APPENDIX G

TRAFFIC MANAGEMENT PLANS

Traffic Management Plan
New York Pipeline Segments

Algonquin Gas Transmission, LLC

ALGONQUIN INCREMENTAL MARKET PROJECT

Traffic Management Plan
New York Pipeline Segments

May 2014

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1.0 INTRODUCTION

Algonquin Gas Transmission, LLC ("Algonquin"), an indirect, wholly-owned subsidiary of Spectra Energy Partners, LP, is seeking authorization from the Federal Energy Regulatory Commission ("FERC" or "Commission") pursuant to Section 7(c) of the Natural Gas Act[1] ("NGA") to construct, install, own, operate, and maintain the Algonquin Incremental Market Project ("AIM Project" or "Project") which will involve expansion of its existing pipeline systems located in New York, Connecticut, Rhode Island and Massachusetts.

In New York, Algonquin will take-up and relay approximately 3.3-miles of mainline pipeline located upstream (southwest) of the existing Stony Point Compressor Station in Rockland County, New York (*Haverstraw to Stony Point Take-up & Relay*). The installation of the new 42-inch pipeline will begin at the existing Algonquin Mainline Valve Site ("MLV") 13B (MP 0.0) located west of Call Hollow Road in the Town of Haverstraw and end at the Stony Point Compressor Station located northeast of Cedar Flats Road in the Town of Stony Point (MP 3.3).

Downstream (northeast) of the Stony Point Compressor Station, Algonquin will construct approximately 12.3 miles of 42-inch diameter mainline pipeline in the Towns of Stony Point and Cortlandt (including the Hamlet of Verplanck and the Village of Buchanan), the City of Peekskill, and the Town of Yorktown (*Stony Point to Yorktown Take-up & Relay*). This pipeline section includes two segments of take-up and relay pipeline construction and one section of pipeline construction within a new permanent ROW across the Hudson River.

In response to comments from the FERC, landowners and other stakeholders, Algonquin has retained Hatch Mott MacDonald, NY LLC. ("HMM") to provide traffic engineering consulting services in support of the proposed Project facilities in New York. Algonquin is committed to working with each municipality along the Project limits to address potential transportation-related impacts associated with constructing the proposed pipeline. This document includes a summary of roadways where the construction will take place and information regarding general traffic management strategies. Based on the research conducted to date, this report summarizes the currently proposed construction schedule, hours of operation, and provides representative traffic management plans that will be implemented during construction.

[1] 15 U.S.C. § 717f(c) (2006).

2.0 PROJECT DESCRIPTION

The projected in-service date of the AIM Project is November 2016. Construction of the Project pipeline facilities, new M&R stations, and modifications to the Algonquin's existing compressor stations and M&R stations is expected to occur over a 1½ year period to accommodate multiple work locations and the need for scheduled system outages for the numerous tie-ins along the existing system. The work is scheduled to start in the 1st Quarter of 2015 and be completed by October 2016.

Table 2-1 provides a preliminary construction schedule.

TABLE 2-1

Preliminary Construction Schedule for AIM Project Facilities in New York

Facilities	Start	Finish	Length (miles)
PIPELINE FACILITIES			
Mainline Take-up & Relay a/	March 2016	Oct. 2016	12.8
Horizontal Directional Drill/New Pipe b/			
Hudson River	March 2015	Oct. 2015	2.9
ABOVEGROUND FACILITIES			
Existing Compressor Station Modifications			
Stony Point c/	March 2016	Oct. 2016	N/A
Southeast c/	March 2016	Oct. 2016	N/A
Existing M&R Station Modifications			
Stony Point M&R Station	April 2016	Oct. 2016	N/A
Peekskill M&R Station	April 2015	Oct. 2015	N/A
Cortlandt M&R Station	April 2016	Oct. 2016	N/A

Notes:
a/ Certain complex pipeline crossings (e.g., road, streams, railroads) may be constructed during the April – October 2015 construction season. Winter clearing in Nov. 2015 – Feb. 2016 may be necessary to address time of year restrictions.
b/ The length shown for the Hudson River HDD is also included in the total length shown for the mainline take-up and relay.
c/ Civil site work at these two compressor stations will begin in the April – October 2015 time frame.

To expedite the completion of the Project, weekday working hours between 7 AM and 7 PM are desirable. However, Algonquin recognizes that these hours may not be possible for all portions of the Project due to traffic management in consideration of abutting residential and commercial properties, and that night working hours may be required. The exact timeframe for the completion of the Project is dependent on weather conditions, extent of restricted work hours and other factors. For construction planning purposes, the Project is being viewed in eighteen distinct sections. To minimize the duration of construction, work may occur simultaneously in multiple areas as three dedicated construction crews are expected to be working on the Project. For each portion of the Project involving work in public roadways traffic management plans will be required to help ensure general public safety and to maintain appropriate traffic flow. In addition to measures to address motor vehicles, considerations also will be made for pedestrians, bicycles, and construction workers. As such, Algonquin will continue to work closely with the various municipalities and public agencies involved, as well as residential and commercial stakeholders that may be affected by the Project.

3.0 REPRESENTATIVE TRAFFIC MANAGEMENT PLANS

General traffic management plans have been developed and included as part of this TMP. The plans were developed following standards contained in the Manual on Uniform Traffic Control Devices (MUTCD)[2], New York State Supplement to the Manual on Uniform Traffic Control Devices, and the New York State Work Zone Traffic Control Standard Details. While not all of the affected roadways are under New York State Department of Transportation ("NYSDOT") jurisdiction, NYSDOT's "Work Zone Traffic Control Standard Details" also were applied to local and residential roadways. These resulting plans are expected to be implemented for the majority of the work areas. The following tables provide a summary of where the attached traffic management plans are applied at each road crossing along the project.

A meeting with the NYSDOT was held on April 14, 2014 to discuss the locations and crossing methods of the proposed AIM Pipeline installations across NYSDOT jurisdictional roadways. The purpose of the meeting was to introduce the AIM Project, discuss pipeline crossing methods, required geotechnical boring work, and license vs. easement options pertaining to pipeline occupation at the road crossings.

The TMP's outlined in this document are being provided to each of the affected municipalities crossed by the proposed AIM Project and will be part of continuing communications.

Table 1: New York Roadways Affected by Construction (Haverstraw to Stony Point)

	MP	Road Name	Road Surface	Proposed Crossing Method	County	Municipality	Typical Detail #
Mainline Take up and Relay (Haverstraw to Stony Point)	0.3	Call Hollow Rd.	Paved	Open Cut	Rockland	Haverstraw	TTC DETAILS #1 AND #6
	0.49	Wolf Rd.	Paved	Open Cut	Rockland	Haverstraw	TTC DETAILS #1 AND #6
	1.02	Call Hollow Rd.	Paved	Open Cut	Rockland	Haverstraw	TTC DETAILS #1 AND #6
	1.18	Willow Grove Rd.	Paved	Open Cut	Rockland	Stony Point	TTC DETAILS #1 AND #6
	2.26	Pierce Dr.	Paved	Open Cut	Rockland	Stony Point	TTC DETAILS #5 AND #6
	2.39	Zachary Taylor St.	Paved	Open Cut	Rockland	Stony Point	SITE SPECIFIC DETAIL REQUIRED - MODIFICATION OF TTC DETAILS #1 AND #6
	2.46	Pyngyp Rd.	Paved	Open Cut	Rockland	Stony Point	TTC DETAILS #1 AND #6
	2.97	Gate Hill Rd. (HWY .210)	Paved	Open Cut	Rockland	Stony Point	SITE SPECIFIC DETAIL REQUIRED - MODIFICATION OF TTC DETAILS #1 AND #6
	3	Cedar Flats Rd.	Paved	Open Cut	Rockland	Stony Point	TTC DETAILS #1 AND #6

[2] U.S. Department of Transportation Federal Highway Administration, Manual on Uniform Traffic Control Devices, 2009 Edition; Washington DC, December 2009.

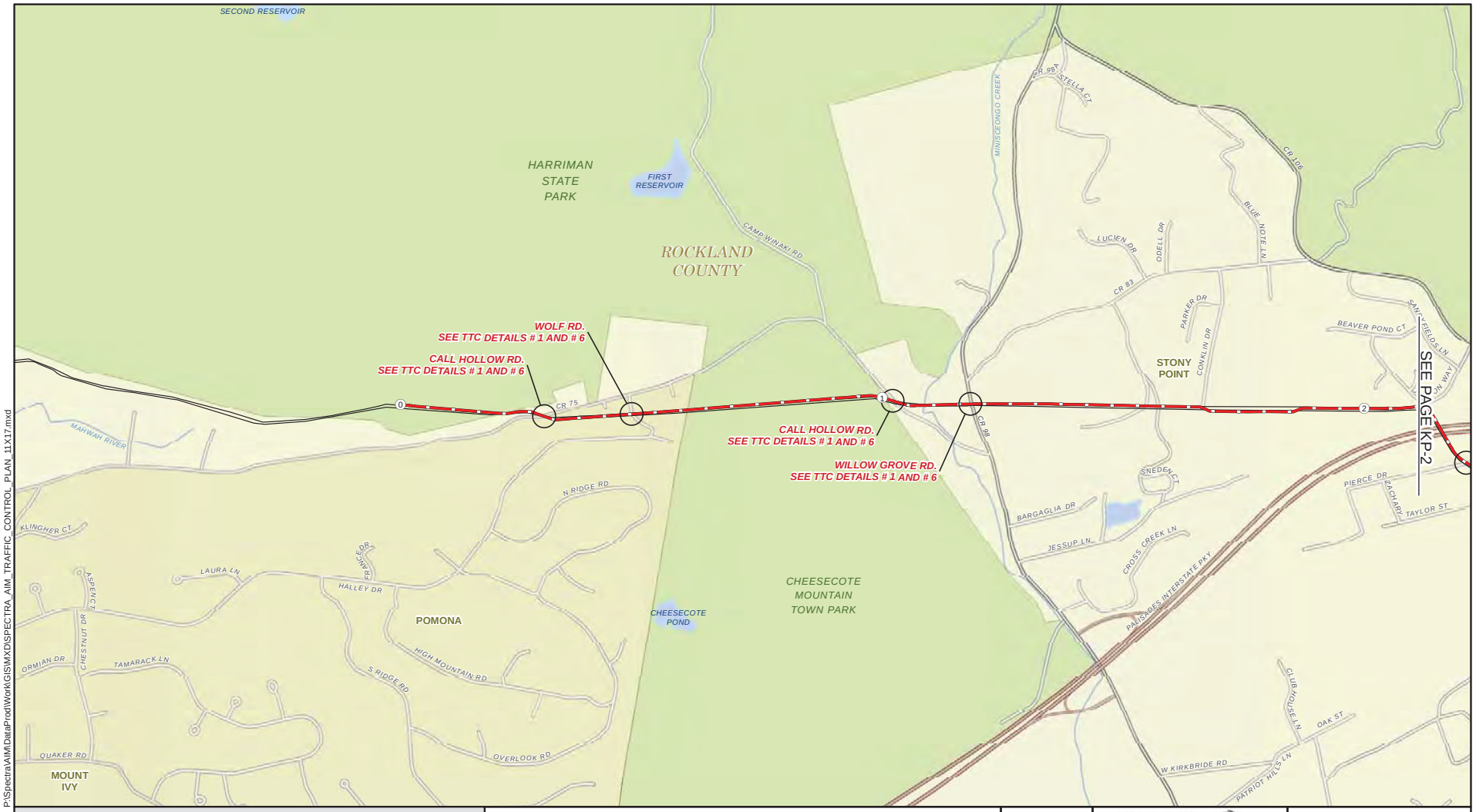
Table 2: New York Roadways Affected by Construction (Stony Point to Yorktown)

	MP	Road Name	Road Surface	Proposed Crossing Method	County	Municipality	Typical Detail #
Mainline Take up and Relay (Stony Point to Yorktown)	0.44	Bulson Town Rd. (Rte. 65)	Paved	Open Cut	Rockland	Stony Point	TTC DETAILS #1 AND #6
	0.7	Franck Rd.	Paved	Open Cut	Rockland	Stony Point	TTC DETAILS #1 AND #6
	1.38	Soluri Ln.	Paved	Open Cut	Rockland	Stony Point	TTC DETAILS #5 AND #6
	1.64	Soluri Ln.	Paved	Open Cut	Rockland	Stony Point	TTC DETAILS #5 AND #6
	2.14	Rte. 53/Buck Berg Mountain Rd.	Paved	Open Cut	Rockland	Stony Point	TTC DETAILS #1 AND #6
	2.38	Mott Farm Rd. (Rte. 118)	Paved	Open Cut	Rockland	Stony Point	TTC DETAILS #1 AND #6
	2.95	Highway 9	Paved	Open Cut	Rockland	Stony Point	TTC DETAILS #1 AND #6
	2.97	West Shore Dr.	Paved	Open Cut	Rockland	Stony Point	TTC DETAILS #1 AND #6
	4.5	Lafarge Entrance Rd.	Paved	Open Cut	Westchester	Cortlandt	TTC DETAILS #1 AND #6
	4.77	Broadway	Paved	Bore	Westchester	Cortlandt	TTC DETAIL # 6
	5.52	Bleakley Ave.	Paved	Open Cut	Westchester	Cortlandt	SITE SPECIFIC DETAIL REQUIRED - MODIFICATION OF TTC DETAILS #1, # 4 AND #6
	5.76	Rte. 9A	Paved	Open Cut	Westchester	Cortlandt	SITE SPECIFIC DETAIL REQUIRED - MODIFICATION OF TTC DETAILS #2, #3, #4 AND #6
	5.87	Reynolds Hills	Paved	Bore	Westchester	Cortlandt	TTC DETAIL # 6
	6.31	Pine Ln.	Paved	Open Cut	Westchester	Cortlandt	TTC DETAILS #1 AND #6
	6.42	Boulder Dr.	Paved	Open Cut	Westchester	Cortlandt	TTC DETAILS #1 AND #6
	6.68	Washington St.	Paved	Open Cut	Westchester	Cortlandt	TTC DETAILS #1 AND #6
	8.43	Montrose Station Rd.	Paved	Open Cut	Westchester	Cortlandt	SITE SPECIFIC DETAIL REQUIRED - MODIFICATION OF TTC DETAILS #1 AND #6
	8.43	Maple Ave.	Paved	Open Cut	Westchester	Cortlandt	SITE SPECIFIC DETAIL REQUIRED - MODIFICATION OF TTC DETAILS #1 AND #6
	9.05	Benjamin Ln.	Paved	Open Cut	Westchester	Cortlandt	TTC DETAILS #5 AND #6
	9.21	Dimond Ave.	Paved	Open Cut	Westchester	Cortlandt	TTC DETAILS #5 AND #6

	MP	Road Name	Road Surface	Proposed Crossing Method	County	Municipality	Typical Detail #
	9.39	Cordwood Rd.	Paved	Open Cut	Westchester	Cortlandt	SITE SPECIFIC DETAIL REQUIRED - MODIFICATION OF TTC DETAILS #1 AND #6
	9.61	Forest Ave.	Paved	Open Cut	Westchester	Cortlandt	TTC DETAILS #1 AND #6
	9.79	Rick Ln.	Paved	Open Cut	Westchester	Cortlandt	TTC DETAILS #1 AND #6
	10	Justin Ct.	Paved	Open Cut	Westchester	Cortlandt	TTC DETAILS #1 AND #6
	10.2	Peachtree Dr.	Paved	Open Cut	Westchester	Cortlandt	TTC DETAILS #1 AND #6
	10.3	Croton Ave.	Paved	Open Cut	Westchester	Cortlandt	TTC DETAILS #1 AND #6
	10.49	Crompond Rd. (Rt. 35 & 202)	Paved	Bore	Westchester	Cortlandt	TTC DETAIL # 6
	10.7	Baron De Hirsh Rd	Paved	Open Cut	Westchester	Cortlandt	TTC DETAILS #1 AND #6
	11	Lexington Ave.	Paved	Open Cut	Westchester	Cortlandt	TTC DETAILS #1 AND #6
	12.31	Stoney St.	Paved	N/A	Westchester	Cortlandt	TTC DETAIL # 6

ATTACHMENTS

TRAFFIC MANAGEMENT PLANS



① MILE POST	MAJOR HIGHWAY	PARK / FOREST
EXISTING ALGONQUIN COMPRESSOR STATION	HIGHWAY	WATERBODY
TEMPORARY TRAFFIC CONTROL DETAIL AREA	LOCAL ROAD	CITY AREA
PROPOSED PIPELINE CENTERLINE HANOVER / STONY POINT	RAILROAD	COUNTY BOUNDARY
EXISTING ALGONQUIN GAS TRANSMISSION PIPELINE	STREAM / RIVER	

SPECTRA ENERGY
ALGONQUIN INCREMENTAL MARKET (AIM)

HANOVER AND STONY POINT LIFT AND RELAY TEMPORARY TRAFFIC CONTROL OVERVIEW

ROCKLAND COUNTY, NEW YORK

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ABSOLUTE SCALE: 1:12,000

REFERENCE SCALE: 1 IN = 1,000 FT

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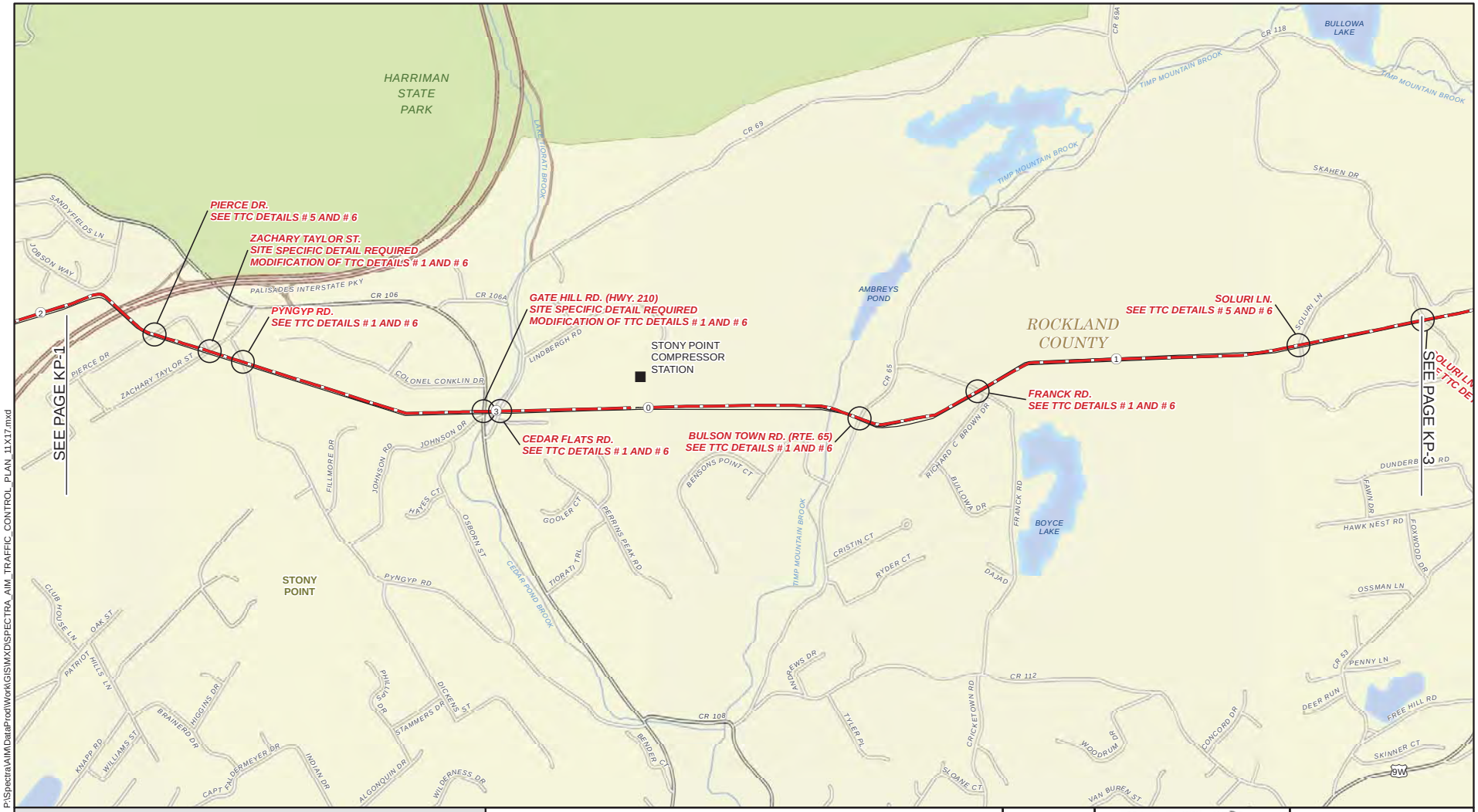

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- HIGHWAY
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SPECTRA ENERGY
ALGONQUIN INCREMENTAL MARKET (AIM)

HANOVER AND STONY POINT LIFT AND RELAY TEMPORARY TRAFFIC CONTROL OVERVIEW

ROCKLAND COUNTY, NEW YORK

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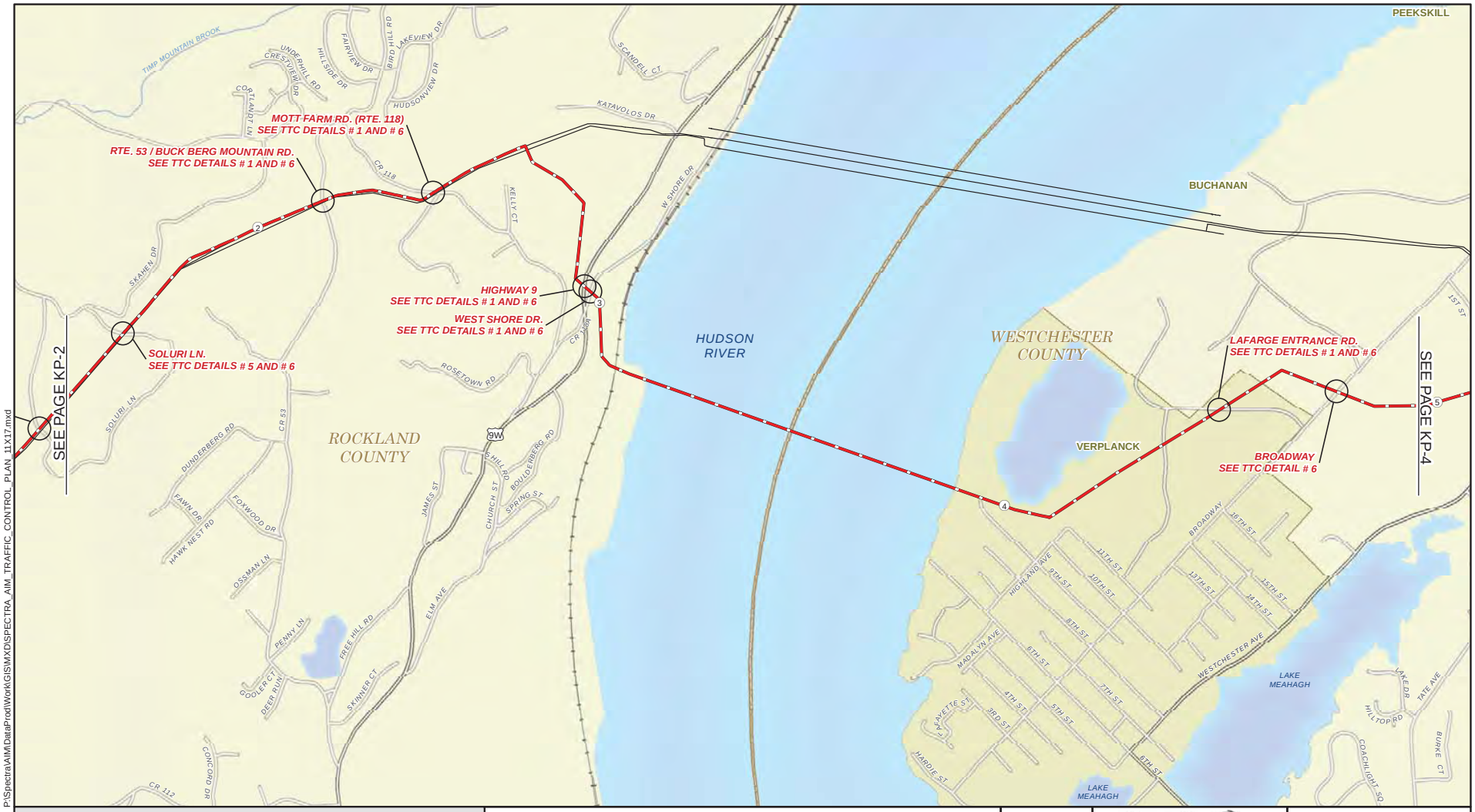

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ALGONQUIN INCREMENTAL MARKET (AIM)

HANOVER AND STONY POINT LIFT AND RELAY
TEMPORARY TRAFFIC CONTROL OVERVIEW

ROCKLAND & WESTCHESTER COUNTIES, NEW YORK

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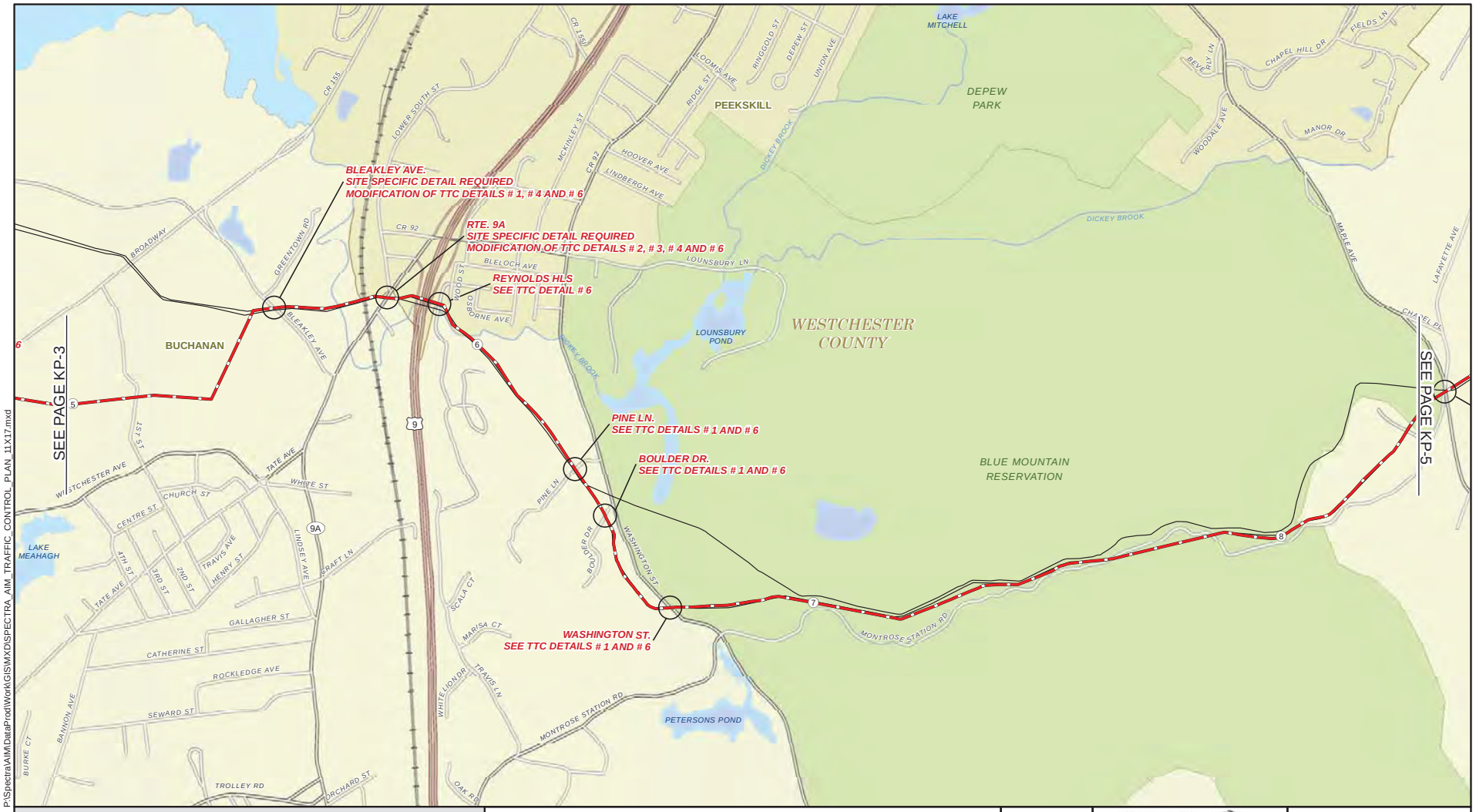

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SPECTRA ENERGY
ALGONQUIN INCREMENTAL MARKET (AIM)

HANOVER AND STONY POINT LIFT AND RELAY
TEMPORARY TRAFFIC CONTROL OVERVIEW

WESTCHESTER COUNTY, NEW YORK

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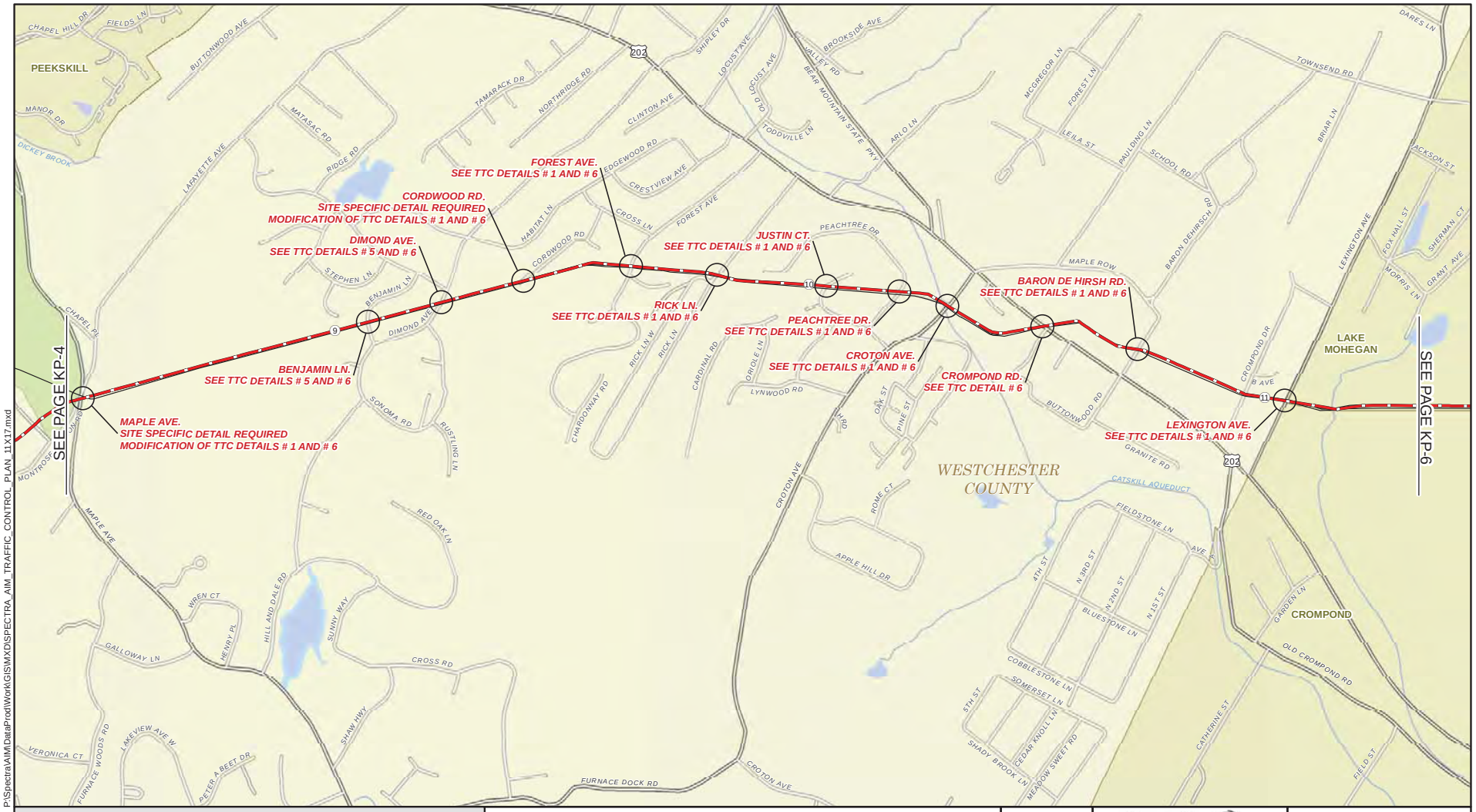

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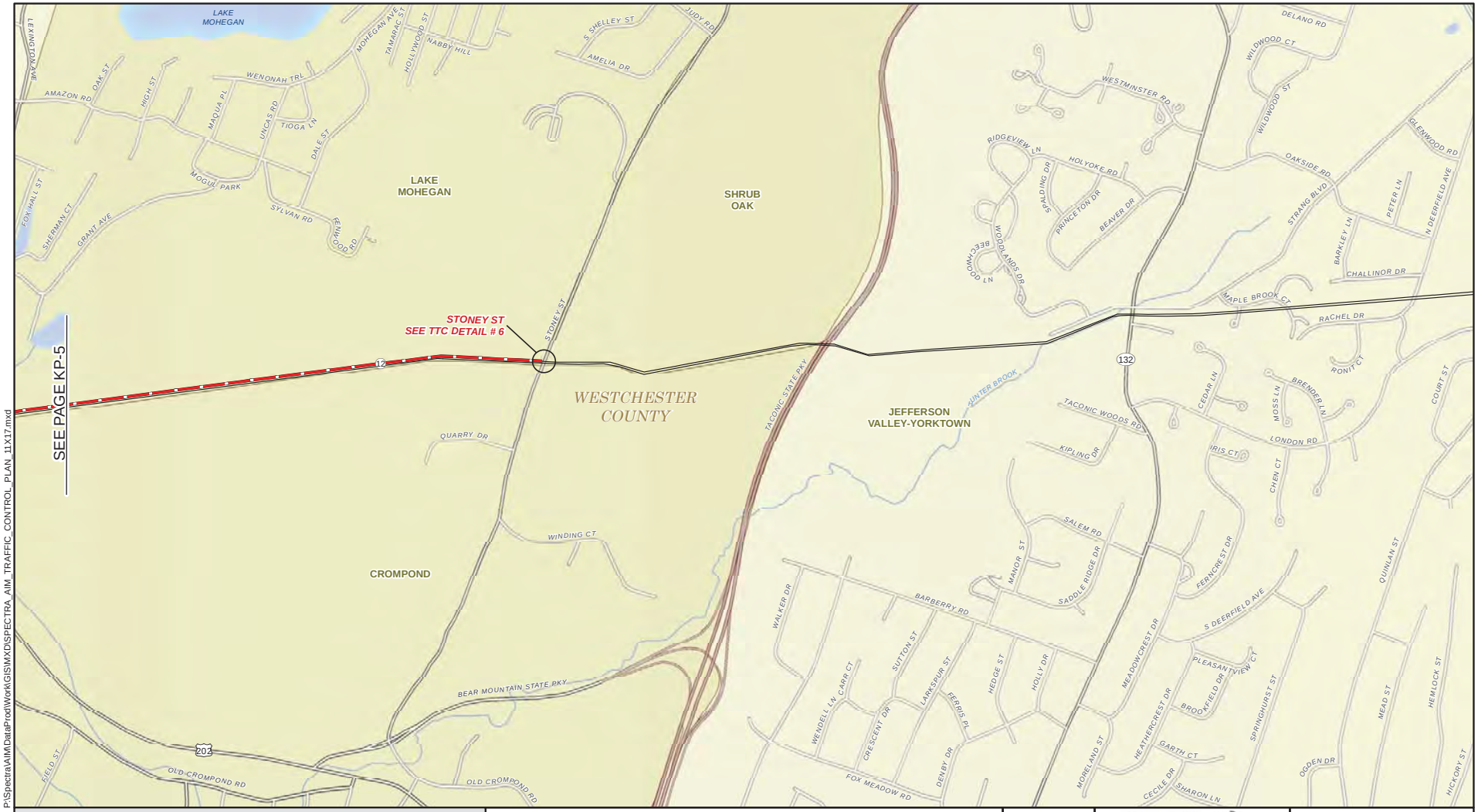

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	HIGHWAY
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	STREAM / RIVER
	PARK / FOREST
	WATERBODY
	CITY AREA
	COUNTY BOUNDARY

SPECTRA ENERGY
ALGONQUIN INCREMENTAL MARKET (AIM)

HANOVER AND STONY POINT LIFT AND RELAY TEMPORARY TRAFFIC CONTROL OVERVIEW

WESTCHESTER COUNTY, NEW YORK

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TABLE NY1-A
BARRIER VEHICLE USE REQUIREMENTS
(LONG TERM, INTERMEDIATE TERM, AND SHORT TERM STATIONARY CLOSURES)

CLOSURE TYPE	EXPOSURE CONDITION [1]	USE REQUIREMENTS [4,5]			
		FREEWAY	NON-FREEWAY (PRECONSTRUCTION POSTED SPEED LIMIT)		
			w 45 MPH	35-40 MPH	
LANE CLOSURE	WORKERS ON FOOT OR IN VEHICLES EXPOSED TO TRAFFIC	REQUIRED[3]	REQUIRED[3]	REQUIRED[3]	
	NON-TRAVERSABLE HAZARD (IE. EQUIPMENT, MATERIALS, EXCAVATION) ONLY NO WORKERS EXPOSED	REQUIRED[3]	REQUIRED[3]	OPTIONAL[2]	
SHOULDER CLOSURE	WORKERS ON FOOT OR IN VEHICLES EXPOSED TO TRAFFIC	REQUIRED[3]	REQUIRED[3]	OPTIONAL[2]	
	NON-TRAVERSABLE HAZARD (IE. EQUIPMENT, MATERIALS, EXCAVATION) ONLY NO WORKERS EXPOSED	REQUIRED[3]	OPTIONAL[2]	OPTIONAL[2]	

THE EXPOSURE CONDITIONS DESCRIBED IN TABLE NY1-A ASSUMES THERE IS NO POSITIVE PROTECTION (TEMPORARY TRAFFIC BARRIER) PRESENT. WHERE WORKERS OR HAZARDS ARE PROTECTED BY A TEMPORARY TRAFFIC BARRIER, BARRIER VEHICLES ARE NOT REQUIRED.

WHERE THE REQUIREMENT IS "OPTIONAL", EITHER A BARRIER VEHICLE OR THE STANDARD LONGITUDINAL BUFFER SPACE (TABLE 6C-2) SHALL BE PROVIDED.

REQUIREMENTS SHALL INCLUDE PROVIDING A SEPARATE BARRIER VEHICLE FOR EACH CLOSED LANE AND EACH CLOSED PAVED SHOULDER 8' OR GREATER IN WIDTH. IF THE WORK SPACE MOVES WITHIN THE STATIONARY CLOSURE, THE BARRIER VEHICLE SHALL BE REPOSITIONED ACCORDINGLY. BARRIER VEHICLES PROTECTING NON-TRANSVERSABLE HAZARDS SHALL REMAIN IN PLACE DURING BOTH WORKING AND NON-WORKING HOURS UNTIL THE HAZARD NO LONGER EXISTS. EXCEPTIONS TO THESE REQUIREMENTS MAY BE MADE, AS APPROVED BY THE REGIONAL DIRECTOR OR HIS/HER DESIGNEE WHERE BARRIER VEHICLE PLACEMENT WOULD BE INEFFECTIVE OR WOULD INTERFERE WITH THE SAFE OPERATION OF TRAFFIC.

BARRIER VEHICLES ARE NOT REQUIRED FOR MILLING AND/OR PAVING OPERATIONS, BUT THE STANDARD LONGITUDINAL BUFFER SPACE (TABLE 6C-2) SHALL BE PROVIDED.

BARRIER VEHICLES ARE NOT REQUIRED FOR FLAGGING OPERATIONS, BUT THE STANDARD LONGITUDINAL BUFFER SPACE (TABLE6C-2) SHALL BE PROVIDED.

TABLE NY2-A
PLACEMENT DISTANCE FOR BARRIER VEHICLES

PRECONSTRUCTION POSTED SPEED LIMIT (MPH)	PLACEMENT DISTANCE (FT.) BARRIER VEHICLES*			
	(18000 LBS.)		(24000 LBS.)	
	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM
> 55	100 FT.	200 FT.	100 FT.	200 FT.
45 - 55	100 FT.	200 FT.	85 FT.	165 FT.
< 45	85 FT.	165 FT.	50 FT.	100 FT.

* AS DEFINED IN NYSDOT STANDARD SPECIFICATION 619:

BARRIER VEHICLE - VEHICLE USED FOR STATIONARY SHOULDER CLOSURES, LANE CLOSURES, AND OTHER STATIONARY WORK ZONES.

MINIMUM DISTANCE SHOWN REFLECTS THE ACTUAL ROLL AHEAD DISTANCE FROM MANUFACTURER.

TABLE 6H-4 FORMULAS FOR DETERMINING TAPER LENGTHS

SPEED LIMIT (S) (MPH)	TAPER LENGTH (L) (FT.)
(40 MPH) OR LESS	$L = WS^2/60$
(45 MPH) OR MORE	$L = WS$

L = TAPER LENGTH
W = WIDTH OF OFFSET (FT.)
S = PRECONSTRUCTION POSTED SPEED LIMIT (MPH)

STANDARD TAPER LENGTHS

LATERAL SHIFT OF TRAFFIC FLOW PATH	TEMPORARY TRAFFIC CONTROL ZONE POSTED SPEED LIMIT									
	(25 MPH)	(30 MPH)	(35 MPH)	(40 MPH)	(45 MPH)	(50 MPH)	(55 MPH)	(60 MPH)	(65 MPH)	(70 MPH)
4	45	60	85	110	180	200	220	240	260	280
5	55	75	105	135	225	250	275	300	325	350
6	65	90	125	160	270	300	330	360	390	420
7	75	105	145	190	315	350	385	420	455	490
8	85	120	165	215	360	400	440	480	520	560
9	95	135	185	240	405	450	495	540	585	630
10	105	150	205	270	450	500	550	600	650	700
11	115	165	225	295	495	550	605	660	715	770
12	125	180	245	320	540	600	660	720	780	840

TABLE NY6H-3 ADVANCE WARNING SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS			SIGN LEGEND	
	A (FT.)	B (FT.)	C (FT.)	XX	YY
URBAN (1 30 MPH*)	100	100	100	AHEAD	AHEAD
URBAN (35-40 MPH*)	200	200	200	AHEAD	AHEAD
URBAN (w 45 MPH*)	350	350	350	1000 FT.	AHEAD
RURAL	500	500	500	1500 FT.	1000 FT.
EXPRESSWAY / FREEWAY	1000	1500	2640	1 MILE	1/2 MILE

* PRECONSTRUCTION POSTED SPEED LIMIT

URBAN: (MEETS MORE THAN 1 OF THE FOLLOWING CRITERIA) SIDEWALKS, BICYCLE USAGE, CURBING, CLOSED DRAINAGE SYSTEMS, DRIVEWAY DENSITIES GREATER THAN 24 DRIVEWAYS PER MILE, MINOR COMMERCIAL DRIVEWAY DENSITIES OF 10 DRIVEWAYS PER MILE OR GREATER, MAJOR COMMERCIAL DRIVEWAYS, NUMEROUS RIGHT OF WAY CONSTRAINTS, HIGH DENSITY OF CROSS STREETS, 85TH PERCENTILE SPEEDS OF 45 MPH OR LESS.

RURAL: ANY AREA NOT EXHIBITING MORE THAN ONE OF THE ABOVE CHARACTERISTICS.

EXPRESSWAY: DIVIDED HIGHWAYS FOR TRAFFIC WITH FULL OR PARTIAL CONTROL OF ACCESS AND GENERALLY WITH GRADE SEPARATIONS AT MAJOR CROSSROADS.

FREEWAYS/INTERSTATE: LOCAL OR INTER REGIONAL HIGH-SPEED, DIVIDED, HIGH-VOLUME FACILITIES WITH FULL OR PARTIAL CONTROL OF ACCESS.

TABLE 6C-2
LONGITUDINAL BUFFER SPACE

PRECONSTRUCTION POSTED SPEED LIMIT (MPH)	DISTANCE
25	155 FT.
30	200 FT.
35	250 FT.
40	305 FT.
45	360 FT.
50	425 FT.
55	495 FT.
60	570 FT.
65	645 FT.

TABLE 6C-3
TAPER LENGTH FOR TEMPORARY
TRAFFIC CONTROL ZONES

TYPE OF TAPER	TAPER LENGTH (L)
MERGING TAPER	L
SHIFTING TAPER	L/2
SHOULDER TAPER	L/3
ONE-LANE, TWO-WAY TRAFFIC TAPER	100 FT. MAXIMUM
DOWNSTREAM TAPER	100 FT. PER LANE

WORK ZONE TRAFFIC CONTROL LEGEND

SYMBOL	DESCRIPTION
	ARROW PANEL
	ARROW PANEL, CAUTION MODE
	ARROW PANEL TRAILER OR SUPPORT
	CHANNELIZING DEVICE
	DIRECTION OF TEMPORARY TRAFFIC DETOUR
	DIRECTION OF TRAFFIC
	FLAGGER
	FLAG TREE
	SIGN, TEMPORARY
	TYPE III BARRICADE
	WORK SPACE
	WORK VEHICLE WITH TRUCK MOUNTED ATTENUATOR

SPECTRA ENERGY
ALGONQUIN INCREMENTAL MARKET (AIM)
HANOVER AND STONY POINT LIFT AND RELAY

WORK ZONE TRAFFIC CONTROL
LEGENDS AND NOTES

ROCKLAND COUNTY, NEW YORK

SCALE
N/A

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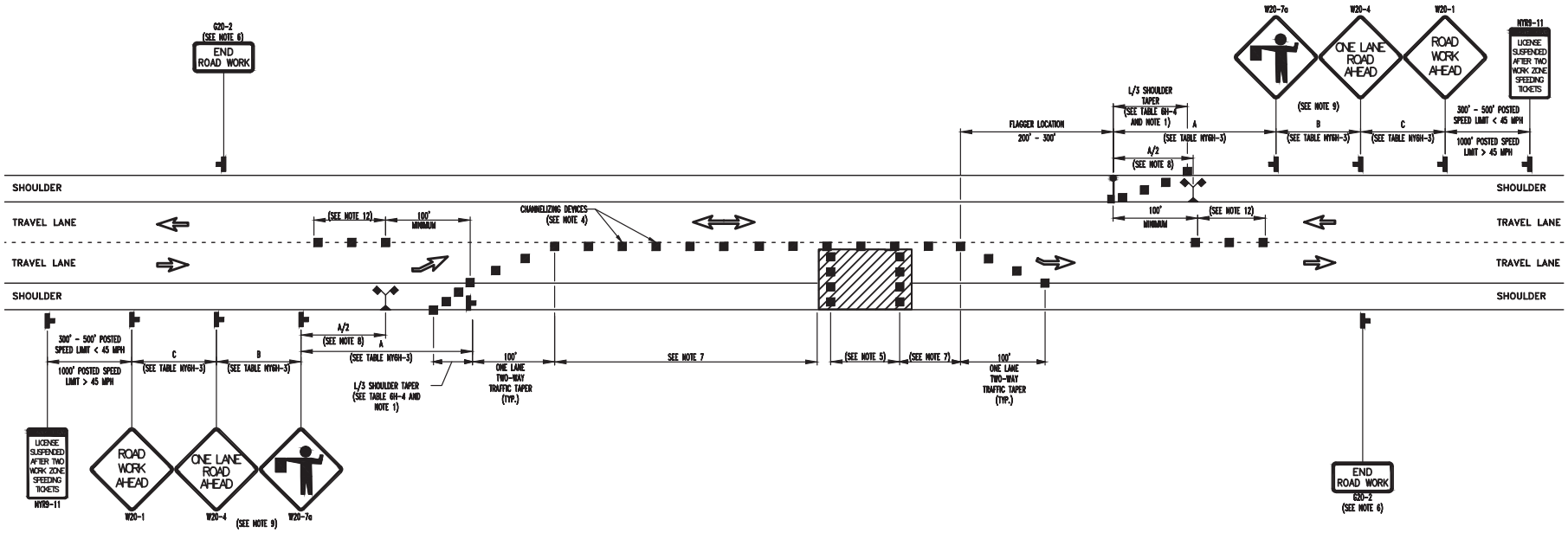

NOTES:

1. WHEN PAVED SHOULDERS HAVING A WIDTH OF 8' OR MORE ARE CLOSED, CHANNELIZING DEVICES SHALL BE USED TO CLOSE THE SHOULDER IN ADVANCE TO DELINEATE THE BEGINNING OF THE WORK AREA AND DIRECT VEHICULAR TRAFFIC TO REMAIN IN THE TRAVEL WAY.
2. WHEN A SIDE ROAD OR DRIVEWAY INTERSECTS THE ROADWAY WITHIN A WORK ZONE TRAFFIC CONTROL AREA, ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES AND/OR FLAGGERS SHALL BE PLACED AS NEEDED. ADDITIONAL FLAGGERS SHALL BE LOCATED AT ALL INTERSECTIONS AND COMMERCIAL DRIVEWAYS LOCATED WITHIN OR NEAR THE ACTIVE WORK SPACE.
3. NO WORK ACTIVITY, EQUIPMENT, OR STORAGE OF VEHICLES, OR MATERIAL SHALL OCCUR WITHIN THE BUFFER SPACE AT ANY TIME.
4. CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVE WORK SPACE.
5. TRANSVERSE DEVICES SHALL BE REQUIRED (AS PER NYSDOT 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.
6. THE END ROAD WORK SIGN (G20-2) SHALL BE PLACED A MAXIMUM OF 500' PAST THE END OF THE WORK SPACE.
7. WHERE DIRECTED BY THE ENGINEER, A BUFFER SPACE SHALL BE PROVIDED IN ORDER TO LOCATE THE ONE-LANE, TWO-WAY TRAFFIC TAPER PRIOR TO ANY HORIZONTAL OR VERTICAL CURVE, IN ORDER TO PROVIDE ADEQUATE SIGHT DISTANCE FOR THE FLAGGERS AND/OR A QUEUE OF STOPPED VEHICLES.
8. THE FLAG TREE SHALL BE LOCATED ON THE SHOULDER, AT APPROXIMATELY 1/2 THE DISTANCE BETWEEN THE FLAGGER SIGN (W20-7a) AND THE FLAGGER.
9. FLAGGER SIGN (W20-7a) AND ONE LANE ROAD AHEAD SIGN (W20-4) SHALL BE REMOVED, COVERED OR TURNED AWAY FROM ROAD USERS WHEN FLAGGING OPERATIONS ARE NOT OCCURRING.
10. FLAGGER AND FLAG TREE SHALL BE ILLUMINATED TO LEVEL II ILLUMINATION DURING NIGHT TIME OPERATIONS.
11. ALL FLAGGERS SHALL USE 24" (MIN.) OCTAGON SHAPED STOP/SLOW PADDLES HAVING 6' STAFF.
12. CENTERLINE CHANNELIZING DEVICES ARE OPTIONAL AND MAY BE ELIMINATED WHERE SPACE CONSTRAINTS EXIST.

SPECTRA ENERGY
ALGONQUIN INCREMENTAL MARKET (AIM)
HANOVER AND STORY POINT LIFT AND RELAY
TTC DETAIL #1
SHORT OR INTERMEDIATE TERM STATIONARY LANE
CLOSURE ON 2-LANE 2-WAY ROADWAY

ROCKLAND COUNTY, NEW YORK

SCALE
N/A

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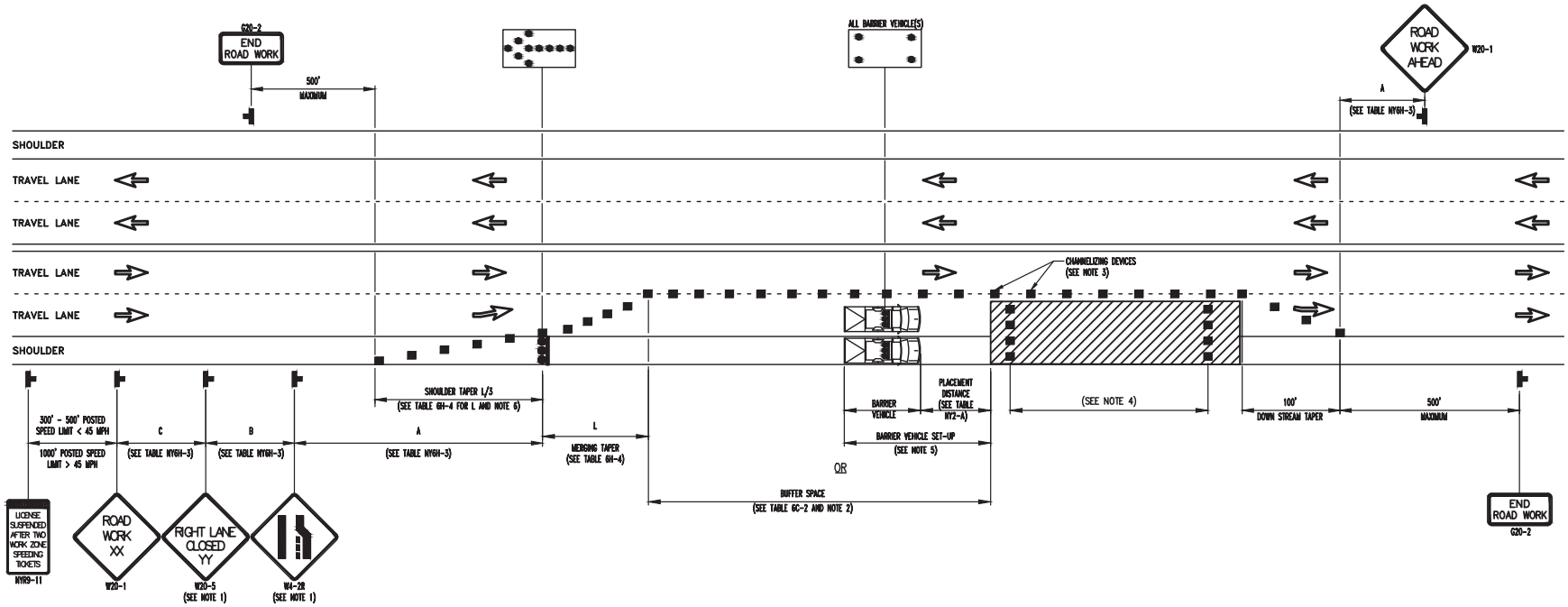

NOTES:

1. LEFT LANE CLOSURES ARE SYMMETRICAL TO RIGHT LANE CLOSURES. SUBSTITUTE LEFT LANE CLOSED SIGN (W20-5) AND THE CORRESPONDING LANE ENDS SIGN (W4-2L).
2. NO WORK ACTIVITY, EQUIPMENT, OR STORAGE OF VEHICLES, OR MATERIAL SHALL OCCUR WITHIN THE BUFFER SPACE AT ANY TIME.
3. CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVE WORK SPACE.
4. TRANSVERSE DEVICES SHALL BE REQUIRED (AS PER NYSDOT 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.
5. FOR BARRIER VEHICLE USE REQUIREMENTS SEE TABLES NY1-A AND NY2-A ON THE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES".
6. WHEN PAVED SHOULDERS HAVING A WIDTH OF 8' OR MORE ARE CLOSED, CHANNELIZING DEVICES SHALL BE USED TO CLOSE THE SHOULDER IN ADVANCE TO DELINEATE THE BEGINNING OF THE WORK SPACE AND TO DIRECT VEHICULAR TRAFFIC TO REMAIN IN THE TRAVELED WAY.

SPECTRA ENERGY
ALGONQUIN INCREMENTAL MARKET (AIM)
HANOVER AND STONY POINT LIFT AND RELAY
TTC DETAIL #2
SINGLE LANE CLOSURE SHORT OR INTERMEDIATE TERM STATIONARY
MULTI LANE HIGHWAY (UNDIVIDED)

ROCKLAND COUNTY, NEW YORK

SCALE
N/A

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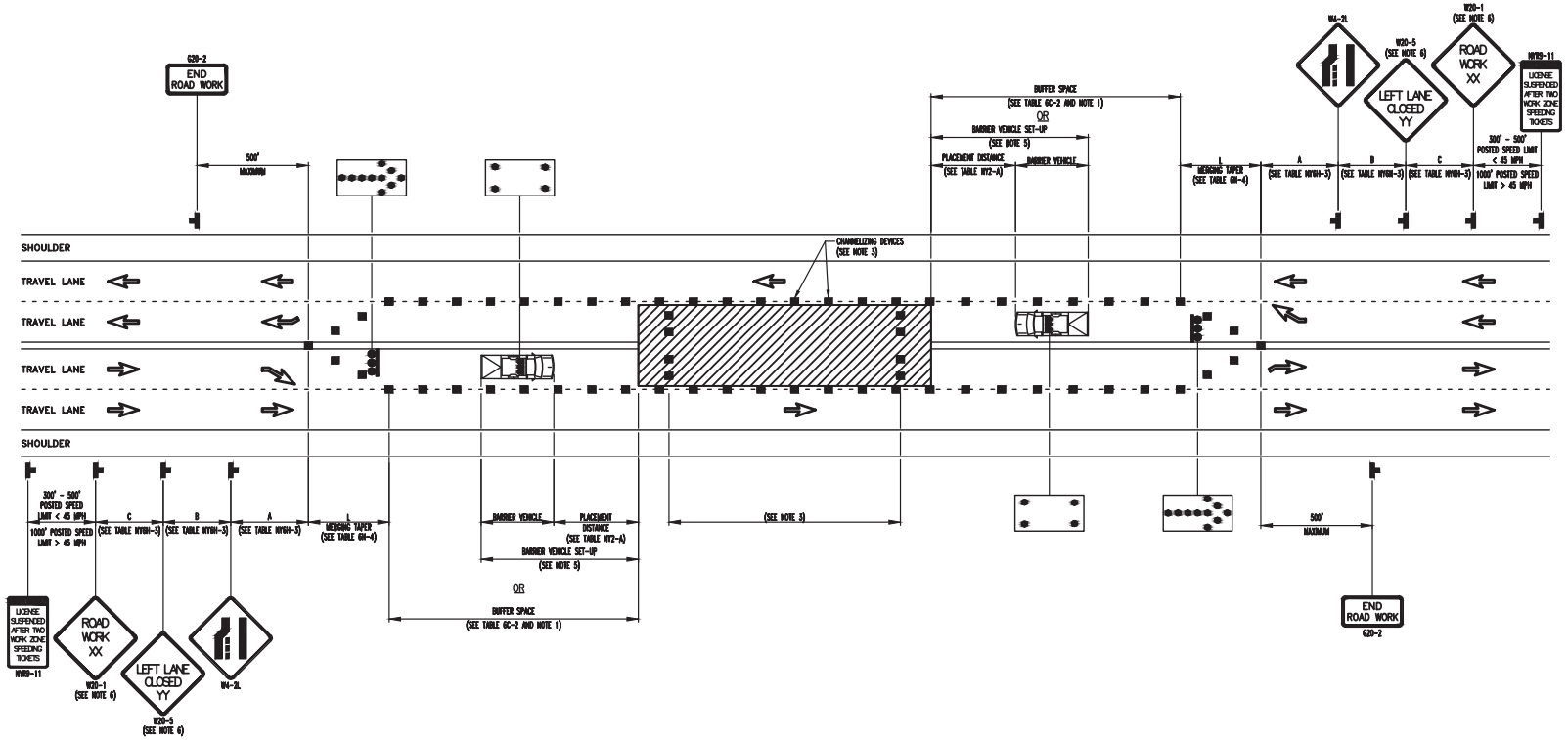

NOTES:

1. NO WORK ACTIVITY, EQUIPMENT, OR STORAGE OF VEHICLES, OR MATERIAL SHALL OCCUR WITHIN THE BUFFER SPACE AT ANY TIME.
2. CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVE WORK SPACE.
3. TRANSVERSE DEVICES SHALL BE REQUIRED (AS PER NYSDOT 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.
4. FOR LONG DURATION LANE CLOSURES, TEMPORARY PAVEMENT MARKINGS SHALL BE USED IN ACCORDANCE TO THE CONTRACT DOCUMENTS. ANY EXISTING PAVEMENT MARKINGS THAT ARE CONFLICTING OR MISLEADING SHALL BE REMOVED OR COVERED.
5. FOR BARRIER VEHICLE USE REQUIREMENTS SEE TABLES NY1-A AND NY2-A ON THE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES".
6. FOR LOW SPEED, LOW VOLUME URBAN STREETS, THE LEFT LANE CLOSED XXX FT. SIGN (W20-5) CAN BE OMITTED AND THE ROAD WORK AHEAD SIGN (W20-1) RELOCATED TO THAT LOCATION.

SPECTRA ENERGY
ALGONQUIN INCREMNTAL MARKET (AIM)
HANOVER AND STONY POINT LIFT AND RELAY
TTC DETAIL #3
DOUBLE INTERIOR LANE CLOSURE
MULTI LANE HIGHWAY

ROCKLAND COUNTY, NEW YORK

SCALE
N/A

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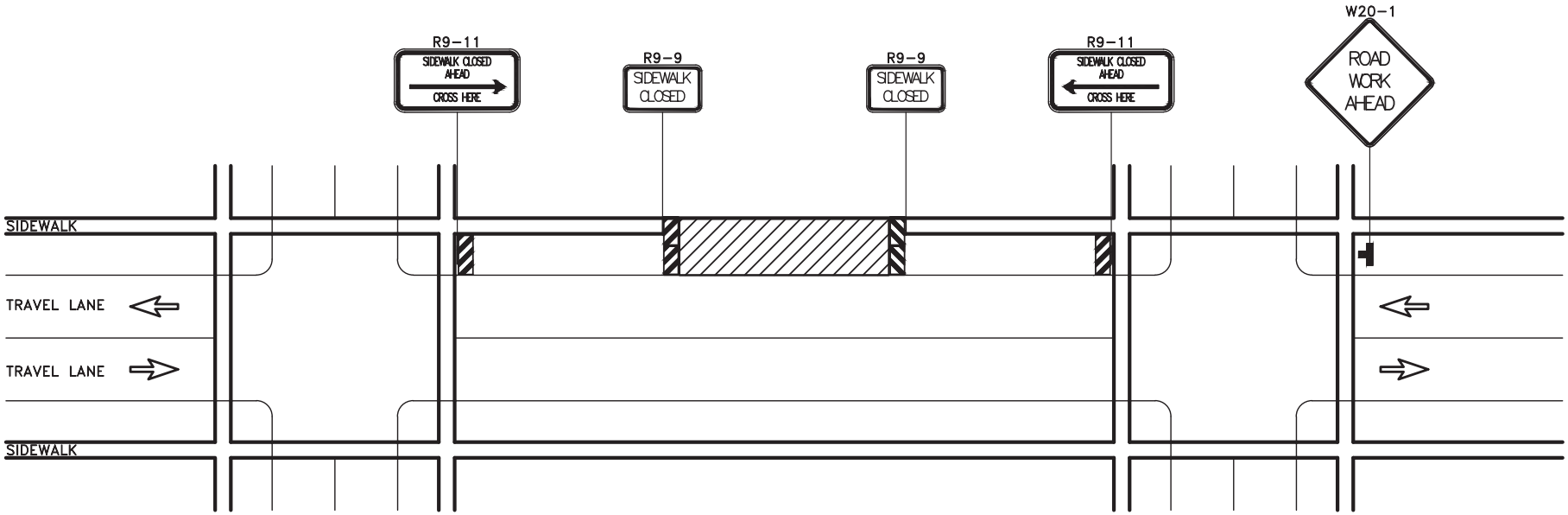

NOTES:

1. WHEN CROSSWALKS OR OTHER PEDESTRIAN FACILITIES ARE CLOSED OR RELOCATED, TEMPORARY FACILITIES SHALL BE DETECTABLE AND SHALL INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING FACILITY.
2. WHERE HIGH SPEEDS ARE ANTICIPATED, A TEMPORARY TRAFFIC BARRIER AND TEMPORARY IMPACT ATTENUATOR SHOULD BE USED TO SEPARATE THE TEMPORARY SIDEWALKS FROM VEHICULAR TRAFFIC.
3. ONLY THE WORK ZONE TRAFFIC CONTROL DEVICES RELATED TO PEDESTRIANS ARE SHOWN. OTHER DEVICES, SUCH AS LANE CLOSURE SIGNING OR ROAD NARROWS SIGNS (W5-4), MAY BE USED TO CONTROL VEHICULAR TRAFFIC.
4. FOR NIGHTTIME CLOSURES, FLASHING WARNING LIGHTS SHALL BE USED ON BARRICADES SUPPORTING SIGNS AND CLOSING SIDEWALKS.
5. SIGNS SUCH AS KEEP RIGHT (LEFT) SHALL BE PLACED ALONG A TEMPORARY SIDEWALK, WHERE APPLICABLE AND ACCORDING TO AMERICAN WITH DISABILITIES STANDARDS, TO GUIDE OR DIRECT PEDESTRIANS.
6. TYPE II BARRICADES MAY BE SUBSTITUTED FOR TYPE III BARRICADES AS PER NYSDOT 619 STANDARD SPECIFICATIONS.

SPECTRA ENERGY
ALGONQUIN INCREMENTAL MARKET (AIM)
HANOVER AND STONY POINT LIFT AND RELAY
TTC DETAIL #4
SIDEWALK DETOUR SHORT OR INTERMEDIATE TERM STATIONARY
2-LANE 2-WAY ROADWAY

ROCKLAND COUNTY, NEW YORK

SCALE
N/A

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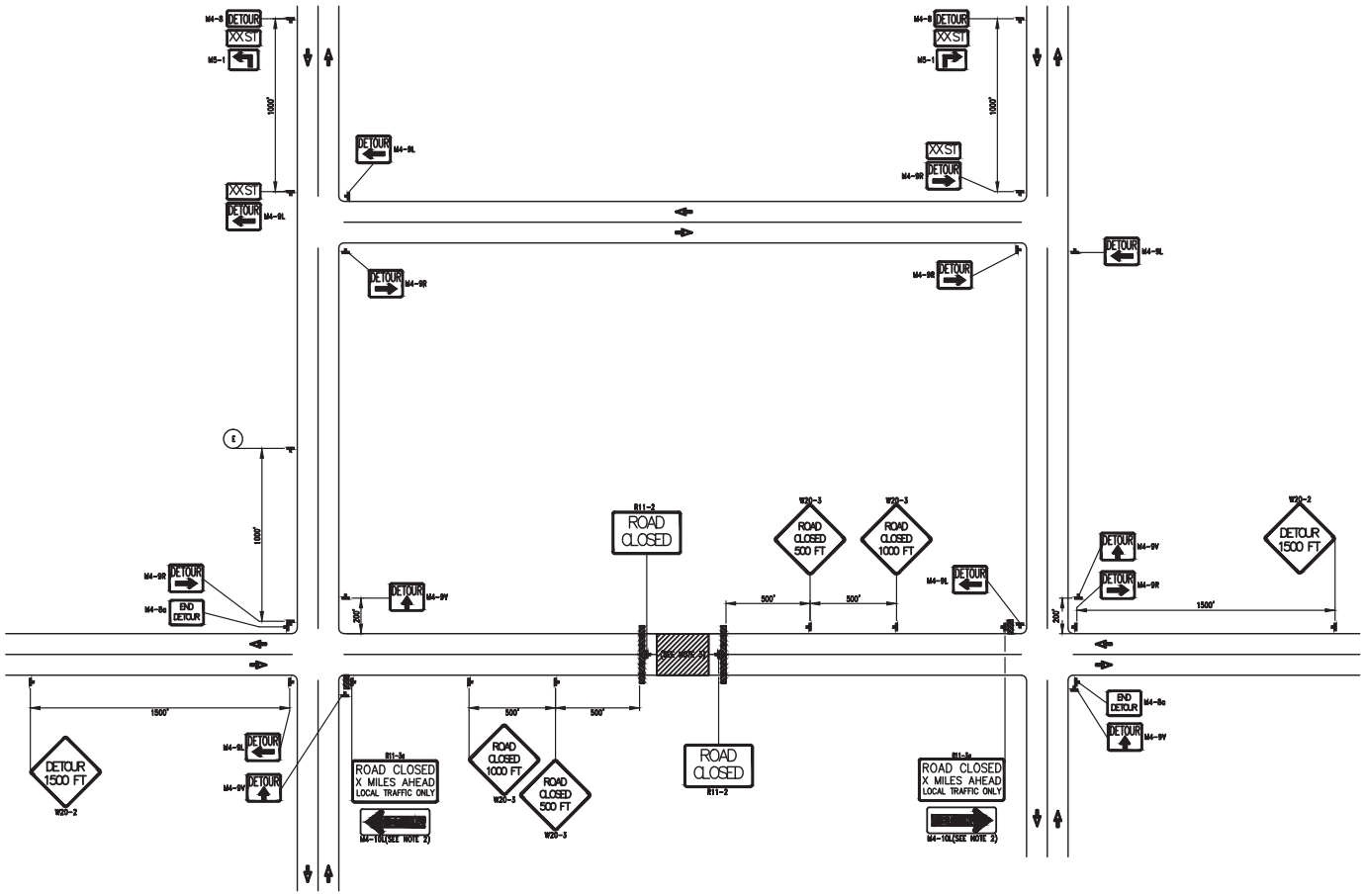

NOTES:

1. IF THE ROAD IS OPENED FOR SOME DISTANCE BEYOND THE INTERSECTION AND/OR THERE ARE SIGNIFICANT ORIGIN/DESTINATION POINTS BEYOND THE INTERSECTION, THE R11-3A ROAD CLOSED SIGN AND THE M4-10(L/R) SIGN ON TYPE III BARRICADES MAY BE LOCATED AT THE EDGE OF THE TRAVELED WAY.

2. ANY EXISTING SIGN, INCLUDING OVERHEAD SIGNS, WHICH CONFLICT WITH THE TEMPORARY TRAFFIC CONTROL SIGN LAYOUT SHALL BE COVERED, REMOVED, STORED OR RESET AOBE. BLANK COVERS USED TO COVER PORTIONS OF EXISTING SIGNS SHALL BE OF A COLOR AND REFLECTORIZED MATERIAL MATCHING THAT OF THE SIGN BEING PARTIALLY COVERED. THE CONTRACTOR SHALL BE LIABLE FOR ANY DAMAGE TO SIGNS CAUSED BY THE METHODS USED TO TEMPORARILY REMOVE, REPLACE, RELOCATE OR COVER SIGN PANELS OR SIGN TEXT, AT NO ADDITIONAL COST TO THE STATE. ALL APPROPRIATE EXISTING SIGNS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND/OR LOCATION UNLESS OTHERWISE REPLACED IN THE CONTACT DOCUMENTS.

3. M4-9 SERIES SIGNS SHALL ALWAYS BE POSTED A MAXIMUM OF 50' FROM AN INTERSECTION.

SPECTRA ENERGY
ALGONQUIN INCREMENTAL MARKET (AIM)
HANOVER AND STONY POINT LIFT AND RELAY
TTC DETAIL #5
ROAD CLOSURE WITH OFF SITE DETOUR
2-LANE 2-WAY ROADWAY

ROCKLAND COUNTY, NEW YORK

SCALE
N/A

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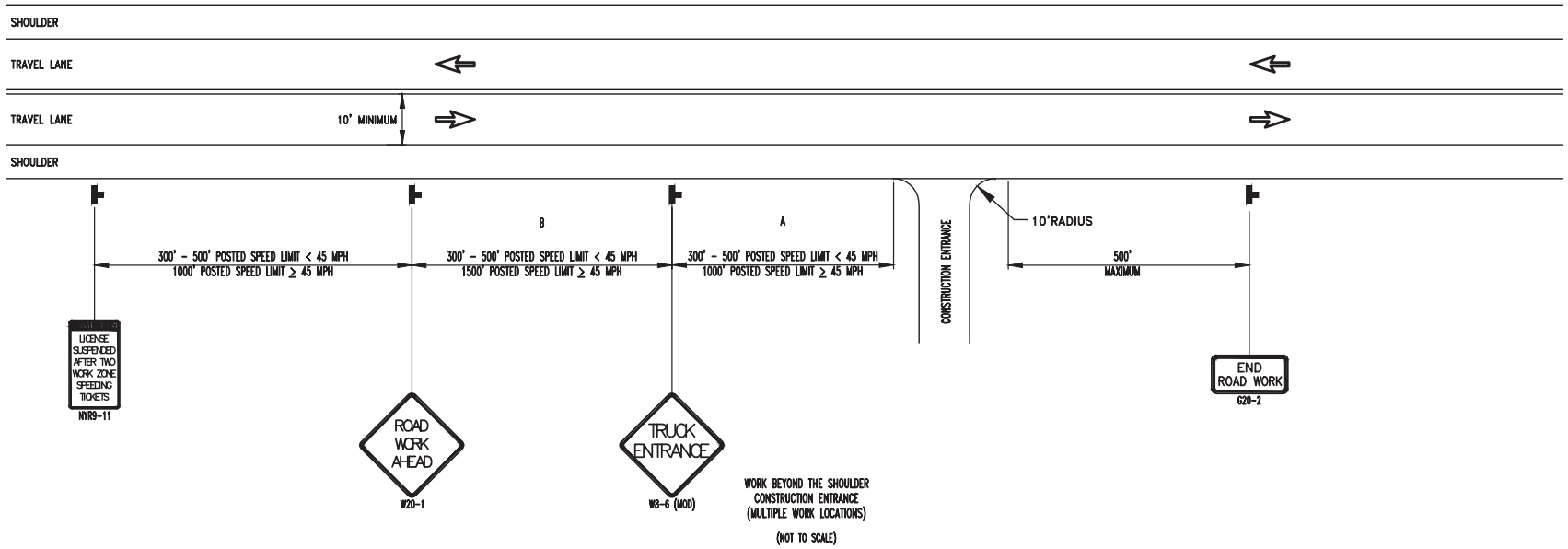

WORK BEYOND THE SHOULDER CONSTRUCTION ENTRANCE (MULTIPLE WORK LOCATIONS)

(NOT TO SCALE)

NOTES:

1. WHEN THE DISTANCE BETWEEN THE ADVANCE WARNING SIGNS AND WORK IS 2 MILES TO 5 MILES, A SUPPLEMENTAL DISTANCE PLAQUE (W7-3a) SHOULD BE USED WITH THE ROAD WORK AHEAD SIGN (W20-1).

2. IN THOSE SITUATIONS WHERE MULTIPLE WORK LOCATIONS EXIST WITHIN A LIMITED DISTANCE MAKE IT PRACTICAL TO PLACE STATIONARY SIGNS, THE DISTANCE BETWEEN THE ADVANCE WARNING SIGN AND WORK SHALL NOT EXCEED 5 MILES.

3. IN THE CASE WHERE A CONSTRUCTION ENTRANCE IS WITHIN THE LIMITS OF A LANE CLOSURE OR ROAD CLOSURE, THE TRAFFIC CONTROL ARRAY AND SIGNAGE SHALL FOLLOW THE LANE OR ROAD CLOSURE UNTIL THE ASSOCIATED WORK HAS BEEN COMPLETED.
IF THE CONSTRUCTION ENTRANCE IS REQUIRED AFTER SUCH WORK HAS BEEN COMPLETED, THE LANE OR ROAD CROSSING TRAFFIC CONTROL ARRAY AND SIGNAGE SHALL BE REPLACED BY DETAIL TTC #6.

SPECTRA ENERGY
ALGONQUIN INCREMENTAL MARKET (AIM)
HANOVER AND STONY POINT LIFT AND RELAY
TTC DETAIL #6
WORK BEYOND THE SHOULDER
CONSTRUCTION ENTRANCE

ROCKLAND COUNTY, NEW YORK

SCALE
N/A

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Updated Traffic Management Assessment and Plans for the West Roxbury Lateral

Algonquin Gas Transmission, LLC

ALGONQUIN INCREMENTAL MARKET PROJECT

Traffic Management Plan

Updated September 2014

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LIST OF ATTACHMENTS

Attachment A – Site Specific Traffic Management Plans

1.0 INTRODUCTION

Algonquin Gas Transmission, LLC ("Algonquin"), an indirect, wholly-owned subsidiary of Spectra Energy Partners, LP, is seeking authorization from the Federal Energy Regulatory Commission ("FERC" or "Commission") pursuant to Section 7(c) of the Natural Gas Act[1] ("NGA") to construct, install, own, operate, and maintain the Algonquin Incremental Market Project ("AIM Project") which will involve expansion of its existing pipeline systems located in New York, Connecticut, Rhode Island and Massachusetts.

Within the Commonwealth of Massachusetts, Algonquin will install approximately 4.89 miles of new pipeline lateral from its existing I-4 System Lateral in Norfolk and Suffolk counties to provide Boston Gas with the service it has requested ("West Roxbury Lateral" or the "Project"). The West Roxbury Lateral will consist of approximately 4.09 miles of new 16-inch diameter pipeline in the Towns of Westwood and Dedham and the West Roxbury section of the City of Boston and approximately 0.80 miles of new 24-inch diameter pipeline in West Roxbury.

In order to respond fully to comments from the FERC, the Massachusetts Energy Facilities Siting Board, landowners and other stakeholders, Algonquin retained Vanasse Hangen Brustlin, Inc. ("VHB") to provide traffic engineering consulting services in support of the proposed Project facilities in Massachusetts. Algonquin is committed to working with each municipality, the Massachusetts Department of Transportation ("MassDOT"), homeowners and other stakeholders along the Project limits to address potential transportation-related impacts associated with constructing the proposed pipeline. This document includes a summary of existing traffic conditions along the roadways where the construction will take place and information regarding general traffic management strategies. Based on the research conducted to date, this report summarizes the currently proposed construction schedule, hours of operation, and provides representative traffic management plans that will be implemented during construction.

There also has been a significant ongoing community outreach program by Algonquin with regular coordination with the various municipalities and agencies involved with this process as well as other stakeholders. The traffic analysis prepared to date and the comprehensive traffic management plans provided in Attachment A are intended to help ensure that traffic is safely and efficiently managed throughout the duration of the Project. These plans and information have been prepared for use in the coordination efforts noted above. As the Project design advances and more detailed information becomes available, and factoring in the comments received during Algonquin's continuing coordination efforts, the Traffic Management Program can be modified and refined as necessary.

[1] 15 U.S.C. § 717f(c) (2006).

2.0 PROJECT DESCRIPTION

The work on the West Roxbury Lateral is planned to commence as early as April of 2015 at selected locations, particularly in the Westwood and Dedham areas, following the issuance of all necessary approvals, and is expected to be completed by November 2016. To expedite the completion of the Project, weekday working hours between 7:00 AM and 7:00 PM are desirable. However, Algonquin recognizes that these hours will not be possible for all portions of the Project due to traffic management considerations, and that night working hours will be required, primarily in non-residential areas. For example, in discussions with MassDOT, that agency has indicated that nighttime construction will be required along Providence Highway in Dedham. The exact timeframe for the completion of the Project is, therefore, dependent on weather conditions, the extent of restricted work hours and other factors. To minimize the duration of construction, work may occur simultaneously in various areas as multiple dedicated construction crews are expected to be working on the Project. For each portion of the Project involving work in public roadways, traffic management plans will be required to help ensure general public safety and to maintain appropriate traffic flow. In addition to measures to address motor vehicles, considerations also will be made for pedestrians, bicycles, and construction workers. As such, Algonquin will continue to work closely with the various municipalities and public agencies involved, as well as residential and commercial stakeholders that may be affected by the Project.

3.0 EXISTING TRAFFIC CONDITIONS

This final Traffic Management Study supplements both an initial evaluation which was prepared in February 2014 for this Project, and a prior version of this assessment dated June 2014. This current updated version reflects the final alignment as proposed and includes detailed current traffic counts at key locations along the Project corridor with associated analysis. The traffic management plans to be implemented during construction were developed based on observed traffic volumes and patterns, existing roadway geometry and traffic control, and measures to maintain appropriate access to abutting residents and businesses. The first step in conducting this traffic data collection effort was to review currently available data to help determine the most critical locations within the Project limits in terms of traffic management. This preliminary traffic count information was obtained from a variety of sources, including the MassDOT traffic count database, municipal websites and recent traffic studies prepared for development projects or roadway improvements in the area. Due to the age of some of this information, updated traffic counts were required at multiple key locations within the Project study area as described in the following section. The updated traffic count data and expected roadway configurations during construction have been reviewed to identify the general operating conditions that can be expected. This effort includes evaluating level-of-service for key study area roadways or intersections both under existing conditions and during construction. As part of this effort, data from MassDOT's "Standard Details and Drawings for the Development of Traffic Management Plans"[2] have been reviewed to determine how the observed volumes compare to the expected roadway capacities during construction.

3.1 Traffic Volumes

Traffic volumes (i.e., vehicles, pedestrians, bicyclists) for the study area roadways and intersections were collected manually and mechanically by VHB to provide a basis from which to evaluate traffic conditions. In May 2014, VHB conducted Automatic Traffic Recorder counts (ATRs) for a 72-hour period along the following study area roadways:

- Elm Street (Dedham) - between Providence Highway and Legacy Place driveway
- Providence Highway (Dedham) - between Legacy Boulevard signal and Best Buy/Star signal
- East Street (Dedham) - north of High Street
- High Street (Dedham) - east of East Street
- Washington Street (Dedham/Boston) - between Lower East Street and Oak Street
- Grove Street (Boston) - south of Centre Street
- Centre Street (Boston) - south of Spring Street

The observed volumes on these roadways, and the manner in which the volumes vary over the course of a typical weekday and Saturday, are summarized in Table 1.

[2] MassDOT "MassHighway Standard Details and Drawings for the Development of Temporary Traffic Control Plans"; http://www.massdot.state.ma.us/portals/8/docs/flaggers/tcp.pdf. Accessed February 2014.

Table 1
Observed Variations of Traffic Volumes

	Weekday[1]	Hourly Traffic Range[2]			Commuter Hours[3]		Saturday	Hourly Traffic Range[2]		
Location	**Daily**	**Low**	**High**	**Average**	**AM Peak**	**PM Peak**	**Daily**	**Low**	**High**	**Average**
Dedham:										
Elm Street										
Eastbound	6,309	146	640	390	284	640	7,736	120	696	517
Westbound	8,636	240	698	545	500	661	10,768	181	950	687
Total	14,945	386	1,301	936	784	1,301	18,504	301	1,603	1,204
Providence Highway										
Northbound	24,178	1,294	1,735	1,545	1,634	1,735	25,667	646	1,993	1,633
Southbound	22,542	558	1,790	1,377	1,098	1,789	23,669	579	1,925	1,548
Total	46,720	1,992	3,524	2,921	2,732	3,524	49,336	1,225	3,826	3,181
East Street	1,981	67	161	124	141	161	2,298	38	208	152
High Street	16,181	796	1,362	1,101	1,221	1,362	14,522	465	1,089	954
Washington Street										
Northbound	11,358	513	802	692	661	795	11,976	250	926	704
Southbound	9,827	431	766	628	576	766	10,698	388	817	702
Total	21,185	944	1,561	1,320	1,237	1,561	22,674	638	1,687	1,405
West Roxbury										
Grove Street	8,569	402	724	597	682	724	7,266	229	589	478
Centre Street	7,282	331	637	513	577	637	6,219	190	506	400

Source: Automatic Traffic Recorder (ATR) Counts conducted in May 2014.
1 average daily traffic volume expressed in vehicles per day
2 volumes expressed in vehicles per hour and report low, high and average hourly traffic volumes between 7:00 AM and 7:00 PM. Volumes for northbound and southbound sections of Providence Highway do not necessarily add up to match total, as low- and high-volume conditions for the median-divided roadway may occur at different times.
3 volumes expressed in vehicles per hour and report commuter peak hour traffic between 7:00 AM – 9:00 AM (AM Peak) and between 4:00 PM – 6:00 PM (PM Peak).

Manual turning movement counts ("TMCs") also were collected at key signalized study area intersections where traffic flow may be affected by some travel lanes being temporarily unavailable during daytime construction hours. The TMCS were collected at the study area intersections on a typical weekday from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. Additional TMCs also were conducted during a midday off-peak period, 11:00 AM to 1:00 PM, for use in evaluating the feasibility of conducting construction during regular daytime working hours, but outside of the typical peak commuter time periods.

3.2 Traffic Management Strategy

Based on the automatic traffic recorder ("ATR") counts noted in the previous section, traffic flow within the study area remains relatively constant throughout the day. However, these counts indicate that the volumes on Providence Highway decrease significantly following the weekday evening commuter peak period. See Figure 1. Given the consistently high volumes of traffic along this and other study area

roadways, it is important to maintain reasonable traffic flow in all directions throughout the day. The traffic management plans accompanying this submittal do not propose any detours, and all turning movements at intersections shall be maintained so that businesses and traffic patterns are not significantly impacted. However, these plans have been developed with the understanding that detours potentially could be required at some locations (such as at the Providence Highway/Eastern Avenue and Washington Street/Grove Street intersections) if necessitated by field conditions during construction. While the currently proposed alignment does not require any detours, Algonquin will continue to coordinate with MassDOT and the respective municipalities during the permitting process in the event that any subsequent alignment changes or conditions should require detours. Lane closures and lane shifts are expected to occur at various times throughout the duration of construction for the Project. Therefore, the Traffic Management Plan for this Project has been developed with the goal of minimizing the number of lanes to be closed within the existing roadway cross-sections for most phases of construction. The primary goal of this strategy is to prevent unnecessary delays to the motoring public. However, work along certain sections of Providence Highway will require the temporary closure of two lanes of travel. Likewise, some phases of the Traffic Management Plan will require that two of the westbound Elm Street lanes approaching its signalized intersection with Providence Highway be closed. These temporary multi-lane reductions will be required only for some phases of the proposed Traffic Management Plan, and that work only will occur during evening hours. Based on ongoing discussions with MassDOT it is understood that construction along the Providence Highway corridor will need to occur during evening hours and not during the typical 7:00 AM to 7:00 PM working hours planned for most of the Project. Any work that is to occur during or near peak traffic hours (7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM) on roadways not under MassDOT jurisdiction will be coordinated in advance with Westwood, Dedham and/or the City of Boston. Maintaining two-way traffic flow also shall be closely coordinated with maintaining pedestrian accessibility, as well as providing access for businesses and residents. Finally, in its entirety the Project is expected to be constructed over two construction seasons. The traffic management plan developed and analyzed for this Project addresses the major aspects of construction. The following provides more details on the traffic management plan for the corridor.

For the purpose of this assessment, the Project was considered in the following five general representative segments:

1. East Street (Westwood) northerly to Providence Highway/Elm Street (Dedham)
2. Providence Highway at Elm Street northerly to Eastern Avenue
3. Eastern Avenue to Washington Street
4. Washington Street to Grove Street (West Roxbury)
5. Grove Street and Centre Street to Spring Street

General traffic conditions within each of these general areas are discussed in the following sections based on VHB's observations and updated traffic data collection.

3.3 East Street (Westwood) northerly to Providence Highway at Elm Street (Dedham)

The majority of the construction work in Westwood extending into the southerly portion of Dedham will occur on private property and not within public roadways. Notable exceptions to this are at the East Street crossing, which will involve open trench construction, and the crossing of the pipeline underneath Route I-95, which will be done by directional drilling that will not affect roadway traffic. The southerly limits involve work on private property south and adjacent to the East Street rotary above Route I-95 in Westwood. As noted above, the Project will cross East Street, which is two-lane 30-foot wide roadway, just south of

the section under MassDOT jurisdiction. Based on 2012 traffic counts[3] and VHB's projections for growth in this area, this road should carry approximately 16,500 and 9,500 vehicles per day ("vpd") on a typical weekday and Saturday, during the 2015/2016 construction seasons. Detailed traffic management plans depicting the phased lane closures which will be required on East Street at this location have been provided with this submittal.

After crossing East Street, the proposed line will run south of and adjacent to Route I-95 before crossing underneath the highway roughly 900 feet to the north of East Street. Based on counts by MassDOT,[4] Route I-95 carried approximately 139,439 vpd in 2012. As the pipe installation will occur underneath the highway via directional drilling work in the vicinity of Route I-95, traffic management measures are not required for this crossing.

After passing underneath the highway, the line will continue to Rustcraft Road in Dedham, which is a local two-lane road ranging from 28- to 32-feet in width. As the roadway alignment curves to the northeast the road is named Elm Street. Elm Street has a general 36- to 38-foot width before flaring to a roughly 70-foot width at its intersection with Providence Highway (formerly known as Route 1). The Legacy Place shopping center is located north of and adjacent to Elm Street and Fox 25 is located at the southeast corner of the Providence Highway/Elm Street intersection. Residential homes and apartment buildings also are located along Rustcraft Street and Elm Street. The segment of Elm Street adjacent to the shopping center to the west of its signalized intersection with Providence Highway generally has a single eastbound lane and two westbound lanes.

Site-specific traffic management plans for the two-lane Rustcraft Road/Elm Street sections, and the multi-lane road section near the Providence Highway/Elm Street intersection have been included with this submittal. These reference drawings have been substantially enhanced and refined since their original versions. These changes were primarily the result of a shift in the pipeline alignment within Rustcraft Road and Elm Street and the ongoing coordination with the Town of Dedham, MassDOT and representatives of the Legacy Place shopping center. Based on automatic traffic recorder counts conducted by VHB in May 2014, Elm Street currently carries approximately 14,945 and 18,504 vpd on a typical weekday and Saturday, respectively. These counts were conducted to the west of the Legacy Place driveway on Elm Street and, as such, include volumes generated by that retail center as well as other nearby uses. Due to changes in the proposed pipeline alignment, a crossing of the Legacy Place driveway on Elm Street is no longer required.

The observed hourly volumes summarized above also were compared to the roadway capacities which will be available in conjunction with the traffic management plans. This comparison is discussed in detail later in the "Traffic Management Plans" section of this report.

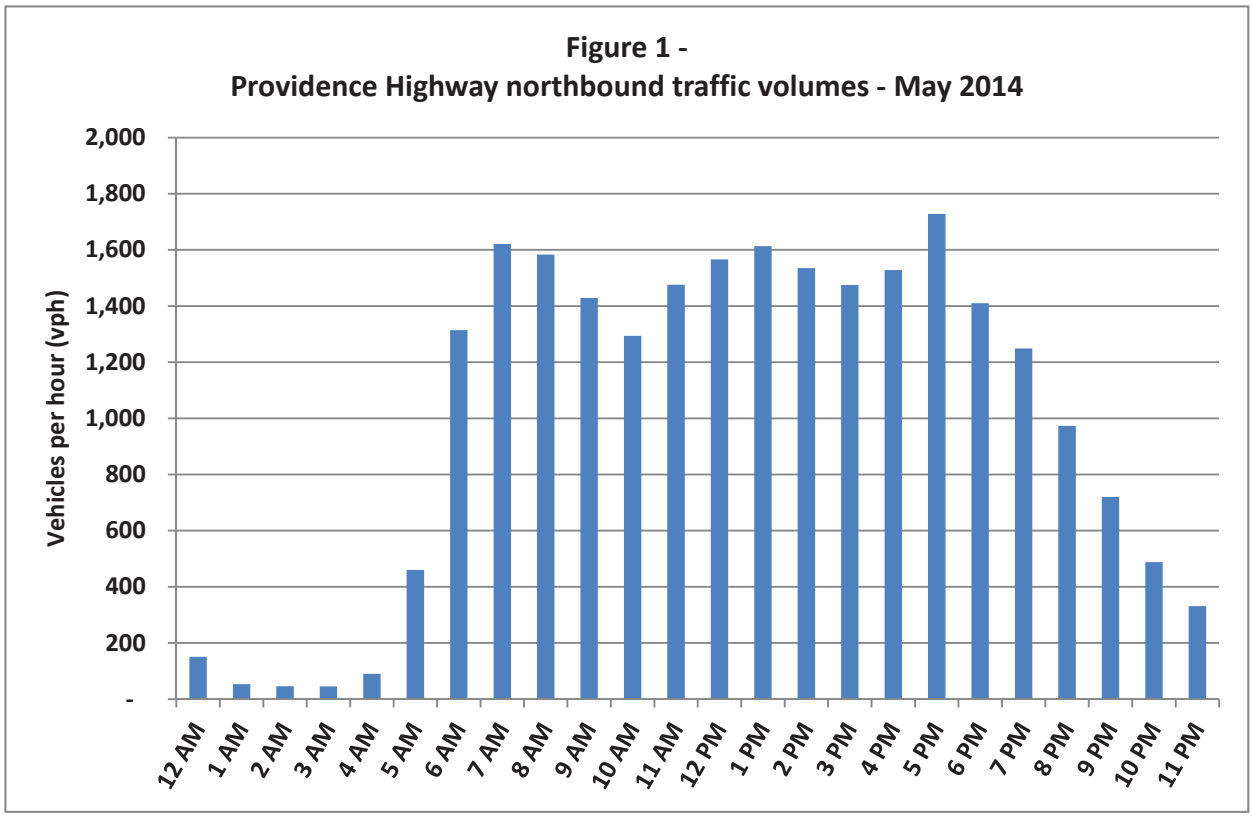
3.4 Providence Highway at Elm Street northerly to Eastern Avenue (Dedham)

Within the Project study area, Providence Highway is a median-divided roadway carrying up to three travel lanes in each direction, with additional turning lanes provided at select locations. The roadway is under MassDOT jurisdiction. The segment of this roadway in the vicinity of Legacy Place was reconstructed as part of the construction of that shopping center in 2009. As part of the current evaluation, VHB conducted ATR counts on Providence Highway to the north of Legacy Boulevard for a continuous 72-hour period including a typical weekday and Saturday. The counts indicate that this roadway currently carries approximately 46,720 vehicles on a typical weekday. However, possibly due to the concentration of retail and restaurant uses along this corridor, Friday volumes were observed to be higher, with approximately

[3] University Station – Traffic Impact Study; TetraTech / VAI (November 2012).

[4] MassDOT "Transportation Data Management System"; http://mhd.ms2soft.com/tcds/tsearch.asp?loc=Mhd&mod=; Accessed February 2014.

49,050 vehicles traveling on this segment. Likewise, Saturday volumes were slightly higher with 49,336 vehicles observed on Providence Highway. The pipeline installation along this road segment is planned to occur entirely on the northbound side of the median-divided roadway. While the pipeline originally was planned to be installed along the right-shoulder of the northbound side of this roadway, there have been changes to this alignment. Specifically, based on input from MassDOT and in order to minimize impacts to abutting businesses and conflicts with existing utilities, the pipeline installation now instead will occur on the westerly side of the northbound segment adjacent to the median. As discussed later in this report, this will simplify the traffic management needs along this segment of the Project. The hourly volumes along this northbound segment of Providence Highway were reviewed as summarized in Figure 1.



As shown in Figure 1, northbound volumes on this roadway begin to increase significantly starting at 6:00 AM on a typical weekday. The volumes decline slightly from 9:00 AM to 11:00 AM before steadily climbing through the evening commuter peak period. These observed volumes also were compared to the Providence Highway capacity that would be available with the traffic management plans in place during typical daytime working hours. This discussion is provided later in the "Traffic Management Plans" section of this report. This information is provided for reference and documentation only, as daytime construction is not feasible in this area based on the volumes shown in Figure 1. Instead, following coordination with MassDOT it was determined that nighttime construction would be required for the Providence Highway corridor. As shown above, the volumes along the northbound side of Providence Highway steadily decrease to manageable levels following the weekday evening commuter peak period. Furthermore, from 11:00 PM to 5:00 AM there is a negligible volume of traffic on this segment as compared to that experienced during typical daytime hours. This will allow for construction to occur with only minimal impacts to traffic operations in this area during the planned evening working hours.

3.5 East Street to Washington Street (Dedham)

Just north of Providence Highway's intersection with Eastern Avenue, the proposed pipeline will shift off of the road and onto recreational fields owned by the Town of Dedham to the east of the roadway. This will occur immediately north of the driveway to the Staples retail center. From that point, work will extend across the town-owned land until the pipeline crosses High Street and continues to the north along East Street. The work is then planned to continue along East Street to its intersection with Washington Street.

The High Street/Harris Street/East Street intersection along this route was recently reconstructed and signalized. While two-way traffic is allowed for almost the entire length of the roadway, East Street is one-way heading northbound at its intersection with Washington Street. As such, the observed southbound traffic on this roadway is associated solely with the residents along this roadway. This is due to entering traffic from Washington Street not being allowed. By comparison, the northbound segment of this road carries both traffic associated with residents of this road as well as traffic heading from High Street to Washington Street. Based on May 2014 ATR counts conducted for this evaluation, East Street currently carries 1,981 vehicles on a typical weekday, which is consistent with prior counts in this area. Saturday volumes on this roadway were observed to be slightly higher, with 2,298 vehicles observed over the course of the Saturday counted. ATRs counts also were conducted on High Street immediately east of High Street as part of this evaluation. The counts indicate that High Street currently carries approximately 16,181 and 14,522 vehicles on a typical weekday and Saturday, respectively.

While the volume along this two-lane locally owned roadway is lower than other portions of the Project, additional considerations will be required to appropriately minimize impacts to abutters. The traffic management plans include a variety of typical details that will be utilized for the lane shifts, closures and minor intersection crossings that will be encountered along this roadway. Due to the complexity of the Highway/East Street intersection, phase traffic management plans for that crossing have been prepared as discussed in more detail in the "Traffic Management Plans" section of this report.

3.6 Washington Street to Grove Street (West Roxbury)

At the northerly end of the East Street work, the construction will shift across a grassed area to the east of Washington Street. This proposed route will help to minimize impacts to the Washington Street/East Street/Dedham Mall signalized intersection. At that point, the route continues along the northbound side of the median-divided Washington Street. This revised configuration will require less-intensive traffic management compared to the initial proposal that involved crossing Washington Street onto Lower East Street, crossing Mother Brook, and then returning to Washington Street. For the segment between East Street and Rockland Street (almost one-half mile in length), the alignment will run along the northbound side of Washington Street. From that point, the line will cross to the southbound side of Washington Street and continue approximately 1,100 feet to the signalized Washington Street/Grove Street intersection. The traffic management plans include standard details for lane shifts and closures and typical treatments for minor intersection crossings. Due to the location of the proposed road opening opposite Curve Street and Lower East Street, a two-phase site specific traffic management plan has been developed for that location.

Starting in 2009, Washington Street was reconstructed from Providence Highway to the Boston City line. Following the completion of the right-of-way process, jurisdiction of this road will be transferred from MassDOT to the Town of Dedham. The portion of this roadway in Boston will continue to remain under City control unaffected by this change. Updated traffic counts conducted as part of this current Project assessment indicate that Washington Street currently carries 21,185 and 22,674 vehicles on a typical weekday and Saturday, respectively. Peak hour volumes ranged from 1,600- to 2,200 vehicles per hour ("vph") during the respective weekday morning and evening peak hours. Additional discussion regarding

the observed traffic volumes relative to the planned traffic management plans is provided later in this assessment.

3.7 Grove Street and Centre Street to Spring Street (West Roxbury)

The pipeline installation will continue from Washington Street onto Grove Street continuing to the north. This two-lane local roadway is under City of Boston jurisdiction and is characterized by its residential nature. As part of this study, VHB conducted ATR counts on Grove Street to the south of Centre Street. The counts indicate that this roadway currently carries approximately 8,569 and 7,266 vehicles on a typical weekday and Saturday, respectively. ATR counts also were conducted on the northerly segment of this roadway after it transitions from Grove Street into Centre Street. The counts on this segment are slightly lower, with 7,282 and 6,219 vehicles observed on a typical weekday and Saturday, respectively. Site-specific traffic management plans depicting the expected temporary lane shifts are provided attached to this submittal. The traffic management plans developed will allow for two-way traffic flow on this segment throughout construction. As discussed later in this document, the complex nature of the pipeline alignment through the Washington Street/Grove Street intersection required that a two-phase, site-specific traffic management plan be developed for that location. For the remainder of Grove Street and Spring Street, traffic will be managed during construction through a variety of typical details for lane closures, lane shifts, and intersection treatments as shown on the plans accompanying this submittal. Additional considerations also were given to traffic management near the West Roxbury Crushed Stone quarry (discussed in the following section) and for the Centre Street/Spring Street intersection. To properly manage traffic at the signalized Centre Street/Spring Street intersection, a four-phase site-specific traffic management plan was developed for that location as shown in the attached plans.

3.7.1 West Roxbury Crushed Stone Quarry

The West Roxbury Crushed Stone quarry is located east and adjacent to Grove Street opposite Centre Street. Algonquin is not aware of any planned changes to this active facility which is expected to continue its regular quarry activity and on-site blasting. Based on discussions between Algonquin and quarry representatives, between 100 and 150 trucks currently visit the quarry on a typical day. This translates into roughly 200 to 300 truck trips on a typical weekday. The single unit trucks are generally 18- to 20-feet in length, though there are a limited number of trailers leaving the site which are up to 32-feet long. This trucking activity is generally confined to March through December, with that volume dropping by 50- to 60- daily trucks during the winter months. The first four or five trucks generally begin to exit the facility starting at 7:30 AM, with relatively constant departures occurring until about 1:30 PM after which exiting traffic decreases notably. In addition to this truck traffic, there are also approximately 17 to 25 workers traveling to and from this site on a typical workday. These workers area generally on-site from 6:00 AM to 5:00 PM on weekdays, and 6:00 AM to noon on Saturdays. The facility is not in operation on Sundays.

VHB also conducted manual turning movement counts at the intersection of Grove Street/Centre Street with the quarry driveway. The counts were conducted on Thursday, May 8, 2014 during from 7:00 AM to 9:00 AM, 11:00 AM to 1:00 PM, and 4:00 PM to 6:00 PM. The peak one-hour period for the quarry during the time period observed occurred between 8:00 AM and 9:00 AM. During this time, 24 vehicles entered the site while 25 exited. Approximately 80-percent of these trips were made by trucks with the remainder being employees or visitors to the site. As noted above, activity decreased throughout the day with 20 vehicles entering and 17 exiting between 11:00 AM and 12 noon, with over 80-percent of that traffic being trucks. By the late afternoon, only 9 employee vehicles were observed exiting the site between 4:00 PM and 5:00 PM.

Traffic at the intersection of Grove Street/Centre Street with the quarry driveway will be managed during construction with the typical intersection crossing plans shown in the accompanying plans. With these

measures in place, quarry trucks still will be able to access and egress that site with minimal delay while minimizing impacts both to that site and the surrounding neighborhood.

4.0 COORDINATION WITH AGENCIES / MUNICIPALITIES / PROJECT STAKEHOLDERS

As part of the ongoing coordination efforts for the Project, Algonquin has consulted with multiple public agencies and other stakeholders in the area. A list of the various public and landowner outreach meetings is provided below. Construction, traffic, safety and other project related topics were discussed at each of the meetings. At the local municipal level, Algonquin is coordinating directly with officials from the Towns of Westwood and Dedham, and the City of Boston on an ongoing basis. Algonquin also has met with representatives of MassDOT on several occasions.

- Landowner Informational Meeting
  West Roxbury, MA
  July 23, 2013

- Landowner Informational Meeting
  Dedham, MA
  July 25, 2013

- Algonquin Public Open House
  Dedham, MA
  August 14, 2013

- Algonquin Public Open House
  West Roxbury, MA
  September 3, 2014

- FERC Scoping Meeting
  Dedham, MA
  October 3, 2013

- Massachusetts Energy Facility Siting Board Hearing
  Dedham, MA
  December 3, 2013

- West Roxbury Civic Association
  West Roxbury, MA
  December 11, 2013

The following sections provide a general summary of these initials discussions regarding the traffic management aspects of the Project.

4.1 Town of Westwood

As noted earlier, the majority of the construction work in the Town of Westwood will occur on private property and not on Town roads. However, in addition to discussions concerning general construction activity within the Town, Algonquin also has discussed the work proposed to cross East Street near the Route I-95 rotary. While the planned work within the Route I-95 state highway layout is under MassDOT jurisdiction, the nature of this work also was discussed. To date, an introductory meeting was held with the Westwood Department of Public Works (DPW) and the Police and Fire Chiefs on July 18, 2013. At a

subsequent meeting on December 9, 2013, local permitting requirements through the Conservation Commission were discussed along with general outreach plans for abutters and other interested parties. Additional meetings with the various town departments involved also have been held on February 14, 2014 and as recently as August 25, 2014 and will continue to occur as the Project advances through the federal, local and state permitting processes.

4.2 Town of Dedham

Algonquin has met with representatives of the Town of Dedham to discuss construction plans within Dedham. An initial meeting was held with the Dedham Engineering Department and Fire Department on July 18, 2013 to discuss general construction activity, potential working days/hours, and traffic management. Particular attention was given to measures to minimize potential impacts to residents and commercial entities in the area. The Town's road repair/restoration requirements relative to the Project also were reviewed as part of these discussions. Following that initial consultation, Algonquin met with the Town of Dedham DPW Director and Director of Engineering on December 9, 2013. At this meeting the Town requested that a traffic study be provided, and the need for both Dedham and MassDOT approval of appropriate working hours within portions of Providence Highway was discussed. The expected local permitting required through the Conservation Commission and Board of Selectmen (for potential off-peak works hours) also was reviewed. Most recently, the Project team met with multiple Town of Dedham department heads on April 14, 2014, July 28, 2014 and August 25, 2014 to update the Town on the status of the Project, and to seek input on various aspects of the proposed alignment and the planned traffic management during construction. The Project team also made a presentation concerning the Project to the Dedham Board of Selectmen on September 4, 2014 which was carried by local cable television. Algonquin will continue to coordinate with the Town of Dedham throughout the remainder of the planning and construction processes.

