#### EPA Contract No. EP-S1-06-01 EPA Task Order No. 0060-RD-RD-01D5

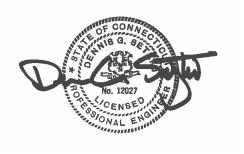
EPA Project Officer: Heidi Horahan EPA Task Order Project Manager: Ed Hathaway

#### **VOLUME 2 OF 2**

# SPECIFICATIONS DURHAM MEADOWS WATERLINE REMEDIAL DESIGN

100% Design Submittal

Durham Meadows Superfund Site Durham, Connecticut



Prepared by:

AECOM, Inc. 500 Enterprise Drive Suite 1A Rocky Hill, CT 06067

#### TABLE OF CONTENTS

#### VOLUME 1 OF 2:

<b>DIVISION</b>	<u>0 - CONTRACT REQUIREMENTS</u>
00300	Bid Form
DIVISION	1 - GENERAL REQUIREMENTS
01010	Summary of Work
01046	Control of Work
01063	Miscellaneous Requirements
01070	Regulatory Requirements
01110	Environmental Protection Procedures
01120	Safety and Health Program
01150	Measurement and Payment
01200	Project Meetings
01300	Submittals
01310	Construction Progress
01390	Pre- and Post-Construction Surveys
01400	Quality Assurance
01410	Sampling Procedures and Laboratory Services
01500	Temporary Facilities
01568	Erosion Control, Sedimentation, and Containment of Construction
	Materials
01610	Delivery, Storage, and Handling
01700	Contract Closeout
01710	Cleaning Up
01740	Warranties and Bonds
<b>DIVISION</b>	2 - SITE WORK
02012	Protecting Existing Underground Utilities
02013	Connections to Existing Buried Pipelines
02018	Vibration Monitoring
02053	Excavated Material Management Plan
02100	Site Preparation
02160	Excavation Support Systems
02210	Earth Excavation, Backfill, Fill, and Grading
02211	Rock Excavation and Disposal
02223	Screened Gravel
02224	Bank -Run or Crushed Gravel
02225	Select Borrow
02230	Site Clearing
02240	Dewatering
02241	Construction Water Management
02273	Geotextile Fabric
02371	Riprap
02400	Temporary Cofferdam

02435 02510	Crushed Stone Water Utilities
02515	Disinfecting Water Utility Distribution System
02521	Well Abandonment
02630	Storm Drainage Utilities
02740	Flexible Paving
02820	Chain Link Fences and Gates
02900	Planting
02922	Hydroseeding
DIVISION	3 – CONCRETE
03100	Concrete Formwork
03200	Concrete Reinforcement
03300	Cast-In-Place Concrete
03410	Precast Structural Concrete Buildings
03420	Precast Reinforced Concrete Vaults
03800	Leakage Testing of Containment Structures
	<u>5 – METALS</u>
05515	Aluminum Stairs and Ladders
DIVISION	7 – THERMAL AND MOISTURE PROTECTION
07900	Joint Sealants
	8 – OPENINGS
08111	Flush Panel Aluminum Doors and Frames
08710	Finish Hardware
	9 – FINISHES
09941	Field Painting
	10 – SPECIALTIES
10200	Louvers
DIVISION	<u> 11 – EQUIPMENT</u>
11316	Sump Pumps and Appurtenances
11353	Booster Chlorination System
11355	THM Removal System
11397	Gas Engine Generator Set and Appurtenances
	13 – SPECIAL CONSTRUCTION
13225	Prestressed Concrete Tanks
13300	Utility Control Instrumentation System
13300A	Utility Control Instrumentation System -Attachment A
	15 – PLUMBING – MECHANICAL
15101	Valves, Gates, Hydrants, and Appurtenances
15105	Pipe Supports for Process Piping
15112	Self-Contained Automatic Control Valves and Appurtenances

