO. 4	REVISION FOR CORRECTION	DATE	BY
NO. 5	REVISION FOR CORRECTION	DATE	BY
NO. 6	REVISION FOR CORRECTION	DATE	BY
NO. 7	REVISION FOR CORRECTION	DATE	BY
NO. 8	REVISION FOR CORRECTION	DATE	BY
NO. 9	REVISION FOR CORRECTION	DATE	BY
NO. 10	REVISION FOR CORRECTION	DATE	BY
NO. 11	REVISION FOR CORRECTION	DATE	BY
NO. 12	REVISION FOR CORRECTION	DATE	BY
NO. 13	REVISION FOR CORRECTION	DATE	BY
NO. 14	REVISION FOR CORRECTION	DATE	BY
NO. 15	REVISION FOR CORRECTION	DATE	BY

EVERSOURCE ENERGY

MANHOLE COVER DETAILS

WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT

134V UNDERGROUND TRANSMISSION LINE

NEEDHAM - WEST ROXBURY, MASSACHUSETTS

SCALE: N.T.S.

DATE: 5/10/18

BY: [Signature]

CHK: [Signature]

DESIGNED BY: [Signature]

CHECKED BY: [Signature]

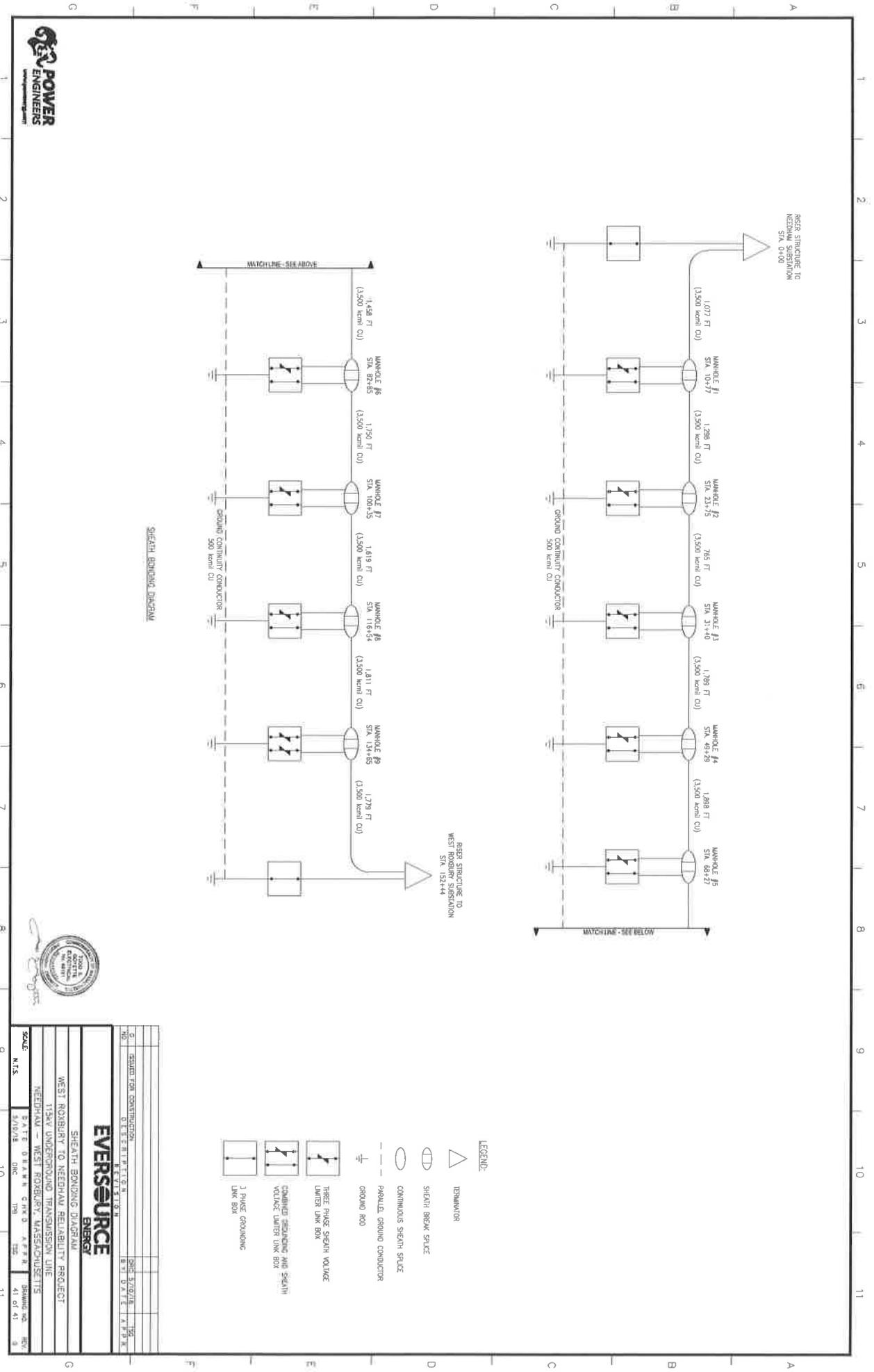
DATE: 5/10/18

BY: [Signature]

CHK: [Signature]

DESIGNED BY: [Signature]

CHECKED BY: [Signature]



NO.	DATE	BY	CHKD
01	07/10/18	W. J. [Signature]	[Signature]
DESIGNED FOR CONSTRUCTION			
ELECTRICAL			
WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT			
115KV UNDERGROUND TRANSMISSION LINE			
NEEDHAM - WEST ROXBURY, MASSACHUSETTS			
SCALE: 1/4" = 1'-0"			
DATE: 07/10/18			
PROJECT NO: 1708			
SHEET NO: 41 of 41			

EVERSOURCE
ENERGY

SHEATH BONDING DIAGRAM

WEST ROXBURY TO NEEDHAM RELIABILITY PROJECT
115KV UNDERGROUND TRANSMISSION LINE
NEEDHAM - WEST ROXBURY, MASSACHUSETTS

SCALE: 1/4" = 1'-0"

DATE: 07/10/18

PROJECT NO: 1708

SHEET NO: 41 of 41

Grant of Location Request
West Roxbury to Needham DCT Separation Project

Exhibit E
List of Abutters