4.3 City of Boston

The Algonquin team had an introductory meeting with City representatives on July 10, 2013 to provide a general Project overview. The Project was discussed in greater detail at a subsequent July 25, 2013 meeting attended by representatives of the Boston DPW and Boston Transportation Department (BTD), as well as the Boston Mayor's Office West Roxbury Coordinator.

The general plans for construction activity and traffic management along the Washington Street and Grove Street corridors were discussed. The City placed a particular emphasis on the need to address potential concerns of local residents, schools and businesses along these roadways. Further meetings will be held with BTD and the Boston Department of Public Works as the construction plans are further refined. This Project also has been entered into the City of Boston Utility Coordination "COBUCS" database so that long-term planning for the timing of this Project relative to other planned projects in the area can begin.

4.4 MassDOT

As Route I-95 and portions of Providence Highway are state highways under MassDOT jurisdiction, Algonquin has met with the MassDOT District 6 office in Boston on multiple occasions. To date, Algonquin has met with MassDOT staff on July 22, 2013 to discuss general traffic management protocol, potential permitting needs associated with the construction, and other transportation-related matters. An additional meeting was held on December 2, 2013 to discuss these matters in greater detail. Since that time, the Project team met again at the District 6 office on April 16, 2014 and July 16, 2014 to provide an update on the Project, and additional discussions have occurred since that time. Algonquin will continue this coordination with MassDOT to refine the traffic management plans as the Project advances.

4.5 Project Stakeholders

In addition to the agency/municipality coordination outlined above, Algonquin also has engaged various other commercial stakeholders along the affected corridor. The following section provides a summary of this coordination, which will continue throughout the FERC review process and subsequent construction.

4.5.1 Legacy Place Shopping Center – Dedham

Following the December 3, 2013 public hearing on the Project, Algonquin and representatives from Legacy Place arranged to meet to discuss the planned construction in detail. This meeting with the management of the Legacy Place shopping center and National Amusements, the operators of the theatre complex at Legacy Place, was held at the National Amusement's offices in Norwood, Massachusetts on January 27, 2014. Algonquin's proposal for construction activity in this area at that time was presented, with input, thoughts and concerns of Legacy Place and National Amusements being discussed at length. A follow-up meeting to continue these discussions was held on March 11, 2014.

Most recently, the Project team met with representatives from Legacy Place and National Amusements on July 8, 2014 and August 18, 2014. The purpose of these meetings was to provide a general update concerning the Project status, particularly with regard to the revised alignment within Rustcraft Road, Elm Street and Providence Highway and the traffic management plans which were being developed to support that alignment. Both Legacy Place and National Amusements acknowledged that the shift in alignment served to address significantly their concerns when compared to the alignment as initially proposed. Algonquin is committed to continued coordination with Legacy Place, National Amusements and other abutters in this area, throughout the remainder of the permitting and construction process.

4.5.2 West Roxbury Civic and Improvement Association

Algonquin attended the December 11, 2013 meeting of the West Roxbury Civic and Improvement Association. Approximately thirty local residents were in attendance, along with the City of Boston Ward Councilor Matt O'Malley. The meeting included a summary of the Project with local residents providing their input and concerns. In addition to traffic, construction constraints associated with the nearby West Roxbury Crushed Stone quarry were discussed along with the general safety and integrity of the proposed pipeline.

4.5.3 FERC – Public Meeting

Algonquin attended the September 8, 2014 public meeting held for the Project at the Dedham Holiday Inn's conference facilities. The public meeting was held as part of the FERC process to provide the public with the opportunity to comment, on the record, regarding any general concerns or other matters relating to the Draft Environmental Impact Statement. At the meeting comments were made by roughly thirty attendees concerning a variety of topics including safety, traffic management, schedule and related matters.

5.0 TRAFFIC MANAGEMENT PLANS

General traffic management plans have been developed and included as part of this submittal. The plans were developed following standards contained in the Manual on Uniform Traffic Control Devices (MUTCD)[5]. While not all of the affected roadways are under MassDOT jurisdiction, MassDOT's "Standard Details and Drawings for the Development of Traffic Management Plans" also were reviewed. These resulting plans are expected to be implemented for the majority of the work areas. However, additional site-specific traffic management plans are required for certain key areas where unique conditions or constraints exist. The following section provides a summary of the attached traffic management plans.

5.1 Pedestrian Accommodations

Currently there are varying degrees of pedestrian activity within the Project area, with the busier sections being located in the residential areas of Dedham and West Roxbury. For those areas where sidewalks will need to be closed on a temporary basis a proposed pedestrian bypass is provided within the standard details of the traffic management plans. Pedestrians will be maintained on the same side of the roadway and temporary wheelchair ramps will be provided to ramp the pedestrians from the existing sidewalk to the roadway. The pedestrians will be separated from the travel lanes by drums. If the width is not sufficient to accommodate traffic and pedestrian activity, then pedestrians will be directed to cross to the sidewalk on the opposite side of the street or at the closest adjacent intersection. The traffic management plans accompanying this submittal includes details for pedestrian bypasses, sidewalk detours or diversions, and crosswalk closures. These treatments will be implemented within the Project limits as required to help maintain safe and efficient pedestrian accommodations during all phases of construction.

In addition, the work being performed is in an area where there are concentrated sections of predominately retail and commercial business uses. Accordingly, the intent of the traffic management plan for this Project is that access to all properties must be maintained at all times. Safe and ready means of ingress and egress to all stores and shops, public and private and professional offices and any other businesses or residences in the project area, both day and night, shall be provided for the project duration. If the access needs to be restricted for a short period of time, the contractor shall coordinate with the owner to determine an acceptable time to perform the work.

5.2 Bicycle Accommodations

Currently there is limited bicycle activity within the project area. Based on field observations conducted as part of this assessment, most of this activity is oriented towards residential uses at the southerly limits of the project along Elm Street, and further to the north in West Roxbury. Bicyclists currently share the road within the Project study area as shoulder width is minimal and there are not any separate bicycle facilities currently in place. Therefore, bicycles will be accommodated within normal vehicular traffic.

5.3 Roadway Segment Lane Shifts and Closures

The following describes the traffic management details that may be used during construction. These plans are depicted in the detailed traffic management plans accompanying this submittal. As all roadways that are expected to be impacted by construction provide a variety of general configurations (i.e., multi-lane,

[5] U.S. Department of Transportation Federal Highway Administration, Manual on Uniform Traffic Control Devices, 2009 Edition; Washington DC, December 2009.

median-divided, etc.), construction activity will be accomplished through one, or a combination, of the described lane closure/shift details.

One-lane closure details shall be used in instances where there is a cross-section of two-lanes or more in a single direction and work needs to be performed within or along the edge of the roadway. It is expected that construction for the majority of the study area will be accomplished using this traffic set-up. As this detail will reduce the overall cross section and number of lanes, the roadway capacity would be impacted on a temporary basis as shown in Table 2.

Table 2
Arterial Work Zone Capacities

	Hourly Traffic Range[1]			Traffic Management Plan Capacity[2]		
Location	**Low**	**High**	**Average**	**Lanes[3]**	**Ideal Average Capacity[4]**	**Meets MassDOT[5]**
Dedham:						
Elm Street (westbound)	240	698	545	2 to 1 (WB)	1,340	Yes
Providence Highway (northbound)	1,294	1,735	1,545	3 to 2 (NB)	2,980	Yes
Providence Highway (northbound)	1,294	1,735	1,545	3 to 1 (NB)	1,170	No
Providence Highway (northbound)	1,294	1,735	1,545	2 to 1 (NB)	1,340	No
East Street	67	161	124	2 to 1	1,340	Yes
West Roxbury (Boston):						
Washington Street (northbound)	513	802	692	2 to 1 (NB)	1,340	Yes
Washington Street (southbound)	431	766	628	2 to 1 (SB)	1,340	Yes

Source: Automatic Traffic Recorder (ATR) Counts conducted in May 2014.
1 Volumes expressed in vehicles per hour and report low, high and average hourly traffic volumes (by direction) between the hours of 7:00 AM and 7:00 PM.
2 Traffic management plans provided accompanying this evaluation.
3 Indicates the cross sectional change for the corridor; i.e. 2 to 1 indicates that 2 travel lanes will be reduced to 1 travel lane during construction
4 Ideal Average Lane Capacity values obtained from Figure Gen-1, General Guidelines, Standard Details and Drawings for the Development of Traffic Management Plans, prepared by MassDOT.
5 Indicates whether this section of the corridor will meet the MassDOT guidelines for Average Lane Capacity in a work zone.

As the required details will reduce the overall cross section and number of lanes, the roadway capacity in certain areas will be impacted on a temporary basis. The streets where this condition is applicable all have adequate capacity to accommodate the required lane closures during the planned working hours. As noted earlier, for the entire length of the Providence Highway, corridor work will be restricted to evening hours instead of during the normal daytime working hours that will be utilized for other portions of the Project. Also, the segment of Rustcraft Road (which is generally the continuation of Elm Street to the east of the Robinwood Road/Legacy Place intersection) may require a single lane closure. A site-specific traffic management plan for the boring pit work at the easterly end of Rustcraft Road where the line first will enter the roadway has been prepared. This will require the closure of the northbound travel lane. Therefore, traffic flow in each direction will need to alternate under the control of police details at this location. The

next quarter-mile of pipeline installation leading to the Robinwood Road/Legacy Place intersection will occur along the easterly/southerly side of the roadway. While it may be possible for the existing single lanes of traffic to be maintained in both directions, the same single-lane closure treatment described above will be utilized for this area as needed. This segment is not summarized in Table 2 as the Elm Street traffic counts were taken to the west of the Legacy Place driveway, where volumes are considerably higher than on this easterly segment. This conclusion is based on ongoing traffic observations at this location, and the existing restriction of exiting let-turns onto Elm Street from the Legacy Place driveway. Regardless, while the capacity of the easterly segment clearly will be reduced in the event of a single-lane closure, this condition should be manageable on a temporary basis based on the lower volumes for this segment. The police officer required in conjunction with the traffic management detail will have the ability to manage traffic flow alternating in either direction to avoid any undue impacts on either approach to the work area.

5.3.1 Elm Street (Dedham) – one lane closure

For the majority of its length adjacent to the Legacy Place shopping center in Dedham, Elm Street has a single eastbound lane and two westbound lanes. The gas line installation is now proposed to occur in the curbside area on the eastbound side of the roadway. Therefore, this will require a typical single-lane closure treatment as shown in the accompanying plans. As noted above, these plans are intended to show Algonquin's general approach to traffic management for a variety of representative conditions. The Elm Street single-lane closure plan is primarily focused on the area extending from the Legacy Place driveway to just east of the Providence Highway/Elm Street intersection. The eastbound Elm Street approach to the Legacy Place driveway currently features an exclusive left-turn lane into that site. Likewise, the westerly segment of the roadway flares to a greater width near the Providence Highway intersection due to the multiple travel lanes on that approach. The extra width available within the roadway cross-section as a result of these existing configurations will allow for two-way traffic flow to be maintained within this segment during construction. As there is no on-street parking on Elm Street and fewer private driveways than on those roadways, there should be additional flexibility in how traffic is managed in this area.

The accompanying plans also include a three-phase treatment showing the traffic management for the crossing from the south side of Elm Street to the north side of the roadway leading to its signalized intersection with Providence Highway. This crossing will occur to the west of the Fox 25 driveway, and was shifted slightly to the west from an earlier alignment proposal. Due to its proximity to the Providence Highway signal, this work will occur during evening hours. By shifting the crossing further to the west away from nearby residents, evening construction-related impacts to homes to the east will be minimized further compared to the initial proposal.

While the capacity of a single lane can generally range from 1,400 to 1,600 vph, the capacity in work zones is further reduced. However, as these volumes are well below the standard capacity level, work-hour limitations should not be necessary strictly from a volume standpoint. Regardless, the Project team will continue to work with the Town of Dedham and the abutting businesses and residents to determine the appropriate work hours and schedule. It is expected that work in the immediate vicinity of the Providence Highway/Elm Street intersection will occur during evening hours to minimize disruptions to traffic flow. The specific traffic management measures that will be required at the signalized Providence Highway/Elm Street intersection are described in detail later in this section.

5.3.2 Providence Highway (Dedham) – northbound lane closures

The pipe installation adjacent to the Legacy Place shopping center now will occur on the *left-side* of the northbound portion of the roadway adjacent to the center median. Originally, the pipeline was planned to be installed along the right-shoulder/curbside area on the northbound side of the roadway. By shifting the alignment as currently proposed, impacts to the multiple commercial abutters along the easterly side of the

roadway will be significantly reduced, along with the complexity of the required traffic management plans. With this alignment the travel lane adjacent to the median will need to be closed, leaving two remaining travel lanes in the northbound direction. This condition will continue for 4,400 feet to the north to the point where the northbound approach tapers down from three lanes to two lanes. Additional standard details depicting the three northbound lanes temporarily being shifted into a single lane also have been provided in the accompanying plans in case that treatment should become necessary in the field during construction. Likewise, one phase of construction at the Providence Highway/Elm Street intersection to the south will require the closure of two northbound lanes. Site-specific traffic management plans have been prepared for this condition as described in detail later in this section. Historically, MassDOT's general practice in this area has been to limit weekday construction to between the hours of 9 AM and 3 PM. However, with the required time for construction set up and other factors, it will be more productive and less disruptive for traffic flow to limit work hours to times outside of the peak periods discussed earlier. As shown earlier in Table 2, the average hourly volume on the northbound side of Providence Highway on a typical weekday between 7 AM to 7 PM is approximately 1,545 vehicles per hour (vph). Volumes during the weekday morning and evening peak hours are higher, with 1,634 and 1,735 vph observed, respectively. When two lanes are closed the available capacity would be approximately 1,170 vph. Accordingly, to minimize the impact to traffic and to maximize the length of available working hours for a given day, work will occur exclusively during overnight hours. Given the primarily commercial nature of the Project area along Providence Highway, nighttime construction should have minimal impact on adjacent properties.

5.3.3 East Street (Dedham) – single lane closure

East Street in Dedham is a two-lane residential roadway between High Street and Washington Street. With the exception of the northerly 150-foot one-way segment approaching its signalized intersection with Washington Street two-way traffic is currently allowed on East Street. Due to the narrow width of the roadway, it will not be possible to maintain simultaneous two-way travel during most construction. Instead, traffic flow will alternate in both directions separately under police officer detail/flagger control using the traffic management plan shown. The traffic management plans for this roadway include a variety of typical details that will be utilized for the lane shifts, closures and minor intersection crossings that will be encountered along this roadway.

5.3.4 Washington Street (Dedham/West Roxbury) – single lane closure

Similar to Providence Highway, Washington Street is a median-divided multi-lane roadway. Starting at its intersection with East Street, work in this area will occur along the northbound side of Washington Street. During construction, traffic along this roughly one-half mile segment will be managed appropriately using a typical single-/left-lane closure treatment. At Washington Street's intersection with Rockland Street, the alignment will shift to the southbound side of Washington Street. From that point, the line will cross to the southbound side of Washington Street and continue approximately 1,100 feet to the signalized Washington Street/Grove Street intersection. That work will generally occur adjacent to the center median with traffic being managed through a typical single-lane closure treatment. As this corridor is near capacity during peak periods construction working hours may need to be limited to end prior to the weekday evening peak period, or with other limitations. The exact work schedule and hours for construction will be discussed with the Town of Dedham and City of Boston as part of the ongoing Project coordination. The accompanying traffic management plans include standard details for lane closures and typical treatments for minor intersection crossings. Due to the location of the proposed road opening opposite Curve Street and Lower East Street a two-phase site specific traffic management plan has been developed for that location. The site-specific traffic management plans for the Washington Street/Grove Street intersection also are discussed later in this section.

5.3.5 Grove Street (West Roxbury)

The majority of the approximately 0.5± miles of work within Grove Street will be on the northbound side of the roadway. The attached plans depict the required lane shifts for this work with accompanying police detail/flagger control. While the majority of this work should be able to occur with only lane shifts, standard details for single lane closures with accompanying police-control to manage alternating traffic flow in each direction also have been provided. Some on-street parking spaces in certain areas will need to be temporarily removed for portions of construction as shown. These plans may be refined further both during the permitting process and during construction as needed to help ensure that impacts to abutting residents are minimized. Understanding the limited available on-street parking in this area Algonquin will implement measures to minimize the number of construction workers needing to drive to this area and park their own vehicle.

5.3.6 Centre Street (West Roxbury)

The remaining 0.70+ miles of work from Centre Street's intersection with Grove Street to Spring Street will be similar to that along Grove Street. Accordingly, the traffic management will be similar for both segments. As with Grove Street the traffic management plans will continue to be refined to meet the needs of residents along this roadway. Similar to Grove Street, Algonquin will implements measures to minimize construction worker traffic and parking impacts to this area.

5.4 Traffic at Intersections

The majority of the intersection work within the study area will be constructed by maintaining at least one lane on all approaches where work is proposed. If a lane needs to be closed, this work shall be conducted during off-peak conditions so that traffic flows are not constrained at the study area intersections. Details illustrating the traffic management plan for intersections are included in the traffic management plans accompanying this submittal. Traffic operations at some of the more complicated locations within the Project limits are discussed in the following section.

5.4.1 Providence Highway at Elm Street

As noted earlier, a multi-phase traffic management plan will be utilized for work at this location. Due to the heavy traffic volumes documented earlier in this assessment, work at this location will need to occur during evening hours. Work at this location is expected to occur using the following two-phase traffic management approach:

Phase 1: With the planned pipeline installation along the northerly side of Elm Street, the existing westbound right-turn lane will be closed on a temporary basis. During this construction phase, the adjacent exclusive through-lane will temporarily function as a shared through-/right-turn lane. On the northbound Providence Highway approach, the easternmost through-lane will be blocked off with barrels, but access into the exclusive right-turn lane onto Elm Street will be maintained. Access to the right-turn entrance to Legacy Place to the north of the signal will be maintained during each phase of this traffic management plan.

Phase 2: This phase of traffic management will be implemented for the work involving pipeline installation on the northbound side of Providence Highway adjacent to the median. For this work two of the three Providence Highway northbound through-lanes will need to be closed on both the arriving and departing sides of the intersection. Access to both the northbound left- and right-turn lanes will be maintained during all phases on construction. Due to the location of the proposed

work, one of the existing two eastbound through-lanes will temporarily be converted to an exclusive left-turn lane as that existing lane's alignment cannot be maintained during construction.

5.4.2 Providence Highway at Signalized Commercial Parking Lot Driveway

The following traffic management treatments were primarily developed for Providence Highway's intersection with the Dedham Plaza (Shaw's Supermarket) and TGI Friday's/Best Buy driveways. However, certain elements of these plans, along with the typical roadway crossing plans, also may be used for other locations along the corridor, including the Providence Highway/Legacy Boulevard intersection. As noted earlier in this report, work in this area will be limited to evening hours following consultation with MassDOT

Phase 1: The first segment of work would involve pipeline installation within the southerly potion of the intersection. During this timeframe, the northbound left-turn lane would be closed, and the adjacent northbound through-lane would temporarily be converted to a through-/left-turn lane under police detail control. Both the eastbound and westbound intersection approaches would need to be consolidated into a single lane to avoid the construction within the southerly end of the intersection.

Phase 2: The next phase of traffic management would be required for work within the center of the signalized intersection. The same general approach treatment for Providence Highway northbound would be required, but with a slightly different alignment of traffic approaching from the private driveways to the east and west.

Phase 3: For work within the northerly potion of the intersection traffic management for the northbound Providence Highway and westbound approaches generally would remain unchanged from the prior two phases. However, the eastbound approach generally would be able to function as it does under existing conditions, though under the direction of police officer control during evening construction.

As a four-way signalized intersection, the configuration outlined above generally should represent the most complicated condition encountered along the Providence Highway corridor. Accordingly, these traffic management principles, along with those depicted in the general minor roadway crossing treatments, should be appropriate for other locations along Providence Highway. While other locations, such as Providence Highway's intersection with Legacy Boulevard, have different lane configurations, conditions at those locations are less complicated than those outlined under this four-way signalized intersection configuration.

5.4.3 Providence Highway at Eastern Avenue

Work within this signalized intersection will need to be managed with the following three phases, which will occur during evening hours as noted earlier:

Phase 1: The first segment of work would involve pipeline installation within the southerly portion of the intersection. Currently there are two through-lanes and an exclusive left-turn lane on the Providence Highway northbound approach. During this phase this would be reduced to a single shared through-/right-turn lane and an exclusive left-turn lane. The westbound two-lane approach also would need to be reduced to a single lane to maintain proper traffic alignment between the two intersecting Eastern Avenue approaches.

Phase 2: The second phase of work involves pipeline installation within the center of the intersection. During this phase of construction the general lane configurations outlined above would

remain unchanged, but with slightly different alignments of the side streets to avoid the center intersection construction.

Phase 3: The final phase of work at the northerly end of the intersection requires the same general lane configurations outlined above but with slightly different alignments. The police officer details shown on the accompanying plans will help to avoid conflicts between the Eastern Avenue approaches. Limiting this work to evening hours will help to minimize impacts at this location.

5.4.4 High Street/Harris Street/East Street intersection

Work within this signalized intersection will need to be managed with a three-phase traffic management plan. Capacity analysis summarizing operating conditions at this location during construction are provided later in this document.

Phase 1: The first phase of work involve pipeline installation at the southerly portion of the intersection. During this phase the existing northbound High Street approach will need to be converted to a single lane instead of the current left-/through and right-turn lane combination.

Phase 2: The next phase of construction will involve work within the center of the signalized intersection. This will require that both the eastbound Harris Street and westbound High Street approaches temporarily being reduced to single lanes without the current exclusive turn lane treatments. Both the northbound High Street and southbound East Street approaches also will need to have their alignments temporarily shifted to avoid the center intersection construction.

Phase 3: Under this final phase of construction intersection lane use along the northbound High Street and eastbound Harris Street approaches should be returned to their current configurations. However, traffic on the westbound High Street approach will need to be shifted into a single lane to avoid construction on the northerly side of the intersection. Two-way traffic also should be maintained on East Street under police-officer control.

5.4.5 Washington Street at Grove Street

Work within this signalized intersection is planned to occur in the following stages:

Phase 1: The first phase of work involves pipeline installation within the southerly potion of the intersection on the westerly side of the median. Currently the southbound Washington Street approach features an exclusive left-turn lane, a through-lane, and a shared through-/right-turn lane. During this phase of construction the exclusive left-turn lane will be maintained but with only a single shared through-/right-turn lane. The two-lane eastbound Grove Street approach will be reduced to a single shared-lane during this time period.

Phase 2: During the second phase of construction only a single shard-lane will be provided on the Washington Street southbound approach. A single lane also will be provided on the eastbound Grove Street approach. Police officer control will continue to be required to help manage traffic flow during this phase on construction.

5.4.6 Spring Street at Centre Street

Work within this signalized intersection is planned to occur within the following stages to appropriately manage traffic conditions during construction. Capacity analysis summarizing operating conditions for each phase of construction at this location are provided later in this document.

Phase 1: The first phase of pipeline installation will occur within the Centre Street northbound channelized right-turn lane. During this timeframe the adjacent shared left-/through-lane will need to be converted to a single lane accommodating all movements with police details being utilized to help manage traffic flow during this timeframe.

Phase 2: The second phase of work at this location will involve pipeline installation on the eastbound side of Spring Street. During this period, the two Spring Street eastbound lanes will be reduced to a single shared-lane. Traffic on the Centre Street northbound approach will return to the existing shared left-/through-lane and right-turn lane configuration but with a slightly different alignment approaching the intersection.

Phase 3: The next phase of work at this location will involve construction within the median area and eastbound travel lanes. During this phase the eastbound Spring Street approach will be reduced to a single shared lane. The westbound Spring Street approach also will be converted to two general purpose lanes as a result of the westbound exclusive left-turn lane being eliminated on a temporary basis.

Phase 4: During the final phase of construction the pipeline will be installed to meet the exiting line in this area within Spring Street. Under this condition impacts primarily will be limited to the westbound intersection approach. Specifically, the westbound approach will be reduced to a single travel lane accommodating all movements under police-officer control.

5.4.7 Level of Service and Delay Criteria

The evaluation criteria used to analyze area intersections in this traffic study are based on the 2000 Highway Capacity Manual (HCM)[6]. The term 'Level of Service' ("LOS") is used to denote the different operating conditions that occur on a given roadway segment under various traffic volume loads. It is a qualitative measure that considers a number of factors including roadway geometry, speed, travel delay and freedom to maneuver. LOS provides an index to the operational qualities of a roadway segment or an intersection. LOS designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions.

In addition to LOS, two other measures of effectiveness (MOEs) are typically used to quantify the traffic operations at intersections; volume-to-capacity ratio (v/c) and delay (expressed in seconds per vehicle). For example, an existing v/c ratio of 0.9 for an intersection indicates that the intersection is operating at 90 percent of its available capacity. A delay of 15 seconds for a particular vehicular movement or approach indicates that vehicles on the movement or approach will experience an average additional travel time of 15 seconds. For a given LOS letter designation, there may be a wide range of values for both v/c ratios and delay. Comparison of intersection capacity results therefore requires that, in addition to the LOS, the other MOEs should also be considered.

For signalized intersections, the capacity analysis considers the operation of all traffic entering the intersection and the LOS designation is for overall conditions at the intersection. Table 3 shows the LOS criteria for signalized intersections.

6 Transportation Research Board, Highway Capacity Manual, Washington, D.C., 2000.

Table 3
Level of Service Criteria

Level of Service	Delay – Signalized Intersection
A	0 to 10 seconds
B	10 to 20 seconds
C	20 to 35 seconds
D	35 to 55 seconds
E	55 to 80 seconds
F	Greater than 80 seconds

Source: 2000 Highway Capacity Manual Exhibits 16-2 and 17-2.

5.4.8 Signalized Intersection Capacity Analysis

Capacity analyses were conducted for key signalized study area intersections where capacity will be reduced on a temporary basis during potential daytime construction hours. For comparison purposes, this analysis was conducted for both current conditions and the temporary conditions involving lane closures at intersections that will occur on a phased basis during construction. A summary of the analysis for the High Street/Harris Street/East Street intersection is presented in Table 4. The phased construction analysis results for the Spring Street/Centre Street/Temple Street intersection in Table 5.

Table 4
Signalized Intersection Capacity Analysis
High Street/Harris Street/East Street intersection

	2014 Existing				Construction – Phase 1			
	V/C[c]	Delay[b]	LOS[a]	95th % Queue[d]	V/C	Delay	LOS	95th % Queue
Weekday AM								
Harris Street EB LTR	0.39	35.6	D	50	N/A	N/A	N/A	N/A
Harris Street EB L	N/A	N/A	N/A	N/A	0.07	32.4	C	15
Harris Street EB TR	N/A	N/A	N/A	N/A	0.52	36.1	D	91
High Street WB L	0.94	44.4	D	#371	0.91	36.9	D	#330
High Street WB TR	0.37	16.7	B	137	0.35	15.5	B	125
High Street NB LT	0.05	10.8	B	31	N/A	N/A	N/A	N/A
High Street NB RT	0.20	2.7	A	14	N/A	N/A	N/A	N/A
High Street NB LTR	N/A	N/A	N/A	N/A	0.27	13.8	B	67
East Street SB LTR	0.03	10.7	B	21	0.04	11.6	B	23
Overall	**0.53**	**25.7**	**C**		**0.57**	**25.3**	**C**	
Weekday Midday								
Harris Street EB LTR	0.51	28.2	C	80	N/A	N/A	N/A	N/A
Harris Street EB L	N/A	N/A	N/A	N/A	0.07	23.3	C	20
Harris Street EB TR	N/A	N/A	N/A	N/A	0.67	31.3	C	156
High Street WB L	0.84	31.6	C	#194	0.86	32.5	C	#177
High Street WB TR	0.27	15.9	B	81	0.25	13.9	B	75
High Street NB LT	0.06	8.4	A	28	N/A	N/A	N/A	N/A
High Street NB RT	0.20	4.3	A	16	N/A	N/A	N/A	N/A
High Street NB LTR	N/A	N/A	N/A	N/A	0.29	11.9	B	51
East Street SB LTR	0.02	8.1	A	8	0.02	9.6	A	9
Overall	**0.46**	**19.3**	**B**		**0.53**	**22.1**	**C**	
Weekday Evening								
Harris Street EB LTR	0.71	32.8	C	106	N/A	N/A	N/A	N/A
Harris Street EB L	N/A	N/A	N/A	N/A	0.13	25.4	C	26
Harris Street EB TR	N/A	N/A	N/A	N/A	1.11	115.9	F	#283
High Street WB L	0.89	33.5	C	#296	0.91	35.7	D	#304
High Street WB TR	0.22	12.5	B	77	0.22	12.2	B	77
High Street NB LT	0.07	11.1	B	33	N/A	N/A	N/A	N/A
High Street NB RT	0.35	5.0	A	21	N/A	N/A	N/A	N/A
High Street NB LTR	N/A	N/A	N/A	N/A	0.45	15.5	B	77
East Street SB LTR	0.06	11.1	B	21	0.08	11.5	B	22
Overall	**0.61**	**19.6**	**B**		**0.71**	**40.1**	**D**	

Table 4 (Continued)
Signalized Intersection Capacity Analysis
High Street/Harris Street/East Street intersection

	Construction – Phase 2				Construction – Phase 3			
	V/C[c]	Delay[b]	LOS[a]	95th % Queue[d]	V/C	Delay	LOS	95th % Queue
Weekday AM								
Harris Street EB LTR	0.12	9.7	A	52	0.07	9.4	A	25
High Street WB LTR	1.17	109.4	F	#737	1.20	>120	F	#747
High Street NB L	0.02	15.8	B	12	N/A	N/A	N/A	N/A
High Street NB TR	0.27	18.5	B	67	N/A	N/A	N/A	N/A
High Street NB LT	N/A	N/A	N/A	N/A	0.07	16.2	B	35
High Street NB R	N/A	N/A	N/A	N/A	0.21	17.8	B	50
East Street SB LTR	0.05	16.1	B	25	0.04	16.0	B	25
Overall	**0.80**	**73.6**	**E**		**0.79**	**80.9**	**F**	
Weekday Midday								
Harris Street EB LTR	0.32	12.9	B	116	0.18	11.8	B	52
High Street WB LTR	1.07	78.7	E	#420	1.05	71.3	E	#414
High Street NB L	0.03	11.1	B	13	N/A	N/A	N/A	N/A
High Street NB TR	0.27	13.3	B	46	N/A	N/A	N/A	N/A
High Street NB LT	N/A	N/A	N/A	N/A	0.07	11.4	B	30
High Street NB R	N/A	N/A	N/A	N/A	0.22	12.8	B	34
East Street SB LTR	0.02	11.0	B	9	0.02	11.0	B	9
Overall	**0.67**	**42.8**	**D**		**0.63**	**39.0**	**D**	
Weekday Evening								
Harris Street EB LTR	0.46	14.1	B	150	0.25	12.3	B	66
High Street WB LTR	>1.2	>120	F	#595	>1.2	>120	F	#581
High Street NB L	0.02	11.0	B	12	N/A	N/A	N/A	N/A
High Street NB TR	0.44	15.4	B	69	N/A	N/A	N/A	N/A
High Street NB LT	N/A	N/A	N/A	N/A	0.07	11.4	B	33
High Street NB R	N/A	N/A	N/A	N/A	0.38	14.6	B	53
East Street SB LTR	0.09	11.7	B	22	0.06	11.3	B	21
Overall	**0.96**	**104.9**	**F**		**0.89**	**88.5**	**F**	

a Volume-to-capacity ratio.
b Average delay per vehicle in seconds.
c Level of Service.
d 95th percentile queue measured in feet
95th percentile volume exceeds capacity, queue may be longer
Note: Delay cannot be accurately calculated when volume-to-capacity ratio exceeds 1.20 or 1/PHF; delays can be assumed to exceed 120 seconds.
EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound;
L = Left; T = Through; R = Right

Table 5
Signalized Intersection Capacity Analysis
Spring Street/Centre Street/Temple Street intersection

	20014 Existing Conditions				Construction – Phase 1				Construction - Phase 2			
	V/C[c]	Delay[b]	LOS[a]	95th % Queue[d]	V/C	Delay	LOS	95th % Queue	V/C	Delay	LOS	95th % Queue
Weekday AM												
Spring Street EB LTR	0.58	19.8	B	229	0.57	19.4	B	229	1.03	64.9	E	#673
Spring Street WB L	0.47	10.6	B	82	0.47	10.6	B	82	0.51	13.8	B	82
Spring Street WB TR	0.43	9.9	A	180	0.43	9.9	A	180	0.43	9.9	A	180
Centre Street NB LT	0.31	29.9	C	78	N/A	N/A	N/A	N/A	0.31	29.9	C	78
Centre Street NB R	0.79	34.5	C	#182	N/A	N/A	N/A	N/A	1.20	>120	F	#348
Centre Street NB LTR	N/A	N/A	N/A	N/A	>1.2	>120	F	#453	N/A	N/A	N/A	N/A
Temple Street SB LTR	0.32	29.9	C	86	0.38	31.4	C	88	0.32	29.9	C	86
Overall	**0.67**	**18.7**	**B**		**0.82**	**64.5**	**E**		**1.01**	**51.1**	**D**	
Weekday Midday												
Spring Street EB LTR	0.58	20.8	C	#220	0.58	20.8	C	#220	1.05	71.8	E	#5783
Spring Street WB L	0.46	11.3	B	#106	0.46	11.3	B	#106	0.54	14.9	B	#126
Spring Street WB TR	0.35	10.4	B	146	0.35	10.4	B	146	0.35	10.4	B	146
Centre Street NB LT	0.11	22.0	C	35	N/A	N/A	N/A	N/A	0.11	22.0	C	35
Centre Street NB R	0.30	17.7	B	40	N/A	N/A	N/A	N/A	0.43	26.9	C	102
Centre Street NB LTR	N/A	N/A	N/A	N/A	0.53	29.4	C	126	N/A	N/A	N/A	N/A
Temple Street SB LTR	0.19	22.9	C	51	0.20	23.0	C	51	0.19	22.9	C	51
Overall	**0.47**	**15.9**	**B**		**0.55**	**17.1**	**B**		**0.77**	**36.6**	**D**	
Weekday PM												
Spring Street EB LTR	0.56	21.6	C	261	0.57	19.4	B	229	1.03	64.9	E	#673
Spring Street WB L	0.70	14.9	B	#211	0.47	10.6	B	82	0.51	13.8	B	82
Spring Street WB TR	0.37	8.6	A	191	0.43	9.9	A	180	0.43	9.9	A	180
Centre Street NB LT	0.35	37.1	D	66	N/A	N/A	N/A	N/A	0.31	29.9	C	78
Centre Street NB R	0.38	23.4	C	66	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Centre Street NB LTR	N/A	N/A	N/A	N/A	>1.2	>120	F	#453	1.2	>120	F	#348
Temple Street SB LTR	0.63	43.8	D	166	0.38	31.4	C	88	0.32	29.9	C	86
Overall	**0.67**	**18.6**	**B**		**0.82**	**64.5**	**E**		**1.01**	**51.1**	**D**	

Table 5 (Continued)
Signalized Intersection Capacity Analysis
Spring Street/Centre Street/Temple Street intersection

	Construction – Phase 3				Construction – Phase 4			
	V/C[c]	Delay[b]	LOS[a]	95th % Queue[d]	V/C	Delay	LOS	95th % Queue
Weekday AM								
Spring Street EB LTR	0.76	18.7	B	#537	0.42	10.5	B	174
Spring Street WB LTR	0.81	17.6	B	#342	>1.2	>120	F	#880
Centre Street NB LT	0.31	29.9	C	78	0.31	29.9	C	78
Centre Street NB R	1.20	>120	F	#348	1.20	>120	F	#348
Temple Street SB LTR	0.32	29.9	C	86	0.32	29.9	C	86
Overall	**0.91**	**39.4**	**D**		**>1.2**	**>120**	**F**	
Weekday Midday								
Spring Street EB LTR	0.72	18.4	B	#476	0.40	11.3	B	159
Spring Street WB LTR	0.69	14.8	B	#280	>1.2	>120	F	#695
Centre Street NB LT	0.11	22.0	C	35	0.11	22.0	C	35
Centre Street NB R	0.43	26.9	C	102	0.43	26.9	C	102
Temple Street SB LTR	0.19	22.9	C	51	0.19	22.9	C	51
Overall	**0.63**	**17.8**	**B**		**0.97**	**66.4**	**E**	
Weekday Evening								
Spring Street EB LTR	0.76	18.7	B	#537	0.42	10.5	B	174
Spring Street WB LTR	0.81	17.6	B	#342	>1.2	>120	F	#880
Centre Street NB LT	0.31	29.9	C	78	0.31	29.9	C	78
Centre Street NB R	1.2	>120	F	#348	1.2	>120	F	#348
Temple Street SB LTR	0.32	29.9	C	86	0.06	29.9	C	86
Overall	**0.91**	**39.4**	**D**		**>1.2**	**>120**	**F**	

a Volume-to-capacity ratio.
b Average delay per vehicle in seconds.
c Level of Service.
d 95th percentile queue measured in feet
95th percentile volume exceeds capacity, queue may be longer
Note: Delay cannot be accurately calculated when volume-to-capacity ratio exceeds 1.20 or 1/PHF; delays can be assumed to exceed 120 seconds.
EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound;
L = Left; T = Through; R = Right

As shown in Table 4, High Street's intersection with East Street and Harris Street currently operates acceptably under peak-hour conditions and during a typical weekday midday period. However, the required lane closures at this intersection will temporarily impact traffic operations. The analysis indicates that construction during the typical weekday commuter periods could be complicated, but that off-peak daytime construction is feasible through the implementation of the accompanying traffic management plans. However, as the westbound queues approaching the intersection may extend into the adjacent signalized

intersection to the east, evening construction hours are desirable to minimize any impacts further if permitted by the Town of Dedham. Likewise, traffic generally operates acceptably at the Spring Street/Centre Street intersection in West Roxbury throughout the day under existing conditions. With the planned pipeline construction route, the northbound Centre Street right-turn lane will need to be blocked off temporarily. This treatment will be limited to only one phase of the four traffic management phases planned for this location. The analysis indicates that the intersection can still operate efficiently throughout the day, though lengthy delays are expected on the northbound Centre Street approach to this intersection. However, these impacts will be temporary and the police officer details in place will have the ability to monitor traffic conditions and make adjustments as required. The analysis also indicates that with some of the temporary lane closures, there will be longer than normal delays that occur as a result of the lost capacity. These delays generally should be limited to a single intersection approach during a given phase of the traffic management plan. To avoid excessive delays at this location, work in the vicinity of these intersections should end prior to the late afternoon commuter peak period whenever possible.

5.5 Crosswalks, sidewalks, intersections – various locations

Various portions of the Project will involve temporary closures of sidewalks or crosswalks across streets or intersections. To make sure that safe and appropriate accommodations are available for pedestrians plans have been developed for conditions typically encountered. Additional plans will be developed to address unique conditions, such as areas near schools or densely populated areas. Plans depicting traffic management during the temporary closure of lanes at the center or sides of various intersections also have been developed. Additional site-specific plans will be prepared at locations with more complicated configurations, such as some of the signalized intersections along the Providence Highway corridor.

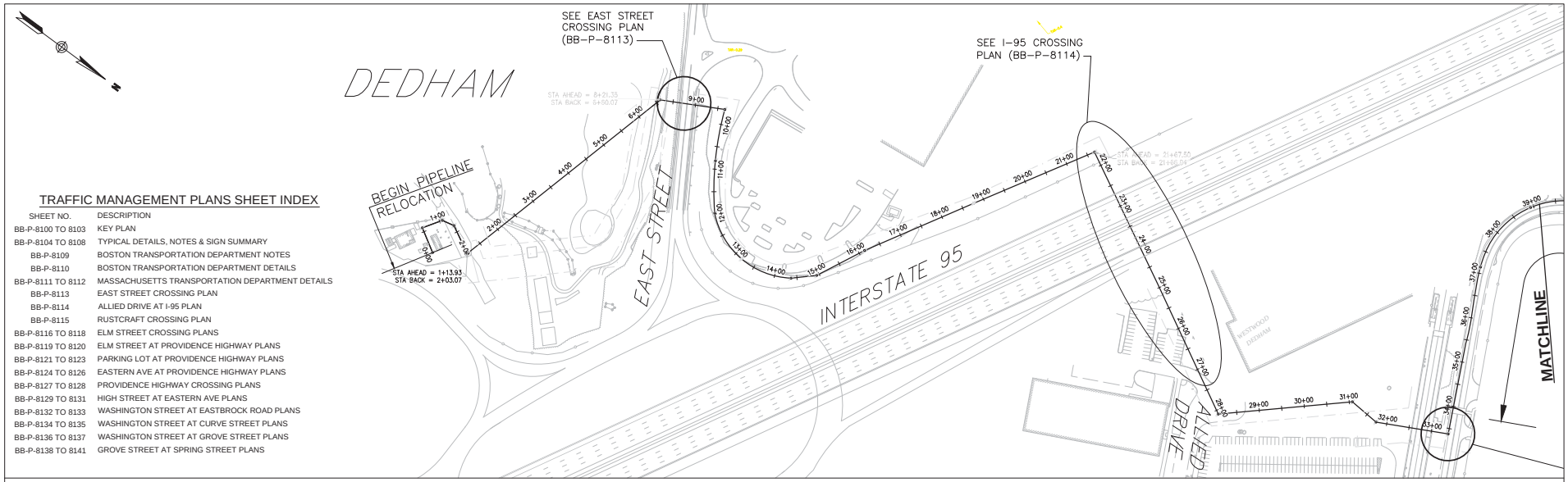
6.0 CONCLUSION

Algonquin has undertaken an extensive process of evaluating the traffic management measures which will be required during construction of the Project. To date, this effort has involved compiling available traffic count data in the vicinity of the Project and reaching out to the local communities, MassDOT and other stakeholders in order to obtain their input. The intent of this effort was to quantify existing traffic conditions, review notable traffic patterns, and to use this information to help identify appropriate working hours. Beyond the standard traffic data analysis, Algonquin also has taken the context of the surrounding area into consideration to help minimize any disruptions or impacts to nearby residences, businesses or schools. In doing so, there has been an extensive and ongoing community outreach and continued coordination efforts with the various municipalities, agencies and stakeholders involved with the Project.

In response to the thoughts and concerns of these various stakeholders, Algonquin has developed site-specific traffic management plans that will be implemented along the Project corridor. While the plans provided as part of this current submittal are expected to be utilized for the majority of the work areas, the Project contractor and accompanying police details will be able to implement additional temporary measures as needed. The general traffic management principles depicted on the attached plans are expected to be carried through for each portion of the Project to help minimize any disruptions to traffic operations in the area. As a result of the ongoing Project development and coordination with MassDOT, the towns of Dedham and Westwood, and the City of Boston, there have been multiple changes to the proposed pipeline alignment. With these changes, construction in certain areas, such as Providence Highway, now will require far less intensive traffic management measures than would have been necessary with the initially proposed alignment. The associated impacts to abutters in certain key areas also should be reduced as a result of the new alignment.

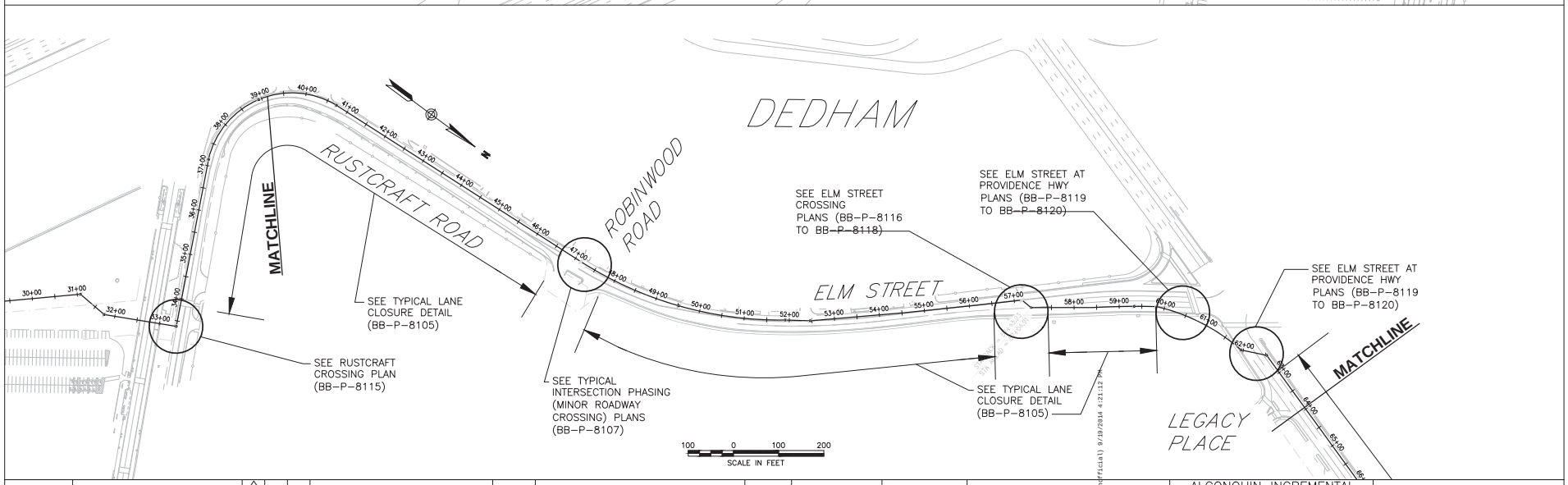
ATTACHMENT A

SITE SPECIFIC TRAFFIC MANAGEMENT PLANS



TRAFFIC MANAGEMENT PLANS SHEET INDEX

SHEET NO.	DESCRIPTION
BB-P-8100 TO 8103	KEY PLAN
BB-P-8104 TO 8108	TYPICAL DETAILS, NOTES & SIGN SUMMARY
BB-P-8109	BOSTON TRANSPORTATION DEPARTMENT NOTES
BB-P-8110	BOSTON TRANSPORTATION DEPARTMENT DETAILS
BB-P-8111 TO 8112	MASSACHUSETTS TRANSPORTATION DEPARTMENT DETAILS
BB-P-8113	EAST STREET CROSSING PLAN
BB-P-8114	ALLIED DRIVE AT I-95 PLAN
BB-P-8115	RUSTCRAFT CROSSING PLAN
BB-P-8116 TO 8118	ELM STREET CROSSING PLANS
BB-P-8119 TO 8120	ELM STREET AT PROVIDENCE HIGHWAY PLANS
BB-P-8121 TO 8123	PARKING LOT AT PROVIDENCE HIGHWAY PLANS
BB-P-8124 TO 8126	EASTERN AVE AT PROVIDENCE HIGHWAY PLANS
BB-P-8127 TO 8128	PROVIDENCE HIGHWAY CROSSING PLANS
BB-P-8129 TO 8131	HIGH STREET AT EASTERN AVE PLANS
BB-P-8132 TO 8133	WASHINGTON STREET AT EASTBROCK ROAD PLANS
BB-P-8134 TO 8135	WASHINGTON STREET AT CURVE STREET PLANS
BB-P-8136 TO 8137	WASHINGTON STREET AT GROVE STREET PLANS
BB-P-8138 TO 8141	GROVE STREET AT SPRING STREET PLANS



DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

TITLE	ENGINEERING APPROVALS			
DRAWN BY: P.W.Y.	BID		CONSTRUCTION	
CHECKED BY: R.J.M.				
	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014	W.O. 004110598	SCALE: 1"=100'	DWG. BB-P-8100	REV.

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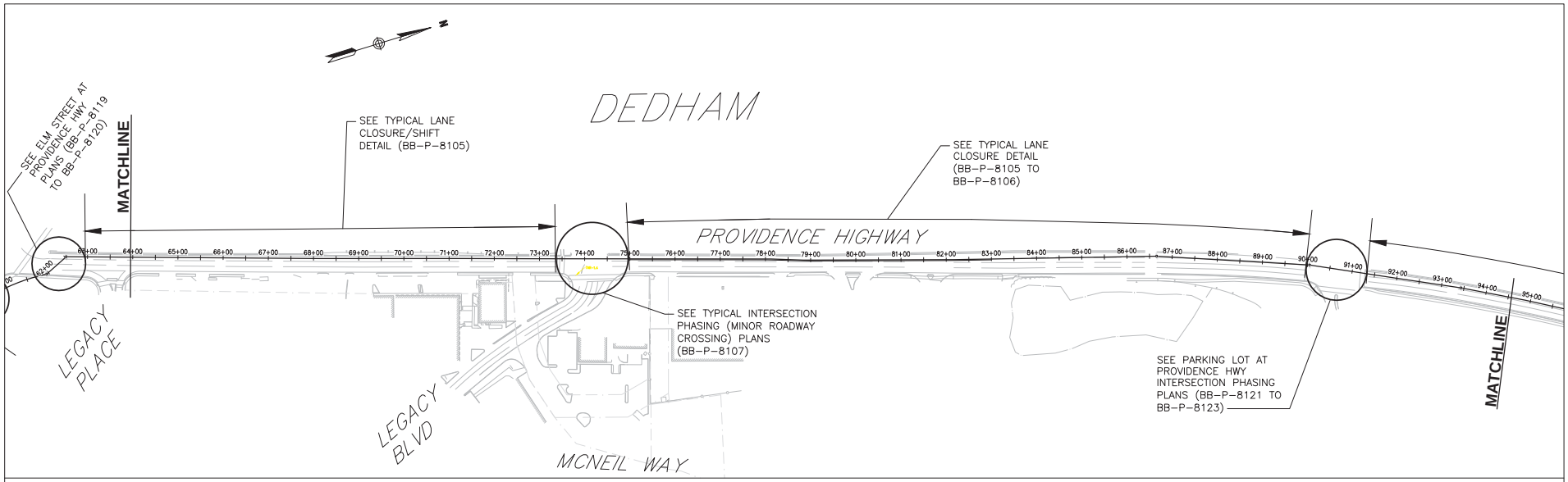

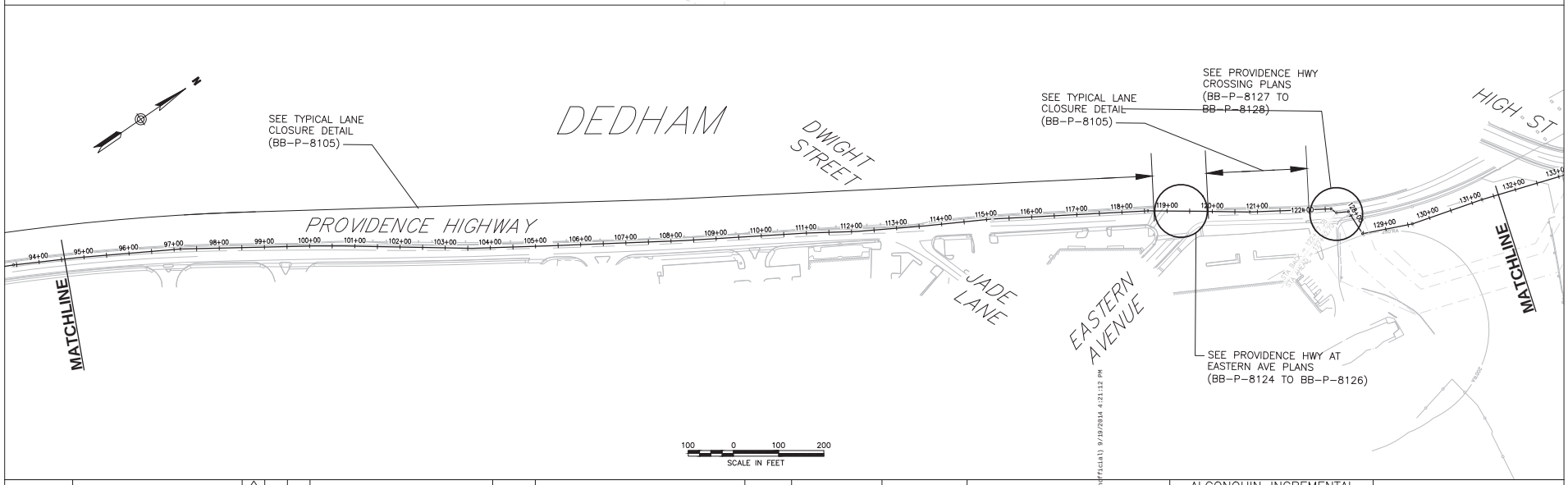

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

Vanasse Hangen Brustlin, Inc.
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Land Development
Environmental Services
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Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

TITLE	ENGINEERING APPROVALS				
DRAWN BY:	BID		CONSTRUCTION		
P.W.Y.					
CHECKED BY:					
R.J.M.					
	SIGNATURE	DATE	SIGNATURE	DATE	

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=100' | DWG. BB-P-8101 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

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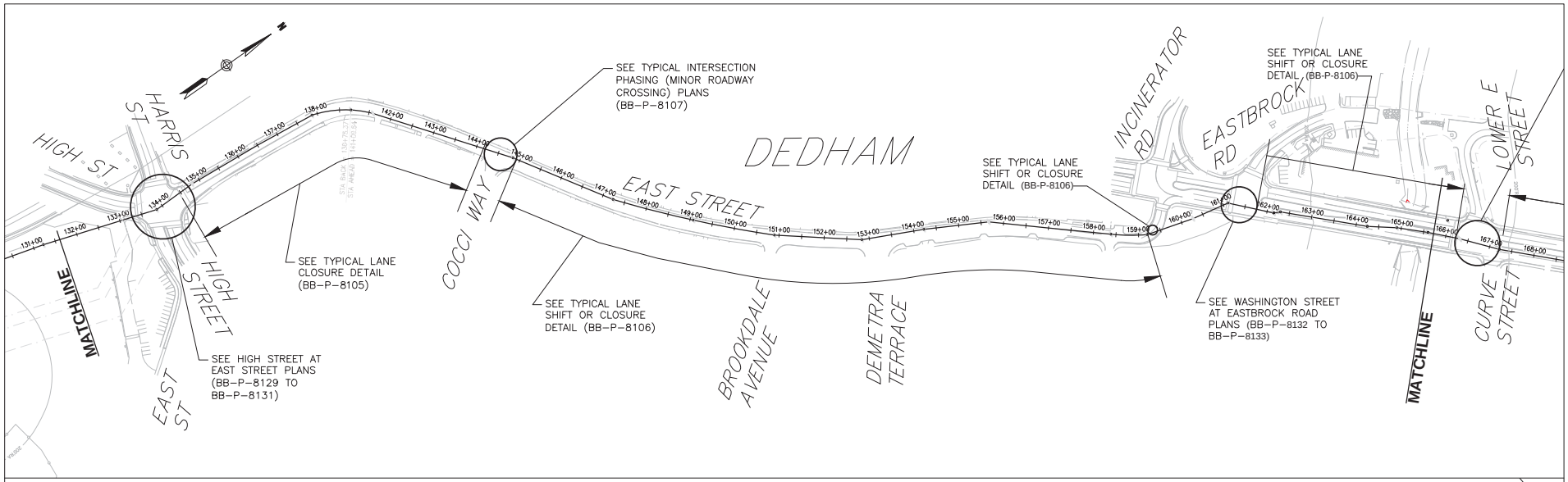

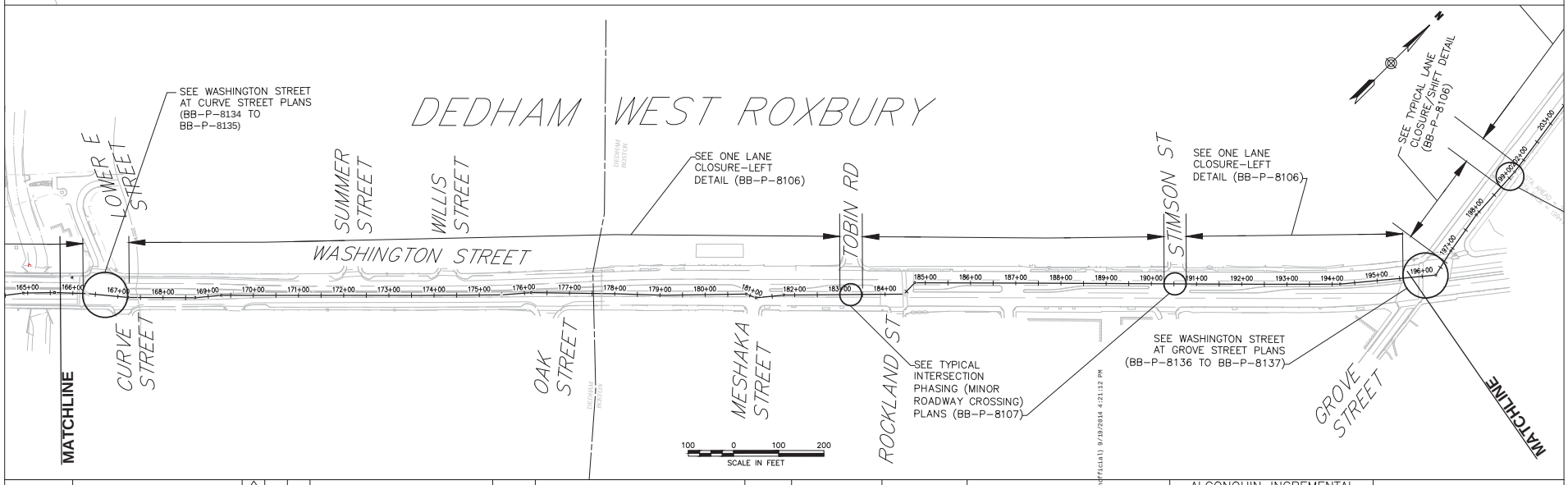

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
	REFERENCE DRAWINGS		REVISIONS				MATERIALS	

Weston & Sampson Engineers, Inc.
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
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TITLE	ENGINEERING APPROVALS				
	BID		CONSTRUCTION		
DRAWN BY: P.W.Y.					
CHECKED BY: R.J.M.					
	SIGNATURE	DATE	SIGNATURE	DATE	

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET
LOC. SUFFOLK/NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014	W.O. 004110598	SCALE: 1"=100'	DWG. BB-P-8102	REV.

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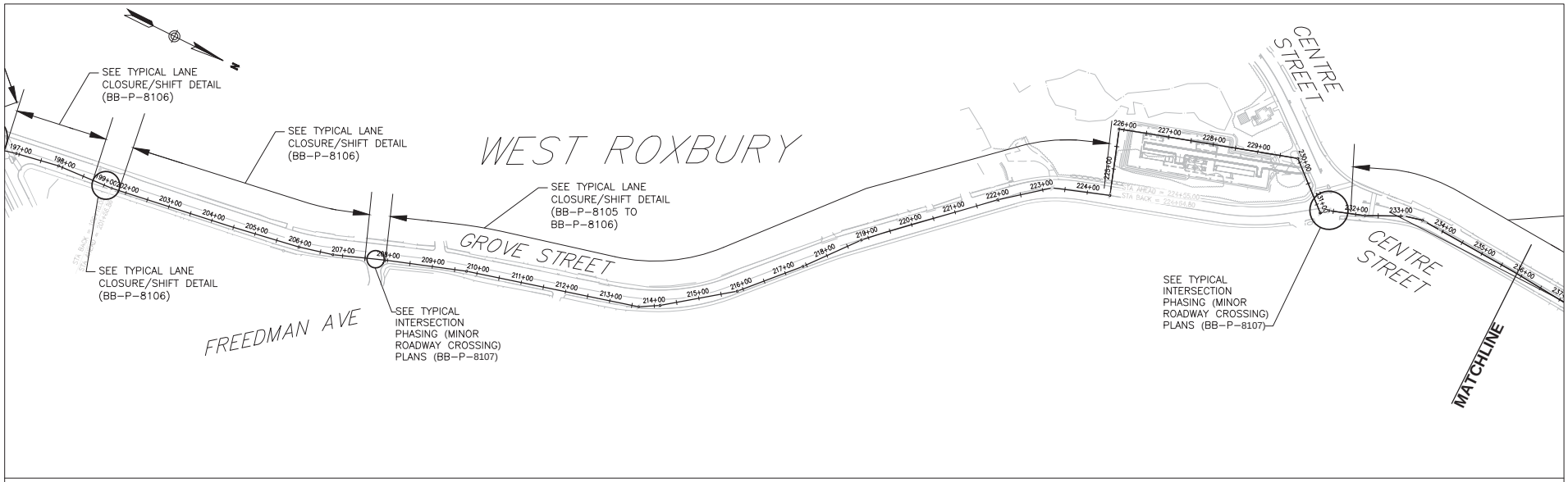

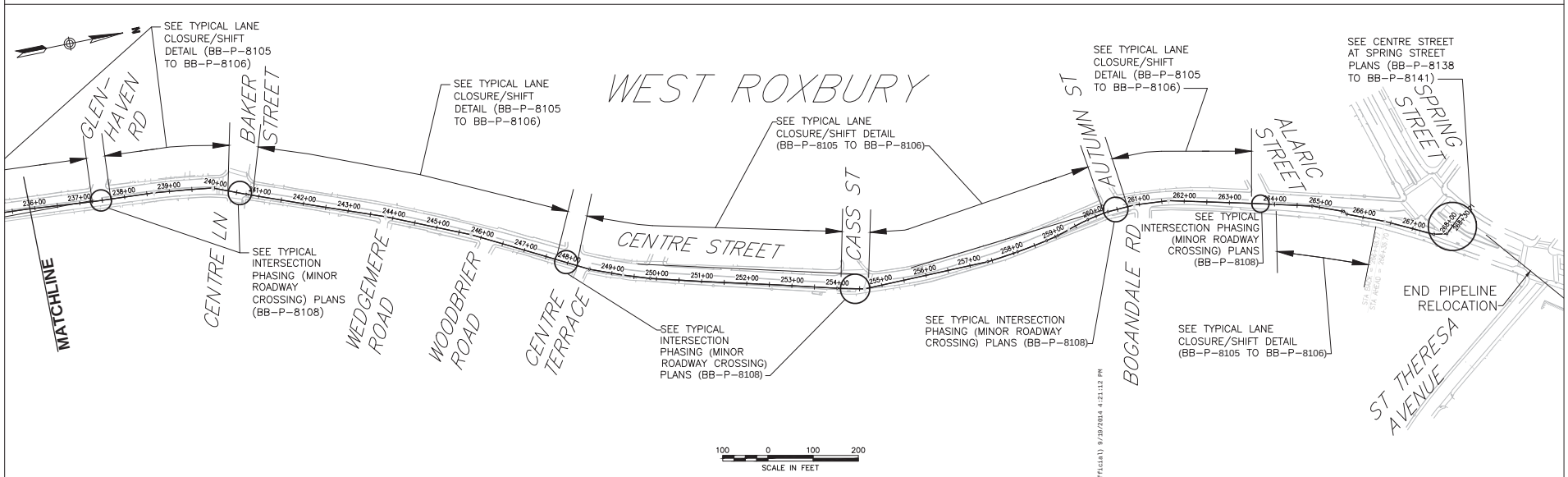

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REFERENCE DRAWINGS		REVISIONS				MATERIALS		

VHB
Vanasse Hangen Brustlin, Inc.
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Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
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TITLE	SIGNATURE	DATE	SIGNATURE	DATE
DRAWN BY: P.W.Y.				
CHECKED BY: R.J.M.				

ENGINEERING APPROVALS
BID | CONSTRUCTION

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17 16"
TRAFFIC MANAGEMENT SHEET
LOC. SUFFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=100' | DWG. BB-P-8103 | REV.

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GENERAL NOTES

1. ALL CONSTRUCTION SIGNING, DRUMS, BARRICADES AND OTHER DEVICES SHALL CONFORM WITH THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AS AMENDED.
2. ALL DRUMS SHALL BE SET AT 20' (10' WITHIN THE CITY OF BOSTON JURISDICTION) ON CENTER MAX. UNLESS OTHERWISE NOTED OR ADJUSTED BY THE ENGINEER.
3. ALL DRUMS SHALL BE APPROXIMATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN ADEQUATE ABUTTER ACCESS AT ALL TIMES. WORK MAY REQUIRE ADDITIONAL SIGNS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES, GRADING AND TEMPORARY PAVEMENT FOR PASSAGE OF PEDESTRIAN, VEHICULAR AND EMERGENCY TRAFFIC THROUGH THE WORK AREAS, BOTH DURING AND AFTER WORKING HOURS, TO MAINTAIN SUCH ACCESS.
4. A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION ON TWO WAY STREETS SHALL BE MAINTAINED AT ALL TIMES, EXCEPT THAT DURING WORKING HOURS, TRAFFIC MAY BE REDUCED TO ONE LANE UNDER POLICE CONTROL FOR SHORT TIME PERIODS WHEN REQUIRED FOR THE WORK, AS SHOWN.
5. GRADE SEPARATIONS IN EXCESS OF 2" DURING NON-WORKING HOURS WILL REQUIRE DELINEATION BY USE OF DRUMS.
6. EXCAVATION EDGES IN EXCESS OF 4" DEEP SHALL BE PROTECTED DURING NON-WORKING HOURS BY BACKFILLING WITH A WEDGE OF GRAVEL OR SOIL TO COMPACTED 1:4 SLOPE.
7. 11' MINIMUM LANE WIDTHS SHALL BE MAINTAINED, UNLESS OTHERWISE NOTED.
8. NON-ESSENTIAL TRAFFIC CONTROL DEVICES SHALL BE COVERED OR REMOVED DURING NON-WORKING HOURS.
9. ALL PARKING AREAS WITHIN 400' OF WORK ZONES SHALL INCLUDE DRUMS ATTACHED WITH "NO PARKING" SIGNS. THESE SHALL BE PLACED 2 DAYS IN ADVANCE OF CONSTRUCTION.
10. ALL WORK SHALL BE IN COMFORMANCE OF TRENCH REGULATION 520 CMR 14.
11. CONTRACTOR SHALL PROVIDE PEDESTRIAN ROUTES WITH 48" MINIMUM WIDTH TO COMPLY WITH ADA REQUIREMENTS.
12. SPECTRA ENERGY SHALL PROVIDE AN ON SITE SAFETY INSPECTOR TO WORK WITH THE CONTRACTOR TO ASSURE THE CONTRACTOR'S COMPLIANCE WITH THESE TRAFFIC MANAGEMENT PLANS.
13. CONTRACTOR SHALL CARPOOL ALL EMPLOYEES. NO ON SITE EMPLOYEE PARKING WILL BE ALLOWED NEAR THE WORK ZONE.
14. CONTRACTOR SHALL PLACE A G20-2 (END ROAD WORK) SIGN (AT 100') FOLLOWING EACH DAILY SET UP IN EACH DIRECTION OF TRAVEL AFFECTED BY THE WORK.

G-69

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FOR POSTED SPEEDS GREATER THAN 40 MPH

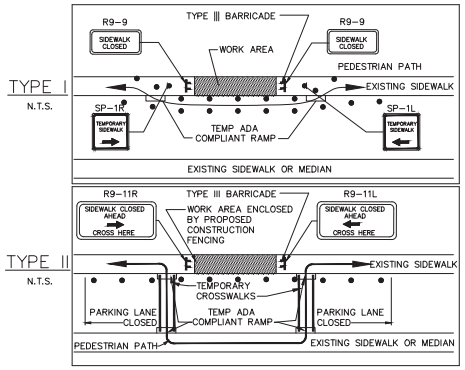
$L = W \times S$ — L=TAPER LENGTH; W=WIDTH OF ROADWAY TO BE SHIFTED OR REDIRECTED; S=POSTED SPEED LIMIT

FOR POSTED SPEEDS OF 40 MPH OR LESS

$L = \frac{WS^2}{60}$ — L=TAPER LENGTH; W=WIDTH OF ROADWAY TO BE SHIFTED OR REDIRECTED; S=POSTED SPEED LIMIT

PEDESTRIAN BYPASS

TO BE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING AND AS DIRECTED BY THE ENGINEER.



PEDESTRIAN BYPASS NOTES:

1. ADDITIONAL ADVANCE WARNING MAY BE NECESSARY.
2. CONTROLS FOR PEDESTRIAN TRAFFIC ONLY, ARE SHOWN. VEHICULAR TRAFFIC SHALL BE MAINTAINED AS SHOWN ELSEWHERE.
3. STREET LIGHTING SHOULD BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
4. ◄——► DIRECTION OF PEDESTRIAN TRAVEL.
5. IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT AS SHOWN IN PEDESTRIAN BYPASS TYPE I, TEMPORARY CROSSWALKS WITH APPROPRIATE SIGNS SHALL BE INSTALLED TO CROSS PEDESTRIANS TO THE OPPOSITE SIDE OF THE STREET AS SHOWN IN PEDESTRIAN BYPASS TYPE II, AND AS DIRECTED BY THE ENGINEER.

LEGEND

- DRUM
- POLICE OFFICER
- CONSTRUCTION SIGN
- TYPE III BARRICADES
- ACTIVE TRENCH AREA
- PROPOSED TRAFFIC FLOW
- ALTERNATING TRAFFIC UNDER POLICE DIRECTION
- SPECIAL LIGHTING UNIT (FLASHING ARROW)
- NTS — NOT TO SCALE

TRAFFIC SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH	SIZE OF SIGN HEIGHT	TEXT
W1-4 (LR)	36"	36"	
W4-2 (LR)	36"	36"	
W5-1	48"	48"	ROAD NARROWS
W20-1	48"	48"	ROAD CONSTRUCTION AHEAD
W20-7b	36"	36"	BE PREPARED TO STOP
W20-3	48"	48"	ROAD CLOSED AHEAD
W20-4	48"	48"	ONE LANE ROAD AHEAD
W20-5 (LR) (XX')	48"	48"	LEFT LANE CLOSED XX FEET
W20-8	48"	48"	POLICE OFFICER AHEAD
W20-7a	36"	36"	
W20-8	36"	36"	POLICE OFFICER AHEAD
W21-5	30"	30"	SHOULDER WORK
W5-1	36"	36"	ROAD NARROWS

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH	SIZE OF SIGN HEIGHT	TEXT
W4-7 (LR)	36"	36"	THRU TRAFFIC MERGE LEFT
R9-9	24"	12"	SIDEWALK CLOSED
R9-10	24"	12"	SIDEWALK CLOSED USE OTHER SIDE
R9-11 (LR)	24"	12"	SIDEWALK CLOSED AHEAD CROSS HERE
R3-7 (LR)	30"	30"	LEFT LANE MUST TURN LEFT
R4-7	24"	30"	
R3-2	30"	30"	
SP-1 (LR)	24"	12"	TEMPORARY SIDEWALK
M4-9B (LR)	30"	24"	DETOUR
W21-5	30"	30"	SHOULDER WORK
W5-1	36"	36"	ROAD NARROWS
R2-10a	36"	48"	WORK ZONE SPEEDING FINES DOUBLED
R2-10e	36"	48"	END ROAD WORK DOUBLE FINES END
W9-3	48"	48"	CENTER LANE CLOSED AHEAD

DESIGN DATA	ELM STREET	INTERSTATE 95	PROVIDENCE HIGHWAY	EAST STREET (WEST OF I-95)	EAST STREET	HIGH STREET	WASHINGTON STREET	GROVE STREET	CENTRE STREET	ROBINWOOD ROAD	EASTERN AVE	LEGACY BOULEVARD	RUSTCRAFT ROAD
FUNCTIONAL CLASSIFICATION	URBAN MINOR ARTERIAL	INTERSTATE	URBAN PRINCIPAL ARTERIAL	URBAN MINOR ARTERIAL	URBAN MINOR ARTERIAL	URBAN PRINCIPAL ARTERIAL	URBAN MINOR ARTERIAL	URBAN MINOR ARTERIAL	URBAN MINOR ARTERIAL	LOCAL ROAD	URBAN COLLECTOR	LOCAL ROAD	URBAN MINOR ARTERIAL
MUTCD ROAD TYPE	LOW SPEED URBAN	HIGH SPEED URBAN	HIGH SPEED URBAN	LOW SPEED URBAN	LOW SPEED URBAN	LOW SPEED URBAN	HIGH SPEED URBAN	LOW SPEED URBAN	LOW SPEED URBAN	LOW SPEED URBAN	LOW SPEED URBAN	LOW SPEED URBAN	LOW SPEED URBAN
SPEED LIMIT	30 MPH	60 MPH	45 MPH	35 MPH	25 MPH	30 MPH	40 MPH	30 MPH	25 MPH	25 MPH	25 MPH	25 MPH	30 MPH
TAPER WIDTH	12 FEET	12 FEET	12 FEET	12 FEET	15 FEET	12 FEET	12 FEET	16 FEET	12 FEET	10 FEET	12 FEET	11 FEET	12 FEET
TAPER LENGTH ($L=\frac{WS^2}{60}$)	180'			245'	156'	180'	320'	240'	125'	104'	125'	115'	180'
TAPER LENGTH (L=WS)		720'	540'										

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

VHB
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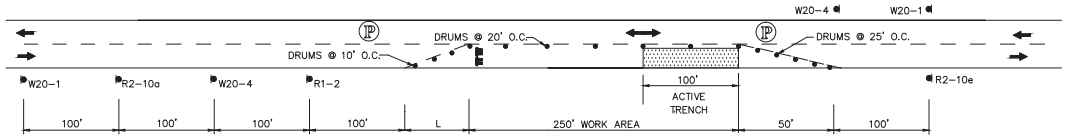
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

DRAWN BY:	ENGINEERING APPROVALS BID		CONSTRUCTION	
P.W.Y.				
CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17 16"
TRAFFIC MANAGEMENT SHEET
LOC. SUFFOLK/NORFOLK COUNTY, MA

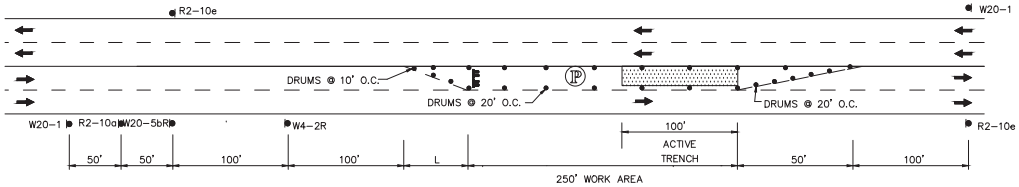
Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014 | W.O. 004110598 | SCALE: N.T.S. | DWG. BB-P-8104 | REV.



TYPICAL TWO WAY STREET LANE CLOSURE

NOT TO SCALE



ONE LANE CLOSURE –LEFT

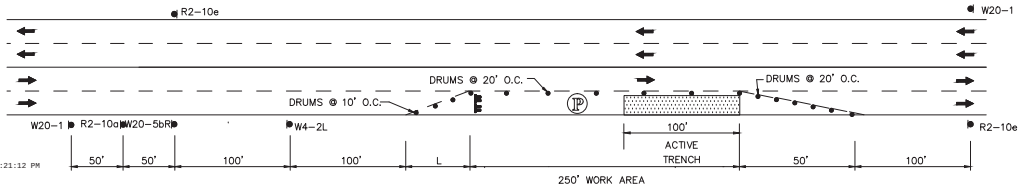
NOT TO SCALE

FOR POSTED SPEEDS GREATER THAN 40 MPH

$L = W \times S$ L=TAPER LENGTH
W=WIDTH OF ROADWAY TO BE SHIFTED OR REDIRECTED
S=POSTED SPEED LIMIT

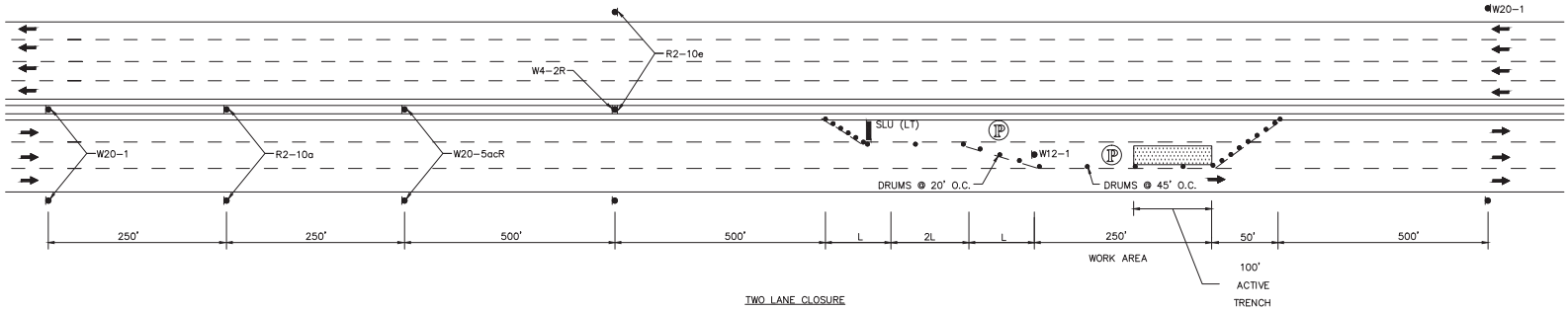
FOR POSTED SPEEDS OF 40 MPH OR LESS

$L = \frac{WS^2}{60}$ L=TAPER LENGTH
W=WIDTH OF ROADWAY TO BE SHIFTED OR REDIRECTED
S=POSTED SPEED LIMIT



ONE LANE CLOSURE – RIGHT

NOT TO SCALE



TWO LANE CLOSURE

NOT TO SCALE

NOTE: FOR SIGN LEGEND AND DIMENSIONS SEE DWG. BB-P-8104

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

	ENGINEERING APPROVALS			
DRAWN BY:	BID		CONSTRUCTION	
P.W.Y.				
CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17 16"
TRAFFIC MANAGEMENT SHEET
LOC. SUFFOLK/NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014	W.O. 004110598	SCALE: N.T.S.	DWG. BB-P-8105	REV.

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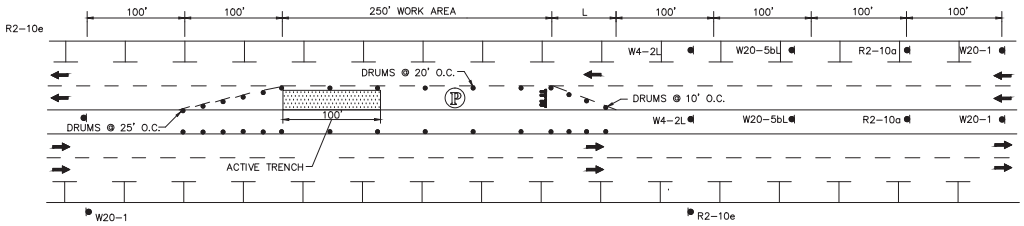
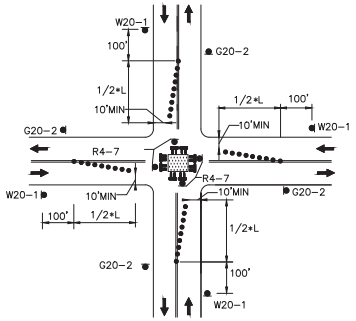


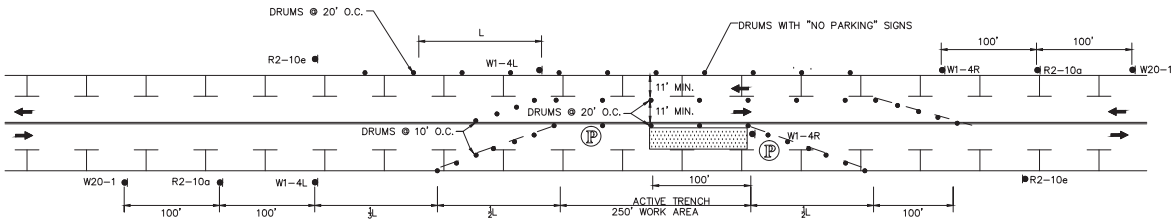
ONE LANE CLOSURE – LEFT

NOT TO SCALE



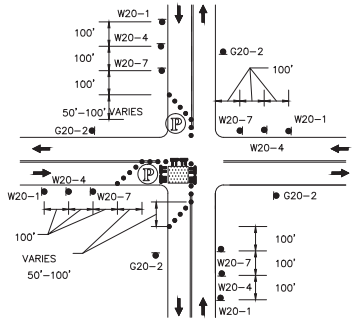
CLOSURE IN THE CENTER OF AN INTERSECTION

NOT TO SCALE



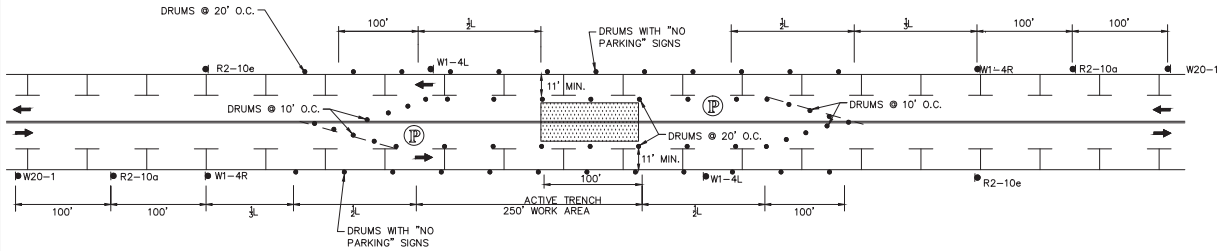
LANE CLOSURE WITH PARKING – TWO DIRECTIONS

NOT TO SCALE



CLOSURE AT THE SIDE OF AN INTERSECTION

NOT TO SCALE



CENTER CLOSURE WITH PARKING – TWO DIRECTIONS

NOT TO SCALE

NOTE: FOR SIGN LEGEND AND DIMENSIONS SEE DWG. BB-P-8104

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

Stantec Consulting Services Inc.
Transportation
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991 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

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P.W.Y.				
CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17 16"
TRAFFIC MANAGEMENT SHEET
LOC. SUFFOLK/NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014	W.O. 004110598	SCALE: N.T.S.	DWG. BB-P-8106	REV.

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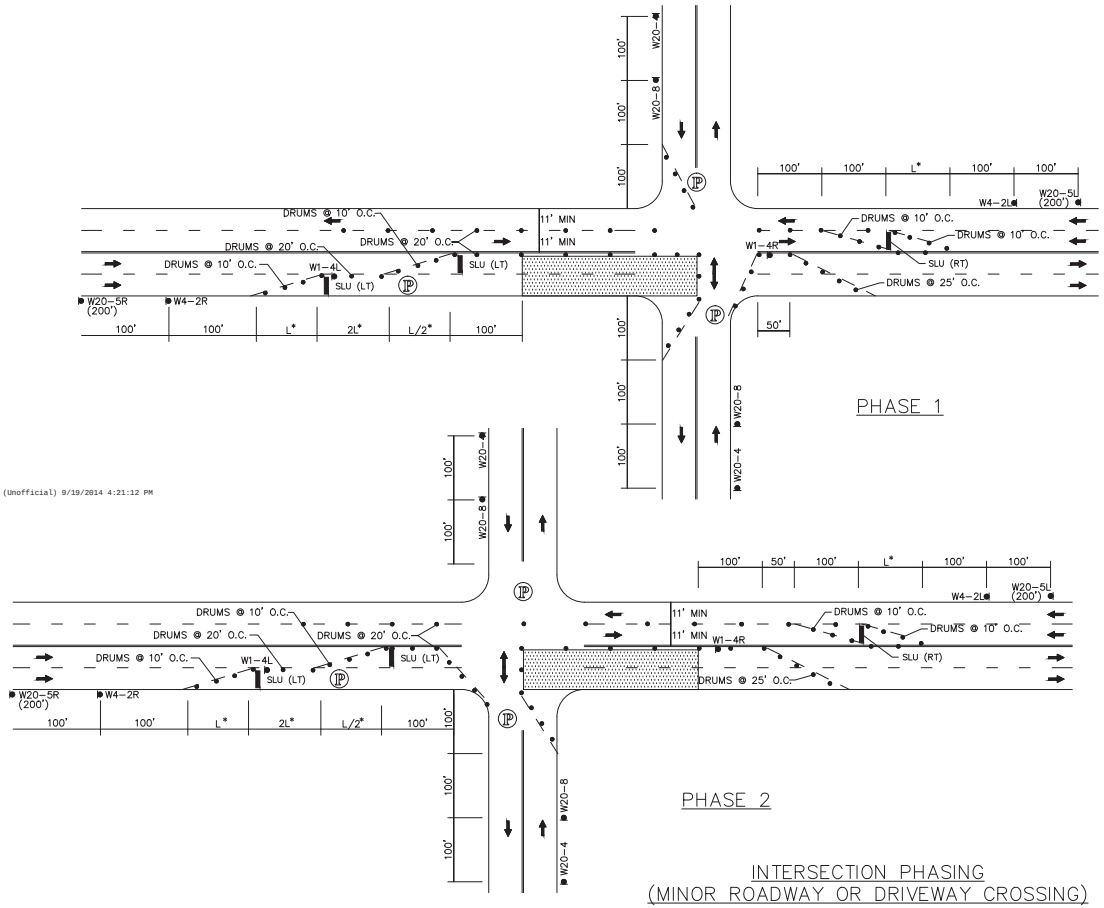
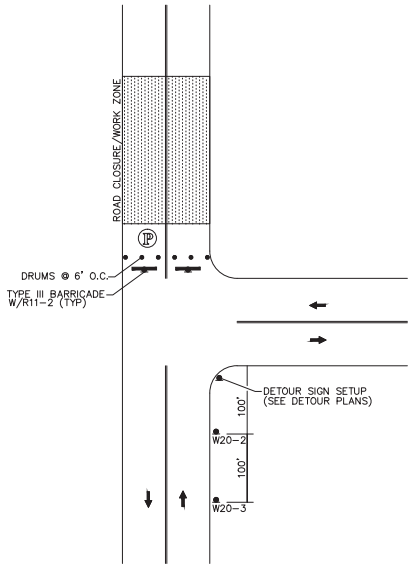


INTERSECTION PHASING
(MINOR ROADWAY OR DRIVEWAY CROSSING)
NOT TO SCALE



TYPICAL ROAD CLOSURE
(FOR ACTIVE DETOURS)
NOT TO SCALE

NOTE: FOR SIGN LEGEND AND DIMENSIONS SEE DWG. BB-P-8104

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
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VHB
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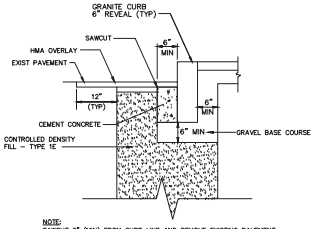
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17 16"
TRAFFIC MANAGEMENT SHEET
LOC. SUFFOLK/NORFOLK COUNTY, MA

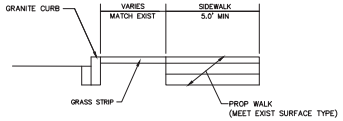
Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014	W.O. 004110598	SCALE: N.T.S.	DWG. BB-P-8107	REV.



NOTE:
SAWCUT 6" (MIN) FROM CURB LINE AND REMOVE EXISTING PAVEMENT AND GRAVEL. REPLACE WITH CEMENT CONCRETE.

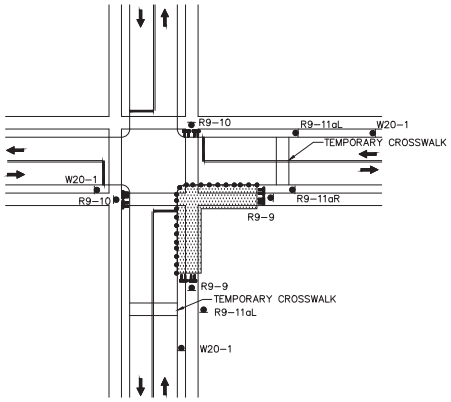
GRANITE CURB RESET OVER TRENCH
SCALE: NOT TO SCALE
DATE: APRIL 2003
DWG: CURB–04



PROPOSED CEMENT CONCRETE WALK
SURFACE: 4" CEMENT CONCRETE
AIR ENTRAINED 4000PSI, 3/4", 610
FOUNDATION: 8" GRAVEL BORROW, TYPE b

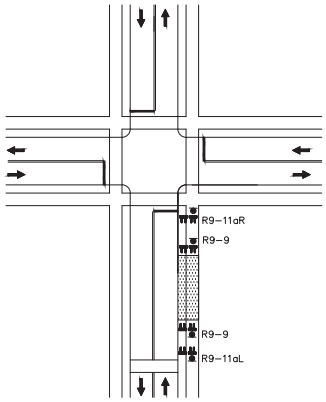
PROPOSED HOT MIX ASPHALT WALK
SURFACE: 3" HOT MIX ASPHALT
PLACE IN TWO LAYERS, 1.5" TOP COURSE
OVER 1.5" BINDER COURSE
FOUNDATION: 8" GRAVEL BORROW, TYPE b

PROPOSED SIDEWALK RECONSTRUCTION
SCALE: NOT TO SCALE
DATE: APRIL 2003
DWG: CURB–04



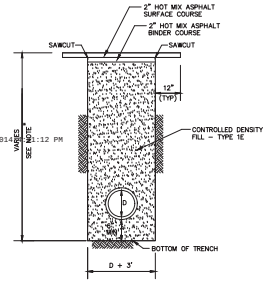
CROSSWALK CLOSURES AND PEDESTRIAN DETOURS

NOT TO SCALE



SIDEWALK DETOUR OR DIVERSION

NOT TO SCALE



TRENCH DETAIL IN EXISTING HOT MIX ASPHALT
SCALE: NOT TO SCALE
DATE: APRIL 2003
DWG: TRENCH–04

*NOTE: TRENCHES OVER 5' DEPTH REQUIRE SUPPORT OF EXCAVATION

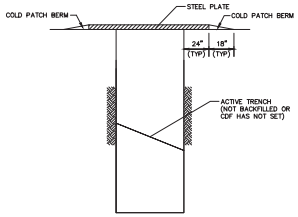
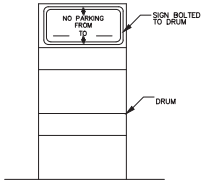


PLATE DETAIL (FOR NON–WORK HOURS)
SCALE: NOT TO SCALE
DATE: APRIL 2003
DWG: TRENCH–04

NOTE:
1. CONTRACTOR SHALL HAVE "NO PARKING" SIGN APPROVED BY TOWN/CITY TRAFFIC DEPARTMENT PRIOR TO FABRICATION.
2. CONTRACTOR TO USE PERMANENT MARKERS TO IDENTIFY DATES WORKING IN SPECIFIC WORK ZONE. MARKERS SHOULD BE ABLE TO BE ERADICATED WITH A PROPRIETRY CHEMICAL SOLVENT.



"NO PARKING" SIGN MOUNTED ON DRIM
SCALE: NOT TO SCALE
DATE: JANUARY 2009
DWG:

NOTE: FOR SIGN LEGEND AND DIMENSIONS SEE DWG. BB–P–8104

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R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I–17 16"
TRAFFIC MANAGEMENT SHEET
LOC. SUFFOLK/NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014	W.O. 004110598	SCALE: 1"=30'	DWG. BB–P–8108	REV.

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BOSTON TRANSPORTATION DEPARTMENT GENERAL NOTES

1. ALL EQUIPMENT SHALL CONFORM TO THE BOSTON TRANSPORTATION DEPARTMENT SPECIFICATIONS AND INSTALLATION PROCEDURES EXCEPT AS NOTED.
2. THE CONTRACTOR SHALL FURNISH AND INSTALL COMPLETE IN PLACE AND READY TO OPERATE A TRAFFIC CONTROL SYSTEM.
3. SIGNAL CABLE, WHERE REQUIRED, SHALL CONFORM TO I.M.S.A. SPECIFICATION 19–I, SOLID, LATEST REVISION. NUMBER OF WIRES IN EACH CABLE RUN AND SEALED CONNECTIONS USING WIRE NUTS IN SIGNAL, MAST ARM AND SPAN POLE BASES SHALL CONFORM TO COMMONWEALTH OF MASSACHUSETTS STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGES (LATEST REVISION) NO MORE THAN TWO(2) SIGNAL CABLES ARE TO BE CONNECTED IN ANY SIGNAL BASE UNLESS OTHERWISE DIRECTED BY THE BTD ENGINEER. ALL SIGNAL CABLES SHALL BE LABELED IN THE CONTROL CABINET BY THE CONTRACTOR. THE PERMANENT LABELS SHALL INCLUDE POST NUMBER(S) AND A LETTER DESIGNATION FOR USE ON F28 WIRING DOCUMENTATION. ALL WIRING FROM MAST–ARM BASES TO MAST–ARM OR SPAN WITH SIGNAL HOUSINGS SHALL BE I.M.S.A. 19–1 #16 A.W.G., STRANDED. FOR HOUSINGS NOT ON MAST ARMS OR SPAN WIRES, SEPARATE WIRES FOR EACH CIRCUIT SHALL BE INSTALLED FROM THE HOUSING TO THE SIGNAL BASE.

4a. NSTAR SERVICE CONNECTION SHALL BE 115 V.A.C. ONE #6 LEAD AND ONE #6 BARE.

4b. THE CONTRACTOR SHALL INITIATE TO MAKE ALL ARRANGEMENTS WITH NSTAR FOR ALL WORK IN THE NSTAR SYSTEM. THE CONTRACTOR SHALL BEAR THE COST OF SUCH WORK INCLUDING NSTAR SUPERVISION CHARGES.

4c. THE CONTRACTOR SHALL MAKE ARRANGEMENTS WITH NSTAR TO DISCONNECT THE EXISTING SERVICE CONNECTION AND SHALL BEAR THE COST OF SUCH WORK.

4d. WHEN STAR SERVICE IS TO BE PROVIDED FROM THE OVERHEAD ELECTRIC LINES, THE CONTRACTOR SHALL FURNISH AND INSTALL A RIGID METALLIC RISER AND NECESSARY ADAPTERS TO UNDERGROUND CONDUIT PER REQUIREMENTS OF NSTAR AND THE NATIONAL ELECTRIC CODE. THE RISER SHALL BE OF A SIZE WHICH WILL ACCOMMODATE INTERCONNECT CABLE WHEN THIS IS REQUIRED AS PART OF THE INSTALLATION.

5. THE CONTRACTOR SHALL PROVIDE AND ATTACH, IN A SUITABLE MANNER, IDENTIFICATION TAGS FOR TRAFFIC SIGNAL CONTROL BOXES AND POSTS AS PER BOSTON TRANSPORTATION DEPARTMENT PLAN A–23 LATEST REVISION. THESE TAGES SHALL BE ATTACHED TO THE BASE OF THE POSTS AND THE FRONT OF THE CONTROL BOX WITH LEGENDS AS INDICATED ON THE SIGNAL LAYOUT PLANS.

6. ALL PEDESTRIAN SIGNALS SHALL BE MOUNTED SO THAT THERE IS A MINIMUM HORIZONTAL CLEARANCE OF AT LEAST SIX INCHES BETWEEN ANY PART OF THE HOUSING OR VISOR ARE THE OUTER FACE OF THE CURB.

7. GROUND AND BONDING WIRE, SHALL BE INSTALLED BETWEEN ALL SIGNAL POSTS AND THE CONTROL BOX WHERE SIGNAL CABLE IS INSTALLED. THE GROUND AND BONDING WIRE SHALL BE COPPER, #8 AWG OR LARGER CONFORMING TO THE REQUIREMENTS OF ASTM B3 FOR SOFT OR ANNEALED COPPER WIRE, ASTM B8 FOR STANDARD COPPER WIRE. AN EXISTING GROUND AND BONDING WIRE MAY BE REUSED IF APPROVED BY THE ENGINEER.

8. ALL SPLICES SHALL BE MADE WITH 3M SPLICE KITS USING RESIN #2114. SPLICES SHALL NOT BE PERMITTED IN SIGNAL OR INTERCONNECT CABLES UNLESS CALLED FOR ON PLANS FOR A PARTICULAR LOCATION.

9a. HOUSINGS MOUNTED ON THE SIDE OF STANDARD TYPE 3 POLES SHALL BE WITH POLE CLAMPS AND SHALL FIT THE CONTOUR OF THE POLE, EXCEPT SPLITFITTERS MAY BE USED IN PLACE OF THE TOP CLAMP.

9b. FOR HOUSINGS MOUNTED ON THE SIDE OF MAST ARM POLES, STRAPPING MAY BE USED WITH APPROPRIATE HARDWARE FOR ALL FITTINGS EXCEPT THE ONE(S) FOR THE WIREWAY(S) WHICH SHALL BE A POLE CLAMP.

10a. ALL TRAFFIC SIGNAL POSTS AND CONTROL CABINETS SHALL BE FIELD LOCATED BY THE TRANSPORTATION DEPARTMENT ENGINEER.

10b. PEDESTRIAN RAMP CONSTRUCTION SHALL BE COORDINATED WITH THE PUBLIC WORKS DEPARTMENT ENGINEER.

11. TEMPLATES FOR POSITIONING ANCHOR BOLTS AND RODS TO BE SUPPLIED BY THE CONTRACTOR.

12. THE CONTRACTOR SHALL BE REQUIRED TO KEEP RECORDS OF DATES WHEN TRAFFIC SIGNAL POSTS REMOVED AND INSTALLED AND WHEN TRAFFIC SIGNALS ARE PUT ON FLASHING, STOP AND GO, OR "ALL OUT." THESE RECORDS ARE TO BE SUBMITTED TO THE ENGINEER. A COPY SHALL BE TRANSMITTED TO THE BOSTON TRANSPORTATION DEPARTMENT BY THE FIRST OF EACH MONTH.

13a. AFTER THE CONTRACTOR BEGINS CONSTRUCTION AT THE INTERSECTION, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE EXISTING TRAFFIC SIGNALS UNTIL THEY ARE REMOVED. DURING AN INSTALLATION PERIOD WHERE EXISTING AND NEW SIGNALS ARE PRESENT, THE CONTRACTOR SHALL MAINTAIN BOTH

13b. WHEN THE CONTRACTOR COMPLETES ALL WORK AT AN INTERSECTION, BTD SHALL BE NOTIFIED IN WRITING THAT THE INTERSECTION IS READY FOR FINAL INSPECTION BY BTD. THE CONTRACTOR WILL BE PROVIDED A LIST OF ITEMS TO BE CORRECTED. AFTER THESE ITEMS ARE COMPLETED TO THE SATISFACTION OF BTD, WRITTEN NOTICE WILL BE GIVEN TO THE CONTRACTOR THAT THE RESPONSIBILITY FOR MAINTENANCE OF THE INTERSECTION WILL BE RETURNED TO BTD.

14a. IN ADVANCE OF THE LOOP DETECTOR INSTALLATION, THE CONTRACTOR SHALL MARK, ON SITE, THE LOOP DETECTORS WITH ANY NECESSARY CHANGES REQUIRED BY FIELD CONDITIONS SUCH AS MANHOLES. THE LOOP DETECTOR LAYOUT SHALL BE INSPECTED AND APPROVED BY THE ENGINEER BEFORE THE LOOP DETECTORS ARE INSTALLED.

14b. THE 3/8 INCH SAW CUT FOR WIRE LOOP DETECTORS IN BITUMINOUS CONCRETE PAVEMENT SHALL BE MADE AS SHOWN ON BOSTON TRANSPORTATION DEPARTMENT PLAN A11.1, LATEST REVISION, AND THE LOOP WIRE INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF BOSTON TRANSPORTATION DEPARTMENT PLAN AL2.4, LATEST REVISION.

14c. SLOTS IN THE BITUMINOUS CONCRETE PAVEMENT SHALL BE CUT WITH A CONCRETE SAWING MACHINE TO A UNIFORM DEPTH AS SHOWN IN THE BOSTON TRANSPORTATION DEPARTMENT'S DETAILS AND AS REQUIRED TO ACCOMMODATE ALL NECESSARY LOOP TURNS OF LEADS. DIAGONAL SAW CUTS OF AT LEAST TWELVE INCHES IN LENGTH SHALL BE MADE AT EACH CORNER TO PREVENT SHARP BENDS IN THE WIRE. THE DIAGONAL CUTS SHALL OVERLAP THE MAIN CUTS SO THAT EACH WIRE–BEARING SLOT HAS FULL DEPTH.

14d. DRY CUTTING BLADES WILL NOT BE ALLOWED.

14e. BEFORE INSTALLING THE LOOP WIRE, THE SAW CUT SHALL BE CLEARED OF DEBRIS AND THOROUGHLY DRIED. THE WIRE SHALL BE INSERTED IN THE CLEARED, DRIED SLOT WITH A BLUNT WOODEN OR PLASTIC TOOL THAT WILL NOT DAMAGE THE INSULATION.

14f. LOOP WIRE CROSSING JOINTS OR NOTICEABLE CRACKS SHALL BE PROTECTED WITH AN APPROVED INSULATING SLEEVE CONTINUOUSLY FOR AT LEAST SIX (6) INCHES ON EACH SIDE OF THE JOINT OR CRACK. THE OBJECTIVE IS TO PREVENT BONDING OF THE WIRE TO THE PAVEMENT. THE ENDS OF THE SLEEVING MATERIAL SHALL BE TAPED TO PREVENT ENTRY OF SLOT SEALING COMPOUND INTO THE SLEEVING. SAID SLEEVING SHALL BE FURNISHED AND INSTALLED AT NO EXTRA COST AND SHALL BE INCIDENTAL TO THE INDUCTION LOOP ITEM. THE END OF THE 1 1/2 INCH PVC CONDUIT SHALL BE PLUGGED WITH AN APPROVED MATERIAL AND LOOP WIRES ENTERING THE CONDUIT SHALL BE SLEEVED AND TAPED AS ABOVE.

14g. NO SPLICE SHALL BE USED IN THE INSTALLATION OF ANY INDUCTIVE LOOP OR ITS LEAD–IN TO THE APPROPRIATE PULL BOX. LOOP LEAD–IN WIRE WILL BE SPLICED TO THE LOOP IN THE HANDHOLE OR PULL BOX AND WILL BE INSTALLED TO THE CONTROLLER CABINET WITHOUT ANY ADDITIONAL SPLICES. SPLICES SHALL BE SOLDERED AND MADE COMPLETELY WATERTIGHT. THE SPLICE SHALL INCLUDE THE LOOP LEAD–IN SHIELD SO THAT ISOLATION OF THE SHIELD FROM GROUND WILL BE MAINTAINED.

15a. THE TRAFFIC SIGNALS SHALL REMAIN ON STOP AND GO OPERATION WITH ADEQUATE INDICATIONS AS DETERMINED BY THE ENGINEER. TEMPORARY SIGNAL INDICATIONS AS NECESSARY TO MEET THIS REQUIREMENT SHALL BE SUPPLIED BY THE CONTRACTOR AT NO ADDITIONAL COST.

15b. THE CONTRACTOR SHALL PROVIDE RESPONSE TO REPORTED TRAFFIC SIGNAL FAILURES WITHIN TWO (2) HOURS.

16. ALL LOOP DETECTORS SHALL MEET THE REQUIREMENTS OF THE BOSTON TRANSPORTATION DEPARTMENT LOOP DETECTOR TEST PROCEDURE DATED MAY 23, 1978. TESTING SHALL BE DONE A MINIMUM OF TWO(2) WEEKS AFTER INITIAL INSTALLATION OR REPAIRS.

17. ALL INTERCONNECT CABLE SHALL BE AS PER BOSTON TRANSPORTATION DEPARTMENT INTERCONNECTION SYSTEM NOTES, LATEST REVISION. ALL CABLE INCLUDING THOSE EXISTING AT THE TIME OF CONTROL CABINET INSTALLATION SHALL BE LABELED BY THE CONTRACTOR. THE PERMANENT LABELS SHALL INDICATE ORIGIN OF EACH CABLE AND PAIR ASSIGNMENTS INCLUDING MODEM NUMBERS. FOR EXISTING CABLES, BTD WILL PROVIDE EXISTING PAIR ASSIGNMENTS TO THE CONTRACTOR.

18. IN THE CONTROL BOX WHERE DETECTOR AMPLIFIER HARNESSES ATTACH TO THE AMPLIFIERS, IDENTIFICATION TAGS SHALL BE SUPPLIED WHICH IDENTIFY STREET NAME, DIRECTION, MOVEMENT AND THE PHASE(S) TO WHICH THE OUTPUT OF THE AMPLIFIER FEEDS. THE TAG AND ITS ATTACHMENTS SHALL BE OF A DURABLE MATERIAL SUCH AS BRASS OR PLASTIC.

19. IN THE CONTROL BOX WHERE DETECTOR FEEDER CABLES ARE TERMINATED, ALL DETECTOR LEADS SHALL BE SUPPLIED WITH IDENTIFICATION TAGS WHICH SPECIFY THE STREET NAME, DIRECTION AND MOVEMENT OF THE LOOP TO WHICH THE FEEDER CABLE IS CONNECTED. THE TAG AND ITS ATTACHMENTS SHALL BE OF A DURABLE MATERIAL SUCH AS BRASS OR PLASTIC.