<b>DIVISION</b>	16 – ELECTRICAL
16050	Electrical Work – General
16110	Raceway and Boxes for Electrical Systems
16120	Electric Wires and Cables
16160	Panelboards
16220	Electric Motors
16260	Low Voltage Variable Frequency Drive Unit
16400	Surge Protection Devices
16402	Underground Ducts and Raceways for Electrical Systems
16415	Automatic Transfer Switches
16450	Grounding and Bonding for Electrical Systems
16601	Lightning Protection
16900	Electrical Controls and Miscellaneous Electrical Equipment
16998	Field Inspection and Acceptance Tests

Heating, Ventilating, and Air Conditioning Water Booster Pumps and Appurtenances

#### VOLUME 2 OF 2:

#### **APPENDICES**

- A Geotechnical Data
- B Water Service Work on Private Property Details by Address
- C State Department of Labor Wage Rates (To be issued by Addendum)
- D Historic Site Data (203R Main Street)

Flow Meter

Plumbing Systems

15115 15400

15806

15809

#### APPENDIX A

Geotechnical Data



AECOM 701 Edgewater Drive Wakefield, MA 01880 781-246-5200 tel 781-224-6546 fax

www.aecom.com

#### Memorandum

**File:** 60275749

**Date:** August 5, 2013

To: Dennis Setzko

From: Geotechnical Department, AECOM Wakefield Office

Subject: Geotechnical Data Report (GDR), Cherry Hill Water Storage Tank

Durham, CT

**Discipline:** Geotechnical

Copies: J. Ramos;

#### **INTRODUCTION**

A subsurface exploration program was conducted to support the design and construction of the proposed Cherry Hill Water Storage Tank as part of Durham Meadows Water System Upgrades project located in Durham, CT. The exploration program consisted of drilling and sampling three (3) test borings. The test borings were drilled by New England Boring Contractors of Glastonbury, CT. The work was performed from June 11 to June 12, 2013.

#### **EXPLORATION PROGRAM**

The three test borings ranged in depth from 13 to 15 feet. The borings were drilled using 3.25-inch ID Hollow Stem Auger in combination with 4-inch HW casing. Split spoon soil samples were collected at 5-foot intervals from the ground surface to the top of rock. An AECOM representative was present to log the borings.

Bedrock was encountered and cored 5 ft in all test borings. The groundwater was not observed during drilling. However, groundwater levels may fluctuate with precipitation, season, construction activities, run-off controls, and other factors. As a result, water levels during construction may vary from those observed during the subsurface investigation.

The test boring locations are included in the Contract Documents. Geologic logs are provided in Attachment 1.



Attachment 1 Boring Logs



This	PROJ	ECT: Du	ham W	ator Storago	Tank			SHE	ET	BORING NO.	
SOURCE   S	SITE			ater Storage	Talik	JOB NO.: 60275740.03				TD 1	
Difference   Note   Difference   Note   Difference   Di						002/5/49.03					
DRILL CONTRACTOR:   NEB											
DRILL RIG:   Mobile B-3			TOD .					DECLIN	1.	19.1 ft	
Mole   Size   Weather   Weather   Drizzling, overcast, ~60s   Not Encountered   Top of Rock (Depth) : Not Encountered   Top of Rock (Depth) :   Top			TUR:	NEI	В	W. Song				June 11, 2013	
Drilling Method:   Drilling Fluid:   Top of Rock (Depth):						DRILLER: O. Cone				June 11, 2013	
Drilling Method :	Hole S	Size :		Weather:			Ground Wa	iter (Dep	th):		
Drilling Method :		~7"				Drizzling, overcast, ~60s		No	t Encour	ntered	
Depth   Sample   N   Blow Count   Sample   (per 6 in.)	Drilling Method :						Top of Roc				
Depth   Sample   N   Blow Count   Sample   (per 6 in.)	3 25" ID HSA///" HW Casing					Potable Water			14 1 fi	+	
Characterist   Char		0.20 10	1107 04		Sample	1 otable water			17.11	•	
Red brown GRAVELLY SAND, fine to medium sand, some fine gravel, little fines, hard, moist. Till.   10.3'   SS-3   50/4"   4"   Red brown Till. and weathered Sandstone fragments.   0.0   Weathered Rock   14.1'   15.19.1"   3   3   Red brown SANDSTONE with horizontal joints, slightly weathered, moderately hard.   Red brown SANDSTONE with horizontal joints, slightly weathered, moderately hard.   SAMPLE TYPES:   S3-3' SPLIT SPOON   ST=SHELIBY TUBE   Some   S0 to 5%   SPT Resistance   Cobesive Consistency.   0.3 very Soft   July 12.15   SS-SPLIT SPOON   ST=SHELIBY TUBE   Some   30 to 45%   S-9 Loose   10-29 Med Dense   Cobesive Consistency.   0.3 very Soft   July 12.15   MSS   MSSIff. 91-Stefff   MSS   MSSIff. 91-	Dept	Sample	N	(per 6 in.)	Recovery	SAMPLE			S	TRATIGRAPHIC	
SS-1   8	(ft)	Type/No.	Value	or Drilling	or REC &	DESCRIPTION	DESCRIPTION			DESCRIPTION	
SS-1   8   1-1-7-13   12"   10 some fines, trace grass roots, moist.   0.0   F-M SAND				Rate(min/ft)	RQD		1.1901	_			
0 - 2'		SS-1	8	1-1-7-13	12"		rse gravei, little				
SS-2											
SS-2		+									
SS-2										F-M SAND	
SS-2											
SS-2											
SS-2	5_								5'		
10		200	77	20 50 05 04	16"	l l	m sand, some	0.0			
10			11	29-52-25-21	10	Tille graver, little fines, nard, moist. TILL.		0.0			
10		<u> </u>									
10										GLACIAL TILL	
SS-3											
SS-3											
10'-10'4"	10								10.3'		
10'-10'4"		00.0			411	]					
SS-4   -   50/1"   1"   Red brown weathered Sandstone fragments.   0.0   14.1'   14'.14'1"			-	50/4"	4"	Red brown TILL and weathered Sandstone fi	ragments.	0.0			
SS-4		10-10-4									
SS-4									١٨	leathered Pock	
14'-14'1"						†				realities into	
15			-	50/1"	1"	Red brown weathered Sandstone fragments.	•	0.0	14.1'		
RC-1	15	14'-14'1"									
14.1'-19.1'   3					_		ts, slightly				
SANDSTONE   SAND					2	weathered, moderately hard.					
3   EOB @ 19.1 ft		17.1-13.1			3	Rec = 20%, RQD = 20%.				SANDSTONE	
3   EOB @ 19.1 ft					4						
SAMPLE TYPES: trace 0 to 5%   SPT Resistance   Approve/Date					4						
SAMPLE TYPES:         trace         0 to 5%         SPT Resistance         Approve/Date           S3=3" SPLIT SPOON         few         5 to 10%         5 to 10%         5 to 10%         Cohesionless Density:         0-4 Very Loose         Cohesive Consistency:         0-2 Very Soft         July 12, 13           ST=SHELBY TUBE         some         30 to 45%         5-9 Loose         10-29 Med. Dense         3-4 Soft, 5-8 M/Stiff, 9-15 Stiff         WS					3						
SAMPLE TYPES:         trace         0 to 5%         SPT Resistance         Approve/Date           S3=3" SPLIT SPOON         few         5 to 10%         5 to 25%         5 to 25%         5 to 25%         6 to 25%         7 to 25%					3				ı	FOR @ 19 1 ft	
S3=3" SPLIT SPOON   few   5 to 10%						SPT Resistance		1			
SS=SPLIT SPOON         little         15 to 25%         Cohesionless Density:         0-4 Very Loose         Cohesive Consistency:         0-2 Very Soft         July 12, 13           ST=SHELBY TUBE         some         30 to 45%         5-9 Loose         10-29 Med. Dense         3-4 Soft, 5-8 M/Stiff, 9-15 Stiff         WS						5		7,55104075410			
ST=SHELBY TUBE   some   30 to 45%   5-9 Loose   10-29 Med. Dense   3-4 Soft, 5-8 M/Stiff, 9-15 Stiff   WS					Cohesionles	s Density: 0-4 Very Loose Cohesive Consistency:			0-2 Very Soft July 12, 13		
R=ROCK CORE mostly >50% 30-49 Dense 50+ Very Dense 16-30 V-Stiff, 31+ Hard	ST=S	HELBY TUB	E som	ne 30 to 45%	5-9 Lo						
	R=RC	CK CORE	mos	stly >50%	30-49	Dense 50+ Very Dense	16-30 V-Stiff, 31-				