20. THE EXISTING TRAFFIC SIGNAL EQUIPMENT IS TO BE REMOVED AND DELIVERED TO THE BOSTON TRANSPORTATION DEPARTMENT STOCK ROOM AT 112 SOUTHAMPTON STREET. CONTRACTOR TO DISASSEMBLE POSTS FROM PEDESTALS AND DISASSEMBLE HOUSINGS AND CABINET FROM POSTS. THE ELECTRICAL LEADS SHALL REMAIN INTACT. SHELF MOUNTED EQUIPMENT SHALL BE REMOVED FROM THE CONTROL CABINET AND TRANSPORTED SEPARATELY FROM THE CABINET.

21. THE BOSTON TRANSPORTATION DEPARTMENT ENGINEER SHALL BE NOTIFIED FORTY–EIGHT (48) HOURS PRIOR TO ANY INTERCONNECT CABLE, PEDESTRIAN RAMP OR TRAFFIC SIGNAL WORK. IF WORK AT A LOCATION IS DISCONTINUED, THE BOSTON TRANSPORTATION DEPARTMENT ENGINEER SHALL BE AGAIN NOTIFIED TWENTY–FOUR (24) HOURS BEFORE WORK IS RESUMED.

22. THE CONTRACTOR SHALL, WITHIN THIRTY (30) DAYS AFTER AWARD OF THE CONTRACT, FORWARD TO THE ENGINEER A COPY OF A CONFIRMED PURCHASE ORDER FROM THE MANUFACTURER FOR THE CONTROLLER, CO–ORDINATION UNIT, REMOTE COMMUNICATION UNIT, HOUSINGS, CABLE, LOOP DETECTOR AMPLIFIERS, CLOCKS AND INTERCONNECT CABLE WITH AN ESTIMATED DELIVERY DATE.

23. ALL PUSH BUTTONS SHALL FACE THE INSIDE OF SIDEWALK UNLESS OTHERWISE DIRECTED BY THE TRAFFIC ENGINEER OF THE BOSTON TRANSPORTATION DEPARTMENT.

24. LOOP DETECTOR LEAD–IN CABLE SHALL BE PER I.M.S.A. SPECIFICATION 50–2 (LATEST REVISION).

25. VEHICLE HOUSINGS WHICH HAVE BEEN INSTALLED BUT NOT YET ENERGIZED SHALL BE FACED AWAY FROM ALL TRAFFIC AND BAGGED.

26. THE CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO THE BOSTON TRANSPORTATION DEPARTMENT WHEN TRAFFIC SIGNAL WORK IS COMPLETE SO THAT THE FINISHED WORK CAN BE INSPECTED PRIOR TO CONTRACT COMPLETION.

27. THE CONTRACTOR SHALL PREPARE "AS BUILT" SIGNAL CABLE WIRING CHARTS TO BE RECORDED ON BOSTON TRANSPORTATION DEPARTMENT FORM F28A. THE CONTRACTOR SHALL PROVIDE "AS BUILT" TRAFFIC SIGNAL PLANS IN ELECTRONIC FORMAT UTILIZING BTD AUTOCAD STANDARDS. THE AS BUILT DRAWING SHALL INCLUDE INFORMATION SPECIFIED IN MASS HIGHWAY DEPT. SPECIFICATION 815.67 IN ADDITION TO REQUIREMENTS IN BTD SPECIFICATIONS.THESE ITEMS SHALL BE SUPPLIED TO THE BOSTON TRANSPORTATION DEPARTMENT PRIOR TO PROJECT ACCEPTANCE.

28. FOR INTERSECTIONS UNDER COMPUTER CONTROL, THE CONTRACTOR SHALL MAKE TEMPORARY CONNECTIONS AS NECESSARY SO THAT COMPUTER CONTROL OF THE TRAFFIC SIGNALS AND RELATED SYSTEM DETECTORS SHALL BE MAINTAINED AT ALL TIMES. WHERE EXISTING SENSORS ARE TO BE REPLACED, THE NEW SENSORS SHALL BE OPERATIONAL WITHIN TWENTY–FOUR (24) HOURS AFTER REMOVAL OF EXISTING ONES.

29. STEEL MAST ARM CALCULATIONS SHALL BE POLE SPECIFIC INDICATING/REFERENCING THE POLE LOCATION AND PLAN DESIGNATION AND THE ACTUAL LOADING FROM BOTH SIGNAL DESIGN SHEETS AND SIGN SHEETS FOR THE PROPOSED INSTALLATION.

30. FOR INTERSECTIONS WITH A VIDEO MONITORING SYSTEM, THE CONTRACTOR SHALL MAKE TEMPORARY CONNECTIONS AS NECESSARY SO THAT REMOTE VIEWING AND PTZ CONTROL OF THE VIDEO CAMERA(S) SHALL BE MAINTAINED AT ALL TIMES. WHERE EXISTING VIDEO MONITORING SYSTEMS ARE TO BE REPLACED, THE NEW SYSTEM SHALL BE OPERATIONAL WITHIN TWENTY–FOUR (24) HOURS AFTER REMOVAL OF THE EXISTING ONE.

31. PEDESTRIAN RAMPS SHALL BE CONSTRUCTED IN CONFORMANCE WITH PLANS AND STANDARD DETAILS. ALL RAMPS SHALL COMPLY WITH ADA REQUIREMENTS. THE CONTRACTOR SHALL VERIFY GRADES PRIOR TO RAMP CONSTRUCTION. ANY NEWLY CONSTRUCTED RAMP WHICH IS FOUND TO BE NON COMPLIANT SHALL BE RECONSTRUCTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CITY.

32. ALL EQUIPMENT SHALL BE YEAR 2000 COMPLIANT.

YEAR 2000 COMPLIANCE REQUIREMENTS

THE CONTRACTOR REPRESENTS AND WARRANTS THAT THE INFORMATION TECHNOLOGY FOR THIS DEVICE IS YEAR 2000 COMPLIANT. YEAR 2000 COMPLIANT MEANS INFORMATION TECHNOLOGY THAT ACCURATELY PROCESSES DATE/TIME (INCLUDING, BUT NOT LIMITED TO, CALCULATING, COMPARING AND SEQUENCING) FROM, INTO, AND BETWEEN THE TWENTIETH AND TWENTY–FIRST CENTURIES, AND THE YEARS 1999 AND
2000 AND LEAP YEAR CALCULATIONS. FURTHERMORE, YEAR 2000 COMPLIANT INFORMATION TECHNOLOGY, WHEN USED IN COMBINATION WITH OTHER INFORMATION TECHNOLOGY, SHALL ACCURATELY PROCESS DATE/TIME DATA IF THE OTHER INFORMATION TECHNOLOGY PROPERLY EXCHANGES DATE/TIME DATA WITH IT. THIS WARRANTY SHALL SURVIVE THE EXPIRATION OR TERMINATION OF THE CONTRACT UNDER WHICH THE DEVICE IS PURCHASED.

YEAR 2000 WARRANTY

THE CONTRACTOR REPRESENTS AND WARRANTS THAT THE PRODUCT IS YEAR 2000 COMPLIANT. YEAR 2000 COMPLIANT MEANS INFORMATION TECHNOLOGY THAT ACCURATELY PROCESSES DATE/TIME DATA (INCLUDING, BUT NOT LIMITED TO, CALCULATING, COMPARING, AND SEQUENCING) FROM, INTO, AND BETWEEN THE TWENTIETH AND TWENTY–FIRST CENTURIES, AND THE YEARS 1999 AND 2000 AND LEAP YEAR CALCULATIONS.

BOSTON TRANSPORTATION DEPARTMENT LOOP DETECTOR TEST PROCEDURE

THE FOLLOWING TEST PROCEDURES SHALL BE PERFORMED BY THE CONTRACTOR IN THE PRESENCE OF THE CITY OF BOSTON ENGINEER OR OTHER ENGINEER(S) DESIGNATED BY HIM, AFTER INSTALLATION AS DETAILED BELOW. THE COST OF EQUIPMENT, LABOR AND MATERIALS TO PERFORM SUCH TESTING AND SIMILAR RE–TESTING FOLLOWING REPAIRS, REPLACEMENT, OR ADJUSTMENT OF ANY DETECTOR SHALL BE AT NO ADDITIONAL COST TO THE CITY ABOVE THE TOTAL SUM BID FOR EACH INDIVIDUAL INTERSECTION.

AFTER INSTALLATION OF WIRE LOOP VEHICLE DETECTORS IN THE ROADWAYS AND INSTALLATION OF LOOP CONNECTED LEADS TO THE CONTROLLER CABINET, EACH LOOP AND LEAD–IN COMBINATION SHALL BE TESTED FOR PROPER INSTALLATION. THE DC RESISTANCE FROM LEAD TO LEAD OF THE SAME LOOP SHALL NOT EXCEED FIVE OHMS AS MEASURED BY A HIGH QUALITY BATTERY POWERED VOM. A MEGOHM METER (MEGGER) TEST AT 500 VOLTS DC OR GREATER, SHALL BE MADE BETWEEN LEAD–IN SHIELD AND THE EARTH GROUND ROD, PRIOR TO CONNECTION TO THE GROUND ROD. THIS RESISTANCE SHALL BE NOT LESS THAN 100 MEGOHMS. THEN THE TWO LEADS OF A LOOP SHALL BE TEMPORARILY SPLICED TOGETHER AND A SIMILAR MEGGAR TEST MADE BETWEEN THE LEADS AND THE EARTH GROUND ROD. THIS RESISTANCE SHALL BE NOT LESS THAN 100 MEGOHMS. IF ANY LOOP AND LEAD–IN COMBINATION FAILS TO PASS ALL THREE TESTS, IT SHALL BE REPAIRED AND THEN RETESTED.

THIS PLAN NOT DESIGNED BY VANASSE HANGEN BRUSTLIN, INC. IT WAS PROVIDED BY MASSDOT AND ALL INFORMATION CONTAINED HEREIN IS ASSUMED TO BE CORRECT.

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

VHB Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

ENGINEERING APPROVALS				
DRAWN BY:	BID		CONSTRUCTION	
P.W.Y.				
CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

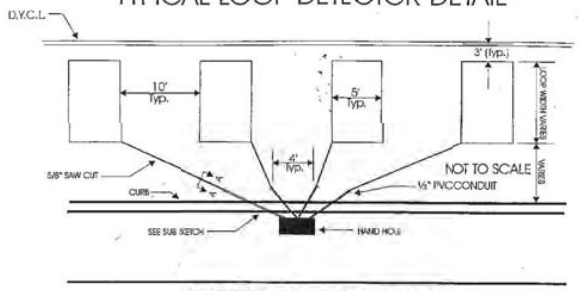
ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I–17 16
TRAFFIC MANAGEMENT SHEET
LOC. SUFFOLK/NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

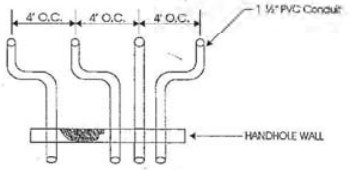
YEAR: 2014	W.O. 004110598	SCALE: N.T.S.	DWG. BB–P–8109	REV.

20140919-5149 FERC PDF (Unofficial) 9/19/2014

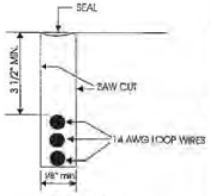
TYPICAL LOOP DETECTOR DETAIL



FOR ACTUAL SAW CUT REFER TO SPEC. A11.1



SUB SKETCH



SECTION A -A

20140919-5149 FERC PDF (Unofficial) 9/19/2014 4:21:12 PM

1.) ALL WIRES SHALL BE PER I.M.S.A. SPECIFICATION 51-5 (LATEST REVISION). EACH PAIR SHALL BE TWISTED SEPARATELY FROM LOOP CORNER TO THE SHIELDED CABLE IN HAND HOLE.

2.) IN HAND HOLE, SPLICE ALL LOOP WIRE TO THE 2 CONDUCTOR #14 AWG CABLE (WITH METALLIC SHIELD AND DRAIN WIRE, AS PER I.M.S.A. SPECIFICATION 50-2 (LATEST REVISION). SPLICES TO BE SOLDERED.

3.) LOOPS SHALL BE SPLICED IN PARALLEL, IN SERIES, OR IN COMBINATION OF PARALLEL AND SERIES, AS REQUIRED TO MATCH THE DETECTOR AMPLIFIER, PER MANUFACTURER'S RECOMMENDATIONS AND SHALL HAVE INDUCTANCE IN THE RANGE OF 50 TO 500 MICRO-HENRIES PER BID SPECIFICATION FOR LOOP DETECTOR TEST DATED MAY 23, 1978 OR LATEST REVISION..

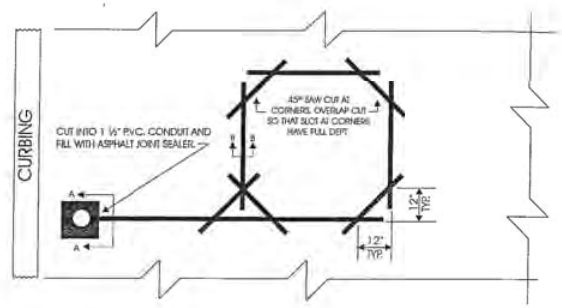
4.) NUMBER OF TURNS PER LOOP SHALL BE 3 TURNS UNLESS SPECIFIED OTHERWISE BY THE BID ENGINEER.

5.) DETECTOR WIRE SHALL BE IDENTIFIED AS TO LOOP SEGMENT IN HANDHOLE WITH PERMANENT LABELS. THE FRONT LOOP SHALL BE #1, FOLLOWING LOOPS #2, #3 AND #4.

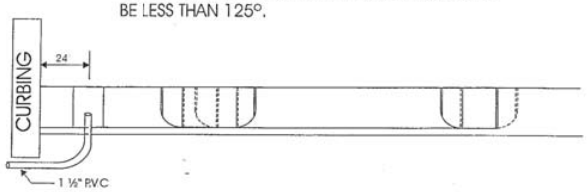
REV. 12-31-98

A 12.4

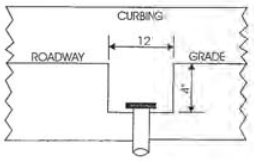
TYPICAL SAW CUT INSTALLATION FOR LOOP DETECTORS



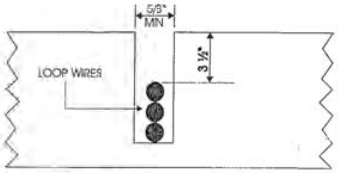
NOTE:
THE BEND IN ANY WIRE IN THE INSTALLATION SHALL BE LESS THAN 125°.



LOOP CONDUIT TO HAND HOLE OR SIGNAL BASE



SECTION A -A



SECTION B - B

REV. 1-16-98

NOT TO SCALE

A 11.1

THIS PLAN NOT DESIGNED BY VANASSE HANGEN BRUSTLIN, INC. IT WAS PROVIDED BY MASSDOT AND ALL INFORMATION CONTAINED HEREIN IS ASSUMED TO BE CORRECT.

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617 924 1770 • FAX 617 924 2286

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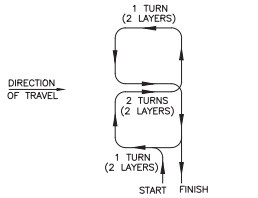
DRAWN BY:	BID		CONSTRUCTION	
P.W.Y.				
CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17 16
TRAFFIC MANAGEMENT SHEET
LOC. SUFFOLK/NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

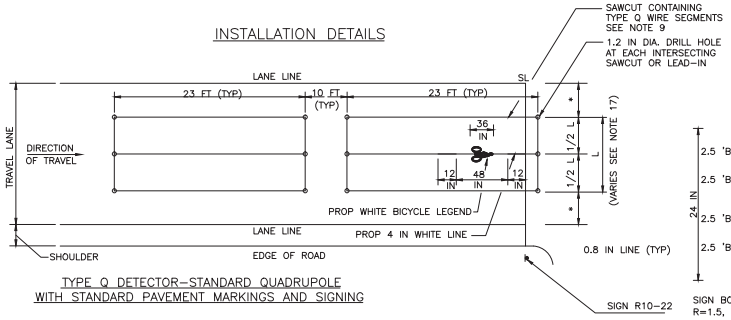
YEAR: 2014	W.O. 004110598	SCALE: N.T.S.	DWG. BB-P-8110	REV.

WINDING DETAILS



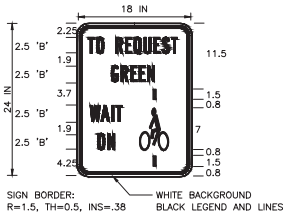
TYPE Q DETECTOR

INSTALLATION DETAILS



TYPE Q DETECTOR–STANDARD QUADRUPOLE
WITH STANDARD PAVEMENT MARKINGS AND SIGNING

SIGN R10-22

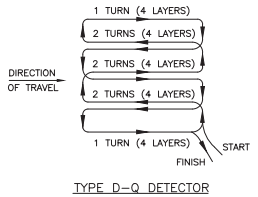


NOTE: ALL SIGN DIMENSIONS IN INCHES
NOTE: SIGN PANEL NOT SHOWN TO SCALE

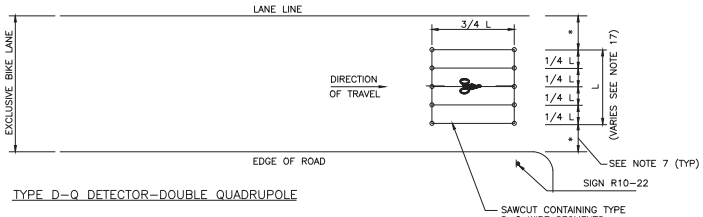
BICYCLE LOOP DETECTOR DETAILS

NOTES:

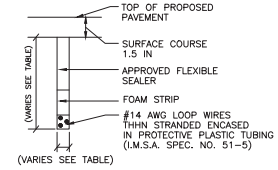
1. REFER TO VEHICLE LOOP DETECTOR DETAIL SHEET FOR ADDITIONAL NOTES AND CONSTRUCTION DETAILS.
2. ALL DETAILS ARE GRAPHICAL WITH NO SCALE.
3. THE NUMBER, SIZE, LOCATION AND LENGTH OF DETECTION AREA VARIES AND SHALL BE DETERMINED BY THE DESIGNER REFER TO TRAFFIC SIGNAL PLAN.
4. BICYCLE LOOPS SHALL BE CONNECTED TO SEPARATE LOOP DETECTOR AMPLIFIERS CAPABLE OF HIGHER LEVELS OF SENSITIVITY.
5. BICYCLE LOOPS SHALL BE INSTALLED IN THE BASE COURSE OF EXISTING PAVEMENT. THE EXISTING PAVEMENT SHALL BE COLD PLANED TO THE BASE COURSE AND SAWCUT FOR LOOP INSTALLATION.
6. SIGNS AND PAVEMENT MARKINGS SHALL BE INSTALLED FOR ALL BICYCLE DETECTORS TO INFORM CYCLISTS OF THE DETECTION AREA.
7. * OFFSETS FROM LANE LINE EQUAL UNLESS OTHERWISE NOTED. SEE PLANS.
8. TYPE Q DETECTORS SHALL BE WIRED IN A FIGURE EIGHT PATTERN WITH A DOUBLE LAYER DESIGN ("2-4-2") WITH 2 TURNS IN THE PERIMETER SLOTS AND 4 TURNS IN THE CENTER SLOT AS SHOWN IN THE WINDING DETAIL.
9. BICYCLES WILL BE DETECTED WITHIN 4 IN. OF THE INTERIOR LONGITUDINAL LOOP WIRES FOR TYPE Q AND D-Q DETECTORS.
10. PROVIDE 3 TURNS FOR TYPE D-1 DETECTORS.
11. INSTALL 2 LAYERS OF WIRE WOUND IN THE SAME DIRECTION IN BOTH LAYERS FOR TYPE D-2 DETECTORS. THE RESULT IS 4 TURNS IN EACH DIAGONAL.
12. RIGHT JUSTIFIED LOOP DETECTORS SHALL BE CONSIDERED FOR THE FOLLOWING CONDITIONS:
    a) BICYCLE STOPPING ON THE RIGHT SIDE OF A THRU TRAVEL LANE.
    b) BICYCLE STOPPING ON THE RIGHT SIDE OF AN EXCLUSIVE LEFT TURN LANE.
13. LEFT JUSTIFIED LOOP DETECTORS SHALL BE CONSIDERED FOR THE FOLLOWING CONDITIONS:
    a) BICYCLE STOPPING ON THE LEFT SIDE OF A SHARED LEFT/THRU LANE.
    b) BICYCLE STOPPING JUST TO THE RIGHT OF THE CENTERLINE WHEN TURNING LEFT ON A TWO-LANE ROADWAY.
14. RECTANGULAR LOOP DETECTORS SHALL BE CONSIDERED FOR BICYCLES STOPPING ON EITHER THE LEFT OR RIGHT SIDE OF A TWO-LANE ROADWAY. THE MINIMUM OFFSET FROM LANE LINE OR CURB LINE SHALL BE 1.0 FT.
15. PAVEMENT CORES OR TEST PITS MAY BE REQUIRED TO DETERMINE THE DEPTH OF EXISTING PAVEMENT AND CONFIRM THAT THE DETECTION OPTION CHOSEN AND CORRESPONDING WINDING PATTERN CAN BE ACCOMMODATED.
16. THESE DETAILS APPLY TO BICYCLE LOOPS INSTALLED IN ROADWAYS. PUSH BUTTON ACTUATION SHALL BE CONSIDERED FOR RECREATIONAL BIKE PATHS.
17. THE MINIMUM DIMENSION FOR L SHALL BE 6 FT MIN. FOR DETECTORS TYPE D-Q, D-1 & D-2. FINAL DIMENSIONS SHALL BE DETERMINED BY THE DESIGN ENGINEER.



TYPE D-Q DETECTOR

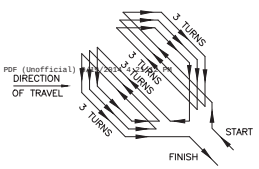


TYPE D-Q DETECTOR–DOUBLE QUADRUPOLE

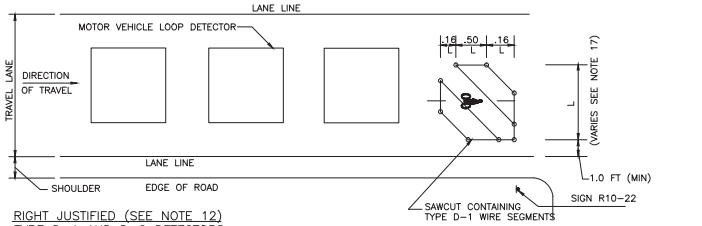


SECTION THRU LOOP DETECTOR

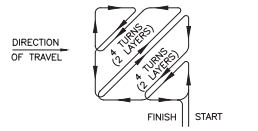
SAWCUT SLOT DEPTH GUIDE		
TURNS OF WIRE	SLOT SIZE	
	DEPTH (IN)	WIDTH (IN)
1	1.5	0.5
2	1.5	0.5
3	1.5	0.5
4	2.0	0.5
5	2.0	0.5
6	2.0	0.5
7	2.0	0.5
8	2.0	0.5



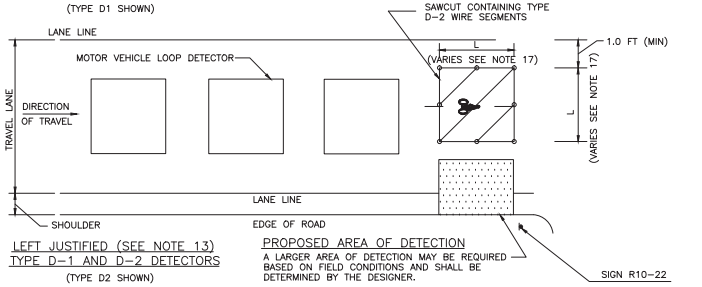
TYPE D-1 DETECTOR



RIGHT JUSTIFIED (SEE NOTE 12)
TYPE D-1 AND D-2 DETECTORS
(TYPE D1 SHOWN)



TYPE D-2 DETECTOR



LEFT JUSTIFIED (SEE NOTE 13)
TYPE D-1 AND D-2 DETECTORS
(TYPE D2 SHOWN)

PROPOSED AREA OF DETECTION
A LARGER AREA OF DETECTION MAY BE REQUIRED BASED ON FIELD CONDITIONS AND SHALL BE DETERMINED BY THE DESIGNER.

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VANASSE HANGEN BRUSTLIN, INC.
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ENGINEERING APPROVALS				
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ALGONQUIN INCREMENTAL MARKET PROJECT
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YEAR: 2014	W.O. 004110598	SCALE: N.T.S.	DWG. BB-P-8111	REV.

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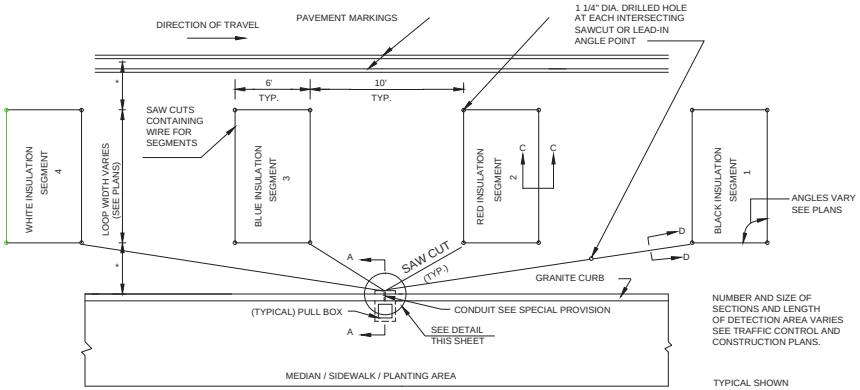
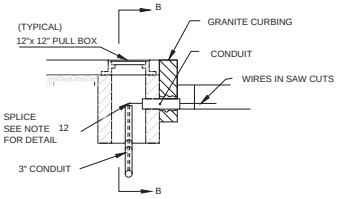


NUMBER AND SIZE OF SECTIONS AND LENGTH OF DETECTION AREA VARIES SEE TRAFFIC CONTROL AND CONSTRUCTION PLANS.

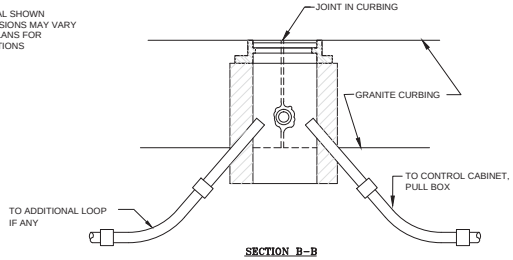
TYPICAL SHOWN DIMENSIONS MAY VARY SEE PLANS FOR VARIATIONS

* OFFSETS FROM CURB TO LOOP AND EDGE OF LANE TO LOOP EQUAL IF NOT SHOWN.

PLAN OF SEGMENTED DETECTOR DETAIL
NOT TO SCALE



SECTION A–A
NOT TO SCALE



SECTION B–B
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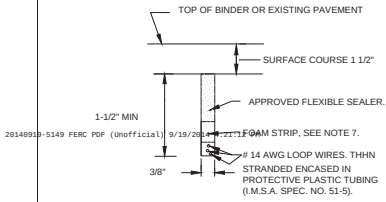

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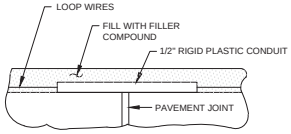
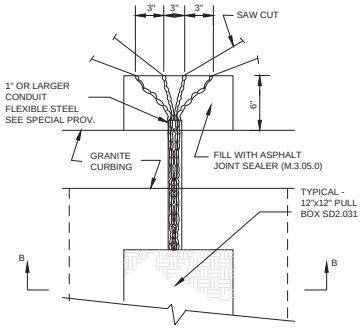
SECTION C–C & D–D

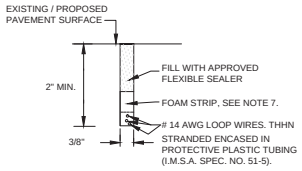
LOOPS IN BINDER COURSE OR EXISTING PAVEMENT TO BE RESURFACED
NOT TO SCALE



VERTICAL SECTION
TREATMENT AT PAVEMENT JOINTS
NOT TO SCALE

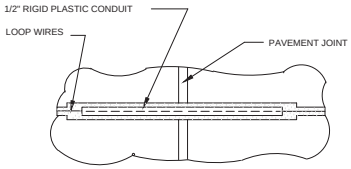


DETAIL – PLAN VIEW
NOT TO SCALE



SECTION C–C & D–D

LOOPS IN SURFACE COURSE
NOT TO SCALE



PLAN
TREATMENT AT PAVEMENT JOINTS
NOT TO SCALE

DETECTOR NOTES

IN HANDHOLE, SPLICE ALL SEGMENTS TO TYPE II-SHIELDED LOOP DETECTOR DETECTOR LEAD-IN CABLE. SEGMENTS SHALL BE SPLICED IN PARALLEL, IN SERIES, OR IN A COMBINATION OF PARALLEL & SERIES AS SHOWN ON THE PLAN SHEET FOR EACH DETECTOR. NUMBER OF TURNS OF WIRE SHALL ALSO BE AS SHOWN ON THE PLAN SHEET FOR EACH DETECTOR. SEE NOTE 12.

SEE SPECIAL PROVISIONS FOR REQUIREMENTS OF DETECTOR AMPLIFIER

LEAD IN WIRES SHALL BE TWISTED FROM SEGMENT TO SPLICE WITH SHIELDED CABLE FIVE TURNS PER FOOT. LEAD-IN SHALL BE TYPE II (M8. 16. II).

1. BEFORE STARTING ANY SPLICING, THE ELECTRICAL CONTRACTOR SHALL FURNISH DATA SHEETS ON THE MATERIALS AND/OR METHODS TO BE USED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD OPERATING PROCEDURES FOR APPROVAL OF SHOP DRAWINGS SEE SECTION 815.64, ESPECIALLY PARAGRAPH 1.

2. THE METALLIC SHIELD WHICH SHALL ENCASE THE DETECTOR LEADS FROM A SPLICE (TYPICALLY LOCATED IN A PULL BOX NEAR THE ROADWAY COMPONENT OF THE DETECTOR) TO THE CONTROLLER, AND THE DRAIN WIRE UNDER THE METALLIC SHIELD, SHALL NOT BE GROUNDED TO THE EARTH GROUNDING BUSS IN THE CONTROLLER, AND THE SHIELD
3. AND DRAIN WIRE SHALL BE CAREFULLY INSULATED FROM THE TRANSFORMER NEUTRAL OR FROM EARTH GROUND AT ALL POINTS ALONG IT'S LENGTH. SPECIFICALLY, THIS INCLUDES CAREFUL INSULATION OF THE EXPOSED PORTION OF THE SHIELD AND THE
4 AND THE DRAIN WIRE AT THE END AWAY FROM THE CONTROLLER WHERE IT IS SPLICED TO WIRES LEADING TO THE ROADWAY COMPONENT OF THE DETECTOR. THIS IS IMPORTANT TO AVOID A GROUND RETURN LOOP.

FILL ALL CONDUIT OPENINGS WITH DUCT SEAL.

5 AFTER SAW CUTS ARE COMPLETE, BLOW OUT WATER WITH OIL - FREE COMPRESSED AIR UNTIL CUTS ARE CLEAN AND DRY. INSERT WIRE INTO CLEAN SLOT WITH A BLUNT, SMOOTH, ROUND EDGED TOOL OF WOOD OR PLASTIC SUCH AS A PAINT STIRRER. DO NOT USE A SCREWDRIVER, THEN INSERT FOAM PLASTIC HOLD DOWN STRIPS, SIMILAR TO ETHA FOAM SB STRIPS SHALL BE ABOUT 2" LONG, PLACED IN THE SLOT ABOUT EVERY 2 FEET THEN POUR SEALER, TAKING CARE TO ELIMINATE BUBBLES.

THE COMBINED ROADWAY LOOP, TWISTED LEAD-IN WIRES, SPLICE AND SHIELDED LEAD-IN CABLE SHALL HAVE A RESISTANCE TO GROUND OF AT LEAST 100 MEGOHMS. SEE
6. SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

7. FOR INSTALLATION OF SINGLE (ONE SEGMENT) SMALL WIRE LOOP DETECTOR DETAIL IS THE SAME

10. CUT LOOPS IN BINDER AND FILL WITH APPROVED FLEXIBLE SEALER.

11. DETECTOR WIRE SHALL BE A DIFFERENT COLOR FOR EACH SEGMENT OF A
8. DETECTOR GROUP. SEE DETAIL

12. SPLICING PATTERN P = SERIES/PARALLEL: SPLICE SEGMENTS 1 AND 3 OF AN INDIVIDUAL DETECTOR IN SERIES. SPLICE SEGMENTS 2 AND 4 IN SERIES. SPLICE THE RESULTANT TWO GROUPS IN PARALLEL. SPLICE THE RESULTANT
9. COMBINATION TO ONE LEAD-IN CABLE. CONNECT THIS CABLE TO AN OTHERWISE UNUSED AMPLIFIER CHANNEL.

SPLICING PATTERN S = SERIES: SPLICE ALL SEGMENTS (TYPICALLY FOUR, BUT MAY BE LESS) OF AN INDIVIDUAL DETECTOR IN SERIES. SPLICE THE RESULTANT COMBINATION TO ONE LEAD-IN CABLE TO AN OTHERWISE UNUSED AMPLIFIER CHANNEL.

THIS PLAN NOT DESIGNED BY VANASSE HANGEN BRUSTLIN, INC. IT WAS PROVIDED BY MASSDOT AND ALL INFORMATION CONTAINED HEREIN IS ASSUMED TO BE CORRECT.

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

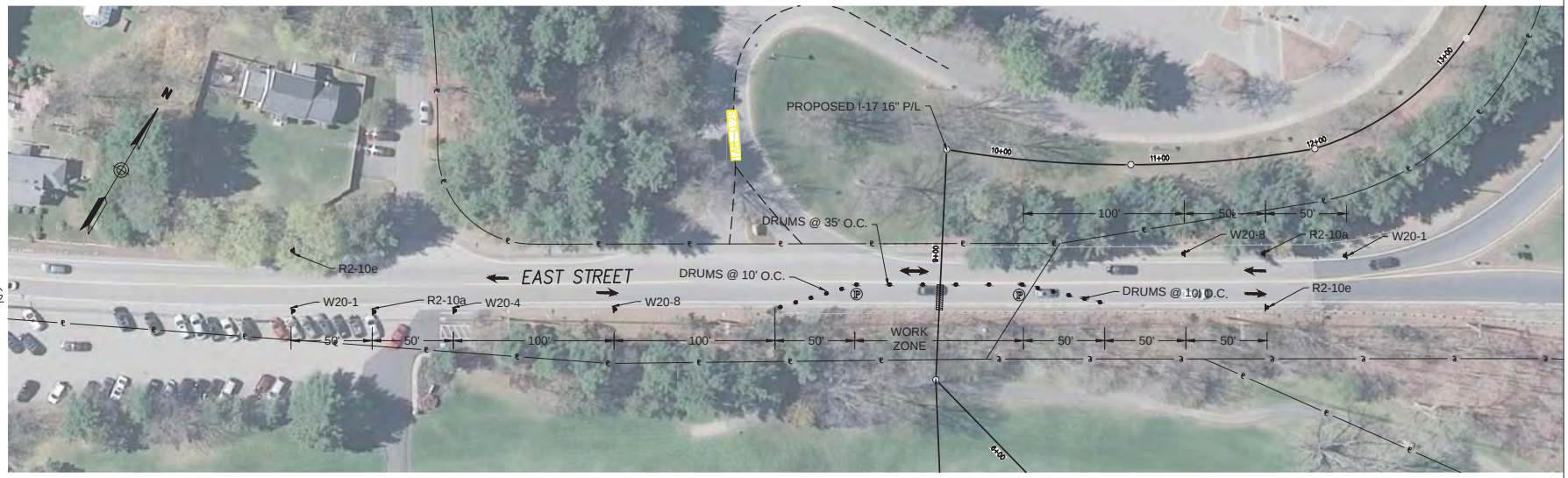
TITLE	ENGINEERING APPROVALS			
DRAWN BY: P.W.Y.	BID		CONSTRUCTION	
CHECKED BY: R.J.M.				
	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL PROPOSED I-17 16
TRAFFIC MANAGEMENT SHEET
LOC. SUFFOLK/NORFOLK COUNTY, MA

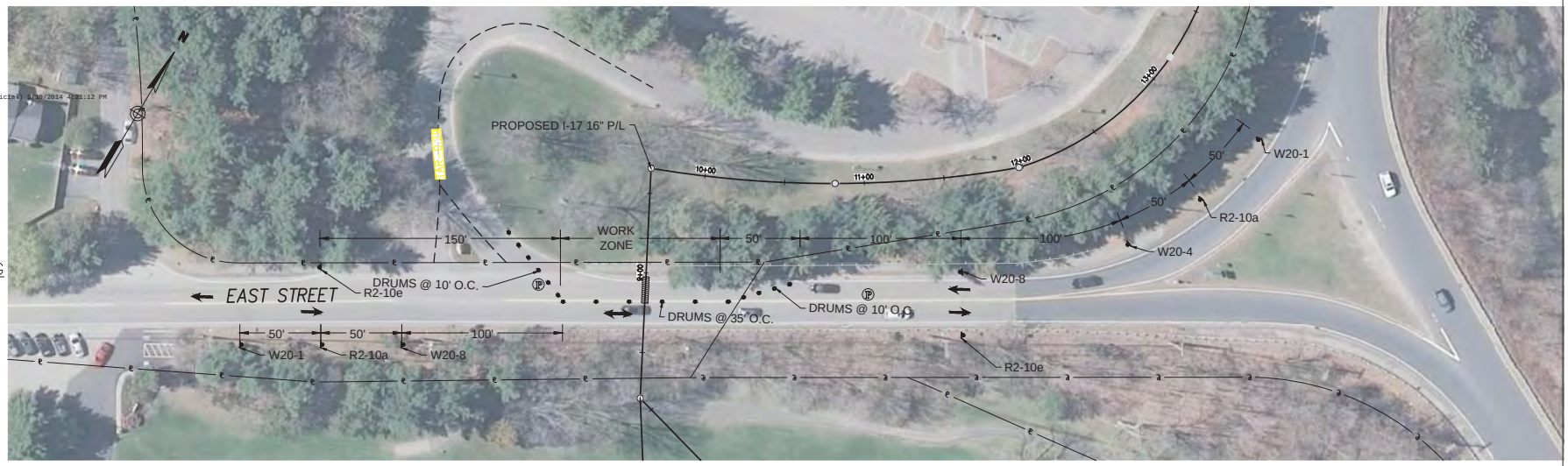
Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014	W.O. 004110598	SCALE: N.T.S.	DWG. BB–P–8112	REV.

EAST STREET CROSSING PHASE 1



EAST STREET CROSSING PHASE 2



30 0 30 60
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

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R.J.M.				
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ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=30' | DWG. BB-P-8113 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

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I-95 CROSSING PLAN

40 0 40 80
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

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P.W.Y.				
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R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014	W.O. 004110598	SCALE: 1"=40'	DWG. BB-P-8114	REV.

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RUSTCRAFT ROAD CROSSING

30 0 30 60

SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

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P.W.Y.				
CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17 16"
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=30' | DWG. BB-P-8115 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

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ITEM 819.831
WIRE LOOP INSTALLED IN ROADWAY
LIST OF MAJOR ITEMS REQUIRED

QUANTITY	DESCRIPTION	LENGTH(LF)	TOTAL(LF)
8	6' x 20'	185'	1480'

PLUS NECESSARY CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING VEHICLE DETECTION

DETECTOR DATA

DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
12	2-6'X20'	2-4-2	PRESENCE	EXIST	EXIST	SERIES
13	2-6'X20'	2-4-2	PRESENCE	EXIST	EXIST	SERIES
14	2-6'X20'	2-4-2	PRESENCE	EXIST	EXIST	SERIES
15	2-6'X20'	2-4-2	PRESENCE	EXIST	EXIST	SERIES

NOTE: DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY

ELM STREET
CROSSING
PHASE 1

30 0 30 60
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

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R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17 16"
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=30' | DWG. BB-P-8116 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

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ITEM 819.831
WIRE LOOP INSTALLED IN ROADWAY
LIST OF MAJOR ITEMS REQUIRED

QUANTITY	DESCRIPTION	LENGTH(LF)	TOTAL(LF)
8	6' x 20'	185'	1480'

PLUS NECESSARY CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING VEHICLE DETECTION

DETECTOR DATA

DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
12	2-6'X20'	2-4-2	PRESENCE	EXIST	EXIST	SERIES
13	2-6'X20'	2-4-2	PRESENCE	EXIST	EXIST	SERIES
14	2-6'X20'	2-4-2	PRESENCE	EXIST	EXIST	SERIES
15	2-6'X20'	2-4-2	PRESENCE	EXIST	EXIST	SERIES

NOTE: DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY

ELM STREET
CROSSING
PHASE 2

30 0 30 60
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

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CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17 16"
TRAFFIC MANAGEMENT SHEET
LOC. NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=30' | DWG. BB-P-8117 | REV.

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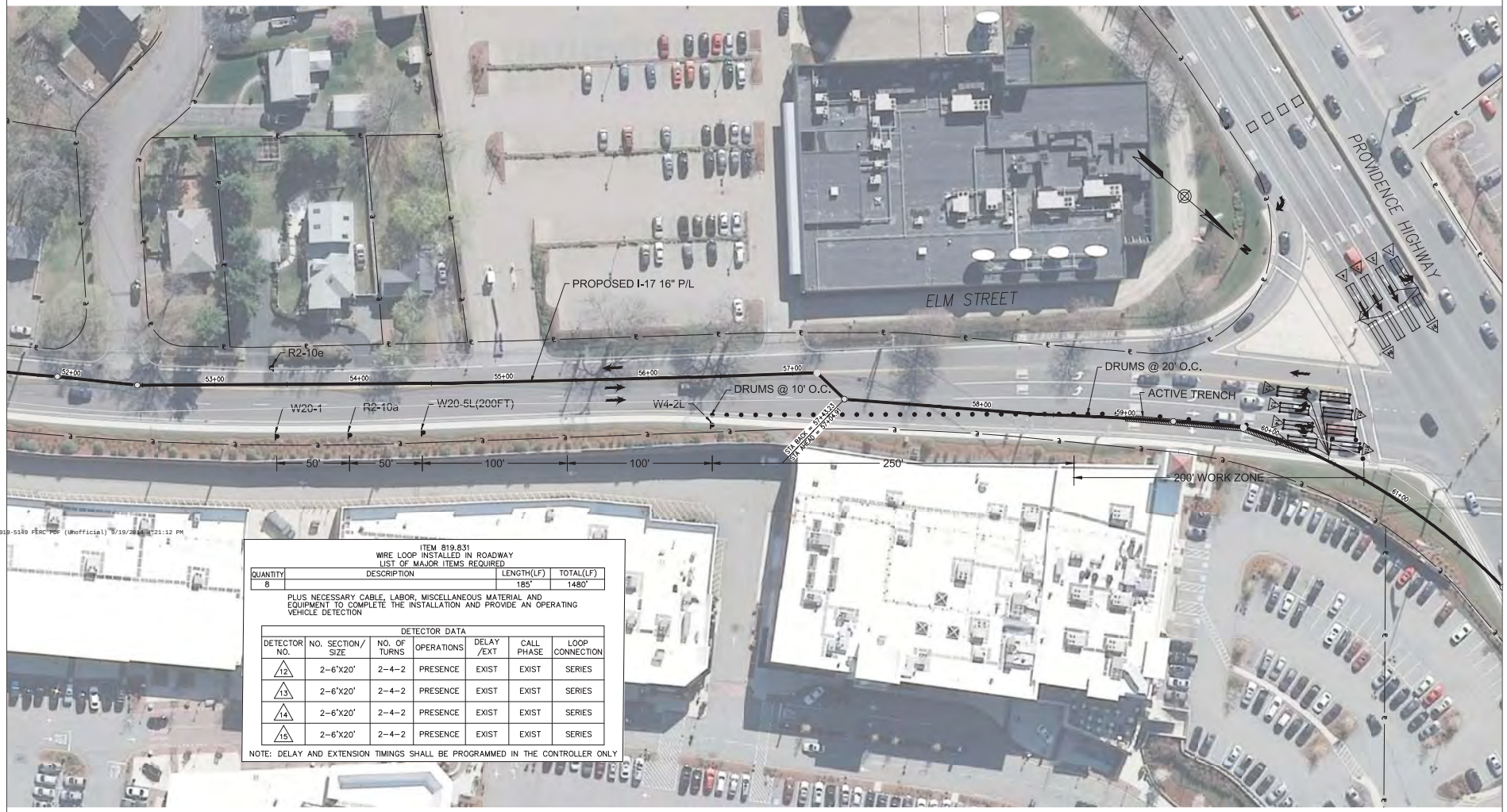

ITEM 819.831
WIRE LOOP INSTALLED IN ROADWAY
LIST OF MAJOR ITEMS REQUIRED

QUANTITY	DESCRIPTION	LENGTH(LF)	TOTAL(LF)
8		185'	1480'

PLUS NECESSARY CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING VEHICLE DETECTION

DETECTOR DATA

DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
12	2-6'X20'	2-4-2	PRESENCE	EXIST	EXIST	SERIES
13	2-6'X20'	2-4-2	PRESENCE	EXIST	EXIST	SERIES
14	2-6'X20'	2-4-2	PRESENCE	EXIST	EXIST	SERIES
15	2-6'X20'	2-4-2	PRESENCE	EXIST	EXIST	SERIES

NOTE: DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY

ELM STREET
CROSSING
PHASE 3

30 0 30 60
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

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R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17 16"
TRAFFIC MANAGEMENT SHEET
LOC. NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=30' | DWG. BB-P-8118 | REV.

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ITEM 819.831
WIRE LOOP INSTALLED IN ROADWAY
LIST OF MAJOR ITEMS REQUIRED

QUANTITY	DESCRIPTION	LENGTH(LF)	TOTAL(LF)
8	6' X 20' QUADRUPOLE LOOP DETECTOR	250'±	2000'±

PLUS NECESSARY CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING VEHICLE DETECTION

DETECTOR DATA

DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
12	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SERIES
13	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SINGLE
14	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SERIES
15	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SINGLE
813	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SINGLE
815	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SINGLE

NOTES:
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY
2. SEE MASSDOT LOOP AND BICYCLE LOOP DETECTOR DETAILS

40 0 40 80
SCALE IN FEET

ELM STREET AT
PROVIDENCE HIGHWAY
PHASE 1

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

VHB
Vanasse Hangen Brustlin, Inc.
Transportation
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Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

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P.W.Y.				
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R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17 16"
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=40' | DWG. BB-P-8119 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

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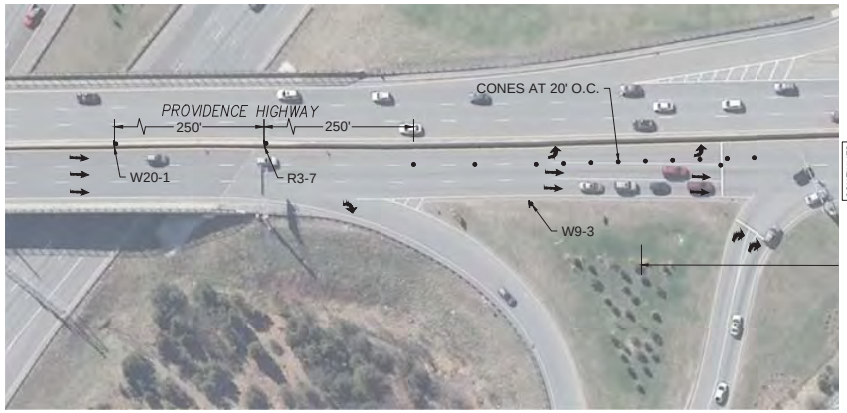

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ITEM 819.831
WIRE LOOP INSTALLED IN ROADWAY
LIST OF MAJOR ITEMS REQUIRED

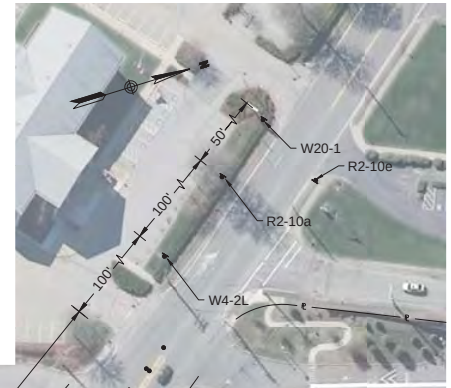
QUANTITY	DESCRIPTION	LENGTH(LF)	TOTAL(LF)
8	6' X 20' QUADRUPOLE LOOP DETECTOR	250'±	2000'±

PLUS NECESSARY CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING VEHICLE DETECTION

DETECTOR DATA

DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
12	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SERIES
13	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SINGLE
14	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SERIES
15	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SINGLE
813	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SINGLE
815	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SINGLE

NOTES:
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY
2. SEE MASSDOT LOOP AND BICYCLE LOOP DETECTOR DETAILS



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SCALE IN FEET: 40 0 40 80

ELM STREET AT
PROVIDENCE HIGHWAY
PHASE 2

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

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Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

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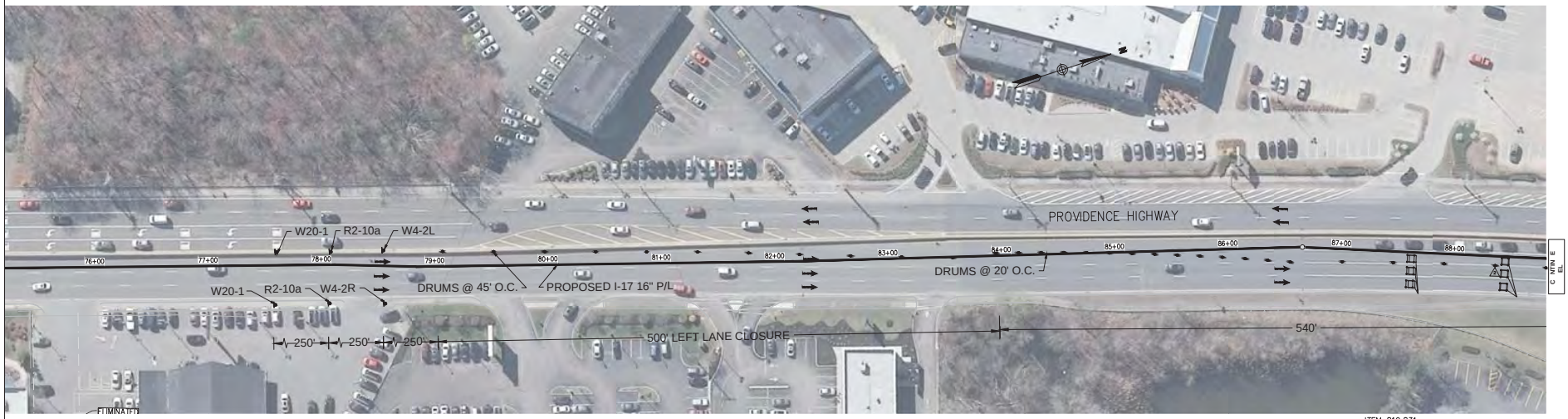
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

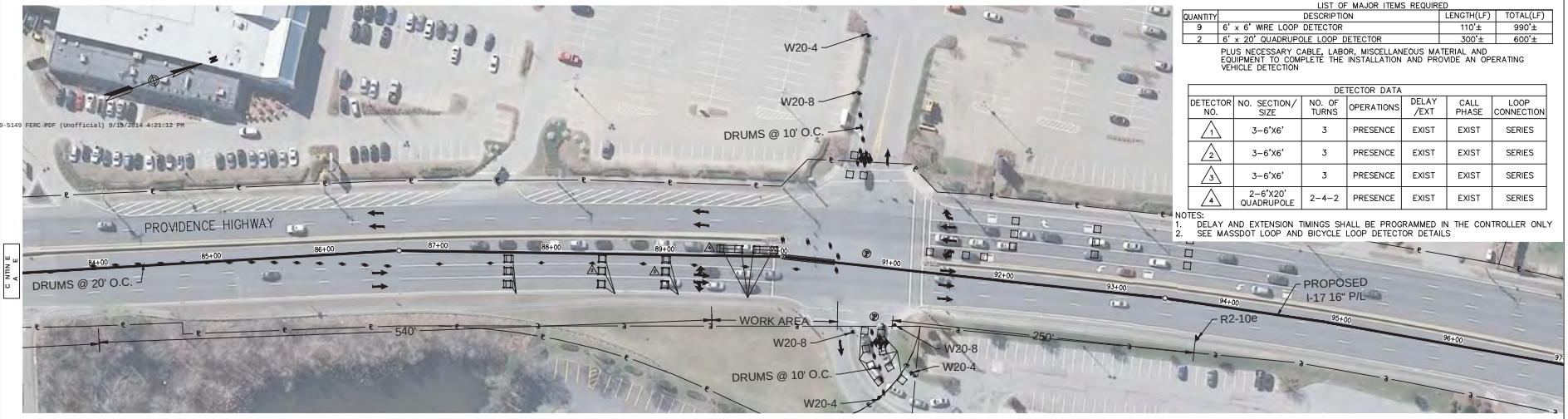
ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17 16"
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=40' | DWG. BB-P-8120 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310





ITEM 819.831
WIRE LOOP INSTALLED IN ROADWAY
LIST OF MAJOR ITEMS REQUIRED

QUANTITY	DESCRIPTION	LENGTH(LF)	TOTAL(LF)
9	6' x 6' WIRE LOOP DETECTOR	110'±	990'±
2	6' x 20' QUADRUPOLE LOOP DETECTOR	300'±	600'±

PLUS NECESSARY CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING VEHICLE DETECTION

DETECTOR DATA						
DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
1	3–6'X6'	3	PRESENCE	EXIST	EXIST	SERIES
2	3–6'X6'	3	PRESENCE	EXIST	EXIST	SERIES
3	3–6'X6'	3	PRESENCE	EXIST	EXIST	SERIES
4	2–6'X20' QUADRUPOLE	2–4–2	PRESENCE	EXIST	EXIST	SERIES

NOTES:
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY
2. SEE MASSDOT LOOP AND BICYCLE LOOP DETECTOR DETAILS

PARKING LOT AT
PROVIDENCE HIGHWAY
PHASE 1

40 0 40 80
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

VHB
Vanasse Hangen Brustlin, Inc.
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101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

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P.W.Y.				
CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17 16"
TRAFFIC MANAGEMENT SHEET
LOC. NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=40' | DWG. BB–P–8121 | REV.

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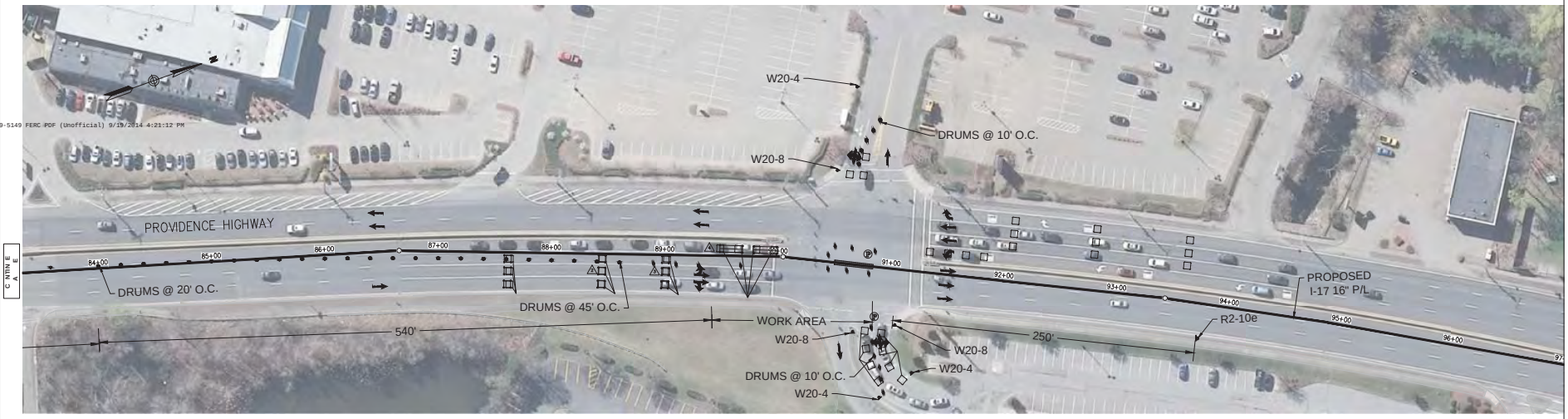

PARKING LOT AT
PROVIDENCE HIGHWAY
PHASE 2

40 0 40 80
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

Parsons Brinckerhoff
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Land Development
Environmental Services
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617 924 1770 • FAX 617 924 2286

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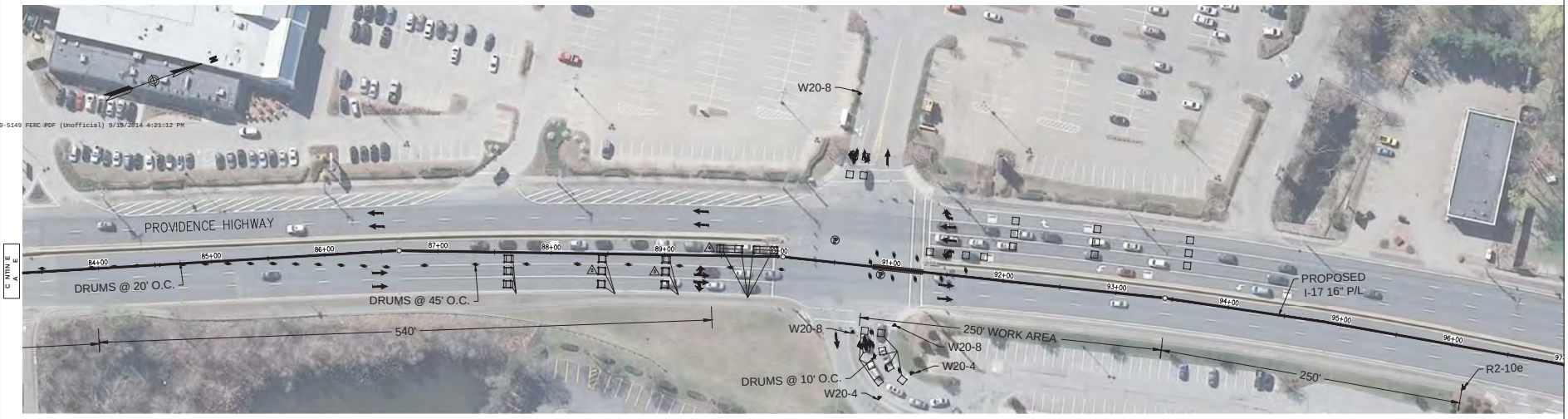
P.W.Y.				
CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17 16"
TRAFFIC MANAGEMENT SHEET
LOC. NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=40' | DWG. BB-P-8122 | REV.

20140919-5149 FERC PDF (Unofficial) 9/19/2014 4:21:12 PM



PARKING LOT AT
PROVIDENCE HIGHWAY
PHASE 3

40 0 40 80
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

	ENGINEERING APPROVALS			
DRAWN BY:	BID		CONSTRUCTION	
P.W.Y.				
CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17 16"
TRAFFIC MANAGEMENT SHEET
LOC. NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=40' | DWG. BB-P-8123 | REV.

20140919-5149 FERC PDF (Unofficial) 9/19/2014 4:21:12 PM

ITEM 819.831
WIRE LOOP INSTALLED IN ROADWAY
LIST OF MAJOR ITEMS REQUIRED

QUANTITY	DESCRIPTION	LENGTH(LF)	TOTAL(LF)
2	6' x 20' QUADRUPOLE WIRE LOOP DETECTOR	300'±	600'±
1	6' X 6' BIKE LOOP DETECTOR	100'±	100'±

PLUS NECESSARY CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING VEHICLE DETECTION

DETECTOR DATA						
DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
5	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SINGLE
15	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SINGLE
16	1-6'X6' BIKE	2	PRESENCE	EXIST	EXIST	SINGLE

NOTES:
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY
2. SEE MASSDOT LOOP AND BICYCLE LOOP DETECTOR DETAILS

EASTERN AT PROVIDENCE HIGHWAY
PHASE 1

40 0 40 80
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

	ENGINEERING APPROVALS			
DRAWN BY:	BID		CONSTRUCTION	
P.W.Y.				
CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=40' | DWG. BB-P-8124 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

20140918-5141 FERC PDF (Unofficial) 9/11/2014 4:21:12 PM

EASTERN AT PROVIDENCE HIGHWAY
PHASE 2

40 0 40 80
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
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	ENGINEERING APPROVALS			
DRAWN BY:	BID		CONSTRUCTION	
P.W.Y.				
CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=40' | DWG. BB-P-8125 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

20140910-5141 FERC PDF (Unofficial) 9/11/2014 4:21:12 PM

EASTERN AT PROVIDENCE HIGHWAY
PHASE 3

40 0 40 80
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
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	ENGINEERING APPROVALS			
DRAWN BY:	BID		CONSTRUCTION	
P.W.Y.				
CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

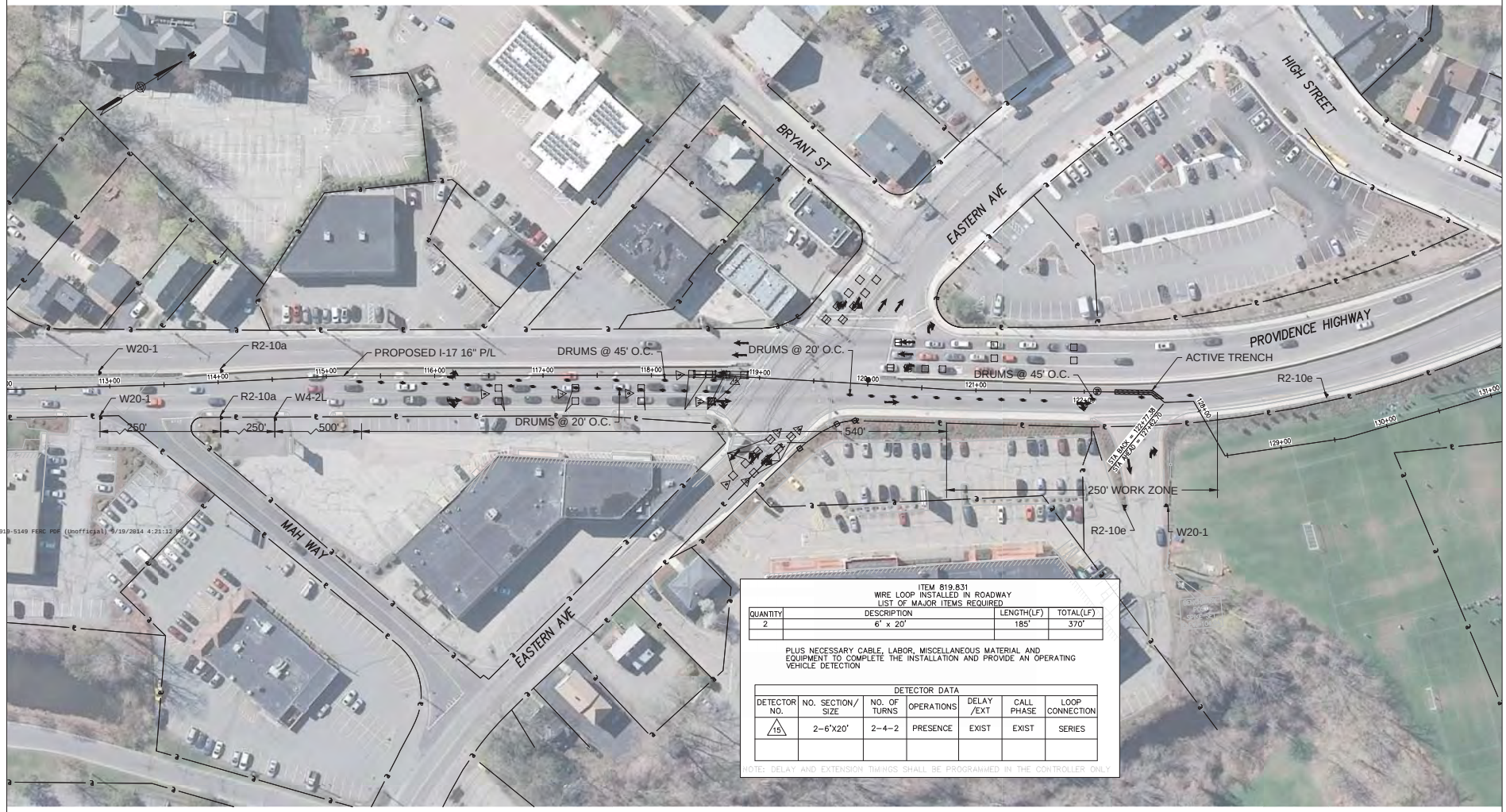
ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=40' | DWG. BB-P-8126 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

20140910-5141 FERC PDF (Unofficial) 9/11/2014 4:21:12 PM



ITEM 819.831
WIRE LOOP INSTALLED IN ROADWAY
LIST OF MAJOR ITEMS REQUIRED

QUANTITY	DESCRIPTION	LENGTH(LF)	TOTAL(LF)
2	6' x 20'	185'	370'

PLUS NECESSARY CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING VEHICLE DETECTION

DETECTOR DATA

DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
15	2-6'X20'	2-4-2	PRESENCE	EXIST	EXIST	SERIES

NOTE: DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY

PROVIDENCE HIGHWAY CROSSING
PHASE 1

40 0 40 80
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
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	ENGINEERING APPROVALS			
DRAWN BY:	BID		CONSTRUCTION	
P.W.Y.				
CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

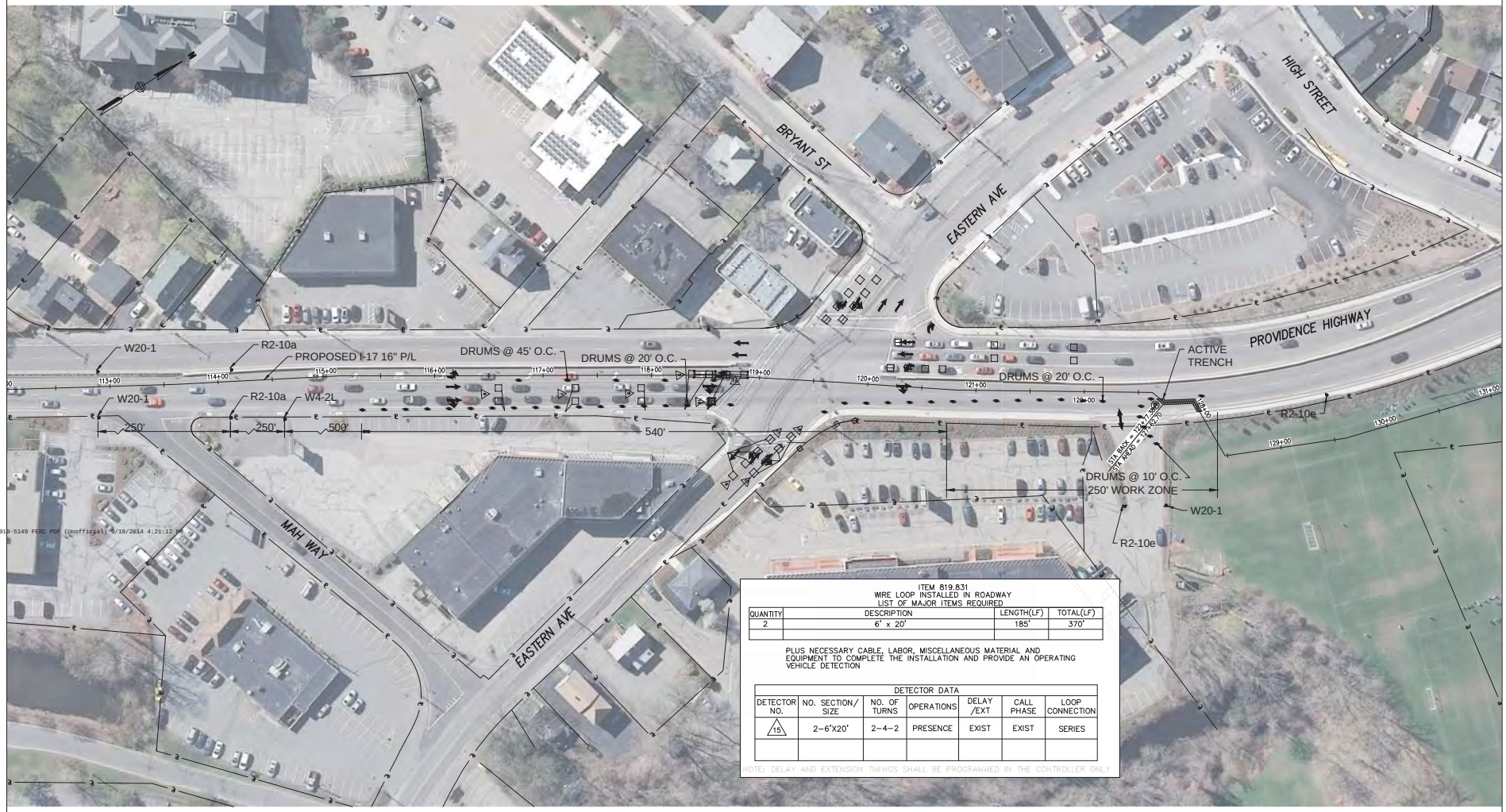
ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=40' | DWG. BB-P-8127 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

20140919-5149 FERC PDF (Unofficial) 9/19/2014 4:21:12 PM



ITEM 819.831
WIRE LOOP INSTALLED IN ROADWAY
LIST OF MAJOR ITEMS REQUIRED

QUANTITY	DESCRIPTION	LENGTH(LF)	TOTAL(LF)
2	6' x 20'	185'	370'

PLUS NECESSARY CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING VEHICLE DETECTION

DETECTOR DATA

DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
15	2-6'X20'	2-4-2	PRESENCE	EXIST	EXIST	SERIES

NOTE: DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY

PROVIDENCE HIGHWAY CROSSING
PHASE 2

40 0 40 80
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

VHB
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Transportation
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101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

	ENGINEERING APPROVALS			
DRAWN BY:	BID		CONSTRUCTION	
P.W.Y.				
CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=40' | DWG. BB-P-8128 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

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HIGH STREET AT EAST STREET
PHASE 1

30 0 30 60
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
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	ENGINEERING APPROVALS			
DRAWN BY:	BID		CONSTRUCTION	
P.W.Y.				
CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014	W.O. 004110598	SCALE: 1"=30'	DWG. BB-P-8129	REV.

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HIGH STREET AT EAST STREET
PHASE 2

30 0 30 60
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		
		4			N/A 3/20/2009			
		3			ISSUE FOR BID 2/04/2009			

VHB
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Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
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	ENGINEERING APPROVALS			
DRAWN BY:	BID		CONSTRUCTION	
P.W.Y.				
CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=30' | DWG. BB-P-8130 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

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ITEM 819.831
WIRE LOOP INSTALLED IN ROADWAY
LIST OF MAJOR ITEMS REQUIRED

QUANTITY	DESCRIPTION	LENGTH(LF)	TOTAL(LF)
1	4' x 6' QUADRUPOLE LOOP DETECTOR	80'±	80'±
4	6' X 20' QUADRUPOLE LOOP DETECTOR	225'±	900'±

PLUS NECESSARY CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING VEHICLE DETECTION

DETECTOR DATA

DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
11	1-4'X6' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SINGLE
12	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SERIES
22	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SINGLE
24	1-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SINGLE

NOTES:
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY
2. SEE MASSDOT LOOP AND BICYCLE LOOP DETECTOR DETAILS.

HIGH STREET AT EAST STREET
PHASE 3

30 0 30 60
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		
		1						
		2						
		3						
		4						
		5			N/A 3/20/2009			
		6			ISSUE FOR BID 2/04/2009			

VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

	ENGINEERING APPROVALS			
DRAWN BY:	BID		CONSTRUCTION	
P.W.Y.				
CHECKED BY:				
R.J.M.				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=30' | DWG. BB-P-8131 | REV.

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WASHINGTON STREET AT EASTBROCK ROAD
PHASE 1

40 0 40 80
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

	ENGINEERING APPROVALS			
DRAWN BY:	BID		CONSTRUCTION	
S.L.T.				
CHECKED BY:				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET
LOC. NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014	W.O. 004110598	SCALE: 1"=40'	DWG. BB-P-8132	REV.

ITEM 819.831
WIRE LOOP INSTALLED IN ROADWAY
LIST OF MAJOR ITEMS REQUIRED

QUANTITY	DESCRIPTION	LENGTH(LF)	TOTAL(LF)
1	6' x 6' LOOP DETECTOR	150'±	150'±
1	6' x 6' BIKE LOOP DETECTOR	150'±	150'±
6	6' X 20' QUADRUPOLE LOOP DETECTOR	225'±	1350'±

PLUS NECESSARY CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING VEHICLE DETECTION

DETECTOR DATA

DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
8	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SERIES
9	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SERIES
13	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SERIES
14	1-6'X6'	3	PRESENCE	EXIST	EXIST	SINGLE
B3	1-6'X6' BIKE	2	PRESENCE	EXIST	EXIST	SINGLE

NOTES:
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY
2. SEE MASSDOT LOOP AND BICYCLE LOOP DETECTOR DETAILS.

WASHINGTON STREET AT EASTBROCK ROAD
PHASE 2

40 0 40 80
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

DRAWN BY:	ENGINEERING APPROVALS			
	BID		CONSTRUCTION	
S.L.T.				
CHECKED BY:				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET
LOC. NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=40' | DWG. BB-P-8133 | REV.

WASHINGTON STREET AT CURVE STREET
PHASE 1

40 0 40 80
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

	ENGINEERING APPROVALS			
DRAWN BY:	BID		CONSTRUCTION	
S.L.T.				
CHECKED BY:				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=40' | DWG. BB-P-8134 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

20140910-5140 FERC PDF (Unofficial) 9/10/2014 4:21:12 PM

ITEM 819.831
WIRE LOOP INSTALLED IN ROADWAY
LIST OF MAJOR ITEMS REQUIRED

QUANTITY	DESCRIPTION	LENGTH(LF)	TOTAL(LF)
7	6' x 6' LOOP DETECTOR	150'±	1050'±
1	6' x 6' BIKE LOOP DETECTOR	150'±	150'±
2	6' X 20' QUADRUPOLE LOOP DETECTOR	225'±	450'±

PLUS NECESSARY CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING VEHICLE DETECTION

DETECTOR DATA

DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
1	2-6'X6'	3	PRESENCE	EXIST	EXIST	SERIES
2	2-6'X6'	3	PRESENCE	EXIST	EXIST	SERIES
3	2-6'X6'	3	PRESENCE	EXIST	EXIST	SERIES
4	1-6'X6'	3	PRESENCE	EXIST	EXIST	SINGLE
5	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	EXIST	EXIST	SERIES
B1	1-6'X6' BIKE	2	PRESENCE	EXIST	EXIST	SINGLE

NOTES:
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY
2. SEE MASSDOT LOOP AND BICYCLE LOOP DETECTOR DETAILS.

WASHINGTON STREET AT CURVE STREET
PHASE 2

40 0 40 80
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

	ENGINEERING APPROVALS			
DRAWN BY:	BID		CONSTRUCTION	
S.L.T.				
CHECKED BY:				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. NORFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=40' | DWG. BB-P-8135 | REV.

20140918-SLED FERC.PDF (unofficial) 9/19/2014 4:21:12 PM

WASHINGTON STREET AT GROVE STREET

PHASE 1

40 0 40 80

SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

DRAWN BY:	ENGINEERING APPROVALS			
	BID		CONSTRUCTION	
S.L.T.				
CHECKED BY:				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. SUFFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=40' | DWG. BB-P-8136 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

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WASHINGTON STREET AT GROVE STREET
PHASE 2

40 0 40 80
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

Parsons Brinckerhoff Quade & Douglas, Inc.
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

DRAWN BY:	ENGINEERING APPROVALS			
	BID		CONSTRUCTION	
S.L.T.		1/29		
CHECKED BY:				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. SUFFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=40' | DWG. BB-P-8137 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

CENTRE STREET AT SPRING STREET
PHASE 1

30 0 30 60
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

	ENGINEERING APPROVALS			
DRAWN BY:	BID		CONSTRUCTION	
S.L.T.				
CHECKED BY:				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. SUFFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=30' | DWG. BB-P-8138 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

CENTRE STREET AT SPRING STREET
PHASE 2

30 0 30 60
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

Parsons Brinckerhoff
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

	ENGINEERING APPROVALS			
DRAWN BY:	BID		CONSTRUCTION	
S.L.T.				
CHECKED BY:				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. SUFFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=30' | DWG. BB-P-8139 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

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CENTRE STREET AT SPRING STREET

PHASE 3

30 0 30 60

SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

	ENGINEERING APPROVALS			
DRAWN BY:	BID		CONSTRUCTION	
S.L.T.				
CHECKED BY:				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET

LOC. SUFFOLK COUNTY, MA

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=30' | DWG. BB-P-8140 | REV.

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

ITEM 819.831
WIRE LOOP INSTALLED IN ROADWAY
LIST OF MAJOR ITEMS REQUIRED

QUANTITY	DESCRIPTION	LENGTH(LF)	TOTAL(LF)
2	5' x 5' BIKE LOOP DETECTOR	100'±	200'±
6	5' x 5' LOOP DETECTOR	100'±	600'±

PLUS NECESSARY CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING VEHICLE DETECTION

DETECTOR DATA						
DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
D2	1-5'X5' BIKE 3-5'X5'	2 3	PRESENCE	EXIST	EXIST	SERIES/ PARALLEL
D3	1-5'X5' BIKE 3-5'X5'	2 3	PRESENCE	EXIST	EXIST	SERIES/ PARALLEL

NOTES:
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY
2. SEE BOSTON TRANSPORTATION DEPARTMENT DETAILS AND SPECIFICATIONS

CENTRE STREET AT SPRING STREET
PHASE 4

30 0 30 60
SCALE IN FEET

DWG. NO.	DESCRIPTION	REV	DSN	CK	DESCRIPTION	ITEM NO.	DESCRIPTION	LN. FT.
REFERENCE DRAWINGS		REVISIONS				MATERIALS		

VHB
Transportation
Land Development
Environmental Services
101 Walnut Street, P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770 • FAX 617 924 2286

	ENGINEERING APPROVALS			
DRAWN BY:	BID		CONSTRUCTION	
S.L.T.				
CHECKED BY:				
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
WEST ROXBURY LATERAL
PROPOSED I-17
TRAFFIC MANAGEMENT SHEET
LOC. SUFFOLK COUNTY, MA

Spectra Energy
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310

YEAR: 2014 | W.O. 004110598 | SCALE: 1"=30' | DWG. BB-P-8141 | REV.

APPENDIX H

RESIDENCES AND OTHER STRUCTURES WITHIN 50 FEET OF THE CONSTRUCTION WORK AREA AND RESIDENTIAL CONSTRUCTION PLANS

TABLE H-1

Residences and Other Structures Within 50 Feet of the Construction Work Area for the AIM Project

Facility, County, State, Municipality	Milepost	Type of Structure	Approx. Distance from Construction Work Area (feet) [a]	Approx. Distance from Pipeline Centerline (feet)	Residential Drawing Number [b]
HAVERSTRAW TO STONY POINT TAKE-UP AND RELAY					
Rockland County, NY					
Haverstraw	0.38	Residential	2[c]	15	HA-E-7001
	0.40	Residential	22	42	HA-E-7001
	0.42	Residential	25	46	HA-E-7001
	0.44	Residential	46	66	HA-E-7002
	0.47	Residential	3[d]	23	HA-E-7002
	0.50	Residential	14	34	HA-E-7002
	0.57	Residential	44	64	HA-E-7003
	1.01	Residential	10	83	HA-E-7004
	1.04	Res./Comm.	9[e]	108	HA-E-7004
	1.10	Residential	0[d]	20	HA-E-7004
	1.10	Residential	0[d]	18	HA-E-7004
	1.11	Residential	0[d]	18	HA-E-7004
	1.12	Residential	0[d]	20	HA-E-7004
	1.13	Residential	35	90	HA-E-7004
	1.13	Residential	2[d]	22	HA-E-7005
	1.14	Residential	43	117	HA-E-7005
	1.14	Residential	43	99	HA-E-7005
	1.15	Residential	10	92	HA-E-7005
	1.15	Residential	10	32	HA-E-7005
	1.16	Residential	25	82	HA-E-7005
Stony Point	1.7	Residential	26	69	HA-E-7006
	2.02	Residential	15	35	HA-E-7007
	2.1	Residential	2[c]	16	HA-E-7007
	2.23	Residential	10[d]	62	HA-E-7008
	2.25	Residential	35	55	HA-E-7008
	2.26	Residential	49	104	HA-E-7008
	2.29	Residential	10	55	HA-E-7008
	2.30	Residential	28	48	HA-E-7008
	2.34	Residential	31	86	HA-E-7008
	2.35	Residential	5[d]	18	HA-E-7008
	2.41	Residential	10[c]	54	HA-E-7009
	2.42	Residential	17	37	HA-E-7009
	2.82	Residential	50	116	HA-E-7010
	3.14	Radio Tower Facility	10	75	NA
STONY POINT TO YORKTOWN TAKE-UP AND RELAY					
Rockland County, NY					
Stony Point	0.41	Res./Comm.	14	75	S7-E-7001
	0.42	Res./Comm.	40	114	S7-E-7002
	0.60	Shed	0	11	S7-E-7003
	0.61	Gazebo	29	54	S7-E-7003
	0.61	Residential	44	69	S7-E-7003

TABLE H-1 (cont'd)

Residences and Other Structures Within 50 Feet of the Construction Work Area for the AIM Project

Facility, County, State, Municipality	Milepost	Type of Structure	Approx. Distance from Construction Work Area (feet) [a]	Approx. Distance from Pipeline Centerline (feet)	Residential Drawing Number [b]
	0.62	Residential	48	123	S7-E-7003
	0.65	Residential	24	99	S7-E-7003
	0.67	Residential	15	35	S7-E-7003
	1.48	Garage	12	62	NA
	1.68	Residential	43	68	S7-E-7004
	1.77	Shed	18	43	S7-E-7005
	1.79	Residential	24	49	S7-E-7005
	2.09	Patio	27	47	NA
	2.10	Shed/Pool	9	29	S7-E-7006
	2.11	Residential	0[c]	19	S7-E-7006
	2.11	Residential	46	101	S7-E-7006
	2.17	Residential	9[d]	64	S7-E-7006
	2.18	Residential	37	68	S7-E-7006
	2.29	Residential	10	30	S7-E-7007
	2.33	Residential	12	67	S7-E-7007
	2.43	Residential	15	35	S7-E-7008
	3.08	Residential	41	76	S7-E-7009
Westchester County, NY					
Buchanan	5.52	Garage	43	113	NA
	5.60	Commercial	42	77	NA
	5.69	Commercial	5	35	S7-E-7010
	5.69	Commercial	5	70	S7-E-7010
Peekskill	5.77	Residential	5[d]	20	S7-E-7010
	5.80	Commercial	15	75	S7-E-7010
	5.80	Shed	10	75	S7-E-7010
	5.80	Shed	10	65	S7-E-7010
	5.80	Residential	48	148	S7-E-7010
Cortlandt	6.41	Residential	47	82	S7-E-7011
	6.53	Residential	42	107	S7-E-7011
	6.60	Residential	10	30	S7-E-7012
	8.10	Barn	5	35	S7-E-7013
	8.10	Garage	38	103	S7-E-7013
	8.11	Residential	13	78	S7-E-7013
	8.12	Ranch/Residential	45	80	S7-E-7013
	8.33	Residential	30	65	S7-E-7014
	8.35	Garage	15	50	S7-E-7014
	8.95	Shed	26	124	NA
	8.98	Residential	18	38	S7-E-7015
	9.01	Residential	15	70	S7-E-7015
	9.03	Residential	10	30	S7-E-7015
	9.07	Residential	9[d]	29	S7-E-7015
	9.16	Residential	27	82	S7-E-7016
	9.34	Residential	10	61	S7-E-7017
	9.38	Residential	43	63	S7-E-7017
	9.41	Residential	13	68	S7-E-7017
	9.45	Residential	27	47	S7-E-7017
	9.52	Garage	35	55	NA
	9.54	Residential	44	64	S7-E-7018

TABLE H-1 (cont'd)

Residences and Other Structures Within 50 Feet of the Construction Work Area for the AIM Project

Facility, County, State, Municipality	Milepost	Type of Structure	Approx. Distance from Construction Work Area (feet) [a]	Approx. Distance from Pipeline Centerline (feet)	Residential Drawing Number [b]
	9.58	Residential	18	73	S7-E-7018
	9.62	Residential	10	31	S7-E-7018
	9.65	Residential	25	80	S7-E-7018
	9.71	Residential	38	93	S7-E-7019
	9.75	Shed	14	34	S7-E-7019
	9.77	Residential	9[d]	29	S7-E-7019
	9.78	Residential	18	106	S7-E-7019
	9.82	Residential	1[c]	19	S7-E-7019
	9.83	Shed	0	20	S7-E-7020
	9.85	Residential	3[d]	58	S7-E-7020
	9.89	Residential	30	85	S7-E-7020
	9.98	Residential	49	104	S7-E-7020
	10.00	Residential	36	56	S7-E-7021
	10.02	Residential	14	69	S7-E-7021
	10.03	Shed	30	85	S7-E-7021
	10.05	Residential	22	77	S7-E-7021
	10.08	Residential	0[c]	20	S7-E-7021
	10.09	Residential	20	75	S7-E-7021
	10.11	Patio	15	35	S7-E-7021
	10.12	Residential	2[d]	22	S7-E-7021
	10.18	Residential	16	71	S7-E-7022
	10.19	Residential	32	52	S7-E-7022
	10.29	Commercial	35	205	NA
	10.34	Commercial	42	204	NA
	10.36	Commercial	40	197	NA
	10.37	Commercial	38	137	NA
	10.38	Commercial	0	10	S7-E-7023
	10.38	Commercial	36	56	S7-E-7023
	10.38	Commercial	1	21	S7-E-7023
	10.40	Residential	40	95	S7-E-7023
	10.41	Commercial	5	25	S7-E-7023
	10.41	Residential	44	100	S7-E-7023
	10.43	Residential	5[d]	60	S7-E-7023
	10.65	Garage	5	40	S7-E-7024
	10.67	Residential	0[f]	17	S7-E-7024
	10.67	Residential	15	54	S7-E-7024
	10.70	Residential	0[c]	53	S7-E-7024
	11.06	Residential	30	95	S7-E-7025
SOUTHEAST TO MLV 19 TAKE-UP AND RELAY					
Fairfield County, CT					
Danbury	0.58	Garage Entrance Ramp	20	55	NA
	1.30	Weigh Station	50	145	NA
	1.46	Commercial	18	107	NA
	1.87	Commercial	35	39	NA
	1.89	Commercial	30	130	NA
	1.91	Commercial	10	53	NA
	2.01	Commercial	5	32	NA

TABLE H-1 (cont'd)

Residences and Other Structures Within 50 Feet of the Construction Work Area for the AIM Project

Facility, County, State, Municipality	Milepost	Type of Structure	Approx. Distance from Construction Work Area (feet) [a]	Approx. Distance from Pipeline Centerline (feet)	Residential Drawing Number [b]
	2.04	Commercial	50	80	NA
	2.20	Commercial	12	75	NA
	2.18	Residential	46	96	SQ-E-7001
	2.34	Residential	10	35	SQ-E-7002
	2.38	Residential	31	81	SQ-E-7002
	2.42	Residential	25	60	SQ-E-7002
	2.42	Residential	10	57	SQ-E-7002
	2.66	Commercial	37	72	NA
	3.14	Residential	10	48	SQ-E-7003
	3.22	Residential	48	98	SQ-E-7003
	3.23	Shed	0	32	SQ-E-7003
	3.24	Residential	46	96	SQ-E-7003
	3.30	Residential	10	20	SQ-E-7004
	3.32	Residential	10	23	SQ-E-7004
	3.34	Residential	44	119	SQ-E-7004
	3.36	Residential	23	71	SQ-E-7005
	3.42	Residential	27	77	SQ-E-7005
	3.49	Residential	10	51	SQ-E-7006
	3.77	Residential	19	69	SQ-E-7007
	3.80	Residential	10	56	SQ-E-7007
	3.84	Residential	21	56	SQ-E-7007
	3.85	Residential	35	85	SQ-E-7007
	3.88	Residential	10	52	SQ-E-7007
	3.97	Shed	46	96	SQ-E-7008
	4.01	Residential	33	83	SQ-E-7008
	4.23	Residential	25	77	SQ-E-7009
	4.28	Shed	8	61	SQ-E-7009
	4.30	Residential	32	62	SQ-E-7009
	4.30	Residential	11	48	SQ-E-7009
	4.43	Residential	30	71	SQ-E-7010
LINE-36A LOOP EXTENSION					
Middlesex County, CT					
Cromwell	1.28	Residential	4[g]	34	CJ-E-7001
E-1 SYSTEM LATERAL LOOP EXTENSION					
New London County, CT					
Montville	0.12	Residential	23	48	CJ-E-7201
WEST ROXBURY LATERAL					
Norfolk County, MA					
Westwood	0.00	Commercial	14	65	NA
	0.30	Utility Unit	0	0	NA
Dedham	0.55	Commercial	49	82	NA
	0.76	Commercial	40	61	NA
	0.81	Commercial	0	30	NA
	0.83	Commercial	45	75	NA
	0.86	Residential	42	67	BB-P-8500
	0.89	Residential	25	41	BB-P-8500
	0.90	Residential	16	32	BB-P-8500
	0.91	Residential	21	38	BB-P-8500

TABLE H-1 (cont'd)

Residences and Other Structures Within 50 Feet of the Construction Work Area for the AIM Project

Facility, County, State, Municipality	Milepost	Type of Structure	Approx. Distance from Construction Work Area (feet) [a]	Approx. Distance from Pipeline Centerline (feet)	Residential Drawing Number [b]
	0.92	Residential	29	47	BB-P-8500
	0.93	Residential	26	43	BB-P-8500
	0.94	Residential	32	48	BB-P-8500
	0.95	Residential	23	41	BB-P-8501
	0.99	Residential	50	77	BB-P-8501
	1.00	Residential	25	52	BB-P-8501
	1.02	Residential	27	55	BB-P-8501
	1.08	Commercial	0	76	NA
	1.09	Commercial	10	30	NA
	1.10	Commercial	0	25	NA
	1.21	Commercial	28	56	NA
	1.23	Commercial	43	89	NA
	1.25	Commercial	42	86	NA
	1.27	Commercial	42	87	NA
	1.28	Commercial	38	63	NA
	1.31	Commercial	36	64	NA
	1.32	Commercial	35	64	NA
	1.36	Commercial	0	15	NA
	1.42	Vertical Sign	0	30	NA
	1.50	Vertical Sign	10	35	NA
	1.57	Commercial	35	100	NA
	1.96	Commercial	38	92	NA
	2.08	Commercial	20	52	BB-P-8503
	2.00	Residential	47	55	BB-P-8503
	2.17	Vertical Sign	31	52	BB-P-8504
	2.21	Commercial	33	67	NA
	2.55	Commercial	0	10	NA
	2.57	Residential	2	33	BB-P-8505
	2.58	Residential	6	39	BB-P-8505
	2.58	Residential	11	44	BB-P-8505
	2.59	Residential	<1	11	BB-P-8505
	2.59	Residential	4	15	BB-P-8505
	2.60	Residential	6	18	BB-P-8505
	2.60	Residential	12	44	BB-P-8505
	2.61	Residential	22	53	BB-P-8505
	2.63	Residential	24	45	BB-P-8505
	2.67	Residential	12	39	BB-P-8505
	2.68	Residential	12	39	BB-P-8505
	2.69	Residential	9	25	BB-P-8505
	2.70	Residential	15	31	BB-P-8505
	2.70	Residential	24	52	BB-P-8506
	2.72	Residential	6	30	BB-P-8506
	2.72	Residential	14	30	BB-P-8506
	2.74	Residential	21	35	BB-P-8506
	2.76	Residential	40	70	BB-P-8506
	2.77	Residential	36	67	BB-P-8506
	2.78	Residential	37	50	BB-P-8506
	2.79	Residential	22	50	BB-P-8507

TABLE H-1 (cont'd)

Residences and Other Structures Within 50 Feet of the Construction Work Area for the AIM Project

Facility, County, State, Municipality	Milepost	Type of Structure	Approx. Distance from Construction Work Area (feet) [a]	Approx. Distance from Pipeline Centerline (feet)	Residential Drawing Number [b]
	2.80	Residential	5	16	BB-P-8507
	2.80	Residential	25	56	BB-P-8507
	2.81	Residential	23	55	BB-P-8507
	2.81	Residential	10	21	BB-P-8507
	2.81	Residential	7	17	BB-P-8507
	2.82	Residential	29	38	BB-P-8507
	2.83	Residential	26	57	BB-P-8507
	2.83	Residential	7	17	BB-P-8507
	2.84	Residential	18	49	BB-P-8507
	2.84	Residential	6	19	BB-P-8507
	2.85	Residential	38	66	BB-P-8507
	2.85	Residential	10	25	BB-P-8507
	2.86	Residential	7	23	BB-P-8507
	2.87	Residential	9	25	BB-P-8508
	2.88	Residential	23	55	BB-P-8508
	2.89	Residential	8	23	BB-P-8508
	2.89	Residential	4	17	BB-P-8508
	2.90	Residential	<1	15	BB-P-8508
	2.91	Residential	22	57	BB-P-8508
	2.93	Residential	4	15	BB-P-8508
	2.94	Residential	9	19	BB-P-8508
	2.95	Residential	28	46	BB-P-8509
	2.97	Residential	35	54	BB-P-8509
	2.98	Residential	20	39	BB-P-8509
	3.00	Residential	11	34	BB-P-8509
	3.06	Residential	11	34	BB-P-8510
	3.08	Residential	23	64	BB-P-8510
	3.10	Commercial	40	67	BB-P-8510
	3.15	Residential	12	40	BB-P-8510
	3.16	Residential	35	85	BB-P-8511
	3.18	Residential	12	33	BB-P-8512
	3.18	Residential	17	37	BB-P-8512
	3.19	Residential	17	37	BB-P-8512
	3.19	Residential	29	74	BB-P-8512
	3.20	Residential	19	41	BB-P-8512
	3.21	Residential	52	92	BB-P-8512
	3.22	Residential	14	35	BB-P-8512
	3.23	Residential	44	82	BB-P-8512
	3.24	Residential	49	89	BB-P-8512
	3.24	Residential	23	49	BB-P-8512
	3.25	Residential	36	79	BB-P-8513
	3.25	Residential	36	62	BB-P-8513
	3.27	Residential	34	60	BB-P-8513
	3.27	Residential	31	72	BB-P-8513
	3.28	Residential	25	67	BB-P-8513
	3.29	Residential	28	54	BB-P-8513
	3.29	Residential	26	69	BB-P-8513
	3.31	Residential	24	66	BB-P-8513

TABLE H-1 (cont'd)

Residences and Other Structures Within 50 Feet of the Construction Work Area for the AIM Project

Facility, County, State, Municipality	Milepost	Type of Structure	Approx. Distance from Construction Work Area (feet) [a]	Approx. Distance from Pipeline Centerline (feet)	Residential Drawing Number [b]
	3.32	Residential	16	42	BB-P-8513
	3.33	Residential	39	66	BB-P-8513
	3.33	Residential	27	69	BB-P-8513
	3.35	Residential	34	74	BB-P-8514
	3.36	Commercial	20	65	BB-P-8514
Suffolk County, MA					
West Roxbury, Boston	3.37	Residential	43	86	BB-P-8514
	3.37	Commercial Sign	10	32	BB-P-8514
	3.38	Commercial Sign	10	32	BB-P-8514
	3.38	Residential	28	73	BB-P-8514
	3.39	Residential	28	76	BB-P-8514
	3.40	Commercial	35	87	BB-P-8514
	3.41	Commercial	10	33	BB-P-8514
	3.43	Residential	15	32	BB-P-8515
	3.45	Residential	30	83	BB-P-8515
	3.46	Residential	50	73	BB-P-8515
	3.49	Residential	17	78	BB-P-8515
	3.49	Residential	19	71	BB-P-8515
	3.50	Residential	10	61	BB-P-8515
	3.50	Commercial	14	37	BB-P-8515
	3.52	Residential	28	79	BB-P-8515
	3.53	Residential	5	57	BB-P-8515
	3.53	Residential	7	59	BB-P-8516
	3.55	Residential	39	65	BB-P-8516
	3.58	Residential	47	73	BB-P-8516
	3.59	Commercial	22	45	BB-P-8516
	3.60	Residential	47	74	BB-P-8516
	3.61	Commercial	22	92	BB-P-8516
	3.62	Residential	30	56	BB-P-8516
	3.63	Commercial	16	62	BB-P-8517
	3.64	Residential	34	60	BB-P-8517
	3.64	Residential	11	62	BB-P-8517
	3.65	Residential	35	61	BB-P-8517
	3.67	Commercial	39	71	NA
	3.69	Commercial	20	40	NA
	3.73	Commercial	15	29	NA
	3.73	Commercial	18	28	NA
	3.74	Commercial	21	29	NA
	3.75	Commercial	6	29	NA
	3.76	Commercial	13	32	NA
	3.77	Residential	15	59	BB-P-8518
	3.78	Commercial	5	36	NA
	3.78	Commercial	5	35	NA
	3.79	Commercial	6	36	NA
	3.80	Commercial	0	37	BB-P-8518
	3.82	Commercial	0	34	BB-P-8518
	3.82	Residential	8	21	BB-P-8518
	3.83	Residential	7	21	BB-P-8518

TABLE H-1 (cont'd)

Residences and Other Structures Within 50 Feet of the Construction Work Area for the AIM Project

Facility, County, State, Municipality	Milepost	Type of Structure	Approx. Distance from Construction Work Area (feet) [a]	Approx. Distance from Pipeline Centerline (feet)	Residential Drawing Number [b]
	3.85	Residential	8	22	BB-P-8518
	3.86	Residential	11	26	BB-P-8518
	3.87	Residential	7	22	BB-P-8518
	3.88	Residential	13	56	BB-P-8518
	3.88	Residential	3	19	BB-P-8518
	3.90	Residential	21	37	BB-P-8519
	3.91	Residential	22	63	BB-P-8519
	3.91	Residential	28	41	BB-P-8519
	3.92	Residential	14	25	BB-P-8519
	3.93	Residential	10	53	BB-P-8519
	3.95	Residential	14	56	BB-P-8519
	3.97	Residential	16	58	BB-P-8519
	3.97	Residential	12	28	BB-P-8519
	3.98	Residential	22	62	BB-P-8519
	3.99	Residential	23	65	BB-P-8520
	3.99	Residential	4	21	BB-P-8520
	3.99	Residential	21	63	BB-P-8520
	3.99	Residential	6	22	BB-P-8520
	4.00	Residential	15	58	BB-P-8520
	4.00	Residential	5	20	BB-P-8520
	4.02	Residential	10	53	BB-P-8520
	4.02	Residential	7	22	BB-P-8520
	4.03	Residential	6	21	BB-P-8520
	4.03	Residential	6	21	BB-P-8520
	4.08	Residential	22	62	BB-P-8521
	4.09	Residential	23	64	BB-P-8521
	4.11	Residential	19	59	BB-P-8521
	4.13	Residential	24	59	BB-P-8521
	4.14	Residential	21	52	BB-P-8521
	4.15	Residential	10	38	BB-P-8521
	4.16	Residential	20	46	BB-P-8521
	4.20	Residential	16	46	BB-P-8522
	4.21	Residential	9	42	BB-P-8522
	4.34	Residential	12	77	BB-P-8523
	4.39	Commercial	21	34	BB-P-8523
	4.40	Residential	32	82	BB-P-8523
	4.41	Residential	28	75	BB-P-8523
	4.42	Commercial	14	48	BB-P-8524
	4.42	Commercial	16	43	BB-P-8524
	4.46	Residential	22	49	BB-P-8524
	4.46	Residential	22	49	BB-P-8524
	4.47	Residential	25	52	BB-P-8524
	4.47	Residential	15	35	BB-P-8524
	4.48	Residential	23	51	BB-P-8524
	4.48	Residential	17	35	BB-P-8524
	4.49	Residential	34	64	BB-P-8524
	4.49	Residential	13	31	BB-P-8524
	4.50	Residential	26	44	BB-P-8524

TABLE H-1 (cont'd)

Residences and Other Structures Within 50 Feet of the Construction Work Area for the AIM Project

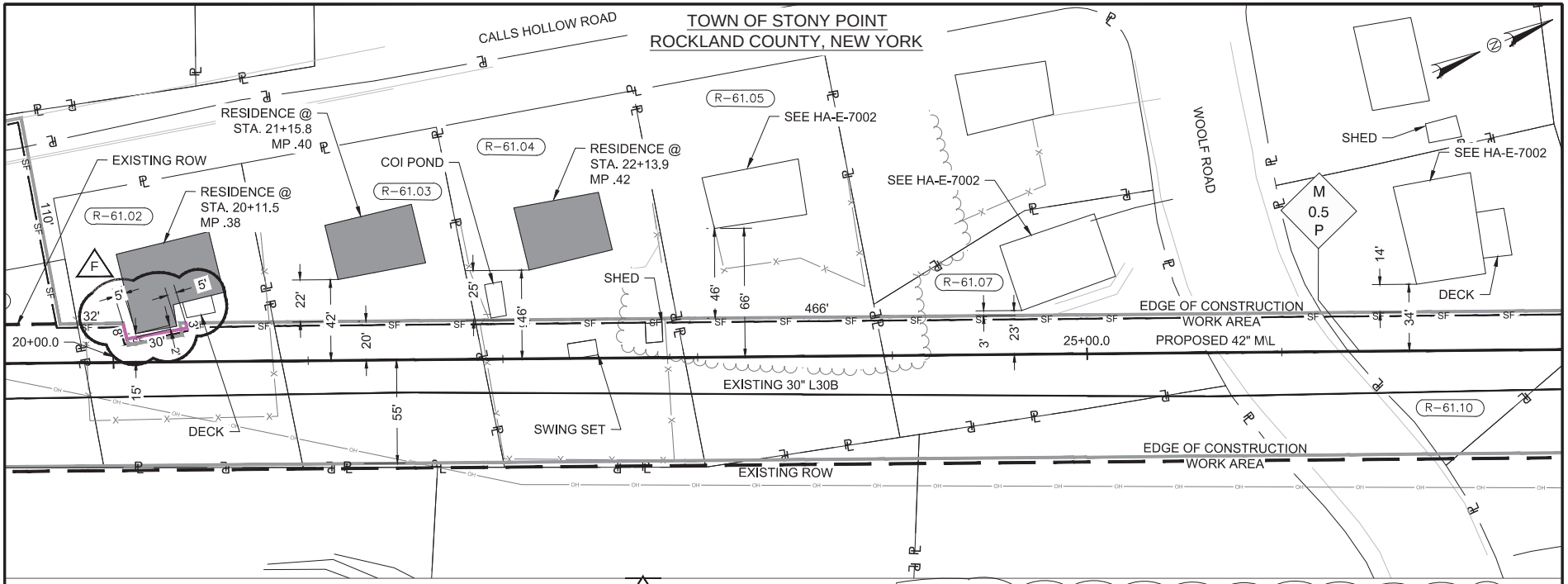
Facility, County, State, Municipality	Milepost	Type of Structure	Approx. Distance from Construction Work Area (feet) [a]	Approx. Distance from Pipeline Centerline (feet)	Residential Drawing Number [b]
	4.51	Residential	4	32	BB-P-8524
	4.52	Residential	28	47	BB-P-8524
	4.52	Residential	5	33	BB-P-8524
	4.52	Residential	9	37	BB-P-8524
	4.53	Residential	16	44	BB-P-8524
	4.54	Residential	23	42	BB-P-8524
	4.54	Residential	11	37	BB-P-8525
	4.55	Residential	23	39	BB-P-8525
	4.55	Residential	8	38	BB-P-8525
	4.56	Residential	25	37	BB-P-8525
	4.56	Residential	25	56	BB-P-8525
	4.57	Residential	13	23	BB-P-8525
	4.58	Residential	10	40	BB-P-8525
	4.58	Residential	13	23	BB-P-8525
	4.59	Residential	25	34	BB-P-8525
	4.60	Residential	16	46	BB-P-8525
	4.60	Residential	11	22	BB-P-8525
	4.61	Residential	22	53	BB-P-8525
	4.62	Residential	21	33	BB-P-8525
	4.62	Residential	24	54	BB-P-8525
	4.65	Residential	11	24	BB-P-8526
	4.66	Residential	30	57	BB-P-8526
	4.67	Residential	9	20	BB-P-8526
	4.67	Residential	9	41	BB-P-8526
	4.68	Residential	13	23	BB-P-8526
	4.68	Residential	9	41	BB-P-8526
	4.68	Residential	13	24	BB-P-8526
	4.69	Residential	10	43	BB-P-8526
	4.69	Residential	17	28	BB-P-8526
	4.70	Residential	25	59	BB-P-8526
	4.71	Residential	12	22	BB-P-8526
	4.71	Residential	27	61	BB-P-8526
	4.72	Residential	23	33	BB-P-8526
	4.73	Residential	38	67	BB-P-8527
	4.73	Residential	21	27	BB-P-8527
	4.75	Residential	12	46	BB-P-8527
	4.76	Residential	8	43	BB-P-8527
	4.77	Residential	8	53	BB-P-8527
	4.78	Residential	24	62	BB-P-8527
	4.79	Residential	13	51	BB-P-8527
	4.80	Residential	7	46	BB-P-8527
	4.82	Residential	24	33	BB-P-8528
	4.82	Residential	40	79	BB-P-8528
	4.84	Residential	13	42	BB-P-8528
	4.85	Residential	19	46	BB-P-8528
	4.86	Residential	24	53	BB-P-8528
	4.87	Residential	24	56	BB-P-8528
	4.88	Residential	23	58	BB-P-8528

TABLE H-1 (cont'd)

Residences and Other Structures Within 50 Feet of the Construction Work Area for the AIM Project

Facility, County, State, Municipality	Milepost	Type of Structure	Approx. Distance from Construction Work Area (feet) [a]	Approx. Distance from Pipeline Centerline (feet)	Residential Drawing Number [b]
	4.89	Residential	22	58	BB-P-8528
	4.90	Residential	12	48	BB-P-8528
	4.91	Residential	21	54	BB-P-8529
	4.92	Residential	23	52	BB-P-8529
	4.93	Residential	13	30	BB-P-8529
	4.94	Residential	11	41	BB-P-8529
	4.95	Residential	16	43	BB-P-8529
	4.95	Residential	25	44	BB-P-8529
	4.96	Residential	27	54	BB-P-8529
	4.97	Residential	6	38	BB-P-8529
	4.97	Residential	25	44	BB-P-8529
	4.97	Residential	29	48	BB-P-8529
	4.99	Residential	34	55	BB-P-8529
	4.99	Residential	36	66	BB-P-8529
	5.00	Residential	3	31	BB-P-8530
	5.03	Commercial	24	63	BB-P-8530
	5.08	Commercial	12	28	BB-P-8530
	5.09	Commercial	15	50	BB-P-8530

[a] A distance of 0 feet indicates that the structure is located at the edge of the construction work area.
[b] "NA" indicates non-residential structures not included on residential plan drawings.
[c] Residence encroaches on permanent easement. Construction Work Area (CWA) located on Algonquin's existing easement.
[d] CWA coincides with the limits of Algonquin's existing permanent easement.
[e] CWA is needed for the ATWS associated with the crossing of wetland B13-RLR-W3.
[f] Algonquin is purchasing residence. Purchase is currently under contract (See section 4.9.7 of the EIS).
[g] CWA coincides with the limits of Algonquin's existing permanent easement where CWA is less than 10 feet.