PROJE	CT : Dur	ham Wa	ater Storage	Tank			SHE	ET	BORING NO.	
SITE L	OCATION:		1	of 1	TB-2					
					60275749.03 LOCATION:				Total Depth:	
					N: E:				·	
Durhan	n, CT CONTRAC	TOP ·			FNC/CFO:			BEGUN: 14.1		
		TOK.	NE	В	vv. Song				June 11, 2013	
DRILL			Mobile B-53		DRILLER: O. Cone		FINISH		June 12, 2013	
Hole Si	ze :		Weather:			Ground Wa	iter (Dep	th):		
	~7"				Drizzling, overcast, ~60s		No	t Encou	ntered	
Drilling	Method:				Drilling Fluid :	Top of Rocl	k (Depth	):		
3.25" ID HSA					Potable Water			10.2	ft	
	T		Blow Count	Sample	Totalio VVator			10.2		
Depth	Sample	N	(per 6 in.)	Recovery	SAMPLE			5	TRATIGRAPHIC	
(ft)	Type/No.	Value	or Drilling	or REC &	DESCRIPTION		PID		DESCRIPTION	
ļ.,			Rate(min/ft)	RQD	I Down to with the state of the	To a second	Reading			
	SS-1	5	2-2-3-6	6"	Brown to red brown fine to medium SAND, gravel, few fines, trace grass roots, moist.	trace coarse	0.0			
	0'-2'		2200		3.2751, 1511 III155, 1406 grass 15515, 1116151.		0.0			
				1						
									F-M SAND	
				1						
5								5'		
+										
	SS-2	>50	101-50/1"	6"	Red brown hardpan, highly weathered, soft	t Sandstone, dry.	0.0			
	5'-5'7"									
-								•	GLACIAL TILL	
								&	Weathered Rock	
10					Red brown Sandy Conglomerate, highly we	athered		10.2'		
	SS-3	-	50/2"	2"	Sandstone, dry.	eatilei eu	0.0			
	10'-10'2"									
, ⊢				-	   Highly weathered SANDSTONE, broken, w	ith grav calv				
	RC-1			3	seams.	gray oary			SANDSTONE	
	10.1'-14.1'				Dan = 40% DOD = 00%			14.1'		
				3	Rec = 40%, RQD = 0%.			14.1		
15				2					EOB @ 14.1 ft	
$   \top$				3						
				3						
SAMPI	 _E_TYPES:	trace	e 0 to 5%		SPT Resistance		<u> </u>		Approve/Date	
	SPLIT SPO		5 to 10%		or i resistance		Approve/Date			
	LIT SPOO			Cohesionless	s Density: 0-4 Very Loose Cohesive Consistency:			0-2 Very Soft July 12, 1		
	ELBY TUB			5-9 Lo						
					Dense 50+ Very Dense	16-30 V-Stiff, 31-				
		1								



DRILL CONTRACTOR:         NEB         ENG/GEO:         W. Song         BEGUN:         June 11, 2013           DRILL RIG:         Mobile B-53         DRILLER:         O. Cone         FINISHED:         June 12, 2013           Hole Size:         Weather:         Ground Water (Depth):         Not Encountered           Drilling Method:         Drilling Fluid:         Top of Rock (Depth):           4" HW Casing         Potable Water         13 ft	
Durham, CT	
DRILL CONTRACTOR: NEB ENG/GEO: W. Song BEGUN: June 11, 2013  DRILL RIG: Mobile B-53 DRILLER: O. Cone FINISHED: June 12, 2013  Hole Size: Weather: Ground Water (Depth):  -7" Drizzling, overcast, ~60s Not Encountered  Drilling Method: Top of Rock (Depth):  4" HW Casing Potable Water 13 ft	
DRILL CONTRACTOR:     NEB     ENG/GEO:     W. Song     BEGUN:     June 11, 2013       DRILL RIG:     Mobile B-53     DRILLER:     O. Cone     FINISHED:     June 12, 2013       Hole Size:     Weather:     Ground Water (Depth):       ~7"     Drizzling, overcast, ~60s     Not Encountered       Drilling Method:     Drilling Fluid:     Top of Rock (Depth):       4" HW Casing     Potable Water     13 ft	
DRILL RIG :         Mobile B-53         DRILLER :         O. Cone         FINISHED :         June 12, 2013           Hole Size :         Weather :         Ground Water (Depth) :         Not Encountered           Drilling Method :         Drilling Fluid :         Top of Rock (Depth) :           4" HW Casing         Potable Water         13 ft	3
Hole Size : Weather : Ground Water (Depth) :  ~7" Drizzling, overcast, ~60s Not Encountered  Drilling Method : Top of Rock (Depth) :  4" HW Casing Potable Water 13 ft	
Drilling Method:  Drilling Fluid:  Top of Rock (Depth):  4" HW Casing  Potable Water  13 ft	
Drilling Method:  Drilling Fluid:  Top of Rock (Depth):  4" HW Casing  Potable Water  13 ft	
Blow Count Sample	
Blow Count Sample	
Depth         Sample         N         (per 6 in.)         Recovery         SAMPLE         STRATIGRAPHIC	
(ft) Type/No. Value or Drilling or REC & DESCRIPTION PID DESCRIPTION	
Rate(min/ft) RQD Reading Borehole TB-2A was shifted 3 ft away from TB-2. Soil	
portion was blind drilled to top of rock.	
10	
13'	
Slightly to moderately weathered SANDSTONE with horizontal joints, fine grained, moderately hard.	
13'-18'	
15 Rec = 50%, RQD = 0%.	
SANDSTONE	
EOB @ 18 ft	
SAMPLE TYPES: trace 0 to 5% SPT Resistance Approve/Da	te
S3=3" SPLIT SPOON few 5 to 10%	
SS=SPLIT SPOON little 15 to 25% Cohesionless Density: 0-4 Very Loose Cohesive Consistency: 0-2 Very Soft July 12, 13	;
ST=SHELBY TUBE some 30 to 45% 5-9 Loose 10-29 Med. Dense 3-4 Soft, 5-8 M/Stiff, 9-15 Stiff WS  P=POCK_CORE mostly > 50% 30.40 Dense 50.4 Very Dense 16.20 V Stiff, 31.4 Med	