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 20+11.5 THERE IS A RESIDENCE 2' LEFT OF THE CWA AND 15' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M\L.

AT SURVEY STATION 21+15.8 THERE IS A RESIDENCE 22' LEFT OF THE CWA AND 42' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M\L.

AT SURVEY STATION 22+13.9 THERE IS A RESIDENCE 25' LEFT OF THE CWA AND 46' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M\L.

NOTES:

THE EXISTING RESIDENCE @ STA. 20+11.5 ENCROACHES ON THE EXISTING AGT R.O.W. CONSTRUCTION EQUIPMENT AND MATERIAL SHALL MAINTAIN A SUITABLE DISTANCE AWAY FROM THE RESIDENCE.

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
- THE SEWER LINE TECHNIQUE – THIS TECHNIQUE IS A LESS EFFICIENT ALTERNATIVE TO THE MAINLINE METHOD OF CONSTRUCTION. IT IS TYPICALLY USED WHEN THE PIPELINE IS TO BE INSTALLED IN VERY CLOSE PROXIMITY TO AN EXISTING STRICTURE OR WHEN AN OPEN DITCH WOULD ADVERSELY IMPACT A RESIDENTIAL OR COMMERCIAL STRUCTURE. THE TECHNIQUE INVOLVES INSTALLING PIPE ONE JOINT AT A TIME WHEREBY THE WELDING, X-RAY AND COATING ACTIVITIES ARE ALL PERFORMED IN THE OPEN TRENCH. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED OR THE OPEN TRENCH IS COVERED WITH STEEL PLATES OR TIMBER MATS.
- TRAFFIC CONTROL WILL CONSIST OF DEVICES OUTLINED IN STATE AND LOCAL CODES ACCOMPANIED BY LOCAL LAW ENFORCEMENT DETAILS AND QUALIFIED FLAGMEN TO SAFELY COORDINATE TRANSPORT OF PIPELINE CONSTRUCTION PERSONNEL, EQUIPMENT, AND MATERIAL.
- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL-FREE LANDOWNER HOTLINE IS 1-866-873-2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

REV.#	DESCRIPTION	DATE
F	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
E	ISSUED FOR USE	09/11/14
D	RE-ISSUED FOR CLIENT REVIEW	03/11/14
C	RE-ISSUED FOR CLIENT REVIEW	03/06/14

IG.#

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

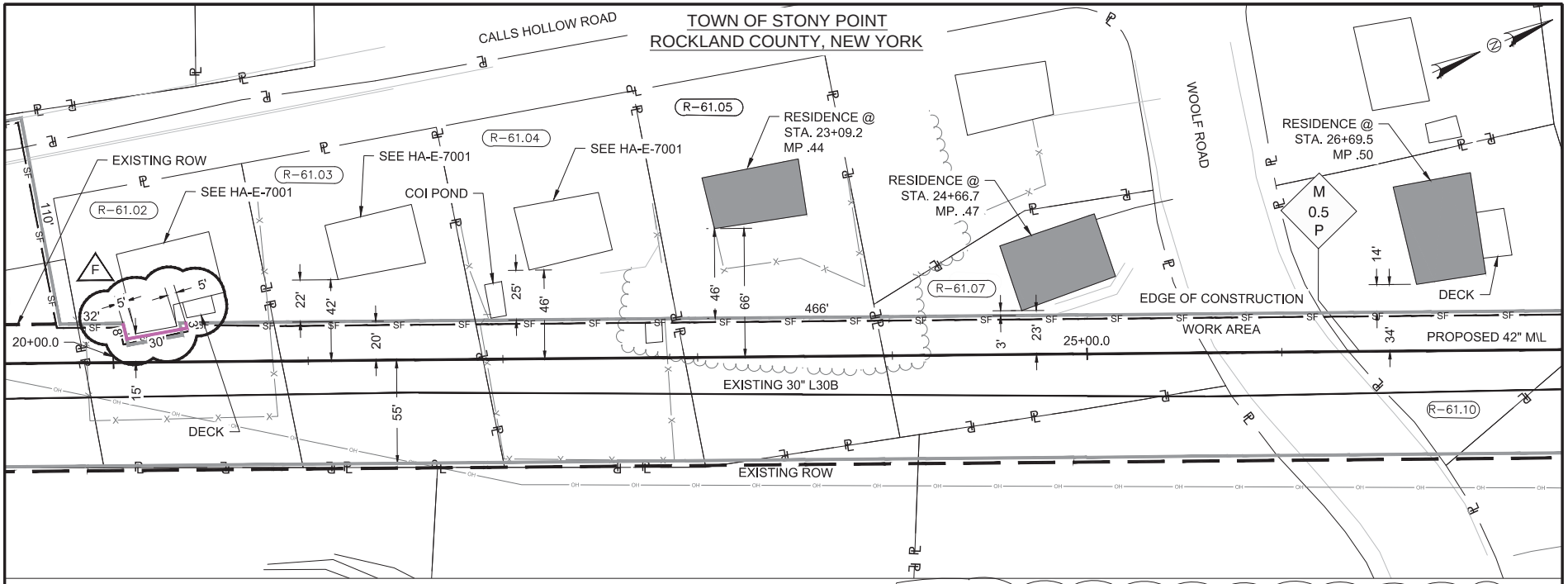
HANOVER DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: ROCKLAND COUNTY, NEW YORK | REV.: F
YR.: 2016 | W.O.: | DWG. NO.: HA-E-7001

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\HA-E-7001.dwg – PLOT TIME: 9/25/2014 3:44 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 23+09.2 THERE IS A RESIDENCE 46' LEFT OF THE CWA AND 66' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M\L.

AT SURVEY STATION 24+66.7 THERE IS A RESIDENCE 3' LEFT OF THE CWA AND 23' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M\L.

AT SURVEY STATION 26+69.5 THERE IS A RESIDENCE 14' LEFT OF THE CWA AND 34' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M\L.

NOTES:

CONSTRUCTION WORK AREA IS LIMITED TO THE EXISTING R.O.W.

F

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
- THE SEWER LINE TECHNIQUE – THIS TECHNIQUE IS A LESS EFFICIENT ALTERNATIVE TO THE MAINLINE METHOD OF CONSTRUCTION. IT IS TYPICALLY USED WHEN THE PIPELINE IS TO BE INSTALLED IN VERY CLOSE PROXIMITY TO AN EXISTING STRICTURE OR WHEN AN OPEN DITCH WOULD ADVERSELY IMPACT A RESIDENTIAL OR COMMERCIAL STRUCTURE. THE TECHNIQUE INVOLVES INSTALLING PIPE ONE JOINT AT A TIME WHEREBY THE WELDING, X-RAY AND COATING ACTIVITIES ARE ALL PERFORMED IN THE OPEN TRENCH. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED OR THE OPEN TRENCH IS COVERED WITH STEEL PLATES OR TIMBER MATS.
- TRAFFIC CONTROL WILL CONSIST OF DEVICES OUTLINED IN STATE AND LOCAL CODES ACCOMPANIED BY LOCAL LAW ENFORCEMENT DETAILS AND QUALIFIED FLAGMEN TO SAFELY COORDINATE TRANSPORT OF PIPELINE CONSTRUCTION PERSONNEL, EQUIPMENT, AND MATERIAL.
- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL-FREE LANDOWNER HOTLINE IS 1-866-873-2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

F

REV.#	DESCRIPTION	DATE
F	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
E	ISSUED FOR USE	09/11/14
D	RE-ISSUED FOR CLIENT REVIEW	03/11/14
C	RE-ISSUED FOR CLIENT REVIEW	03/06/14

I.G.#

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

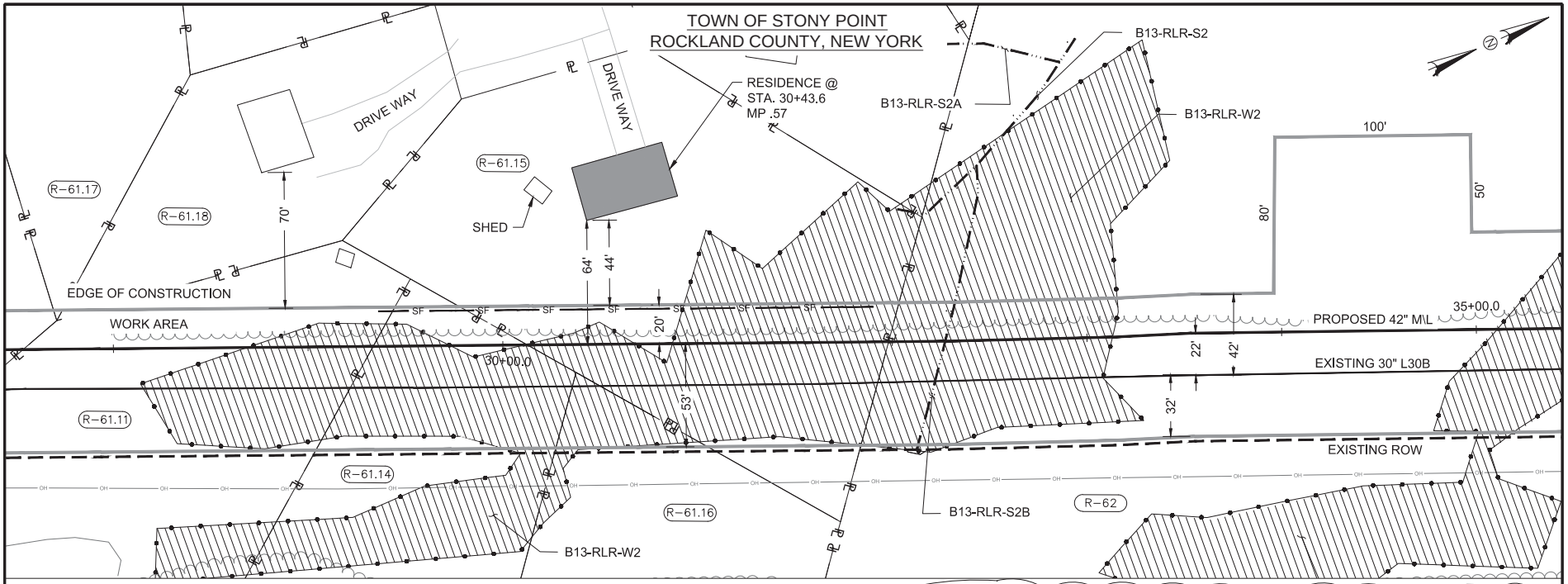
HANOVER DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: ROCKLAND COUNTY, NEW YORK | REV.: F
YR.: 2016 | W.O.: | DWG. NO.: HA-E-7002

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\HA-E-7002.dwg – PLOT TIME: 9/25/2014 5:21 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

DESCRIPTION:

AT SURVEY STATION 30+43.6 THERE IS A RESIDENCE 44' LEFT OF THE CWA AND 64' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M\L.

E

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
- THE SEWER LINE TECHNIQUE - THIS TECHNIQUE IS A LESS EFFICIENT ALTERNATIVE TO THE MAINLINE METHOD OF CONSTRUCTION. IT IS TYPICALLY USED WHEN THE PIPELINE IS TO BE INSTALLED IN VERY CLOSE PROXIMITY TO AN EXISTING STRICTURE OR WHEN AN OPEN DITCH WOULD ADVERSELY IMPACT A RESIDENTIAL OR COMMERCIAL STRUCTURE. THE TECHNIQUE INVOLVES INSTALLING PIPE ONE JOINT AT A TIME WHEREBY THE WELDING, X-RAY AND COATING ACTIVITIES ARE ALL PERFORMED IN THE OPEN TRENCH. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED OR THE OPEN TRENCH IS COVERED WITH STEEL PLATES OR TIMBER MATS.
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LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

REV.#	DESCRIPTION	DATE
E	REVISED PER DEIS/USACOE COMMENTS	09/27/14
D	RE-ISSUED FOR CLIENT REVIEW	03/11/14
C	RE-ISSUED FOR CLIENT REVIEW	03/06/14
B	ISSUED FOR CLIENT REVIEW	11/20/13

IC.#

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
HANOVER DISCHARGE
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: ROCKLAND COUNTY, NEW YORK | REV.: E

YR.: 2014 | W.O.: | DWG. NO.: HA-E-7003

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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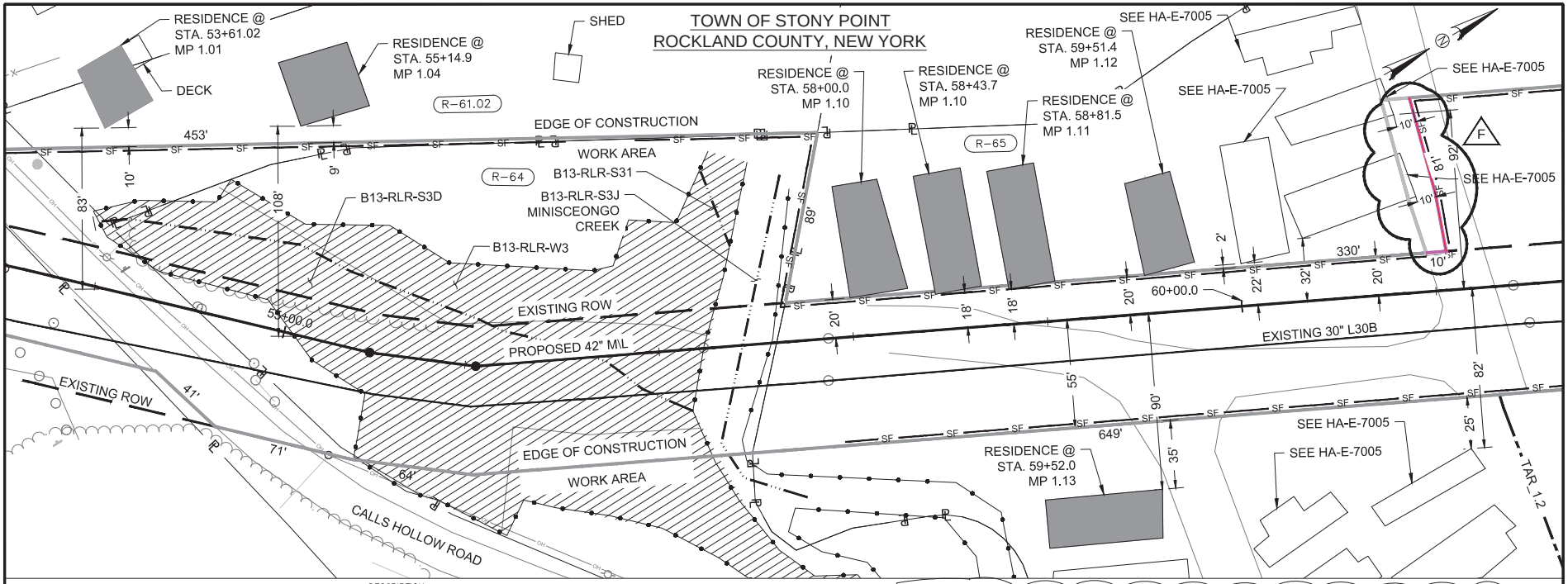

SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 53+61.02 THERE IS A RESIDENCE 10' LEFT OF THE CWA AND 83' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 55+14.9 THERE IS A RESIDENCE 9' LEFT OF THE CWA AND 108' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 58+00.0 THERE IS A RESIDENCE AT THE EDGE OF THE CWA AND 20' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 58+43.7 THERE IS A RESIDENCE AT THE EDGE OF THE CWA AND 18' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 58+81.5 THERE IS A RESIDENCE AT THE EDGE OF THE CWA AND 18' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 59+51.4 THERE IS A RESIDENCE AT THE EDGE OF THE CWA AND 20' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 59+52.0 THERE IS A RESIDENCE 35' RIGHT OF THE CWA AND 90' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

NOTES:

CONSTRUCTION WORK AREA IS LIMITED TO THE EXISTING R.O.W. ADJACENT TO THE LISTED RESIDENCES.

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NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
- THE SEWER LINE TECHNIQUE – THIS TECHNIQUE IS A LESS EFFICIENT ALTERNATIVE TO THE MAINLINE METHOD OF CONSTRUCTION. IT IS TYPICALLY USED WHEN THE PIPELINE IS TO BE INSTALLED IN VERY CLOSE PROXIMITY TO AN EXISTING STRICTURE OR WHEN AN OPEN DITCH WOULD ADVERSELY IMPACT A RESIDENTIAL OR COMMERCIAL STRUCTURE. THE TECHNIQUE INVOLVES INSTALLING PIPE ONE JOINT AT A TIME WHEREBY THE WELDING, X-RAY AND COATING ACTIVITIES ARE ALL PERFORMED IN THE OPEN TRENCH. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED OR THE OPEN TRENCH IS COVERED WITH STEEL PLATES OR TIMBER MATS.
- TRAFFIC CONTROL WILL CONSIST OF DEVICES OUTLINED IN STATE AND LOCAL CODES ACCOMPANIED BY LOCAL LAW ENFORCEMENT DETAILS AND QUALIFIED FLAGMEN TO SAFELY COORDINATE TRANSPORT OF PIPELINE CONSTRUCTION PERSONNEL, EQUIPMENT, AND MATERIAL.
- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL-FREE LANDOWNER HOTLINE IS 1-866-873-2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

F

REV.#	DESCRIPTION	DATE
F	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
E	ISSUED FOR USE	09/11/14
D	RE-ISSUED FOR CLIENT REVIEW	03/11/14
C	RE-ISSUED FOR CLIENT REVIEW	03/06/14

I.C.#

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

HANOVER DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: ROCKLAND COUNTY, NEW YORK | REV.: F

YR.: 2016 | W.O.: | DWG. NO.: HA-E-7004

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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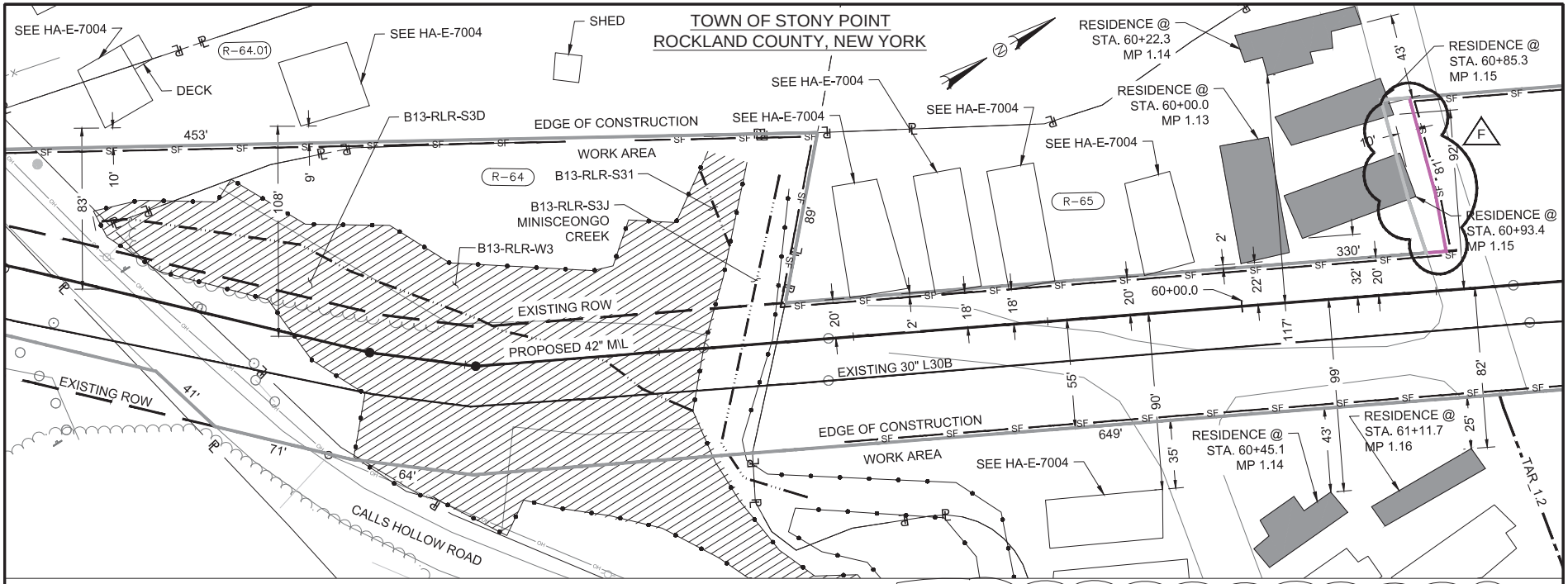

SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 60+00.0 THERE IS A RESIDENCE 2' LEFT OF THE CWA AND 22' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 60+22.3 THERE IS A RESIDENCE 43' LEFT OF THE CWA AND 117' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 60+45.1 THERE IS A RESIDENCE 43' RIGHT OF THE CWA AND 99' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 60+93.4 THERE IS A RESIDENCE 10' LEFT OF THE CWA AND 32' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 60+85.3 THERE IS A RESIDENCE 10' LEFT OF THE CWA AND 92' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 61+11.7 THERE IS A RESIDENCE 25' RIGHT OF THE CWA AND 82' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

F

NOTES:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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REV.#	DESCRIPTION	DATE
F	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
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D	RE-ISSUED FOR CLIENT REVIEW	03/11/14
C	RE-ISSUED FOR CLIENT REVIEW	03/06/14

I.C.#

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

HANOVER DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: ROCKLAND COUNTY, NEW YORK | REV.: F
YR.: 2016 | W.O.: | DWG. NO.: HA-E-7005

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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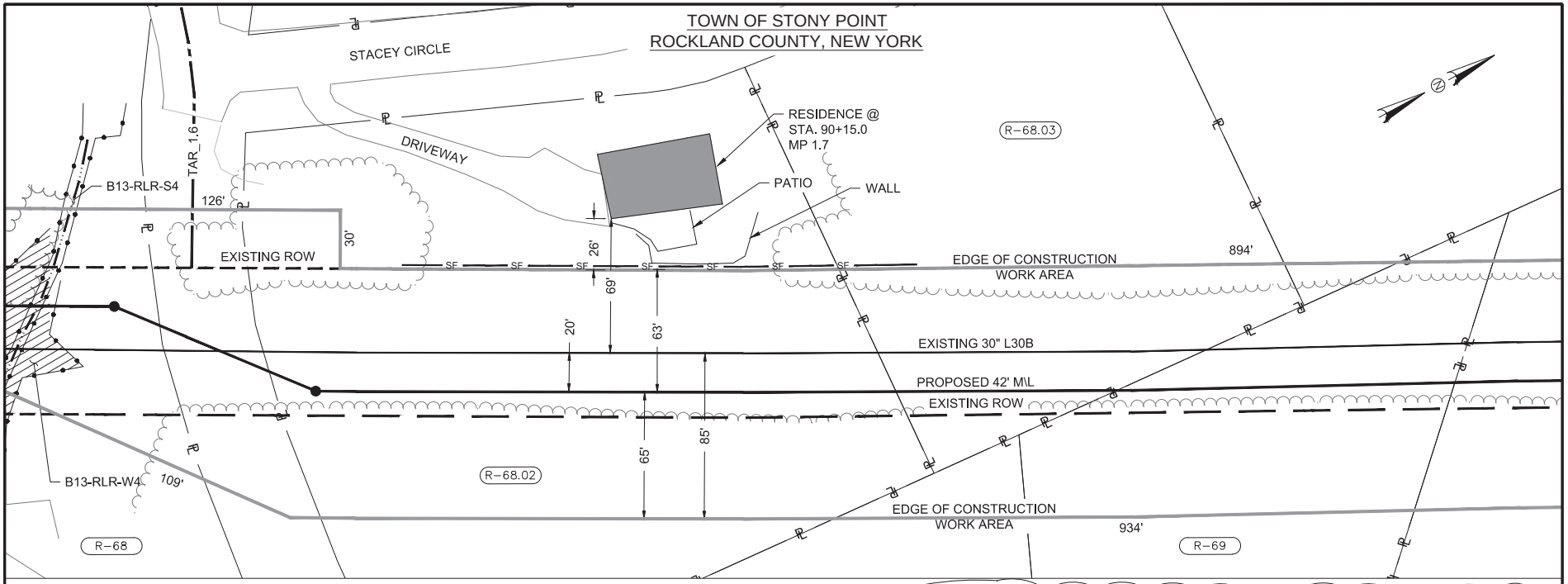

SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 90+15.0 THERE IS A RESIDENCE 26' LEFT OF THE CWA AND 69' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

E

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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REV.#	DESCRIPTION	DATE
E	REVISED PER DEIS/USACOE COMMENTS	09/27/14
D	RE-ISSUED FOR CLIENT REVIEW	03/11/14
C	RE-ISSUED FOR CLIENT REVIEW	03/06/14
B	ISSUED FOR CLIENT REVIEW	11/20/13

IC.#

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
HANOVER DISCHARGE
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: ROCKLAND COUNTY, NEW YORK | REV.: E

YR.: 2014 | W.O.: | DWG. NO.: HA-E-7006

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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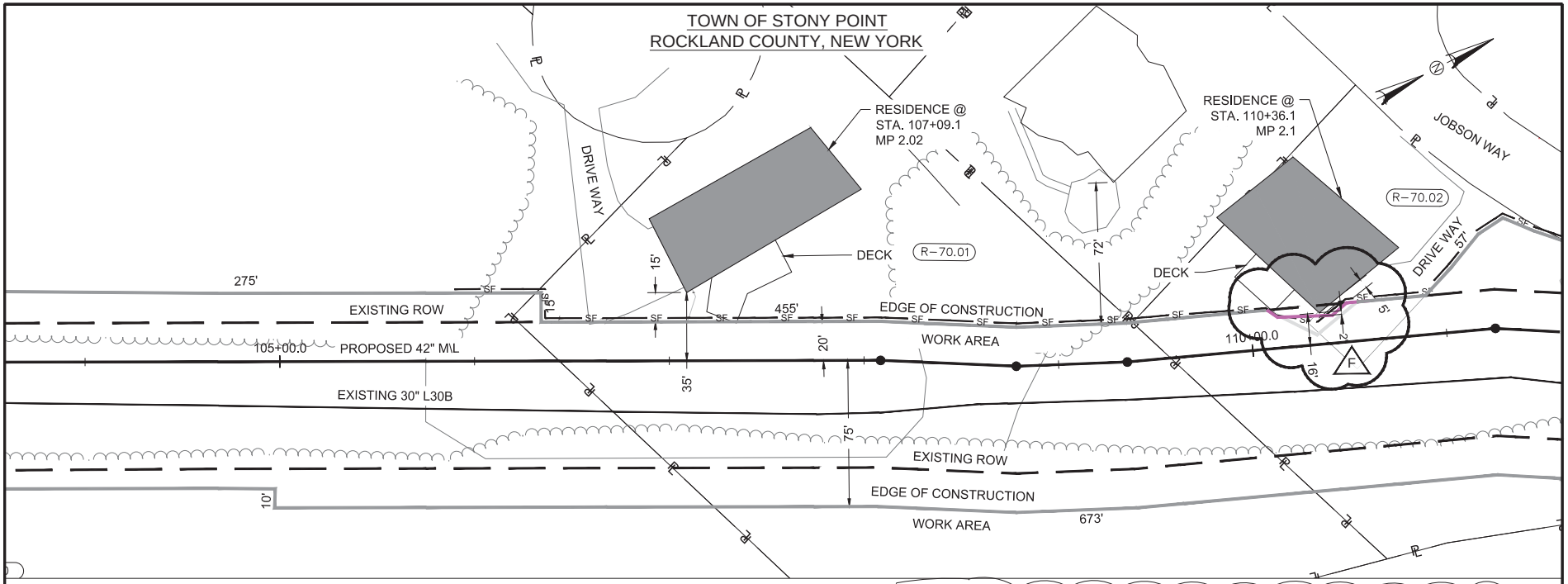

SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 107+09.1 THERE IS A RESIDENCE 15' LEFT OF THE CWA AND 35' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 110+36.1 THERE IS A RESIDENCE 2' LEFT OF THE CWA AND 16' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

F

NOTES:

CONSTRUCTION WORK AREA LIMITED TO WITHIN THE EXISTING R.O.W., 2' FROM THE EXISTING DECK & 5' FROM THE RESIDENCE. THE UNDISTURBED PORTION OF THE RESIDENTIAL DRIVEWAY WILL NOT BE USED AS CONSTRUCTION ACCESS.

F

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NOTES CONTINUED:

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IG. #

PROJ. ENG.	CCW	12/12/13
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HANOVER DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: ROCKLAND COUNTY, NEW YORK | REV.: F

YR.: 2016 | W.O.: | DWG. NO.: HA-E-7007

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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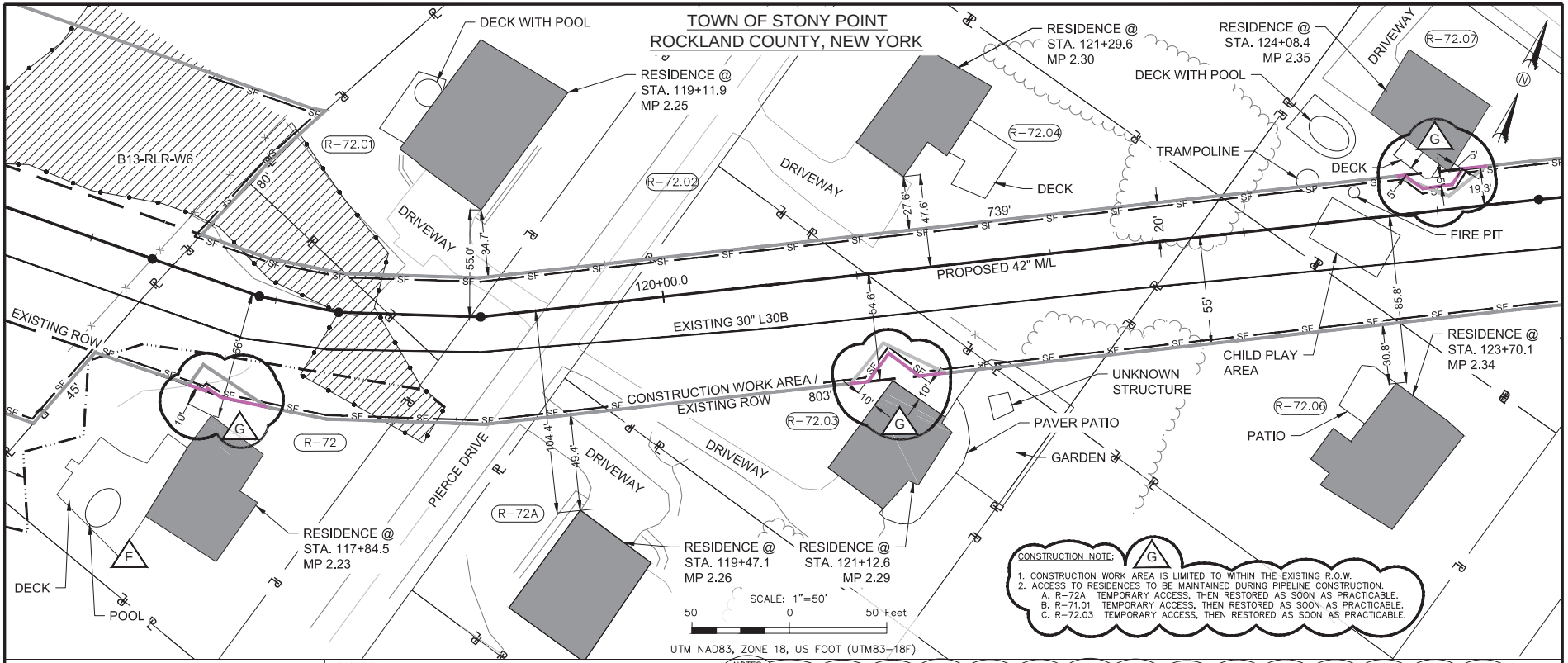

CONSTRUCTION NOTE: G

1. CONSTRUCTION WORK AREA IS LIMITED TO WITHIN THE EXISTING R.O.W.
2. ACCESS TO RESIDENCES TO BE MAINTAINED DURING PIPELINE CONSTRUCTION.
   A. R-72A TEMPORARY ACCESS, THEN RESTORED AS SOON AS PRACTICABLE.
   B. R-71.01 TEMPORARY ACCESS, THEN RESTORED AS SOON AS PRACTICABLE.
   C. R-72.03 TEMPORARY ACCESS, THEN RESTORED AS SOON AS PRACTICABLE.

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 117+84.5 THERE IS A RESIDENCE 10' RIGHT OF THE CWA AND 62.3' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L. G

AT SURVEY STATION 119+11.9 THERE IS A RESIDENCE 34.7' LEFT OF THE CWA AND 55.0' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 119+47.1 THERE IS A RESIDENCE 49.4' RIGHT OF THE CWA AND 104.4' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 121+12.6 THERE IS A RESIDENCE 10' RIGHT OF THE CWA AND 54.6' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L. G

AT SURVEY STATION 121+29.6 THERE IS A RESIDENCE 27.6' LEFT OF THE CWA AND 47.6' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 123+70.1 THERE IS A RESIDENCE 30.8' LEFT OF THE CWA AND 85.8' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 124+08.4 THERE IS A RESIDENCE 5' LEFT OF THE CWA AND 18.2' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L. G

NOTES: G

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- THE SEWER LINE TECHNIQUE – THIS TECHNIQUE IS A LESS EFFICIENT ALTERNATIVE TO THE MAINLINE METHOD OF CONSTRUCTION. IT IS TYPICALLY USED WHEN THE PIPELINE IS TO BE INSTALLED IN VERY CLOSE PROXIMITY TO AN EXISTING STRICTURE OR WHEN AN OPEN DITCH WOULD ADVERSELY IMPACT A RESIDENTIAL OR COMMERCIAL STRUCTURE. THE TECHNIQUE INVOLVES INSTALLING PIPE ONE JOINT AT A TIME WHEREBY THE WELDING, X-RAY AND COATING ACTIVITIES ARE ALL PERFORMED IN THE OPEN TRENCH. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED OR THE OPEN TRENCH IS COVERED WITH STEEL PLATES OR TIMBER MATS.
- TRAFFIC CONTROL WILL CONSIST OF DEVICES OUTLINED IN STATE AND LOCAL CODES ACCOMPANIED BY LOCAL LAW ENFORCEMENT DETAILS AND QUALIFIED FLAGMEN TO SAFELY COORDINATE TRANSPORT OF PIPELINE CONSTRUCTION PERSONNEL, EQUIPMENT, AND MATERIAL.
- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL-FREE LANDOWNER HOTLINE IS 1-866-873-2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

REV.#	DESCRIPTION	DATE
G	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
F	ISSUED FOR USE	09/11/14
E	RE-ISSUED FOR CLIENT REVIEW	03/11/14
D	RE-ISSUED FOR CLIENT REVIEW	03/06/14

I.C.#

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

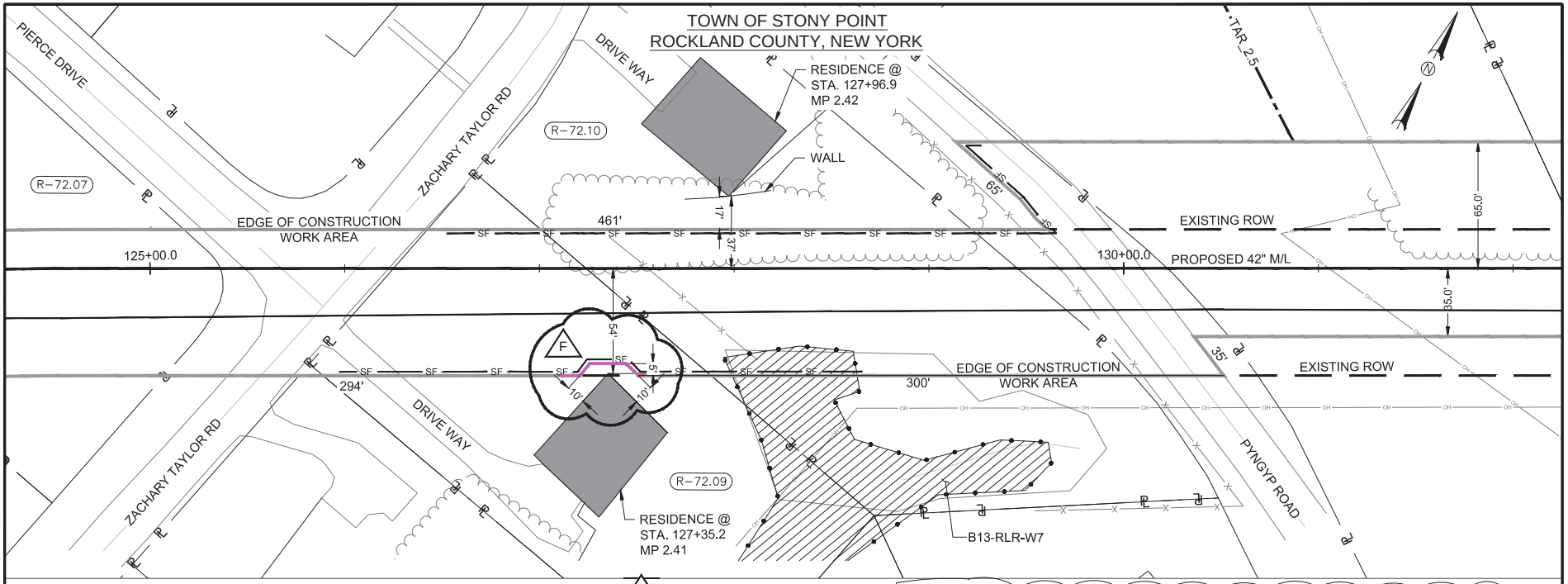
HANOVER DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: ROCKLAND COUNTY, NEW YORK | REV.: G
YR.: 2016 | W.O.: | DWG. NO.: HA-E-7008

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\HA-E-7008.dwg – PLOT TIME: 9/25/2014 5:22 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 127+35.2 THERE IS A RESIDENCE 10' RIGHT OF THE CWA AND 54' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 127+96.9 THERE IS A RESIDENCE 17' LEFT OF THE CWA AND 37' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

F

NOTES:

CONSTRUCTION WORK AREA IS LIMITED WITHIN THE EXISTING R.O.W., RESIDENTIAL ACCESS WILL BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACT R-72.09.

F

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
- THE SEWER LINE TECHNIQUE – THIS TECHNIQUE IS A LESS EFFICIENT ALTERNATIVE TO THE MAINLINE METHOD OF CONSTRUCTION. IT IS TYPICALLY USED WHEN THE PIPELINE IS TO BE INSTALLED IN VERY CLOSE PROXIMITY TO AN EXISTING STRICTURE OR WHEN AN OPEN DITCH WOULD ADVERSELY IMPACT A RESIDENTIAL OR COMMERCIAL STRUCTURE. THE TECHNIQUE INVOLVES INSTALLING PIPE ONE JOINT AT A TIME WHEREBY THE WELDING, X-RAY AND COATING ACTIVITIES ARE ALL PERFORMED IN THE OPEN TRENCH. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED OR THE OPEN TRENCH IS COVERED WITH STEEL PLATES OR TIMBER MATS.
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F

REV.#	DESCRIPTION	DATE
F	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
E	ISSUED FOR USE	09/11/14
D	RE-ISSUED FOR CLIENT REVIEW	03/11/14
C	RE-ISSUED FOR CLIENT REVIEW	03/06/14

I.C.#

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

HANOVER DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

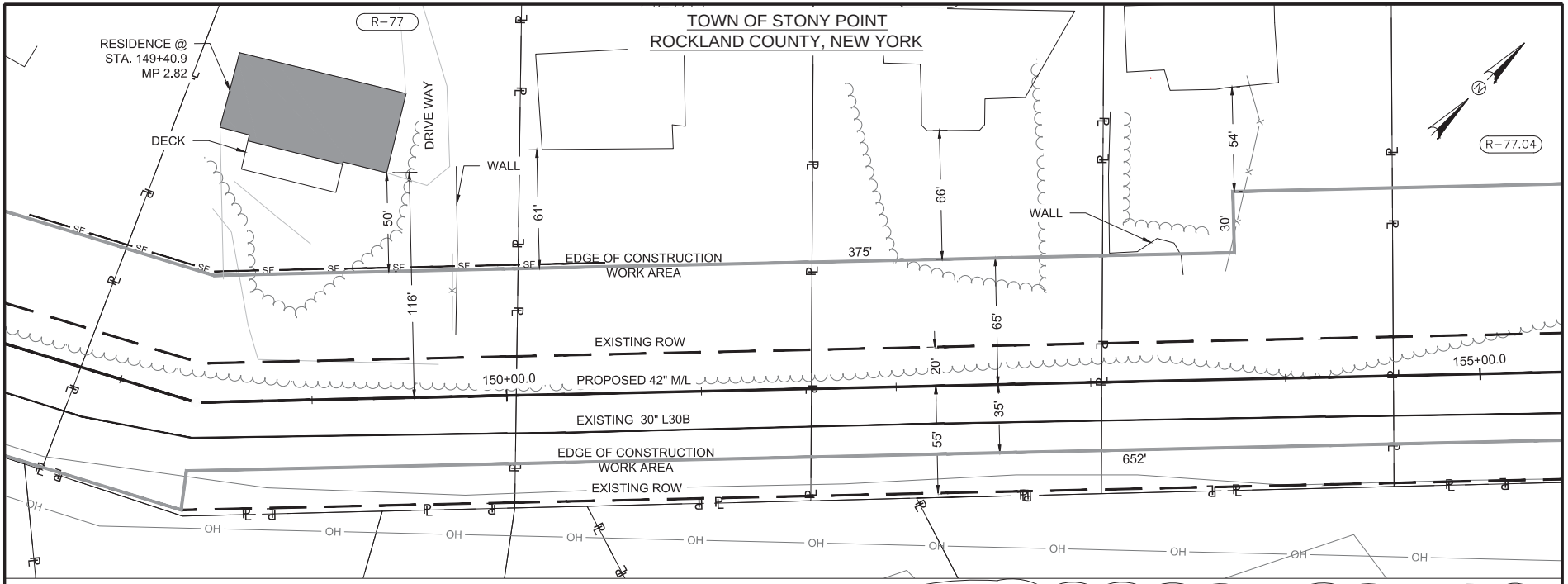
LOC.: ROCKLAND COUNTY, NEW YORK | REV.: F

YR.: 2016 | W.O.: | DWG. NO.: HA-E-7009

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\HA-E-7009.dwg – PLOT TIME: 9/25/2014 3:57 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

DESCRIPTION:

AT SURVEY STATION 149+40.9 THERE IS A RESIDENCE 50' LEFT OF THE CWA AND 116' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

E

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
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LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

REV.#	DESCRIPTION	DATE
E	REVISED PER DEIS/USACOE COMMENTS	09/27/14
D	~~RE-ISSUED FOR CLIENT REVIEW~~	~~03/11/14~~
C	RE-ISSUED FOR CLIENT REVIEW	03/06/14
B	ISSUED FOR CLIENT REVIEW	11/20/13

I.C. #

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
HANOVER DISCHARGE
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: ROCKLAND COUNTY, NEW YORK | REV.: E

YR.: 2014 | W.O.: | DWG. NO.: HA-E-7010

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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AIM PROJECT
RESIDENTIAL SITE SPECIFIC CROSSING PLANS - DETAIL SHEET

General

In general, the following measures will be taken in residential properties:

- Notify local residents in advance of construction activities;
- Install safety fence, a minimum 100' on either side of residences as required, along the edge of the proposed Construction Work Area (CWA), to maintain equipment, material, and spoil within the CWA.
- Preserve all mature trees and landscaping where practical, consistent with construction safety;
- Complete installation of welded pipeline sections as quickly as reasonably possible, consistent with prudent pipeline construction practices, to minimize construction time affecting a neighborhood;
- Backfill the trench as soon as the pipe is laid or place temporary steel plates or timber mats over the trench.
- Complete final cleanup (including final grading) and installation of permanent erosion control measures within 10 days after the trench is backfilled, weather conditions permitting.
- Configure use of CWA to provide access for emergency vehicles and residential driveways, including materials available on site to provide temporary bridging across the pipeline trench if necessary.
- Road surfaces would be restored to drivable condition as soon as practicable so that normal access could resume.

Construction Techniques

One of the following techniques shall be utilized for a longitudinal distance of 100 feet either side of the residence:

- The Sewer Line Technique - this technique is a less efficient alternative to the mainline method of construction. It is typically used when the pipeline is to be installed in very close proximity to an existing stricture or when an open ditch would adversely impact a residential or commercial structure. The technique involves installing pipe one joint at a time whereby the welding, x-ray and coating activities are all performed in the open trench. At the end of each day the newly installed pipe is backfilled or the open trench is covered with steel plates or timber mats.
- Drag Section Technique - This technique is also a less efficient alternative to the mainline method. It is normally preferred over the sewer line alternative. This technique involves the trenching, installation and backfill of a prefabricated length of pipe containing several segments all in one day. At the end of each day the newly installed pipe is backfilled or the open trench is covered with steel plates or timber mats.
- In the take up and relay segments, the soil cover over the existing pipeline will be excavated to remove the existing pipe. The removed pipe will then be transported away from the construction work area and properly disposed. The trench will be backfilled until such time as the construction crews are prepared to install the new pipeline. The replacement pipe will be installed in approximately the same location as the existing pipe using one of the above construction methods.
- Where the pipeline facilities cross residential properties, topsoil will be stripped and stockpiled separately from the subsoil during grading within the construction workspace as shown on the corresponding Typical ROW Configuration figure ES-0001
- Reseed all disturbed lawns with a seed mixture acceptable to landowner or comparable to the adjoining lawn.
- Landowners shall be compensated for damages to ornamental shrubs and other landscape plantings based on the appraised value. Landowners shall be compensated for damages in a fair and reasonable manner, and as specified in the damage provision within the controlling easement on each property.

Workspace Restrictions

- Existing structures including but not limited to; fences, sheds, swing-sets, trampolines, shrubbery, trees, gardens, flowerbeds, pools will be removed from the CWA. Landowners will be made aware of what will be relocated during negotiations for temporary workspace and damages.
- Structures within the existing permanent easement area will be allowed to be returned to the existing permanent easement provided they are not in violation of Algonquin's existing permanent easement rights that will be made available to landowners.
- Structures outside the existing permanent easement, however within the construction work space, will be replaced as close as practicable to their previous locations.
- Removal and replacement responsibility will be an issue that is negotiated with each landowner.

Anticipated Construction Schedule

- Pipeline construction work is typically scheduled to take advantage of daylight hours, generally starting at 7:00 a.m. and completing at 6:00 p.m. (6 days a week).
- Pipeline installation progress should range from 40' to 200' each day.

Public Safety Considerations

- Traffic control will consist of devices outlined in state and local codes accompanied by local law enforcement details and qualified flagmen to safely coordinate transport of pipeline construction personnel, equipment, and material.
- Site Security will be evaluated on a case by case basis, employing daily and/or 24 hour qualified security services as required.
- Algonquin will staff a Landowner Hotline to receive landowner construction concerns. The toll-free Landowner Hotline is 1-866-873-2579. The Landowner Hotline will be staffed Monday through Friday from 7 AM to 5 PM and on Saturday from 7 AM to 12 PM by Algonquin personnel from the Cheshire, Connecticut field office. After these hours, a call forwarding system will be available to receive calls and page the Complaint Resolution Coordinator.

Other Considerations

- Fugitive dust will result from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. The amount of dust generated will be a function of construction activity, soil type, soil moisture content, wind speed, precipitation, vehicle traffic, vehicle types, and roadway characteristics. Algonquin will employ proven construction-related practices to control fugitive dust such as application of water or other commercially-available dust control agents on unpaved areas subject to frequent vehicle traffic. In addition, construction equipment will be operated only on an as-needed basis.
- Noise mitigation measures to be employed during construction include ensuring that sound muffling devices that are provided as standard equipment by the construction equipment manufacturer are kept in good working order.

REV.#	DESCRIPTION	DATE
E	REVISED PER DEIS/USACOE COMMENTS	09/27/14
D	RE-ISSUED FOR CLIENT REVIEW	03/11/14
C	NOT ISSUED	03/11/14
B	NOT ISSUED	03/11/14

IG. #

PROJ. ENG.	CCW	01/29/14
CHECKED BY:	CCW	01/29/14
DRAWN BY:	APW	01/23/14
SCALE:		DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
RESIDENTIAL SITE SPECIFIC CROSSING PLANS
DETAIL SHEET

LOC.: REV.: E
YR.: 2014 W.O.: DWG. NO.: HA-E-7011

Spectra Energy Partners
Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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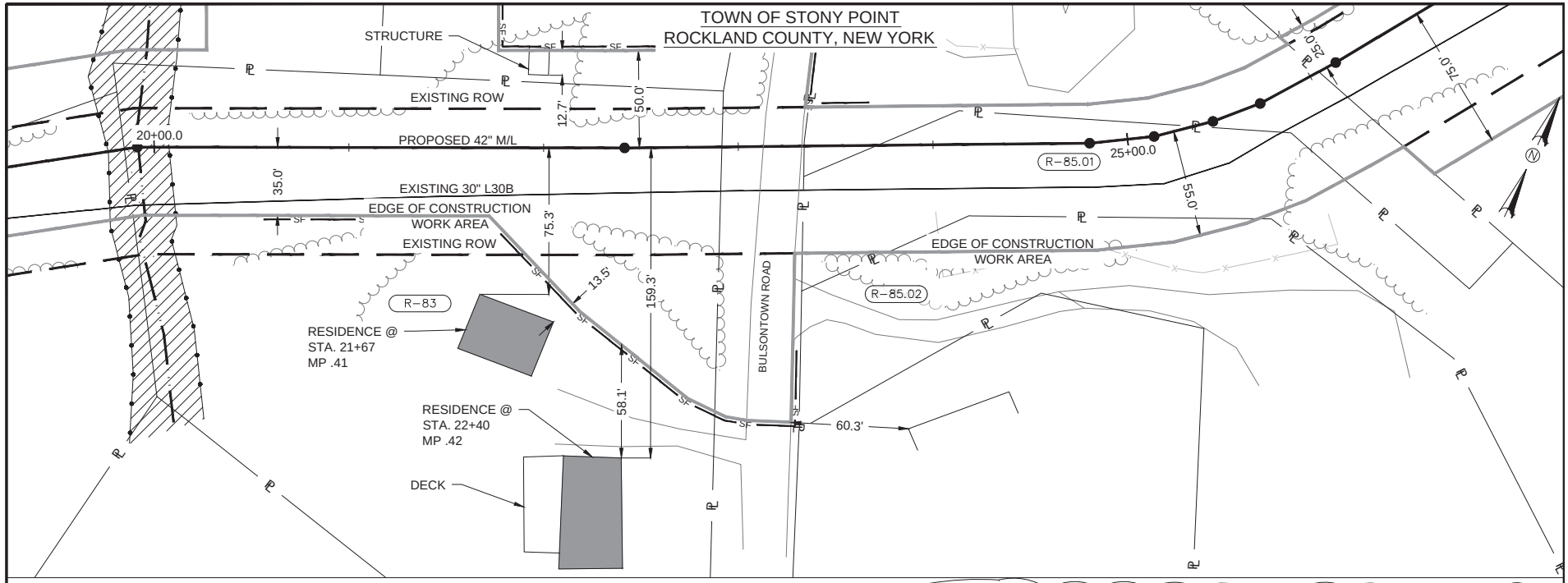

SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 22+67 THERE IS A STRUCTURE 13.5' RIGHT OF THE CWA AND 75.3' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 22+40 THERE IS A STRUCTURE 58.1' RIGHT OF THE CWA AND 159.3' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

C

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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REV.#	DESCRIPTION	DATE
C	REVISED PER DEIS/USACOE COMMENTS	09/27/14
B	ISSUED FOR CLIENT REVIEW	03/12/14
A	ISSUED FOR INTERNAL REVIEW	11/20/13

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/14/13
SCALE:	1"=50'	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
STONY POINT TO DISCHARGE
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: ROCKLAND COUNTY, NEW YORK | REV.: C

YR.: 2014 | W.O.: | DWG. NO.: S7-E-7001

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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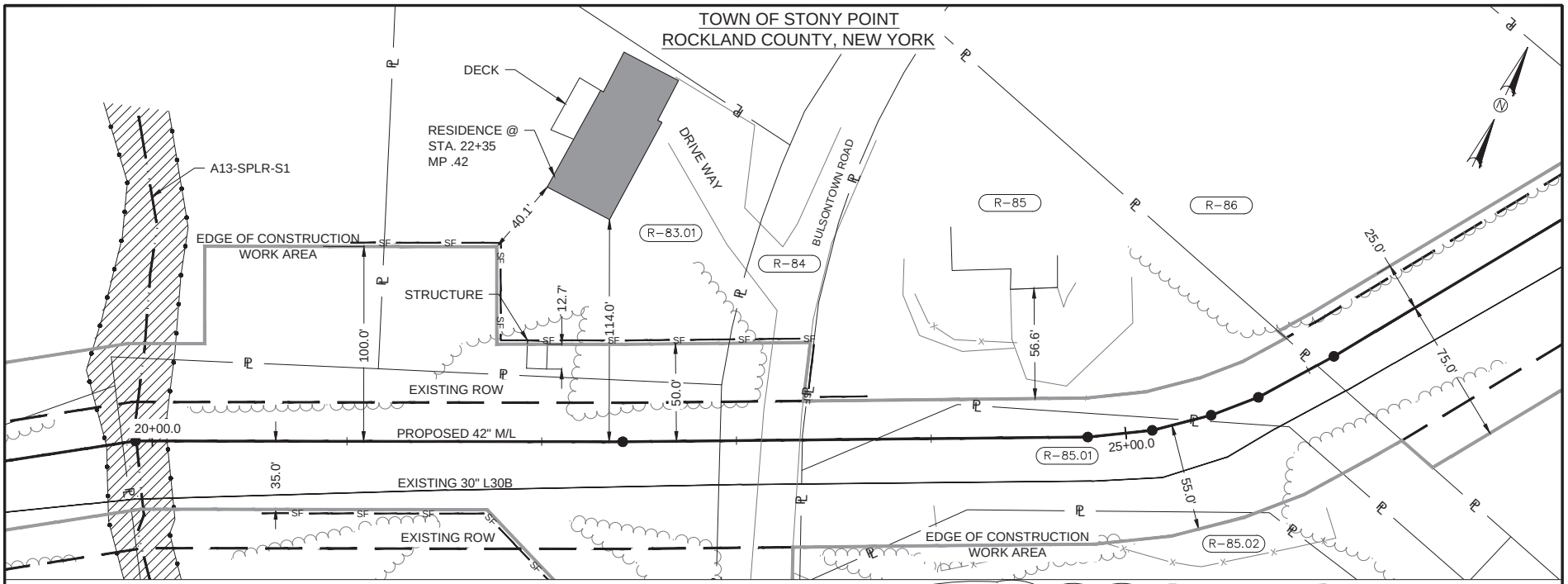

SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

DESCRIPTION:

AT SURVEY STATION 22+35 THERE IS A STRUCTURE 40.1' RIGHT OF THE CWA AND 114' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

C

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL-FREE LANDOWNER HOTLINE IS 1-866-873-2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

LEGEND

PROPOSED PIPELINE	
EXISTING RIGHT-OF-WAY (ROW)	
NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)	
CONSTRUCTION WORK AREA (CWA)	
EXISTING PIPELINE	
FENCE LINE	X
SAFETY FENCE	SF
PROPERTY LINE	PL
OVERHEAD POWER LINE	OH
TREE LINE	

REV.#	DESCRIPTION	DATE
C	REVISED PER DEIS/USACOE COMMENTS	09/27/14
B	ISSUED FOR CLIENT REVIEW	03/12/14
A	ISSUED FOR INTERNAL REVIEW	11/20/13

I.G.#

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/14/13
SCALE:	1"=50'	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
STONY POINT TO DISCHARGE
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

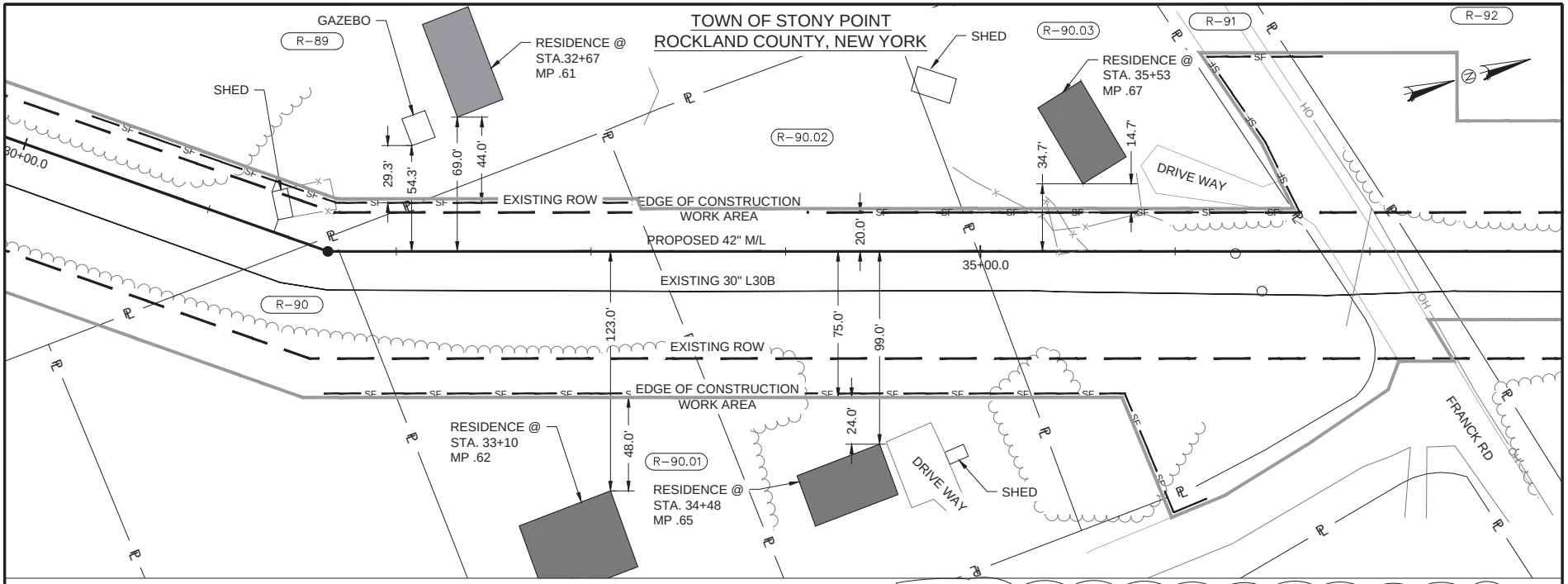
LOC.: ROCKLAND COUNTY, NEW YORK | REV.: C

YR.: 2014 | W.O.: | DWG. NO.: S7-E-7002

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

C:\Users\AWall\Desktop\Copied from Citrix\09-26-14\Residentials\needs changes\S7-E-7002.dwg - PLOT TIME: 9/28/2014 2:04 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 32+43 THERE IS A STRUCTURE 29.3' LEFT OF THE CWA AND 54.3' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 32+67 THERE IS A RESIDENCE 44.0' LEFT OF THE CWA AND 69.0' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 33+10 THERE IS A STRUCTURE 48.0' RIGHT OF THE CWA AND 123.0' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 34+48 THERE IS A RESIDENCE 24.0' RIGHT OF THE CWA AND 99.0' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 35+53 THERE IS A RESIDENCE 14.7' LEFT OF THE CWA AND 34.7' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

NOTES:

RESIDENTIAL ACCESS TO BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACT 90.03.

D

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
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- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL-FREE LANDOWNER HOTLINE IS 1-866-873-2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

REV.#	DESCRIPTION	DATE
D	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
C	ISSUED FOR USE	09/11/14
B	ISSUED FOR CLIENT REVIEW	03/12/14
A	ISSUED FOR INTERNAL REVIEW	11/20/13

IG. #

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/18/13
SCALE:	1"=50'	DATE

STONY POINT TO DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: ROCKLAND COUNTY, NEW YORK | REV.: D
YR.: 2016 | W.O.: | DWG. NO.: S7-E-7003

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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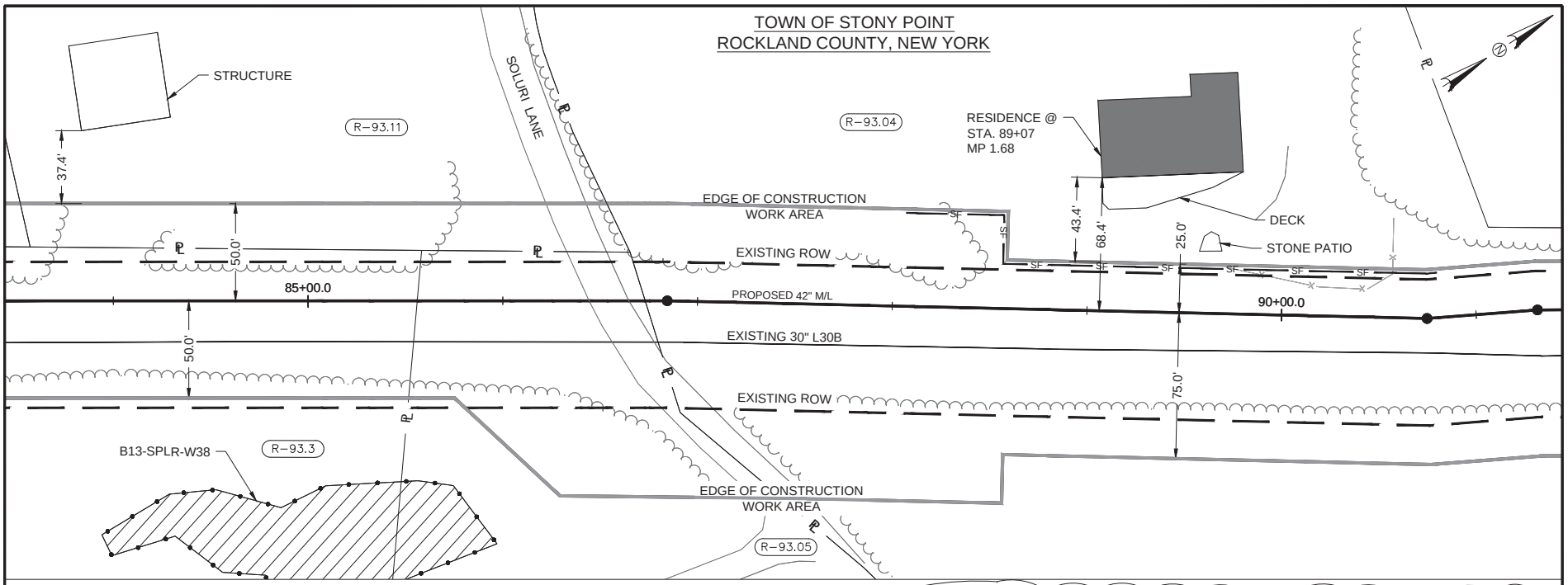

SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

DESCRIPTION:

AT SURVEY STATION 89+07 THERE IS A RESIDENCE 43.4' LEFT OF THE CWA AND 68.4' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

C

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
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REV.#	DESCRIPTION	DATE
C	REVISED PER DEIS/USACOE COMMENTS	09/27/14
B	ISSUED FOR CLIENT REVIEW	03/12/14
A	ISSUED FOR INTERNAL REVIEW	11/20/13

I.G. #

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/18/13
SCALE:	1"=50'	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
STONY POINT TO DISCHARGE
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: ROCKLAND COUNTY, NEW YORK | REV.: C

YR.: 2014 | W.O.: | DWG. NO.: S7-E-7004

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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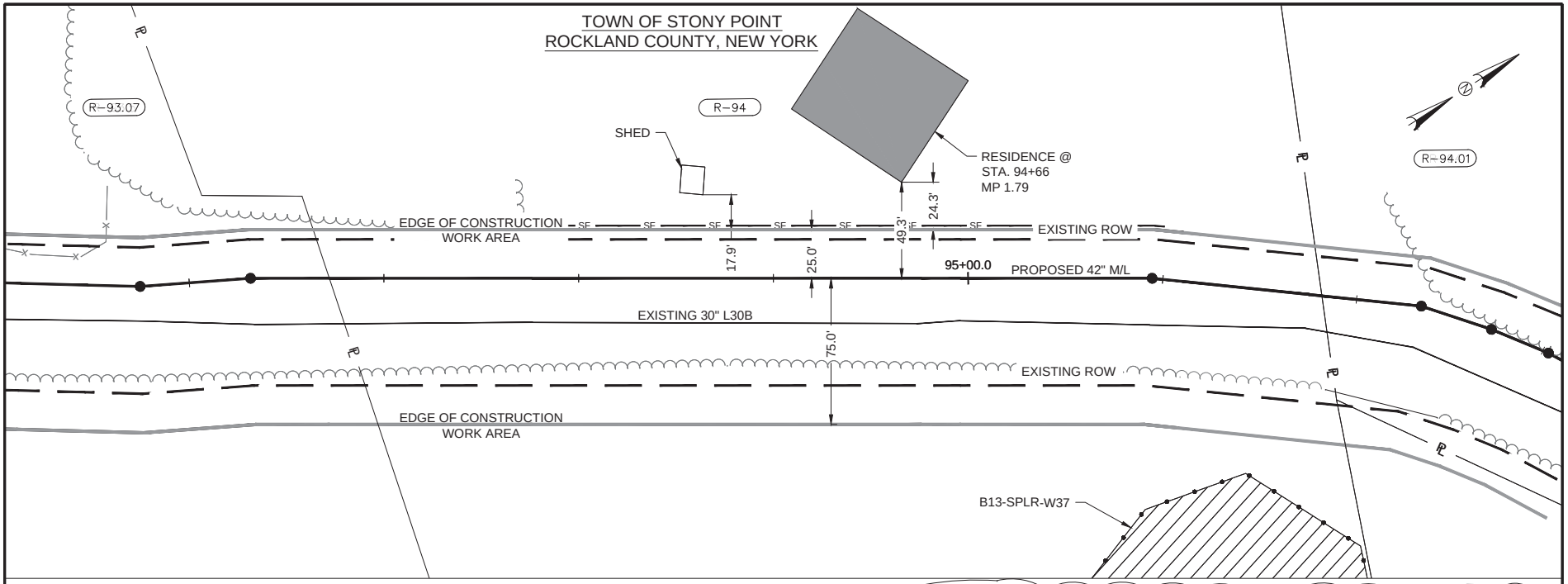

SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

PROPOSED PIPELINE	
EXISTING RIGHT-OF-WAY (ROW)	
NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)	
CONSTRUCTION WORK AREA (CWA)	
EXISTING PIPELINE	
FENCE LINE	X X
SAFETY FENCE	SF
PROPERTY LINE	℄
OVERHEAD POWER LINE	OH
TREE LINE	

DESCRIPTION:

AT SURVEY STATION 94+66 THERE IS A STRUCTURE 24.3' LEFT OF THE CWA AND 49.3' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

C

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
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REV.#	DESCRIPTION	DATE
C	REVISED PER DEIS/USACOE COMMENTS	09/27/14
B	ISSUED FOR CLIENT REVIEW	03/12/14
A	ISSUED FOR INTERNAL REVIEW	11/20/13

IC.#

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/18/13
SCALE:	1"=50'	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
STONY POINT TO DISCHARGE
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: ROCKLAND COUNTY, NEW YORK | REV.: C

YR.: 2014 | W.O.: | DWG. NO.: S7-E-7005

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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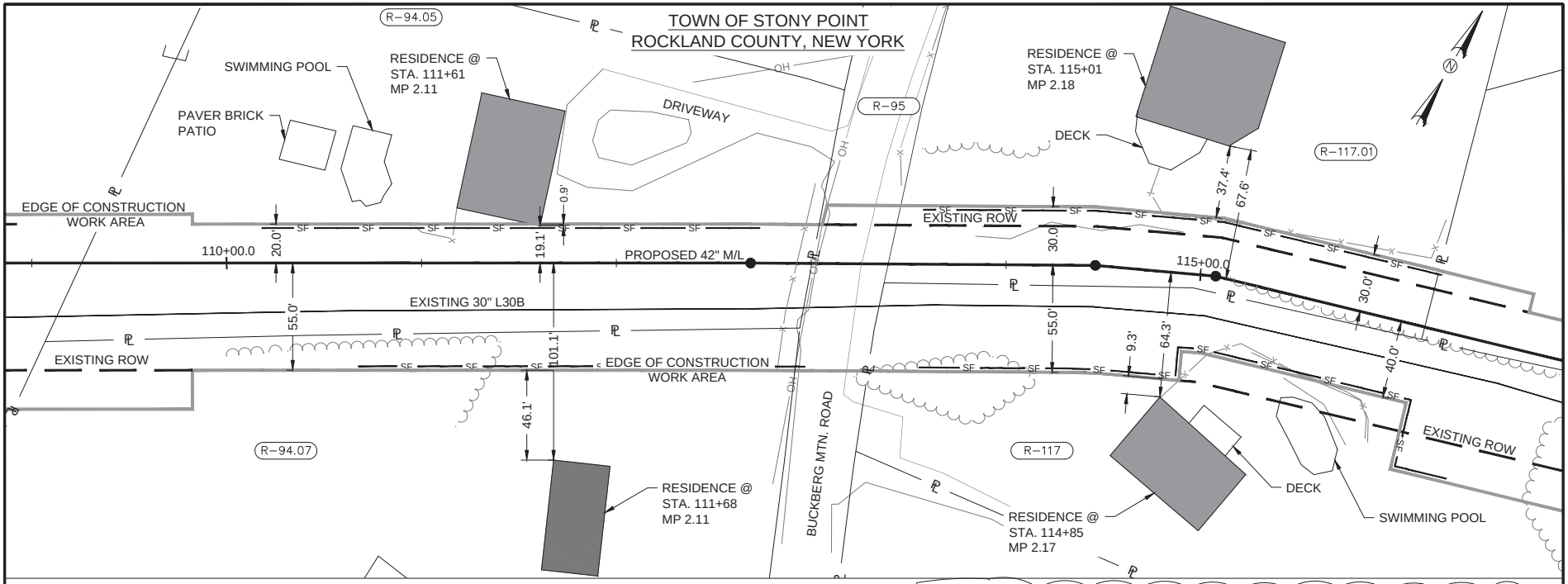

SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 111+61 THERE IS A RESIDENCE AT THE EDGE OF THE CWA AND 19.1' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 111+68 THERE IS A RESIDENCE 46.1' RIGHT OF THE CWA AND 101.1' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L..

AT SURVEY STATION 114+85 THERE IS A RESIDENCE 9.3' RIGHT OF THE CWA AND 64.3' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 115+01 THERE IS A RESIDENCE 37.4' LEFT OF THE CWA AND 67.6' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

NOTES:

CONSTRUCTION WORK AREA IS LIMITED TO THE EXISTING R.O.W. @ TRACT R-94.05

CONSTRUCTION WORK AREA IS LIMITED TO WITHIN THE EXISTING R.O.W. @ TRACT R-117

D

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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REV.#	DESCRIPTION	DATE
D	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
C	ISSUED FOR USE	09/11/14
B	ISSUED FOR CLIENT REVIEW	03/12/14
A	ISSUED FOR INTERNAL REVIEW	11/20/13

I.G.#

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/18/13
SCALE:	1"=50'	DATE

STONY POINT TO DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: ROCKLAND COUNTY, NEW YORK | REV.: D
YR.: 2016 | W.O.: | DWG. NO.: S7-E-7006

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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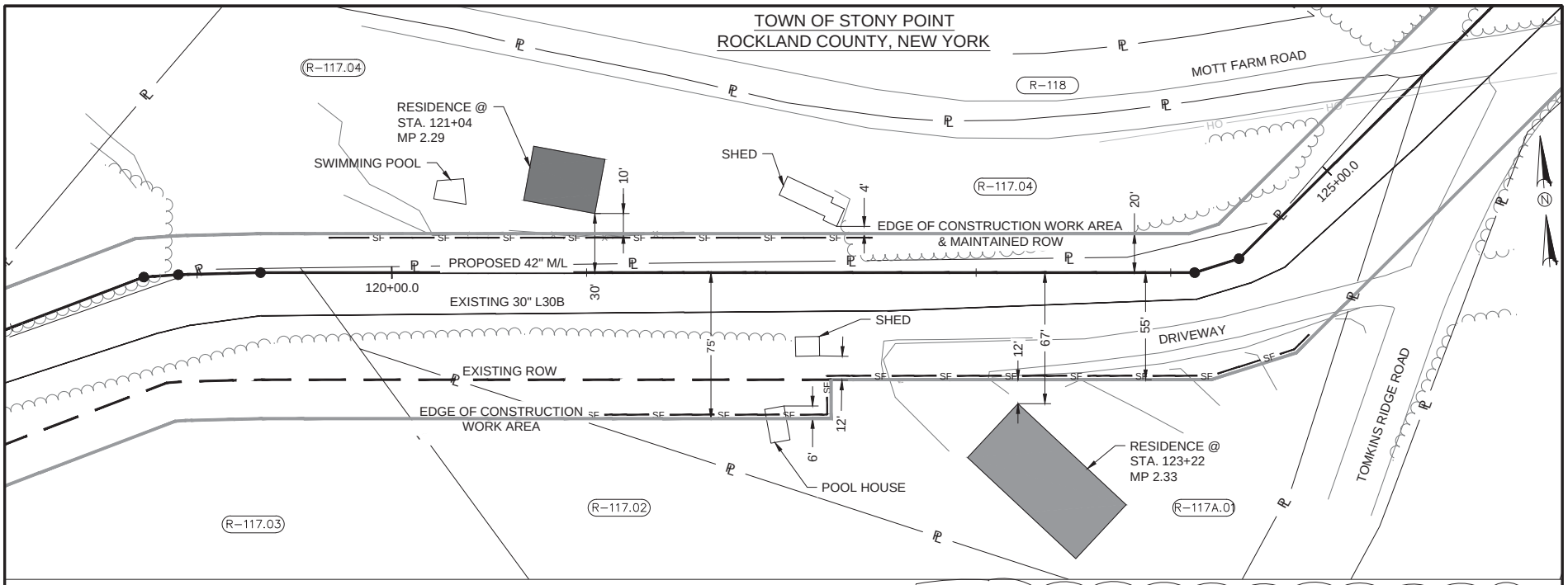


SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83–18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 121+04 THERE IS A STRUCTURE 10' LEFT OF THE CWA AND 30' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 123+22 THERE IS A RESIDENCE 12' RIGHT OF THE CWA AND 67' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

NOTES:

RESIDENTIAL ACCESS TO BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACT R–117A.01

E

E

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING–SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
- THE SEWER LINE TECHNIQUE – THIS TECHNIQUE IS A LESS EFFICIENT ALTERNATIVE TO THE MAINLINE METHOD OF CONSTRUCTION. IT IS TYPICALLY USED WHEN THE PIPELINE IS TO BE INSTALLED IN VERY CLOSE PROXIMITY TO AN EXISTING STRICTURE OR WHEN AN OPEN DITCH WOULD ADVERSELY IMPACT A RESIDENTIAL OR COMMERCIAL STRUCTURE. THE TECHNIQUE INVOLVES INSTALLING PIPE ONE JOINT AT A TIME WHEREBY THE WELDING, X–RAY AND COATING ACTIVITIES ARE ALL PERFORMED IN THE OPEN TRENCH. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED OR THE OPEN TRENCH IS COVERED WITH STEEL PLATES OR TIMBER MATS.
- TRAFFIC CONTROL WILL CONSIST OF DEVICES OUTLINED IN STATE AND LOCAL CODES ACCOMPANIED BY LOCAL LAW ENFORCEMENT DETAILS AND QUALIFIED FLAGMEN TO SAFELY COORDINATE TRANSPORT OF PIPELINE CONSTRUCTION PERSONNEL, EQUIPMENT, AND MATERIAL.
- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL–FREE LANDOWNER HOTLINE IS 1–866–873–2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

REV.#	DESCRIPTION	DATE
E	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
D	ISSUED FOR USE	09/11/14
C	RE–ISSUED FOR CLIENT REVIEW	03/12/14
B	ISSUED FOR CLIENT REVIEW	01/09/14

IC.#

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	01/09/14
SCALE:	1"=50'	DATE

STONY POINT TO DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

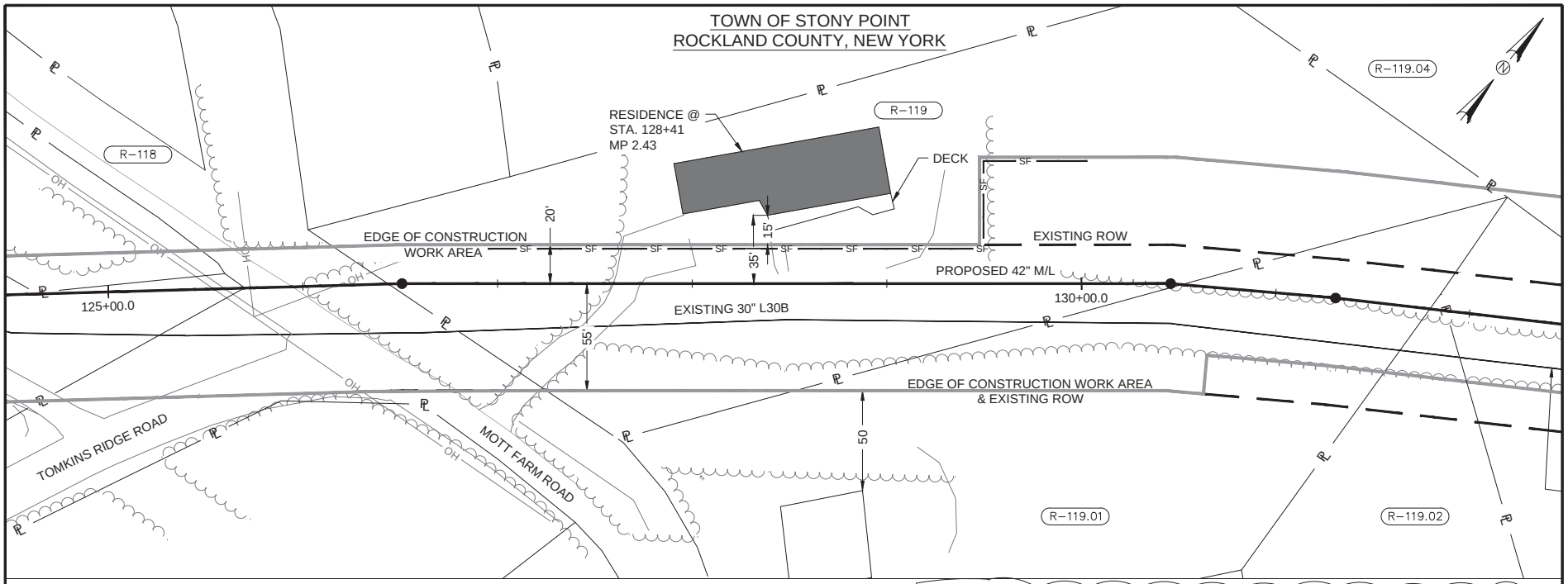
LOC.: ROCKLAND COUNTY, NEW YORK | REV.: E

YR.: 2016 | W.O.: | DWG. NO.: S7–E–7007

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\S7–E–7007.dwg – PLOT TIME: 9/25/2014 5:24 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

DESCRIPTION:

AT SURVEY STATION 128+41 THERE IS A RESIDENCE 15' LEFT OF THE CWA AND 35' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

NOTES:

RESIDENTIAL ACCESS WILL BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACT R-119

E

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
- THE SEWER LINE TECHNIQUE – THIS TECHNIQUE IS A LESS EFFICIENT ALTERNATIVE TO THE MAINLINE METHOD OF CONSTRUCTION. IT IS TYPICALLY USED WHEN THE PIPELINE IS TO BE INSTALLED IN VERY CLOSE PROXIMITY TO AN EXISTING STRICTURE OR WHEN AN OPEN DITCH WOULD ADVERSELY IMPACT A RESIDENTIAL OR COMMERCIAL STRUCTURE. THE TECHNIQUE INVOLVES INSTALLING PIPE ONE JOINT AT A TIME WHEREBY THE WELDING, X-RAY AND COATING ACTIVITIES ARE ALL PERFORMED IN THE OPEN TRENCH. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED OR THE OPEN TRENCH IS COVERED WITH STEEL PLATES OR TIMBER MATS.
- TRAFFIC CONTROL WILL CONSIST OF DEVICES OUTLINED IN STATE AND LOCAL CODES ACCOMPANIED BY LOCAL LAW ENFORCEMENT DETAILS AND QUALIFIED FLAGMEN TO SAFELY COORDINATE TRANSPORT OF PIPELINE CONSTRUCTION PERSONNEL, EQUIPMENT, AND MATERIAL.
- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL-FREE LANDOWNER HOTLINE IS 1-866-873-2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

REV.#	DESCRIPTION	DATE
E	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
D	ISSUED FOR USE	09/11/14
C	RE-ISSUED FOR CLIENT REVIEW	03/12/14
B	ISSUED FOR CLIENT REVIEW	01/09/14

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	01/09/14
SCALE:	1"=50'	DATE

STONY POINT TO DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

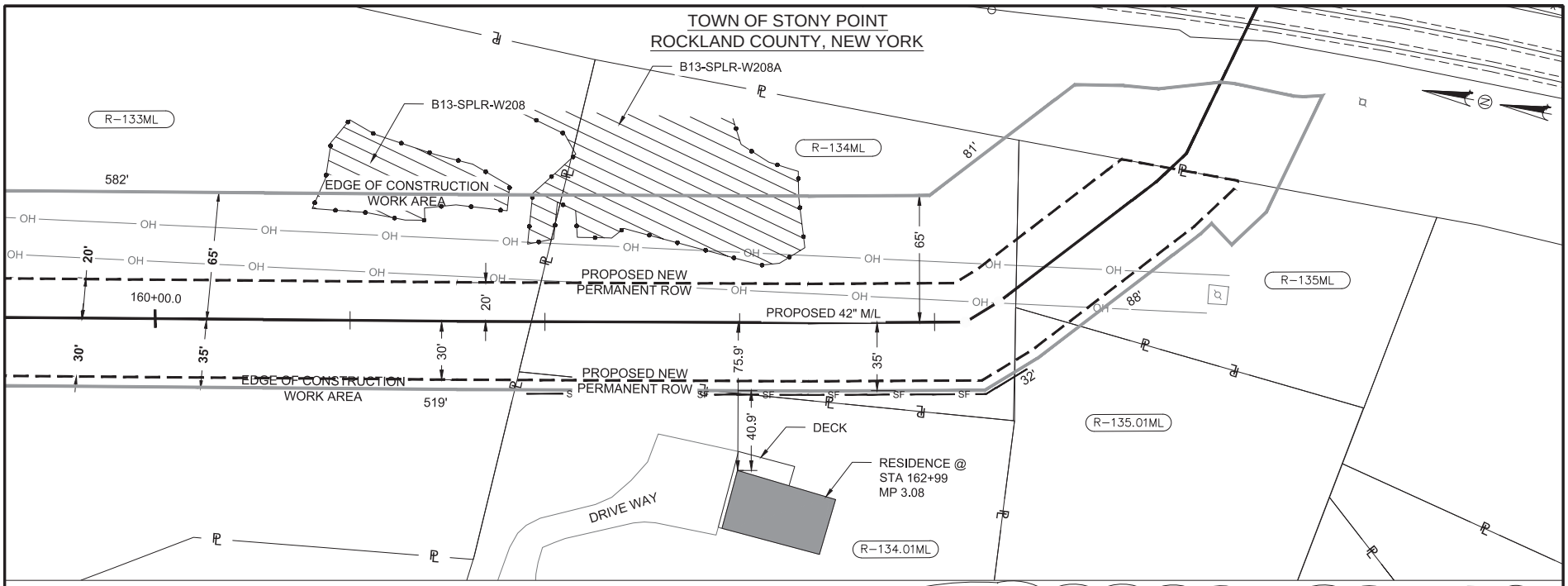
LOC.: ROCKLAND COUNTY, NEW YORK | REV.: E

YR.: 2016 | W.O.: | DWG. NO.: S7-E-7008

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\S7-E-7008.dwg – PLOT TIME: 9/25/2014 5:25 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

DESCRIPTION:

AT SURVEY STATION 162+99 THERE IS A RESIDENCE 40.9' RIGHT OF THE CWA AND 75.9' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

C

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
- THE SEWER LINE TECHNIQUE - THIS TECHNIQUE IS A LESS EFFICIENT ALTERNATIVE TO THE MAINLINE METHOD OF CONSTRUCTION. IT IS TYPICALLY USED WHEN THE PIPELINE IS TO BE INSTALLED IN VERY CLOSE PROXIMITY TO AN EXISTING STRICTURE OR WHEN AN OPEN DITCH WOULD ADVERSELY IMPACT A RESIDENTIAL OR COMMERCIAL STRUCTURE. THE TECHNIQUE INVOLVES INSTALLING PIPE ONE JOINT AT A TIME WHEREBY THE WELDING, X-RAY AND COATING ACTIVITIES ARE ALL PERFORMED IN THE OPEN TRENCH. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED OR THE OPEN TRENCH IS COVERED WITH STEEL PLATES OR TIMBER MATS.
- TRAFFIC CONTROL WILL CONSIST OF DEVICES OUTLINED IN STATE AND LOCAL CODES ACCOMPANIED BY LOCAL LAW ENFORCEMENT DETAILS AND QUALIFIED FLAGMEN TO SAFELY COORDINATE TRANSPORT OF PIPELINE CONSTRUCTION PERSONNEL, EQUIPMENT, AND MATERIAL.
- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL-FREE LANDOWNER HOTLINE IS 1-866-873-2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

REV.#	DESCRIPTION	DATE
C	REVISED PER DEIS/USACOE COMMENTS	09/27/14
B	ISSUED FOR CLIENT REVIEW	03/12/14
A	ISSUED FOR INTERNAL REVIEW	11/20/13

I.C. #

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	01/09/14
SCALE:	1"=50'	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
STONY POINT TO DISCHARGE
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: WESTCHESTER COUNTY, NEW YORK | REV.: B

YR.: 2014 | W.O.: | DWG. NO.: S7-E-7009

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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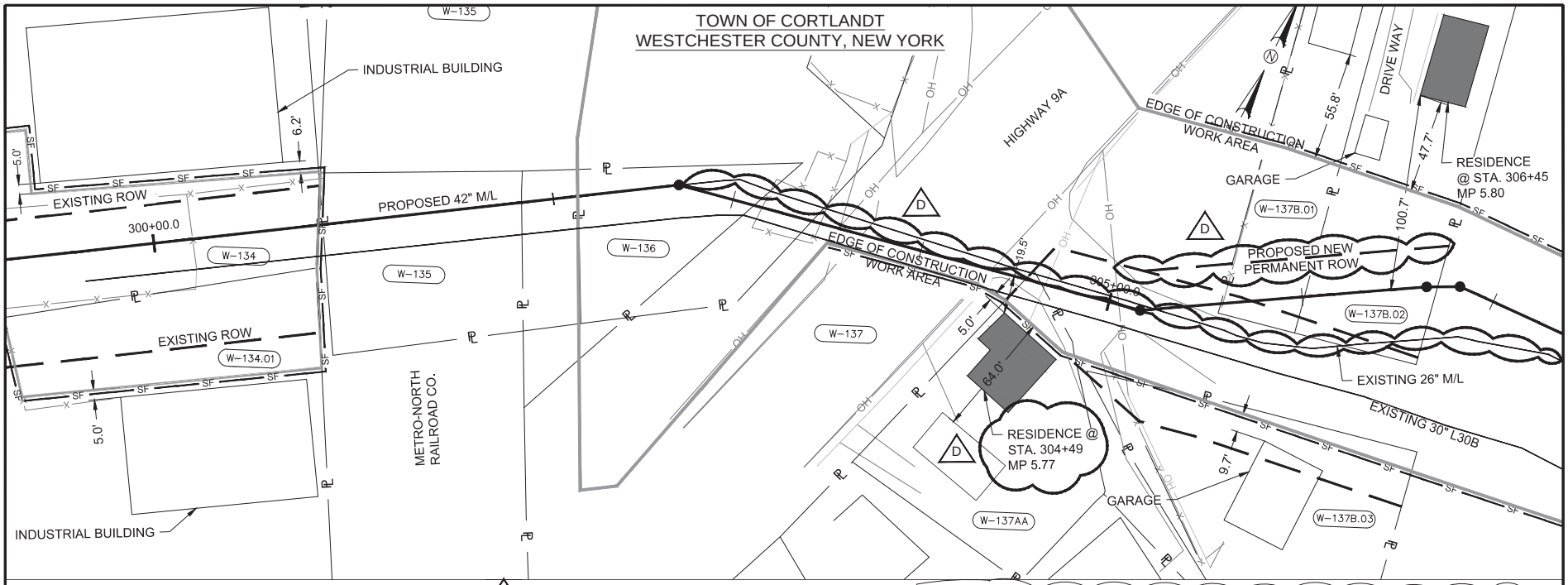
TOWN OF CORTLANDT
WESTCHESTER COUNTY, NEW YORK



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 304+49 THERE IS A RESIDENCE 5.0' RIGHT OF THE CWA AND 19.5' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 306+45 THERE IS A RESIDENCE 47.7' LEFT OF THE CWA AND 147.7' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

NOTES:

CWA LIMITED TO EXISTING R.O.W. @ TRACTS W-137AA & W-137B.03

ACCESS WILL BE MAINTAINED TO THE EXTENT POSSIBLE DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACTS W-137AA & W-137B.03

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
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- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
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REV.#	DESCRIPTION	DATE
D	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
C	ISSUED FOR USE	09/11/14
B	ISSUED FOR CLIENT REVIEW	03/12/14
A	ISSUED FOR INTERNAL REVIEW	11/20/13

IG. #

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/19/13
SCALE:	1"=50'	DATE

STONY POINT TO DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: WESTCHESTER COUNTY, NEW YORK | REV.: D

YR.: 2016 | W.O.: | DWG. NO.: S7-E-7010

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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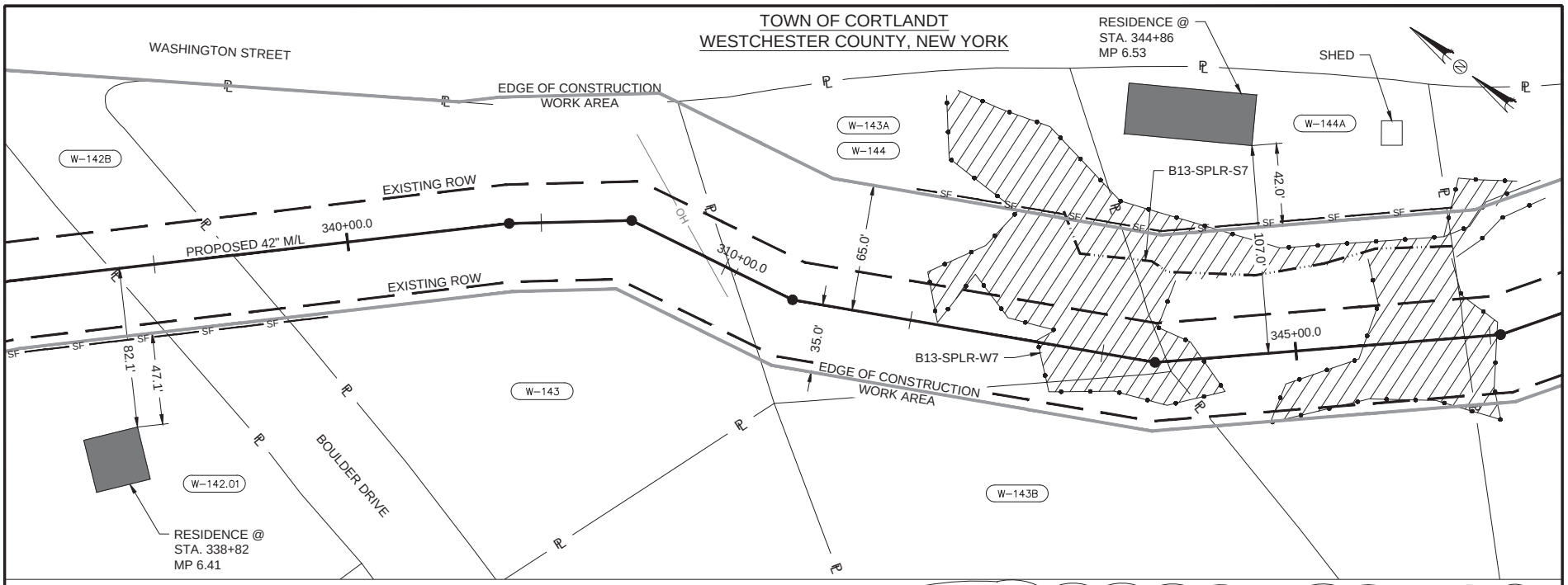

SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 338+82 THERE IS A RESIDENCE 47.1' RIGHT OF THE CWA AND 82.1' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 344+86 THERE IS A RESIDENCE 42.0' LEFT OF THE CWA AND 107.0' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

C

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
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REV.#	DESCRIPTION	DATE
C	REVISED PER DEIS/USACOE COMMENTS	09/27/14
B	ISSUED FOR CLIENT REVIEW	03/12/14
A	ISSUED FOR INTERNAL REVIEW	11/20/13

I.G. #

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/20/13
SCALE:	1"=50'	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
STONY POINT TO DISCHARGE
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: WESTCHESTER COUNTY, NEW YORK | REV.: C

YR.: 2014 | W.O.: | DWG. NO.: S7-E-7011

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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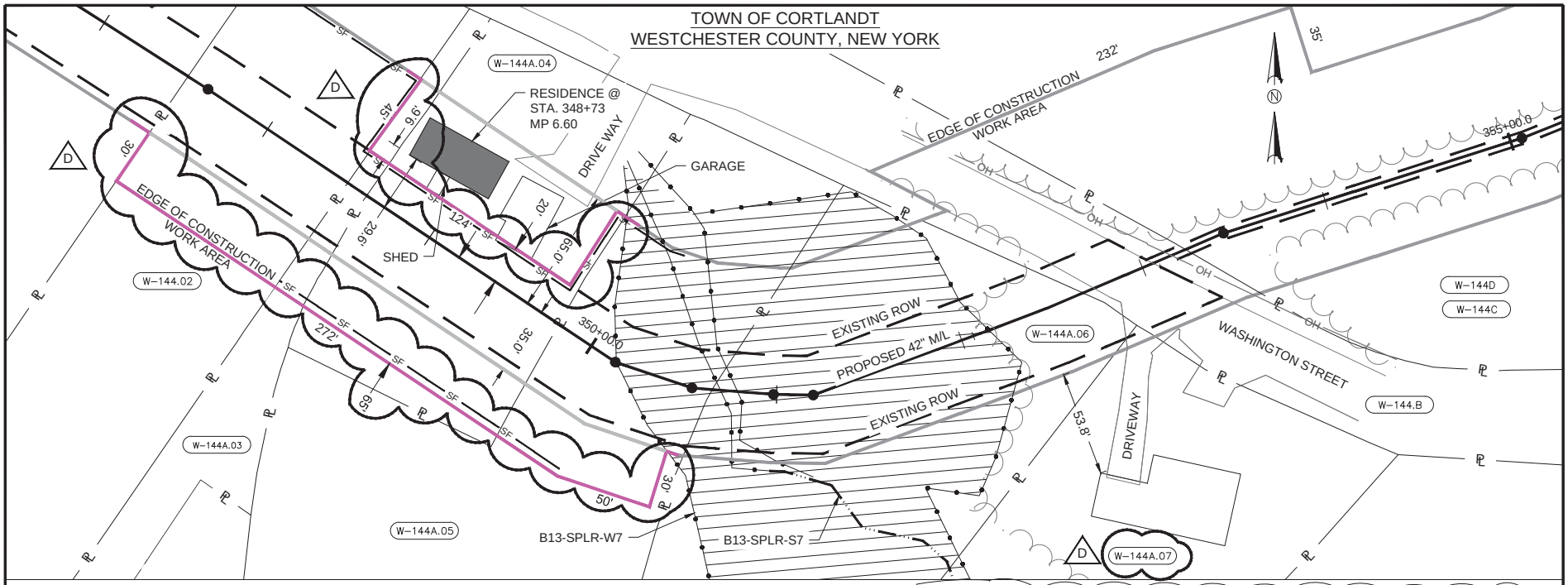

SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 348+73 THERE IS A RESIDENCE 9'6"' RIGHT OF THE CWA AND 29.6' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

NOTES:

DRIVEWAY ACCESS WILL BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACT W-144A.07

D

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
- THE SEWER LINE TECHNIQUE – THIS TECHNIQUE IS A LESS EFFICIENT ALTERNATIVE TO THE MAINLINE METHOD OF CONSTRUCTION. IT IS TYPICALLY USED WHEN THE PIPELINE IS TO BE INSTALLED IN VERY CLOSE PROXIMITY TO AN EXISTING STRICTURE OR WHEN AN OPEN DITCH WOULD ADVERSELY IMPACT A RESIDENTIAL OR COMMERCIAL STRUCTURE. THE TECHNIQUE INVOLVES INSTALLING PIPE ONE JOINT AT A TIME WHEREBY THE WELDING, X-RAY AND COATING ACTIVITIES ARE ALL PERFORMED IN THE OPEN TRENCH. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED OR THE OPEN TRENCH IS COVERED WITH STEEL PLATES OR TIMBER MATS.
- TRAFFIC CONTROL WILL CONSIST OF DEVICES OUTLINED IN STATE AND LOCAL CODES ACCOMPANIED BY LOCAL LAW ENFORCEMENT DETAILS AND QUALIFIED FLAGMEN TO SAFELY COORDINATE TRANSPORT OF PIPELINE CONSTRUCTION PERSONNEL, EQUIPMENT, AND MATERIAL.
- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL-FREE LANDOWNER HOTLINE IS 1-866-873-2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

REV.#	DESCRIPTION	DATE
D	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
C	ISSUED FOR USE	09/11/14
B	ISSUED FOR CLIENT REVIEW	03/12/14
A	ISSUED FOR INTERNAL REVIEW	11/20/13

IG. #

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/20/13
SCALE:	1"=50'	DATE

STONY POINT TO DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

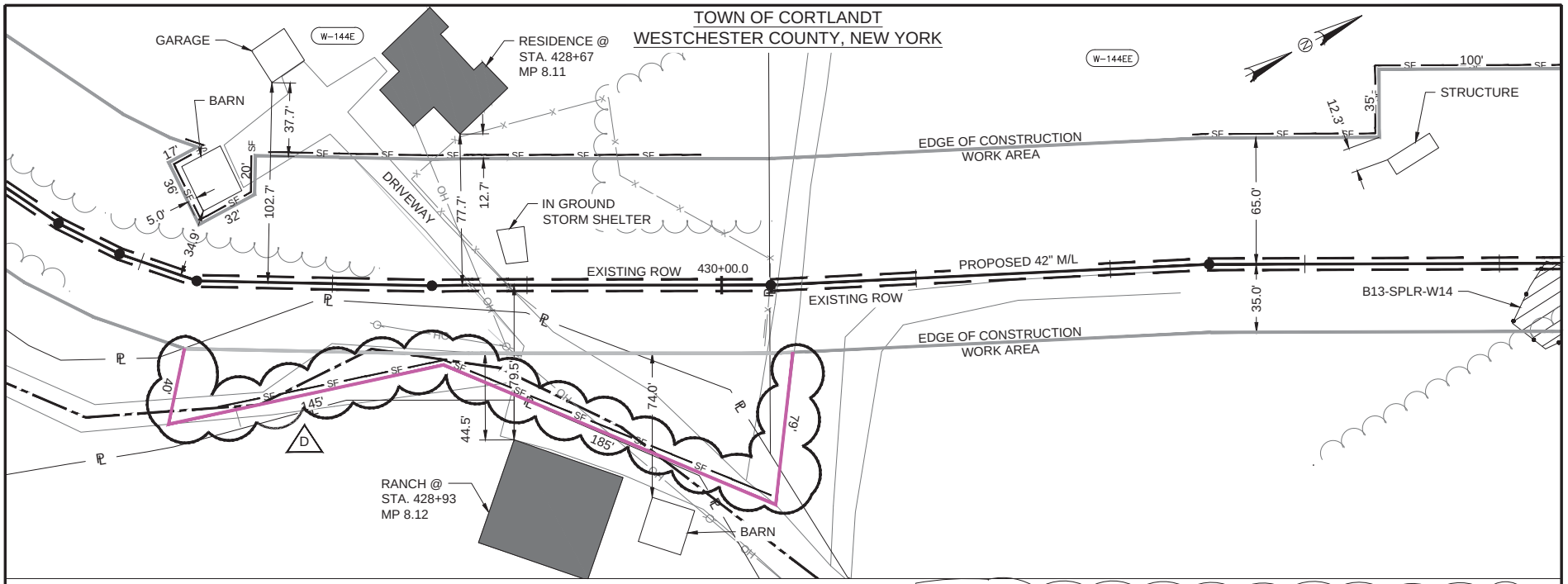
LOC.: WESTCHESTER COUNTY, NEW YORK | REV.: D

YR.: 2016 | W.O.: | DWG. NO.: S7-E-7012

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\S7-E-7012.dwg – PLOT TIME: 9/25/2014 4:13 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 428+67 THERE IS A RESIDENCE 12.7' LEFT OF THE CWA AND 77.7' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 428+93 THERE IS A RANCH 44.5' RIGHT OF THE CWA AND 79.5' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

NOTES;

DRIVEWAY ACCESS WILL BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACT W-144E

D

D

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
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- TRAFFIC CONTROL WILL CONSIST OF DEVICES OUTLINED IN STATE AND LOCAL CODES ACCOMPANIED BY LOCAL LAW ENFORCEMENT DETAILS AND QUALIFIED FLAGMEN TO SAFELY COORDINATE TRANSPORT OF PIPELINE CONSTRUCTION PERSONNEL, EQUIPMENT, AND MATERIAL.
- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL-FREE LANDOWNER HOTLINE IS 1-866-873-2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

REV.#	DESCRIPTION	DATE
D	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
C	ISSUED FOR USE	09/11/14
B	ISSUED FOR CLIENT REVIEW	03/12/14
A	ISSUED FOR INTERNAL REVIEW	11/20/13

IG. #

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/20/13
SCALE:	1"=50'	DATE

STONY POINT TO DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

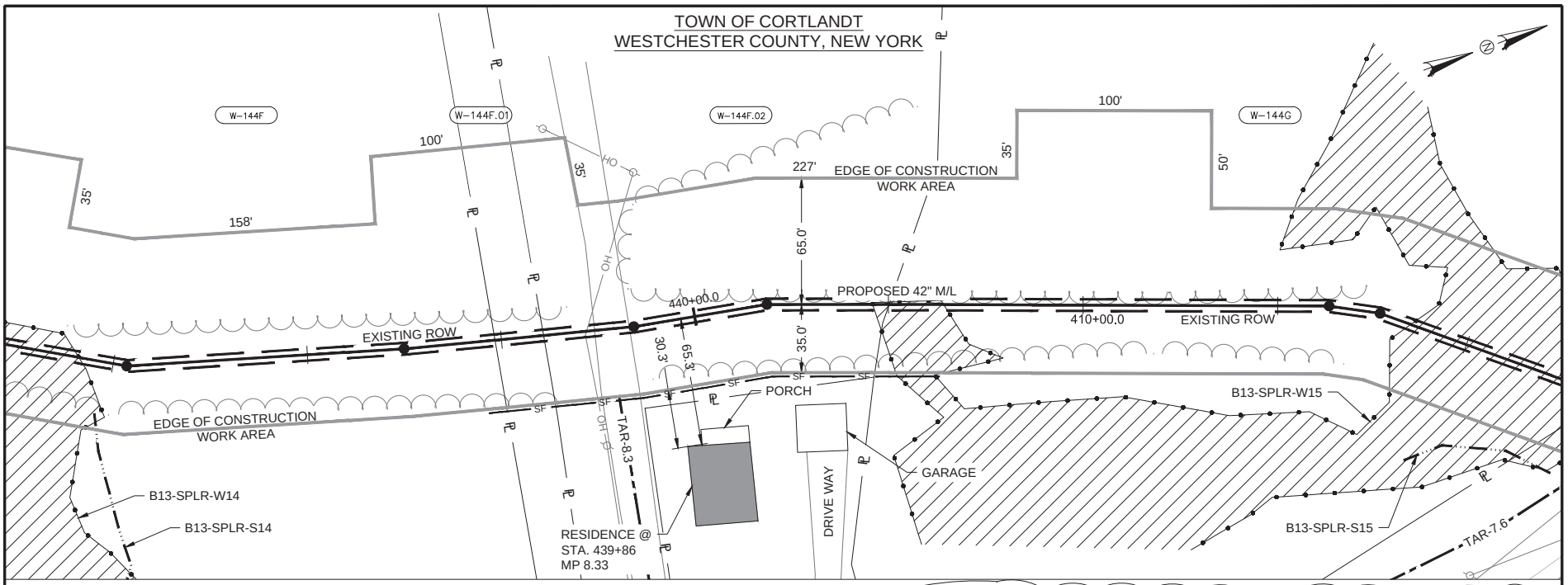
LOC.: WESTCHESTER COUNTY, NEW YORK | REV.: D

YR.: 2016 | W.O.: | DWG. NO.: S7-E-7013

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\S7-E-7013.dwg – PLOT TIME: 9/25/2014 4:15 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

DESCRIPTION:

AT SURVEY STATION 439+86 THERE IS A RESIDENCE 30.3' RIGHT OF THE CWA AND 65.3' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

C

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
- THE SEWER LINE TECHNIQUE - THIS TECHNIQUE IS A LESS EFFICIENT ALTERNATIVE TO THE MAINLINE METHOD OF CONSTRUCTION. IT IS TYPICALLY USED WHEN THE PIPELINE IS TO BE INSTALLED IN VERY CLOSE PROXIMITY TO AN EXISTING STRICTURE OR WHEN AN OPEN DITCH WOULD ADVERSELY IMPACT A RESIDENTIAL OR COMMERCIAL STRUCTURE. THE TECHNIQUE INVOLVES INSTALLING PIPE ONE JOINT AT A TIME WHEREBY THE WELDING, X-RAY AND COATING ACTIVITIES ARE ALL PERFORMED IN THE OPEN TRENCH. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED OR THE OPEN TRENCH IS COVERED WITH STEEL PLATES OR TIMBER MATS.
- TRAFFIC CONTROL WILL CONSIST OF DEVICES OUTLINED IN STATE AND LOCAL CODES ACCOMPANIED BY LOCAL LAW ENFORCEMENT DETAILS AND QUALIFIED FLAGMEN TO SAFELY COORDINATE TRANSPORT OF PIPELINE CONSTRUCTION PERSONNEL, EQUIPMENT, AND MATERIAL.
- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL-FREE LANDOWNER HOTLINE IS 1-866-873-2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

REV.#	DESCRIPTION	DATE
C	REVISED PER DEIS/USACOE COMMENTS	09/27/14
B	ISSUED FOR CLIENT REVIEW	03/12/14
A	ISSUED FOR INTERNAL REVIEW	11/21/13

IC. #

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/21/13
SCALE:	1"=50'	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
STONY POINT TO DISCHARGE
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: WESTCHESTER COUNTY, NEW YORK | REV.: C
YR.: 2014 | W.O.: | DWG. NO.: S7-E-7014

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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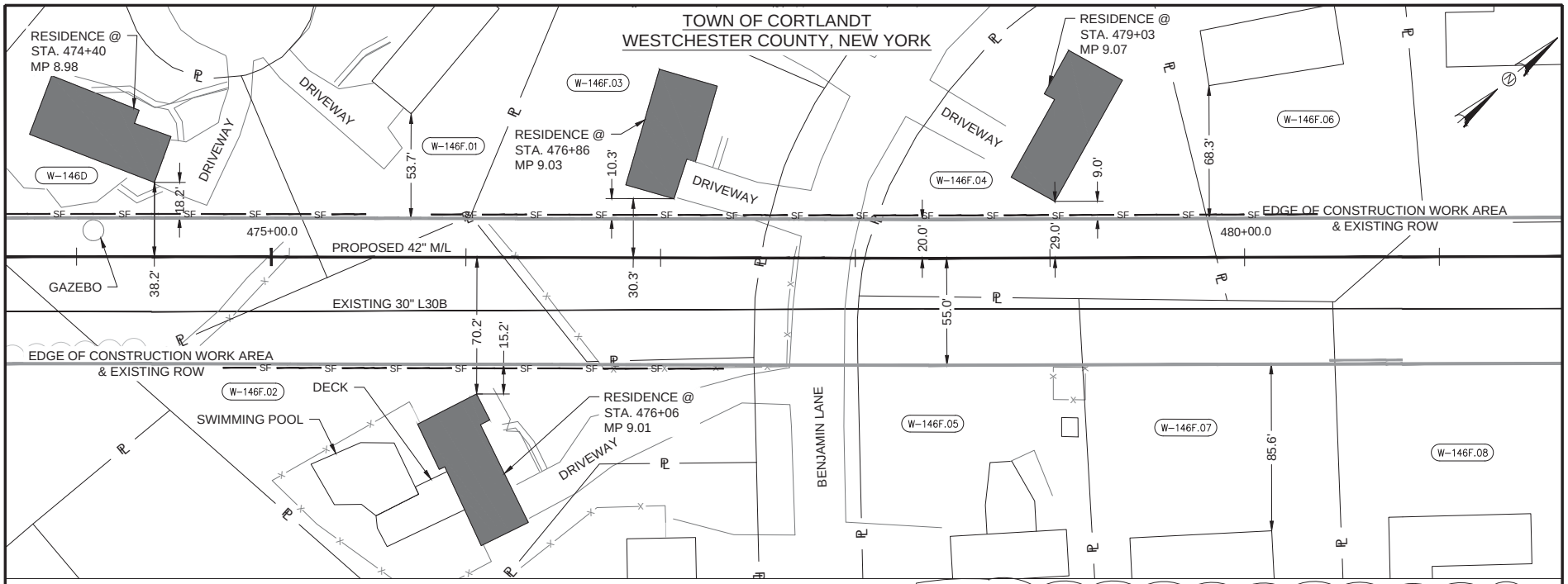

SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 474+40 THERE IS A STRUCTURE 18.2' LEFT OF THE CWA AND 38.2' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 476+06 THERE IS A STRUCTURE 15.2' RIGHT OF THE CWA AND 70.2' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 476+86 THERE IS A STRUCTURE 10.3' LEFT OF THE CWA AND 30.3' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 479+03 THERE IS A STRUCTURE 9.0' LEFT OF THE CWA AND 29.0' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

NOTES:

CWA IS LIMITED TO EXISTING R.O.W. @ TRACT W-146F.04

DRIVEWAY ACCESS WILL BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACT W-146F.03

D

D

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
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REV.#	DESCRIPTION	DATE
D	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
C	ISSUED FOR USE	09/11/14
B	ISSUED FOR CLIENT REVIEW	03/12/14
A	ISSUED FOR INTERNAL REVIEW	11/25/13

IG. #

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/25/13
SCALE:	1"=50'	DATE

STONY POINT TO DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: WESTCHESTER COUNTY, NEW YORK | REV.: D

YR.: 2016 | W.O.: | DWG. NO.: S7-E-7015

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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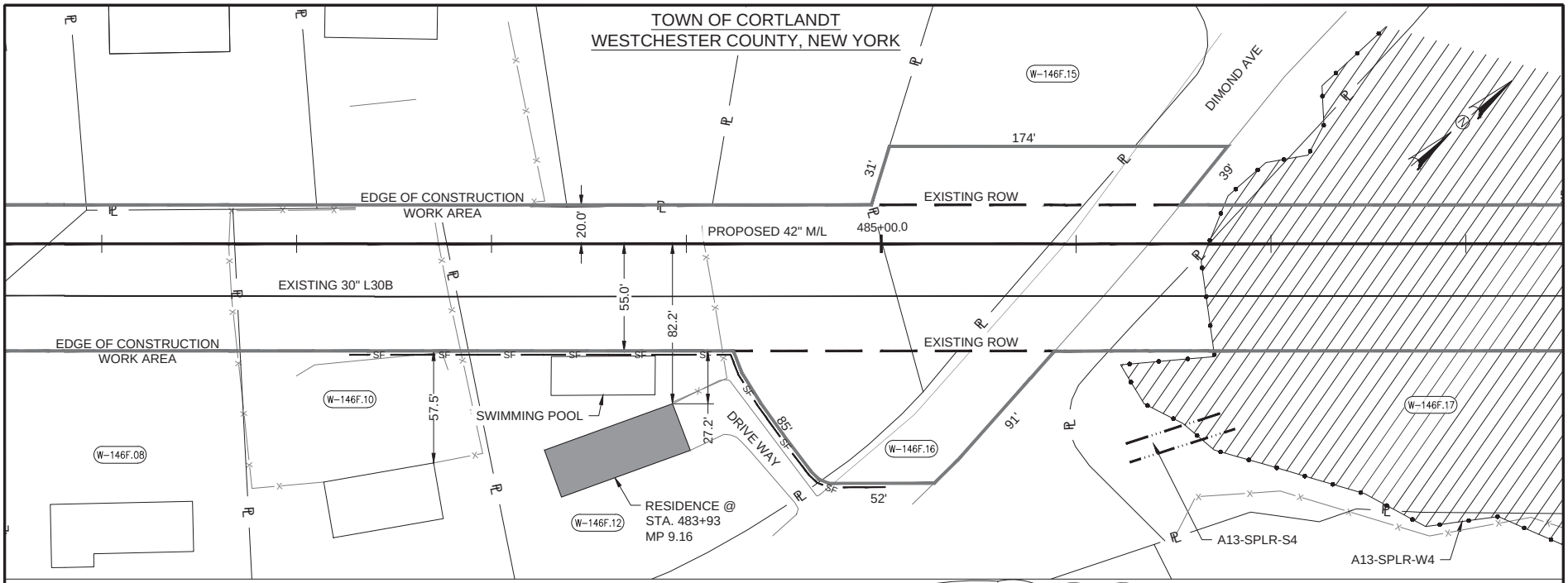

SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 483+93 THERE IS A RESIDENCE 27.2' RIGHT OF THE CWA AND 82.2' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

C

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
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REV.#	DESCRIPTION	DATE
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B	ISSUED FOR CLIENT REVIEW	03/12/14
A	ISSUED FOR INTERNAL REVIEW	11/25/13

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/25/13
SCALE:	1"=50'	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
STONY POINT TO DISCHARGE
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: WESTCHESTER COUNTY, NEW YORK | REV.: C
YR.: 2014 | W.O.: | DWG. NO.: S7-E-7016

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

I.G.#

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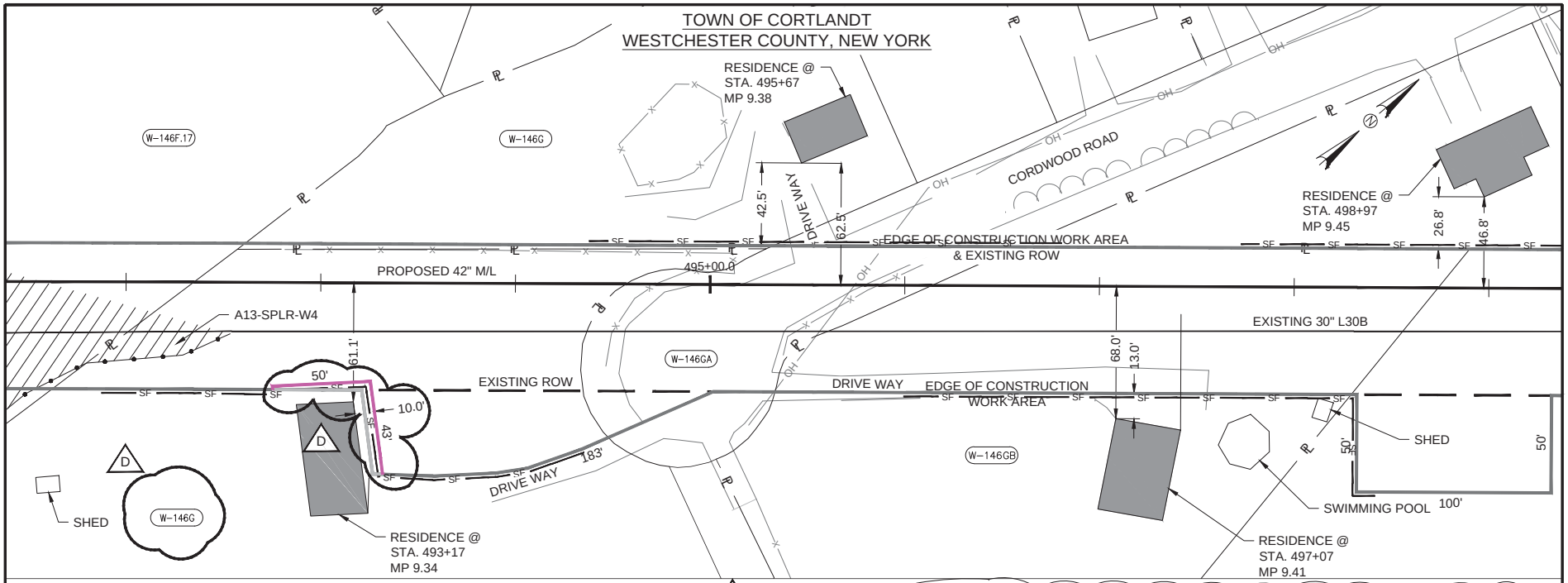


SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 493+17 THERE IS A RESIDENCE 10.0' LEFT OF THE CWA AND 61.1' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 495+67 THERE IS A RESIDENCE 42.5' LEFT OF THE CWA AND 62.5' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 497+07 THERE IS A RESIDENCE 13.0' RIGHT OF THE CWA AND 68.0' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L..

AT SURVEY STATION 498+97 THERE IS A RESIDENCE 26.8' LEFT OF THE CWA AND 46.8' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

NOTES:

DRIVEWAY ACCESS WILL BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACT W-146G

CWA IS LIMITED TO EXISTING R.O.W. @ TRACT 146-G

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
- THE SEWER LINE TECHNIQUE – THIS TECHNIQUE IS A LESS EFFICIENT ALTERNATIVE TO THE MAINLINE METHOD OF CONSTRUCTION. IT IS TYPICALLY USED WHEN THE PIPELINE IS TO BE INSTALLED IN VERY CLOSE PROXIMITY TO AN EXISTING STRICTURE OR WHEN AN OPEN DITCH WOULD ADVERSELY IMPACT A RESIDENTIAL OR COMMERCIAL STRUCTURE. THE TECHNIQUE INVOLVES INSTALLING PIPE ONE JOINT AT A TIME WHEREBY THE WELDING, X-RAY AND COATING ACTIVITIES ARE ALL PERFORMED IN THE OPEN TRENCH. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED OR THE OPEN TRENCH IS COVERED WITH STEEL PLATES OR TIMBER MATS.
- TRAFFIC CONTROL WILL CONSIST OF DEVICES OUTLINED IN STATE AND LOCAL CODES ACCOMPANIED BY LOCAL LAW ENFORCEMENT DETAILS AND QUALIFIED FLAGMEN TO SAFELY COORDINATE TRANSPORT OF PIPELINE CONSTRUCTION PERSONNEL, EQUIPMENT, AND MATERIAL.
- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL-FREE LANDOWNER HOTLINE IS 1-866-873-2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

REV.#	DESCRIPTION	DATE
D	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
C	ISSUED FOR USE	09/11/14
B	ISSUED FOR CLIENT REVIEW	03/12/14
A	ISSUED FOR INTERNAL REVIEW	11/25/13

IG.#

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/25/13
SCALE:	1"=50'	DATE

STONY POINT TO DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

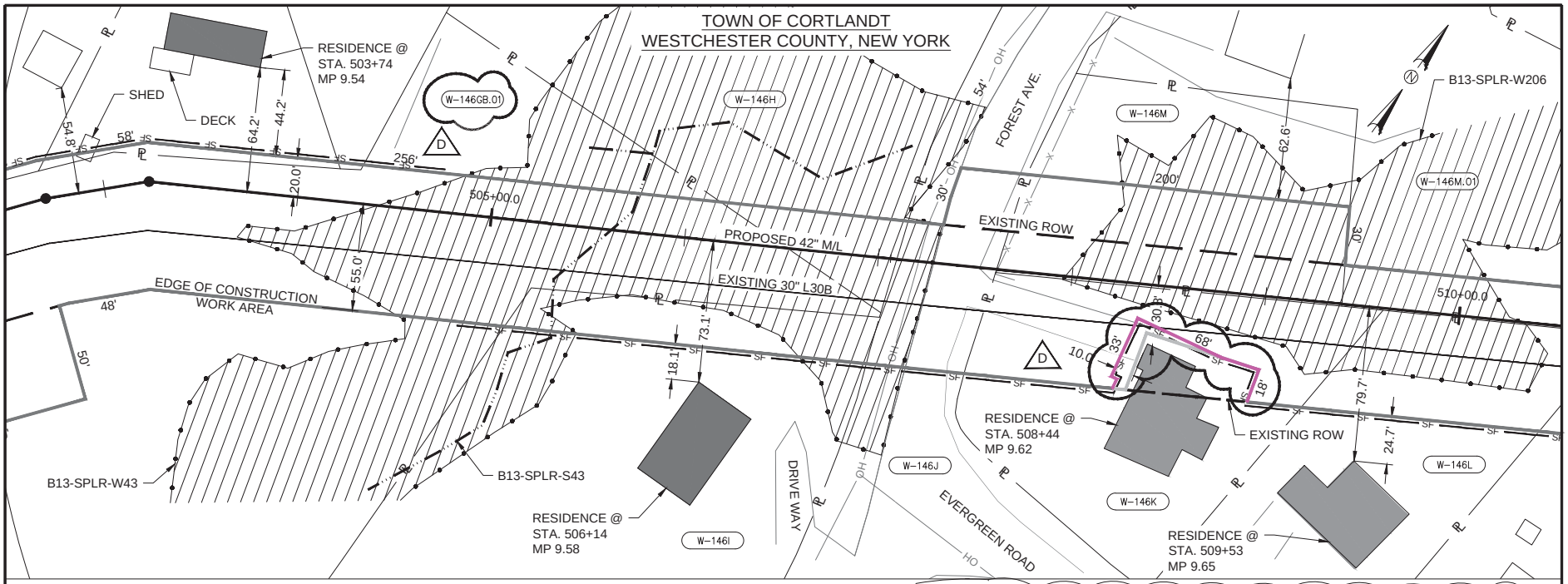
LOC.: WESTCHESTER COUNTY, NEW YORK | REV.: D

YR.: 2016 | W.O.: | DWG. NO.: S7-E-7017

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\S7-E-7017.dwg – PLOT TIME: 9/25/2014 4:30 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 503+74 THERE IS A RESIDENCE 44.2' LEFT OF THE CWA AND 64.2' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 506+14 THERE IS A RESIDENCE 18.1' RIGHT OF THE CWA AND 73.1' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 508+44 THERE IS A RESIDENCE 10.0' RIGHT OF THE CWA AND 30.8' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L. D

AT SURVEY STATION 509+53 THERE IS A RESIDENCE 24.7' RIGHT OF THE CWA AND 79.7' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

NOTES:

DRIVEWAY ACCESS WILL BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACT W-146K

D

D

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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STONY POINT TO DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

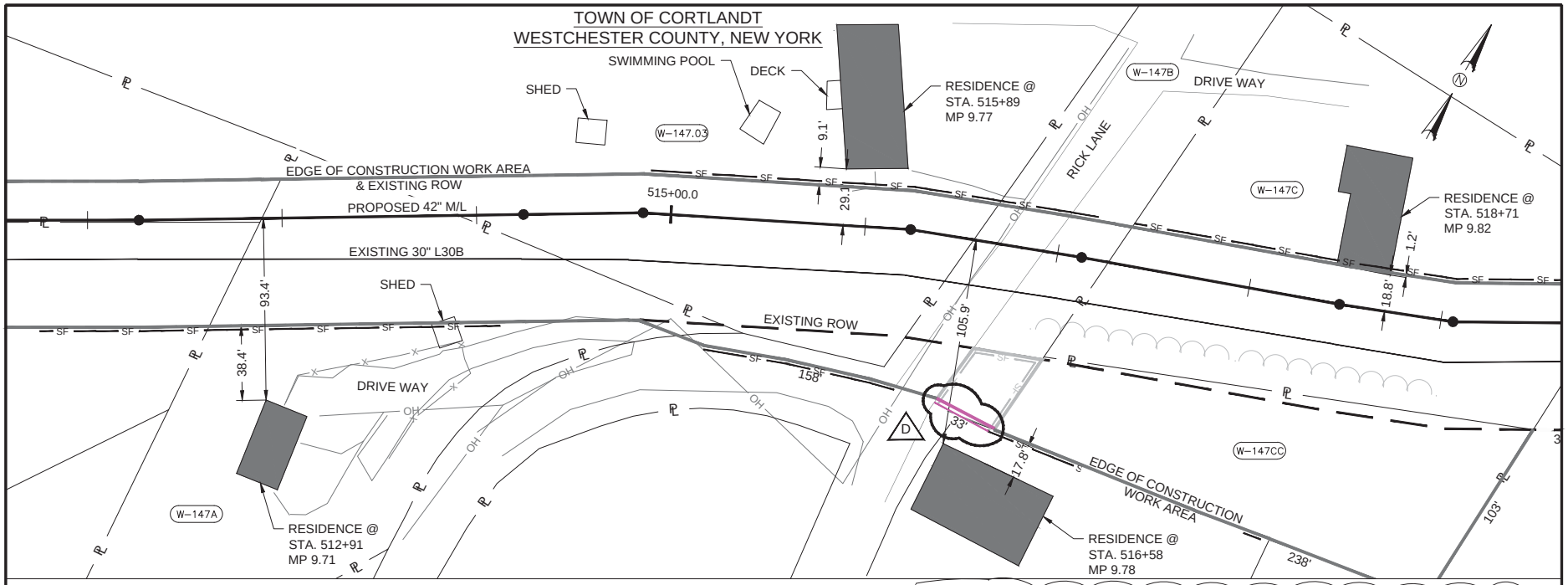
LOC.: WESTCHESTER COUNTY, NEW YORK | REV.: D

YR.: 2016 | W.O.: | DWG. NO.: S7-E-7018

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\S7-E-7018.dwg – PLOT TIME: 9/25/2014 4:33 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 512+91 THERE IS A RESIDENCE 38.4' RIGHT OF THE CWA AND 93.4' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 515+89 THERE IS A RESIDENCE 9.1' LEFT OF THE CWA AND 29.1' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 516+58 THERE IS A RESIDENCE 17.8' RIGHT OF THE CWA AND 105.9' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 518+71 THERE IS A RESIDENCE 1.2' LEFT OF THE CWA AND 18.8' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

NOTES:

CWA IS LIMITED TO EXISTING R.O.W. @ TRACTS W-147.03 & W-147C

D

D

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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IG.#

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/25/13
SCALE:	1"=50'	DATE

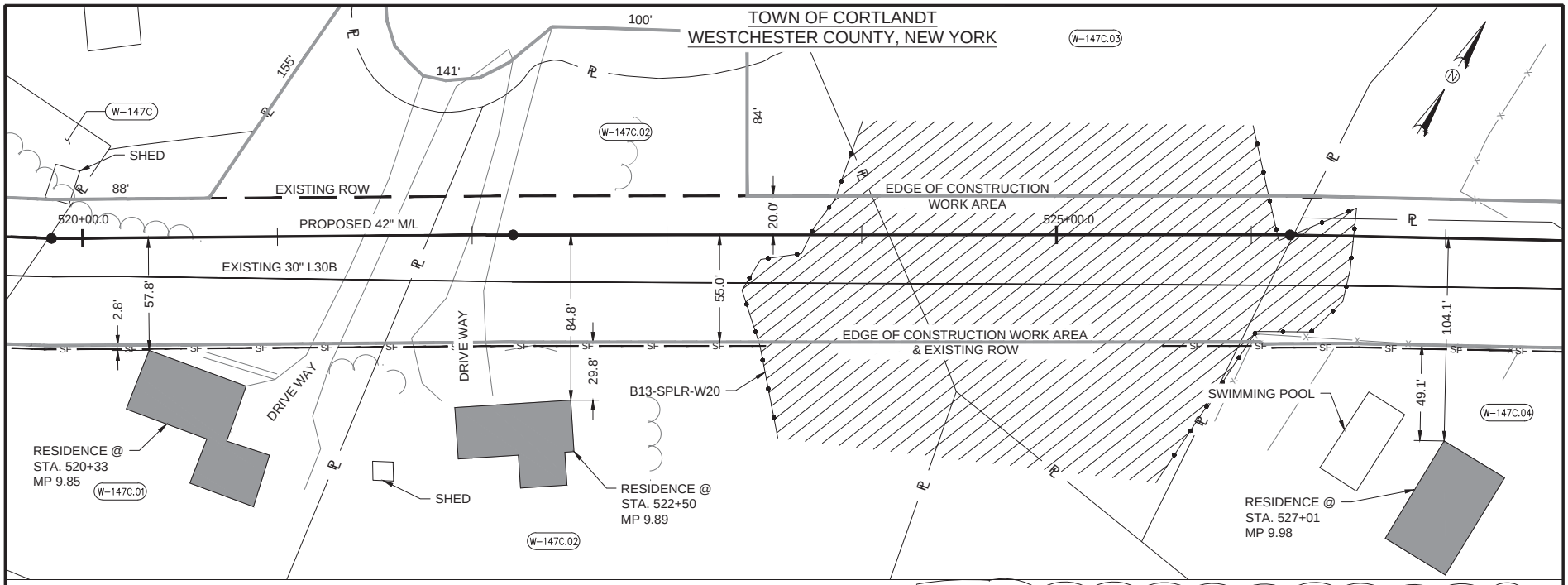
STONY POINT TO DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: WESTCHESTER COUNTY, NEW YORK | REV.: D
YR.: 2016 | W.O.: | DWG. NO.: S7-E-7019

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\S7-E-7019.dwg – PLOT TIME: 9/25/2014 4:35 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 520+33 THERE IS A RESIDENCE 2.8' RIGHT OF THE CWA AND 57.8' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 522+50 THERE IS A RESIDENCE 29.8' RIGHT OF THE CWA AND 84.8' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 527+01 THERE IS A RESIDENCE 49.1' RIGHT OF THE CWA AND 104.1' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

D

NOTES:

DRIVEWAY ACCESS WILL BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACTS 147C.01 & W-147C.02

CWA IS LIMITED TO THE EXISTING R.O.W. @ TRACT W-147C.01

D

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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B	ISSUED FOR CLIENT REVIEW	03/12/14
A	ISSUED FOR INTERNAL REVIEW	11/26/13

IG. #

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/26/13
SCALE:	1"=50'	DATE

STONY POINT TO DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

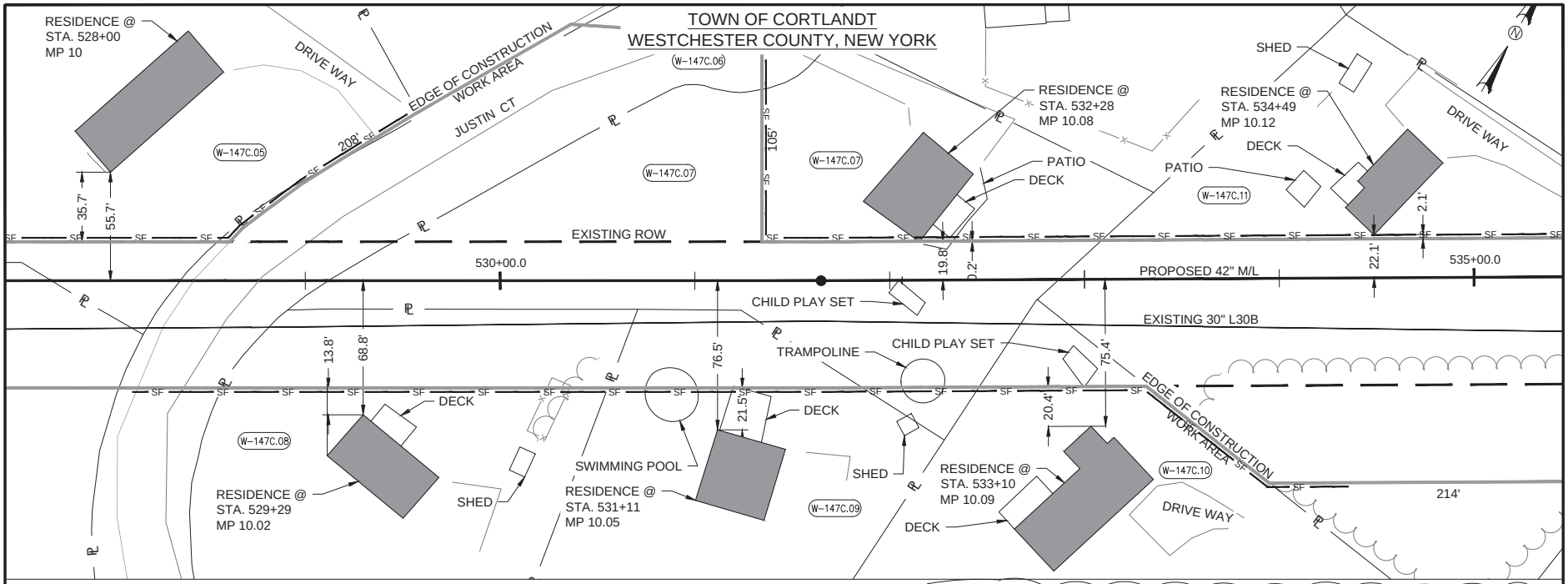
LOC.: WESTCHESTER COUNTY, NEW YORK | REV.: D

YR.: 2016 | W.O.: | DWG. NO.: S7-E-7020

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\S7-E-7020.dwg – PLOT TIME: 9/25/2014 4:41 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
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- TREE LINE

DESCRIPTION:

AT SURVEY STATION 528+00 THERE IS A RESIDENCE 35.7' LEFT OF THE CWA AND 55.7' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 529+29 THERE IS A RESIDENCE 13.8' RIGHT OF THE CWA AND 68.8' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 531+11 THERE IS A RESIDENCE 21.5' RIGHT OF THE CWA AND 76.5' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 532+28 THERE IS A RESIDENCE AT THE EDGE OF THE CWA AND 19.8' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 533+10 THERE IS A RESIDENCE 20.4' RIGHT OF THE CWA AND 75.4' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 534+49 THERE IS A RESIDENCE 2.1' LEFT OF THE CWA AND 22.1' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

NOTES:

CWA IS LIMITED TO THE EXISTING R.O.W. @ TRACTS W-147C.07, W-147C.10, W-147C.09, & W-147C-11.

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NOTES CONTINUED:

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STONY POINT TO DISCHARGE
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PROPOSED 42" M/L
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LOC.: WESTCHESTER COUNTY, NEW YORK | REV.: D
YR.: 2016 | W.O.: | DWG. NO.: S7-E-7021

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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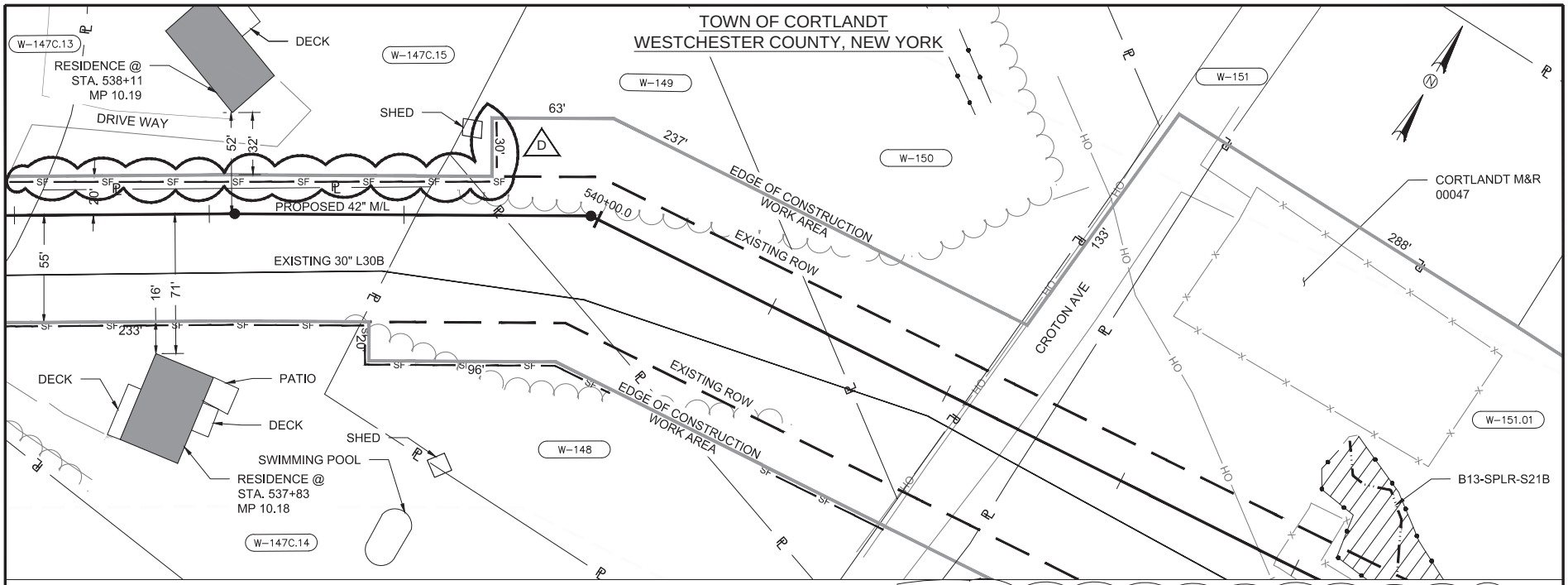


SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 538+11 THERE IS A RESIDENCE 16' RIGHT OF THE CWA AND 71' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 537+83 THERE IS A RESIDENCE 32' LEFT OF THE CWA AND 52' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

D

NOTES:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
- THE SEWER LINE TECHNIQUE – THIS TECHNIQUE IS A LESS EFFICIENT ALTERNATIVE TO THE MAINLINE METHOD OF CONSTRUCTION. IT IS TYPICALLY USED WHEN THE PIPELINE IS TO BE INSTALLED IN VERY CLOSE PROXIMITY TO AN EXISTING STRICTURE OR WHEN AN OPEN DITCH WOULD ADVERSELY IMPACT A RESIDENTIAL OR COMMERCIAL STRUCTURE. THE TECHNIQUE INVOLVES INSTALLING PIPE ONE JOINT AT A TIME WHEREBY THE WELDING, X-RAY AND COATING ACTIVITIES ARE ALL PERFORMED IN THE OPEN TRENCH. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED OR THE OPEN TRENCH IS COVERED WITH STEEL PLATES OR TIMBER MATS.
- TRAFFIC CONTROL WILL CONSIST OF DEVICES OUTLINED IN STATE AND LOCAL CODES ACCOMPANIED BY LOCAL LAW ENFORCEMENT DETAILS AND QUALIFIED FLAGMEN TO SAFELY COORDINATE TRANSPORT OF PIPELINE CONSTRUCTION PERSONNEL, EQUIPMENT, AND MATERIAL.
- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL-FREE LANDOWNER HOTLINE IS 1-866-873-2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

REV.#	DESCRIPTION	DATE
D	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
C	ISSUED FOR USE	09/11/14
B	ISSUED FOR CLIENT REVIEW	03/12/14
A	ISSUED FOR INTERNAL REVIEW	11/20/13

IG. #

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

STONY POINT TO DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

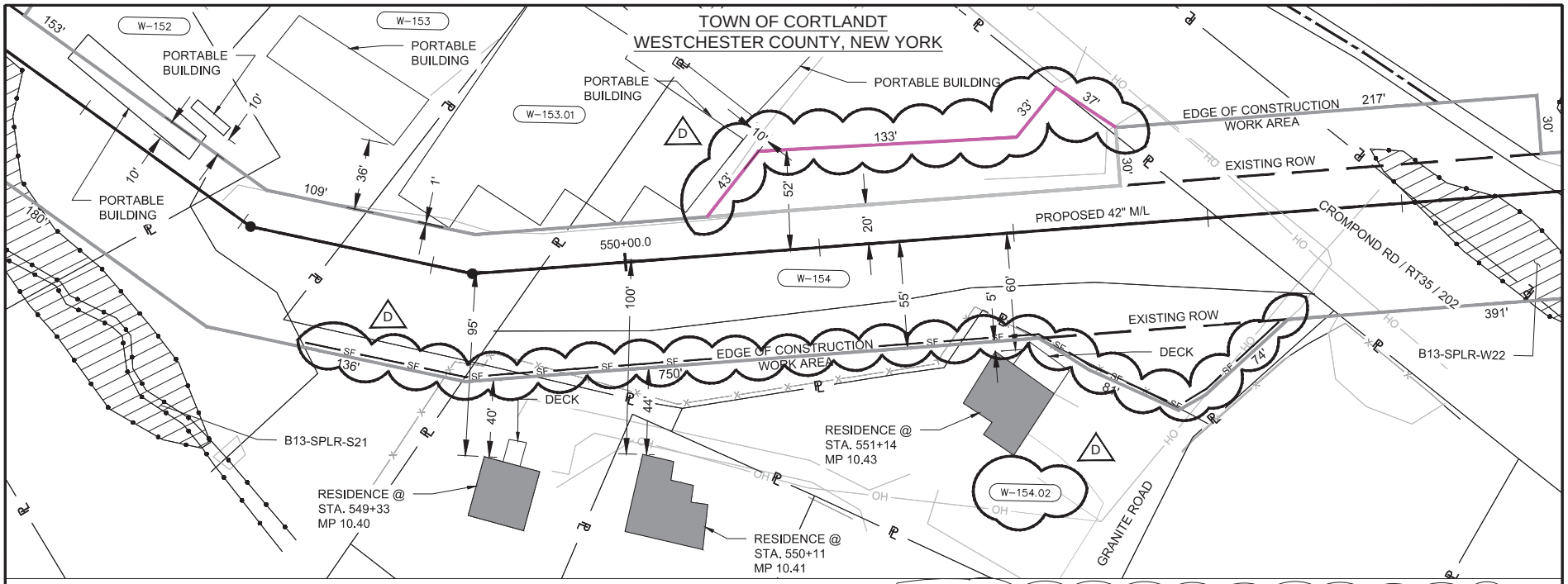
LOC.: WESTCHESTER COUNTY, NEW YORK | REV.: D

YR.: 2016 | W.O.: | DWG. NO.: S7-E-7022

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\S7-E-7022.dwg – PLOT TIME: 9/25/2014 4:48 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 549+33 THERE IS A RESIDENCE 40' OF THE CWA AND 95' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 550+11 THERE IS A RESIDENCE 44' LEFT OF THE CWA AND 100' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 551+14 THERE IS A RESIDENCE 5' LEFT OF THE CWA AND 60' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

D

NOTES:

CWA IS LIMITED TO THE EXISTING R.O.W. @ TRACT W-154.02

DRIVEWAY ACCESS WILL BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACT W-153.01

D

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL-FREE LANDOWNER HOTLINE IS 1-866-873-2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

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IG. #

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
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SCALE:	1"=50'	DATE

STONY POINT TO DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: WESTCHESTER COUNTY, NEW YORK | REV.: D

YR.: 2016 | W.O.: | DWG. NO.: S7-E-7023

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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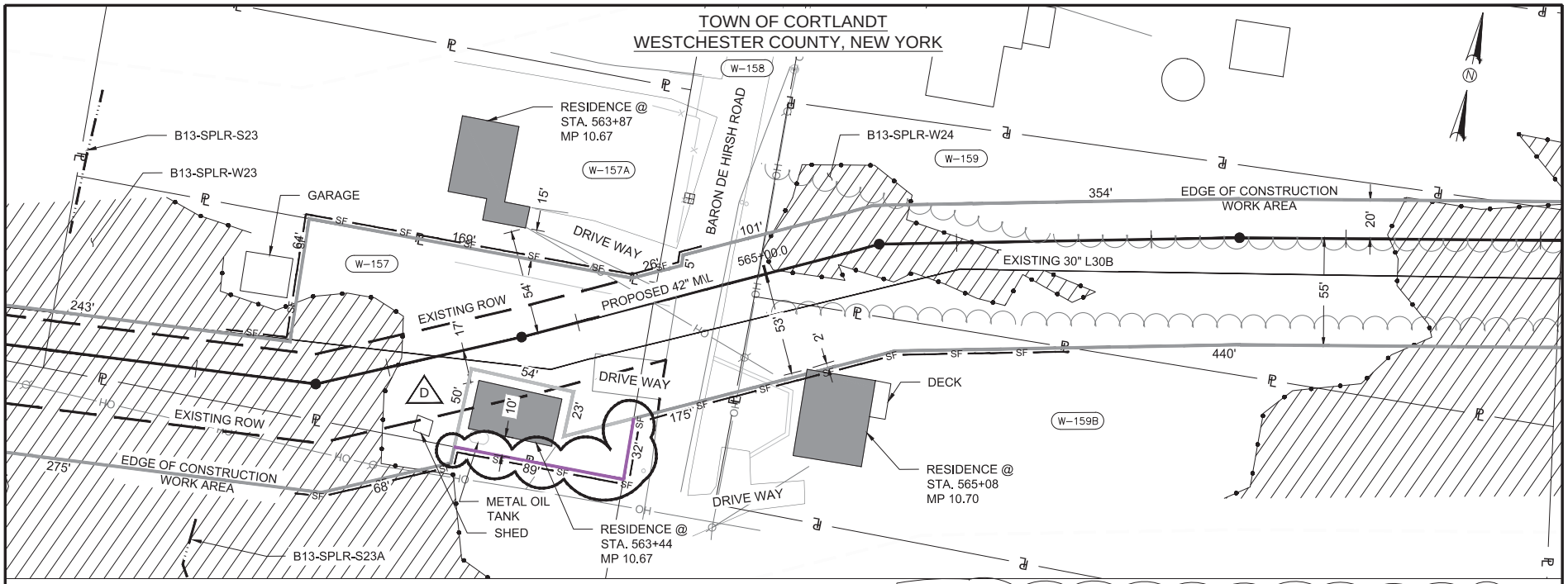
TOWN OF CORTLANDT
WESTCHESTER COUNTY, NEW YORK



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 563+44 THERE IS A RESIDENCE INSIDE OF THE CWA AND 17' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 563+87 THERE IS A RESIDENCE 15' RIGHT OF THE CWA AND 54' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 565+08 THERE IS A STRUCTURE AT THE EDGE OF THE CWA AND 53' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

NOTES:

CWA IS LIMITED TO EXISTING R.O.W. @ TRACT W-159B

DRIVEWAY ACCESS WILL BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACT W-157A

SPECTRA ENERGY HAS PURCHASED THE RESIDENCE @ TRACT W-157, TO BE REMOVED

D

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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IG. #

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

STONY POINT TO DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: WESTCHESTER COUNTY, NEW YORK | REV.: D
YR.: 2016 | W.O.: | DWG. NO.: S7-E-7024

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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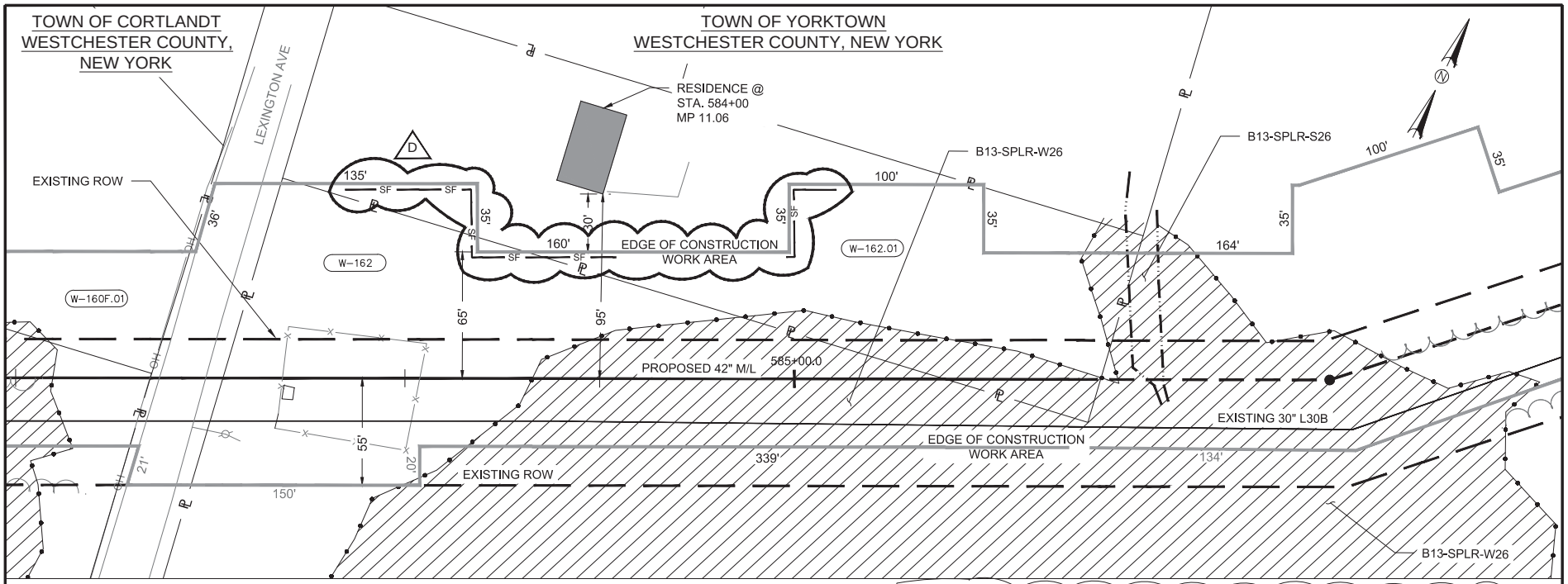

SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

DESCRIPTION:

AT SURVEY STATION 584+00 THERE IS A RESIDENCE 30' LEFT OF THE CWA AND 95' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

D

NOTES:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- PROPOSED RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

REV.#	DESCRIPTION	DATE
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IG. #

PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

STONY POINT TO DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: WESTCHESTER COUNTY, NEW YORK | REV.: D

YR.: 2016 | W.O.: | DWG. NO.: S7-E-7025

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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AIM PROJECT
RESIDENTIAL SITE SPECIFIC CROSSING PLANS - DETAIL SHEET

General

In general, the following measures will be taken in residential properties:

- Notify local residents in advance of construction activities;
- Install safety fence, a minimum 100' on either side of residences as required, along the edge of the proposed Construction Work Area (CWA), to maintain equipment, material, and spoil within the CWA.
- Preserve all mature trees and landscaping where practical, consistent with construction safety;
- Complete installation of welded pipeline sections as quickly as reasonably possible, consistent with prudent pipeline construction practices, to minimize construction time affecting a neighborhood;
- Backfill the trench as soon as the pipe is laid or place temporary steel plates or timber mats over the trench.
- Complete final cleanup (including final grading) and installation of permanent erosion control measures within 10 days after the trench is backfilled, weather conditions permitting.
- Configure use of CWA to provide access for emergency vehicles and residential driveways, including materials available on site to provide temporary bridging across the pipeline trench if necessary.
- Road surfaces would be restored to drivable condition as soon as practicable so that normal access could resume.

Construction Techniques

One of the following techniques shall be utilized for a longitudinal distance of 100 feet either side of the residence:

- The Sewer Line Technique - this technique is a less efficient alternative to the mainline method of construction. It is typically used when the pipeline is to be installed in very close proximity to an existing stricture or when an open ditch would adversely impact a residential or commercial structure. The technique involves installing pipe one joint at a time whereby the welding, x-ray and coating activities are all performed in the open trench. At the end of each day the newly installed pipe is backfilled or the open trench is covered with steel plates or timber mats.
- Drag Section Technique - This technique is also a less efficient alternative to the mainline method. It is normally preferred over the sewer line alternative. This technique involves the trenching, installation and backfill of a prefabricated length of pipe containing several segments all in one day. At the end of each day the newly installed pipe is backfilled or the open trench is covered with steel plates or timber mats.
- In the take up and relay segments, the soil cover over the existing pipeline will be excavated to remove the existing pipe. The removed pipe will then be transported away from the construction work area and properly disposed. The trench will be backfilled until such time as the construction crews are prepared to install the new pipeline. The replacement pipe will be installed in approximately the same location as the existing pipe using one of the above construction methods.
- Where the pipeline facilities cross residential properties, topsoil will be stripped and stockpiled separately from the subsoil during grading within the construction workspace as shown on the corresponding Typical ROW Configuration figure ES-0001
- Reseed all disturbed lawns with a seed mixture acceptable to landowner or comparable to the adjoining lawn.
- Landowners shall be compensated for damages to ornamental shrubs and other landscape plantings based on the appraised value. Landowners shall be compensated for damages in a fair and reasonable manner, and as specified in the damage provision within the controlling easement on each property.

Workspace Restrictions

- Existing structures including but not limited to; fences, sheds, swing-sets, trampolines, shrubbery, trees, gardens, flowerbeds, pools will be removed from the CWA. Landowners will be made aware of what will be relocated during negotiations for temporary workspace and damages.
- Structures within the existing permanent easement area will be allowed to be returned to the existing permanent easement provided they are not in violation of Algonquin's existing permanent easement rights that will be made available to landowners.
- Structures outside the existing permanent easement, however within the construction work space, will be replaced as close as practicable to their previous locations.
- Removal and replacement responsibility will be an issue that is negotiated with each landowner.

Anticipated Construction Schedule

- Pipeline construction work is typically scheduled to take advantage of daylight hours, generally starting at 7:00 a.m. and completing at 6:00 p.m. (6 days a week).
- Pipeline installation progress should range from 40' to 200' each day.

Public Safety Considerations

- Traffic control will consist of devices outlined in state and local codes accompanied by local law enforcement details and qualified flagmen to safely coordinate transport of pipeline construction personnel, equipment, and material.
- Site Security will be evaluated on a case by case basis, employing daily and/or 24 hour qualified security services as required.
- Algonquin will staff a Landowner Hotline to receive landowner construction concerns. The toll-free Landowner Hotline is 1-866-873-2579. The Landowner Hotline will be staffed Monday through Friday from 7 AM to 5 PM and on Saturday from 7 AM to 12 PM by Algonquin personnel from the Cheshire, Connecticut field office. After these hours, a call forwarding system will be available to receive calls and page the Complaint Resolution Coordinator.

Other Considerations

- Fugitive dust will result from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. The amount of dust generated will be a function of construction activity, soil type, soil moisture content, wind speed, precipitation, vehicle traffic, vehicle types, and roadway characteristics. Algonquin will employ proven construction-related practices to control fugitive dust such as application of water or other commercially-available dust control agents on unpaved areas subject to frequent vehicle traffic. In addition, construction equipment will be operated only on an as-needed basis.
- Noise mitigation measures to be employed during construction include ensuring that sound muffling devices that are provided as standard equipment by the construction equipment manufacturer are kept in good working order.

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REV.#	DESCRIPTION	DATE
C	REVISED PER DEIS/USACOE COMMENTS	09/27/14
B	ISSUED FOR CLIENT REVIEW	03/12/14
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IG. #

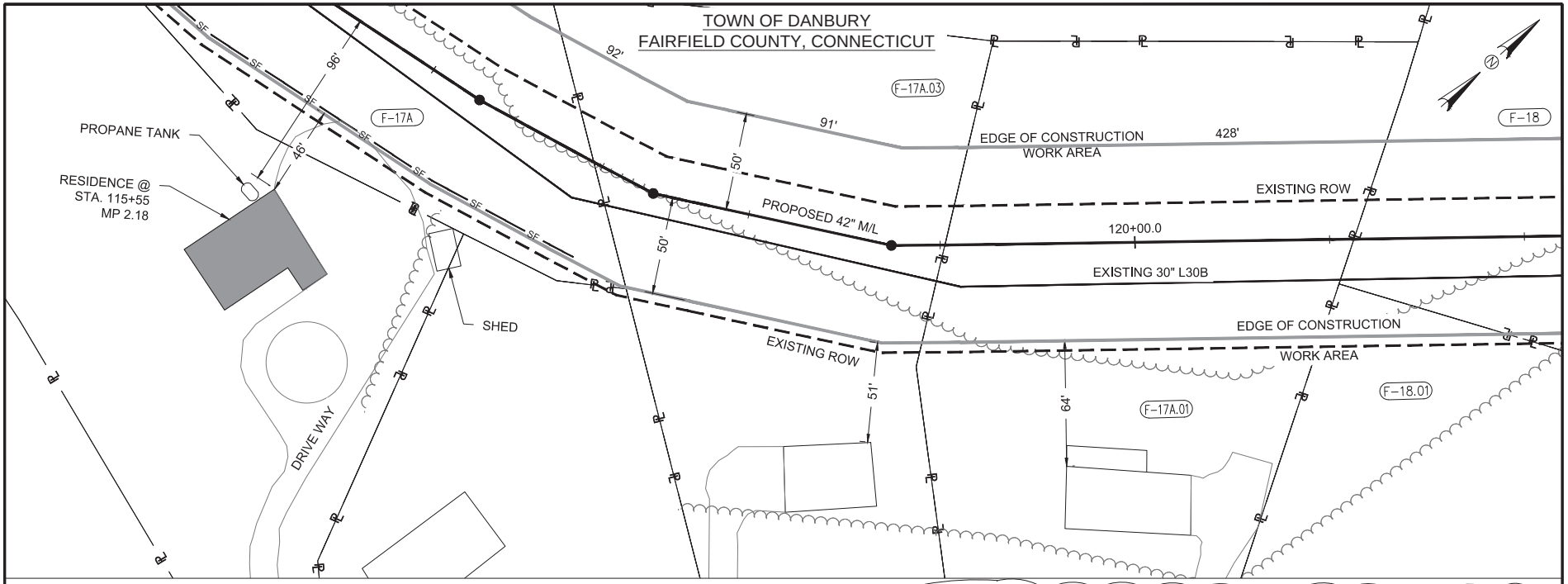
PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/13/13
SCALE:		DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
RESIDENTIAL SITE SPECIFIC CROSSING PLANS
DETAIL SHEET

LOC.: REV.: C
YR.: 2014 W.O.: DWG. NO.: S7-E-7026

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

DESCRIPTION:

AT SURVEY STATION 115+55 THERE IS A RESIDENCE 46' RIGHT OF THE CWA AND 96' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

E

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
- THE SEWER LINE TECHNIQUE - THIS TECHNIQUE IS A LESS EFFICIENT ALTERNATIVE TO THE MAINLINE METHOD OF CONSTRUCTION. IT IS TYPICALLY USED WHEN THE PIPELINE IS TO BE INSTALLED IN VERY CLOSE PROXIMITY TO AN EXISTING STRICTURE OR WHEN AN OPEN DITCH WOULD ADVERSELY IMPACT A RESIDENTIAL OR COMMERCIAL STRUCTURE. THE TECHNIQUE INVOLVES INSTALLING PIPE ONE JOINT AT A TIME WHEREBY THE WELDING, X-RAY AND COATING ACTIVITIES ARE ALL PERFORMED IN THE OPEN TRENCH. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED OR THE OPEN TRENCH IS COVERED WITH STEEL PLATES OR TIMBER MATS.
- TRAFFIC CONTROL WILL CONSIST OF DEVICES OUTLINED IN STATE AND LOCAL CODES ACCOMPANIED BY LOCAL LAW ENFORCEMENT DETAILS AND QUALIFIED FLAGMEN TO SAFELY COORDINATE TRANSPORT OF PIPELINE CONSTRUCTION PERSONNEL, EQUIPMENT, AND MATERIAL.
- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL-FREE LANDOWNER HOTLINE IS 1-866-873-2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

REV.#	DESCRIPTION	DATE
E	REVISED PER DEIS/USACOE COMMENTS	09/27/14
D	RE-ISSUED FOR CLIENT REVIEW	03/13/2014
C	RE-ISSUED FOR CLIENT REVIEW	03/06/2014
B	ISSUED FOR CLIENT REVIEW	12/12/13

IC.#

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
SOUTHEAST DISCHARGE
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: FAIRFIELD COUNTY, CONNECTICUT | REV.: E

YR.: 2014 | W.O.: | DWG. NO.: SQ-E-7001

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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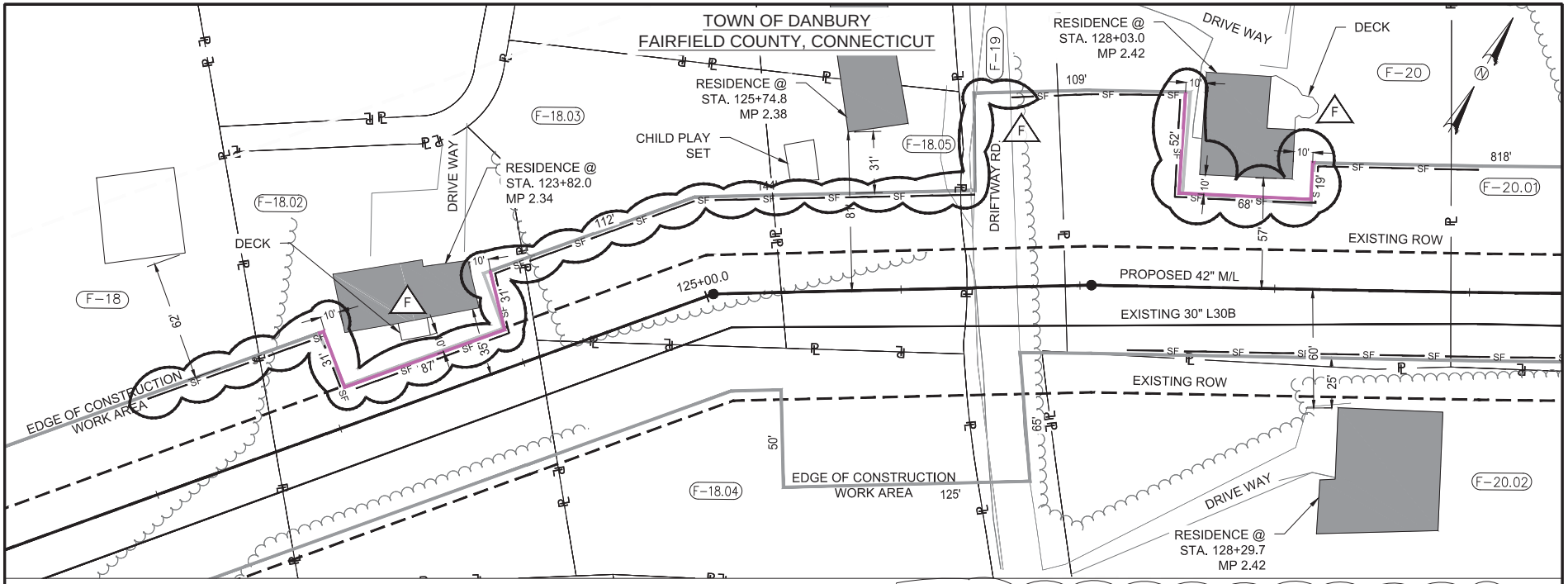

SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 123+82.0 THERE IS A RESIDENCE 10' LEFT OF THE CWA AND 36' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L. F

AT SURVEY STATION 125+74.8 THERE IS A RESIDENCE 31' LEFT OF THE CWA AND 81' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 128+03.0 THERE IS A RESIDENCE 10' LEFT OF THE CWA AND 60' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L. F

AT SURVEY STATION 128+29.7 THERE IS A RESIDENCE 25' RIGHT OF THE CWA AND 60' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

F

NOTES:

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- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
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REV.#	DESCRIPTION	DATE
F	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
E	ISSUED FOR USE	09/11/2014
D	RE-ISSUED FOR CLIENT REVIEW	03/13/2014
C	RE-ISSUED FOR CLIENT REVIEW	03/06/2014

I.G.#

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

SOUTHEAST DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

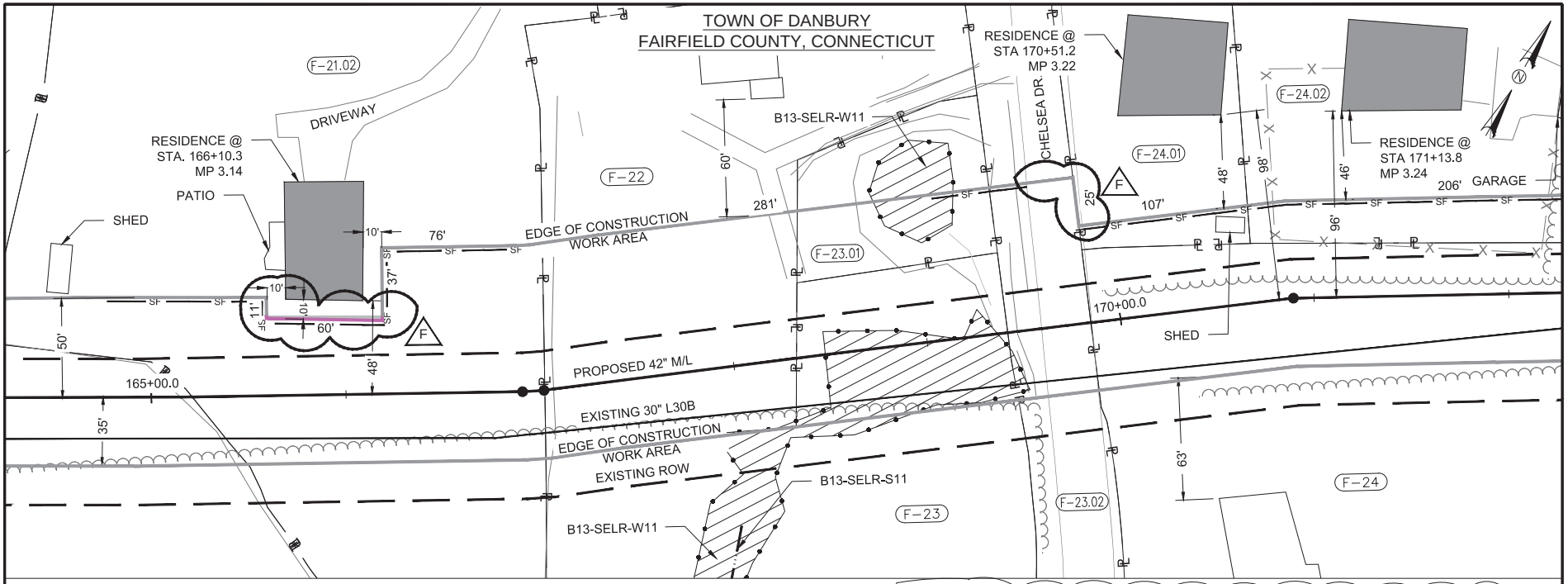
LOC.: FAIRFIELD COUNTY, CONNECTICUT | REV.: F

YR.: 2016 | W.O.: | DWG. NO.: SQ-E-7002

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\SQ-E-7002.dwg – PLOT TIME: 9/25/2014 4:57 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 166+10.3 THERE IS A RESIDENCE 7' LEFT OF THE CWA AND 53' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 170+51.2 THERE IS A RESIDENCE 48' LEFT OF THE CWA AND 98' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 171+13.8 THERE IS A RESIDENCE 46' LEFT OF THE CWA AND 96' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

F

NOTES:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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REV.#	DESCRIPTION	DATE
F	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
E	ISSUED FOR USE	09/11/2014
D	RE-ISSUED FOR CLIENT REVIEW	03/13/2014
C	RE-ISSUED FOR CLIENT REVIEW	03/06/2014

I.C.#

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

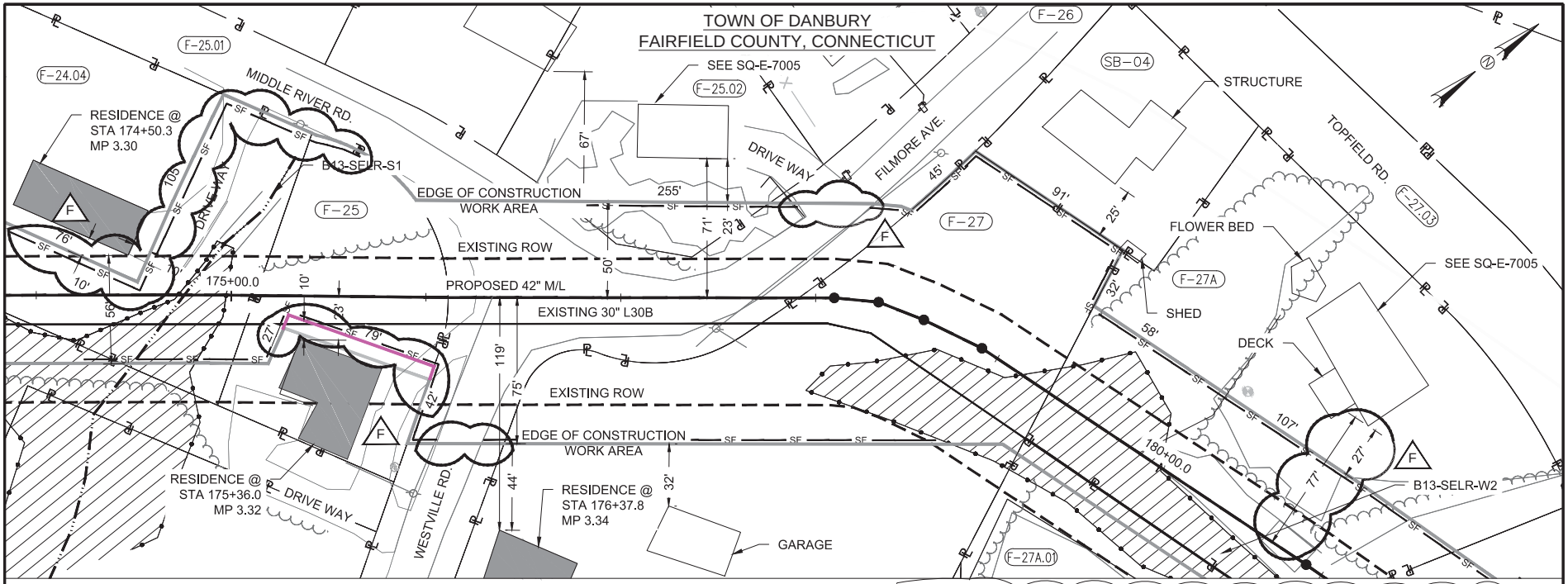
SOUTHEAST DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: FAIRFIELD COUNTY, CONNECTICUT | REV.: F
YR.: 2016 | W.O.: | DWG. NO.: SQ-E-7003

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\SQ-E-7003.dwg – PLOT TIME: 9/25/2014 4:59 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 174+50.3 THERE IS A RESIDENCE 11' LEFT OF THE CWA AND 56' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L. F

AT SURVEY STATION 175+36.0 THERE IS A RESIDENCE 10' RIGHT OF THE CWA AND 23' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L. F

AT SURVEY STATION 176+37.8 THERE IS A RESIDENCE 44' RIGHT OF THE CWA AND 119' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

NOTES:

DRIVEWAY ACCESS WILL BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACTS F-24.04 & F-25.02 F

F

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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REV.#	DESCRIPTION	DATE
F	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
E	ISSUED FOR USE	09/11/2014
D	RE-ISSUED FOR CLIENT REVIEW	03/13/2014
C	RE-ISSUED FOR CLIENT REVIEW	03/06/2014

I.C. #

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

SOUTHEAST DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

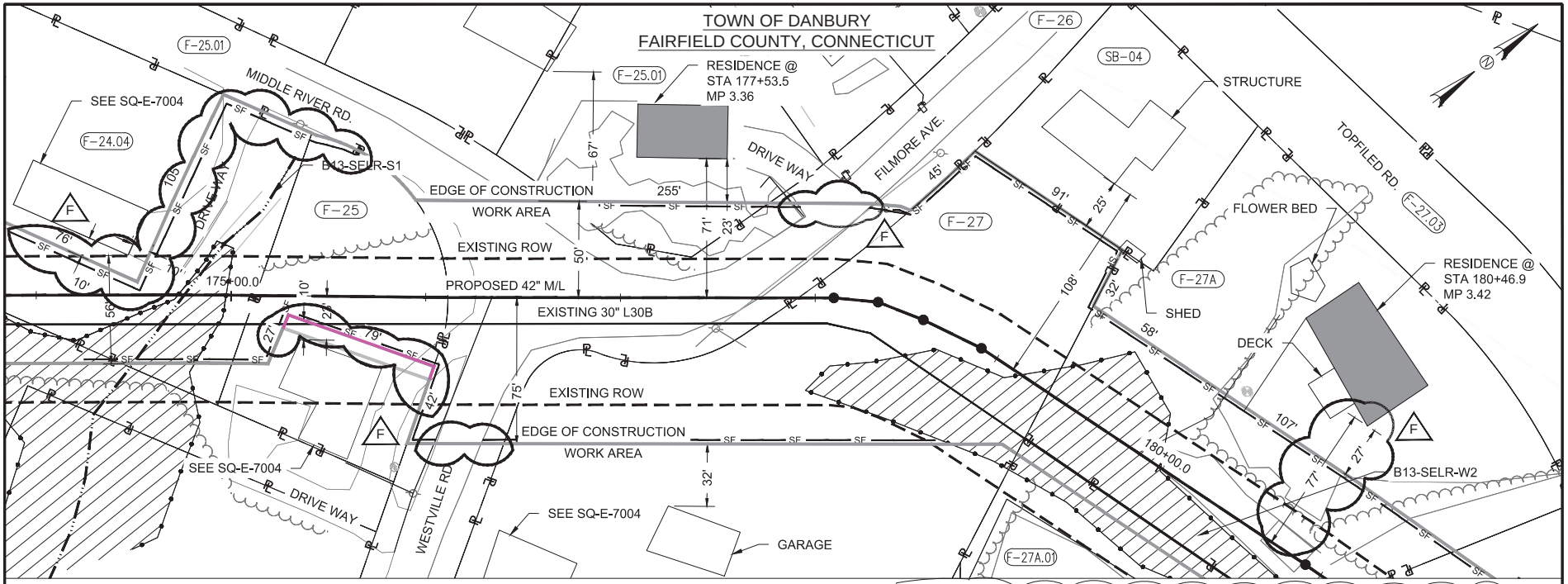
LOC.: FAIRFIELD COUNTY, CONNECTICUT | REV.: F

YR.: 2016 | W.O.: | DWG. NO.: SQ-E-7004

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\SQ-E-7004.dwg – PLOT TIME: 9/25/2014 5:02 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 177+53.5 THERE IS A RESIDENCE 23' LEFT OF THE CWA AND 71' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 179+06.3 THERE IS A STRUCTURE 25' LEFT OF THE CWA AND 108' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 180+46.9 THERE IS A RESIDENCE 28' LEFT OF THE CWA AND 77' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

NOTES:

DRIVEWAY ACCESS WILL BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACTS F-24.04 & F-25.01

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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DRAWN BY:	TMR	12/30/13
SCALE:	1"=50'	DATE

SOUTHEAST DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

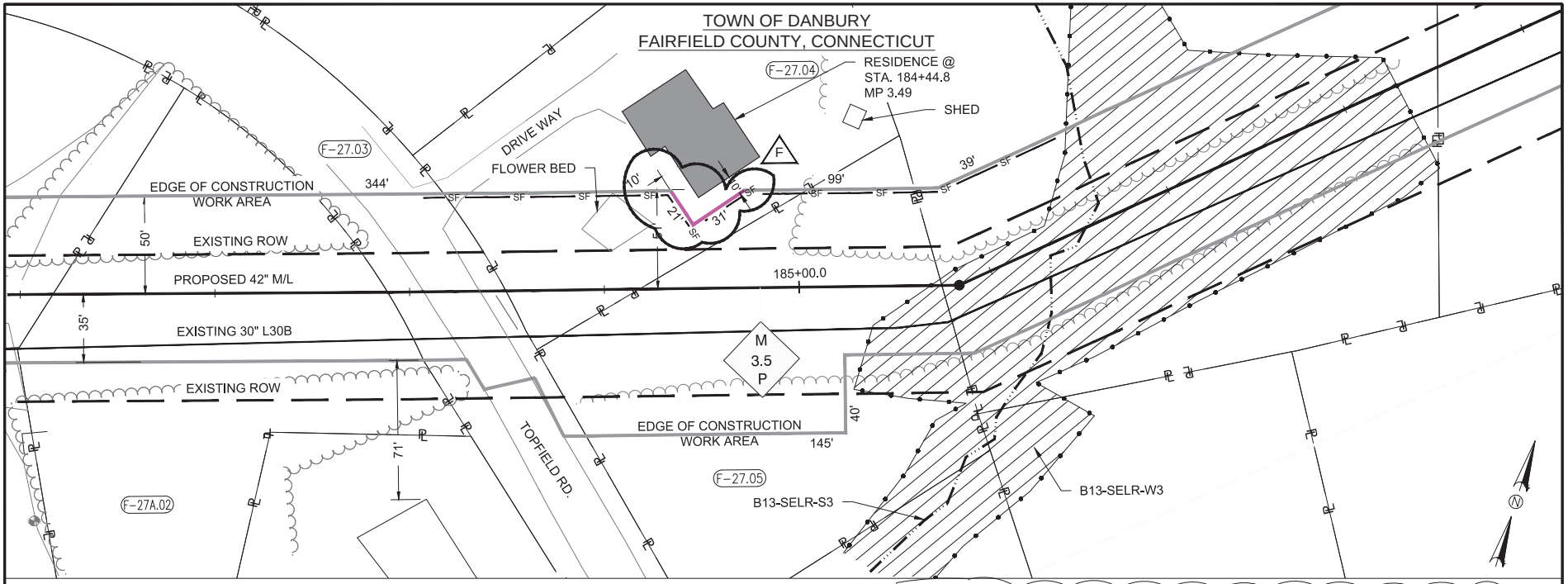
LOC.: FAIRFIELD COUNTY, CONNECTICUT | REV.: F

YR.: 2016 | W.O.: | DWG. NO.: SQ-E-7005

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\SQ-E-7005.dwg – PLOT TIME: 9/25/2014 5:05 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

DESCRIPTION:

AT SURVEY STATION 184+44.8 THERE IS A RESIDENCE 10' LEFT OF THE CWA AND 51' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L F

F

NOTES:

DRIVEWAY ACCESS WILL BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACT F-27.04

F

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
- THE SEWER LINE TECHNIQUE – THIS TECHNIQUE IS A LESS EFFICIENT ALTERNATIVE TO THE MAINLINE METHOD OF CONSTRUCTION. IT IS TYPICALLY USED WHEN THE PIPELINE IS TO BE INSTALLED IN VERY CLOSE PROXIMITY TO AN EXISTING STRICTURE OR WHEN AN OPEN DITCH WOULD ADVERSELY IMPACT A RESIDENTIAL OR COMMERCIAL STRUCTURE. THE TECHNIQUE INVOLVES INSTALLING PIPE ONE JOINT AT A TIME WHEREBY THE WELDING, X-RAY AND COATING ACTIVITIES ARE ALL PERFORMED IN THE OPEN TRENCH. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED OR THE OPEN TRENCH IS COVERED WITH STEEL PLATES OR TIMBER MATS.
- TRAFFIC CONTROL WILL CONSIST OF DEVICES OUTLINED IN STATE AND LOCAL CODES ACCOMPANIED BY LOCAL LAW ENFORCEMENT DETAILS AND QUALIFIED FLAGMEN TO SAFELY COORDINATE TRANSPORT OF PIPELINE CONSTRUCTION PERSONNEL, EQUIPMENT, AND MATERIAL.
- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL-FREE LANDOWNER HOTLINE IS 1-866-873-2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

F

LEGEND

PROPOSED PIPELINE	
EXISTING RIGHT-OF-WAY (ROW)	
NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)	
CONSTRUCTION WORK AREA (CWA)	
EXISTING PIPELINE	
FENCE LINE	X X
SAFETY FENCE	SF
PROPERTY LINE	PL
OVERHEAD POWER LINE	OH
TREE LINE	

REV.#	DESCRIPTION	DATE
F	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
E	ISSUED FOR USE	09/11/2014
D	RE-ISSUED FOR CLIENT REVIEW	03/13/2014
C	RE-ISSUED FOR CLIENT REVIEW	03/06/2014

IG. #

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

SOUTHEAST DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: FAIRFIELD COUNTY, CONNECTICUT | REV.: F

YR.: 2016 | W.O.: | DWG. NO.: SQ-E-7006

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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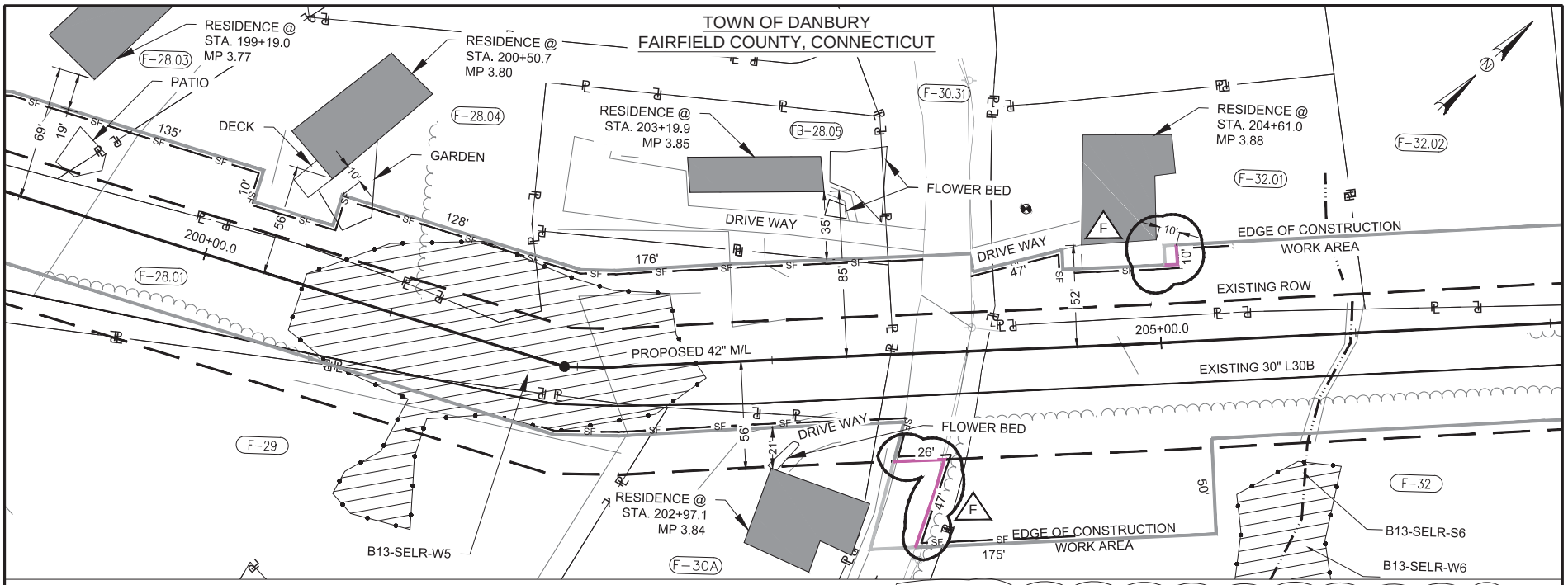
TOWN OF DANBURY
FAIRFIELD COUNTY, CONNECTICUT



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 199+19.0 THERE IS A RESIDENCE 19' LEFT OF THE CWA AND 69' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 200+50.7 THERE IS A RESIDENCE 10' LEFT OF THE CWA AND 56' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 202+97.1 THERE IS A RESIDENCE 21' RIGHT OF THE CWA AND 56' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L. F

AT SURVEY STATION 203+19.9 THERE IS A RESIDENCE 35' LEFT OF THE CWA AND 85' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 204+61.0 THERE IS A RESIDENCE 10' LEFT OF THE CWA AND 52' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L. F

F

NOTES:

DRIVEWAY ACCESS WILL BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACT F-32.01

F

NOTES CONTINUED:

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- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
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REV.#	DESCRIPTION	DATE
F	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
E	ISSUED FOR USE	09/11/2014
D	RE-ISSUED FOR CLIENT REVIEW	03/13/2014
C	RE-ISSUED FOR CLIENT REVIEW	03/06/2014

IG. #

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

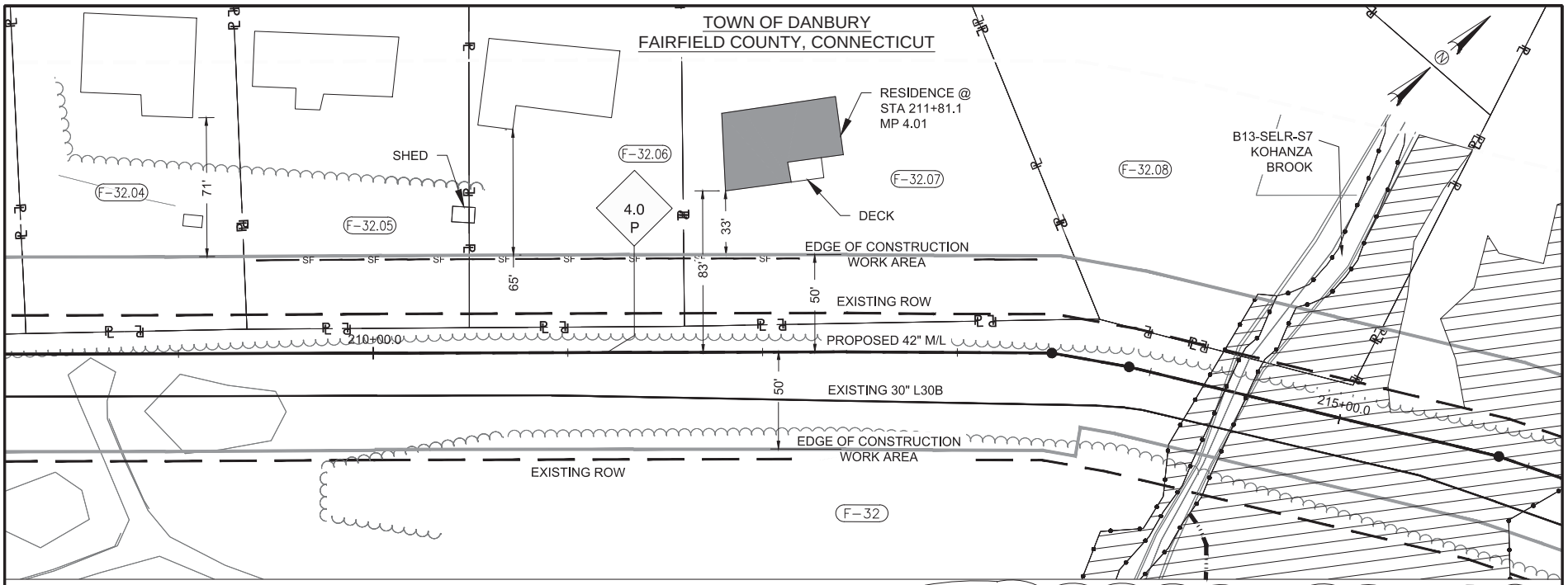
SOUTHEAST DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: FAIRFIELD COUNTY, CONNECTICUT | REV.: F
YR.: 2016 | W.O.: | DWG. NO.: SQ-E-7007

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\SQ-E-7007.dwg – PLOT TIME: 9/25/2014 5:09 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

DESCRIPTION:

AT SURVEY STATION 211+81.1 THERE IS A RESIDENCE 33' LEFT OF THE CWA AND 83' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

E

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
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LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

REV.#	DESCRIPTION	DATE
E	REVISED PER DEIS/USACOE COMMENTS	09/27/14
D	RE-ISSUED FOR CLIENT REVIEW	03/13/2014
C	RE-ISSUED FOR CLIENT REVIEW	03/06/2014
B	ISSUED FOR CLIENT REVIEW	12/12/13

I.C. #

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
SOUTHEAST DISCHARGE
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: FAIRFIELD COUNTY, CONNECTICUT | REV.: E

YR.: 2014 | W.O.: | DWG. NO.: SQ-E-7008

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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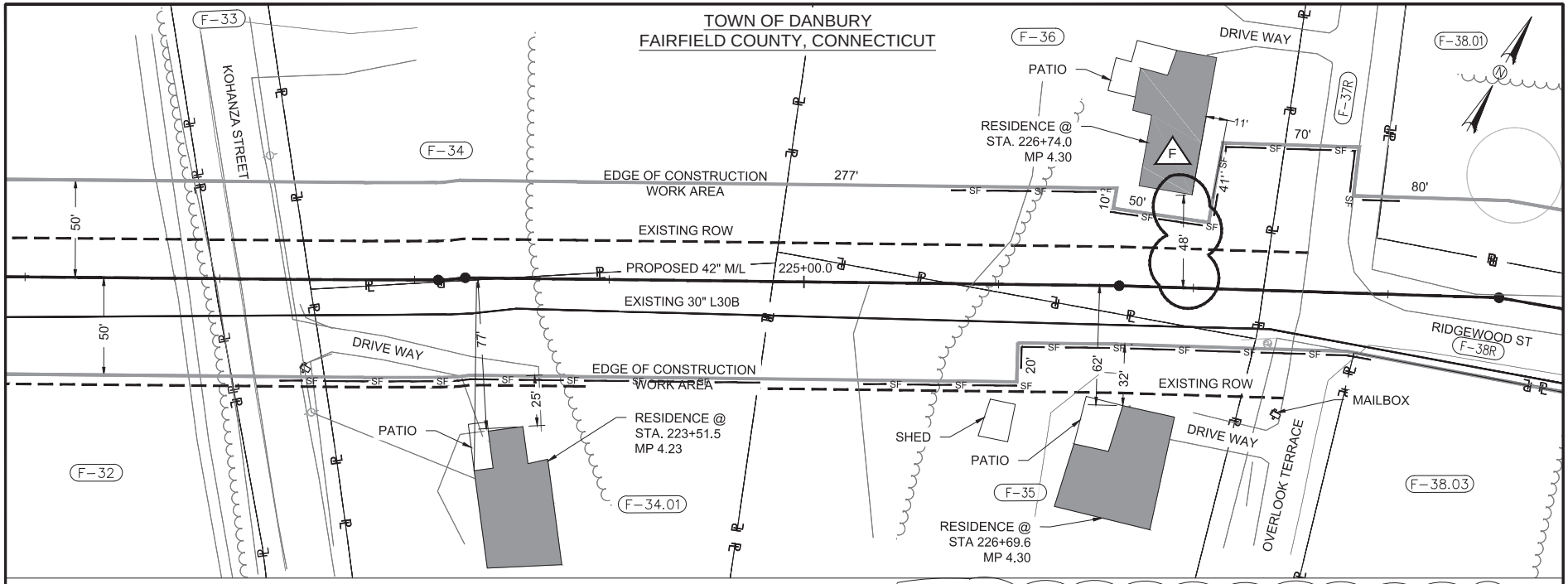

SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 223+51.5 THERE IS A RESIDENCE 25' RIGHT OF THE CWA AND 77' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 226+69.6 THERE IS A RESIDENCE 32' RIGHT OF THE CWA AND 62' RIGHT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

AT SURVEY STATION 226+74.0 THERE IS A RESIDENCE 11' LEFT OF THE CWA AND 48' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

F

NOTES:

DRIVEWAY ACCESS WILL BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACT F-34.01

F

F

NOTES CONTINUED:

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REV.#	DESCRIPTION	DATE
F	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
E	ISSUED FOR USE	09/11/14
D	RE-ISSUED FOR CLIENT REVIEW	03/13/14
C	RE-ISSUED FOR CLIENT REVIEW	01/27/14

IG. #

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

SOUTHEAST DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

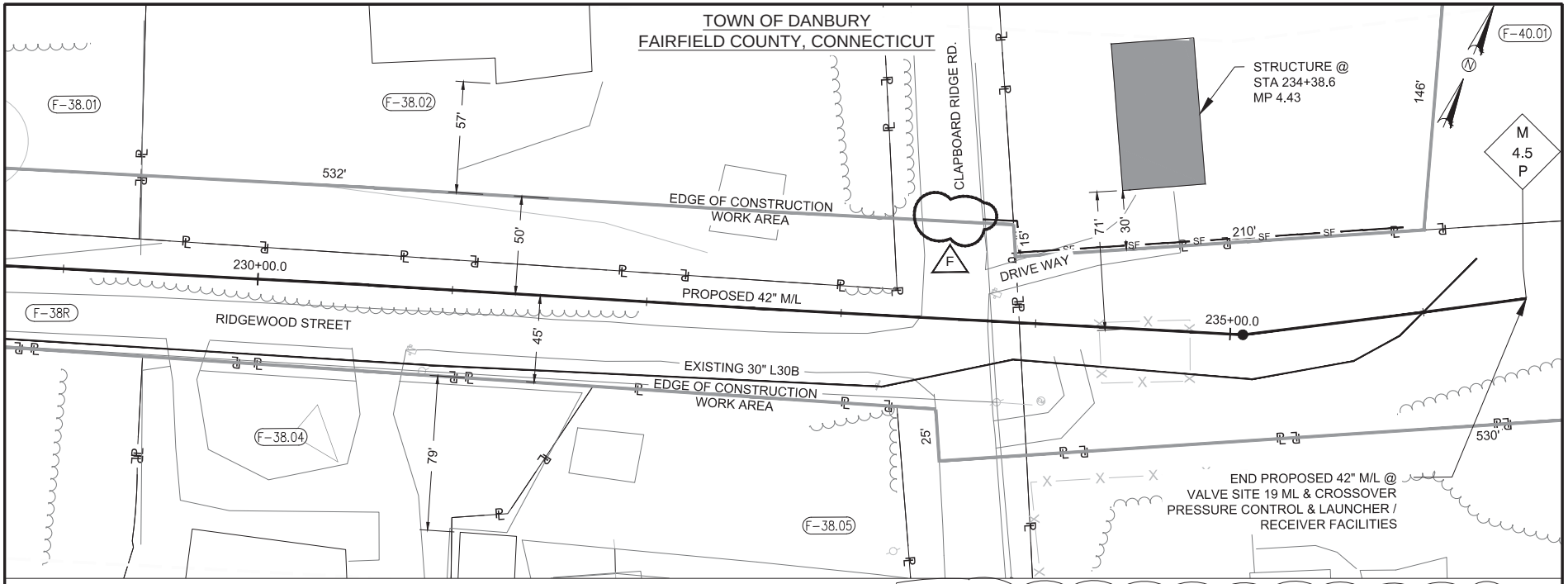
LOC.: FAIRFIELD COUNTY, CONNECTICUT | REV.: F

YR.: 2016 | W.O.: | DWG. NO.: SQ-E-7009

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\SQ-E-7009.dwg – PLOT TIME: 9/25/2014 5:28 PM



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

DESCRIPTION:

AT SURVEY STATION 234+38.6 THERE IS A STRUCTURE 30' LEFT OF THE CWA AND 71' LEFT OF THE CENTERLINE OF THE PROPOSED 42" M/L.

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

NOTES:

DRIVEWAY ACCESS WILL BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACT 40.01

F

NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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I.G. #

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:	1"=50'	DATE

SOUTHEAST DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 42" M/L
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: FAIRFIELD COUNTY, CONNECTICUT | REV.: F

YR.: 2016 | W.O.: | DWG. NO.: SQ-E-7010

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\DEIS\Residentials\SQ-E-7010.dwg – PLOT TIME: 9/25/2014 5:18 PM

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AIM PROJECT
RESIDENTIAL SITE SPECIFIC CROSSING PLANS - DETAIL SHEET

General

In general, the following measures will be taken in residential properties:

- Notify local residents in advance of construction activities;
- Install safety fence, a minimum 100' on either side of residences as required, along the edge of the proposed Construction Work Area (CWA), to maintain equipment, material, and spoil within the CWA.
- Preserve all mature trees and landscaping where practical, consistent with construction safety;
- Complete installation of welded pipeline sections as quickly as reasonably possible, consistent with prudent pipeline construction practices, to minimize construction time affecting a neighborhood;
- Backfill the trench as soon as the pipe is laid or place temporary steel plates or timber mats over the trench.
- Complete final cleanup (including final grading) and installation of permanent erosion control measures within 10 days after the trench is backfilled, weather conditions permitting.
- Configure use of CWA to provide access for emergency vehicles and residential driveways, including materials available on site to provide temporary bridging across the pipeline trench if necessary.
- Road surfaces would be restored to drivable condition as soon as practicable so that normal access could resume.

Construction Techniques

One of the following techniques shall be utilized for a longitudinal distance of 100 feet either side of the residence:

- The Sewer Line Technique - this technique is a less efficient alternative to the mainline method of construction. It is typically used when the pipeline is to be installed in very close proximity to an existing stricture or when an open ditch would adversely impact a residential or commercial structure. The technique involves installing pipe one joint at a time whereby the welding, x-ray and coating activities are all performed in the open trench. At the end of each day the newly installed pipe is backfilled or the open trench is covered with steel plates or timber mats.
- Drag Section Technique - This technique is also a less efficient alternative to the mainline method. It is normally preferred over the sewer line alternative. This technique involves the trenching, installation and backfill of a prefabricated length of pipe containing several segments all in one day. At the end of each day the newly installed pipe is backfilled or the open trench is covered with steel plates or timber mats.
- In the take up and relay segments, the soil cover over the existing pipeline will be excavated to remove the existing pipe. The removed pipe will then be transported away from the construction work area and properly disposed. The trench will be backfilled until such time as the construction crews are prepared to install the new pipeline. The replacement pipe will be installed in approximately the same location as the existing pipe using one of the above construction methods.
- Where the pipeline facilities cross residential properties, topsoil will be stripped and stockpiled separately from the subsoil during grading within the construction workspace as shown on the corresponding Typical ROW Configuration figure ES-0001
- Reseed all disturbed lawns with a seed mixture acceptable to landowner or comparable to the adjoining lawn.
- Landowners shall be compensated for damages to ornamental shrubs and other landscape plantings based on the appraised value. Landowners shall be compensated for damages in a fair and reasonable manner, and as specified in the damage provision within the controlling easement on each property.

Workspace Restrictions

- Existing structures including but not limited to; fences, sheds, swing-sets, trampolines, shrubbery, trees, gardens, flowerbeds, pools will be removed from the CWA. Landowners will be made aware of what will be relocated during negotiations for temporary workspace and damages.
- Structures within the existing permanent easement area will be allowed to be returned to the existing permanent easement provided they are not in violation of Algonquin's existing permanent easement rights that will be made available to landowners.
- Structures outside the existing permanent easement, however within the construction work space, will be replaced as close as practicable to their previous locations.
- Removal and replacement responsibility will be an issue that is negotiated with each landowner.

Anticipated Construction Schedule

- Pipeline construction work is typically scheduled to take advantage of daylight hours, generally starting at 7:00 a.m. and completing at 6:00 p.m. (6 days a week).
- Pipeline installation progress should range from 40' to 200' each day.

Public Safety Considerations

- Traffic control will consist of devices outlined in state and local codes accompanied by local law enforcement details and qualified flagmen to safely coordinate transport of pipeline construction personnel, equipment, and material.
- Site Security will be evaluated on a case by case basis, employing daily and/or 24 hour qualified security services as required.
- Algonquin will staff a Landowner Hotline to receive landowner construction concerns. The toll-free Landowner Hotline is 1-866-873-2579. The Landowner Hotline will be staffed Monday through Friday from 7 AM to 5 PM and on Saturday from 7 AM to 12 PM by Algonquin personnel from the Cheshire, Connecticut field office. After these hours, a call forwarding system will be available to receive calls and page the Complaint Resolution Coordinator.

Other Considerations

- Fugitive dust will result from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. The amount of dust generated will be a function of construction activity, soil type, soil moisture content, wind speed, precipitation, vehicle traffic, vehicle types, and roadway characteristics. Algonquin will employ proven construction-related practices to control fugitive dust such as application of water or other commercially-available dust control agents on unpaved areas subject to frequent vehicle traffic. In addition, construction equipment will be operated only on an as-needed basis.
- Noise mitigation measures to be employed during construction include ensuring that sound muffling devices that are provided as standard equipment by the construction equipment manufacturer are kept in good working order.

REV.#	DESCRIPTION	DATE
E	REVISED PER DEIS/USACOE COMMENTS	09/27/14
D	ISSUED FOR CLIENT REVIEW	03/13/14
C	NOT ISSUED	03/13/14
B	NOT ISSUED	03/13/14

IG. #

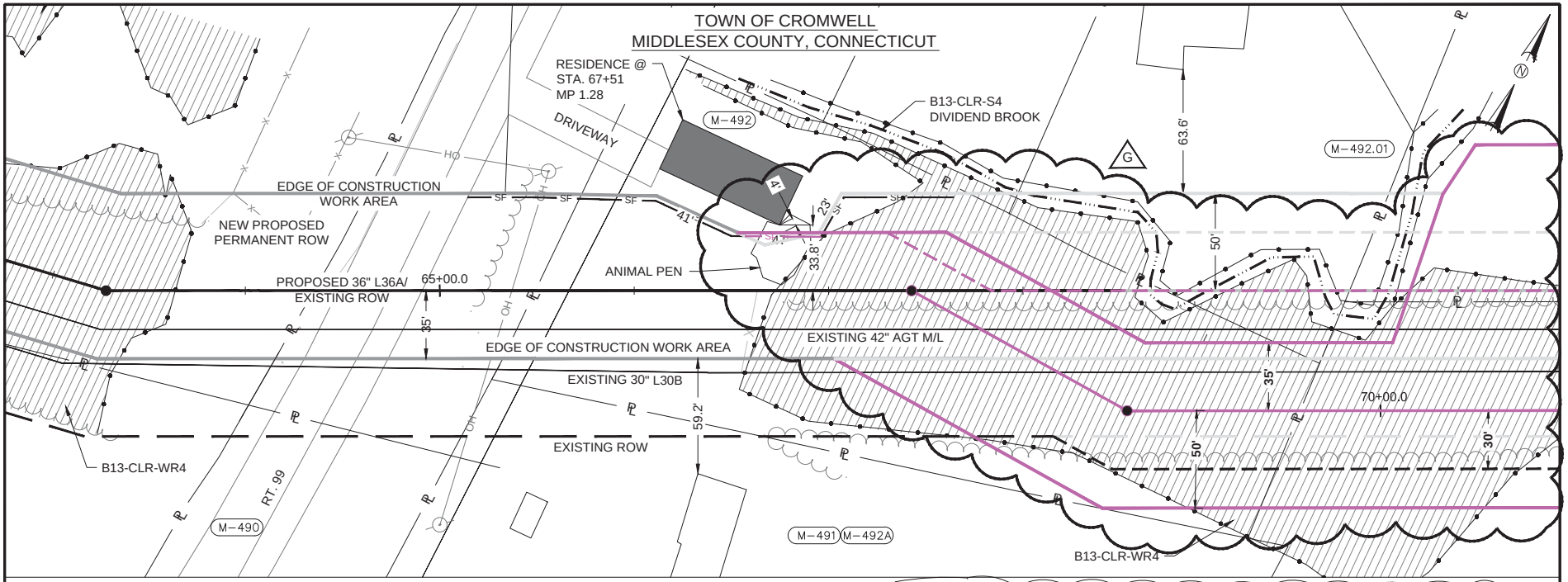
PROJ. ENG.	CCW	03/13/14
CHECKED BY:	CCW	03/13/14
DRAWN BY:	JDW	03/13/14
SCALE:		DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
RESIDENTIAL SITE SPECIFIC CROSSING PLANS
DETAIL SHEET

LOC.: REV.: E
YR.: 2014 W.O.: DWG. NO.: SQ-E-7011

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

LEGEND

- PROPOSED PIPELINE
- EXISTING RIGHT-OF-WAY (ROW)
- NEW PROPOSED PERMANENT RIGHT-OF-WAY (ROW)
- CONSTRUCTION WORK AREA (CWA)
- EXISTING PIPELINE
- FENCE LINE
- SAFETY FENCE
- PROPERTY LINE
- OVERHEAD POWER LINE
- TREE LINE

DESCRIPTION:

AT SURVEY STATION 67+51 THERE IS A STRUCTURE 4.0' LEFT OF THE CWA AND 33.8' LEFT OF THE CENTERLINE OF THE PROPOSED 36" L36A.

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NOTES:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
- INSTALL SAFETY FENCE, A MINIMUM 100' ON EITHER SIDE OF RESIDENCES AS REQUIRED, ALONG THE EDGE OF THE PROPOSED CONSTRUCTION WORK AREA (CWA), TO MAINTAIN EQUIPMENT, MATERIAL, AND SPOIL WITHIN THE CWA.
- BACKFILL THE TRENCH AS SOON AS THE PIPE IS LAID OR PLACE TEMPORARY STEEL PLATES OR TIMBER MATS OVER THE TRENCH.
- COMPLETE FINAL CLEANUP (INCLUDING FINAL GRADING) AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES WITHIN 10 DAYS AFTER THE TRENCH IS BACKFILLED, WEATHER CONDITIONS PERMITTING.
- PIPELINE CONSTRUCTION WORK IS TYPICALLY SCHEDULED TO TAKE ADVANTAGE OF DAYLIGHT HOURS, GENERALLY STARTING AT 7:00 A.M. AND COMPLETING AT 6:00 P.M. (6 DAYS A WEEK).
- THE SEWER LINE TECHNIQUE – THIS TECHNIQUE IS A LESS EFFICIENT ALTERNATIVE TO THE MAINLINE METHOD OF CONSTRUCTION. IT IS TYPICALLY USED WHEN THE PIPELINE IS TO BE INSTALLED IN VERY CLOSE PROXIMITY TO AN EXISTING STRICTURE OR WHEN AN OPEN DITCH WOULD ADVERSELY IMPACT A RESIDENTIAL OR COMMERCIAL STRUCTURE. THE TECHNIQUE INVOLVES INSTALLING PIPE ONE JOINT AT A TIME WHEREBY THE WELDING, X-RAY AND COATING ACTIVITIES ARE ALL PERFORMED IN THE OPEN TRENCH. AT THE END OF EACH DAY THE NEWLY INSTALLED PIPE IS BACKFILLED OR THE OPEN TRENCH IS COVERED WITH STEEL PLATES OR TIMBER MATS.
- TRAFFIC CONTROL WILL CONSIST OF DEVICES OUTLINED IN STATE AND LOCAL CODES ACCOMPANIED BY LOCAL LAW ENFORCEMENT DETAILS AND QUALIFIED FLAGMEN TO SAFELY COORDINATE TRANSPORT OF PIPELINE CONSTRUCTION PERSONNEL, EQUIPMENT, AND MATERIAL.
- SITE SECURITY WILL BE EVALUATED ON A CASE BY CASE BASIS, EMPLOYING DAILY AND/OR 24 HOUR QUALIFIED SECURITY SERVICES AS REQUIRED.
- ALGONQUIN WILL STAFF A LANDOWNER HOTLINE TO RECEIVE LANDOWNER CONSTRUCTION CONCERNS. THE TOLL-FREE LANDOWNER HOTLINE IS 1-866-873-2579. THE LANDOWNER HOTLINE WILL BE STAFFED MONDAY THROUGH FRIDAY FROM 7 AM TO 5 PM AND ON SATURDAY FROM 7 AM TO 12 PM BY ALGONQUIN PERSONNEL FROM THE CHESHIRE, CONNECTICUT FIELD OFFICE. AFTER THESE HOURS, A CALL FORWARDING SYSTEM WILL BE AVAILABLE TO RECEIVE CALLS AND PAGE THE COMPLAINT RESOLUTION COORDINATOR.

REV.#	DESCRIPTION	DATE
G	REVISED PER DEIS/USACOE COMMENTS	09/25/2014
F	ISSUED FOR USE	09/11/14
E	ISSUED FOR CLIENT REVIEW	03/12/14
D	RE-ISSUED FOR FERC APPLICATION	02/2014

IG. #

PROJ. ENG.	CCW	12/12/13
CHECKED BY:	APW	12/12/13
DRAWN BY:	TMR	11/13/13
SCALE:		DATE

CROMWELL DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED 36" L36A
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: MIDDLESEX COUNTY, CONNECTICUT | REV.: G

YR.: 2016 | W.O.: | DWG. NO.: CJ-E-7001

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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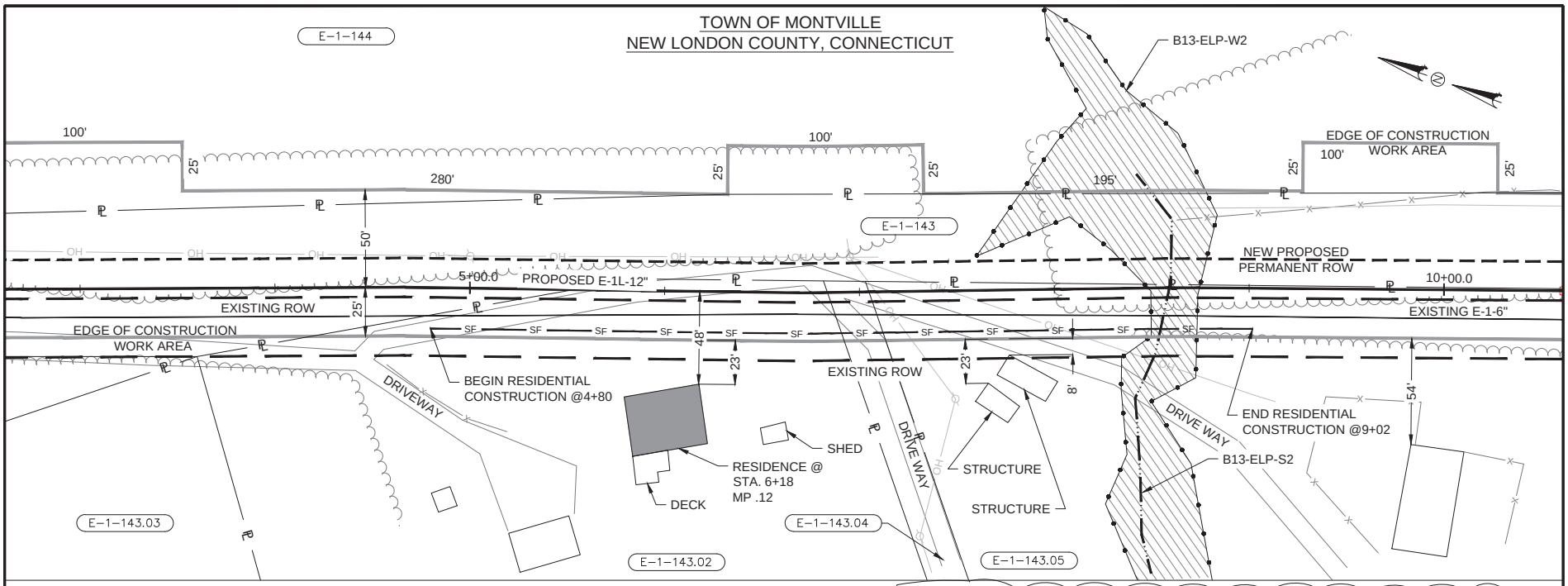
TOWN OF MONTVILLE
NEW LONDON COUNTY, CONNECTICUT



SCALE: 1"=50'

50 0 50 Feet

UTM NAD83, ZONE 18, US FOOT (UTM83-18F)

DESCRIPTION:

AT SURVEY STATION 6+18 THERE IS A RESIDENCE 23' RIGHT OF THE CWA AND 48' RIGHT OF THE CENTERLINE OF THE PROPOSED E-1L-12".

NOTES:

DRIVEWAY ACCESS WILL BE MAINTAINED DURING CONSTRUCTION & RESTORED AS SOON AS PRACTICABLE @ TRACTS E-1-143.02, E-1-143.02, E-1-143.04, & E-1-143.05

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NOTES CONTINUED:

- EXISTING STRUCTURES INCLUDING BUT NOT LIMITED TO; FENCES, SHEDS, SWING-SETS, TRAMPOLINES, SHRUBBERY, TREES, GARDENS, FLOWERBEDS, POOLS WILL BE REMOVED FROM THE CONSTRUCTION WORK AREA. LANDOWNERS WILL BE MADE AWARE OF WHAT WILL BE RELOCATED DURING NEGOTIATIONS. ALGONQUIN WILL PRESERVE ALL MATURE TREES AND LANDSCAPING WHERE PRACTICAL, CONSISTENT WITH CONSTRUCTION SAFETY.
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G

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PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	11/13/13
SCALE:	1":50'	DATE

CROMWELL DISCHARGE
ALGONQUIN INCREMENTAL MARKET PROJECT
PROPOSED E-1L-12"
RESIDENTIAL SITE SPECIFIC DRAWING

LOC.: NEW LONDON CO., CONNECTICUT | REV.: G
YR.: 2016 | W.O.: | DWG. NO.: CJ-E-7201

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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AIM PROJECT
RESIDENTIAL SITE SPECIFIC CROSSING PLANS - DETAIL SHEET

General

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IG. #			
F	REVISED PER DEIS/USACOE COMMENTS	09/27/14	
E	ISSUED FOR CLIENT REVIEW	03/12/14	
D	NOT ISSUED	03/12/14	
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REV.#	DESCRIPTION	DATE	

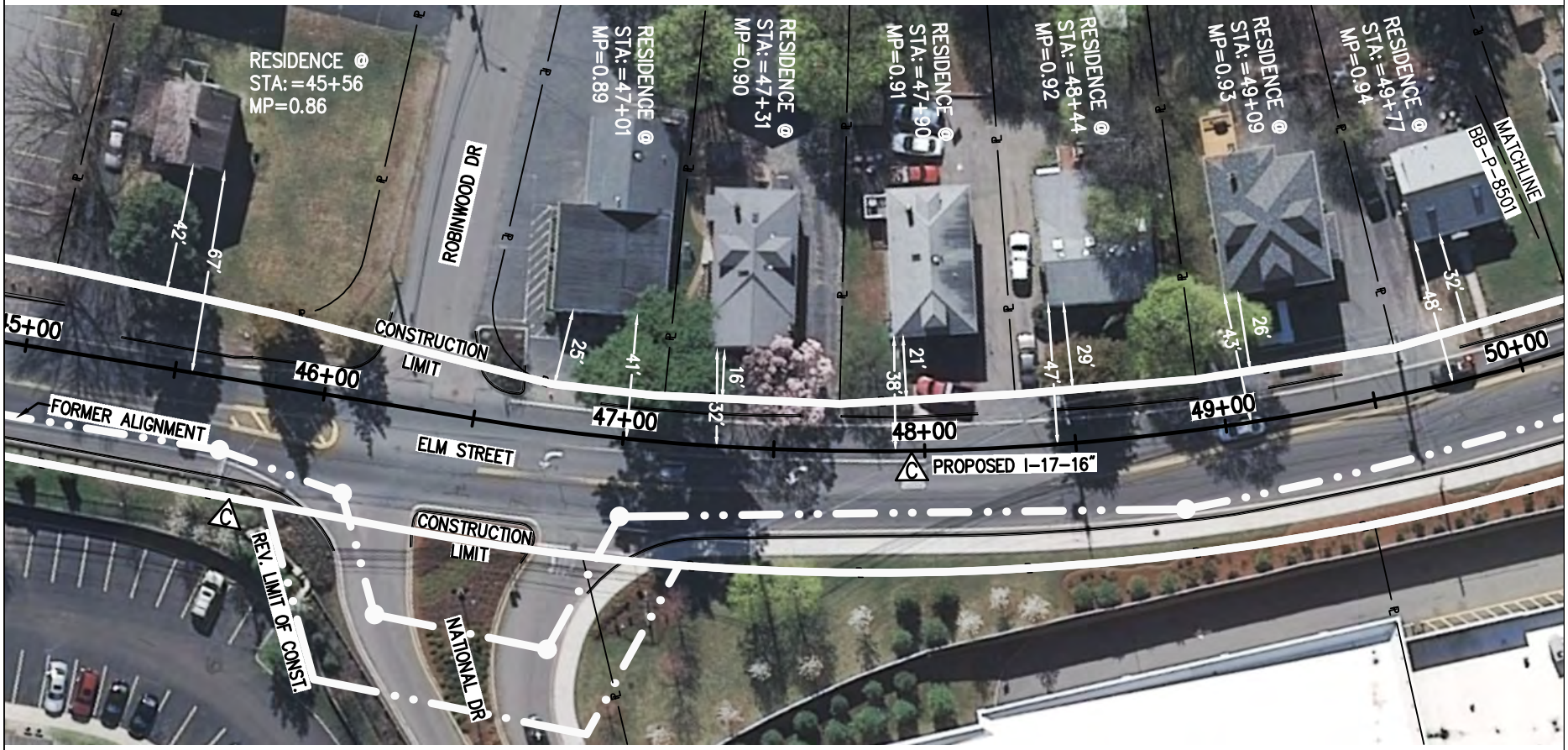
PROJ. ENG.	CCW	03/12/14
CHECKED BY:	APW	03/12/14
DRAWN BY:	TMR	03/12/14
SCALE:		DATE

ALGONQUIN INCREMENTAL MARKET PROJECT
RESIDENTIAL SITE SPECIFIC CROSSING PLANS
DETAIL SHEET

LOC.: REV.: F
YR.: 2014 W.O.: DWG. NO.: CJ-E-7202

Spectra Energy Partners
Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

NORFOLK COUNTY, MASSACHUSETTS
TOWN OF DEDHAM



GENERAL NOTES:

1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT-OF-WAY CONFIGURATIONS DO NOT APPLY.
4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

REV.#	DESCRIPTION	DATE	TITLE: I-17 WEST ROXBURY LATERAL			
C	RE-ROUTE	7/28/14				
			LOC. NORFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
			DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8500	1 of 30

NORFOLK COUNTY, MASSACHUSETTS
TOWN OF DEDHAM

GENERAL NOTES:

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C	RE-ROUTE	7/28/14

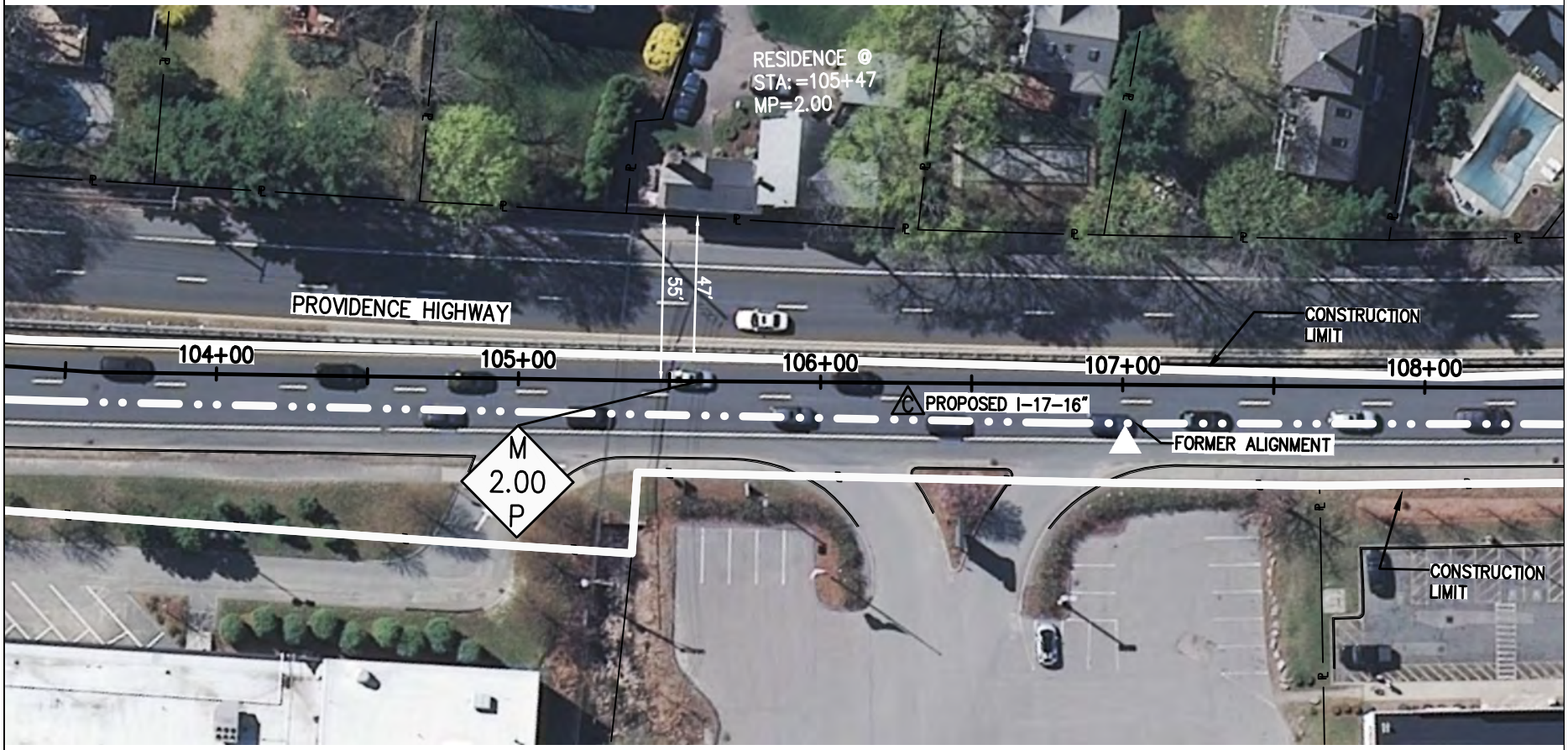
TITLE: I-17 WEST ROXBURY LATERAL

LOC. NORFOLK COUNTY, MASSACHUSETTS — REV.2

CHK. BY SLT | DATE: 7/28/2014 | CE000030.002

DRN. BY VHB | SCALE: 1"=50' | DWG. BB-P-8501 | 2 of 30

NORFOLK COUNTY, MASSACHUSETTS
TOWN OF DEDHAM



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TITLE:
I-17
WEST ROXBURY LATERAL

LOC. NORFOLK COUNTY, MASSACHUSETTS — REV.2

CHK. BY SLT — DATE: 7/28/2014 — CE000030.002

DRN. BY VHB — SCALE: 1"=50' — DWG. BB-P-8503 — 3 of 30

NORFOLK COUNTY, MASSACHUSETTS
TOWN OF DEDHAM

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C	RE-ROUTE	7/28/14	TITLE: I-17 WEST ROXBURY LATERAL			
			LOC. NORFOLK COUNTY, MASSACHUSETTS			REV.2
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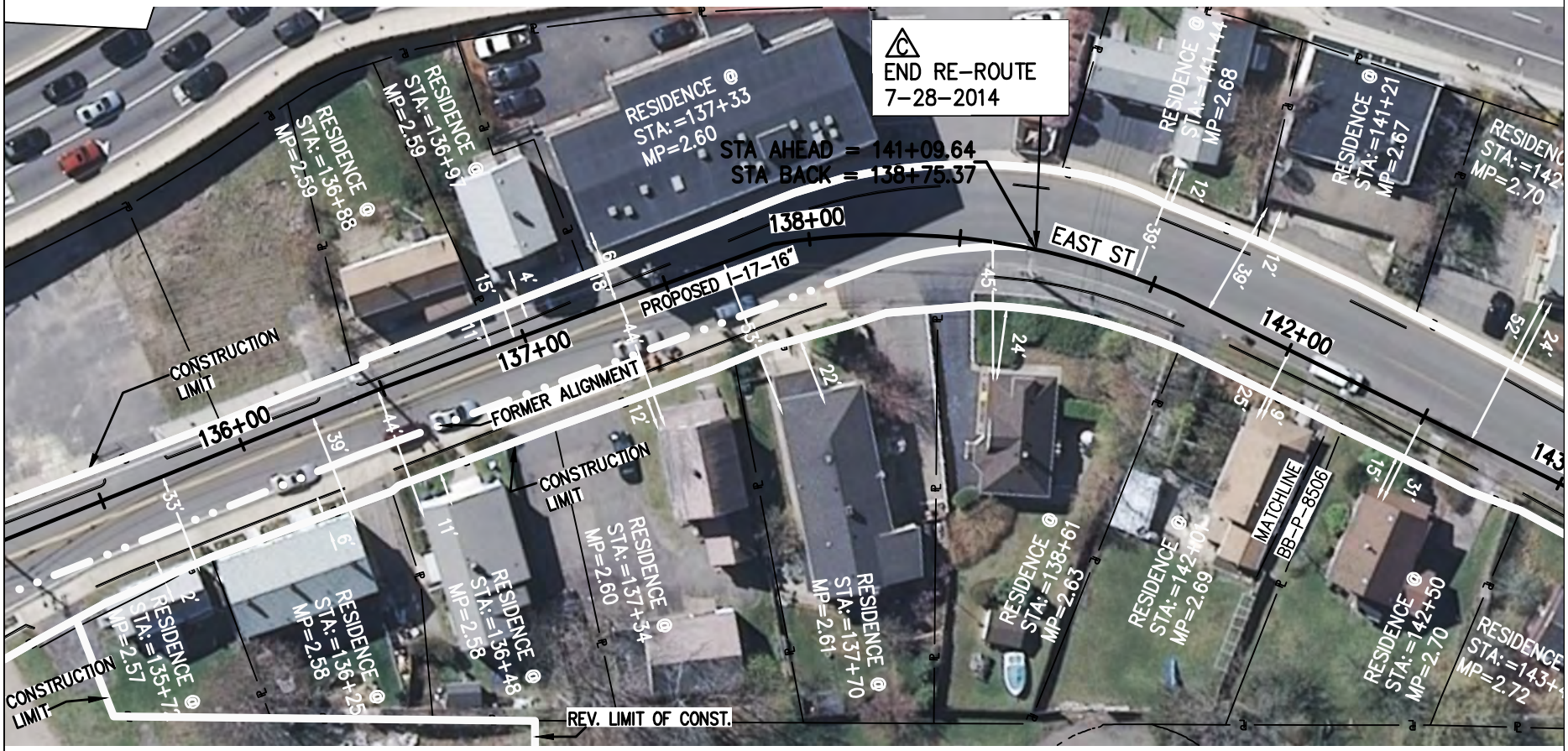
NORFOLK COUNTY, MASSACHUSETTS
TOWN OF DEDHAM



GENERAL NOTES:

1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT-OF-WAY CONFIGURATIONS DO NOT APPLY.
4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

C	RE-ROUTE	7/28/14	TITLE: I-17 WEST ROXBURY LATERAL			
			LOC. NORFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8505	5 of 30

NORFOLK COUNTY, MASSACHUSETTS
TOWN OF DEDHAM

GENERAL NOTES:

1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
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REV.#	DESCRIPTION	DATE	TITLE: I-17 WEST ROXBURY LATERAL			
C	RE-ROUTE	7/28/14				
			LOC. NORFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT		DATE: 7/28/2014	CE000030.002
			DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8506	6 of 30

NORFOLK COUNTY, MASSACHUSETTS
TOWN OF DEDHAM

GENERAL NOTES:

1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
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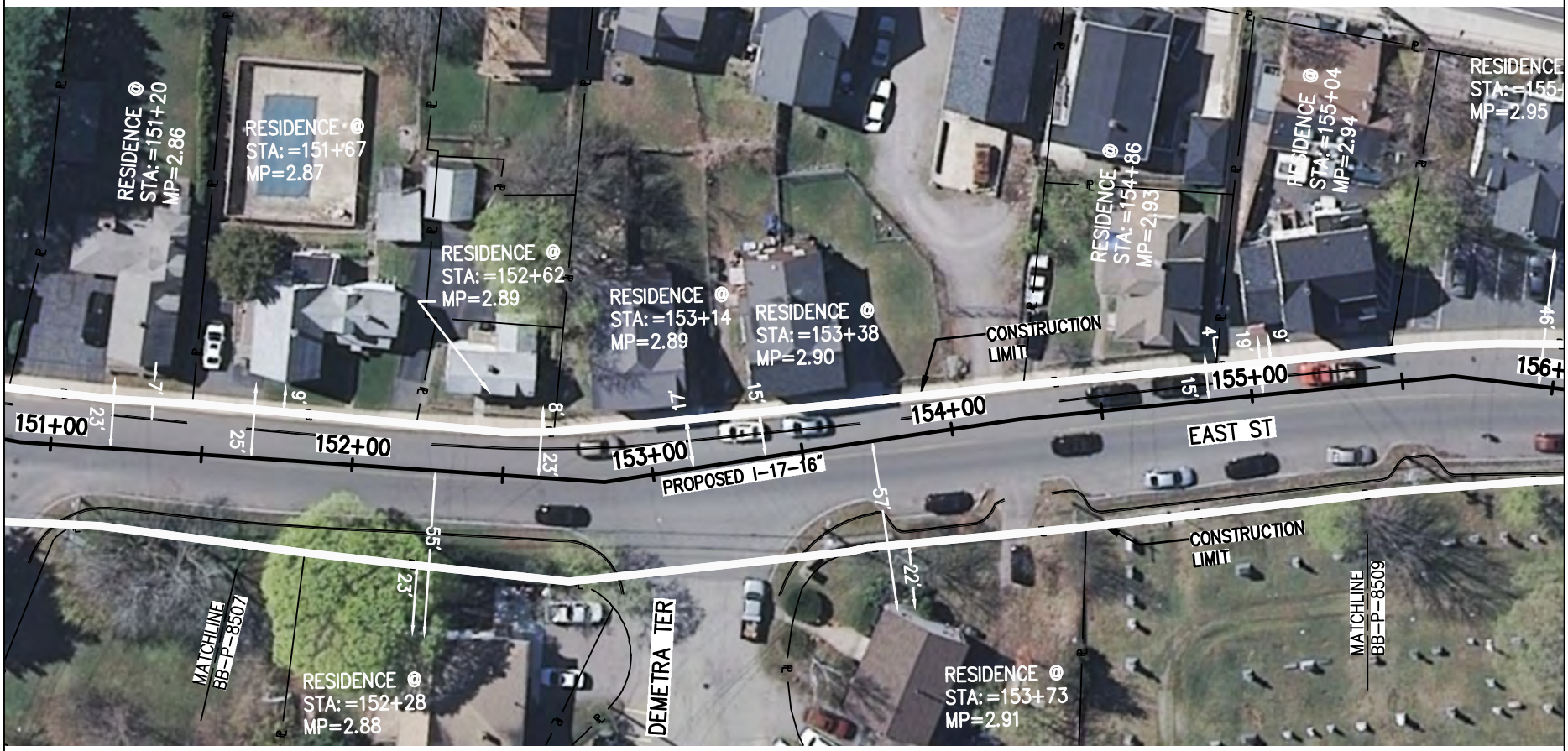
REV.#	DESCRIPTION	DATE	TITLE: I-17 WEST ROXBURY LATERAL			
C	RE-ROUTE	7/28/14				
			LOC. NORFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
			DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8507	7 of 30

NORFOLK COUNTY, MASSACHUSETTS
TOWN OF DEDHAM



GENERAL NOTES:

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REV.#	DESCRIPTION	DATE	TITLE: I-17 WEST ROXBURY LATERAL			
C	RE-ROUTE	7/28/14				
			LOC. NORFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
			DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8508	8 of 30

NORFOLK COUNTY, MASSACHUSETTS
TOWN OF DEDHAM

GENERAL NOTES:

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REV.#	DESCRIPTION	DATE	TITLE: I-17 WEST ROXBURY LATERAL			
C	RE-ROUTE	7/28/14				
			LOC. NORFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
			DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8509	9 of 30

NORFOLK COUNTY, MASSACHUSETTS
TOWN OF DEDHAM

GENERAL NOTES:

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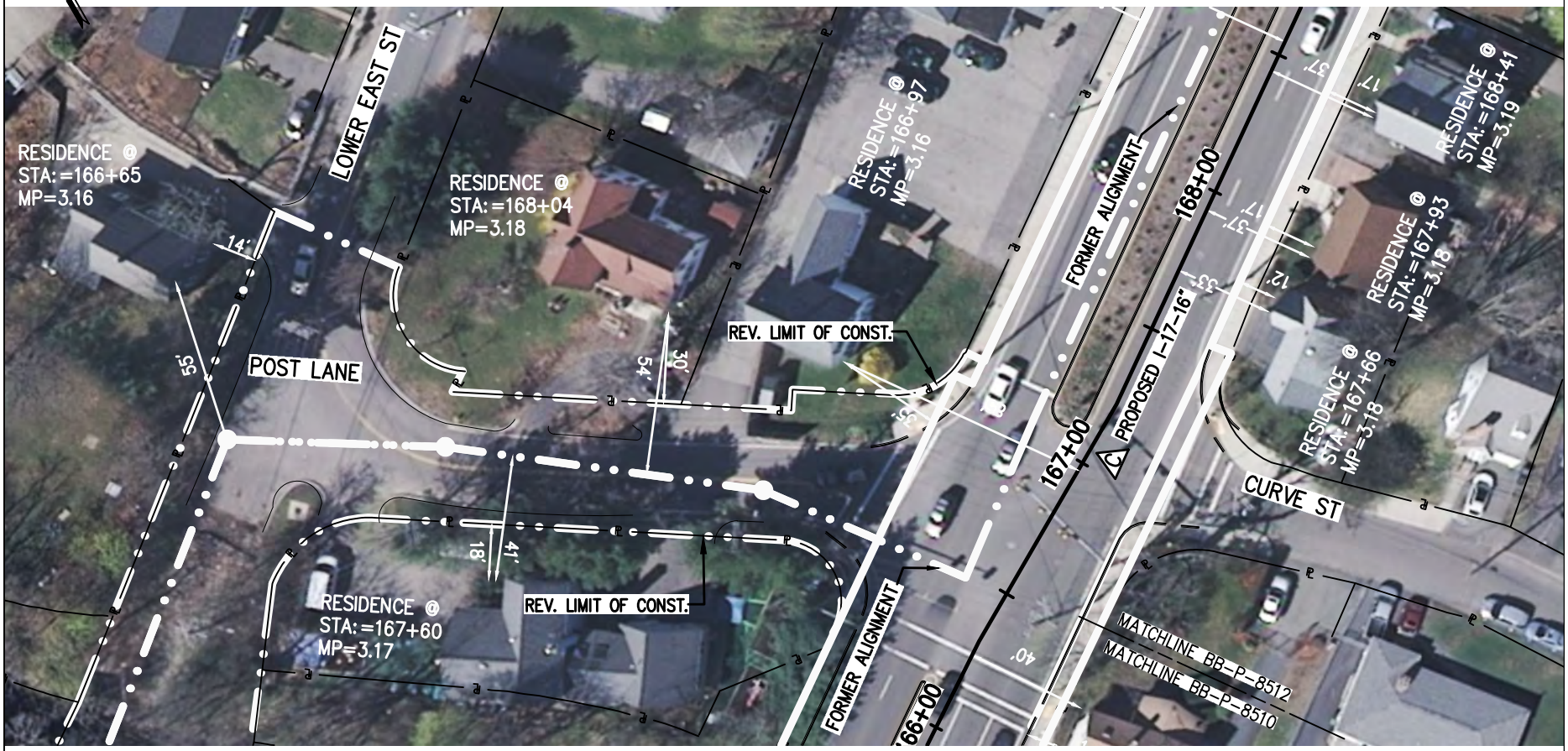
C	RE-ROUTE	7/28/14	TITLE: I-17 WEST ROXBURY LATERAL			
			LOC. NORFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8510	10 of 30

NORFOLK COUNTY, MASSACHUSETTS
TOWN OF DEDHAM



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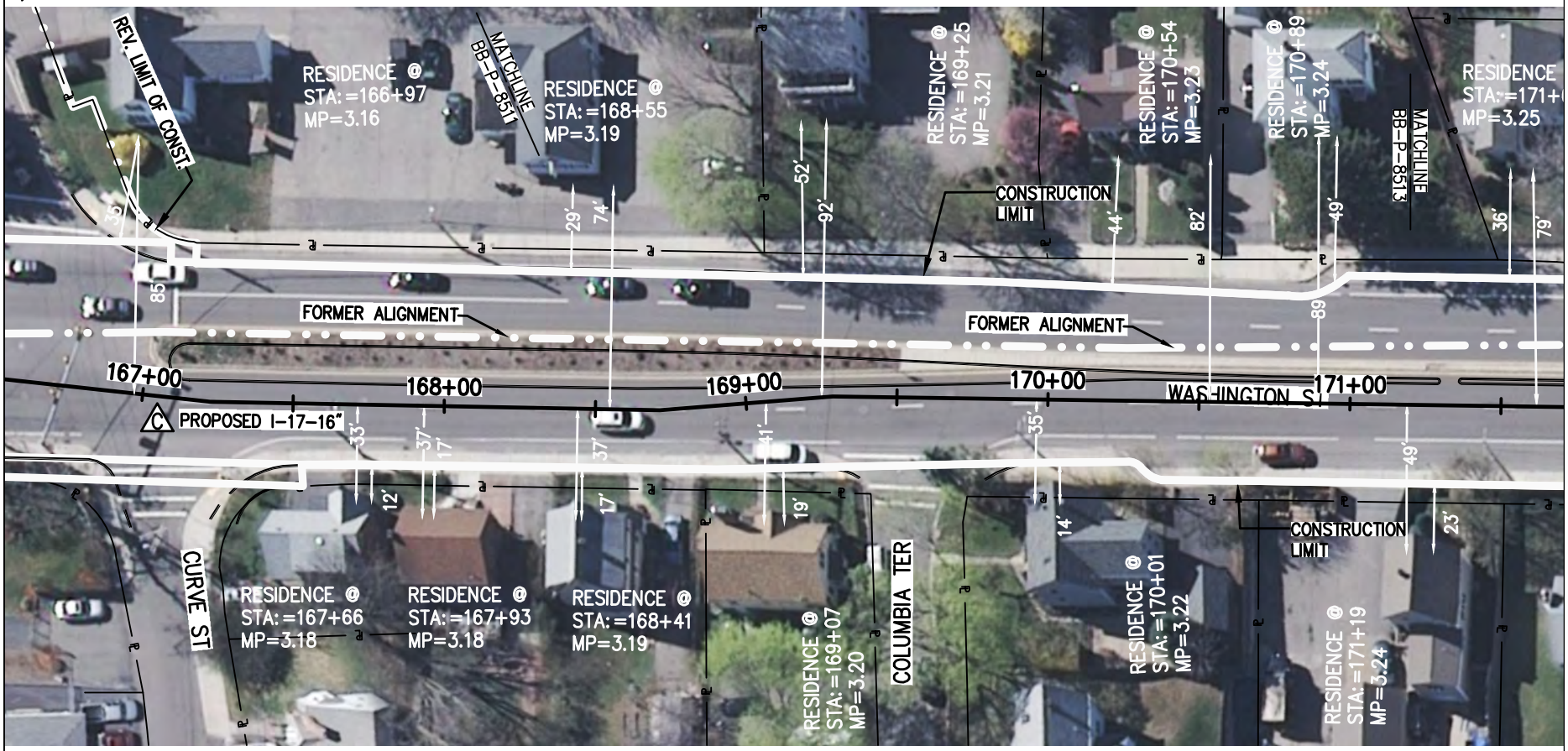
REV.#	DESCRIPTION	DATE	TITLE: I-17 WEST ROXBURY LATERAL			
C	RE-ROUTE	7/28/14				
			LOC. NORFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
			DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8511	11 of 30

NORFOLK COUNTY, MASSACHUSETTS
TOWN OF DEDHAM



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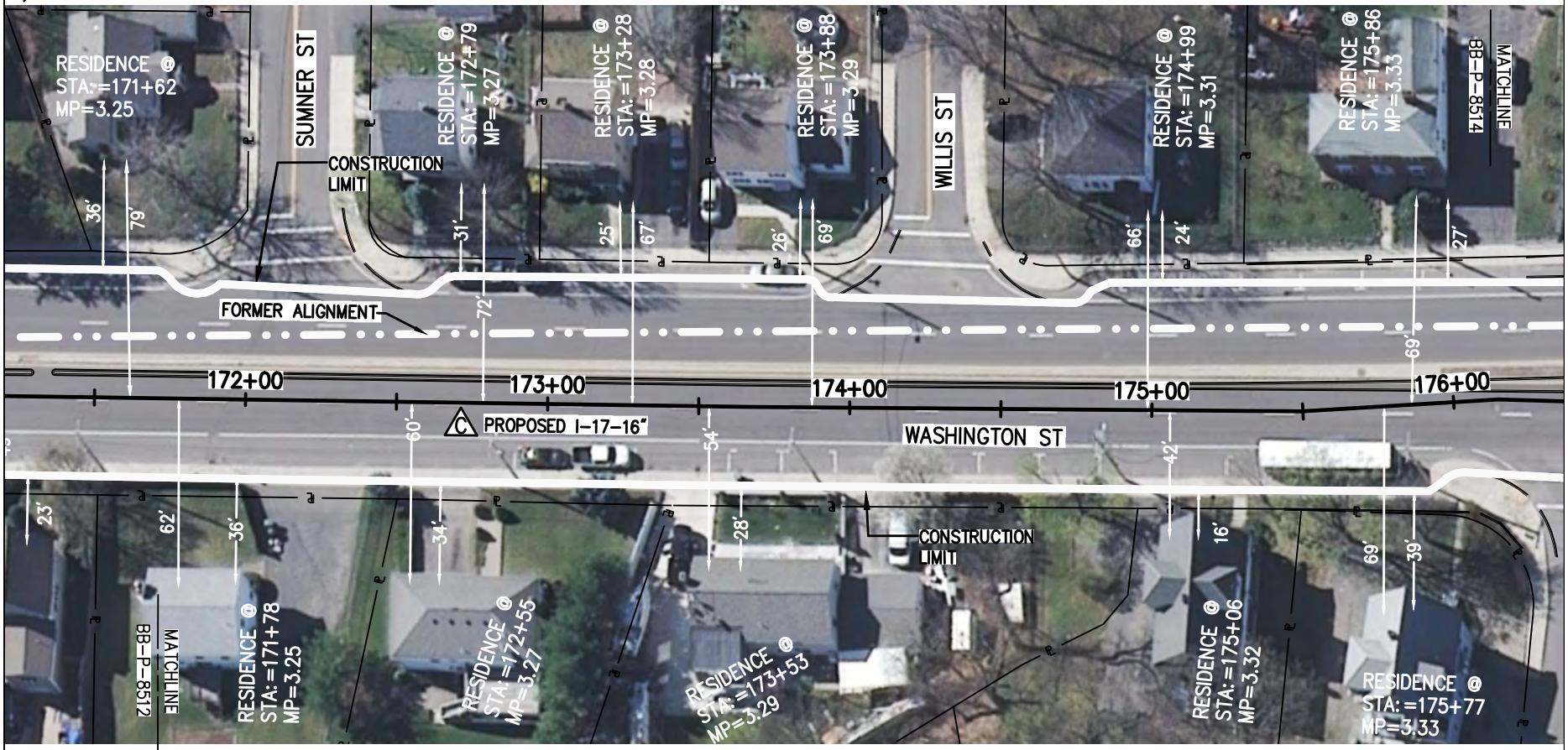
REV.#	DESCRIPTION	DATE	TITLE: I-17 WEST ROXBURY LATERAL			
C	RE-ROUTE	7/28/14				
			LOC. NORFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
			DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8512	12 of 30

NORFOLK COUNTY, MASSACHUSETTS
TOWN OF DEDHAM



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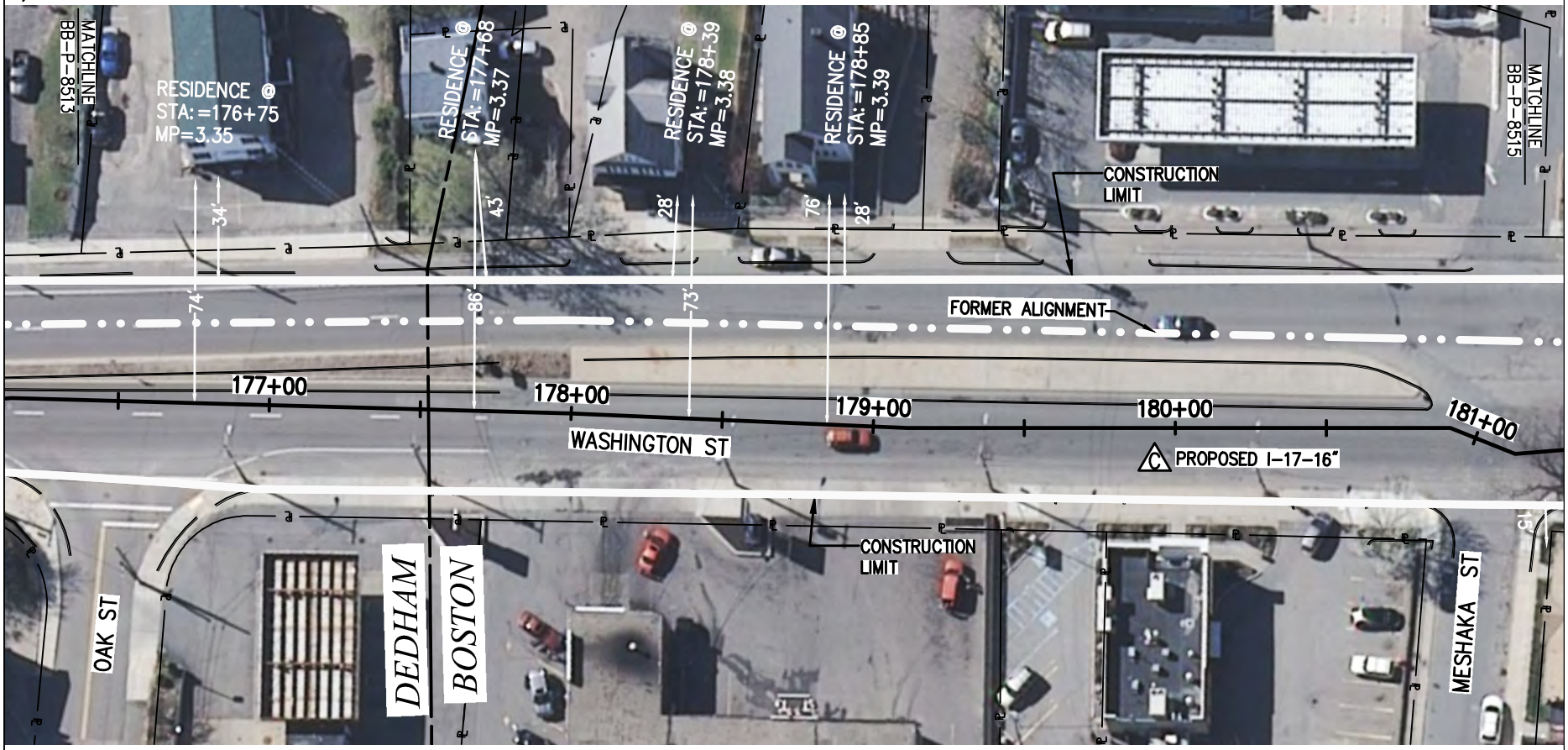
REV.#	DESCRIPTION	DATE	TITLE: I-17 WEST ROXBURY LATERAL			
C	RE-ROUTE	7/28/14				
			LOC. NORFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
			DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8513	13 of 30

NORFOLK / SUFFOLK COUNTY, MASSACHUSETTS
TOWN OF DEDHAM / CITY OF BOSTON



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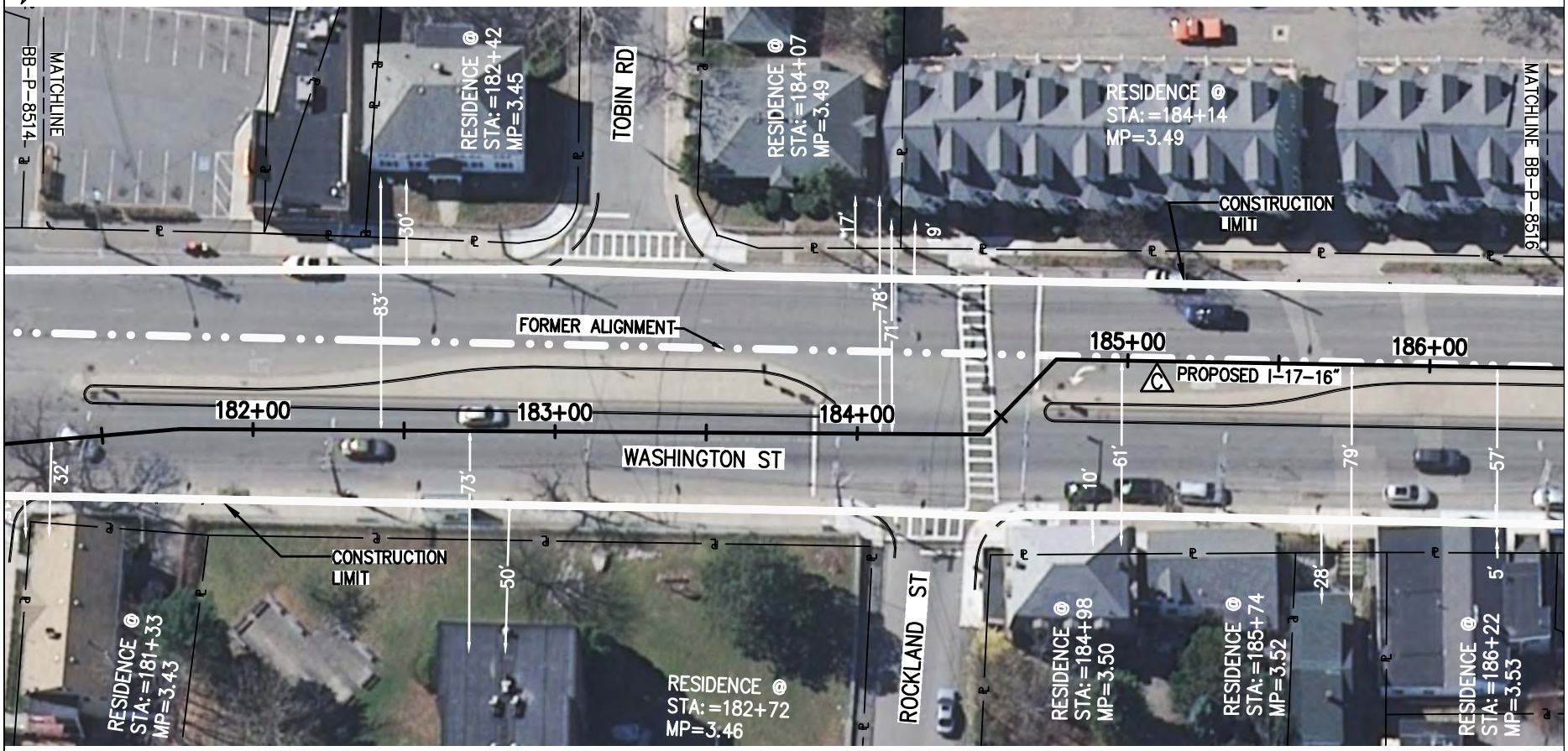
REV.#	DESCRIPTION	DATE	TITLE: I-17 WEST ROXBURY LATERAL			
C	RE-ROUTE	7/28/14				
			LOC. NORFOLK/SUFFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
			DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8514	14 of 30

SUFFOLK COUNTY, MASSACHUSETTS
CITY OF BOSTON



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C	RE-ROUTE	7/28/14	TITLE: I-17 WEST ROXBURY LATERAL			
			LOC. SUFFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8515	15 of 30

SUFFOLK COUNTY, MASSACHUSETTS
CITY OF BOSTON

GENERAL NOTES:

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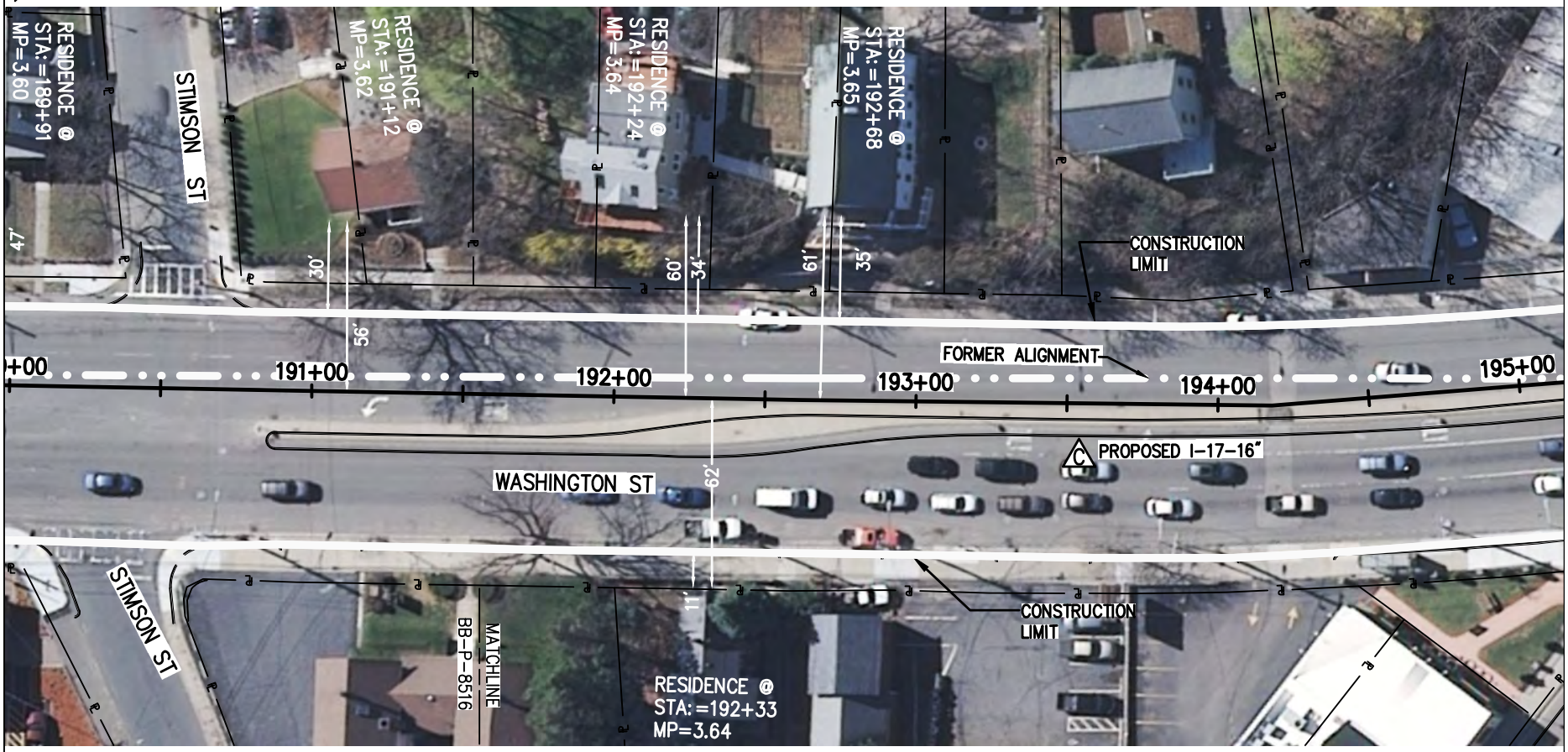
REV.#	DESCRIPTION	DATE				
C	RE-ROUTE	7/28/14	TITLE: I-17 WEST ROXBURY LATERAL			
			LOC. SUFFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
			DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8516	16 of 30

SUFFOLK COUNTY, MASSACHUSETTS
CITY OF BOSTON



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C	RE-ROUTE	7/28/14	TITLE: I-17 WEST ROXBURY LATERAL			
			LOC. SUFFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8517	17 of 30

SUFFOLK COUNTY, MASSACHUSETTS
CITY OF BOSTON

GENERAL NOTES:

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REV.#	DESCRIPTION	DATE				
C	RE-ROUTE	7/28/14	TITLE: I-17 WEST ROXBURY LATERAL			
			LOC. SUFFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
			DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8518	18 of 30

SUFFOLK COUNTY, MASSACHUSETTS
CITY OF BOSTON

GENERAL NOTES:

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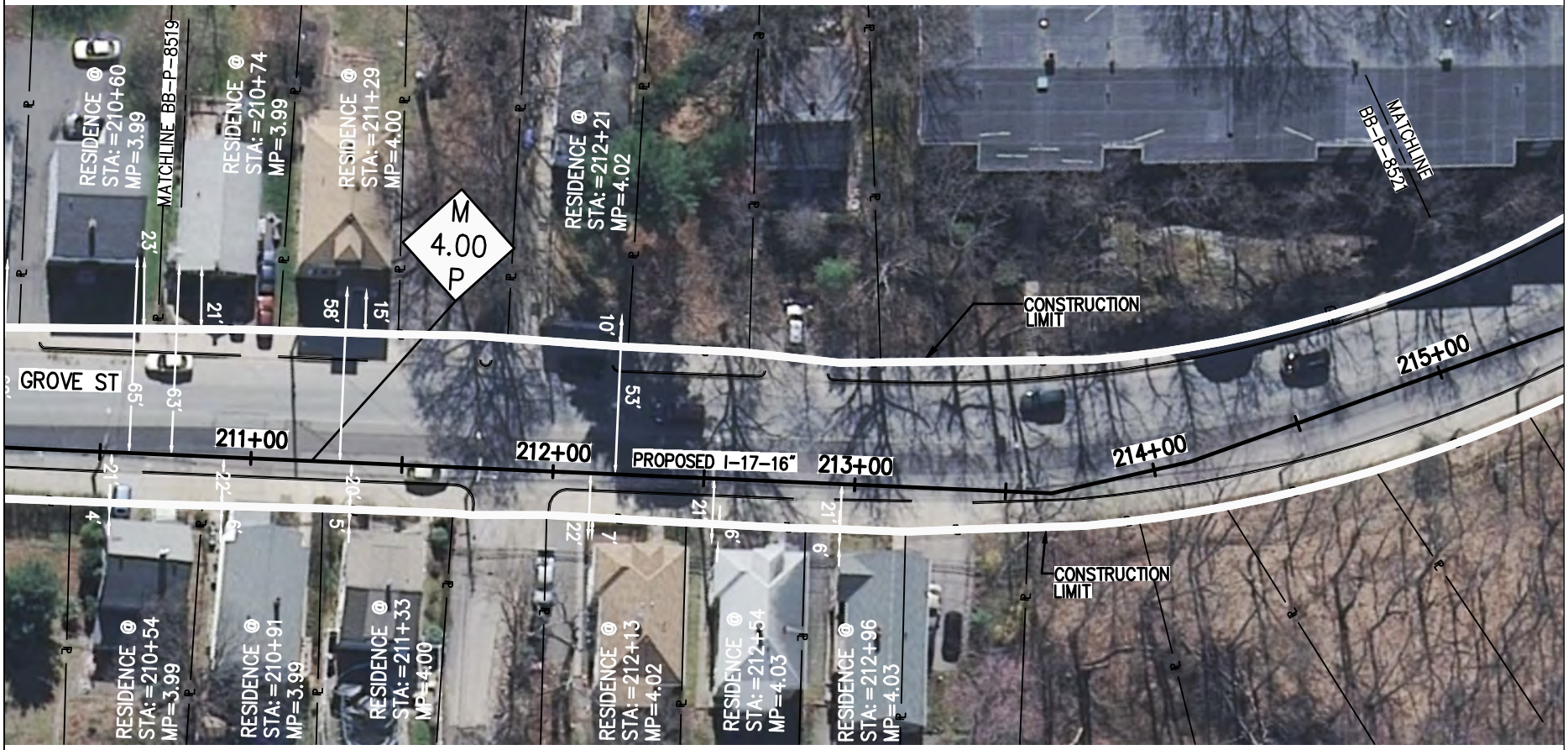
C	RE-ROUTE	7/28/14	TITLE: I-17 WEST ROXBURY LATERAL			
			LOC. SUFFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8519	19 of 30

SUFFOLK COUNTY, MASSACHUSETTS
CITY OF BOSTON



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C	RE-ROUTE	7/28/14	TITLE: I-17 WEST ROXBURY LATERAL			
			LOC. SUFFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8520	20 of 30

SUFFOLK COUNTY, MASSACHUSETTS
CITY OF BOSTON

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REV.#	DESCRIPTION	DATE
C	RE-ROUTE	7/28/14

TITLE:
I-17
WEST ROXBURY LATERAL

LOC. SUFFOLK COUNTY, MASSACHUSETTS — REV.2

CHK. BY SLT — DATE: 7/28/2014 — CE000030.002

DRN. BY VHB — SCALE: 1"=50' — DWG. BB-P-8521 — 21 of 30

SUFFOLK COUNTY, MASSACHUSETTS
CITY OF BOSTON

GENERAL NOTES:

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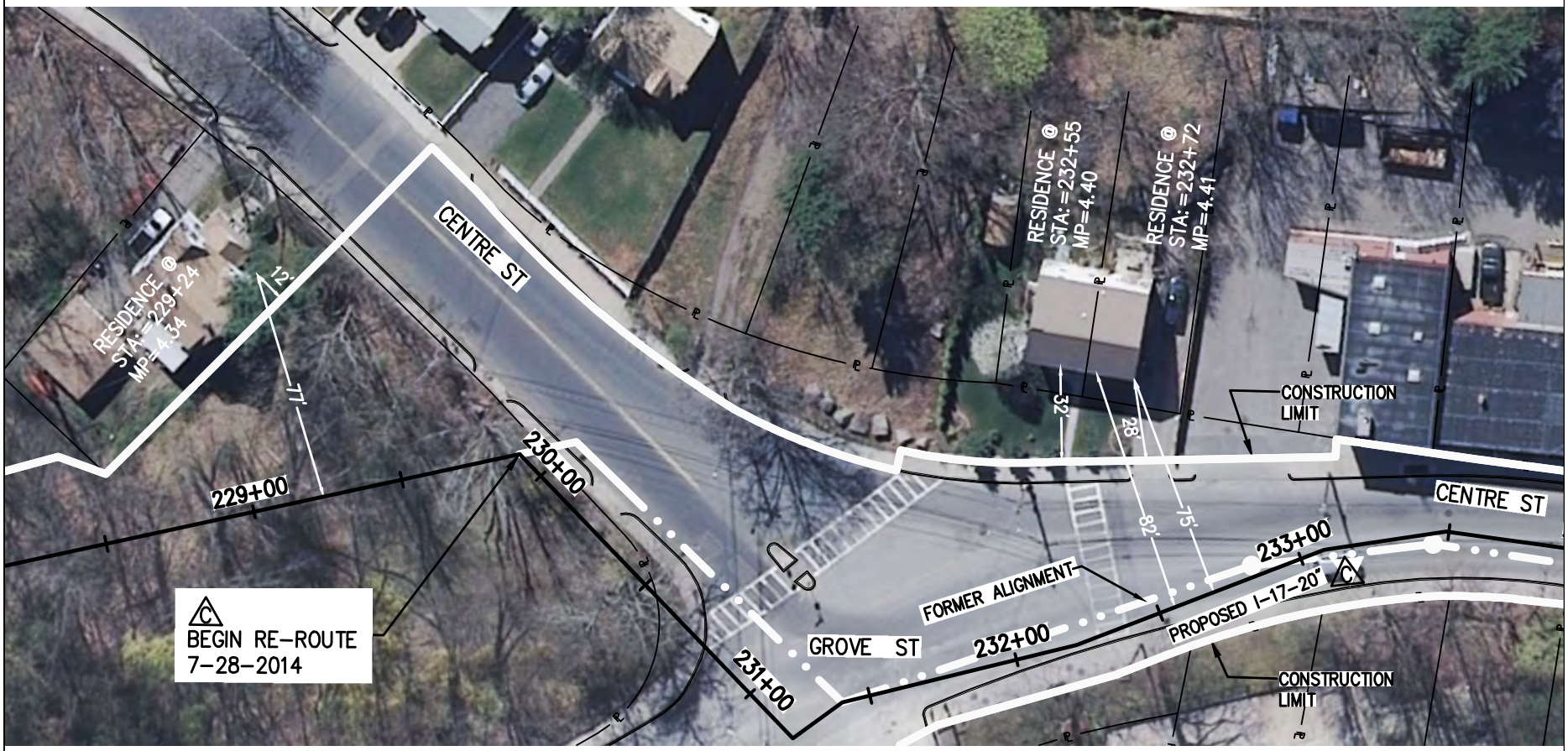
C	RE-ROUTE	7/28/14	TITLE: I-17 WEST ROXBURY LATERAL			
			LOC. SUFFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8522	22 of 30

SUFFOLK COUNTY, MASSACHUSETTS
CITY OF BOSTON



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REV.#	DESCRIPTION	DATE
C	RE-ROUTE	7/28/14

TITLE:
I-17
WEST ROXBURY LATERAL

LOC. SUFFOLK COUNTY, MASSACHUSETTS — REV.2

CHK. BY SLT — DATE: 7/28/2014 — CE000030.002

DRN. BY VHB — SCALE: 1"=50' — DWG. BB-P-8523 — 23 of 30

SUFFOLK COUNTY, MASSACHUSETTS
CITY OF BOSTON

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REV.#	DESCRIPTION	DATE				
C	RE-ROUTE	7/28/14	TITLE: I-17 WEST ROXBURY LATERAL			
			LOC. SUFFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
			DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8524	24 of 30

SUFFOLK COUNTY, MASSACHUSETTS
CITY OF BOSTON

GENERAL NOTES:

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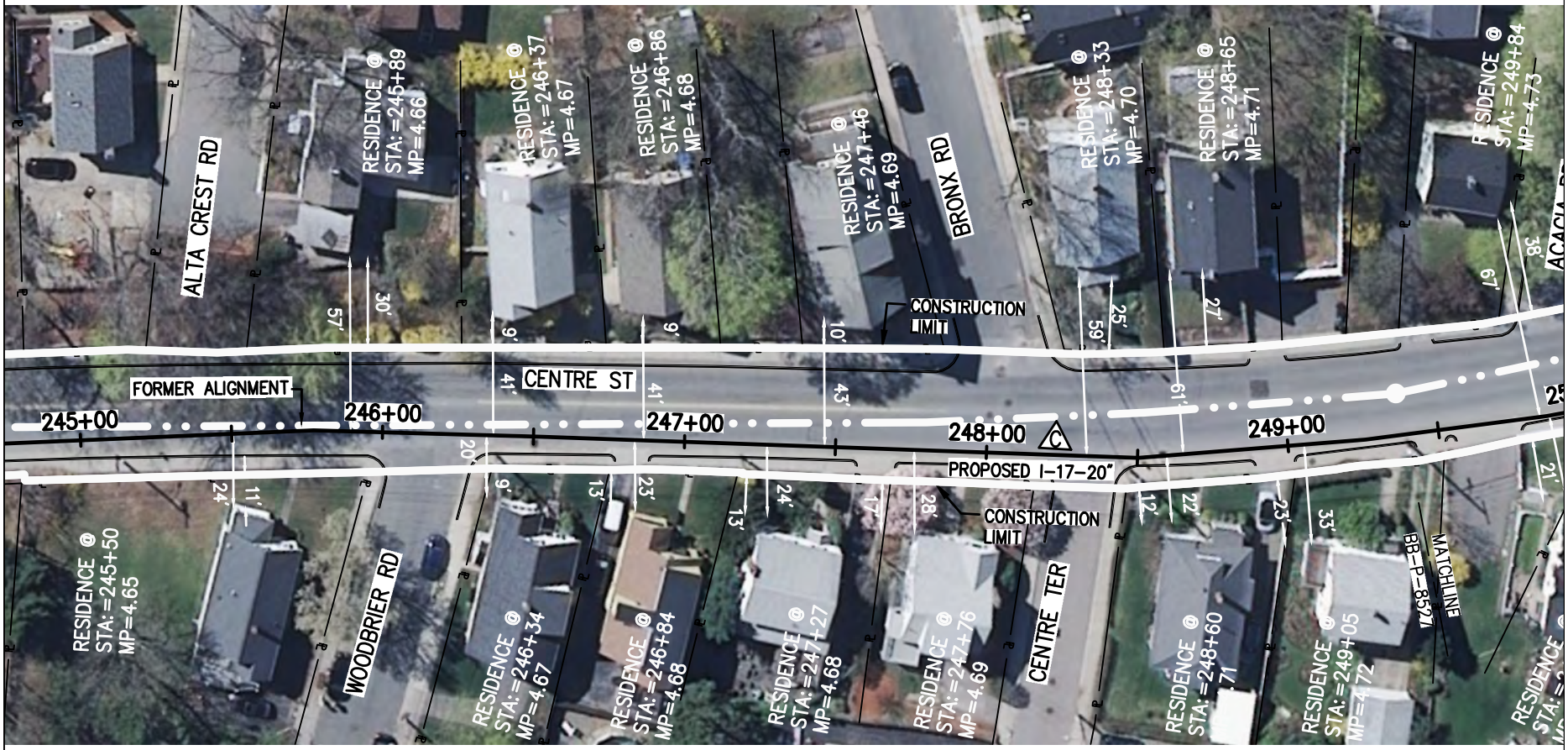
C	RE-ROUTE	7/28/14	TITLE: I-17 WEST ROXBURY LATERAL			
			LOC. SUFFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8525	25 of 30

SUFFOLK COUNTY, MASSACHUSETTS
CITY OF BOSTON



GENERAL NOTES:

1. LOCATION OF BUILDING STRUCTURES ARE BASED ON GIS, THEY ARE NOT THE RESULT OF A FIELD SURVEY.
2. PROPERTY LINES SHOWN ARE GRAPHICAL AND ARE NOT THE RESULT OF A ON THE GROUND SURVEY OR PLAN OF RECORD
3. TRENCH SPOIL WILL BE PLACED IN DUMP TRUCKS AND TRANSFERRED OFF SITE, TYPICAL RIGHT-OF-WAY CONFIGURATIONS DO NOT APPLY.
4. APPROVED TRAFFIC MANAGEMENT PLAN DEVICES AND PUBLIC SAFETY DEVICES WILL REPLACE AND/OR BE UTILIZED IN CONJUNCTION WITH SAFETY FENCING.

REV.#	DESCRIPTION	DATE				
C	RE-ROUTE	7/28/14	TITLE: I-17 WEST ROXBURY LATERAL			
			LOC. SUFFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
			DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8526	26 of 30

SUFFOLK COUNTY, MASSACHUSETTS
CITY OF BOSTON

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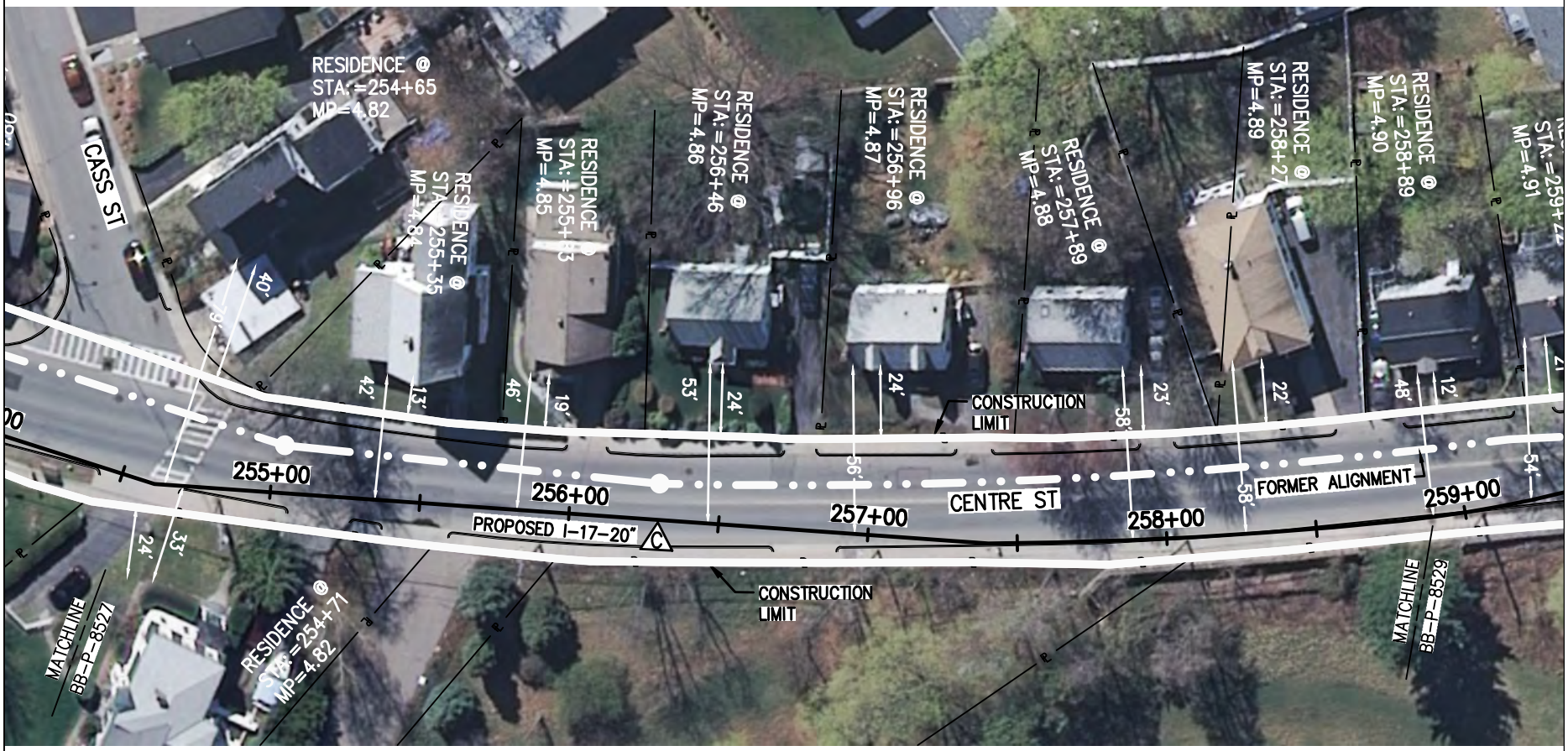
REV.#	DESCRIPTION	DATE				
C	RE-ROUTE	7/28/14	TITLE: I-17 WEST ROXBURY LATERAL			
			LOC. SUFFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
			DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8527	27 of 30

SUFFOLK COUNTY, MASSACHUSETTS
CITY OF BOSTON



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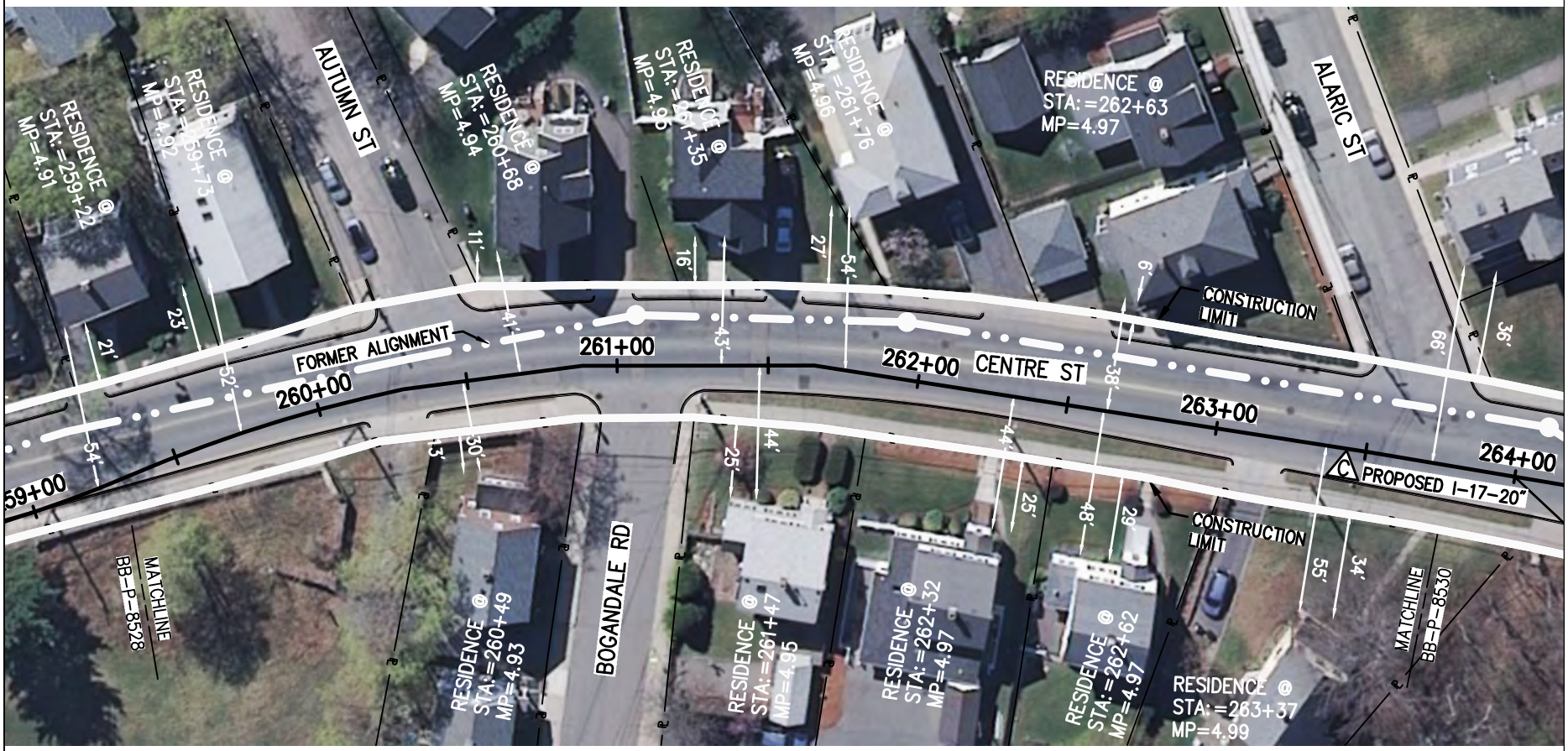
C	RE-ROUTE	7/28/14	TITLE: I-17 WEST ROXBURY LATERAL			
			LOC. SUFFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8528	28 of 30

SUFFOLK COUNTY, MASSACHUSETTS
CITY OF BOSTON



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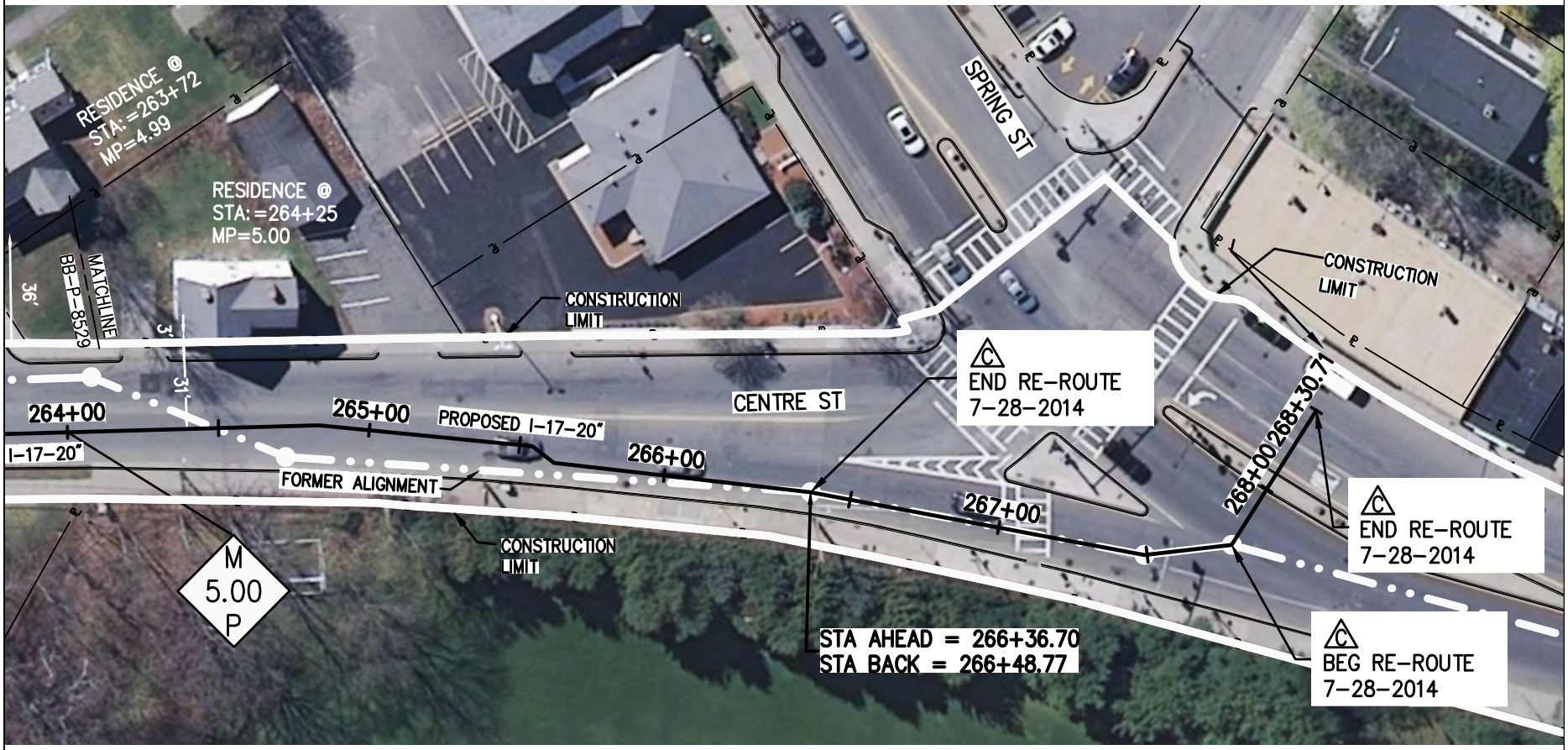
REV.#	DESCRIPTION	DATE	TITLE: I-17 WEST ROXBURY LATERAL			
C	RE-ROUTE	7/28/14				
			LOC. SUFFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
			DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8529	29 of 30

SUFFOLK COUNTY, MASSACHUSETTS
CITY OF BOSTON



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C	RE-ROUTE	7/28/14	TITLE: I-17 WEST ROXBURY LATERAL			
			LOC. SUFFOLK COUNTY, MASSACHUSETTS			REV.2
			CHK. BY SLT	DATE: 7/28/2014	CE000030.002	
REV.#	DESCRIPTION	DATE	DRN. BY VHB	SCALE: 1"=50'	DWG. BB-P-8530	30 of 30

APPENDIX I

WATERBODY CROSSING TABLE

TABLE I-1

Waterbodies Crossed by the AIM Project

Facility, Waterbody ID	Waterbody Name	Milepost [a]	Municipality	County	Crossing Width (Feet) [b]	Flow Type	FERC Classification [c]	Fishery Type	State Water Quality Classification [d]	Proposed Crossing Method [e]
PIPELINE FACILITIES										
Take-up And Relay										
Haverstraw to Stony Point										
B13-RLR-S1C	UNT to Mahwah River	0.29	Haverstraw	Rockland	1	I	Minor	Coldwater (Trout)	A(T)	Dry Crossing
B13-RLR-S2B	UNT to Minisceongo Creek	0.61	Haverstraw	Rockland	1.5	I	Minor	Coldwater	C(T)	Dry Crossing
B13-RLR-S3	UNT to Minisceongo Creek	0.81	Haverstraw	Rockland	1	I	Minor	Coldwater	C(T)	Dry Crossing
B13-RLR-S3A	UNT to Minisceongo Creek	0.81	Haverstraw	Rockland	1	I	Minor	Coldwater	C(T)	Dry Crossing
B13-RLR-S3E	UNT to Minisceongo Creek	0.90	Haverstraw	Rockland	0.5	I	Minor	Coldwater	C(T)	Dry Crossing
B13-RLR-S3D	UNT to Minisceongo Creek	0.90	Haverstraw	Rockland	4	P	Minor	Coldwater (Trout)	C(T)	Dry Crossing
B13-RLR-S3F	UNT to Minisceongo Creek	0.92	Haverstraw	Rockland	1	I	Minor	Coldwater	C(T)	Dry Crossing
B13-RLR-S3D	UNT to Minisceongo Creek	0.93	Haverstraw	Rockland	4	P	Minor	Coldwater (Trout)	C(T)	Dry Crossing
B13-RLR-S3G	UNT to Minisceongo Creek	1.00	Haverstraw	Rockland	1	I	Minor	Coldwater	C(T)	Dry Crossing
B13-RLR-S3H	UNT to Minisceongo Creek	1.00	Haverstraw	Rockland	0.5	I	Minor	Coldwater	C(T)	Dry Crossing
B13-RLR-S3D	UNT to Minisceongo Creek	1.00	Haverstraw	Rockland	4	P	Minor	Coldwater (Trout)	C(T)	Dry Crossing
B13-RLR-S3D	UNT to Minisceongo Creek	1.07	Haverstraw	Rockland	4	P	Minor	Coldwater (Trout)	C(T)	Dry Crossing
B13-RLR-S3I	UNT to Minisceongo Creek	1.08	Haverstraw	Rockland	2	P	Minor	Coldwater	C(T)	Dry Crossing
B13-RLR-S3J	Minisceongo Creek	1.09	Haverstraw	Rockland	20	P	Intermediate	Coldwater (Trout)	C(T)	Dry Crossing
B13-RLR-S4	UNT to Minisceongo Creek	1.65	Stony Point	Rockland	6	P	Minor	Coldwater	C	Dry Crossing
B13-RLR-S6	UNT to Minisceongo Creek	2.24	Stony Point	Rockland	0.5	I	Minor	Coldwater	C	Dry Crossing

TABLE I-1 (cont'd)

Waterbodies Crossed by the AIM Project

Facility, Waterbody ID	Waterbody Name	Milepost [a]	Municipality	County	Crossing Width (Feet) [b]	Flow Type	FERC Classification [c]	Fishery Type	State Water Quality Classification [d]	Proposed Crossing Method [e]
B13-RLR-S10	Cedar Pond Brook	2.99	Stony Point	Rockland	30	P	Intermediate	Coldwater (Trout Spawning)	C(TS)	Dry Crossing
B13-RLR-S10A	UNT to Cedar Pond Brook	3.04	Stony Point	Rockland	6	P	Minor	Coldwater (Trout Spawning)	C(TS)	Dry Crossing
Stony Point to Yorktown										
A13-SPLR-S1	UNT to Cedar Pond Brook	0.37	Stony Point Rockland	Rockland	25	P	Intermediate	Coldwater	A	Dry Crossing
B13-SPLR-S207	UNT to Hudson River	2.90	Stony Point Rockland	Rockland	14	I	Intermediate	Warmwater	B	Dry Crossing
Hudson River	Hudson River	3.00	Stony Point	Rockland Westchester	3,538	P	Major	Saline	SB	HDD
B13-SPLR-S17	Dickey Brook	5.66	Cortlandt	Westchester	30	P	Intermediate	Saline	SC	Dry Crossing
B13-SPLR-S2	Dickey Brook	5.97	Cortlandt	Westchester	13	P	Intermediate	Warmwater	C	Dry Crossing
B13-SPLR-S3A	UNT to Dickey Brook	6.02	Cortlandt	Westchester	1	I	Minor	Warmwater	C	Dry Crossing
B13-SPLR-S3	UNT to Dickey Brook	6.03	Cortlandt	Westchester	1	I	Minor	Warmwater	C	Dry Crossing
B13-SPLR-S7	UNT to Dickey Brook	6.65	Cortlandt	Westchester	3	P	Minor	Warmwater	B	Dry Crossing
B13-SPLR-S7	UNT to Dickey Brook	6.66	Cortlandt	Westchester	3	P	Minor	Warmwater	B	Dry Crossing
B13-SPLR-S13	UNT to Furnace Brook	7.59	Cortlandt	Westchester	2	I	Minor	Warmwater	B	Dry Crossing
B13-SPLR-S13A	UNT to Furnace Brook	7.61	Cortlandt	Westchester	3	I	Minor	Warmwater	B	Dry Crossing
B13-SPLR-S13B	UNT to Furnace Brook	7.89	Cortlandt	Westchester	1	I	Minor	Warmwater	B	Dry Crossing
B13-SPLR-S14	UNT to Furnace Brook	8.25	Cortlandt	Westchester	2	P	Minor	Warmwater	B	Dry Crossing
B13-SPLR-S18	UNT to Furnace Brook	8.83	Cortlandt	Westchester	5	I	Minor	Warmwater	C	Dry Crossing
B13-SPLR-S43	UNT to Peekskill Hollow Creek	9.59	Cortlandt	Westchester	3	I	Minor	Warmwater	C	Dry Crossing
B13-SPLR-S21A	UNT to Hunter Brook	10.34	Cortlandt	Westchester	5	P	Minor	Warmwater	C	Dry Crossing
B13-SPLR-S21B	UNT to Hunter Brook	10.36	Cortlandt	Westchester	4	I	Minor	Warmwater	C	Dry Crossing
B13-SPLR-S22	UNT to Hunter Brook	10.57	Cortlandt	Westchester	5	I	Minor	Warmwater	C	Dry Crossing

TABLE I-1 (cont'd)

Waterbodies Crossed by the AIM Project

Facility, Waterbody ID	Waterbody Name	Milepost [a]	Municipality	County	Crossing Width (Feet) [b]	Flow Type	FERC Classification [c]	Fishery Type	State Water Quality Classification [d]	Proposed Crossing Method [e]
B13-SPLR-S25	UNT to Hunter Brook	10.80	Cortlandt	Westchester	4	P	Minor	Warmwater	C	Dry Crossing
B13-SPLR-S26	UNT to Hunter Brook	11.13	Yorktown	Westchester	6	P	Minor	Warmwater	C	Dry Crossing
B13-SPLR-S27	UNT to Hunter Brook	11.51	Yorktown	Westchester	7	P	Minor	Warmwater	C	Dry Crossing
Southeast to MLV 19										
B13-SELR-S8	Sawmill River	0.27	Danbury	Fairfield	8	P	Minor	Warmwater	AA	Dry Crossing
A13-SELR-S1	UNT to Still River	1.04	Danbury	Fairfield	0.5	I	Minor	Warmwater	AA	Dry Crossing
A13-SELR-S3	UNT to Still River	1.25	Danbury	Fairfield	9	I	Minor	Warmwater	AA	Dry Crossing
B13-SELR-S12 f	Still River	1.74	Danbury	Fairfield	12	P	Intermediate	Warmwater (Trout)	AA	HDD
A13-SELR-S6	UNT to Boggs Pond Brook	3.03	Danbury	Fairfield	6	I	Minor	Warmwater	AA	Dry Crossing
B13-SELR-S1	UNT to Boggs Pond Brook	3.33	Danbury	Fairfield	2	I	Minor	Warmwater	AA	Dry Crossing
B13-SELR-S3	UNT to Boggs Pond Brook	3.55	Danbury	Fairfield	1	I	Minor	Warmwater	AA	Dry Crossing
B13-SELR-S4	Boggs Pond Brook	3.72	Danbury	Fairfield	8	P	Minor	Warmwater	AA	Dry Crossing
B13-SELR-S6	UNT to Kohanza Brook	3.92	Danbury	Fairfield	4	I	Minor	Warmwater	AA	Dry Crossing
B13-SELR-S7	Kohanza Brook	4.08	Danbury	Fairfield	12	I	Intermediate	Warmwater	AA	Dry Crossing
E-1 System Lateral										
A13-ELR-S1	Susquetonscut Brook	0.67	Lebanon	New London	37	P	Intermediate	Warmwater (Trout)	A	Dry Crossing
A13-ELR-S2	UNT to Susquetonscut Brk	0.70	Lebanon	New London	1.5	I	Minor	Warmwater	A	Dry Crossing
B13-ELR-S1	UNT to Susquetonscut Brk	1.21	Lebanon	New London	0.5	I	Minor	Warmwater	A	Dry Crossing
B13-ELR-S4B	UNT to Susquetonscut Brk	1.82	Lebanon	New London	0.75	I	Minor	Warmwater	A	Dry Crossing
B13-ELR-S4A	UNT to Susquetonscut Brk	1.85	Lebanon	New London	3	I	Minor	Warmwater	A	Dry Crossing
A13-ELR-S2A	Susquetonscut Brook	2.01	Lebanon	New London	29	P	Intermediate	Warmwater (Trout)	A	Dry Crossing
A13-ELR-S2E	UNT to Susquetonscut Brk	2.14	Lebanon	New London	2	I	Minor	Warmwater	A	Dry Crossing
A13-ELR-S2C	UNT to Susquetonscut Brk	2.14	Lebanon	New London	2	I	Minor	Warmwater	A	Dry Crossing

TABLE I-1 (cont'd)

Waterbodies Crossed by the AIM Project

Facility, Waterbody ID	Waterbody Name	Milepost [a]	Municipality	County	Crossing Width (Feet) [b]	Flow Type	FERC Classification [c]	Fishery Type	State Water Quality Classification [d]	Proposed Crossing Method [e]
A13-ELR-S2D	UNT to Susquetonscut Brk	2.16	Lebanon	New London	2	I	Minor	Warmwater	A	Dry Crossing
A13-ELR-S2B	UNT to Susquetonscut Brk	2.16	Lebanon	New London	2	I	Minor	Warmwater	A	Dry Crossing
A13-ELR-S3	UNT to Susquetonscut Brk	2.34	Lebanon	New London	1	I	Minor	Warmwater	A	Dry Crossing
A13-ELR-S4	UNT to Susquetonscut Brk	2.47	Lebanon	New London	1	I	Minor	Warmwater	A	Dry Crossing
A13-ELR-S6A	UNT to Susquetonscut Brk	3.04	Lebanon	New London	1	I	Minor	Warmwater	A	Dry Crossing
A13-ELR-S8B	UNT to Susquetonscut Brk	3.24	Lebanon	New London	11	P	Intermediate	Warmwater	A	Dry Crossing
A13-ELR-S8A	UNT to Susquetonscut Brk	3.15	Lebanon	New London	1	I	Minor	Warmwater	A	Dry Crossing
A13-ELR-S9B	UNT to Susquetonscut Brk	3.52	Lebanon	New London	7	P	Minor	Warmwater	A	Dry Crossing
A13-ELR-S10	UNT to Susquetonscut Brk	3.76	Lebanon	New London	4	I	Minor	Warmwater	A	Dry Crossing
B13-ELR-S16	UNT to Susquetonscut Brk	4.33	Franklin	New London	1	I	Minor	Warmwater	A	Dry Crossing
B13-ELR-S15	UNT to Susquetonscut Brk	4.47	Franklin	New London	4	I	Minor	Warmwater	A	Dry Crossing
B13-ELR-S14	UNT to Susquetonscut Brk	4.68	Franklin	New London	5	P	Minor	Warmwater	A	Dry Crossing
B13-ELR-S13A	UNT to Susquetonscut Brk	4.80	Franklin	New London	3	I	Minor	Warmwater	A	Dry Crossing
B13-ELR-S13B	UNT to Susquetonscut Brk	4.80	Franklin	New London	2	I	Minor	Warmwater	A	Dry Crossing
B13-ELR-S11	UNT to Susquetonscut Brk	4.91	Franklin	New London	1.5	I	Minor	Warmwater	A	Dry Crossing
B13-ELR-S10	UNT to Susquetonscut Brk	4.93	Franklin	New London	1.5	I	Minor	Warmwater	A	Dry Crossing
B13-ELR-S9C	UNT to Susquetonscut Brk	5.04	Franklin	New London	2	I	Minor	Warmwater	A	Dry Crossing
B13-ELR-S9B	UNT to Susquetonscut Brk	5.26	Franklin	New London	3	I	Minor	Warmwater	A	Dry Crossing
B13-ELR-S9	UNT to Susquetonscut Brk	5.51	Franklin	New London	1	I	Minor	Warmwater	A	Dry Crossing

TABLE I-1 (cont'd)

Waterbodies Crossed by the AIM Project

Facility, Waterbody ID	Waterbody Name	Milepost [a]	Municipality	County	Crossing Width (Feet) [b]	Flow Type	FERC Classification [c]	Fishery Type	State Water Quality Classification [d]	Proposed Crossing Method [e]
B13-ELR-S5A	UNT to Susquetonscut Brk	5.82	Franklin	New London	2	I	Minor	Warmwater (Trout)	A	Dry Crossing
B13-ELR-S5B	Susquetonscut Brook	5.83	Franklin	New London	37	P	Intermediate	Warmwater (Trout)	A	Dry Crossing
A13-ELR-S11	UNT to Susquetonscut Brk	6.10	Franklin	New London	1	I	Minor	Warmwater	A	Dry Crossing
A13-ELR-S50	UNT to Susquetonscut Brk	6.52	Franklin	New London	17	I	Intermediate	Warmwater	A	Dry Crossing
B13-ELR-S23	UNT to Susquetonscut Brk	7.16	Franklin	New London	5	I	Minor	Warmwater	A	Dry Crossing
B13-ELR-S22 f	Johnnycake Brook (Ponded)	7.28	Franklin	New London	56	N/A	Intermediate	Warmwater	A	Dry Crossing
B13-ELR-S19	UNT to Elisha Brook	8.32	Franklin	New London	1	I	Minor	Coldwater (Trout)	A	Dry Crossing
B13-ELR-S18	Elisha Brook	8.51	Norwich	New London	6	P	Minor	Coldwater (Trout)	A	Dry Crossing
B13-ELR-S25	UNT to Norwichtown Brook	8.83	Norwich	New London	2	P	Minor	Warmwater	A	Dry Crossing
B13-ELR-S25A	UNT to Norwichtown Brook	8.87	Norwich	New London	1	E	Minor	Warmwater	A	Dry Crossing
B13-ELR-S24	UNT to Norwichtown Brook	8.92	Norwich	New London	1	E	Minor	Warmwater	A	Dry Crossing
B13-ELR-S17	UNT to Norwichtown Brook	9.06	Norwich	New London	2	E	Minor	Warmwater	A	Dry Crossing
LOOP EXTENSION										
Line 36-A Loop Extension										
B13-CLR-S1	Coles Brook	0.05	Cromwell	Middlesex	4	P	Minor	Warmwater	A	Dry Crossing
B13-CLR-S2	UNT to Dividend Brook	0.79	Cromwell	Middlesex	1	I	Minor	Coldwater	A	Dry Crossing
B13-CLR-S2C	UNT to Dividend Brook	0.88	Cromwell	Middlesex	1	I	Minor	Coldwater	A	Dry Crossing
B13-CLR-S2B	UNT to Dividend Brook	0.90	Cromwell	Middlesex	2	I	Minor	Coldwater	A	Dry Crossing
B13-CLR-S2D	UNT to Dividend Brook	0.90	Cromwell	Middlesex	1.5	I	Minor	Coldwater	A	Dry Crossing
B13-CLR-S2E	UNT to Dividend Brook	0.91	Cromwell	Middlesex	2	P	Minor	Coldwater	A	Dry Crossing

TABLE I-1 (cont'd)

Waterbodies Crossed by the AIM Project

Facility, Waterbody ID	Waterbody Name	Milepost [a]	Municipality	County	Crossing Width (Feet) [b]	Flow Type	FERC Classification [c]	Fishery Type	State Water Quality Classification [d]	Proposed Crossing Method [e]
E-1 System Lateral Loop Extension										
B13-ELP-S3	UNT to Stony Brook	0.04	Montville	New London	13	P	Intermediate	Coldwater (Trout)	A	Dry Crossing
B13-ELP-S2	UNT to Stony Brook	0.16	Montville	New London	1.5	I	Minor	Coldwater (Trout)	A	Dry Crossing
B13-ELP-S4	UNT to Stony Brook	0.32	Montville	New London	10	I	Minor	Coldwater (Trout)	A	Dry Crossing
B13-ELP-S4A	UNT to Stony Brook	0.34	Montville	New London	1	I	Minor	Coldwater (Trout)	A	Dry Crossing
B13-ELP-S5	Falls Brook	0.80	Montville	New London	25	P	Intermediate	Coldwater (Trout)	A	Dry Crossing
B13-ELP-S6	UNT to Stony Brook	0.94	Montville	New London	5	I	Minor	Coldwater (Trout)	A	Dry Crossing
B13-ELP-S7	UNT to Stony Brook	1.18	Montville	New London	1	I	Minor	Coldwater (Trout)	A	Dry Crossing
NEW PIPELINE										
West Roxbury Lateral										
B13-WRL-S5	UNT to Purgatory Brook	0.07	Dedham	Norfolk	9	P	Minor	Warmwater	B	Dry Crossing
ABOVEGROUND FACILITIES										
None										

[a] Milepost is the approximate pipeline entry point of each waterbody.

[b] Crossing width measured from water's edge.

[c] Minor Waterbody – Includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of crossing.
Intermediate Waterbody – Includes all waterbodies greater than 10 feet wide by less than or equal to 100 feet wide at the water's edge at the time of crossing.
Major Waterbody – Includes all waterbodies greater than 100 feet wide at the water's edge at the time of crossing.

[d] State Designations and Use Descriptions:
New York:

1. The classifications A, AA, A-S and AA-S indicate a best usage for a source of drinking water, swimming and other recreation, and fishing.
2. Classification B indicates a best usage for swimming and other recreation, and fishing.
3. Classification C indicates a best usage for fishing.
4. Classification D indicates a best usage of fishing, but these waters will not support fish propagation.
5. Classification SA (marine waters) indicates a best usage for shellfishing for market purposes, swimming and other recreation, and fishing.
6. Classification SB (marine waters) indicates a best usage for swimming and other recreation, and fishing.
7. Classification SC (marine waters) indicates a best usage for fishing.
8. Classification I (marine waters) indicates a best usage for secondary contact recreation, and fishing.

TABLE I-1 (cont'd)

Waterbodies Crossed by the AIM Project

Facility, Waterbody ID	Waterbody Name	Milepost [a]	Municipality	County	Crossing Width (Feet) [b]	Flow Type	FERC Classification [c]	Fishery Type	State Water Quality Classification [d]	Proposed Crossing Method [e]

9. Classification SD (marine waters) indicates a best usage for fishing, but these waters may not support fish propagation.
10. The symbol (T or TS) after any classification means that designated waters are trout waters (T) or suitable for trout spawning (TS). See the DEC Rules & Regulations (parts 800-941) for a complete definition.

Connecticut:

AA – These waters can be used as existing or proposed drinking water sources, habitat for fish and other aquatic life or wildlife, recreation, and industrial or agricultural water supply.

A – These waters are appropriate for fish, aquatic life and wildlife habitat, potential drinking water supply, recreation, navigation, and industrial or agricultural water supply.

B – These waters are appropriate for fish, aquatic life and wildlife habitat, recreation, navigation, and industrial or agricultural water supply.

Massachusetts:

A – These waters are designated as a source of public water supply. To the extent compatible with this use they shall be an excellent habitat for fish, other aquatic life and wildlife, and suitable for primary and secondary contact recreation. These waters shall have excellent aesthetic value. These waters are designated for protection as Outstanding Resource Waters under 314 CMR 4.04(3).

B – These waters are designated as a habitat for fish. Other aquatic life, and wildlife, and for primary and secondary contact recreation. Where designated they shall be suitable as a source of public water supply with appropriate treatment. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value.

C – These waters are designated as a habitat for fish. Other aquatic life, and wildlife, and for secondary contact recreation. These waters shall be suitable for the irrigation of crops used for consumption after cooking and for compatible industrial cooling and process uses. These waters shall have good aesthetic value.

SB – These waters are designated as habitat for fish, other aquatic life and wildlife, and for primary and secondary contact recreation. In approved areas they shall be suitable for shellfish harvesting with depuration (Restricted Shellfish Areas). These waters shall have consistently good aesthetic value.

[e] The proposed pipeline crossing methods of "dry" and "HDD" are described in detail in section 2.3.1.2.

[f] Indicates partial estimated delineation via aerial imagery within construction workspace.

APPENDIX J

BEST DRILLING PRACTICES, MONITORING, AND CLEAN-UP OF HORIZONTAL DIRECTIONAL DRILLING INADVERTENT RETURNS PLAN AND SITE-SPECIFIC HORIZONTAL DIRECTIONAL DRILL CROSSING PLANS

Best Drilling Practices, Monitoring and Clean-up of Horizontal Directional Drilling Inadvertent Returns for the Algonquin Incremental Market Project

February 2014

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1.0 INTRODUCTION

Algonquin Gas Transmission, LLC ("Algonquin"), an indirect, wholly-owned subsidiary of Spectra Energy Partners, is seeking authorization from the Federal Energy Regulatory Commission ("FERC" or "Commission") pursuant to Section 7(c) of the Natural Gas Act[1] ("NGA") to construct, install, own, operate, and maintain the Algonquin Incremental Market Project ("AIM Project" or "Project") which will involve expansion of its existing pipeline systems located in New York, Connecticut, Rhode Island and Massachusetts.

Algonquin has developed this Best Drilling Practices Plan ("BDP Plan") for monitoring the Horizontal Directional Drilling ("HDD") program. This BDP Plan will be kept on-site at all drill locations and will be available and implemented by all proposed personnel described in the following sections of this BDP Plan. All HDD activities will be managed in accordance with this BDP Plan.

2.0 BEST AVAILABLE DRILLING PRACTICES

2.1 Description of the Work

Algonquin will use the HDD method at designated locations to construct the Project. Two HDDs are proposed. They include:

- 42-inch Hudson River HDD – Beginning at approximately MP 3.19 in Stony Point, New York, on the west side of the Hudson River and terminating at approximately MP 3.91 in the Hamlet of Verplank in the Town of Cortlandt, New York on the east side of the Hudson River
- 42-inch I-84/Still River HDD – Beginning at approximately MP 1.4 in Danbury, Connecticut in the paved portion of the Connecticut Department of Transportation I-84 Rest Area and terminating at approximately MP 2.1 on the east side of Mill Plain Road (U.S. 202/U.S. 6) in the Town of Danbury, Connecticut.

The HDD method always involves establishing staging areas along both sides of the proposed crossing typically at the entry and exit points. The process commences with the boring of a pilot hole into the ground beneath the obstruction, wetland or water body, and then enlarging the hole with one or more passes of a reamer until the hole is the necessary diameter to facilitate the pull-back (installation) of the pipeline.

Once the reaming passes are completed, prefabricated pipe segments are then pulled through the hole to complete the crossing; additional welding between segments will be required. While the HDD method is a proven technology, there are certain impacts that could occur as a result of the drilling such as the inadvertent release of drilling fluid, which is a slurry of bentonite clay and water which is classified as non-toxic to the aquatic environment and is a non-hazardous substance. Drilling fluids that are released typically contain a lower concentration of bentonite when they surface because the bentonite is filtered out as its passes through existing sediments of varying types. The proposed drilling program for both HDDs is expected to be initiated and completed in 2015.

The following sections provide the process of HDD and procedures to be implemented in the case of HDD failure or the inadvertent release of drilling fluid.

[1] 15 U.S.C. §§ 717f(b) and 717f(c) (2006).

2.2 Background

The HDD process uses bentonite-based drilling fluids. The drilling fluids are tested for specific engineering properties to ensure a successful HDD installation. The environmental impact associated with HDD is the inadvertent release of drilling fluids to the surface along the drill alignment during drilling operations.

The drilling fluids are typically a mixture of fresh water and bentonite (sodium montmorillonite). Bentonite is natural clay usually mined in Wyoming. Bentonite is extremely hydrophilic and can absorb up to ten times its weight in water. Typically, the drilling fluid contains no more than 5 percent bentonite (95 percent fresh water).

The HDD Contractor maintains fluid performance through sampling, testing and recording of the fluid properties during drilling operations; analyzing and then adjusting and maintaining to afford the most efficient drilling fluid rheology to adapt to various geological conditions.

The slurry is designed to:

- Stabilize the bore hole against collapse; stabilizes formations and prevents fluid loss;
- Lubricate, cool, and clean the tooling cutters; cool guidance electronics;
- Transport cuttings by suspension to enable flow to the surface at entry/exit points for recycling;
- Produce lubrication for drill string and downhole assembly while drilling which reduces friction forces from the formation and pull loads;
- Produce hydrostatic fluid pressure in the bore hole to offset ground formation/ground water pressure; and
- Drive downhole drill motor for rock drilling.

2.2.1 HDD Working Procedures

Prior to drilling operations, site-specific HDD Procedures will be prepared by the HDD contractor and submitted to Algonquin for review and approval. As a minimum, the HDD Procedures will address the following:

Annular Pressure or Release Mitigation – Once it is indicated to the driller that annular pressures are abnormally high or fluid loss is apparent and that a release has occurred, the driller has the following options (or any combination of these options):

- Dispatch experienced company personnel observers to monitor the area in the vicinity of the drilled path;
- Decrease pump pressure;
- Decrease penetration rate;
- Temporarily cease drilling operations and shut down mud pump;
- Re-start pump and stroke bore hole in 30 ft. +/- lengths to restore circulation ("swab" the hole) as many as 6 times but no fewer than 2 times;
- Introduce additional flow along the borehole starting at the entry/exit using "weeper" subs; and
- Modify the drilling mud with a change in viscosity and/or lost circulation additives.

If inadvertent returns are observed surfacing on the ground surface at a location that is inaccessible; the following procedures will be followed:

- Contractor will ensure all reasonable measures within the limitations of current technology have been taken to re-establish circulation; and
- Continue drilling utilizing a minimal amount of drilling fluid as required to penetrate the formation or to maintain a successful product pull back.

3.0 MONITORING OF INADVERTENT RETURNS

3.1 Personnel and Responsibilities

The actions in this BDP Plan are to be implemented by the following personnel:

Chief Inspector – Algonquin will designate an HDD Chief Inspector for the Project. The CI will have overall authority for construction activities that occur on the Project.

Environmental Inspector – At least one Environmental Inspector ("EI") will be designated by Algonquin to monitor the HDD activities. The EI will have peer status with all other activity inspectors and will report directly to the HDD CI who has overall authority. The EI will have the authority to stop activities that violate the environmental conditions of the FERC certificate (if applicable), other federal and state permits, or landowner requirements, and to order corrective action.

HDD Superintendent – is the senior on-site representative of the HDD contractor. The HDD Superintendent has overall responsibility for implementing this BDP Plan on behalf of the HDD Contractor - The HDD Superintendent will be familiar with all aspects of the drilling activities, the contents of the BDP Plan and the conditions of approval under which the activity is permitted to take place. The HDD Superintendent will make available a copy of this BDP Plan on all drill sites and distribute to the appropriate construction personnel. The HDD Superintendent will ensure that workers are properly trained and familiar with the necessary procedures for response to an inadvertent release.

HDD Operator – is HDD contractor's driller operating the drilling rig and mud pumps. The HDD Operator is responsible for monitoring circulation back to the entry and exit locations and for monitoring annular pressures during pilot-hole drilling. In the event of loss of circulation or higher than expected annular pressures, the HDD Operator must communicate the event to the HDD Superintendent and HDD contractor field crews as well as the on-site Algonquin inspection staff. The HDD Operator is responsible for stoppage or changes to the drilling program in the event of observed or anticipated inadvertent returns.

HDD Contractor Personnel – during HDD installation, field crews will be responsible to monitor the HDD alignment along with the Applicant's field representatives'. Field crews in coordination with the EI are responsible for timely notifications and responses to observed releases in accordance with this BDP Plan. The EI ultimately must sign off on the action plan for mitigating the release.

3.2 Training

Prior to drilling, the HDD Superintendent, CI and the Applicant's EI will verify that the HDD Operator and field crew receive the following site-specific training but not limited to:

- Project specific safety training;
- Review provisions of this BDP Plan and site-specific permit requirements;
- Review location of sensitive environmental resources at the site;
- Review drilling procedures for release prevention;
- Review the site-specific monitoring requirements;

- Review the location and operation of release control equipment and materials; and
- Review protocols for reporting observed inadvertent returns.

3.3 Monitoring & Reporting

Appropriate Monitoring & Reporting actions will be:

- If the HDD Operator observes an increase in annular fluid pressure or loss of circulation, the Operator will notify the HDD Superintendent and field crews of the event and approximate position of the tooling;
- Where practical, a member of the field crew will visually inspect the ground surface near the position of the cutting head;
- If an inadvertent release is observed:
    - Field crew will notify (via hand-held radio or cell phone) the HDD Operator;
    - The HDD Operator will temporarily cease pumping of the drilling fluid and notify the HDD Superintendent and CI;
    - The CI will notify and coordinate a response with the EI;
    - The EI will notify appropriate permit authorities as necessary of the event and proposed response and provide required documentation within 24 hours; and
- The CI will prepare a report that summarizes the incident.

4.0 RESPONSE TO INADVERTENT RETURNS

Typically, inadvertent releases are most often detected in an area near the entry or exit points of the drill alignment when the pilot bore is at shallow depths, above bedrock, and in permeable/porous soils. In these occurrences the release will be assessed by the HDD Superintendent, EI and CI to determine an estimated volume and foot-print of the release. They will also assess the potential of the release to reach adjacent waterbodies, wetlands, or other types of infrastructure.

The HDD Superintendent will assess the drilling parameters (depth, annular pressures, fluid flow rate and drill fluid characteristics) and incorporate appropriate changes.

The HDD Superintendent, EI, and CI will implement installation of appropriate containment structures and additional response measures. Access for personnel and equipment to the release site is a major factor in determining the methods used for containment and disposal. Typically, containment is achieved by excavating a small sump pit (5 cubic yards) at the site of the release and to surround the release with hay bales, silt fence and/or sand bags. Once contained, the drilling fluid is either collected by vacuum trucks or pumped back to the mud recycle unit, or to a location where vacuum trucks can be accessed. The fluids are then transported either back to the HDD Drilling Rig or to a disposal site.

If the release is mitigated and controlled, forward progress of the drilling will be approved by the EI in coordination with the HDD Superintendent and CI.

The site-specific response will follow these guidelines:

4.1 Upland Location

- Evaluate the amount of release to determine if containment structures are warranted and if they will effectively contain the release.

- Promptly implement appropriate containment measures as needed to contain and recover the slurry.
- If the release is within 50-foot of a wetland or waterbody, silt fence and/or hay bales will be installed between the release site and the wetland or waterbody.
- If the release cannot be contained, then the operator must suspend drilling operations until appropriate containment is in place.
- Remove the fluids using either a vacuum truck or by pumping to a location where a vacuum truck is accessible.
- After the HDD installation is complete, perform final clean-up (see Section 5).

4.2 Wetland Location

Algonquin's proposed HDD's are being designed to minimize the potential for inadvertent releases to the HDD crossing locations. Although final design is still in progress, Algonquin expects that the I-84/Still River HDD will be a rock drill thereby limiting the potential for inadvertent returns to occur. To further minimize the potential for inadvertent returns, casing will be installed through overburden soils to the bedrock interface (as feasible) at both ends of the HDD. Even with these controls in place, if a release of drilling fluids does occur the following steps will be taken:

- Evaluate the amount of release to determine if containment structures are warranted and if they will effectively contain the release.
- Promptly implement appropriate containment measures to contain and recover the slurry;
    - Efforts to contain and recover slurry in wetlands may result in further disturbance by equipment and personnel, and possibly offset the benefit gained in removing the slurry.
    - If the amount of the slurry is too small to allow the practical collection from the affected area, the fluid will be diluted with fresh water or allowed to dry and dissipate naturally.
- If the release cannot be controlled or contained, immediately suspend drilling operations until appropriate containment is in place.
- Remove the fluids using either a vacuum truck or by pumping to a location where a vacuum truck is accessible.
- After the HDD installation is complete, perform final clean-up (see Section 5).

4.3 Hudson River Crossing

Due to geotechnical limitations and the extreme depth of the bedrock profile, the Hudson River HDD has been designed to be a soft soil HDD. This crossing method is consistent with the successful HDD crossing of the Hudson River that was completed by Spectra Energy in 2013 as part of the NJ-NY Expansion Project. Because the crossing of the Hudson River will occur in soft soils, casing will be driven deep into the substrata at both ends of the HDD and will remain in place for the duration of the crossing. This will allow flow of drilling fluids from the drill path below the river bed back to the surface. Because this crossing is categorized as a "soft" crossing by passing through organics, silt and sands, the drilling process will occur quite quickly as opposed to a hard rock crossing. While it is possible for some drilling fluid to inadvertently release to the river bed, the volume would be minimal and would not accumulate due to the rapid drilling rates. Additionally, Algonquin's contractor will drill the pilot holes from both sides of this crossing and perform an intersect, thereby decreasing the distance, and subsequently decreasing the resistance/pressure required for the drilling fluid to travel back to the entry points via the conductor casing.

Because of the design, the river current, marine traffic, existing turbidity and other pollutants that contribute to the discoloration of the major water body locations it is extremely unlikely any inadvertent

returns could be identifiable and any amount of accumulation will not occur other than that described above. Algonquin will remove the drilling fluid as described above in the near shore areas of the Hudson River if required. Algonquin does not believe it is feasible to identify, safe or technically possible to effectively perform any reclamation of inadvertent returns that in all probability will never accumulate in the navigation channels of the major waterbody crossings.

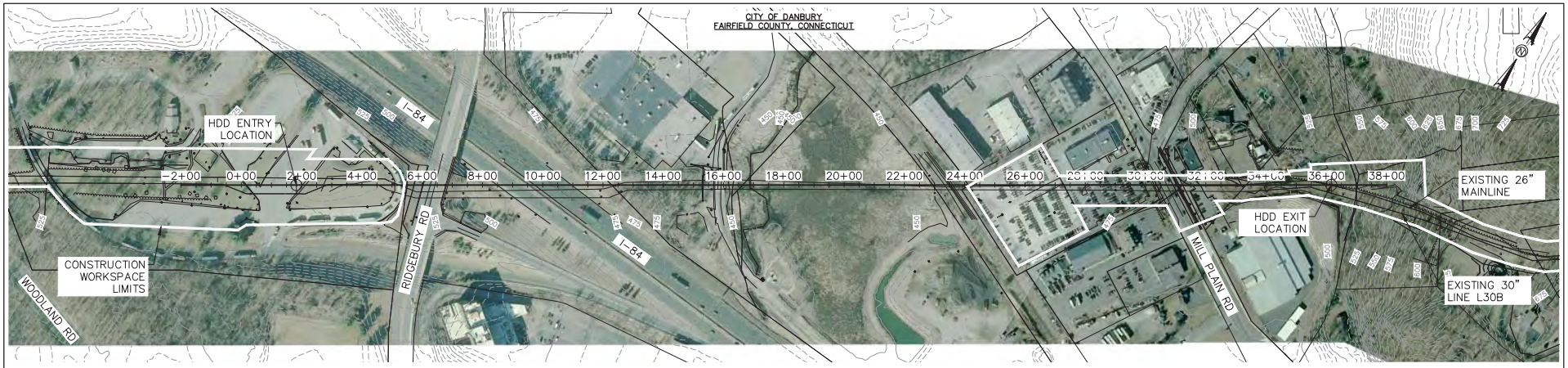
5.0 CLEAN-UP

After completion of the HDD installation, site-specific clean-up measures will be developed by the CI, HDD Superintendent, for approval by the EI. Potential for secondary impact from the clean-up process is to be evaluated and benefits of clean-up activities.

The following measures are considered appropriate:

- Drilling mud will be cleaned up by hand using hand shovels, buckets and soft bristled brooms minimizing damage to existing vegetation;
- Fresh water washes may be employed if deemed beneficial and feasible;
- Containment structures will be pumped out and the ground surface scraped to bare topsoil minimizing loss of topsoil or damage to adjacent vegetation;
- The recovered drilling fluid will be recycled or disposed of at an approved upland location or disposal facility. No recovered drilling fluid will be disposed of in streams or storm drains
- All containment structures will be removed; and
- Recovered materials will be collected in containers for temporary storage prior to removal from the site.

Site-Specific Horizontal Directional Drill Crossing Plans



PLAN
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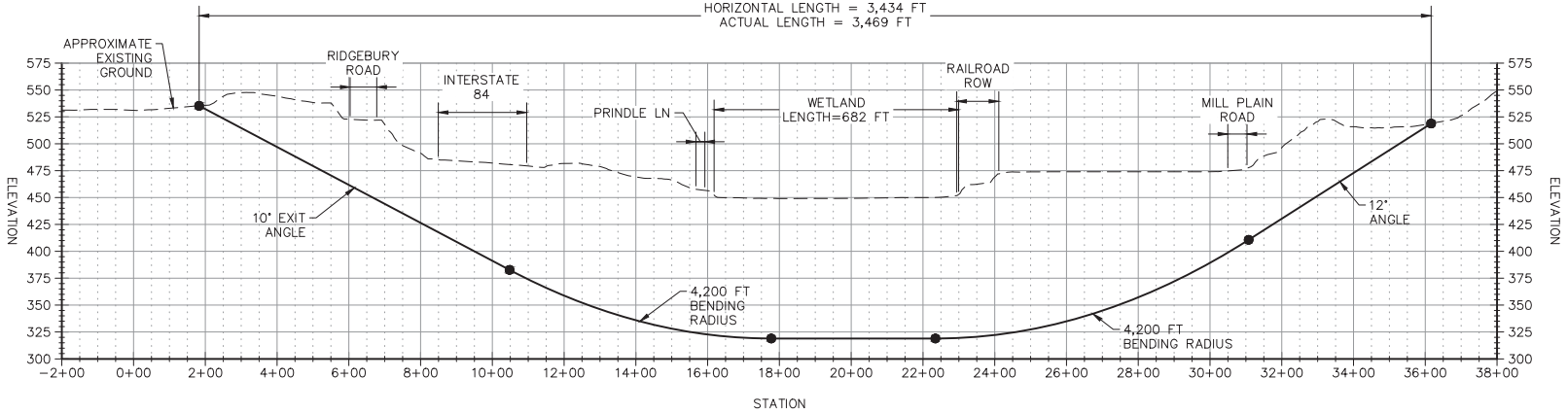

PROFILE

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SCALE: 1" = 150'
HORIZONTAL

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SCALE: 1" = 50'
VERTICAL

DWG. NO.	REFERENCE DWG.	REV	DSN	CK	DESCRIPTION
	03/31/2014				

ENGINEERING APPROVALS				
DRAWN BY:	BID		CONSTRUCTION	
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

SOUTHEAST DISCHARGE
AIM PROJECT
PROPOSED 42" M/L
CONCEPTUAL HDD PLAN & PROFILE
LOC. FAIRFIELD COUNTY, CONNECTICUT

Spectra Energy Partners
Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

YEAR: 2015 | W.B.S. | SCALE: AS NOTED | DWG. SQ-Z-3001 | REV. 0

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PLAN

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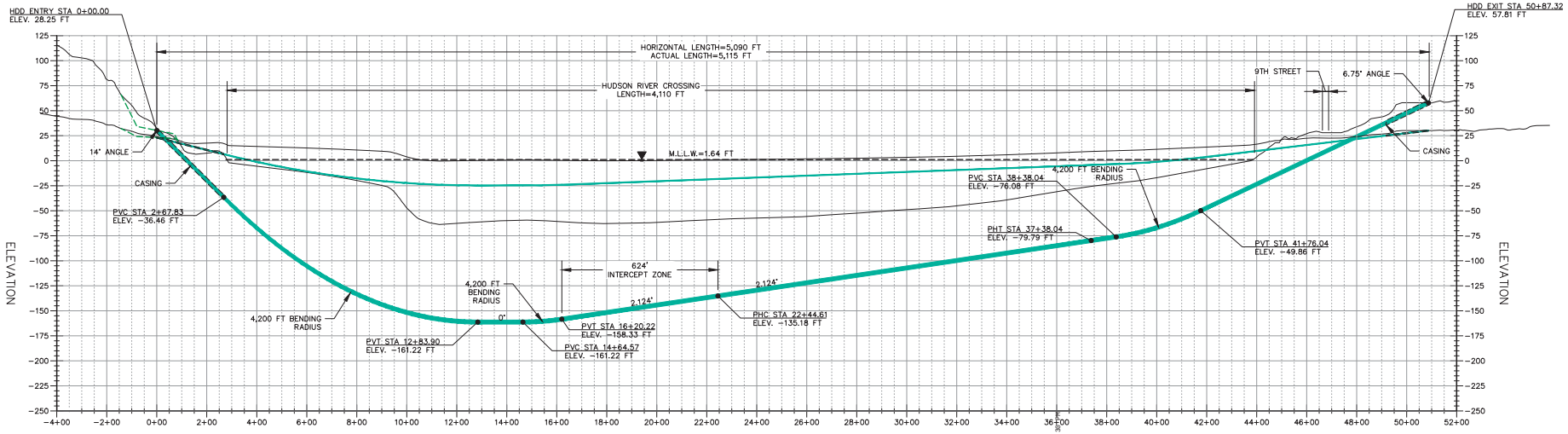
SCALE IN FEET



PROFILE

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SCALE: 1" = 200'
HORIZONTAL

50 0 50 100
SCALE: 1" = 50'
VERTICAL

NOTE: HDD GEOMETRY SHOWN HEREON IS PRELIMINARY AND SUBJECT TO REVISION PENDING FURTHER GEOTECHNICAL INFORMATION.

NOT FOR CONSTRUCTION

DWG. NO.	REFERENCE DWG.	REV	DSN	CK	DESCRIPTION
	09/25/2014				

ENGINEERING APPROVALS				
DRAWN BY:	BID		CONSTRUCTION	
TITLE	SIGNATURE	DATE	SIGNATURE	DATE

STONY POINT DISCHARGE
AIM PROJECT
PROPOSED 42" M/L
CONCEPTUAL HDD PLAN & PROFILE

LOC. ROCKLAND AND WESTCHESTER COUNTIES, NEW YORK

Spectra Energy Partners
Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

YEAR: 2015 | W.B.S. | SCALE: AS NOTED | DWG. S7-Z-3001A | REV. 1

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J-14

APPENDIX K

WETLAND CROSSINGS

TABLE K-1

Wetlands Crossed by the AIM Project

Facility, State, Wetland ID	NWI Classification [a]	Enter Milepost [b]	Exit Milepost [b]	Town	County	Crossing Length (feet) [c]	Total Wetland Acreage Impacted [d]		Total Forested Wetland Acreage Impacted [d]	Total Wetland Acreage Impacted by Mainten-ance [e]	Total Forested Wetland Acreage Impacted by Mainten-ance [e]
							Within Existing ROW	Outside of Existing ROW			
PIPELINE FACILITIES											
New York											
Haverstraw to Stony Point Take-up and Relay											
B13-RLR-W1	PEM/PFO	0.24	0.24	Haverstraw	Rockland	9.77	0.15	0.00	0.01	0.00	0.00
B13-RLR-W2	PEM/PFO	0.54	0.56	Haverstraw	Rockland	102.08	0.78	0.05	0.07	0.00	0.00
B13-RLR-W2	PEM/PFO	0.57	0.58	Haverstraw	Rockland	57.38					
B13-RLR-W2	PEM/PFO	0.58	0.63	Haverstraw	Rockland	226.03					
B13-RLR-W2	PEM/PFO	0.66	0.68	Haverstraw	Rockland	68.51					
B13-RLR-W3[f]	PEM/PFO	0.77	1.01	Haverstraw	Rockland	1,299.46	1.97	0.81	0.50	0.00	0.00
B13-RLR-W3[f]	PEM/PFO	1.04	1.08	Haverstraw	Rockland	212.67					
B13-RLR-W4	PEM/PSS	1.62	1.65	Stony Point	Rockland	184.56	0.22	0.06	0.05	0.00	0.00
B13-RLR-W5	PEM/PFO	2.13	2.14	Stony Point	Rockland	77.73	0.24	0.03	0.06	0.00	0.00
B13-RLR-W6	PSS/PEM/PFO	2.14	2.16	Stony Point	Rockland	87.10	0.08	0.22	0.21	0.00	0.00
B13-RLR-W6	PSS/PEM/PFO	2.24	2.25	Stony Point	Rockland	20.67					
B13-RLR-W7	PSS	2.42	2.44	Stony Point	Rockland	0.00	0.02	0.00	0.00	0.00	0.00
B13-RLR-W8	PSS/PEM	2.66	2.75	Stony Point	Rockland	0.00	0.39	0.00	0.00	0.00	0.00
B13-RLR-W9	PSS/PEM	2.96	2.96	Stony Point	Rockland	27.63	0.03	0.05	0.05	0.00	0.00
B13-RLR-W10	PEM/PFO	3.03	3.05	Stony Point	Rockland	0.00	0.01	0.01	0.01	0.00	0.00
Stony Point to Yorktown Take-up and Relay											
B13-SPLR-W40	PFO/PEM	1.27	1.28	Stony Point	Rockland	43.97	0.04	0.01	0.00	0.00	0.00
B13-SPLR-W37[g]	PFO	1.90	1.91	Stony Point	Rockland	0.00	0.00	0.00	0.00	0.00	0.00
A14-SPLR-W101	PEM	2.98	2.99	Stony Point	Rockland	0.00	0.00	0.00	0.00	0.00	0.00
B13-SPLR-W50	PFO/PSS/PEM	4.44	4.45	Cortlandt	Westchester	0.00	0.00	0.17	0.17	0.05	0.05
B13-SPLR-W203	PEM	4.56	4.56	Cortlandt	Westchester	0.00	0.00	0.02	0.02	0.00	0.00
B13-SPLR-W205	PFO	4.74	4.74	Cortlandt	Westchester	0.00	0.00	0.04	0.04	0.01	0.01

TABLE K-1 (cont'd)

Wetlands Crossed by the AIM Project

Facility, State, Wetland ID	NWI Classification [a]	Enter Milepost [b]	Exit Milepost [b]	Town	County	Crossing Length (feet) [c]	Total Wetland Acreage Impacted [d]		Total Forested Wetland Acreage Impacted [d]	Total Wetland Acreage Impacted by Mainten-ance [e]	Total Forested Wetland Acreage Impacted by Mainten-ance [e]
							Within Existing ROW	Outside of Existing ROW			
B13-SPLR-W202	PFO	4.82	4.82	Cortlandt	Westchester	17.19	0.00	0.07	0.07	0.03	0.03
B13-SPLR-W16	PFO	5.06	5.06	Cortlandt	Westchester	44.34	0.00	1.59	1.27	0.94	0.75
B13-SPLR-W16	PFO/PEM	5.16	5.17	Cortlandt	Westchester	36.20					
B13-SPLR-W16	PFO/PEM	5.18	5.20	Cortlandt	Westchester	100.75					
B13-SPLR-W16	PFO/PEM	5.25	5.37	Cortlandt	Westchester	640.64					
B13-SPLR-W17	PFO/PEM	5.62	5.64	Cortlandt	Westchester	98.08	0.17	0.13	0.13	0.00	0.00
B13-SPLR-W17	PFO/PEM	5.64	5.64	Cortlandt	Westchester	0.01					
B13-SPLR-W17	PFO/PEM	5.65	5.66	Cortlandt	Westchester	67.98					
B13-SPLR-W2	PEM/PFO1	5.90	5.99	Peekskill/ Cortlandt	Westchester	484.03	0.75	0.76	0.80	0.00	0.00
B13-SPLR-W3	PFO/PEM	6.03	6.05	Cortlandt	Westchester	74.26	0.26	0.04	0.04	0.00	0.00
B13-SPLR-W3	PFO/PEM	6.07	6.09	Cortlandt	Westchester	95.58					
B13-SPLR-W5	PFO	6.28	6.28	Cortlandt	Westchester	0.00	0.00	0.05	0.05	0.00	0.00
B13-SPLR-W7	PFO/PEM	6.53	6.54	Cortlandt	Westchester	85.37	0.40	0.45	0.13	0.00	0.00
B13-SPLR-W7	PFO/PEM	6.56	6.57	Cortlandt	Westchester	68.63					
B13-SPLR-W7	PFO/PEM	6.65	6.69	Cortlandt	Westchester	199.46					
B13-SPLR-W8	PFO/PEM	6.83	6.84	Cortlandt	Westchester	58.35	0.01	0.11	0.01	0.00	0.00
B13-SPLR-W10	PFO/PEM	7.02	7.04	Cortlandt	Westchester	77.37	0.02	0.06	0.05	0.00	0.00
B13-SPLR-W10	PFO/PEM	7.04	7.04	Cortlandt	Westchester	5.25					
B13-SPLR-W10	PFO/PEM	7.04	7.05	Cortlandt	Westchester	65.38					
B13-SPLR-W11	PEM/PFO	7.09	7.09	Cortlandt	Westchester	0.00	0.00	0.05	0.00	0.00	0.00
B13-SPLR-W12	PFO/PEM	7.34	7.36	Cortlandt	Westchester	103.39	0.12	1.21	0.27	0.00	0.00
B13-SPLR-W12	PFO/PEM	7.37	7.51	Cortlandt	Westchester	769.95					
B13-SPLR-W13	PFO/PEM/PSS	7.56	7.62	Cortlandt	Westchester	303.99	0.21	2.09	0.78	0.00	0.00
B13-SPLR-W13	PFO/PEM/PSS	7.64	7.85	Cortlandt	Westchester	1,077.77					
B13-SPLR-W13	PFO/PEM/PSS	7.85	7.86	Cortlandt	Westchester	34.62					
B13-SPLR-W13	PFO/PEM/PSS	7.90	7.92	Cortlandt	Westchester	112.44					
B13-SPLR-W14	PEM/PFO	8.24	8.24	Cortlandt	Westchester	3.99	0.03	0.23	0.02	0.00	0.00

TABLE K-1 (cont'd)

Wetlands Crossed by the AIM Project

Facility, State, Wetland ID	NWI Classification [a]	Enter Milepost [b]	Exit Milepost [b]	Town	County	Crossing Length (feet) [c]	Total Wetland Acreage Impacted [d]		Total Forested Wetland Acreage Impacted [d]	Total Wetland Acreage Impacted by Mainten-ance [e]	Total Forested Wetland Acreage Impacted by Mainten-ance [e]
							Within Existing ROW	Outside of Existing ROW			
B13-SPLR-W14	PEM/PFO	8.26	8.29	Cortlandt	Westchester	188.37					
B13-SPLR-W15	PFO/PEM	8.37	8.38	Cortlandt	Westchester	36.43	0.02	0.25	0.11	0.00	0.00
B13-SPLR-W15	PFO/PEM	8.42	8.45	Cortlandt	Westchester	129.86					
A13-SPLR-W2	PFO/PEM	8.46	8.58	Cortlandt	Westchester	620.05	1.62	0.71	0.56	0.00	0.00
A13-SPLR-W2	PFO/PEM	8.59	8.71	Cortlandt	Westchester	629.96					
A13-SPLR-W2	PFO/PEM	8.75	8.77	Cortlandt	Westchester	86.83					
B13-SPLR-W18	PFO/PEM	8.81	8.89	Cortlandt	Westchester	401.72	0.43	0.09	0.09	0.00	0.00
A13-SPLR-W4	PFO/PEM	9.24	9.36	Cortlandt	Westchester	626.97	1.00	0.00	0.15	0.00	0.00
B13-SPLR-W43	PFO/PEM	9.57	9.63	Cortlandt	Westchester	286.57	0.46	0.00	0.08	0.00	0.00
B13-SPLR-W206	PFO/PEM	9.64	9.68	Cortlandt	Westchester	234.95	0.24	0.08	0.00	0.00	0.00
B13-SPLR-W20[g]	PEM	9.94	9.98	Cortlandt	Westchester	239.73	0.48	0.00	0.13	0.00	0.00
B13-SPLR-W20[g]	PEM	9.99	9.99	Cortlandt	Westchester	32.29					
B13-SPLR-W21	PEM/PSS	10.33	10.37	Cortlandt	Westchester	165.52	0.29	0.05	0.04	0.00	0.00
B13-SPLR-W22	PEM/PFO	10.51	10.52	Cortlandt	Westchester	41.53	0.46	0.04	0.15	0.00	0.00
B13-SPLR-W22	PEM/PFO	10.54	10.59	Cortlandt	Westchester	248.94					
B13-SPLR-W23	PEM	10.63	10.68	Cortlandt	Westchester	298.18	0.31	0.24	0.25	0.00	0.00
B13-SPLR-W24	PEM	10.72	10.74	Cortlandt	Westchester	101.86	0.09	0.00	0.00	0.00	0.00
B13-SPLR-W25	PFO/PSS/PEM	10.78	10.82	Cortlandt	Westchester	198.79	0.39	0.07	0.13	0.00	0.00
B13-SPLR-W25	PFO/PSS/PEM	10.83	10.84	Cortlandt	Westchester	62.62					
B13-SPLR-W41	PEM/PFO	10.98	11.03	Cortlandt	Westchester	228.22	0.28	0.02	0.01	0.00	0.00
B13-SPLR-W26	PFO/PEM	11.07	11.13	Yorktown	Westchester	295.10	0.57	0.11	0.14	0.00	0.00
B13-SPLR-W26	PFO/PEM	11.13	11.16	Yorktown	Westchester	141.20					
B13-SPLR-W27	PFO/PEM	11.51	11.54	Yorktown	Westchester	203.76	0.24	0.20	0.26	0.00	0.00
B13-SPLR-W28	PEM/PFO	11.70	11.73	Yorktown	Westchester	151.85	0.53	0.00	0.06	0.00	0.00
B13-SPLR-W28	PEM/PFO	11.75	11.75	Yorktown	Westchester	20.91					
B13-SPLR-W28	PEM/PFO	11.75	11.81	Yorktown	Westchester	301.63					
B13-SPLR-W29	PFO/PEM	11.97	11.98	Yorktown	Westchester	46.85	0.05	0.04	0.03	0.00	0.00
B13-SPLR-W30	PSS/PEM	12.20	12.24	Yorktown	Westchester	186.32	0.24	0.08	0.09	0.00	0.00

TABLE K-1 (cont'd)

Wetlands Crossed by the AIM Project

Facility, State, Wetland ID	NWI Classification [a]	Enter Milepost [b]	Exit Milepost [b]	Town	County	Crossing Length (feet) [c]	Total Wetland Acreage Impacted [d]		Total Forested Wetland Acreage Impacted [d]	Total Wetland Acreage Impacted by Mainten-ance [e]	Total Forested Wetland Acreage Impacted by Mainten-ance [e]
							Within Existing ROW	Outside of Existing ROW			
					New York Subtotal	**13,249.59**	**13.60**	**10.29**	**7.09**	**1.03**	**0.84**
Connecticut											
Southeast to MLV-19 Take-up and Relay											
B13-SELR-W8	PFO1/PEM1	0.17	0.21	Danbury	Fairfield	235.43	0.74	0.23	0.12	0.00	0.00
B13-SELR-W8	PFO1/PEM1	0.24	0.30	Danbury	Fairfield	344.21					
B13-SELR-W9	PEM/PFO	0.66	0.71	Danbury	Fairfield	274.58	1.08	0.51	0.63	0.00	0.00
B13-SELR-W9	PEM/PFO	0.74	0.85	Danbury	Fairfield	573.81					
A13-SELR-W1	PEM/PFO	1.03	1.04	Danbury	Fairfield	77.86	0.15	0.03	0.04	0.00	0.00
A13-SELR-W2	PEM/PFO	1.15	1.17	Danbury	Fairfield	111.96	0.38	0.03	0.02	0.00	0.00
A13-SELR-W2	PEM/PFO	1.18	1.22	Danbury	Fairfield	193.15					
A13-SELR-W3	PEM/PSS/PFO	1.24	1.27	Danbury	Fairfield	156.97	0.18	0.14	0.15	0.00	0.00
B13-SELR-W12	PEM/PSS	1.72	1.85	Danbury	Fairfield	684.06	HDD	HDD	HDD	HDD	HDD
B13-SELR-W10	PEM/PFO	2.06	2.11	Danbury	Fairfield	277.87	0.57	0.20	0.25	0.00	0.00
B13-SELR-W10	PEM/PFO	2.13	2.14	Danbury	Fairfield	42.81					
A13-SELR-W4	PEM/PFO	2.64	2.68	Danbury	Fairfield	197.07	0.53	0.21	0.24	0.00	0.00
A13-SELR-W4	PEM/PFO	2.69	2.72	Danbury	Fairfield	145.82					
A13-SELR-W5	PEM/PFO	2.76	2.86	Danbury	Fairfield	499.85	0.30	0.00	0.03	0.00	0.00
A13-SELR-W6	PEM/PFO	3.00	3.13	Danbury	Fairfield	642.26	0.79	0.27	0.37	0.00	0.00
B13-SELR-W11	PEM/PFO	3.21	3.23	Danbury	Fairfield	68.20	0.09	0.02	0.02	0.00	0.00
B13-SELR-W11	PEM/PFO	3.23	3.23	Danbury	Fairfield	17.39					
B13-SELR-W1	PEM	3.33	3.34	Danbury	Fairfield	24.72	0.15	0.00	0.00	0.00	0.00
B13-SELR-W2	PEM/PFO	3.42	3.43	Danbury	Fairfield	86.09	0.23	0.02	0.07	0.00	0.00
B13-SELR-W3	PEM/PFO	3.54	3.59	Danbury	Fairfield	261.54	0.33	0.09	0.19	0.00	0.00
B13-SELR-W4	PEM/PFO	3.70	3.72	Danbury	Fairfield	117.93	0.15	0.08	0.14	0.00	0.00
B13-SELR-W5	PEM/PFO	3.82	3.86	Danbury	Fairfield	208.22	0.24	0.08	0.01	0.00	0.00
B13-SELR-W7	PEM/PFO	4.08	4.12	Danbury	Fairfield	193.43	0.23	0.11	0.25	0.00	0.00

TABLE K-1 (cont'd)

Wetlands Crossed by the AIM Project

Facility, State, Wetland ID	NWI Classification [a]	Enter Milepost [b]	Exit Milepost [b]	Town	County	Crossing Length (feet) [c]	Total Wetland Acreage Impacted [d]		Total Forested Wetland Acreage Impacted [d]	Total Wetland Acreage Impacted by Mainten-ance [e]	Total Forested Wetland Acreage Impacted by Mainten-ance[e]
							Within Existing ROW	Outside of Existing ROW			
Line-36A Loop Extension											
A13-CCS-W1	PFO/PEM	0.03	0.05	Cromwell	Middlesex	88.16	0.09	0.04	0.04	0.02	0.01
A13-CCS-W1	PFO/PEM	0.05	0.06	Cromwell	Middlesex	71.45					
A13-CCS-W1	PFO/PEM	0.13	0.14	Cromwell	Middlesex	54.08					
B13-CLR-W2	PFO/PEM	0.74	0.80	Cromwell	Middlesex	319.00	0.72	0.91	0.85	0.60	0.60
B13-CLR-W2	PFO/PEM	0.81	0.81	Cromwell	Middlesex	16.62					
B13-CLR-W2	PFO/PEM	0.82	0.92	Cromwell	Middlesex	517.61					
B13-CLR-W2	PFO/PEM	0.92	0.93	Cromwell	Middlesex	17.75					
B13-CLR-W3[f]	PFO/PEM	1.17	1.22	Cromwell	Middlesex	265.40	0.22	0.23	0.06	0.16	0.00
B13-CLR-W4	PFO/PEM	1.28	1.31	Cromwell	Middlesex	186.10	0.61	0.27	0.18	0.14	0.05
B13-CLR-W4	PFO/PEM	1.32	1.33	Cromwell	Middlesex	41.75					
B13-CLR-W4	PFO/PEM	1.34	1.36	Cromwell	Middlesex	98.25					
E-1 System Lateral Take-up and Relay											
B13-ELR-W200	PEM/PFO	0.01	0.07	Lebanon	New London	317.83	0.26	0.46	0.29	0.07	0.00
A13-ELR-W1	PEM/PSS/PFO	0.69	0.82	Lebanon	New London	678.50	0.54	0.59	0.56	0.15	0.11
B13-ELR-W3	PEM/PFO	1.46	1.49	Lebanon	New London	0.00	0.00	0.08	0.00	0.00	0.00
B13-ELR-W4	PEM1/PFO1	1.82	1.86	Lebanon	New London	229.08	0.29	0.12	0.21	0.00	0.00
A13-ELR-W2	PEM/PFO	1.95	1.96	Lebanon	New London	67.29	1.24	1.28	0.99	0.14	0.11
A13-ELR-W2	PEM/PFO	1.97	2.24	Lebanon	New London	1,406.63					
A13-ELR-W3	PEM/PFO	2.33	2.35	Lebanon	New London	111.23	0.09	0.11	0.08	0.03	0.00
A13-ELR-W4	PEM/PFO	2.45	2.48	Lebanon	New London	152.30	0.12	0.14	0.10	0.04	0.00
A13-ELR-W5	PEM/PSS/PFO	2.54	2.62	Lebanon	New London	405.25	0.33	0.38	0.23	0.10	0.00
A13-ELR-W5	PEM/PSS/PFO	2.62	2.62	Lebanon	New London	6.61					
A13-ELR-W6	PEM/PSS/PFO	2.65	2.69	Lebanon	New London	186.01	1.32	0.81	0.51	0.29	0.03
A13-ELR-W6	PEM/PSS/PFO	2.70	2.80	Lebanon	New London	492.20					
A13-ELR-W6	PEM/PSS/PFO	2.82	2.83	Lebanon	New London	61.38					
A13-ELR-W6	PEM/PSS/PFO	2.88	2.91	Lebanon	New London	172.79					
A13-ELR-W6	PEM/PSS/PFO	2.94	2.96	Lebanon	New London	87.21					

TABLE K-1 (cont'd)

Wetlands Crossed by the AIM Project

Facility, State, Wetland ID	NWI Classification [a]	Enter Milepost [b]	Exit Milepost [b]	Town	County	Crossing Length (feet) [c]	Total Wetland Acreage Impacted [d]		Total Forested Wetland Acreage Impacted [d]	Total Wetland Acreage Impacted by Mainten-ance [e]	Total Forested Wetland Acreage Impacted by Mainten-ance[e]
							Within Existing ROW	Outside of Existing ROW			
A13-ELR-W6	PEM/PSS/PFO	2.99	3.00	Lebanon	New London	89.13					
A13-ELR-W6	PEM/PSS/PFO	3.03	3.06	Lebanon	New London	168.29					
A13-ELR-W8	PEM/PSS/PFO	3.17	3.24	Lebanon	New London	372.66	0.32	0.19	0.04	0.07	0.00
A13-ELR-W8	PEM/PSS/PFO	3.27	3.28	Lebanon	New London	21.28					
A13-ELR-W9	PEM/PFO	3.35	3.38	Lebanon	New London	132.42	0.13	0.14	0.12	0.03	0.00
B13-ELR-W16	PEM/PFO	4.09	4.14	Franklin	New London	222.58	0.91	1.26	0.00	0.29	0.00
B13-ELR-W16	PEM/PFO	4.20	4.39	Franklin	New London	1,000.14					
B13-ELR-W15	PEM/PFO	4.48	4.50	Franklin	New London	0.00	0.00	0.01	0.00	0.00	0.00
B13-ELR-W12	PEM1/PFO	4.87	4.87	Franklin	New London	12.38	0.01	0.01	0.00	0.00	0.00
B13-ELR-W10	PEM1/PFO1	4.93	4.94	Franklin	New London	0.00	0.00	0.01	0.00	0.00	0.00
B13-ELR-W9	PEM/PFO	5.40	5.53	Franklin	New London	679.69	0.50	0.70	0.49	0.02	0.00
B13-ELR-W7	PSS1/PFO1	5.59	5.61	Franklin	New London	100.27	0.09	0.04	0.03	0.01	0.00
B13-ELR-W8	PEM/PFO	5.65	5.65	Franklin	New London	36.88	0.03	0.02	0.00	0.01	0.00
B13-ELR-W6	PEM/PFO	5.67	5.69	Franklin	New London	114.95	0.15	0.28	0.17	0.07	0.04
B13-ELR-W6	PEM/PFO	5.74	5.76	Franklin	New London	120.41					
B13-ELR-W5	PEM/PFO	5.84	5.87	Franklin	New London	150.93	0.35	0.23	0.16	0.08	0.04
B13-ELR-W5	PEM/PFO	5.95	6.00	Franklin	New London	274.60					
A13-ELR-W11	PEM	6.09	6.10	Franklin	New London	42.69	0.04	0.01	0.00	0.01	0.00
A13-ELR-W12	PEM/PFO	6.32	6.32	Franklin	New London	22.04	0.03	0.08	0.04	0.00	0.00
A13-ELR-W12	PEM/PFO	6.33	6.33	Franklin	New London	0.68					
A13-ELR-W14	PEM/PFO	6.95	6.96	Franklin	New London	0.00	0.02	0.00	0.00	0.00	0.00
B13-ELR-W22	PEM/PFO	7.27	7.31	Franklin	New London	195.74	0.15	0.21	0.08	0.05	0.00
B13-ELR-W21	PFO/PEM	7.39	7.42	Franklin	New London	155.27	0.13	0.09	0.10	0.03	0.03
B13-ELR-W20	PFO/PEM	7.88	7.88	Franklin	New London	36.58	0.02	0.21	0.22	0.05	0.05

TABLE K-1 (cont'd)

Wetlands Crossed by the AIM Project

Facility, State, Wetland ID	NWI Classification [a]	Enter Milepost [b]	Exit Milepost [b]	Town	County	Crossing Length (feet) [c]	Total Wetland Acreage Impacted [d]		Total Forested Wetland Acreage Impacted [d]	Total Wetland Acreage Impacted by Mainten-ance [e]	Total Forested Wetland Acreage Impacted by Mainten-ance [e]
							Within Existing ROW	Outside of Existing ROW			
B13-ELR-W19	PSS/PFO1	8.31	8.33	Franklin/ Norwich	New London	86.28	0.20	0.18	0.24	0.05	0.05
B13-ELR-W19	PSS/PFO1	8.36	8.39	Franklin/ Norwich	New London	158.12					
B13-ELR-W25	PEM/PFO	8.74	8.76	Norwich	New London	60.65	0.33	0.34	0.42	0.09	0.09
B13-ELR-W25	PEM/PFO	8.82	8.89	Norwich	New London	326.74					
B13-ELR-W24	PEM/PFO	8.92	8.92	Norwich	New London	23.48	0.03	0.00	0.00	0.00	0.00
E-1 System Lateral Loop Extension											
B13-ELP-W3	PFO/PSS	0.03	0.04	Montville	New London	0.00	0.00	0.02	0.02	0.00	0.00
B13-ELP-W2	PFO/PSS	0.16	0.17	Montville	New London	26.44	0.01	0.08	0.09	0.02	0.02
B13-ELP-W4	PFO	0.31	0.40	Montville	New London	486.75	0.42	0.96	0.87	0.41	0.30
B13-ELP-W4	PFO/PEM	0.40	0.43	Montville	New London	126.56					
B13-ELP-W4	PFO	0.44	0.50	Montville	New London	302.60					
B13-ELP-W7	PFO	1.16	1.19	Montville	New London	138.19	0.10	0.15	0.15	0.06	0.06
					Connecticut Subtotal	**17,171.13**	**15.94**	**12.66**	**9.87**	**3.09**	**1.59**
					Project Total	**30,420.72**	**29.54**	**22.95**	**16.96**	**4.12**	**2.43**

Notes: ROW = right-of-way; HDD = horizontal directional drill

[a] NWI Classifications:
PEM – Palustrine emergent wetland
PSS – Palustrine scrub-shrub wetland
PFO – Palustrine forested wetland

[b] Where the pipeline crosses the wetland; enter milepost, exit milepost, and crossing length reflect the actual pipeline intersection of wetlands. Where the pipeline does not cross the wetland and the construction workspace does, the enter milepost and exit milepost are the first and last mileposts where this occurs and the crossing length is the longest length of the wetland parallel to the pipeline that is crossed.

[c] Crossing length of pipeline where the pipe centerline crosses the wetland.

[d] Total wetland/forested wetland acreage impacted includes impacts associated with all areas within the construction workspace limits, temporary and permanent. Wetlands crossed by HDD would not be impacted outside of designated construction workspace areas.

[e] Total wetland/forested wetland acreage impacted by maintenance includes impacts associated with new vegetation maintenance areas outside of the existing and currently maintained pipeline right-of-way.

[f] Indicates partial estimated delineation via aerial imagery within construction workspace.

[g] Indicates partial estimated delineation via aerial imagery outside of construction workspace.

APPENDIX L

BEDROCK GEOLOGY TABLES

TABLE L-1

Bedrock Geology of the Pipeline Facilities for the AIM Project

Facility/Geologic Unit	Length (miles)	Description
Take-up and Relay		
Haverstraw to Stony Point		
Hornblende granite and granite gneiss	3.3	Middle Proterozoic age hornblende granite and granite gneiss with subordinate leucogranite.
Stony Point to Yorktown		
Hornblende granite and granite gneiss	3.0	See description above.
Diorite with hornblende and/or biotite	0.2	Upper Ordovician age diorite with hornblende and/or biotite that is part of the Cortlandt and smaller mafic complexes.
Balmville Limestone	0.4	Middle Ordovician age limestone that is part of the Lorraine, Trenton, and Black River Groups.
Manhattan Formation	0.5	Middle Ordovician age schist with secondary marble and calc-silitic rock.
Manhattan Formation, undivided	0.5	Ordovician age pelitic schists, amphibolites, and part of Trenton Group and Metamorphic Equivalents up to 8,000 feet (2,400 meters). The unit is mapped under Om in digital mapping but can be subdivided into Cambrian eugeosynclinal rocks (Omb, Omc, and Omd) (Fisher et al., 1970). Subunit Omd is comprised of sillimanite-garnet-muscovite-biotite-plagioclase-quartz gneiss. Subunit Omc is comprised of sillimanite-garnet-muscovite-biotite-quartz-plagioclase schistose gneiss, sillimanite nodules, and local quartz-rich layers. Subunit Omb is comprised of a discontinuous unit of amphibolite and schist.
Biotite augite norite	1.8	Upper Ordovician norite that is part of the Cortlandt and smaller mafic complexes.
Hornblende norite	2.0	Upper Ordovician norite that is part of the Cortlandt and smaller mafic complexes. The hornblende is poikilitic.
Olivine Pyroxenite	0.3	Upper Ordovician pyroxenite with poikilitic hornblende that is part of the Cortlandt and smaller mafic complexes. A secondary rock type is peridotite.
Muscovite-biotite granodiorite	2.2	Upper Devonian age muscovite-biotite granodiorite that is part of the Peekskill Pluton.
Muscovite-biotite granite	0.7	Upper Devonian granite that is part of the Peekskill Pluton.
Water	0.7	Water
Southeast to MLV 19		
Manhattan Formation, undivided	0.1	See description above.
Gneiss of highlands massifs	1.5	Proterozoic age gneiss with secondary amphibolite and schist that was part of the proto-North American terrane. It may include a mixture of rock types when they are not mapped separately, including pink granitic gneiss (Ygr), Augen gneiss (Yga), layered gneiss (Ygn), Hornblende gneiss and amphibolite (Ygh), and rusty mica schist and gneiss.
Stockbridge marble	0.2	Lower Ordovician and Cambrian age white to gray, massive to layered marble, generally dolomitic but containing calcite marble in the upper part, locally interlayered with schist or phyllite and with calcareous siltstone or sandstone. The Stockbridge Marble represents the carbonate shelf of the Proto-North American terrane.
Basal marble member of Walloomsac schist	0.3	Middle Ordovician dark gray to white, massive to layered schistose or phyllitic calcite-phlogopite marble.

TABLE L-1 (cont'd)

Bedrock Geology of the Pipeline Facilities for the AIM Project

State/Facility/Geologic Unit	Length (miles)	Description
Hornblende gneiss and amphilolite	0.8	Proterozoic age hornblende gneiss and amphibolite that is dark gray to mottled, fine- to medium-grained, massive to foliated amphibolite and gneiss, composed of hornblende and plagioclase with biotite and minor quartz. This formation is often interlayered with banded felsic gneiss and locally contains calc-silicate rock or diopsidic calcite marble.
Pink granite gneiss	1.6	Proterozoic granitic gneiss that is light pink to gray in color, medium to coarse texture, foliated but generally massive or poorly layered granitic gneiss having quartz, microline, oligoclase, and either biotite or muscovite (or both), with amphibole or epidote occurring locally.
E-1 System Lateral		
Lebanon Gabbro	1.0	Devonian age, dark, speckled, massive (but locally sheared) gabbro, composed of hornblende, labradorite, and opaques. Some rock bodies contain biotite and quartz, and some smaller bodies are almost pure hornblende with local augite. The Lebanon Gabbro is part of the Iapetus (Oceanic) Terrane and the Merrimack Synclinorium.
Hebron Gneiss	3.4	Silurian and Ordivician age interlayered dark-gray colored, medium to coarse-grained schist, composed of andesine, quartz, biotite, and local potassium feldspar and greenish-grey, fine to medium-grained calc-silicate rock, composed of labradorite, quartz, biotite, anctinolite, hornblende, and diopside, with local scapolite. There are local lenses of graphitic two-mica schist. The Hebron Gneiss is part of the Iapetus (Oceanic) Terrane and the Merrimack Synclinorium.
Brimfield Schist	0.2	Upper (possibly) and middle Ordivician age gray colored (weathering to rust), medium to coarse-grained, interlayered schist and gneiss, composed of oligoclase, quartz, potassium feldspar, and biotite, commonly with garnet, sillimanite, graphite, and pyrrhotite. Potassium feldspar often occurs as augen 1 to 3 centimeters across. Minor layers and lenses include hornblende- and pyroxene-bearing gneiss, amphibolite, and calc-silicate rock.
Dioritic phase of Lebanon Gabbro	0.1	Devonian age white to black, streaked, medium-grained, foliated or sheared mafic gneiss, composed of plagioclase, biotite, quartz, and often hornblende.
Scotland Schist	2.5	Devonian or Silurian age silvery (with local rust coloration), fine- to medium-grained schist containing quartz, muscovite, biotite, staurolite, and oligoclase (locally with kyanite or sillimanite) and interlayered with quartz-oligoclase-biotite schist and granofels and quartzite, typically near the base and on the west side of the formation. The Scotland Schist is part of the Iapetus (Oceanic) Terrane and the Merrimack Synclinorium.
Quartzite unit in Scotland Schist	0.3	Devonian or Silurian age quartzite, generally micaceous, interlayered with mica schist.
Canterbury Gneiss	1.1	Devonian age light gray, medium grained, variably foliated, locally strongly lineated gneiss. Composed of quartz, oligoclase, microcline, and biotite, typically with megacrysts 1 to 2 centimeters long on either of both feldspars.
Yantic Member of Tatnic Hill Formation	0.5	Upper and Middle Ordovician age medium to dark gray, fine- to medium-grained schist, composed of quartz, oligoclase, biotite, and muscovite, some layers with garnet, staurolite, and kyanite or garnet and sillimanite, local epidote, or potassium feldspar and some layers of rusty-weathering graphititc, pyrrhotitic, two-mica schist.

TABLE L-1 (cont'd)

Bedrock Geology of the Pipeline Facilities for the AIM Project

State/Facility/Geologic Unit	Length (miles)	Description
Loop Extension		
Line-36A Loop		
Portland arkrose	2.0	Lower Jurassic age reddish-brown to maroon colored micaceous arkose and siltsone and red to black fissile silty shale. On the east it grades into coarse conglomerate.
E-1 System Lateral Loop Extension		
Waterford Group	<0.1	Light to dark, generally medium-grained gneiss, composed of plagioclase, quartz, and biotite, with hornblende in some layers and microcline in others. There are layers of amphibolite. The Waterford group is Proterozoic in age and part of the Avalonian Terrane and the Avalonian Anticlinorium.
Plainfield Formation	0.8	Comprised of several rock types: Intelayered light gray, thin-bedded quartzite, in places with feldspar, mica, graphite, or pyrite; light to medium gray gneiss composed of quartz, oligoclase, and biotite; medium to dark gray schist composed of quartz, oligoclase, biotite, sillimanite, and garnet; dark gray or green gneiss composed of plagioclase, quartz, biotite, and hornblende; and amphibolite, diopsite-bearing quartzite, and calc-silicate rock. The Plainfield Formation is Proterozoic in age and part of the Avalonian Terrane and the Avalonian Anticlinorium.
Hope Valley Alaskite Gneiss	0.5	Light pink to gray, medium- to coarse-grained, locally porphyritic, variably lineated and foliated alaskitic gneiss, composed of microcline, quartz, albite or oligoclase, and minor magnetite, and locally biotite and muscovite. The Hope Valley Alaskite Gneiss is Proterozoic in age and part of the Avalonian Terrane, the Avalonian Anticlinorium, and the Sterling Plutonic Group.
Potter Hill Granite Gneiss	<0.1	Light pink to gray (weathering tan) fine- to medium-grained, rarely porphyritic, well-foliated granitic gneiss composed of microcline, quartz, oligoclase (or albite), biotite, and magnetite, minor muscovite and local garnet. The Potter Hill Granite Gneiss is Proterozoic in age and part of the Avalonian Terrane and the Avalonian Anticlinorium.
New Pipeline		
West Roxbury Lateral		
Westwood Granite	0.2	Proterozoic age light gray to pinkish gray, fine to medium-grained granite.
Dedham Grainte	4.7	Proterozoic age, light grayish-pink to greenish-gray, equigranular to slightly porphyritic, variably altered granite with secondary diorite and quartz monzonite.

Sources:

Fisher D.W.; Y. W. Isachsen, L. V. Rickard, 1970, Geologic Map of New York State, consisting of 5 sheets: Niagara, Finger Lakes, Hudson-Mohawk, Adirondack, and Lower Hudson, New York State Museum and Science Service, Map and Chart Series No. 15, scale 1:250,000.

New York State Museum, NYS Geological Survey, NYS Museum Technology Center, 1999, 1:250,000 Bedrock geology of NYS, data is distributed in ARC/INFOr EXPORT format (with ".e00" extension) in 5 separate files based on printed map sheets, http://www.nysm.nysed.gov/gis.html. Accessed on July 16, 2010.

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Zen, E.A. (editor), Goldsmith, R., Ratcliffe, N.M., Robinson, P., Stanley, R.S., Hatch, N.L., Jr., Shride, A.F., Weed, E.G.A., and Wones, D.R. 1983. Bedrock Geologic Map of Massachusetts: U.S. Geological Survey Special Geologic Map.

TABLE L-2

Bedrock Geology of the Aboveground Facilities for the AIM Project

Facility/Geologic Unit	Area Affected During Construction (acres)	Description
Existing Compressor Station Modifications		
Stony Point Compressor Station		
Hornblende granite and granite gneiss	20.3	Middle Proterozoic age hornblende granite and granite gneiss with subordinate leucogranite.
Southeast Compressor Station		
Manhattan Formation, undivided	15.9	Ordovician age pelitic schists, amphibolites, and part of Trenton Group and Metamorphic Equivalents up to 8,000 feet (2,400 meters). The unit is mapped under Om in digital mapping but can be subdivided into Cambrian eugeosynclinal rocks (Omb, Omc, and Omd) (Fisher et al., 1970). Subunit Omd is comprised of sillimanite-garnet-muscovite-biotite-plagioclase-quartz gneiss. Subunit Omc is comprised of sillimanite-garnet-muscovite-biotite-quartz-plagioclase schistose gneiss, sillimanite nodules, and local quartz-rich layers. Subunit Omb is comprised of a discontinuous unit of amphibolite and schist.
Oxford Compressor Station		
Waterbury Gneiss	0.0	Proterazoic or Cambiran age gneiss. Medium to dark gray, fine to medium grained, typically irregularly foliated and lenticular. Composed of biotite, quartz, oligoclase, kyanite, and garnet.
Cromwell Compressor Station		
Portland arkose	14.9	Lower Jurassic age reddish-brown to maroon colored micaceous arkose and siltsone and red to black fissile silty shale.
Chaplin Compressor Station		
Hebron gneiss	11.7	Silurian and Ordivician age interlayered dark-gray colored, medium to coarse-grained schist, composed of andesine, quartz, biotite, and local potassium feldspar and greenish-grey, fine to medium-grained calc-silicate rock, composed of labradorite, quartz, biotite, anctinolite, hornblende, and diopside, with local scapolite. There are local lenses of graphitic two-mica schist. The Hebron Gneiss is part of the Iapetus (Oceanic) Terrane and the Merrimack Synclinorium.
Burrillville Compressor Station		
Esmond igneous suite	16.7	Late Proterozoic age granodiorite. Gray, greenish, or pale pink in color. Medium to coarse-grained primarily porphyritic rock composed or microcline, perthite, plagioclase, quartz, and accessory biotite, epidote, zircon, allanite, monazite, apatite, sphene, and opaque minerals.
Existing M&R Station Modifications		
Stony Point M&R Station		
Muscovite-biotite granondirorite	2.2	Upper Devonian age muscovite-biotite granodiorite that is part of the Peekskill Pluton.
Peekskill M&R Station		
Biotite augite norite	2.1	Upper Ordovician norite that is part of the Cortlandt and smaller mafic complexes.
Cortlandt M&R Station		
Hornblende granite and granite gneiss	3.8	See description above.

TABLE L-2 (cont'd)

Bedrock Geology of the Aboveground Facilities for the AIM Project

Facility/Geologic Unit	Area Affected During Construction (acres)	Description
West Danbury M&R Station		
Gneiss of Highlands massifs	2.6	Proterozoic age gneiss with secondary amphibolite and schist that was part of the proto-North American terrane. It may include a mixture of rock types when they aren't mapped separately, including pink granitic gneiss (Ygr), Augen gneiss (Yga), layered gneiss (Ygn), Hornblende gneiss and amphibolite (Ygh), and rusty mica schist and gneiss.
Southbury M&R Station		
Taine Mountain Formation	0.6	Lower Ordovician age granofels that includes the Taine Mountain Formation.
Collinsville Formation	<0.1	Middle Ordovician age gneiss with secondary amphibolite, felsic, and mafic metavolcanic rocks and granulite.
Waterbury M&R Station		
Waterbury Gneiss	0.4	See description above.
North Haven M&R Station		
New Haven Arkose	0.5	Upper Triassic and possibly lower Triassic age red, pink, and gray colored coarse-grained poorly sorted and indurated arkose, with conglomerate locally, that is interbedded with brick-red micaceous, locally shaly siltstone and fine-grained feldspathic clayey sandstone.
Guilford M&R Station		
Waterford Group, Stony Creek Granite Gneiss and Narragansett Pier Granite Undivided	0.4	Proterozoic age gneiss and granitic gneiss intruded by Permian age gneiss with considerable pegmatite formations.
Waterford Group	0.1	Light to dark, generally medium-grained gneiss, composed of plagioclase, quartz, and biotite, with hornblende in some layers and microcline in others. There are layers of amphibolite. The Waterford group is Proterozoic in age and part of the Avalonian Terrane and the Avalonian Anticlinorium.
Farmington M&R Station		
New Haven arkose	0.4	See description above.
Glastonbury M&R Station		
Portland arkose	0.7	See description above.
Glastonbury Gneiss	0.1	Ordovician age gray, medium to coarse grained, massive to well folicated granitoid gneiss composed of oligoclase, quartz, microcline, and biotite.
Middletown M&R Station		
Maromas Granite Gneiss	0.5	Devonian age light-gray to buff colored, medium- to fine-grained granitic gneiss, composed of quartz and microcline with minor plagioclase and biotite. Pegmatite bodies are common in the vicinity.
Salem Pike M&R Station		
Tatnic Hill Formation	0.2	Ordovician age medium to dark gray, medium-grained gneiss or schist composed of quartz, andesine, biotite, garnet, and sillimanite (locally kyanite, muscovite, or potassium feldspar) that is interlayered with graphitic pyrrhotitic two-mica schist, amphibolite, and calc-silicate rock.

TABLE L-2 (cont'd)

Bedrock Geology of the Aboveground Facilities for the AIM Project

Facility/Geologic Unit	Area Affected During Construction (acres)	Description
Montville M&R Station		
Waterford Group	1.0	See description above.
Plainfield Formation	0.2	Comprised of several rock types: intelayered light gray, thin-bedded quartzite, in places with feldspar, mica, graphite, or pyrite; light to medium gray gneiss composed of quartz, oligoclase, and biotite; medium to dark gray schist composed of quartz, oligoclase, biotite, sillimanite, and garnet; dark gray or green gneiss composed of plagioclase, quartz, biotite, and hornblende; and amphibolite, diopsite-bearing quartzite, and calc-silicate rock. The Plainfield Formation is Proterozoic in age and part of the Avalonian Terrane and the Avalonian Anticlinorium.
Willimantic M&R Station		
Tatnic Hill Formation	0.9	See description above.
Pomfret M&R Station		
Scotland Schist	0.4	Devonian or Silurian age silvery (with local rust coloration), fine- to medium-grained schist containing quartz, muscovite, biotite, staurolite, and oligoclase (locally with kyanite or sillimanite) and interlayered with quartz-oligoclase-biotite schist and granofels and quartzite, typically near the base and on the west side of the formation. The Scotland Schist is part of the Iapetus (Oceanic) Terrane and the Merrimack Synclinorium.
Putnam M&R Station		
Tatnic Hill Formation	0.3	See description above.
North Fall River M&R Station		
Granite of Fall River pluton	1.5	Proterozoic age light-gray, medium-grained, biotite granite, partially mafic-poor.
New Bedford M&R Station		
Gneiss and schist near New Bedford	1.8	Proterozoic age hornblende and biotite schist and gneiss, amphibolite.
Middleborough M&R Station		
Granite, gneiss, and schist	0.6	Plutonic and metamorphic rocks, which are probably Proterozoic in age.
Brockton M&R Station		
Rhode Island Formation	0.6	Upper and Middle Pennsylvanian age gray sandstone, graywacke, shale, and conglomerate and black shale. Also contains minor meta-anthracite beds.
Norwood M&R Station		
Wamsuttea Formation	0.8	Middle to Lower Pennsylvanian age, red to pink colored, well-sorted conglomerate, greywacke, sandstone, and shale.
Needham M&R Station		
Roxbury Conglomerate	0.4	Proterozoic to early Paleozoic age conglomerate, sandstone, siltstone, argillite, and metaphyre.
Wellesley M&R Station		
Roxburry Conglomerate	0.5	See description above.
Mystic M&R Station		
Cambridge Argillite	0.7	Proterozoic to early Paleozoic age gray argillite to minor quartzite with some sandstone and conglomerate.

TABLE L-2 (cont'd)

Bedrock Geology of the Aboveground Facilities for the AIM Project

Facility/Geologic Unit	Area Affected During Construction (acres)	Description
New M&R Stations		
Oakland Heights M&R Station		
Tatnic Hill Formation	2.4	See description above.
Assonet M&R Station		
Granite of Fall River pluton	1.5	See description above.
West Roxbury M&R Station		
Dedham Granite	1.0	Proterozoic age, light grayish-pink to greenish-gray, equigranular to slightly porphyritic, variably altered granite with secondary diorite and quartz monzonite.
Existing M&R Station Removal		
Greenville M&R Station		
Tatnic Hill Formation	0.3	See description above.

Sources:

Fisher D.W.; Y. W. Isachsen, L. V. Rickard, 1970, Geologic Map of New York State, consisting of 5 sheets: Niagara, Finger Lakes, Hudson-Mohawk, Adirondack, and Lower Hudson, New York State Museum and Science Service, Map and Chart Series No. 15, scale 1:250,000.

New York State Museum, NYS Geological Survey, NYS Museum Technology Center, 1999, 1:250,000 Bedrock geology of NYS, data is distributed in ARC/INFOr EXPORT format (with ".e00" extension) in 5 separate files based on printed map sheets, http://www.nysm.nysed.gov/gis.html. Accessed on July 16, 2010.

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APPENDIX M

FINAL WETLAND MITIGATION PLAN

ALGONQUIN INCREMENTAL MARKET PROJECT

Algonquin Gas Transmission, LLC

Final Wetland Mitigation Plan

Revised December 2014

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APPENDIX A. Proposed Mitigation Plan for AIM Project Facilities in New York

ACRONYMS AND ABBREVIATIONS

AIM	Algonquin Incremental Market
Algonquin	Algonquin Gas Transmission, LLC
BMPs	best management practices
CFR	Code of Federal Regulations
E&SCP	Erosion and Sediment Control Plan
FERC	Federal Energy Regulatory Commission
FERC Procedures	FERC's Wetland and Waterbody Construction and Mitigation Procedures
HDD	horizontal directional drill
hp	horsepower
MLV	mainline valve
MP	milepost
M&R	metering and regulating
NGA	Natural Gas Act
NYSDEC	New York State Department of Environmental Conservation
PAR	permanent access road
PEM	palustrine emergent
PFO	palustrine forested
Plan	Final Mitigation Plan
Project	AIM Project
PSS	palustrine scrub-shrub
ROW	right-of-way
TAR	temporary access road
U.S.	United States
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey

1.0 INTRODUCTION

This Mitigation Plan ("Plan") describes the methods that will be implemented during construction of the Algonquin Gas Transmission, LLC ("Algonquin") Incremental Market Project ("AIM Project" or "Project") to minimize, avoid, and mitigate for temporary and permanent impacts to wetlands and waterbodies. This Plan includes a brief description of the Project, a listing of the types and area of temporary and permanent impacts to wetlands and waterbodies, and a description of the mitigation provided for the Project. Several versions have been filed with the Federal Energy Regulatory Commission ("FERC" or "Commission") and other agencies to satisfy their respective regulatory requirements. This Plan consolidates the mitigation approach on a Project-wide basis and provides updated wetland and water body impact numbers based on recent Project modifications made to minimize wetland impacts.

The Project will result in impacts, both temporary and permanent, to freshwater wetland functions and values in Connecticut and New York; however, there is no permanent wetland fill proposed and no wetland area will be lost due to the Project. As part of their review under Section 404 of the Clean Water Act[1], the U.S. Army Corps of Engineers ("USACE") are requiring the preparation of mitigation plans for Connecticut and New York. Compensatory mitigation is being required for permanent conversion of forested wetlands to non-forested conditions for maintenance of new project right-of-ways. The USACE New England District and The Connecticut Department of Energy and Environmental Protection ("CTDEEP") have agreed to accept payment to the State of Connecticut's in-lieu-fee ("ILF") program in lieu of a permittee-supplied mitigation project. The details of this arrangement are further described in Section 3.2.2. The State of New York does not have an ILF program established for the project area, thus, Algonquin will implement on- and off-site mitigation measures to offset forested conversion impacts. These mitigation measures are described in detail in Algonquin's Proposed Mitigation Plan for the AIM Project Facilities in New York in Appendix A.

2.0 PROJECT DESCRIPTION

Algonquin, an indirect, wholly-owned subsidiary of Spectra Energy Partners, LP, is seeking authorization from the FERC pursuant to Section 7(c) of the Natural Gas Act[2] ("NGA") to construct, install, own, operate, and maintain the AIM Project which will involve expansion of its existing pipeline system located in New York, Connecticut, Rhode Island and Massachusetts. Algonquin is also seeking authorization pursuant to Section 7(b) of the NGA[3] to abandon certain segments of existing mainline pipeline as a related component of the AIM Project. The AIM Project will create 342,000 dekatherms per day of firm transportation capacity to deliver natural gas to the Northeast markets to meet immediate and future supply and load growth requirements of the Project Shippers. Specifically, the Project will create additional pipeline capacity from the Ramapo, New York receipt point on the Algonquin system to various Algonquin city gate delivery points in Connecticut, Rhode Island, and Massachusetts. The target in-service date for the AIM Project is November 1, 2016.

The AIM Project includes the construction of approximately 37.4 miles of take-up and relay, loop and lateral pipeline facilities, modifications to six existing compressor stations resulting in the addition of 81,620 horsepower ("hp") of compression, modifications to 24 existing metering and regulating ("M&R") stations, the construction of three new M&R stations and the removal of one existing M&R station. These proposed Project facilities are located in New York, Connecticut, Rhode Island and Massachusetts. A complete discussion of the proposed Project facilities follows.

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1 33 U.S.C. §§ 1251-1387

2 15 U.S.C. §§ 717f(b) and 717f(c) (2006).

3 15 U.S.C. § 717P(b) (2006).

Proposed Pipeline Facilities

The proposed AIM Project includes approximately 37.4 miles of pipeline composed of the following facilities:

- Construction of approximately 20.1 miles of mainline pipeline, comprised of the following:
  - Haverstraw to Stony Point Take-up & Relay - Take-up and relay 3.3 miles of 26-inch diameter pipeline with 42-inch diameter pipeline in Rockland County, New York upstream of Algonquin's existing Stony Point Compressor Station;
  - Stony Point to Yorktown Take-up & Relay - Take-up and relay 9.4 miles of 26-inch diameter pipeline with 42-inch diameter pipeline and the installation of an approximately 2.9-mile section of new pipeline right-of-way ("ROW") that includes a 0.7-mile horizontal directional drill ("HDD") crossing of the Hudson River. This 12.3-mile segment is located in Rockland County, New York and Westchester County, New York downstream of Algonquin's existing Stony Point Compressor Station; and
  - Southeast to MLV 19 Take-up & Relay - Take-up and relay 4.5 miles of 26-inch diameter mainline pipeline with 42-inch diameter pipeline (including a new 0.7-mile long, 42-inch diameter HDD pipeline crossing of Interstate 84 and the Still River) located in Putnam County, New York and Fairfield County, Connecticut downstream of and between Algonquin's existing Southeast Compressor Station and mainline valve ("MLV") 19;

- Line-36A Loop Extension - Installation of 2.0 miles of 36-inch diameter pipeline loop extension in Middlesex County, Connecticut and Hartford County, Connecticut downstream of Algonquin's existing Cromwell Compressor Station;

- E-1 System Lateral Take-up & Relay - Take-up and relay 9.1 miles of 6-inch diameter pipeline with 16-inch diameter pipeline on Algonquin's existing E-1 System in New London County, Connecticut;

- E-1 System Lateral Loop - Installation of 1.3 miles of 12-inch diameter pipeline loop on Algonquin's existing E-1 System in New London County, Connecticut; and

- West Roxbury Lateral - Installation of 4.09 miles of new 16-inch diameter pipeline and 0.81 miles of new 24-inch diameter pipeline off of Algonquin's existing I-4 System in Norfolk and Suffolk Counties, Massachusetts.

Modifications to Existing Algonquin Compressor Stations

Algonquin will modify six existing Algonquin compressor stations to add an additional 81,620 hp to its pipeline system as part of the AIM Project. This increase in horsepower will be achieved with the installation of six new compressor units. The proposed compressor modifications include the following:

Stony Point Compressor Station - Rockland County, New York

- Install two (2) Solar Mars 100 (15,900 hp each) natural gas-fired compressor units;
- Restage one (1) existing compressor driven by a Solar Taurus 60 natural gas-fired turbine;
- Install gas cooling for the new units; and
- Station piping modifications.

Southeast Compressor Station - Putnam County, New York

- Install one (1) Solar Taurus 70 (10,320 hp) natural gas-fired turbine compressor unit;

- Restage one (1) existing compressor driven by a Solar Taurus 70 natural gas-fired turbine;
- Replace the compressor body driven by an existing Solar Mars 90 natural gas fired turbine;
- Install gas cooling for the new unit; and
- Station piping modifications.

Oxford Compressor Station – New Haven County, Connecticut

- Restage one (1) existing compressor driven by a Solar Taurus 60 natural gas-fired turbine;

Cromwell Compressor Station - Middlesex County, Connecticut

- Install one (1) Solar Mars 100 (15,900 hp) natural gas-fired turbine compressor unit;
- Install gas cooling for the new unit and two (2) existing turbine compressor units; and
- Station piping modifications.

Chaplin Compressor Station - Windham County, Connecticut

- Install one (1) Solar Taurus 60 (7,700 hp) natural gas-fired turbine compressor unit;
- Restage two (2) existing compressors driven by Solar Taurus 60 natural gas-fired turbines;
- Install gas cooling for the new unit and two (2) existing turbine compressor units; and
- Station piping modifications.

Burrillville Compressor Station - Providence County, Rhode Island

- Install one (1) Solar Mars 100 (15,900 hp) natural gas-fired turbine compressor unit;
- Restage two (2) existing compressors driven by Solar Taurus 60 natural gas-fired turbines;
- Install gas cooling for the new unit; and
- Station piping modifications.

Modifications to Existing Algonquin M&R Stations

The AIM Project will include modifications to 24 existing Algonquin M&R stations in New York, Connecticut and Massachusetts, to accept the new gas flows associated with the AIM Project. Three M&R stations are located in New York, 13 are located in Connecticut and eight are located in Massachusetts. The types of modifications will include the replacement of existing heaters and metering facilities, piping modifications, and facility uprates. In addition, one existing M&R station (Greenville) will be removed in Connecticut.

Modifications at 21 of these existing stations are minor in nature and will take place within the existing fenced facilities. Three of the remaining M&R stations will require complete reconstruction and one will be decommissioned and removed (Greenville M&R). The stations requiring reconstruction are all in Connecticut and include the Willimantic M&R Station, Guilford M&R Station and Glastonbury M&R Station. The Glastonbury and Guilford M&R stations will be rebuilt within the same station footprint while the Willimantic M&R Station will be rebuilt on a new parcel of land being acquired by Algonquin adjacent to the existing station property.

Construction of New Algonquin M&R Stations

Algonquin will construct three new M&R stations: two are located in Bristol and Suffolk counties in Massachusetts and one is located in New London County, Connecticut.

- Construct one (1) new M&R station in Connecticut:
  - Oakland Heights M&R Station – construct a new M&R station, including regulation, in the City of Norwich, New London County.

- Construct two (2) new M&R stations in Massachusetts:
  - Assonet M&R Station – construct a new M&R station, including regulation, in the Town of Freetown, Bristol County; and
    West Roxbury M&R Station – construct a new M&R station, including regulation, in the City of Boston, Suffolk County.

3.0 WETLANDS

Wetlands are defined by the USACE as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, and bottomlands. Algonquin delineated wetland boundaries using the methodology described in the USACE's Wetlands Delineation Manual (Environmental Laboratory, 1987) and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2). The 1987 Manual and more recent supplements identify three environmental factors to consider when making wetland determinations: indicators of hydrophytic vegetation, hydric soil, and wetland hydrology.

3.1 Wetlands within the Project Area

Field surveys were conducted within a 300-foot wide study area across the Project area to identify and map wetlands, except for the West Roxbury Lateral where the study corridor was variable due to the developed nature of that route. Based on this survey, a total of 160 wetland crossings were identified in the AIM Project construction workspace; 76 in New York and 84 in Connecticut. The AIM Project facilities proposed in Rhode Island and Massachusetts will not cross any wetlands.

3.1.1 Pipeline Facilities

New York

The AIM Project facilities in New York will cross 76 wetland areas. These wetlands are primarily characterized as palustrine emergent ("PEM") wetlands that are generally dominated by *Phragmites australis* in the ROW and as palustrine forested ("PFO") wetlands off the maintained ROW. Wetlands along the Haverstraw to Stony Point Take-up and Relay segment were located in areas of topographic relief given that this survey area is extremely hilly. Sloping stream drainages were often associated with bordering wetlands. A particularly large wetland system in the Town of Haverstraw is associated with tributaries to Minisceongo Creek. In the Town of Cortland, there is a large wetland system encountered in the drainage area of Dickey Brook and its tributaries, and within the Blue Mountain Reservation there are also a few large wetland systems crossed by the Project. Wetlands within the maintained pipeline ROW along the Stony Point to Yorktown Take-up & Relay segment are also often dominated by *Phragmites australis* while the off-ROW sections are primarily wooded.

New York State has mapped wetland areas that are regulated under its Freshwater Wetlands Act. There are five New York State Department of Environmental Conservation ("NYSDEC") mapped wetlands that are crossed or are in close proximity to the pipeline ROW along the Stony Point to Yorktown Take-up & Relay pipeline. Algonquin discussed and confirmed these crossings in a meeting with NYSDEC on December 5, 2013. These NYSDEC wetlands are as follows:

- Town of Cortlandt

- NYSDEC Wetland P-3 – This is a Class 1 wetland that is crossed by the Stony Point to Yorktown Take-up & Relay pipeline between milepost ("MP") 7.70 and MP 7.85. This NYSDEC mapped wetland has been field delineated as B13-SPLR-W13 for the AIM Project.
- NYSDEC Wetland P-1 – This is a Class 2 wetland that is crossed between MP 8.50 and MP 8.75. This NYSDEC mapped wetland has been field delineated as A13-SPLR-W2 for the AIM Project.
- NYSDEC Wetland A-35 – This is a Class 2 wetland that is crossed in two areas north of Crompond Road. The first wetland crossing occurs between MP 10.63 and MP 10.68 and the second is crossed between MP 10.79 and MP 10.81. These wetlands have been assigned the following identification numbers for the AIM Project: B13-SPLR-W23 and B13-SPLR-W25.

- Town of Yorktown
  - NYSDEC Wetland A-10 – This is a Class 2 wetland that is crossed between MP 11.04 and MP 11.12 on the east side of Lexington Avenue. This wetland has been field delineated as B13-SPLR-W26 for the AIM Project.
- Town of Southeast
  - NYSDEC Wetland BR-36 – This is a Class 2 wetland that is located along the western edge of the existing Southeast Compressor Station in Putnam County. The proposed work at the compressor station will not impact this wetland but construction workspace is located within the 100-foot Adjacent Area. This wetland has been field delineated as A13-SECS-W1 for the AIM Project.

Connecticut

The AIM Project facilities in Connecticut will cross a total of 84 wetland areas. These wetlands vary greatly between segments but generally consist of PEM/Palustrine Scrub-Shrub ("PSS") wetlands within the existing ROW and PFO wetlands outside the existing ROW.

The Southeast to MLV 19 Take-up & Relay pipeline segment crosses 23 wetland areas. Notable are three large wetland systems, one associated with the Sawmill River, one located at MP 0.17 in Danbury, and a third associated with the Still River at MP 1.74. The wetland system associated with the Still River will be crossed by utilizing the HDD method. The majority of the remaining small wetlands are located within heavy residential areas, most often represented in the ROW as PEM wetlands, with many of the wetlands dominated by the aggressive invasive grass species, *Phragmites australis*.

The Line-36A Loop Extension pipeline segment crosses 11 wetland areas, all associated with streams. This segment of the pipeline is located in an area of relatively flat topography. There is a PEM/PFO wetland system associated with Coles Brook between MP 0.03 and MP 0.14. A tributary to Dividend Brook is associated with a large wetland system dominated by *Phragmites australis* that contains several small intermittent streams and an open water area. The remaining wetlands are generally associated with Dividend Brook and often dominated by *Phragmites australis* and an assortment of other invasive and native shrubs and forbs in the ROW.

The E-1 System Lateral Take-up & Relay pipeline segment runs northwest to southeast in a generally parallel orientation with Susquetonscut Brook from MP 0.0 to MP 6.0. As a result of this alignment, there are numerous wetland crossings along this stretch that are associated with minor tributaries of Susquetonscut Brook. Outside the maintained ROW, the wetland cover type is primarily PFO with pockets of PSS, and the floodplain of the Susquentonscut Brook in this area is generally PEM. On ROW wetlands are primarily classified as PEM/PSS. South of MP 6.0, the wetlands crossed by the pipeline are associated with small intermittent and ephemeral streams and drainages, the largest wetlands being located at MP 7.3

and between MP 8.7 and 8.9. These wetlands were classified as PEM wetlands within the ROW and most often classified as PFO wetlands outside the ROW.

The E-1 System Lateral Loop pipeline segment crosses six wetland areas consisting of one large wetland system and three smaller wetland systems along the maintained pipeline ROW. The largest wetland system is crossed between MP 0.31 and MP 0.49 and is predominantly a PFO wetland with a minor stream.

Rhode Island

There are no wetland impacts in Rhode Island.

Massachusetts

There are no wetland impacts in Massachusetts.

3.1.2 Aboveground Facilities

As proposed, the aboveground facilities will not impact wetlands.

3.2 Waterbodies within the Project Area

A total of 102 surface waterbody crossings will occur during construction of AIM Project pipeline facilities. These include 36 perennial stream crossings, 62 intermittent stream crossings, three ephemeral stream crossings and one ponded waterbody crossing. Of these 102 waterbody crossings, 85 are minor crossings (less than 10 feet wide), 16 are intermediate crossings (10 to 100 feet wide), and one is a major crossing, the Hudson River (greater than 100 feet wide). Two of the 102 waterbodies are classified as estuarine waterbodies at the pipeline crossing while the remaining 100 are freshwater waterbodies.

In accordance with the FERC's Waterbody Construction and Mitigation Procedures ("FERC Procedures"), all waterbody crossings will be completed within 24 to 48 hours. Stream bed and bank contours will be restored in accordance with the FERC Procedures and waterbody banks will be stabilized as soon as possible after construction activities have been completed to prevent sloughing. Stream functions should be quickly restored following restoration activities.

3.3 Wetland Impacts and Mitigation

Construction of the AIM Project will result in temporary impacts to 52.5 acres of wetlands. Of this amount, 23.9 acres will be impacted by the New York pipeline facilities and 28.6 acres will be impacted by the Connecticut pipeline facilities. Impacts to wetlands associated with the Hudson River in New York and the Still River in Connecticut will be avoided as Algonquin intends to cross these areas utilizing the HDD method. Algonquin is also evaluating the feasibility of performing an HDD crossing of the Susquetonscut Brook in Franklin, CT (the technical feasibility is yet to be determined. As a result, the impacts discussed in this Plan assume an HDD will not be used). No wetlands will be affected in Rhode Island or Massachusetts and based on current design no wetlands will be affected during construction at existing and proposed aboveground facilities.

In Connecticut and New York, construction of the proposed pipeline segments will result in temporary impacts to 35.5 acres of emergent and scrub-shrub wetlands and 17.0 acres of forested wetlands. Approximately 2.4 acres of forested wetland will be permanently converted to non-forested cover types and maintained by means of mechanical cutting and mowing as part of pipeline operation and maintenance.

The remaining 14.6 acres of forested wetland will be restored or otherwise allowed to revert to a forested state following construction and restoration of the ROW as further discussed below.

3.3.1 Onsite Mitigation and Restoration Measures

Construction and mitigation activities in wetlands will be conducted in accordance with the procedures and best management practices ("BMPs") in the AIM Project Erosion and Sediment Control Plan ("E&SCP") and the conditions of related permits. The AIM Project E&SCP was developed using the FERC's Upland Erosion Control, Revegetation, and Maintenance Plan and Wetland and Waterbody Construction and Mitigation Procedures. Also reflected in the AIM Project E&SCP is Algonquin's significant experience and practical knowledge of pipeline construction and effective environmental protection measures. Lessons and insights gained from past construction projects have been incorporated into the AIM Project E&SCP. Recommended practices include, wherever practical:

- A reduction of construction corridor widths where possible;
- A 50-foot setback for additional temporary workspace for wetlands;
- Minimization of riparian clearing to the extent practicable while ensuring safe construction conditions;
- Expedited construction in and around wetlands;
- Confinement of stump removal to the trench-line to minimize soil disturbance (unless safety or access considerations require stump removal elsewhere);
- Return of wetland bottoms and drainage patterns to their original configurations and contours to the extent practicable;
- Permanent stabilization of upland areas near wetlands as soon as practicable after trench backfilling to reduce sediment run-off;
- Segregation of topsoil in unsaturated wetlands to preserve the native seed source (which will facilitate re-growth of herbaceous vegetation once pipeline installation is complete);
- Utilization of recommended seed mixes as specified by relevant land management agencies;
- Periodic inspection of the construction corridor during and after construction;
- Post-construction wetland monitoring to evaluate the progress of wetland revegetation; and
- Documentation of invasive species prior to construction and post-construction monitoring to compare pre- and post-construction occurrences.

In accordance with the AIM Project E&SCP, Algonquin will conduct post-construction maintenance and monitoring of the ROW in affected wetlands to assess the success of restoration and revegetation. Monitoring efforts will include documenting occurrences of exotic invasive species to compare to pre-construction conditions.

To assist with these periodic monitoring and surveillance efforts, and to comply with the U.S. Department of Transportation Safety Standards (49 CFR Part 192), a 30-foot corridor centered on the pipeline will routinely be cleared of woody growth greater than 15 feet in height, with a 10-foot strip centered over the pipeline being maintained in an herbaceous state. Because of this vegetation maintenance restriction within wetlands, 40 feet of Algonquin's 50-foot wide permanent ROW easement within wetlands will be allowed to revert to PSS and up to 20 feet will be allowed to periodically return to a PSS/PFO state.

3.3.2 Compensatory Mitigation

Federal

The USACE will usually require compensatory mitigation (e.g., purchase of mitigation credits, payment of in-lieu fee, development of a site-specific mitigation plan) for loss of "waters of the U.S." greater than 0.10 acre. As previously noted, no permanent loss of "waters of the U.S." will occur as a result of the AIM Project. During pipeline trenching operations, fill placement (side-cast material) will be placed back in the pipeline trench. The USACE considers this permanent fill placement even though wetland side-cast material is being replaced in the same trench where it was excavated. The wetland impacts resulting from the fill placement are temporary since the wetland will continue to function as a wetland.

PEM wetlands impacted during construction will be restored in accordance with the FERC Procedures. These areas should quickly recover following construction. Compensatory mitigation for temporary effects to PEM wetlands is not proposed.

PSS wetlands impacted during construction will be restored in accordance with the FERC Procedures. Although the herbaceous understory within these areas should quickly recover following construction, there may be a temporal lag before the sub-canopy reaches maturity. Compensatory mitigation for temporary effects to PSS wetlands is not proposed.

PFO wetland areas not within the maintained permanent ROW impacted during construction will also be restored in accordance with the FERC Procedures. Although these areas will remain in a wetland state, there is a temporal time lag associated with these areas regaining their wetland canopy function. Similarly, forested wetland areas that are located within the proposed new permanent ROW areas will remain in a wetland state but will permanently lose their forested canopy.

Algonquin proposes to provide mitigation for the PFO wetland areas that will be temporarily and permanently affected (through conversion to PEM) as a result of the Project. The USACE New England District will accept payment to an in-lieu fee program[4] for PFO wetland impacts in Connecticut. A permit applicant may make a payment to an in-lieu fee program that will conduct wetland, stream or other aquatic resource restoration, creation, enhancement, or preservation activities. In-lieu fee programs are generally administered by government agencies or non-profit organizations that have established an agreement with the regulatory agencies to use in-lieu fee payments collected from permit applicants. On August 21, 2013, the USACE established the final executed instrument for the CT ILF Program. The National Audubon Society is the sponsor.

The USACE New York District has agreed to on-site mitigation for temporary PFO wetland impacts (*e.g.* onsite restoration to include replanting workspace, controlling invasive species and monitoring). However, the USACE New York District will require off-site mitigation for permanent impacts to forested wetlands from the establishment of new maintained ROW.

The state-specific mitigation plans, where applicable, are described below.

Connecticut

The CTDEEP has agreed to accept the In-Lieu payment proposed under the USACE requirements. Algonquin continues to coordinate with the USACE and CTDEEP to finalize the payment requirements to

4 Details on the use of the in-lieu fee program are available at http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/final_mitig_rule.pdf.

the In-Lieu Fee Program. Algonquin has provided the agencies with all the requested Project-related information to establish an appropriate In-Lieu fee amount.

New York

The mitigation plan for New York Facilities of the Project is included as Appendix A.

Massachusetts

There are no wetland impacts associated with proposed Massachusetts Project facilities and, therefore, no compensatory mitigation is proposed in Massachusetts.

Rhode Island

There are no wetland impacts associated with proposed Rhode Island Project facilities and, therefore, no compensatory mitigation is proposed in Rhode Island.

4.0 REFERENCES

Environmental Laboratory. (1987). "Corps of Engineers wetlands delineation manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS., NTIS No. AD A176 912.

Attachment A

Proposed Mitigation Plan for AIM Project Facilities in New York

ALGONQUIN INCREMENTAL MARKET PROJECT

Appendix A

Mitigation Plan for Facilities in New York

and

Junior Lake Enhancement Project
Yorktown, New York

December 2014

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APPENDICES

Attachment A: Functions and Values Checklist – Junior Lake Enhancement Site

ACRONYMS AND ABBREVIATIONS

Addendum	Addendum to the Preliminary Compensatory Mitigation Plan
AIM	Algonquin Incremental Market
Algonquin	Algonquin Gas Transmission, LLC
E&SCP	Erosion and Sediment Control Plan
FERC	Federal Energy Regulatory Commission
FERC Procedures	FERC's Wetland and Waterbody Construction and Mitigation Procedures
New York Plan	Final Mitigation Plan for AIM Project Facilities in New York
NYSDEC	New York State Department of Environmental Conservation
PEM	palustrine emergent
PFO	palustrine forested
Project	AIM Project
PSS	palustrine scrub-shrub
ROW	right-of-way
TWS	temporary work space
USACE	U.S. Army Corps of Engineers

1.0 INTRODUCTION

This Appendix A to the AIM Project Final Mitigation Plan, focuses on mitigation for those portions of work located in the State of New York. Algonquin submitted to the U.S. Army Corps of Engineers ("USACE") New York District an addendum to the Conceptual Mitigation Plan for AIM New York Facilities in July, 2014. The July Draft Plan included discussion of three potential alternative mitigation projects in New York. Following the release of public notice and review, the USACE New York District requested that Algonquin prepare a final mitigation plan with detailed information on one of the proposed mitigation options. To meet that request, Algonquin has prepared this Proposed Mitigation Plan for AIM Project Facilities in New York ("New York Plan"), describing the onsite wetland restoration and mitigation efforts and the offsite Junior Lake Enhancement Project in Yorktown, New York ("Junior Lake Project"). The Junior Lake Project is an offsite wetland, riparian and upland buffer enhancement project designed to create forested habitat in a wetland in a former manmade pond and reduce competition for native tree and shrub species through invasive plant species removal efforts. This New York Plan is organized based on the *Planning and Documentation* requirements described in 33 CFR, Part 332.4(c).

2.0 MITIGATION PLAN OBJECTIVES

The objective of this Plan is to offset impacts to wetlands affected by the AIM Project facilities located in New York. No permanent loss of wetland area will result from installation of the AIM Project pipeline facilities; however, approximately 23.9 acres of wetland will be temporarily impacted during project construction and 0.83 acre of wetland will be permanently cleared of trees. All wetland areas impacted by the Project will be permanently restored to wetland conditions. As further detailed in Table 1, there are three basic types of wetland impact from construction of the AIM Project. There will be temporary impacts to scrub/shrub and emergent wetlands within the existing and new right-of-way ("ROW") during construction (including mowing, temporary excavation, equipment matting, *etc.*). There will also be temporary impacts to forested wetlands outside of the permanent ROW from clearing and construction activities in temporary work spaces ("TWS"). Finally, there will be permanent conversion of a small area of forested wetland to other wetland types within new ROW. These areas will be restored as wetlands, but due to safety considerations and the requirement to maintain a primarily treeless corridor over the pipeline, portions of the wetlands will be maintained in a non-forested state.

TABLE 1

Summary of Wetland Impacts for AIM Project Facilities in New York

Impact Type	Acres of Impact	Proposed Mitigation
Permanent Wetland Fill	0	None
Temporary Impacts to PEM and PSS (from construction and TWS)	16.78	Onsite Restoration to pre-construction conditions
Temporary Impacts to PFO Wetlands (from clearing and construction for TWS)	7.12*	Onsite Restoration to pre-construction conditions (including tree planting, as necessary)
Permanent Conversion Impacts to PFO (from permanent for new ROW)	0.83	Offsite Mitigation: Junior Lake Enhancement Project

**this acreage includes the 0.83 acres of permanently converted PFO*

2.1 Compensatory Mitigation Sequencing

Mitigation sequencing includes the design steps taken during project planning and implementation that are meant to find the least environmentally damaging practicable alternative to achieve a project need. In planning for the AIM Project, Algonquin sought to avoid wetland impacts, however due to the area of work required to achieve the project needs, total avoidance of impacts was deemed unfeasible. Next, Algonquin employed efforts to minimize wetland impacts to the greatest extent, including collocating with existing facilities, minimizing workspace in wetlands and implementing best management practices for construction. Following efforts to avoid and minimize impacts, Algonquin developed this New York Plan to offset unavoidable wetland impacts. This sequencing is further described in the following sections.

2.1.1 Avoidance

Most of the AIM Project has been designed to fit within Algonquin's existing ROW, with a majority of the project consisting of removal of an existing pipe and replacement with a new pipe in the same location (known as "take-up and relay" or "T&R"). On the east and west sides of the AIM Project crossing of the Hudson River, collocation and L&R within existing corridors was not feasible and a new section of ROW is required. An analysis of alternatives for this route was performed based on achieving the project need while avoiding and minimizing impacts to wetlands and streams. Several alternatives were reviewed prior to selecting the proposed route. Due to residential, commercial and industrial development, feasible alternative corridors are limited in this area. The proposed section of new ROW avoids wetlands to the greatest extent practicable, however, some wetland impact and new PFO clearing was required to achieve connection to the existing ROW.

The Project in this area (west of the Hudson River) will result in 0.83 acres of permanent, forested wetland conversion; of that, 0.75 acres are relegated to one large wetland (B13-SPLR-W16), with the remaining 0.08 acres in sections of four other forested wetlands along the new ROW (further described in Section 4.1).

2.1.2 Minimization

To minimize impacts at wetland and waterbody crossings during construction, operation and maintenance, Algonquin will construct the Project in accordance with the best management practices outlined in its AIM Project Erosion and Sediment Control Plan ("E&SCP") and with all federal and state regulations and permit requirements. The AIM Project E&SCP was developed using the Federal Energy Regulatory Commission ("FERC") *Upland Erosion Control, Revegetation, and Maintenance Plan and Wetland and Waterbody Construction and Mitigation Procedures* and the *Wetland and Waterbody Construction and Mitigation Procedures* ("FERC Procedures"). Also reflected in the AIM Project E&SCP is Algonquin's significant experience and practical knowledge of pipeline construction and effective environmental protection measures. Lessons and insights gained from past construction projects have been incorporated into the AIM Project E&SCP.

Algonquin also sought to minimize workspace in and near wetlands to the extent practicable. Due to the environmental and safety measures standard in current pipeline installation methodologies (*e.g.*, adequate space to allow for topsoil segregation and storage, and to maintain safe working and travel distances from pipeline installation equipment,) additional TWS is needed along the existing and permanent ROW during construction.

For both in-ROW work space and TWS, implemented best management practices include, wherever practical:

- A reduction of construction corridor widths (*e.g.*, the typical construction ROW width is 100 feet but in wetlands it is generally reduced to 85 feet when practicable);
- A 50-foot setback for additional TWS for wetlands;
- Minimization of riparian clearing to the extent practicable while ensuring safe construction conditions;
- Expedited construction in and around wetlands;
- Confinement of stump removal to the trench-line to minimize soil disturbance (unless safety or access considerations require stump removal elsewhere);
- Return of wetland bottoms and drainage patterns to their original configurations and contours to the extent practicable;
- Permanent stabilization of upland areas near wetlands as soon as practicable after trench backfilling to reduce sediment run-off;
- Segregation of topsoil in unsaturated wetlands to preserve the native seed source (which will facilitate re-growth of herbaceous vegetation once pipeline installation is complete);
- Utilization of recommended seed mixes as specified by relevant land management agencies;
- Periodic inspection of the construction corridor during and after construction;
- Post-construction wetland monitoring to evaluate the progress of wetland revegetation; and
- Documentation of invasive species prior to construction and post-construction monitoring to compare pre- and post-construction occurrences.

2.1.2.1 Design Modifications – Fall 2014

A fall 2014 redesign of the entry/exit point for the horizontal direction drill ("HDD") under the Hudson River allowed Algonquin to reduce temporary wetland impacts by 0.10 acre by avoiding a small PEM wetland on the west side of the river.

2.1.3 Compensatory Mitigation

There will be no permanent loss of wetland as a result of construction of the AIM Project Facilities in New York; however, there will be approximately 23.9 acres of wetland impact, the majority of which will be temporary in nature. The goal of the mitigation plan is to mitigate and off-set temporary and permanent impacts and alterations to wetland functions and values affected by the AIM Project. Compensatory mitigation will be accomplished through onsite mitigation and restoration and an offsite mitigation project, further described in Section 3.0.

3.0 MITIGATION SELECTION

3.1 Onsite Mitigation

3.1.1 Restoration within existing and permanent ROW

Within the permanent ROW, final restoration (including final grading) of PEM and PSS wetlands will be completed within 20 days after the trench is backfilled, weather and soil conditions permitting. In conjunction with backfilling and restoration of segregated topsoil, all construction debris will be removed from the ROW. The ROW will be seeded within six working days following final grading, weather and soil conditions permitting. Wetlands will be treated in one of two ways, they may be seeded with a quick-growing and inert cover crop (*e.g.*, winter rye [*Secale cereale],)* or they may be left uncovered to allow native seed stock in the restored topsoil to grow and proliferate. Any soil disturbance that occurs outside the permanent seeding season or any bare soil left unstabilized will be mulched in accordance with the AIM Project E&SCP. Additionally, Algonquin will conduct post-construction maintenance and monitoring of

the ROW in affected wetlands to assess the success of restoration and revegetation and to provide data for suggesting additional remediation efforts.

3.1.2 Restoration of PFO in Construction-affected TWS

Onsite restoration for temporarily converted PFO wetlands will include restoration within small areas of forested wetland located in TWS outside the permanent pipeline ROW. Restoration will include select re-planting efforts, as necessary, combined with invasive species control and post construction monitoring. The details of the replanting plan will be finalized following final restoration of these TWS areas in PFO wetlands. Plant species that readily resprout from stumpage (*e.g.*, red maple) will be allowed to grow in place. Where construction has removed stumps or where resprouting does not appear feasible or likely, a plan will be initiated to re-establish the PFO to a similar species composition and density as existed prior to construction, or, if difficult to ascertain, to a composition and density similar to adjacent, reference PFO wetlands. When planting, Algonquin will seek to install 1.5 times the pre-construction number of trees cleared from each wetland (rounded up to the nearest whole number).

3.2 Offsite Compensatory Mitigation

3.2.1 Mitigation Opportunities Search

The Department of Defense and Environmental Protection Agency Joint Compensatory Mitigation for Losses of Aquatic Resources; Final Rule (Fed. Reg. Vol. 73, No. 70, April 10, 2008) established this hierarchy of preferred wetland mitigation options for impacts to USACE-regulated wetlands:

1. Mitigation Banks
2. In-lieu-fee Programs
3. Permittee-responsible compensatory mitigation (developed using a watershed approach)
    a. On-site and/or in-kind permittee-responsible mitigation
    b. Off-site and/or out-of-kind permittee-responsible mitigation.

For smaller scale, secondary impacts such as this, mitigation banks or in-lieu-fee programs often provide the most logical choice for mitigation. These types of compensatory mitigation accept fees from applicants with smaller impacts and pool those assets to fund larger projects with higher ecological value. However, there are no established mitigation banks or in-lieu-fee programs currently in effect in southern New York State. Therefore, Algonquin began evaluating options for compensatory mitigation.

In 2013 and 2014, Algonquin met with the USACE New York District and the New York State Department of Environmental Conservation ("NYSDEC"). The USACE requested compensation for certain impacts, agreeing to on-site mitigation for temporary impacts but requesting off-site mitigation for permanent conversion of forested wetlands. The USACE suggested that off-site mitigation be "in-kind" (*i.e.*, of the same wetland type) and should be located in the same watershed as the impacts (Algonquin and USACE New York District meeting minutes, January 13, 2014). Thus, Algonquin is proposing on-site mitigation for temporary impacts and off-site compensation for permanent PFO conversion impacts.

During early Project discussions, the USACE suggested reaching out to New York municipalities along the Project route for assistance in finding suitable, nearby off-site compensation opportunities. The Town of Yorktown responded to Algonquin's outreach request by suggesting that Algonquin meet with the Yorktown Wetland Planner ("Wetland Planner"). Algonquin talked with the Wetland Planner and requested a listing of potential mitigation opportunities that met some of the following criteria: contains forested wetlands; contains degraded or impacted wetlands; offers opportunity for wetland restoration or enhancement; town-owned; and/or has been noted by the Wetland Planner as having important natural

resources or providing important wetland values. The Wetland Planner presented Algonquin with approximately seven possible properties in Yorktown. In July 2014, representatives from Algonquin met with the Wetland Planner and the Yorktown Town Supervisor and toured several sites. In August 2014, Algonquin prepared and submitted to the USACE the "*Addendum to the Conceptual Mitigation Plan: Compensatory Mitigation Plan for New York Facilities*". This plan contained preliminary details on three conceptual offsite mitigation options in the Town of Yorktown, New York (the potential projects were named Mill Pond, Sparkle Lake and Junior Lake[1]).

In August, and pursuant to the outline in the Addendum, Algonquin performed detailed site investigations of the three offsite mitigation options. Mill Pond is an approximately 7.9-acre parcel of land on a former manmade pond that drained several years ago when a dam failed during a storm event. The site offers opportunity for wetland, stream and upland buffer enhancements, but there is a significant population of invasive plants on the site (*e.g.* mile-a-minute vine [*Persicaria perfoliatum)*, mugwort (*Artemisia vulgaris*), purple loosestrife (*Lythrum salicaria)*, *Phragmites australis*, *etc.*] and the property has a complicated ownership history and status. Sparkle Lake is an approximately 3.3-acre, town-owned property below the dam of Sparkle Lake. The Sparkle Lake site offer an opportunity for forested wetland restoration/enhancement that would primarily be achieved through an intensive herbicide-driven Phragmites and multiflora rose (*Rosa multiflora)* control program, followed by planting and monitoring. The extent of the invasive species control necessary for this wetland (which sits within a residential setting) may be difficult to permit given the proximity to streams and homes, and the many vectors present for continued invasive species colonization. Junior Lake is an approximately 3.4-acre site with a manmade pond and wetlands, and a fringe of riparian trees and shrubs. The site is located within Memorial Park, a recreation park of the Town of Yorktown. Enhancement opportunities at the park include forested wetland enhancement in a wetland peninsula of the pond that is currently dominated by purple loosestrife. There are also opportunities for mixed forest and shrub wetland enhancement in some seasonally flooded, sediment-formed terrestrial wetland areas within the pond, and opportunity for enhancements of the riparian wetlands and upland buffers around the pond.

While seeking alternative off-site mitigation options in the region (primarily Westchester County, in the lower Hudson River watershed), Algonquin also reached out to representatives of agency and non-governmental organizations in the region. Algonquin's outreach included contacts with the Natural Resource Conservation Service ("NRCS"); Soil and Water Conservation Districts in Westchester, Rockland, Putnam, and Dutchess Counties; Ducks Unlimited; the Westchester Land Trust ("WLT"); the Rockland County Division of Environmental Resources; the Watershed Agricultural Council ("WAC"); and the Dutchess Land Conservancy to request assistance and suggestions for any known or potential forested wetland mitigation opportunities in or adjacent to Westchester County or the lower Hudson River watershed. Of these contacts, only the WLT and WAC could suggest a potentially suitable mitigation opportunities within their service area. WLT provided Algonquin representatives a tour of the Hunter Brook Preserve, an approximately 46-acre, primarily forested parcel of land in Yorktown, New York located west of and along Hunter Brook. WLT is working to restore trees to a stretch of the riparian floodplain and wetlands on the western bank of Hunter Brook, and are planning future projects designed to curb erosion concerns and invasive species control elsewhere on the property. While this option appears potentially suitable, the extent of the mitigation credit potential is currently unknown and WLT's immediate priorities for the site include work outside of forested wetland and riparian habitat restoration. WAC has been involved with a small replanting effort on the southwest corner of the riparian area of Junior Lake and is also as supporter of WLT's efforts at Hunter Brook Preserve. WAC works with landowners, municipalities and farmers on environmental education and water quality improvement projects within the watershed of the New York City drinking water supply watershed (including Westchester County). WAC is privy to some privately-owned riparian areas for which WAC would potentially welcome financial

[1] Known as "Junior Pond" in the addendum, Algonquin has since learned that the town refers to this as "Junior Lake".

support for riparian plantings and protection, but they are not aware of strictly forested wetland restoration or enhancement opportunities that could be used by outside entities for mitigation.

In recognition of its inherent ecological value, its proximity to the Project area, its location within the watershed of the Croton Lake Reservoir, its high likelihood of success, and its potential for forested wetland habitat enhancement and wetland buffer restoration, Algonquin proposes the Junior Lake site as the preferred site for off-site compensatory mitigation for the AIM Project facilities in New York. Details and an environmental baseline for the site are provided in Section 4.3.

4.0 BASELINE INFORMATION

4.1 Baseline Information: AIM New York Facilities

Within the existing confines of Algonquin's existing maintained permanent ROW easement in the AIM Project area in New York, the wetlands are primarily characterized as palustrine emergent ("PEM") wetlands generally dominated by the invasive grass *Phragmites australis.* There are also several pockets of palustrine scrub/shrub ("PSS") wetlands within and along the edges of the existing ROW, mostly dominated by speckled alder (*Alnus incana*), highbush blueberry (*Vaccinium corymbosum*), sweet pepperbush (*Clethra alnifolia*), spice bush (*Lindera benzoin*), northern arrowwood (*Viburnum recognitum*), southern arrowwood (*Viburnum dentatum*), and silky dogwood (*Cornus amomum)* and the invasive species discussed below. Outside of the maintained ROW, wetlands are generally characterized as palustrine forested ("PFO") wetlands, with common trees including red maple (*Acer rubrum)*¸ yellow birch (*Betula allegheniensis*), black birch (*Betula nigra*), green ash (*Fraxinus pennsylvanica*), slippery elm (*Ulmus rubra*), and American elm (*Ulmus americana*). All wetland and many upland areas along the Project routes through New York show signs of invasive species infestation both on and off the ROW. Within the wetlands needed to be permanently converted from forested cover types, notable invasive plants include common reed, Japanese stiltgrass (*Microstegium vimineum),* Asiatic bittersweet (*Celastrus orbiculatus)*, and multiflora rose. Additional information on the baseline environmental condition of the AIM New York facilities is available in the attachments for the USACE/NY Joint Application for a Section 404/10 Permit, submitted to USACE in March, 2014.

4.1.1 AIM New York Facilities Wetland Impacts

4.1.1.1 Temporary Impacts to PEM and PSS Wetlands from Construction

Approximately 16.78 acres of temporary impact will occur in PEM and PSS wetlands from Project construction. These impacts include temporary disturbance to soil, hydrology, and vegetation. These impacts may result in temporary changes in current wetland functions and values of the impacted area; however, the physical and hydrologic composition of the impacted wetland areas will be restored following the completion of construction.

4.1.1.2 Temporary Impacts to PFO Wetlands from Construction and Clearing in TWS

Clearing of approximately 6.29 acres of PFO wetlands will be required for the establishment of TWS adjacent to the existing permanent ROW to facilitate construction of the new pipeline. TWS generally consists of areas disturbed parallel to and within the pipeline ROW that are not planned to be permanently maintained. TWS also includes small "bump-out areas" along the project ROW that are used for equipment staging on either side of difficult or dangerous construction areas where additional staging room is required (*e.g.*, steep slopes, roads, streams, wetlands, *etc.*). These bump out TWS will not be permanently maintained, they are also commonly referred to as additional temporary work space ("ATWS"). For the

most part, Algonquin has sited the TWS to avoid wetlands, however in some circumstances and locations, placement of the TWS in wetlands is unavoidable. In general, the impacts to wetlands from creation of TWS are minimal and temporary in nature. In many instances, conversion in wetlands due to TWS will include removal of one or a few trees from any individual PFO wetland. These minor, and discrete conversion impacts generally take place in a very small portion of the remaining PFO wetland outside of the ROW. During construction, unless grading is required for safety reasons, wetland vegetation will be cut off at ground level, leaving existing root systems and stumps intact. This methodology will promote stump sprouting and improve short- and long-term soil stabilization.

4.1.1.3 Permanent PFO Wetland Conversion for Creation of New ROW

No loss of wetland area will result from the AIM Project. The primary long-term impact to wetlands from the Project will be permanent conversion of 0.83 acre of PFO wetland to PSS and PEM wetland for new ROW. All of the permanent conversion wetland impacts occur in the Town of Cortlandt, Westchester County, New York, where new ROW is being acquired for the project. Of the 0.83 acres of PFO wetland conversion, 0.75 acres will occur within a single wetland: Wetland B13-SPLR-W16. The remaining 0.08 acres of forested wetland conversion will occur within Wetlands B13-SPLR-W50, B13-SPLR-W202, and B13-SPLR-W205. Three of these wetlands are located within the fenced portion of the Indian Point power production facility; the fourth wetland is located adjacent to electric transmission ROWs associated with a large electrical substation. These wetlands and their functions and values are further detailed in Table 2.

4.2 Baseline Information: Junior Lake Wetland Enhancement Site

4.2.1 Location

The Junior Lake Wetland Enhancement Site ("Junior Lake site") is located northwest of the corner of Halyan Road and Edgewater Street in the Town of Yorktown, Westchester County, New York. Maps of the site are included as Figures 1 and 2.

4.2.2 Watershed

The Junior Lake site is fed by a small stream channel that flows through the property and into Hallocks Mill Brook, north of Junior Lake. The watershed of Hallocks Mill Brook is approximately 7,200 acres, Hallocks Mill Brook drains into Muscoot River and then to the Croton Reservoir (EDC, 2007). The Croton Reservoir is a component of the public drinking water supply system for New York City (EDC 2007).

4.2.3 General Site Description

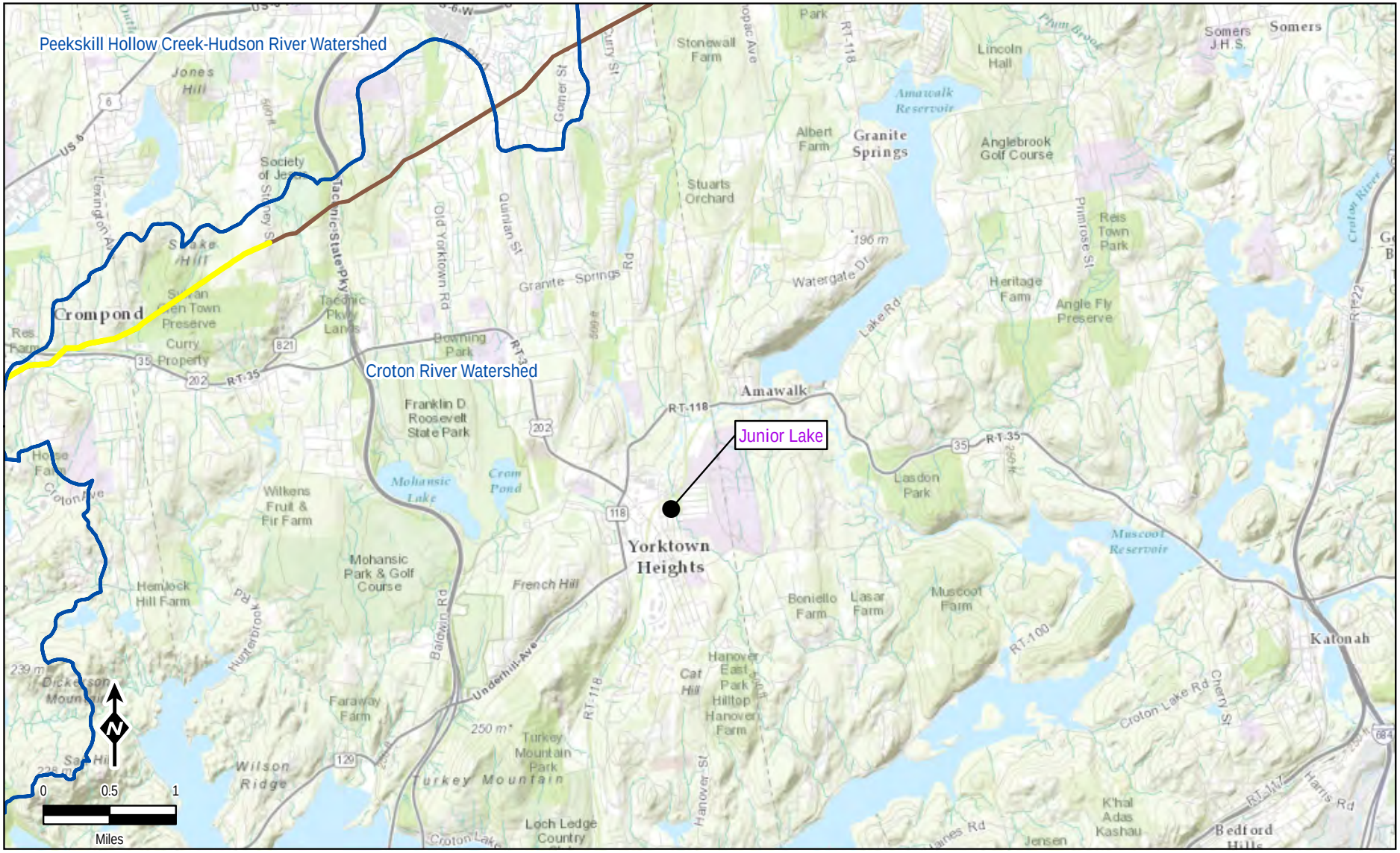
Junior Lake (actually a small pond) is located within Memorial Park, a town-owned parcel. East of the pond, the park includes a playground and a public swimming pool owned and operated by the town. The eastern and southern edges of the pond are buffered with shrubs and herbaceous wetland plants, with mature trees at the southern end. There is a narrow strip of trees on the west side of the pond, with a maintained, mowed lawn beyond the trees. There is an approximately 0.34-acre of area southwest of the pond where the Croton Trees-for-Tribs program sponsored a planting effort designed to restore some woody species to the riparian zone of the wetland. Many of the smaller planted shrubs and trees installed during that 2012 effort have succumbed to deer browse.

TABLE 2

AIM Summary of Permanent Forest Conversion Impacts

Wetland Name	Area Converted (Acres)	Wetland and Crossing Description	Principal Functions/Values*; those underlined may be lost or altered	Discussion of Functions/Values Lost or Altered by Conversion
B13-SPLR-W16	0.75	This is a large wetland that transitions from forested to scrub/shrub and emergent and occurs partially within existing, maintained electric transmission and pipeline ROWs. The new Project ROW crosses through forested portions of this wetland in three areas, generally, adjacent to an existing cleared electric transmission corridor. There are large pockets of common reed throughout this wetland.	Groundwater recharge/discharge; floodflow alteration; sediment/toxicant retention; nutrient removal; wildlife habitat; uniqueness/heritage	The wetland will continue to provide the functionality of wildlife habitat; however the composition of species that utilize the wetland for habitat (i.e., shelter and food) may change with the removal of overstory vegetation in the areas required to be permanently maintained. All trees, including red maple and chestnut oak, must be removed from the wetland within the new permanent corridor footprint over the pipeline. This function will not be significantly impacted because of the size of the overall wetland. There are several acres of forested wetland that extend beyond the proposed construction ROW and that will remain undisturbed.
B13-SPLR-W50	0.05	This partially forested and partially ponded wetland is located partially within a former sand/gravel extraction area, and hydrology is backed up and by an earthen berm at the southern end. There is a large infestation of common reed dominating parts of this wetland. The Project ROW will cross through the outer edge of a small portion of this larger wetland. This wetland resides within the fenced-in property of the Indian Point power production facility.	Groundwater recharge/discharge nutrient removal; sediment/shoreline stabilization	The ability of the wetland to provide these functions will not be impeded or reduced by the proposed conversion to scrub/shrub or emergent.
B13-SPLR-W202	0.03	This wetland contains poorly drained soils, a diffuse intermittent stream and a primarily forested canopy with little understory. The Project ROW will cross through the outer edge of a small portion of this larger wetland. This wetland resides within the fenced-in property of the Indian Point power production facility.	No identified principal functions or values. Secondarily may provide: floodflow alteration, sediment/toxicant retention and nutrient removal.	The ability of the wetland to provide or potentially provide these functions will not be impeded or reduced by the proposed conversion to scrub/shrub or emergent.
B13-SPLR-205	>0.01	Small, partially forested wetland adjacent to partially cleared roads and development within the fenced-in property of the Indian Point power production facility. The Project ROW will cross an edge of a small portion of this small wetland.	No identified principal functions or values. Secondarily may provide: sediment/toxicant retention and nutrient removal.	The ability of the wetland to provide or potentially provide these functions will not be impeded or reduced by the proposed conversion to scrub/shrub or emergent.

*Functional Assessment performed pursuant to The Highway Methodology Workbook Supplement: Wetland Functions and Values: A Descriptive Approach (USACE, 1999)



New and Take-Up & Relay Pipeline Segments

Existing Algonquin Natural Gas Pipelines

HUC-10 Watersheds

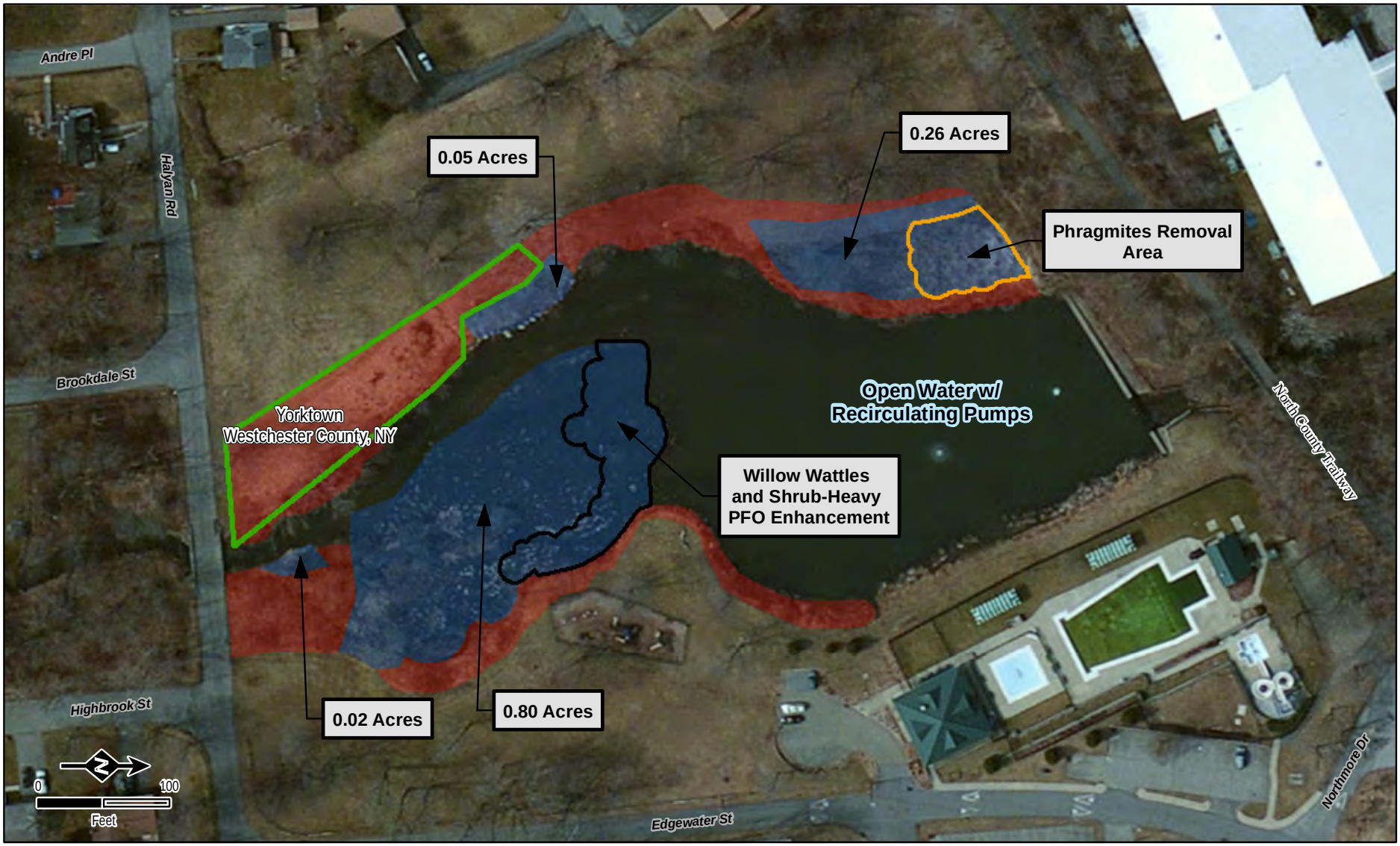
Sources: ESRI
Projection: NAD83, UTM Zone 18N US Survey Feet, Grid North.

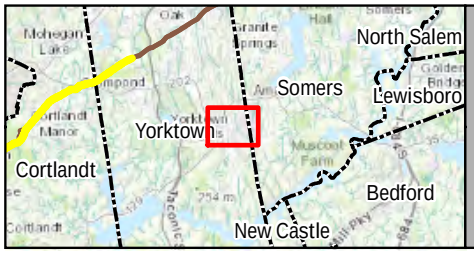
Junior Lake Project

Figure 1
Location

TRC

Created:
12/16/2014





New and Take-Up & Relay Pipeline Segments
Existing Algonquin Natural Gas Pipelines
"Trees For Tribs" Program Riparian Planting Area (0.34 Acres)
PFO Enhancement Planting Areas With Pocket of Shrubs (1.13 Acres)
Invasive Species Removal on Riparian Fringe (0.98 Acres)

Sources: ESRI
Projection: NAD83, UTM Zone 18N US Survey Feet, Grid North.

Junior Lake Project

Figure 2
Enchacement Plan

TRC

Created:
12/16/2014

Junior Lake was constructed in 1927 by a private resident who dammed the stream (Postcripts 2010). Pond hydrology comes from an unnamed, perennial stream channel (NYDEC Class B stream – 6 NYCRR part 935) that runs south to north and enters the park under the Halyan Road bridge. The stream originates in a forested wetland approximately 0.75 mile south of the Junior Lake site. After crossing under Halyan Road, the stream runs approximately 100 feet through a narrow, mixed forested and shrubby wetland before draining into the pond. The enhancement area is east of where the stream enters the pond. The dam is located on the north end of the pond. The land northwest of the pond is vegetated with a mix of trees and shrubs, and there is a patch of the invasive grass, common reed, to the west of the dam.

The extents of the pond were historically larger than they are today. The enhancement area has been slowly filling in by sediment released during housing and road construction over the last few decades and presumably through erosion of the stream channel itself due to increased stormwater runoff. Development and sedimentation has slowed in recent years (B. Barber, personal communication). The islands formed by the sediments have stabilized, but have become overrun with purple loosestrife. The purple loosestrife is forming a monoculture to the detriment of native species, wherein the shading the loosestrife provides is preventing the establishment of woody plants.

4.2.4 Dominant Vegetation

Dominant trees around the pond include red maple and willow species (*Salix sp.*). Within the proposed PFO and PSS enhancement area, some native sedges and forbs (*e.g. Carex stricta, C. cyperinus, Alisma triviale, Solidago spp.,* and *Polygonum spp.)* comingle with the dominant, invasive purple loosestrife. Along the frequently ponded portions of the enhancement site, black, pussy and goat willow (*S. nigra, S. bicolor* and *S. caprea*) grow in patches as well. Between the enhancement area and the playground, a hedgerow of shrubs provides a buffer. A line of cattails (*Typha latifolia*) creates a vegetated buffer along the eastern shore of the pond, between the pond and the public pool.

4.2.5 Invasive Plant Species

As noted, the enhancement area is dominated by purple loosestrife. There are also several large multi-flowered rose bushes mixed in with native shrubs and broadleaved cattails along portions of the pond edge. Northwest of the pond is vegetated with a mix of trees and shrubs, and there is a patch of the invasive grass Phragmites, west of the dam. There are also some examples of Asiatic bittersweet growing on the western side of the pond and intermingled sporadically throughout the riparian fringe habitat.

4.2.6 Current Functions and Values

Functions and values were assessed pursuant to USACE (1999); a copy of the functional assessment checklist and descriptors of the indicators is included in Attachment 1. The principal functions of the enhancement area and adjacent pond at Junior Lake are fish and shellfish habitat, wildlife habitat and uniqueness/heritage (due to proximity to public park and schools). Wildlife habitat is limited within the wetland due to lack of structural diversity and food sources, thus adding berry and nut-producing tree and shrubs in this enhancement area will increase the wetlands ability to provide wildlife habitat. The fish and shellfish functionality of the site will be improved as well, due to increased shading and thermal regulation from the trees, and due to the additional filtering capabilities provided by the planted species. The uniqueness/heritage value of the park will remain unchanged, however the introduction of visually pleasing shrubs such as red osier dogwood may enhance the aesthetic appeal of the enhancement area.

4.2.7 Photographs

(all photographs taken between July and October, 2014)

Panoramic view facing south/southwest across PSS/PFO enhancment area from southern edge of pond.

Facing south across PFO planting area into hummocks of purple loosestrife.

Facing southeast across PSS/PFO enhancement area past the southern end of the pond.

M-34

Facing southeast toward purple loosestrife-dominated area of PSS/PFO enahncement site.

Facing northeast across the pond from western shore.

Facing northwest across PSS enhancement area near edge of pond.

Facing northwest across PSS enhancement area near edge of pond.

Facing south across PSS enhancment area between stream lobes.

Facing downstream toward Haylan Road Bridge.

Facing west toward common reed stand at northwest corner of pond.

Looking west across dam at north end of pond.

Panoramic view facing south across pond from dam at north end of pond.

5.0 DETERMINATION OF CREDITS

Temporarily impacted wetlands will be restored to their pre-construction functionality and there will be no permanent loss or alteration of wetland functions or values compared with pre-construction conditions. Onsite restoration provides 1:1 compensatory mitigation for temporary impacts associated with the project.

There will be approximately 0.83 acres of unavoidable, permanent change in wetland functions and values due to permanent conversion of PFO wetlands to PSS and PEM wetland types. The primary functionality altered will be wildlife habitat, due to removal of overstory vegetation along certain portions of the new ROW. The proposed compensatory mitigation for these alterations is via wetland and buffer enhancements at Junior Lake, which includes planting effort to establish trees and shrubs in currently herbaceous invasive species-dominated wetland area. Planting and invasive species control at the park will enhance the wildlife habitat of the park by providing stratigraphic, nesting and food source diversity.

TABLE 3

Wetland Mitigation Credits

Offsite Mitigation Activity Type	Acres	Mitigation Ratio	Mitigation Acre-Credits Provided	Mitigation Acre- Credits Required for PFO Conversion Impacts
PFO Enhancement [a]	1.08	1.5:1	0.72	-
PFO Riparian Supplemental Planting	0.34	3:1	0.11	-
Riparian PFO/PSS Buffer Enhancement [b]	0.97	5:1	0.19	-
		Total	**1.02**	0.83

[a] removal of invasive plants and installation of trees and shrubs
[b] invasive species control

6.0 MITIGATION WORK PLAN

6.1 Onsite Restoration: Temporary Impacts to PEM and PSS

Following construction, segregated topsoil, subsoil, site contours, and surface hydrologic patterns will be replaced to pre-construction conditions, thereby promoting the re-establishment of hydrophytic vegetation. Construction may result in some temporary short-term changes in current wetland functions and values of the impacted area; however, PEM and PSS wetlands impacted during construction will be restored quickly after initial impacts (*i.e.* within 20 days after the trench is backfilled where weather permits) and allowed to recover following construction. These restoration measures, in combination with the mitigation measures described elsewhere in the mitigation plan and in permit application documents previously submitted, will provide full, *in situ* replacement of any temporary impacts to wetland functions and values.

6.2 Onsite Restoration: Temporary Impacts to PFO

Onsite restoration for temporarily impacted PFO wetlands will include restoration of approximately 6.29 acres distributed amongst several wetlands where they are located in TWS outside the permanent pipeline ROW. Algonquin is proposing to restore these impacted PFO wetlands to pre-construction, forested conditions of similar species composition. Thus, the functions and values of the cleared PFO wetlands will be fully restored in place following construction. Assessing the overall impact from these minor clearing

impacts will require assessing as-built conditions, in order to fully ascertain the area and number of mature trees removed from each wetland area.

The site replanting plan will be finalized following final restoration of these TWS areas in PFO wetlands. Plant species that readily resprout from stumpage (*e.g.*, red maple) will be allowed to grow in place. Where construction has removed stumps or where resprouting does not appear feasible or likely, a plan will be initiated to re-establish the PFO wetland to a similar species composition and density as existed prior to construction, or, if difficult to ascertain, to a composition and density similar to adjacent, reference PFO wetlands.

6.2.1 As-Built Planning

The quantity of plants restored in the temporarily cleared PFO wetlands will be determined based upon comparison of pre- and post-construction conditions. Prior to clearing, trees within permitted TWS of each PFO wetland will be tallied. Information to be collected in the study will include percent aerial coverage by trees in the TWS; tree species present; number of each species present; and presence, type and extents of invasive species [*e.g. sparse (1-10% aerial cover), moderate (10-50%)* or *dominant (>50%)]*. For this study, the term "trees" will include all living woody, non-vine vegetation over six inches in diameter-at-breast height (approximately 4.5 feet above ground level). Invasive tree species (*e.g. Acer platanoides, Ailanthus altissima*) will be noted but not counted for replacement. Following clearing, the pre-construction data will be compared with post-construction conditions to determine how many trees were actually cleared from each wetland. Only trees that are cut off at the stump will be counted and restored (*i.e.* limbed or trimmed trees will not be included). The difference between pre- and post-construction tree data will provide the basis for post-construction restoration work, including planting specifications (*i.e.*, species, number of plants, *etc*.) and invasive species control.

6.2.2 Planting Guidelines

When replanting is deemed necessary based on the pre- and post-construction assessment, the following guidelines will be followed by the landscaping contractor:

- Native, locally-sourced plant materials will be used.
- All trees will be potted nursery stock, at least 24-inches tall.
- Each planted tree will be surrounded with a clean, organic mulch layer (at least four inches thick) or commercially available, slowly biodegradable weed suppression material with a radius of at least four-feet centered on the plant.
- Rodent and deer guards will be placed around each tree, to a height of at least 12 inches above the ground.

6.2.3 Invasive Species Control and Management

The mitigation area invasive species plan will follow the guidance of the AIM Project Invasive Control Plan (Appendix G of the USACE/NY Joint Application Form 09/10 for a Section 404/10 Permit, submitted to USACE in March, 2014). For the purposes of onsite restoration of temporarily cleared forested wetlands, the goal of invasive species control will be to prevent target invasive species from climbing, choking, girdling, crowding, or otherwise negatively affecting the success of planted and resprouting trees in the restoration areas.

6.3 Offsite Mitigation Workplan

6.3.1 Invasive Species Management

Purple loosestrife in the enhancement area: The Junior Lake enhancement area currently has a robust population of purple loosestrife that is dominant throughout most of the area to be planted. Mature clumps of loosestrife plants are growing on hummocks of presumed tussock sedge (*Carex stricta)* and loosestrife seedlings are present throughout the flooded pond fridge area. Due to the proximity of the pond and frequent flooding, application of herbicide is not being proposed at this time. The soil is soft enough and the site is small enough for hand removal to be an effective initial control solution for purple loosestrife. Initial control of the purple loosestrife will allow the planted woody species growth time to shade out and control the spread of the invasive plants. Prior to planting trees and shrubs, purple loosestrife will be hand-cut or pulled, bagged and removed from the site. Care will be taken to remove the entire root mass of the plants in order to discourage resprouting. During site monitoring, to take place in late summer prior to the loosestrife going to seed, flower heads will be removed from any remaining purple loosestrife plant on the site.

Woody invasive plant species around the pond: Mixed in with the thick bordering vegetation around the pond is pockets and individual examples of woody invasive species. Most notably present are multi-flowered rose and Asiatic bittersweet. During the initial planting effort then during the once per year annual monitoring period these species will be hand cut at ground level and removed from the site.

Patch of common reed in the wetland on the northwest corner of pond: This stand will be cut and mulched in place in spring and again in fall; the few native shrubs that are growing within the patch will be avoided and left in place. Native tree species will be planted within the former patch. Trees will be surrounded with burlap covered by mulch and the understory will be thickly planted with quick growing grasses. The common reed will be cut back from the trees at least two times per year.

Broadleaved cattails between the pool and the pond: The cattails are relegated to small stand along eastern edge of the pond. They are not a dominant feature and provide habitat for red-winged blackbirds and refugia for other species of birds, aquatic insects, mammals, and amphibians. No control or eradication plans are being proposed for this small stand.

6.3.2 Planting Specifications

Native plants have been chosen that tolerate a range of hydrologic conditions and exposure that provide wildlife food sources, that are not preferred deer browse, and that tend to grow quickly. Table 4 provides additional detail on species, quantities, approximate location, and stocktype. For stocking and planting the woody species, the following specifications will be adhered to:

- Native plant species will be use;
- All trees will be potted nursery stock, at least 48-inches tall;
- Shrubs will consist of a mix of potted nursery stock and live stakes; and
- Plants will be installed as directed by Algonquin's wetland specialist who will flag out planting locations and be on hand during installation to oversee installation and make recommendations for placement and adjustments.

TABLE 4 Target[a] Wetland Plant Specifications for PFO and PFO/PSS Enhancement Area				
Common Name	**Scientific Name**	**Plant type**	**Minimum Height at Planting (inches)**	**Number**
Trees:				
red maple	*Acer rubrum*	Potted/burlap	48	75
black willow	*Salix nigra*	Potted/burlap	48	75
yellow birch	*Betula allegheniensis*	Potted/burlap	48	50
silver maple	*Acer saccharinum*	Potted/burlap	48	50
black gum	*Nyssa sylvatica*	Potted/burlap	48	50
balsam fir	*Abies balsamea*	Potted/burlap	48	25
sycamore	*Platanus occidentalis*	Potted/burlap	48	25
			Total	350
Shrubs:				
buttonbush	*Cephalanthus occidentalis*	Potted/burlap	24	25
pussy willow	*Salix discolor*	Live stake or Bare Root	24	100
red osier dogwood	*Cornus sericea*	Live stake or Bare Root	24	100
willow wattles	*Salix sp.*	Wattles	NA	25
			Total	250 (not including wattles)
[a] *Plant species may vary depending on availability at the time of planting; native species similar growth patterns (e.g. swamp white oak in place of red maple) will be used if necessary; all changes will be reported in annual monitoring reports.*				

6.3.3 Coarse Woody Debris

Due to the risk of flooding and dislodgement and the deleterious impacts that could have on the dam and plantings, no additional woody debris will be added to the site. However, rack lines indicate that the stream provides fairly consistent source of branches and organic debris, and this material is anticipated to be regularly deposited. Additionally, 25 bundled willow wattles will be staked into place around the site in the more flood prone areas of the enhancement site to help provide additional structural heterogeneity, provide some immediate sediment retention and provide opportunities for additional woody plant growth.

6.3.4 Buffers

The Yorktown Parks Commission maintains an approximately 10 foot, uncleared/unmowed buffer between the pond and the mowed areas of the park on the east side of the wetland and pond. Algonquin will continue to work with the Parks Commission to establish long-term protocols for setbacks and maintenance. A *Croton-Trees-for-Tribs* sponsored riparian planting area in a section of the upland on the southwest side of the pond is currently protected and unmowed, and the vegetated strip around the remainder of the pond will remain in place. The shrub layer maintained around the pond and enhancement area will provide both wildlife habitat and a visual buffer for the habitat.

6.3.5 Schedule

Dependent up on AIM Project initiation and seasonal timing (for planting), this New York Plan will be implemented during or immediately following Project construction. Monitoring will be begin during the first growing season after implementation.

7.0 PERFORMANCE STANDARDS

7.1 Onsite Mitigation

Success of the onsite mitigation efforts will be determined based on achieving a trend toward restoration of forested conditions in the temporarily cleared TWS areas in wetlands. This trend will be assessed based on survivorship of planted and stump-sprouted tree species in these areas and achievement of pre-construction tree stem density and/or percent aerial cover by trees. In calculating this assessment, all trees over three feet tall located within the cleared TWS in the wetland will be counted. Reporting requirements are discussed in Section 8.

7.2 Offsite Mitigation Site

Success of the offsite mitigation site will be calculated based on survivorship of the planted woody species, control of the invasive species and a trend toward a forested overstory in the PFO enhancement areas with an understory of shrubs in the PFO/PSS planting zones. These criteria will be assessed by completing stem counts and charting the percent aerial coverage of native woody species in the enhancement areas. The project success goal for the enhancement areas will be 75% aerial cover during the growing season by native woody species; with at least 50% survivorship of planted tree species.

8.0 MONITORING REQUIREMENTS

8.1 Monitoring Reports

Onsite and offsite mitigation will be described in a single, annual monitoring report. The monitoring procedures and reports will be completed by a field scientist experienced in wetlands, wildlife biology, invasive species control, horticulture, and/or wetland restoration. Mitigation monitoring reports will be submitted to the district engineer on or by December 31st of the year of the inspection. Monitoring reports will include the following elements:

- A restatement of the goals, objectives and performance standards for the compensation site plan.
- A narrative summary of the results and conclusions of the monitoring.
- Identification of any structural failures or external disturbances on the site.
- A description of management activities and corrective actions implemented during the past year.
- A summary of and full presentation of the data collected during the past year.
- An assessment of the presence and level of occurrence of invasive species.
- A vegetative cover map sketch (actual, not proposed) of the mitigation site.
- Photographs showing all representative areas of the mitigation site.
- An assessment of the degree to which performance standards are being met.
- Proposed corrective actions to attain performance standards.
- The first year monitoring report will also include:
    - As-built plans;
    - Description of problems encountered during site establishment and corrective actions; and

- Follow-up corrective actions and schedule for implementation.

8.2 Monitoring Schedule

8.2.1 Onsite Mitigation Monitoring

Onsite restored PFO wetlands will be monitored for the first four years following pipeline construction and ROW restoration, or until the success criteria are achieved (whichever comes first).

8.2.2 Offsite Mitigation Monitoring

The Junior Lake Enhancement area will be monitored for five years, starting during the first growing season after planting. The site will be monitored twice during the first year (early and late in the growing season) then once during subsequent years.

9.0 LONG-TERM MANAGEMENT PLAN

Algonquin will monitor the Junior Lake mitigation site for the first five years following implementation. The Yorktown Parks and Recreation department provides onsite and regular routine review of the project site during their normal park maintenance activities. They will be provided contact information for Algonquin's wetland mitigation management team and advised to contact the team to report any concerns with the enhancement area.

10.0 MAINTENANCE AND ADAPTIVE MANAGEMENT

Potential maintenance activities include plant replacement, pruning dead or broken branches, invasive species control, and herbivory control. Follow-up and corrective actions will be discussed and documented in each year's monitoring report. For example, if invasive species are not effectively being controlled through mechanical means, Algonquin will seek to permit alternate methods, including natural and/or chemical herbicide application. Additionally, if certain planted woody species are not performing as well as others, the poorly performing species may be replaced by a different species. For both onsite and offsite mitigation, replanting (as necessary) will begin in the third growing season after initial planting. The replanting effort will seek to achieve the project goals through installation of species determined to be successful through the initial seasons. All planted species adaptations and remediation (including number of plants installed) will be reported in the annual monitoring report of the year during which the work takes place.

11.0 OFFSITE MITIGATION SITE PROTECTION

The Junior Lake site is a designated parkland in the Town of Yorktown, see Figure 1. In New York State, the Public Trust Doctrine requires state legislative approval "when there is a substantial intrusion on parkland for non-park purposes….." Parkland in New York is inalienable under this public trust doctrine. Thus, the Junior Lake parcel already is inalienable parkland in perpetuity and cannot be converted to a non-park use without the consent of both the New York State Senate and Assembly. Algonquin would obtain an access agreement with the Yorktown Department of Parks & Recreation in order to plant the trees and carry out the other mitigation work described above. Algonquin will monitor the compensatory mitigation project for five years after completion of the work.

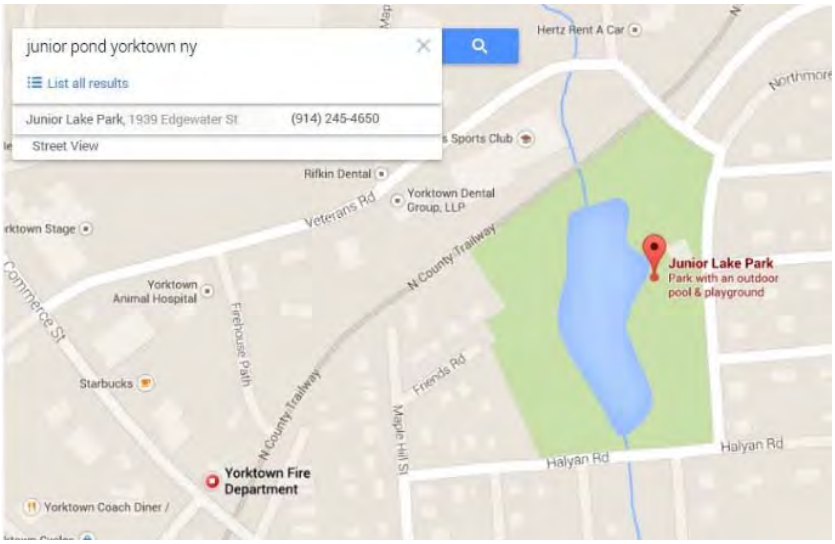


Figure 1. Junior Lake Park.

12.0 FINANCIAL ASSURANCES

The estimated cost for performing the compensatory mitigation activities described herein ranges from $200,000 to $250,000. Spectra's current market capitalization is currently estimated at over $22 billion. These figures demonstrate that Spectra is more than financially capable of undertaking the mitigation activities, and thus provide a high level of confidence that the compensatory mitigation project will be successfully completed in accordance with applicable performance standards.

13.0 REFERENCES

EDC (Environmental Design Consulting). 2007. Freshwater Wetland Functional Assessment Study for the Town of Yorktown New York. 41 pp.

Postscripts. May 12, 2012. *Of Ponds and Lakes: A Catalog of Water Resources*. Available online: http://notorc.blogspot.com/2010/05/of-ponds-and-lakes-catalog-of-water.html; Accessed November, 2014.

USACE. 1999. They Highway Methodology Workbook Supplement: *Wetland Functions and Values, A Descriptive Approach.* NAEEP-360-1-30a.

ATTACHMENT 1

Functions and Values Checklist – Junior Lake Enhancement Site

Wetland Description: Junior Lake pond and associated riparian fringe; including wetland peninsulas apparently created as a buildup of sediments over preceding half century of development near and adjacent to the property. Includes forested fringe on west side of pond, shrub and emergent wetland on east side, and partially forested/shrub habitats on south side of area. Hydrology by unnamed brook, dammed.	File number: 140092
	Wetland identifier: Junior Lake
	Preparer(s): REJ
	Date: July 2014

13.1.1.1 Function/Value	**Capability? Y**	**N**	**Summary (Rational Reference #)**	**Principal Yes/No**
Groundwater Recharge/Discharge	X		1, 2, 7, 15	
Floodwater Alteration	X		2, 4, 5, 7, 9, 11, 13	
Fish and Shellfish Habitat	X		1, 3, 4, 10, 12, 14, 17	**X**
Sediment/Toxicant Retention	X		1, 3, 5, 6, 8, 10, 12	
Nutrient Removal	X		2, 5, 9, 14	
Production Export	X		1, 2, 4, 5, 6, 7, 12	
Sediment/Shoreline Stabilization	X		9	
Wildlife Habitat	X		9, 12, 16, 17, 20, 21,	**X**
Recreation	X		1, 8, 10, 11, 12	
Education/Scientific Value	X		3, 8, 9, 13	
Uniqueness/Heritage	X		1, 3, 8, 9, 12, 17, 19, 21, 22, 23	**X**
Visual Quality/Aesthetics	X		2, 6, 7, 9	
ES Endangered Species Habitat		X	NA	
Other				

Wildlife Observations: great blue heron; Canada geese; American goldfinch; aquatic snails; painted turtle; snapping turtle; small unidentified fish; green frogs; northern chickadee; downy woodpecker; mallards

Wetland Function and Value Code Descriptions

GROUNDWATER RECHARGE/DISCHARGE

This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. It refers to the fundamental interaction between wetlands and aquifers, regardless of the size or importance of either.

1. Public or private wells occur downstream of the wetland.
2. Potential exists for public or private wells downstream of the wetland.
3. Wetland is underlain by stratified drift.
4. Gravel or sandy soils present in or adjacent to the wetland.
5. Fragipan does not occur in the wetland.
6. Fragipan, impervious soils, or bedrock does occur in wetland.
7. Wetland is associated with a perennial or intermittent watercourse.
8. Signs of groundwater recharge are present of piezometer data demonstrates recharge.
9. Wetland is associated with a watercourse but lacks a defined outlet or contains a constricted outlet.
10. Wetland contains only an outlet, no inlet.
11. Groundwater quality of stratified drift aquifer within or downstream of wetland meets drinking water standards.
12. Quality of water associated with the wetland is high.
13. Signs of groundwater discharge are present (e.g. springs).
14. Water temperature suggests it is a discharge site.
15. Wetland shows signs of variable water levels.
16. Piezometer data demonstrates discharge.
17. Other.

FLOODFLOW ALTERATION

This function considers the effectiveness of the wetland in reducing flood damage by water retention for prolonged periods following precipitation events and the gradual release of floodwaters. It adds to the stability of the wetland ecological system or its buffering characteristics and provides social or economic value relative to erosion and/or flood prone areas.

1. Area of the wetland is large relative to its watershed.
2. Wetland occurs in the upper portions of its watershed.
3. Effective flood storage is small or non-existent upslope of or above the wetland.
4. Wetland watershed contains a high percent of impervious surfaces.
5. Wetland contains hydric soils which are able to absorb and detain water.
6. Wetland exists in a relatively flat area that has flood storage potential.
7. Wetland has an intermittent outlet, ponded water, or signs are present of variable water level.
8. During flood events, this wetland can retain higher volumes of water than under normal or average rainfall conditions.
9. Wetland receives and retains overland or sheet flow runoff from surrounding uplands.
10. In the event of a large storm, this wetland may receive and detain excessive flood water from a nearby watercourse.
11. Valuable properties, structures, or resources are located in or near the floodplain downstream from the wetland.
12. The watershed has a history of economic loss due to flooding.
13. This wetland is associates with one or more watercourses.
14. The wetland watercourse is sinuous or diffuse.
15. This wetland outlet is constricted.
16. Channel flow velocity is affected by this wetland.
17. Land uses downstream are protected by this wetland.
18. This wetland contains a high density of vegetation.
19. Other

FISH AND SHELLFISH HABITAT (freshwater)

This function considers the effectiveness of seasonal or permanent watercourses associates with the wetland in question for fish and shellfish habitat.

1. Forest land dominant in the watershed above this wetland.
2. Abundance of cover objects present

STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE

3. Size of wetland is able to support large fish/shellfish populations.
4. Wetland is part of a larger, contiguous watercourse.
5. Wetland has sufficient size and depth in open water areas so as not to freeze solid and retain some open water during winter.

6. Stream width (bank to bank) is more than 50 feet.
7. Quality of the watercourse associates with the wetland is able to support healthy fish/shellfish populations.
8. Streamside vegetations provides shade for watercourse.
9. Spawning areas are present (submerged vegetation or gravel beds).
10. Food is available to fish/shellfish populations within this wetland.
11. Barrier(s) to anadromous fishes (such as dams, including beaver dams, waterfalls, road crossings) are absent from the stream reach associates with this wetland.
12. Evidence of fish is present.
13. Wetland is stocked with fish.
14. The watercourse is persistent.
15. Man-made streams are absent.
16. Water velocities are not too excessive for fish usage.
17. Defined stream channel is present.
18. Other

FISH AND SHELLFISH HABITAT (Marine)

This function considers the effectiveness of wetlands, embayments, tidal flats, vegetated shallows, and other environments in supporting marine resources such as fish, shellfish, marine mammals, and sea turtles.

1. Special aquatic sites (tidal marshes, mud flats, eelgrass beds) are present.
2. Suitable spawning habitat is present at the site or in the area.
3. Commercially or recreationally important species are present or suitable habitat exists.
4. The wetland/waterway supports prey for higher trophic level marine organisms.
5. The waterway provides migratory habitat for anadromous fish.
6. Essential fish habitat, as defined by the 1996 amendments to the Magnuson-Stevens Fishery & Conservation Act, is present.
7. Other.

SEDIMENT/TOXICANT/PATHOGEN RETENTION

This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants or pathogens in runoff water from surrounding uplands or upstream eroding wetland areas.

1. Potential sources of excess sediment are in the watershed above the wetland.
2. Potential or known sources of toxicants are in the watershed above the wetland.
3. Opportunity for sediment trapping by slow moving water or deepwater habitat are present in this wetland.
4. Fine grained mineral or organic soils are present.
5. Long duration water retention time is present in this wetland.
6. Public or private drinking water sources occur downstream.
7. The wetland edge is broad and intermittently aerobic.
8. The wetland is known to have existed for more than 50 years.
9. Drainage ditches have not been constructed in wetland.

STOP HERE IF THE WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.

10. Wetland is associated with an intermittent of perennial stream or a lake.
11. Channelized flows have visible velocity decreases in the wetland.
12. Effective floodwater storage in wetland is occurring. Areas of impounded open water are present.
13. No indicators of erosive forces are present. No high water velocities are present.
14. Diffuse water flows are present in the wetland.
15. Wetland has a high degree of water and vegetation interspersion.
16. Dense vegetation provides opportunity for sediment trapping and/or signs of sediment accumulations by dense vegetation is present.
17. Other.

NUTRIENT REMOVAL/ RETENTION/TRANSFORMATION

This function considers the effectiveness of the wetland as a trap for nutrients in runoff water from surrounding uplands or contiguous wetlands and the ability of the wetland to process these nutrients into other forms or trophic levels. One aspect of this function is to prevent ill effects of nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers or estuaries.

1. Wetland is large relative to the size of its watershed.
2. Deep water or open water habitat exists
3. Overall potential for sediment trapping exists in the wetland.
4. Potential sources of excess nutrients are present in the watershed above the wetland.
5. Wetland saturated for most of the season. Ponded water is present in the wetland.

6. Deep organic/sediment deposits are present.
7. Slowly drained fine grained mineral or organic soils are present.
8. Dense vegetations is present.
9. Emergent vegetation and/or dense woody stems are dominant.
10. Opportunity for nutrient attenuation exists.
11. Vegetation diversity/abundance sufficient to utilize nutrients.

STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.

12. Water flow through this wetland is diffuse.
13. Water retention/detention time in this wetland is increased by constricted outlet or thick vegetation.
14. Water moves slowly through this wetland.
15. Other.

PRODUCTION EXPORT (Nutrient)

This function evaluates the effectiveness of the wetland to produce food or usable products for humans or other living organisms.

1. Wildlife food sources grow within this wetland.
2. Detritus development is present within this wetland.
3. Economically or commercially used products found in the wetland.
4. Evidence of wildlife use found within this wetland.
5. Higher trophic level consumers are utilizing this wetland.
6. Fish or shellfish develop or occur in this wetland.
7. High vegetation density is present.
8. Wetland exhibits high degree of plant community structure/species diversity.
9. High aquatic vegetative diversity/abundance is present.
10. Nutrients exported in wetland watercourses (permanent outlet present).
11. "Flushing" of relatively large amounts of organic plant material occurs from this wetland.
12. Wetland contains flowering plants that are used by nectar-gathering insects.
13. Indications of export are present.
14. High production levels occurring, however, no visible signs of export (assumes export is attenuated).
15. Other.

SEDIMENT/SHORELINE STABILIZATION

This function considers the effectiveness of a wetland to stabilize stream banks and shorelines against erosion.

1. Indications of erosion or siltation are present
2. Topographical gradient is present in wetland.
3. Potential sediment sources are present up-slope.
4. Potential sediment sources are present upstream.
5. No distinct shoreline or bank is evident between the water body and the wetland or upland.
6. A distinct step between the open waterbody or stream and the adjacent land exists (i.e. sharp bank) with dense roots throughout.
7. Wide wetland (>10') borders watercourse, lake, or pond.
8. High flow velocities in the wetland.
9. The watershed id of sufficient size to produce channelized flow.
10. Open water fetch is present.
11. Boating activity is present.
12. Dense vegetation is bordering watercourse, lake or pond.
13. High percentage of energy-absorbing emergents and/or shrubs border a watercourse, lake or pond.
14. Vegetation is comprised of large trees and shrubs that withstand major flood events or erosive incidents and stabilize the shoreline on a large scale (feet).
15. Vegetation is comprised of a dense resilient herbaceous layer that stabilizes sediments and the shoreline on a small scale (inches) during minor flood events or potentially erosive events.
16. Other.

WILDLIFE HABITAT

This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and/or migrating species must be considered. Species lists of observed and potential animals should be included in the wetland assessment report.

1. Wetland is not degraded by human activity.
2. Water quality of the watercourse, pond, or lake associates with this wetland meets or exceeds Class A or B standards.

3. Wetland is not fragmented by development.
4. Upland surrounding this wetland is undeveloped.
5. More than 40% of this wetland edge is bordered by upland wildlife habitat (e.g. brushland, woodland, active farmland, or idle land) and at least 500 feet in width.
6. Wetland is contiguous with other wetland systems connected by a watercourse or lake.
7. Wildlife overland access to other wetlands is present
8. Wildlife food sources are within this wetland or are nearby.
9. Wetland exhibits a high degree of interspersion of vegetation classes and/or open water.
10. Two or more islands or inclusion of upland within the wetland are present.
11. Dominant wetland class includes deep or shallow marsh or wooded swamp.
12. More than three acres of shallow permanent open water (less than 6.6 feet deep), including streams in or adjacent to wetland, are present.
13. Density of the wetland vegetation is high.
14. Wetland exhibits a high degree of plant species diversity.
15. Wetland exhibits a high degree of diversity in plant community structure (e.g. tree/shrub/vine/grasses/mosses).
16. Plant/animal indicator species are present. (List species for project)
17. Animal signs observed (tracks, scats, nesting areas, etc.)
18. Seasonal uses vary for wildlife and wetland appears to support varied population diversity/abundance during different seasons.
19. Wetland contains or has potential to contain a high population of insects.
20. Wetland contains or has potential to contain large amphibian populations.
21. Wetland has a high avian utilization or its potential.
22. Indications of less disturbance-tolerant species are present.
23. Signs of wildlife habitat enhancement are present (birdhouses, nesting boxes, food sources, etc).
24. Other

RECREATION

This value considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities. Consumptive opportunities consume or diminish the plants, animals, or other resources that are intrinsic to the wetland. Non-consumptive opportunities do not consume or diminish the resources of the wetland.

1. Wetland is part of a recreation area, park, forest or refuge.
2. Fishing is available within or from the wetland.
3. Hunting is permitted in the wetland.
4. Hiking occurs or has potential to occur within the wetland.
5. Wetland is a valuable wildlife habitat.
6. The watercourse, pond, or lake associated with the wetland is unpolluted.
7. High visual/aesthetic quality of the potential recreation site.
8. Access to water is available at this potential recreation site for boating, canoeing, or fishing.
9. The watercourse associated with this wetland is wide and deep enough to accommodate canoeing and/or non-powered boating.
10. Off-road public parking available at the potential recreation site.
11. Accessibility and travel ease is present at this site.
12. The wetland is within a short drive or safe walk from highly populated public and private areas.
13. Other.

EDUCATIONAL/SCIENTIFIC VALUE

This value considers the suitability of the wetland as a site for an “outdoor classroom” or as a location for scientific study or research.

1. Wetland contains or is known to contain threatened, rare, or endangered species.
2. Little or no disturbance is occurring in this wetland.
3. Potential educational site contains a diversity of wetland classes which are accessible or potentially accessible.
4. Potential educational site is undisturbed and natural.
5. Wetland is considered to be a valuable wildlife habitat.
6. Wetland is located within a nature preserve or wildlife management area.
7. Signs of wildlife habitat enhancement present (birdhouses, nesting boxes, food sources, etc).
8. Off-road parking at potential educational site suitable for school bus access in or near wetland.
9. Potential educational site is within safe walking distance or a short drive to schools.
10. Potential educational site is within safe walking distance to other plant communities.
11. Direct access to perennial stream at potential educational site is available.

12. Direct access to pond or lake at potential educational site is available
13. No known safety hazards exist within the potential educational site.
14. Handicap accessibility is available.
15. Site is currently used for educational or scientific purposes.
16. Other

UNIQUENESS/HERITAGE

This value considers the effectiveness of the wetland or its associates waterbodies to provide certain special values. These may include archaeological sites, critical habitat for endangered species, its overall health and appearance, its role in the ecological system of the area, its relative importance as atypical wetland class for this geographic location. These functions are clearly valuable wetland attributes relative to aspects of public health, recreation and habitat diversity.

1. Upland surround wetland is primarily urban.
2. Upland surrounding wetland is developing rapidly.
3. More than 3 acres of shallow permanent open water (less than 6.6 feet deep), including streams occur in wetlands.
4. Three or more wetland classes are present.
5. Deep and/or shallow marsh or wooded swamp dominate.
6. High degree of interspersion of vegetation and or open water occur in this wetland.
7. Well vegetated stream corridor (15 feet on each side of the stream) occurs in this wetland.
8. Potential educational site is within a short drive or a safe walk from schools.
9. Off-road parking at potential educational site is suitable for school buses.
10. No known safety hazards exist within this potential educational site.
11. Direct access to perennial stream or lake exists at potential educational site.
12. 2 or more wetland classes are visible from primary viewing locations.
13. Low-growing wetlands (marshes, scrub-shrub, bogs, and open water) are visible from primary viewing locations.
14. Half an acre of open water or 200 feet of stream is visible from the primary viewing locations.
15. Large area of wetland is dominated by flowering plants or plants that run vibrant colors in different seasons.
16. General appearance of the wetland visible from primary viewing locations is unpolluted and/or undisturbed.
17. Overall view of the wetland is available from the surrounding upland.
18. Quality of the water associated with the wetland is high.
19. Opportunities for wildlife observations are available.
20. Historical buildings are found within the wetland.
21. Presence of pond or pond site and remains of a dam occur within the wetland.
22. Wetland is within 50 yards of the nearest perennial watercourse.
23. Visible stone or earthen foundations, berms, dams, standing structures, or associates features occur within the wetland.
24. Wetland contains critical habitat for a state- or federally-listed threatened or endangered species.
25. Wetland is known to be a study site for scientific research.
26. Wetland is a natural landmark or recognized by the state natural heritage inventory authority as an exemplary natural community.
27. Wetland has local significance because its serves several functional values.
28. Wetland has local significance because it has biological, geological, or other features that are rare or unique.
29. Wetland is known to contain an important archaeological site.
30. Wetland is hydrologically connected to a state or federally designated scenic river.
31. Wetland is locates in an area experiencing a high wetland loss rate.
32. Other.

VISUAL QUALITY/AESTHETICS

This value considers the visual and aesthetic quality or usefulness of the wetland.

1. Multiple wetland classes are visible from primary viewing location.
2. Emergent marsh and/or open water are visible from primary viewing locations.
3. A Diversity of vegetative species is visible from primary viewing locations.
4. Wetland is dominated by flowering plants or plants that turn vibrant colors in different seasons.
5. Land use surrounding the wetland is undeveloped as seen from primary viewing locations.
6. Visible surrounding land use form contrasts with wetland.
7. Wetland views absent of trash, debris, and signs of disturbance.
8. Wetland is considered to be a valuable wildlife habitat.
9. Wetland is easily accessed.
10. Low noise level at primary viewing locations.

11. Unpleasant odors absent at primary viewing locations.
12. Relatively unobstructed sight line exists through wetland.
13. Other.

ENDANGERED SPECIES HABITAT

This value considers the suitability of the wetland to support threatened or endangered species.

1. Wetland contains or is known to contain threatened or endangered species.

Wetland contains critical habitat for a state or federally listed threatened or endangered species

APPENDIX N

COMMON WILDLIFE SPECIES OFTEN ASSOCIATED WITH THE VEGETATIVE COVER TYPES FOUND WITHIN THE PROJECT AREA

TABLE N-1

Common Wildlife Species Often Associated with the Vegetative Cover Types Found Within the AIM Project Area

Species	Upland Forest	Open Uplands	Forested Wetland	Open Wetlands	Urban	Estuary
Amphibians						
Spotted salamander (*Ambystoma maculatum*)	X	X	X	X		
Red-spotted newt (*Notophtalmus v. viridescens*)	X	X	X	X		
Northern-dusky salamander (*Desmognathus f. fuscus*)	X		X			
Redback salamander (*Plethodon cinereus*)	X		X			
Four-toed salamander (*Hemidactylium scutatum*)			X			
Northern two-lined salamander (*Eurycea b. blislineata*)	X		X			
Eastern American toad (*Bufo a. americanus*)	X	X	X	X		
Fowler's toad (B*ufo woodhousii fowleri*)	X	X	X	X		
Gray treefrog (*Hyla versicolor*)	X		X	X		
Northern spring peeper (*Pseudacris c. crucifer*)	X		X	X		
Bullfrog (*Rana catesbeiana*)	X		X	X	X	
Green frog (*Rana clamitans*)			X	X	X	
Pickerel frog (*Rana palustris*)				X		
Wood frog (*Rana sylvatica*)	X	X	X	X		
Reptiles						
Common snapping turtle (*Chelydra s. serpentine*)				X		X
Common musk turtle (*Sternotherus odoratus*)				X		
Red eared slider (*Trachemys s. elegans*)				X		
Eastern painted turtle (*Chrysemys p. picta*)				X	X	X
Northern water snake (*Nerodia s. sipedon*)			X	X		
Northern b)rown snake (*Storeria d. dekayi*)	X	X	X	X		
Northern redbelly snake (*Storeria o. occipitomaculata*)	X		X	X		
Eastern garter snake (*Thamnophis s. sirtalis*)	X	X	X	X	X	
Northern ringneck snake (*Diadophis punctatus edwardsi*)	X		X			
Northern black racer (*Coluber c. constrictor*)	X	X				
Eastern milk snake (*Lampropeltis t. triangulum*)	X	X	X			
Birds						
Green heron (*Butorides striatus*)			X	X		X
Black-crowned night-heron (*Nycticorax nycticorax*)				X		X
Yellow-crowned night-heron (*Nycticorax violaceus*)				X		X
Double-crested cormorant (*Phalacrocorax auritus*)						X
Mute swan (*Cygnus olor*)				X		X
Canada goose (*Branta canadensis*)				X	X	X
Brant (*Branta bernicula*)				X	X	X
Wood duck (*Aix sponsa*)			X	X		
American black duck (*Anas rubripes*)			X	X	X	X
Mallard (*Anas playtrhynchos*)				X	X	X
Greater scaup (*Aythya marila*)						X
Lesser scaup (*Aythya affinis*)						X

TABLE N-1 (cont'd)

Common Wildlife Species Often Associated with the Vegetative Cover Types Found Within the AIM Project Area

Species	Upland Forest	Open Uplands	Forested Wetland	Open Wetlands	Urban	Estuary
Bufflehead (*Bucephala albeola*)						X
Common goldeneye (*Bucephala clangula*)						X
Gadwall (*Anas strepera*)						X
Black vulture (*Coragyps atratus*)	X	X	X	X		
Turkey vulture (*Cathartes aura*)	X	X	X	X		
Broad-winged hawk (*Buteo platypterus*)	X		X			
Red-tailed hawk (*Buteo jamaicensis*)	X	X	X			
Ruffed grouse (*Bonasa umbellus*)	X	X	X			
Wild turkey (*Meleagris gallopavo*)	X	X	X			
Clapper rail (*Rallus longirostris*)				X		X
Virginia rail (*Rallus limicola*)				X		X
Common moorhen (*Gallinula chloropus*)				X		X
Willet (*Tringa semipalmata*)				X		X
Greater yellowlegs (*Tringa melanoleuca*)				X		X
Lesser yellowlegs (*Tringa flavipes*)				X		X
Semipalmated sandpiper (*Calidris pusilla*)				X		X
Least sandpiper (*Calidris minutilla*)				X		X
Dunlin (*Calidris alpine*)				X		X
Short-billed dowitcher (*Limnodromus griseus*)				X		X
Black-bellied plover (*Pluvialis squatarola*)				X		X
Semipalmated plover (*Charadrius semipalmatus*)				x		x
Killdeer (*Charadrius vociferus*)		X			X	X
Spotted sandpiper (*Actitis macularia*)			X	X		
Wilson's snipe (*Gallinago delicate*)		X		X		
American woodcock (*Scolopax minor*)	X	X	X	X		
Ring-billed gull (*Larus delawarensis*)					X	X
Herring gull (*Larus argentatus*)					X	X
Great black-backed gull (*Larus marinus*)					X	X
Rock pigeon (*Columba livia*)					X	
Mourning dove (*Zenaida macroura*)	X	X	X		X	
Black-billed cuckoo (*Coccyzus erythropthalmus*)	X	X		X		
Yellow-billed cuckoo (*Coccyzus americanus*)	X	X	X			
Eastern screech-owl (*Otus asio*)	X		X			
Great horned owl (*Bubo virginianus*)	X	X	X	X		
Chimney swift (*Chaetura pelagica*)		X			X	
Ruby-throated hummingbird (*Archilochus colubris*)	X	X	X			
Belted kingfisher (*Ceryle alcyon*)				X		X
Red-bellied woodpecker (*Melanerpes carolinus*)	X		X			
Downy woodpecker (*Picoides pubescens*)	X	X	X			
Hairy woodpecker (*Picoides villosus*)	X		X			
Northern flicker (*Colaptes auratus*)	X	X	X			

TABLE N-1 (cont'd)

Common Wildlife Species Often Associated with the Vegetative Cover Types Found Within the AIM Project Area

Species	Upland Forest	Open Uplands	Forested Wetland	Open Wetlands	Urban	Estuary
Pileated woodpecker (*Dryocopus pileatus*)	X		X			
Eastern wood-pewee (*Contopus virens*)	X		X			
Acadian flycatcher (*Empidonax virescens*)	X			X		
Willow flycatcher (*Empidonax traili*)	X	X		X		
Least flycatcher (*Empidonax minimus*)	X		X			
Eastern phoebe (*Sayornis phoebe*)	X		X			
Great crested flycatcher (*Myiarchus crinitus*)	X		X			
Eastern kingbird (*Tyrannus tyrannus*)	X	X	X			
Tree swallow (*Tachycineta bicolor*)		X	X	X		X
Northern rough-winged swallow (*Stelgidopteryx serripennis*)		X	X	X		X
Barn swallow (*Hirundo rustica*)		X	X	X	X	X
Blue jay (*Cyanocitta cristata*)	X	X	X			
American crow (*Corvus brachyrhynchos*)	X	X	X	X	X	
Fish crow (*Corvus ossifragus*)	X	X	X	X	X	
Common raven (*Corvus corax*)	X		X			
Black-capped chickadee (*Parus atricapillus*)	X	X	X			
Tufted titmouse (*Parus bicolor*)	X		X			
White-breasted nuthatch (*Sitta carolinensis*)	X		X			
House wren (*Troglodytes aedon*)	X	X	X			
Marsh wren (*Cistothorus palustris*)				X		
Carolina wren (*Thryothorus ludovicianus*)	X	X	X			
Gold-crowned kinglet (*Regulus satrapa*)	X		X			
Blue-gray gnatcatcher (*Polioptila caerulea*)	X	X	X	X		
Eastern bluebird (*Sialia sialis*)	X	X	X			
Veery (*Catharus fuscescens*)	X	X	X			
Wood thrush (*Hylocichla mustelina*)	X		X			
American robin (*Turdus migratorius*)	X	X	X	X		
Gray catbird (*Dumetella carolinensis*)	X	X	X	X		
Northern mockingbird (*Mimus polyglottos*)		X			X	
Brown thrasher (*Toxostoma rufum*	X	X	X			
Cedar waxwing (*Bombycilla cedrorum*)	X	X	X	X		
European starling (*Sturnus vulgaris*)	X	X			X	
Yellow-throated vireo (*Vireo flavifrons*)	X		X			
White-eyed vireo (*Vireo griseus*)	X	X	X	X		
Warbling vireo (*Vireo gilvus*)	X		X			
Red-eyed vireo (*Vireo olivaceus*)	X		X			
Blue-winged warbler (*Vermivora pinus*)	X	X	X	X		
Yellow warbler (*Dendroica petechial*)	X	X	X	X		
Chestnut-sided warbler (*Dendroica pensylvanica*)		X	X	X		
Magnolia warbler (*Dendroica magnolia*)	X		X			

TABLE N-1 (cont'd)

Common Wildlife Species Often Associated with the Vegetative Cover Types Found Within the AIM Project Area

Species	Upland Forest	Open Uplands	Forested Wetland	Open Wetlands	Urban	Estuary
Yellow-rumped warbler (*Dendroica coronate*)	X	X	X	X		
Black-throated Green warbler (*Dendroica virens*)	X		X			
Pine warbler (*Dendroica pinus*)	X					
Prairie warbler (*Dendroica discolor*)	X	X				
Black-and-white warbler (*Mniotilta varia*)	X		X			
American redstart (*Setophaga ruticilla*)	X		X			
Ovenbird (*Seiurus aurocapillus*)	X		X			
Common yellowthroat (Geothlypis trichas)	X	X	X	X		
Scarlet tanager (*Piranga olivacea*)	X					
Northern cardinal (*Cardinalis cardinalis*)	X	X	X	X		
Rose-breasted grosbeak (*Pheucticus ludovicianus*)	X		X			
Indigo bunting (*Passerina cyanea*)	X	X				
Eastern towhee (*Pipilo erythrophthalmus*)	X	X	X	X		
Chipping sparrow (*Spizella passerine*)	X	X	X			
Field sparrow (*Spizella pusilla*)		X				
Song sparrow (*Melospiza melodia*)	X	X	X	X		
Swamp sparrow (*Melospiza georgiana*)			X	X		
Red-winged blackbird (*Agelaius phoeniceus*)		X	X	X		
Boat-tailed grackle (*Quiscalus major*)			X	X		
Common grackle (*Quiscalus quiscula*)	X	X	X	X	X	
Brown-headed cowbird (*Molothrus ater*)	X	X	X	X		
Orchard oriole (*Icterus spurius*)	X		X			
Baltimore oriole (*Icterus galbula*)	X		X			
House finch (*Carpodacus mexicanus*)	X	X			X	
American goldfinch (*Cardeulis tristis*)	X	X	X	X		
House sparrow (*Passer domesticus*)		X			X	
Mammals						
Virginia opossum (*Didelphis virginiana*)	X	X	X	X		
Masked shrew (*Sorex cinereus*)	X	X	X	X		
Northern short-tailed shrew (*Blarina brevicuada*)	X	X	X	X		
Eastern cottontail (*Sylvilagus floridanus*)	X	X	X	X	X	
Eastern chipmunk (*Tamias striatus*)	X	X	X		X	
Woodchuck (*Marmota monax*)	X	X				
Gray squirrel (*Sciurus carolinensis*)	X		X		X	
Red squirrel (*Tamiasciurus hudsonicus*)	X		X			
House mouse (*Mus musculus*)		X			X	
White-footed Mouse (*Peromyscus leucopus*)	X	X	X	X	X	
Meadow vole (*Microtus pennsylvanicus*)	X	X	X	X		
Woodland vole (*Microtus pinetorum*)	X	X	X			
Norway rat (*Rattus norvegicus*)					X	
Muskrat (*Ondatra zibethicus*)				X	X	

TABLE N-1 (cont'd)

Common Wildlife Species Often Associated with the Vegetative Cover Types Found Within the AIM Project Area

Species	Upland Forest	Open Uplands	Forested Wetland	Open Wetlands	Urban	Estuary
Coyote (*Canis latrans*)	X	X	X	X	X	
Red fox (*Vulpes vulpes*)	X	X	X	X		
Gray fox (*Urocyon cinereoargenteus*)	X	X	X	X		
Raccoon (*Procyon lotor*)	X	X	X	X	X	
Long-tailed weasel (*Mustela frenata*)	X	X	X	X		
Mink (*Mustela vison*)	X		X	X		
Striped skunk (*Mephitis mephitis*)	X	X	X	X		
White-tailed deer (*Odocoileus virginianus*)	X	X	X	X	X	

APPENDIX O

MIGRATORY BIRD PRIORITY SPECIES AND ASSOCIATED HABITATS POTENTIALLY LOCATED WITHIN THE AIM PROJECT AREA

TABLE O-1

Migratory Bird Priority Species and Associated Habitats Potentially Located Within the AIM Project Area

		Land Birds			Shorebirds			Waterbirds			Waterfowl		
Species [a]	Habitat Type [b]	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30
American avocet (M)	Estuarine emergent marsh									x			
American bittern (B)	Palustrine emergent marsh							x	x	x			
American black duck (B,W)	Estuaries and bays/freshwater lakes, rivers, streams/ palustrine emergent marsh/ forested wetland										x		x
American golden plover (M)	Grasslands – agriculture				x		x						
American oystercatcher (B)	Estuarine emergent marsh						x						
American redstart (B)	Deciduous and mixed forests/ mixed forests	x											
American widgeon (W, M)	Freshwater emergent marsh									x			
American woodcock (B)	Shrub-scrub/shrub – early successional/grasslands – agriculture				x	x	x						
Atlantic brant (M)	Estuaries and bays										x		
Bachman's sparrow (B)	Forested upland communities			x									
Bald eagle (B,W)	Freshwater lakes	x	x	x									
Baltimore oriole (B)	Forested upland communities			x									
Bank swallow (B)	Freshwater lakes, rivers, streams	x											
Barn swallow (B)	Palustrine emergent marsh/ grasslands – agriculture/urban – suburban	x											
Barrow's goldeneye (W)	Estuaries and bays/freshwater lakes, rivers, streams										x		
Bay-breasted warbler (B)	Forested upland communities			x									
Bicknell's thrush (B)	Mountaintop forests	x	x	x									
Black rail (B)	Estuarine emergent marsh									x			
Black scoter (W)	Estuaries and bays										x		x
Black skimmer (B)	Estuaries and bays									x			
Black-and-white warbler (B)	Forested upland communities			x									
Black-backed woodpecker (B,W)	Coniferous forests	x											
Black-bellied plover (M)	Grasslands – agriculture				x		x						
Black-billed cuckoo (B)	Deciduous and mixed forests	x	x										
Blackburnian warbler (B)	Coniferous forests/mixed forests	x		x									
Black-crowned night heron (B)	Palustrine emergent marsh/ forested wetland							x		x			
Blackpoll warbler (B)	Coniferous forests/mountaintop forests	x											
Black-throated blue warbler (B)	Deciduous and mixed forests/ mixed forests	x											
Black-throated green warbler	Coniferous forests/mixed forests	x											

TABLE O-1 (cont'd)

Migratory Bird Priority Species and Associated Habitats Potentially Located Within the AIM Project Area

Species [a]	Habitat Type [b]	Land Birds			Shorebirds			Waterbirds			Waterfowl		
		BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30
Blue-winged warbler (B)	Shrub – early successional	x	x	x									
Bobolink (B)	Grasslands – agriculture	x											
Boreal chickadee (B,W)	Coniferous forests	x											
Boreal owl (W)	Coniferous forests/mixed forests	x											
Broad-winged hawk (B)	Forested upland communities			x									
Brown creeper (B,W)	Coniferous forests/ mixed forests	x											
Brown thrasher (B)	Shrub-scrub		x	x									
Brown-headed nuthatch (B, W)	Forested upland communities			x									
Bufflehead (B,W,M)	Estuaries and bays/wooded lakes and ponds									x			
Canada goose-NAP (M)	Estuaries and bays/grasslands – agriculture										x		x
Canada warbler (B)	Shrub-scrub/ deciduous and mixed forests/ coniferous forests/mixed forests	x	x	x									
Canvasback (W, M)	Estuaries and bays/emergent marsh									x			
Cape may warbler (B)	Coniferous forests	x											
Cerulean warbler (B)	Deciduous forests		x	x									
Chestnut-sided warbler (B)	Shrub – early successional	x											
Chimney swift (B)	Deciduous and mixed forests/ urban – suburban	x		x									
Clapper rail (B)	Estuarine emergent wetlands									x			
Coastal plain swamp sparrow (B)	Freshwater emergent wetlands									x			
Common eider (B,W)	Estuaries and bays										x		x
Common goldeneye (B,W)	Estuaries and bays/ freshwater lakes, rivers, streams/ forested wetland										x		x
Common loon (B,W)	Estuaries and bays/ freshwater lakes, rivers, streams							x					
Common nighthawk (B)	Urban – suburban	x											
Common snipe (B,W,M)	Freshwater emergent wetlands									x			
Common tern (B)	Freshwater lakes							x		x			
Dunlin (W, M)	Beach, sand, mud flat							x		x			
Eastern meadowlark (B,W)	Grasslands – agriculture		x										
Eastern wood-pewee (B)	Deciduous and mixed forests	x											
Eastern kingbird (B)	Grassland communities			x									
Eastern towhee (B,W,M)	Shrub-scrub/shrub – early successional			x									
Field sparrow (B, M)	Shrub-scrub/shrub – early successional			x									

TABLE O-1 (cont'd)

Migratory Bird Priority Species and Associated Habitats Potentially Located Within the AIM Project Area

Species [a]	Habitat Type [b]	Land Birds			Shorebirds			Waterbirds			Waterfowl		
		BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30
Forster's tern (B, M)	Freshwater emergent wetlands									x			
Gadwall (B, W, M)	Freshwater emergent wetlands/ freshwater lakes, rivers, streams									x			
Glossy ibis (B)	Freshwater emergent wetlands									x			
Golden-winged warbler (B)	Shrub-scrub/shrub – early successional/deciduous and mixed forests		x	x									
Grasshopper sparrow (B)	Grasslands – agriculture		x	x									
Gray catbird (B)	Shrub-scrub/shrub – early successional			x									
Gray jay (B,W)	Coniferous forests	x											
Great cormorant (B,W)	Estuaries and bays							x					
Great crested flycatcher (B)	Forested upland communities			x									
Greater scaup (W)	Estuaries and bays										x		x
Greater shearwater (M)	Marine open water									x			
Greater snow goose (M)	Grasslands – agriculture										x		
Greater yellowlegs (W, M)	Beach, sand, mud flat						x						
Green-winged teal (B,W,M)	Freshwater emergent wetlands			x									
Harlequin duck (W)	Freshwater lakes										x		x
Henslow's sparrow (B)	Estuarine emergent wetlands/ grassland communities			x									
Herring gull (B,W)	Estuaries and bays/ freshwater lakes, rivers, streams							x					
Hooded merganser (B,W,M)	Forested wetland communities			x									
Horned grebe (W)	Estuaries and bays							x		x			
Horned lark (B)	Grasslands – agriculture	x											
Ipswich savannah sparrow (B)	Grasslands – agriculture	x		x									
Killdeer (B)	Grasslands – agriculture/urban – suburban				x		x						
King rail (B, W)	Estuarine emergent wetlands									x			
Least bittern (B)	Palustrine emergent marsh					x	x						
Least sandpiper (M)	Palustrine emergent marsh				x		x						
Least tern (B, M)	Beach, sand, mud flat						x						
Lesser scaup (W, M)	Freshwater lakes, rivers, streams									x			
Lesser yellowlegs (W, M)	Beach, sand, mud flat						x						
Little blue heron (B, W)	Freshwater emergent wetlands/ forested wetland communities									x			
Loggerhead shrike (B)	Grassland communities			x									
Long-eared owl (B)	Coniferous forests/mixed forests	x											

TABLE O-1 (cont'd)

Migratory Bird Priority Species and Associated Habitats Potentially Located Within the AIM Project Area

Species [a]	Habitat Type [b]	Land Birds			Shorebirds			Waterbirds			Waterfowl		
		BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30
Long-tailed duck (W)	Estuaries and bays										x		x
Louisiana waterthrush	Freshwater rivers, streams/forests		x	x									
Mallard (B, W, M)	Freshwater emergent wetlands/ forested wetland communities												x
Marsh wren (M)	Freshwater emergent wetlands			x									
Nelson's sharp-tailed sparrow (B, M)	Estuarine emergent wetlands			x									
Northern bobwhite (B, W)	Shrub-scrub/shrub – early successional			x									
Northern flicker (B)	Deciduous and mixed forests/ mixed forests	x		x									
Northern gannet (W, M)	Marine open water									x			
Northern goshawk (B,W)	Coniferous forests/mixed forests	x											
Northern harrier (B)	Palustrine emergent marsh/ grasslands – agriculture	x	x										
Northern parula (B)	Coniferous forests/mixed forests	x											
Northern pintail (W, M)	Estuarine emergent wetlands									x			
Olive-sided flycatcher (B)	Shrub-scrub/coniferous forests/ mixed forests/shrub – early successional	x	x										
Ovenbird (B)	Deciduous and mixed forests/ mixed forests	x											
Palm warbler (B)	Shrub-scrub/shrub – early successional	x											
Peregrine falcon (B)	Urban – suburban		x										
Prairie warbler (B)	Shrub-scrub/shrub – early successional		x	x									
Prothonotary warbler (B)	Forested wetland communities			x									
Purple finch (B,W)	Coniferous forests/mixed forests/ mountaintop forests	x											
Purple sandpiper (W, M)	Rocky coasts						x						
Red phalarope (M)	Estuaries and bays				x		x	x		x			
Red-breasted merganser (W, M)	Forested wetland communities			x									
Red-cockaded woodpecker (B, W)	Forested upland communities			x									
Red-headed woodpecker (B,W)	Grasslands – agriculture/urban – suburban		x	x									
Red-necked grebe (W)	Estuaries and bays							x					
Red-necked phalarope (M)	Marine open water									x			
Red-throated loon (W)	Estuaries and bays							x		x			
Resident Canada goose (B,W)	Freshwater lakes, rivers, streams/ grasslands – agriculture										x		
Roseate tern (B)	Estuaries and bays							x		x			
Rose-breasted grosbeak (B)	Deciduous and mixed forests	x											

TABLE O-1 (cont'd)

Migratory Bird Priority Species and Associated Habitats Potentially Located Within the AIM Project Area

		Land Birds			Shorebirds			Waterbirds			Waterfowl		
Species [a]	Habitat Type [b]	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30
Royal tern (B)	Beach, sand, mud flat						x						
Ruddy duck (W, M)	Freshwater marsh communities									x			
Ruffed grouse (B,W)	Deciduous and mixed forests/ mixed forests/shrub – early successional	x	x										
Rusty blackbird (B)	Forested wetland/shrub-scrub	x		x									
Saltmarsh sharp-tailed sparrow (B, W, M)	Estuarine emergent wetlands									x			
Sanderling (W, M)	Beach, sand, mud flat						x						
Scarlet tanager (B)	Forested upland communities			x									
Sedge wren (B)	Palustrine emergent marsh/ grasslands – agriculture		x	x									
Semipalmated plover (M)	Beach, sand, mud flat						x						
Short-bicher (M)	Estuarine emergent wetlands						x						
Short-eared owl (B, M)	Palustrine emergent marsh/ grasslands – agriculture	x	x	x									
Snowy egret (B, W)	Freshwater emergent wetlands									x			
Solitary sandpiper (M)	Freshwater emergent wetlands									x			
Sora (B, M)	Freshwater emergent wetlands									x			
Spotted sandpiper (B, M)	Freshwater lakes, rivers, streams									x			
Swainson's warbler (B)	Forested upland communities			x									
Surf scoter (W)	Estuaries and bays										x		x
Tricolored heron (B)	Freshwater emergent wetlands									x			
Tundra swan – eastern (W, M)	Marshy lakes and bays									x			
Upland sandpiper (B)	Grasslands – agriculture				x	x	x						
Veery (B)	Deciduous and mixed forests/ mixed forests	x											
Vesper sparrow (B)	Grasslands – agriculture	x											
Western sandpiper (M)	Beach, sand, mud flat						x						
Whip-poor-will (B)	Deciduous and mixed forests/ shrub – early successional	x	x	x									
White-rumped sandpiper (M)	Beach, sand, mud flat						x						
White-winged scoter (W, M)	Marine open water									x			
Willet (B)	Grasslands – agriculture				x		x						
Willow flycatcher (B)	Scrub-shrub – early successional			x									
Wilson's phalarope (M)	Freshwater emergent wetlands									x			
Wilson's snipe (B)	Palustrine emergent marsh/ grasslands – agriculture				x								
Wood duck (B)	Freshwater lakes, rivers, streams/ palustrine emergent marsh/										x		x

TABLE O-1 (cont'd)

Migratory Bird Priority Species and Associated Habitats Potentially Located Within the AIM Project Area

Species [a]	Habitat Type [b]	Land Birds			Shorebirds			Waterbirds			Waterfowl		
		BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30	BCR 14	BCR 28	BCR 30
	forested wetland												
Wood thrush (B)	Deciduous and mixed forests/ mixed forests	x	x	x									
Worm-eating warbler (B)	Forested wetland communities			x									
Yellow rail (B)	Palustrine emergent marsh							x					
Yellow-bellied flycatcher (B)	Shrub-scrub	x											
Yellow-bellied sapsucker (B)	Deciduous and mixed forests	x											
Yellow-breasted chat (B)	Shrub-scrub		x										
Yellow-crowned night heron (B, M)	Forested wetland communities			x									
Yellow-throated vireo (B)	Forested upland communities			x									

[a] Priority migratory bird species are denoted with their primary season of occurrence: breeding (B), migration (M), and winter (W).

[b] The Habitat Types listed only represent habitats found within or near the Project area. These habitat types are based on the priority species-habitat suites for Atlantic Northern Forest Bird Conservation Region – BCR 14, Appalachian Mountains Bird Conservation Region – BCR 28, and New England/Mid-Atlantic Coast Bird Conservation Region – BCR 30.

APPENDIX P

PUBLIC LANDS, RECREATION, AND SPECIAL INTEREST AREAS CROSSED OR WITHIN 0.25 MILE

TABLE P-1

Public Lands, Recreation, and Special Interest Areas Crossed by or Within 0.25 Mile of the AIM Project[a]

Facility/County, State	Enter Milepost	Exit Milepost	Distance and Direction from Nearest Point Along Construction Work Area	Name of Area/Ownership	Crossing Length (feet)	Acreage Affected by Construction	
						Temp.	Perm.[b]
PIPELINE FACILITIES							
Haverstraw to Stony Point Take-up and Relay							
Rockland County, NY	0.0	0.3	Inside	Harriman State Park/ Palisades Interstate Park Commission	1,666	3.9	0.0
Rockland County, NY	NA	NA	90 feet southeast from milepost (MP) 2.5	Patriot Hills Public Golf club/Town of Stony Point	NA	NA	NA
Rockland County, NY	0.6	1.0	Inside	Cheesecote Mountain/ Town of Haverstraw	2,090	5.3	0.0
Rockland County, NY	0.8	0.8	Inside	Letchworth Village Cemetery/State of New York	185	0.2	0.0
Stony Point to Yorktown Take-up and Relay							
Rockland County, NY	0.7	1.3	Inside	Camp Bullowa/Boy Scouts of America, Hudson Valley Council	3,126	7.4	0.0
Rockland County, NY	2.5	2.6	Inside	Harriman State Park/ Palisades Interstate Park Commission	299	0.6	0.0
Rockland County, NY	2.8	3.0	Inside	Simpson Memorial Church, Inc.	1,023	2.6	1.2
Rockland County, NY	3.0	3.0	Inside	Washington-Rochambeau National Historic Trail/ National Park Service and Rockland Riverfront Trails	75	0.2	0.1
Rockland County, NY	3.0	3.8	Inside/River	New York Critical Environmental Areas (CEAs) (Hudson River Crossing)	4,125	0.1	1.0
Westchester County, NY	4.1	4.2	Inside	St. Patrick's Church	158	0.3	0.0
Westchester County, NY	4.4	4.9	Inside	Indian Point Energy Center/Entergy Nuclear Operations, Inc.	2,159	1.9	2.4
Westchester County, NY	4.8	4.8	Inside	Washington-Rochambeau National Historic Trail/ National Park Service	75	0.4	0.2
Westchester County, NY	NA	NA	450 feet south of MP 4.9	Buchanan-Verplanck Elementary School/ Village of Buchanan	NA	NA	NA
Westchester County, NY	5.1	5.1	Inside	Village Park/Village of Buchanan	313	0.7	0.3
Westchester County, NY	5.8	5.8	Inside	Washington-Rochambeau National Historic Trail/ National Park Service	75	0.4	0.0

TABLE P-1 (cont'd)

Public Lands, Recreation, and Special Interest Areas Crossed by or Within 0.25 Mile of the AIM Project[a]

Facility/County, State	Enter Milepost	Exit Milepost	Distance and Direction from Nearest Point Along Construction Work Area	Name of Area/Ownership	Crossing Length (feet)	Acreage Affected by Construction	
						Temp.	Perm.[b]
Westchester County, NY	5.8	5.9	Inside	Washington-Rochambeau National Historic Trail/National Park Service	75	1.1	0.0
Westchester County, NY	6.7	8.1	Inside	Blue Mountain Reservation/ Westchester County (includes CEAs)	7,089	17.7	0.0
Westchester County, NY	8.4	8.5	Inside	Blue Mountain Reservation/Westchester County (includes CEAs)	380	1.1	0.0
Westchester County, NY	10.6	10.7	Inside	Town of Cortlandt/empty lot	100	0.1	0.0
Westchester County, NY	10.3	10.3	Inside	Catskill Aqueduct/City of New York Bureau of Water Supply	79	0.2	0.0
Westchester County, NY	10.3	10.4	Inside	Catskill Aqueduct/City of New York Bureau of Water Supply	527	2.5	0.1
Westchester County, NY	11.0 11.1 11.9	11.1 11.8 12.3	Inside	Sylvan Glen Park Preserve (Granite Knolls Park West)/Town of Yorktown	6,238	15.6	0.5
Southeast to MLV 19 Take-up and Relay							
Fairfield County, CT	3.9	4.2	Inside	Ridgewood County Club (private)/Ridgewood County Club, Inc.	1,787	1.4	0.0
E-1 System Lateral Take-up and Relay							
New London County, CT	NA	NA	Adjacent on west side of workspace at MP 1.9	Trumbull Cemetery/Town of Lebanon	NA	NA	NA
New London County, CT	2.0	2.2	Inside	Aspinall Recreation Property and Lebanon Elementary School/Town of Lebanon	1,061	1.9	0.1
New London County, CT	8.7 8.9	8.9 9.0	Inside	Senator Thomas J. Dodd Memorial Stadium/City of Norwich	1,489	3.1	0.4
New London County, CT	NA	NA	865 feet east of MP 9.1	Bog Meadow Reservoir (state-protected open space)	NA	NA	NA
Line-36A Loop Extension							
Middlesex County, CT	0.5	0.8	Inside	Watrous Park/Town of Cromwell Middle School	1,326	2.5	0.9
Middlesex County, CT	1.1	1.2	Inside	Cromwell Fire District	524	1.0	0.4
Hartford County, CT	NA	NA	63 feet north of MP 1.6	Dividend Pond Open Space/Town of Rocky Hill	NA	NA	NA

TABLE P-1 (cont'd)

Public Lands, Recreation, and Special Interest Areas Crossed by or Within 0.25 Mile of the AIM Project[a]

Facility/County, State	Enter Milepost	Exit Milepost	Distance and Direction from Nearest Point Along Construction Work Area	Name of Area/Ownership	Crossing Length (feet)	Acreage Affected by Construction	
						Temp.	Perm.[b]
E-1 System Lateral Loop Extension							
New London County, CT	NA	NA	255 feet east of MP 1.1	Boy Scouts of America/ Mohegan District of the Connecticut Rivers Council	NA	NA	NA
New London County, CT	1.1	1.2	Inside	Mohegan Tribe of Indians, federally recognized Indian Nation	750	1.4	0.3
West Roxbury Lateral							
Norfolk County, MA	0.0	0.0	Inside	Canton Street Buffer/ Town of Westwood	28	0.3	0.1
Norfolk County, MA	0.0	0.1	Inside	Norfolk Golf Club (private)	677	1.2	0.4
Norfolk County, MA	NA	NA	393 feet east	Wigwam Pond Conservation Area/Town of Dedham	NA	NA	NA
Norfolk County, MA	NA	NA	115 feet southeast of MP 2.33	Barnes Memorial Park/ Town of Dedham	NA	NA	NA
Norfolk County, MA	2.4	2.5	Inside	Gonzalez Field/Town of Dedham	340	1.0	0.4
Norfolk County, MA	NA	NA	1,139 feet northwest of MP 2.7	Charles River Reservation/ Massachusetts Department of Conservation and Recreation (MADCR)	NA	NA	NA
Norfolk County, MA	3.0	3.7	Inside	Washington-Rochambeau National Historic Trail/National Park Service	3,485	5.8	0.0
Norfolk County, MA	NA	NA	Above	Mother Brook Reservation/MADCR	NA	NA	NA
Norfolk County, MA	2.8	3.1	Inside	Brookdale Cemetery/ Town of Dedham	272	0.4	0.0
Norfolk County and Suffolk County, MA	NA	NA	610 feet northwest of MP 3.4	Boston United Hand & Hand Cemetery/ Chestnut Hill's Congregation Mishka Tefila	NA	NA	NA
Suffolk County, MA	NA	NA	8 feet northwest of MP 3.6	Mary Draper Playground/ municipal	NA	NA	NA
Suffolk County, MA	NA	NA	132 feet northwest of MP 3.7	Grove Street Cemetery/ Jewish Cemetery Association of Massachusetts	NA	NA	NA
Suffolk County, MA	NA	NA	525 feet east of MP 3.9	Beethoven Elementary School and Playground/ City of Boston	NA	NA	NA
Suffolk County, MA	NA	NA	0 feet east of MP 4.3	West Roxbury Quarry Urban Wild/West Roxbury Crushed Stone, Co./private	NA	NA	NA

TABLE P-1 (cont'd)

Public Lands, Recreation, and Special Interest Areas Crossed by or Within 0.25 Mile of the AIM Project[a]

Facility/County, State	Enter Milepost	Exit Milepost	Distance and Direction from Nearest Point Along Construction Work Area	Name of Area/Ownership	Crossing Length (feet)	Acreage Affected by Construction	
						Temp.	Perm.[b]
Suffolk County, MA	NA	NA	248 feet east of MP 4.6	Guy Cammarata Complex/baseball fields	NA	NA	NA
Suffolk County, MA	NA	NA	801 feet southeast of MP 5.1	Roxbury Latin School/ private	NA	NA	NA
Suffolk County, MA	NA	NA	295 feet northeast of MP 5.1	St. Theresa of Avila School/private	NA	NA	NA
ABOVEGROUND FACILITIES							
Burrillville Compressor Station							
Providence County, RI	NA	NA	1,147 feet south	George Washington State Campground and Management Area	NA	NA	NA
Farmington M&R Station							
Hartford County, CT	NA	NA	Within 120 feet east	State Protected Open Space (planned bike trail)	NA	NA	NA
Multiple Facilities							
New London and Windham Counties, CT	NA	NA	Facilities are within the area	Quinebaug and Shetucket Rivers Valley National Heritage Corridor	NA	NA	NA
Waterbury M&R Station							
New Haven County, CT	NA	NA	6 feet southeast	Formerly Larkin State Park Trail/state-owned property	NA	NA	NA

[a] NA (not applicable) indicates that the Project would not cross the area, but would be located within 0.25 mile.

[b] Only includes the new permanent right-of-way, not Algonquin's existing permanent easement.

APPENDIX Q

SIGNALIZED INTERSECTION CAPACITY ANALYSIS FOR KEY INTERSECTIONS WITHIN THE AIM PROJECT AREA IN MASSACHUSETTS

TABLE Q-1

Signalized Intersection Capacity Analysis for Key Intersections Within the AIM Project Area in Massachusetts

Intersection	2014 Existing				Construction – Phase 1				Construction – Phase 2				Construction – Phase 3				Construction – Phase 4			
	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C	Delay	LOS	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)
HIGH STREET AT EAST STREET/HIGH STREET																				
Weekday AM																				
Harris Street EB LTR	0.39	35.6	D	50	N/A	N/A	N/A	N/A	0.12	9.7	A	52	0.07	9.4	A	25	N/A	N/A	N/A	N/A
Harris Street EB L	N/A	N/A	N/A	N/A	0.07	32.4	C	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Harris Street EB TR	N/A	N/A	N/A	N/A	0.52	36.1	D	91	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street WB LTR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.17	109.4	F	737 [d]	1.20	>120	F	747 [d]	N/A	N/A	N/A	N/A
High Street WB L	0.94	44.4	D	371 [d]	0.91	36.9	D	330 [d]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street WB TR	0.37	16.7	B	137	0.35	15.5	B	125	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street NB L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.02	15.8	B	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street NB LT	0.05	10.8	B	31	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.07	16.2	B	35	N/A	N/A	N/A	N/A
High Street NB RT	0.20	2.7	A	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street NB TR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.27	18.5	B	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street NB LTR	N/A	N/A	N/A	N/A	0.27	13.8	B	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street NB R	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.21	17.8	B	50	N/A	N/A	N/A	N/A

TABLE Q-1 (cont.)

Signalized Intersection Capacity Analysis for Key Intersections Within the AIM Project Area in Massachusetts

	2014 Existing				Construction – Phase 1				Construction – Phase 2				Construction – Phase 3				Construction – Phase 4			
Intersection	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C	Delay	LOS	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)
East Street SB LTR	0.03	10.7	B	21	0.04	11.6	B	23	0.05	16.1	B	25	0.04	16.0	B	25	N/A	N/A	N/A	N/A
Overall	**0.53**	**25.7**	**C**		**0.57**	**25.3**	**C**		**0.8**	**73.6**	**E**		**0.79**	**80.9**	**F**		**N/A**	**N/A**	**N/A**	
Weekday Midday																				
Harris Street EB LTR	0.51	28.2	C	80	N/A	N/A	N/A	N/A	0.32	12.9	B	116	0.18	11.8	B	52	N/A	N/A	N/A	N/A
Harris Street EB L	N/A	N/A	N/A	N/A	0.07	23.3	C	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Harris Street EB TR	N/A	N/A	N/A	N/A	0.67	31.3	C	156	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street WB LTR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.07	78.7	E	420 [d]	1.05	71.3	E	414 [d]	N/A	N/A	N/A	N/A
High Street WB L	0.84	31.6	C	194 [d]	0.86	32.5	C	177 [d]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street WB TR	0.27	15.9	B	81	0.25	13.9	B	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street NB L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.03	11.1	B	13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street NB LT	0.06	8.4	A	28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.07	11.4	B	30	N/A	N/A	N/A	N/A
High Street NB RT	0.20	4.3	A	16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street NB TR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.27	13.3	B	46	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street NB LTR	N/A	N/A	N/A	N/A	0.29	11.9	B	51	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

TABLE Q-1 (cont.)

Signalized Intersection Capacity Analysis for Key Intersections Within the AIM Project Area in Massachusetts

	2014 Existing				Construction – Phase 1				Construction – Phase 2				Construction – Phase 3				Construction – Phase 4			
Intersection	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C	Delay	LOS	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)
High Street NB R	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.22	12.8	B	34	N/A	N/A	N/A	N/A
East Street SB LTR	0.02	8.1	A	8	0.02	9.6	A	9	0.02	11.0	B	9	0.02	11.0	B	9	N/A	N/A	N/A	N/A
Overall	**0.46**	**19.3**	**B**		**0.53**	**22.1**	**C**		**0.67**	**42.8**	**D**		**0.63**	**39.0**	**D**		**N/A**	**N/A**	**N/A**	
Weekday PM																				
Harris Street EB LTR	0.71	32.8	C	106	N/A	N/A	N/A	N/A	0.46	14.1	B	150	0.25	12.3	B	66	N/A	N/A	N/A	N/A
Harris Street EB L	N/A	N/A	N/A	N/A	0.13	25.4	C	26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Harris Street EB TR	N/A	N/A	N/A	N/A	1.11	115.9	F	283 [d]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street WB LTR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	>1.2	>120	F	595 [d]	>1.2	>120	F	581 [d]	N/A	N/A	N/A	N/A
High Street WB L	0.89	33.5	C	296 [d]	0.91	35.7	D	304 [d]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street WB TR	0.22	12.5	B	77	0.22	12.2	B	77	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street NB L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.02	11.0	B	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street NB LT	0.07	11.1	B	33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.07	11.4	B	33	N/A	N/A	N/A	N/A

TABLE Q-1 (cont.)

Signalized Intersection Capacity Analysis for Key Intersections Within the AIM Project Area in Massachusetts

	2014 Existing				Construction – Phase 1				Construction – Phase 2				Construction – Phase 3				Construction – Phase 4			
Intersection	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C	Delay	LOS	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)
High Street NB RT	0.35	5.0	A	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street NB TR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.44	15.4	B	69	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street NB LTR	N/A	N/A	N/A	N/A	0.45	15.5	B	77	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High Street NB R	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.38	14.6	B	53	N/A	N/A	N/A	N/A
East Street SB LTR	0.06	11.1	B	21	0.08	11.5	B	22	0.09	11.7	B	22	0.06	11.3	B	21	N/A	N/A	N/A	N/A
Overall	**0.61**	**19.6**	**B**		**0.71**	**40.1**	**D**		**0.96**	**104.9**	**F**		**0.89**	**88.5**	**F**		**N/A**	**N/A**	**N/A**	
SPRING STREET AT CENTRE STREET/TEMPLE STREET																				
Weekday AM																				
Spring Street EB LTR	0.58	19.8	B	229	0.57	19.4	B	229	1.03	64.9	E	673 [d]	0.76	18.7	B	537 [d]	0.42	10.5	B	174
Spring Street WB L	0.47	10.6	B	82	0.47	10.6	B	82	0.51	13.8	B	82	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spring Street WB TR	0.43	9.9	A	180	0.43	9.9	A	180	0.43	9.9	A	180	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spring Street WB LTR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.81	17.6	B	342 [d]	>1.2	>120	F	880 [d]
Centre Street NB LT	0.31	29.9	C	78	N/A	N/A	N/A	N/A	0.31	29.9	C	78	0.31	29.9	C	78	0.31	29.9	C	78
Centre Street NB R	0.79	34.5	C	182 [d]	N/A	N/A	N/A	N/A	1.20	>120	F	348 [d]	1.20	>120	F	348 [d]	1.20	>120	F	348 [d]
Centre Street NB LTR	N/A	N/A	N/A	N/A	1.20	>120	F	453 [d]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

TABLE Q-1 (cont.)

Signalized Intersection Capacity Analysis for Key Intersections Within the AIM Project Area in Massachusetts

	2014 Existing				Construction – Phase 1				Construction – Phase 2				Construction – Phase 3				Construction – Phase 4			
Intersection	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C	Delay	LOS	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)
Temple Street SB LTR	0.32	29.9	C	86	0.38	31.4	C	88	0.32	29.9	C	86	0.32	29.9	C	86	0.32	29.9	C	86
Overall	**0.67**	**18.7**	**B**		**0.82**	**64.5**	**E**		**1.01**	**51.5**	**D**		**0.91**	**39.4**	**D**		>1.2	>120	F	
Weekday Midday																				
Spring Street EB LTR	0.58	20.8	C	220 [d]	0.58	20.8	C	220 [d]	1.05	71.8	E	5783 [d]	0.72	18.4	B	476 [d]	0.40	11.3	B	159
Spring Street WB L	0.46	11.3	B	106 [d]	0.46	11.3	B	106 [d]	0.54	14.9	B	126 [d]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spring Street WB TR	0.35	10.4	B	146	0.35	10.4	B	146	0.35	10.4	B	146	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spring Street WB LTR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.69	14.8	B	280 [d]	>1.2	>120	F	695 [d]
Centre Street NB LT	0.11	22.0	C	35	N/A	N/A	N/A	N/A	0.11	22.0	C	35	0.11	22.0	C	35	0.11	22.0	C	35
Centre Street NB R	0.30	17.7	B	40	N/A	N/A	N/A	N/A	0.43	26.9	C	102	0.43	26.9	C	102	0.43	26.9	C	102
Centre Street NB LTR	N/A	N/A	N/A	N/A	0.53	29.4	C	126	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Temple Street SB LTR	0.19	22.9	C	51	0.20	23.0	C	51	0.19	22.9	C	51	0.19	22.9	C	51	0.19	22.9	C	51
Overall	**0.47**	**15.9**	**B**		**0.55**	**17.1**	**B**		**0.77**	**36.6**	**D**		**0.63**	**17.8**	**B**		**0.97**	**66.4**	**E**	
Weekday PM																				
Spring Street EB LTR	0.56	21.6	C	261	0.57	19.4	B	229	1.03	64.9	E	673 [d]	0.76	18.7	B	537 [d]	0.42	10.5	B	174
Spring Street WB L	0.70	14.9	B	211 [d]	0.47	10.6	B	82	0.51	13.8	B	82	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spring Street WB TR	0.37	8.6	A	191	0.43	9.9	A	180	0.43	9.9	A	180	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

TABLE Q-1 (cont.)

Signalized Intersection Capacity Analysis for Key Intersections Within the AIM Project Area in Massachusetts

	2014 Existing				Construction – Phase 1				Construction – Phase 2				Construction – Phase 3				Construction – Phase 4			
Intersection	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)	V/C	Delay	LOS	95th % Queue (feet)	V/C [a]	Delay [b]	LOS[c]	95th % Queue (feet)
Spring Street WB LTR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.81	17.6	B	342 [d]	>1.2	>120	F	880 [d]
Centre Street NB LT	0.35	37.1	D	66	N/A	N/A	N/A	N/A	0.31	29.9	C	78	0.31	29.9	C	78	0.31	29.9	C	78
Centre Street NB R	0.38	23.4	C	66	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.2	>120	F	348 [d]	1.2	>120	F	348 [d]
Centre Street NB LTR	N/A	N/A	N/A	N/A	>1.2	>120	F	453 [d]	1.2	>120	F	348 [d]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Temple Street SB LTR	0.63	43.8	D	166	0.38	31.4	C	88	0.32	29.9	C	86	0.32	29.9	C	86	0.06	29.9	C	86
Overall	**0.67**	**18.6**	**B**		**0.82**	**64.5**	**E**		**1.01**	**51.1**	**D**		**0.91**	**39.4**	**D**		**>1.2**	**>120**	**F**	

[a] Volume-to-capacity ratio.

[b] Average delay per vehicle in seconds.

[c] LOS standards for highways and streets and at signalized intersections: A=free flow, <10 seconds; B=reasonably free flow, 10 to 20 seconds; C=stable flow, at or near free flow, 20 to 35 seconds; D=approaching unstable flow, 35 to 55 seconds; E=unstable flow, operating at capacity, 55 to 80 seconds; F=forced or breakdown flow, ≥80 seconds.

[d] 95th percentile volume exceeds capacity, queue may be longer.

Notes: EB = Eastbound; WB = Westbound; NB – Northbound; SB = Southbound; L = Left; T = Through; R = Right; NA = Not Applicable

Construction Phases are described in the Traffic Management Plan (Appendix G)

APPENDIX R

CONSULTATIONS WITH FEDERALLY RECOGNIZED INDIAN TRIBES

TABLE R-1

Consultations with Federally Recognized Indian Tribes for the AIM Project

Indian Tribe/ Date	Comments
Delaware Nation of Oklahoma	
5/17/13	Initial outreach letter from Public Archaeology Lab (PAL), on behalf of Algonquin Gas Transmission, LLC (Algonquin).
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipated Discovery Plan for review.
11/25/13	Initial consultation letter from the Federal Energy Regulatory Commission (FERC) requesting comments on the Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps.
12/23/13	Email to the FERC requesting the tribe be updated to any changes in the event of project changes or inadvertent discoveries.
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.
2/24/14	PAL provided draft overview/technical reports for review.
12/18/14	PAL provided overview table, technical memoranda, and technical reports & report addenda for review.
Delaware Tribe of Indians	
5/17/13	Initial outreach letter from PAL.
5/30/13	Letter to PAL requesting information on resources identified and to continue to be consulted.
7/3/13	Letter to PAL proving information on states and counties where Delaware have historical connection.
7/22/13	PAL provided request for consultation and maps.
7/29/13	Letter to PAL indicating no known sites of religious significance and requesting copies of cultural resource survey reports.
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipated Discovery Plan for review.
11/5/13	Letter to PAL recommending Phase II investigations for sites within Project corridor.
11/25/13	Initial consultation letter from the FERC requesting comments on the Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps.
12/11/13	Letter to PAL on survey report, indicating that there are no religious or culturally significant sites in the Project area and no objections to the proposed Project.
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.
2/24/14	PAL provided draft overview/technical reports for review.
12/18/14	PAL provided overview table, technical memoranda, and technical reports & report addenda for review.
Mashantucket (Western) Pequot Tribal Nation [a]	
5/17/13	Initial outreach letter from PAL, on behalf of Algonquin.
5/30/13	Email to PAL requesting copies of survey reports when completed.
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipated Discovery Plan for review.
11/14/13	Email to PAL requesting name of FERC cultural resources contact. Email from PAL providing requested contact information.
11/15/13	Emails to FERC on review of technical memoranda, agreeing with recommendations.
11/16/13	Emails to FERC on review of technical memoranda, agreeing with recommendations.
11/22/13	Email to FERC providing review comments on Unanticipated Discovery Plan.
11/25/13	Initial consultation letter from the FERC requesting comments on the Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps.
12/27/13	Email to PAL acknowledging receipt of Resource Reports.
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.

TABLE R-1 (cont'd)

Consultations with Federally Recognized Indian Tribes for the AIM Project

Indian Tribe/ Date	Comments
2/24/14	PAL provided draft overview/technical reports for review.
3/3/14	PAL provided copies of Resource Reports 1 through 12 and alignment sheets.
6/12/14	Email to FERC with comments on the PAL progress memo for site evaluation and additional identification survey.
3/12/14	Met directly with FERC to discuss section 106 concerns and procedures.
6/12/14	Email to FERC on review of progress memo.
8/23/14	Email to FERC on review of draft environmental impact statement.
12/18/14	PAL provided overview table, technical memoranda, and technical reports & report addenda for review
Mashpee Wampanoag Indian Tribe	
5/17/13	Initial outreach letter from PAL, on behalf of Algonquin.
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipated Discovery Plan for review.
11/25/13	Initial consultation letter from the FERC requesting comments on the Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps.
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.
2/24/14	PAL provided draft overview/technical reports for review.
4/8/14	Letter to FERC indicating that periodic visits by tribal monitors would be required during ground-disturbing activities.
8/21/14	Emails with PAL coordinating field survey schedule.
8/22/14	Section 106 Review Consultation Response Form, indicating no concerns related to the project unless human remains are identified.
12/18/14	PAL provided overview table, technical memoranda, and technical reports & report addenda for review.
Mohegan Tribe [a]	
5/17/13	Initial outreach letter from PAL, on behalf of Algonquin.
5/30/13	Email to FERC requesting information on the Project.
6/18/13	Letter from Algonquin to arrange for meeting.
6/27/13	Meeting held with Algonquin and PAL.
8/2/13	Letter from PAL with copy of meeting notes.
9/25/13	Phone message from PAL regarding upcoming fieldwork schedule.
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipated Discovery Plan for review.
11/14/13	Emails with PAL coordinating archaeological testing of a site.
11/25/13	Initial consultation letter from the FERC requesting comments on the Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps.
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.
2/24/14	PAL provided draft overview/technical reports for review.
3/3/14	PAL provided copies of Resource Reports 1 through 12 and alignment sheets.
3/12/14	Met directly with FERC to discuss section 106 concerns and procedures.
10/17/14	Meeting with FERC and AIM regarding potential ceremonial stone landscapes.
12/18/14	PAL provided overview table, technical memoranda, and technical reports & report addenda for review
Narragansett Indian Tribe [a]	
5/17/13	Initial outreach letter from PAL, on behalf of Algonquin.
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipated Discovery Plan for review.

TABLE R-1 (cont'd)

Consultations with Federally Recognized Indian Tribes for the AIM Project

Indian Tribe/ Date	Comments
10/28/13	Telephone call from regarding upcoming field investigations. Email from PAL advising of mailing sensitivity assessment/scope of work for upcoming archaeological investigations.
10/30/13	Email from PAL to coordinate archaeological hand testing.
11/25/13	Initial consultation letter from the FERC requesting comments on the Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps.
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.
2/24/14	PAL provided draft overview/technical reports for review.
3/3/14	PAL provided copies of Resource Reports 1 through 12 and alignment sheets.
3/12/14	Met directly with FERC to discuss section 106 concerns and procedures.
4/14/14	Met with PAL to receive information about cultural resource investigations.
10/17/14	Meeting with FERC and AIM regarding potential ceremonial stone landscapes.
12/18/14	PAL provided overview table, technical memoranda, and technical reports & report addenda for review
Oneida Nation	
10/17/14	Meeting with FERC and AIM regarding potential ceremonial stone landscapes.
Saint Regis Mohawk Tribe	
5/17/13	Initial outreach letter from PAL, on behalf of Algonquin.
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipated Discovery Plan for review.
11/25/13	Initial consultation letter from the FERC requesting comments on the Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps.
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.
2/24/14	PAL provided draft overview/technical reports for review.
12/18/14	PAL provided overview table, technical memoranda, and technical reports & report addenda for review
Stockbridge-Munsee Community Band of Mohican Indians	
5/17/13	Initial outreach letter from PAL, on behalf of Algonquin.
5/29/13	Letter to PAL indicating tribe is not aware of cultural resources in the Project area.
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipated Discovery Plan for review.
11/25/13	Initial consultation letter from the FERC requesting comments on the Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps.
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.
2/24/14	PAL provided draft overview/technical reports for review.
12/18/14	PAL provided overview table, technical memoranda, and technical reports & report addenda for review
Wampanoag Tribe of Gay Head (Aquinnah) [a]	
5/17/13	Initial outreach letter from PAL, on behalf of Algonquin.
7/23/13	Email from PAL to coordinate tribal involvement in field surveys. Email to PAL asking for Spectra/Algonquin and FERC contacts.
7/25/13	Email from Spectra/Algonquin to coordinate tribal involvement field survey.
10/25/13	PAL provided the archaeological overview/identification survey technical memoranda and the draft Unanticipated Discovery Plan for review.

TABLE R-1 (cont'd)

Consultations with Federally Recognized Indian Tribes for the AIM Project

Indian Tribe/ Date	Comments
11/25/13	Initial consultation letter from the FERC requesting comments on the Project to ensure that the concerns of the tribes are identified and properly considered in our environmental analysis, and requesting the tribes' assistance in identifying properties of traditional, religious, or cultural importance that may be affected by the Project.
12/3/13	PAL provided copies of Resource Reports 1 through 12 and associated maps. Call to PAL to discuss investigations.
12/4/13	Meeting with PAL to discuss Project, permitting process, and schedule.
1/27/14	Letter from PAL providing copy of meeting notes.
2/4/14	FERC third-party contractor followed up via email to on FERC request for comments/consultation.
2/24/14	PAL provided draft overview/technical reports for review.
3/3/14	PAL provided copies of Resource Reports 1 through 12 and alignment sheets.
3/12/14	Met directly with FERC to discuss section 106 concerns and procedures.
10/17/14	Meeting with FERC and AIM regarding potential ceremonial stone landscapes.
12/18/14	PAL provided overview table, technical memoranda, and technical reports & report addenda for review

[a] Participated in mostly weekly calls and/or email updates on on-going cultural resource field investigations with FERC, Algonquin, and Algonquin's cultural resources contractor beginning April 3, 2014 until cultural resource field investigations were completed.

APPENDIX S

REFERENCES AND CONTACTS

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APPENDIX T

LIST OF PREPARERS

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LIST OF PREPARERS

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