PROJE	CT : Dur	ham Wa	ater Storage	Tank			SHE	ET	BORING NO.		
SITE L	SITE LOCATION: JOB NO.: 60275749.03								TB-3		
								of 1 n: T	otal Depth:		
	0.7				N: E:				·		
Durhar	n, CT CONTRAC	TOP ·			FNC/CFO:				20 ft		
		TOR .	NEI	3	W. Soliy			BEGUN: June 12, 2013 FINISHED: June 12, 2013			
DRILL			Mobile B-53		DRILLER: O. Cone	1-			June 12, 2013		
Hole S	ze :		Weather:		Ground Wat			er (Depth) :			
	~7"				Sunny/cloudy, ~50s		No	Not Encountered			
Drilling	Method:		•		Drilling Fluid :	Top of Roc	k (Depth)	):			
	3 25" ID	HSA/4"	HW Casing		Potable Water			15 ft			
	0.20 10	110/4	Blow Count	Sample	1 Otable Water			10 10			
Depth	Sample	N	(per 6 in.)	Recovery	SAMPLE			S	TRATIGRAPHIC		
(ft)	Type/No.	Value	or Drilling	or REC &	DESCRIPTION		PID		DESCRIPTION		
			Rate(min/ft)	RQD			Reading				
	SS-1	7	1-3-4-7	10"	Brown fine to medium SAND with few coarse some fines, trace grass roots, moist.	gravel, little to	0.0				
	0'-2'		1-5-4-1	10	Joine Illies, trace grass roots, moist.		0.0				
									F-M SAND		
									1 W 6/ W 6		
5								5'			
					Top 16": Red brown fine to medium SAND, f	ew coarse					
	SS-2	44	25-20-24-25	20"	gravel, few fines, moist. TILL.		0.0				
	5'-7'				Bottom 4": Highly weathered Sandstone.						
-					Bottom 1: 1 hgrilly wouthered cumustone.						
_											
10					Highly weathered Sandatana fragment and C	`anglamarata			GLACIAL TILL		
	SS-3	_	33-50/4"	10"	Highly weathered Sandstone fragment and C broken, dry.	ongiomerate,	0.0	&	Weathered Rock		
	10'-10'10"							-			
					(roller bit advanced to 15 ft depth, set casing	at 15'.)					
15								15'			
	DO 4			0	Gray highly to moderately weathered SANDS	STONE,					
-	RC-1 15'-20'			3	broken, fine grained, moderately hard.						
				2	Rec = 33%, RQD = 7%.						
				-					CANDOTONE		
-				3					SANDSTONE		
				3							
				2					EOD @ 20 #		
SAMDI	 _E_TYPES:	ture -	0 0 40 50/		SPT Resistance				EOB @ 20 ft Approve/Date		
	LE TYPES: SPLIT SPO	ON few			SPT Resistance				Approve/Date		
	LIT SPOO			Cohesionless	Dansitra 0.4 Vanul 2002			0-2 Very Soft July 12, 13			
	ELBY TUB			5-9 Lo							
	CK CORE	mos		30-49 I	· · · · · · · · · · · · · · · · · · ·			uii, 7-13 Suii			
1101	JI OOKL	11103	nay /30/0	30-49	Sense Sur very Dense	10 JU v-Billi, 31	. 11414		1		

#### GEOTECHNICAL DATA REPORT

#### Subsurface Investigation Results for the Durham Meadows Waterline RD Durham, CT

#### I. INTRODUCTION

This Geotechnical Data Report (GDR) is prepared in support of the construction and design of the Durham Meadows Waterline project located in Durham, CT. New England Boring Contractors, Inc of Glastonbury, CT performed the drilling from August 19 to August 28, 2013. Northern Drill Services conducted supplemental drilling on September 22, 2014 for Allyn Brook Crossing. The drilling was observed by AECOM representatives. The locations of the test borings are shown on the Contract Drawings.

#### II. EXPLORATION PROGRAM

Test borings for the proposed waterline were drilled to approximately five feet below the proposed pipe invert depths. All test borings were drilled using Hollow Stem Augers (HSA). Standard split spoon samples were collected at ground surface or below the pavement and at 5-foot intervals until the end of borings except that three boreholes were sampled continuously for Allyn Brook Crossing. Upon completion, the test borings were backfilled with cuttings, tamped and topped with an asphalt patch.

Groundwater was not observed during drilling in the majority of the borings. The groundwater level ranged from 4.8 to 10.5 feet below the ground surface when encountered in some test borings. It should be noted that groundwater levels may fluctuate with precipitation, season, construction activities, run-off controls, and other factors. As a result, water levels during construction may vary from those observed during the subsurface investigation.

#### III. LABORATORY TESTING

A total of ten (10) Grain Size Analyses were performed by GeoTesting Express, Inc. of Boxborough, MA. The submitted report is provided as Attachment 2.

#### IV. ENVIRONMENTAL SAMPLING RESULTS

During the subsurface investigation program, several samples were also collected for environmental analyses including volatile organic compounds (VOCs) and extractable total petroleum hydrocarbons (ETPH). The detailed report is provided as Attachment 3.

(Date: Nov. 25, 2013.

Revised Oct. 27, 2014 for Allyn Brook Crossing Investigation.)

# ATTACHMENT 1 TEST BORING LOGS



PROJE	CT: Dur	ham W	ater Main					SHEET		BORING NO.
SITE L	OCATION:				JOB NO.:	60275749.06.01		1	of 1	B-4
30, Miq	e Easemen	.+			LOCATION:	00270743.00.01		Elevation		otal Depth:
		ıı			N:	E:				10'-6"
Middleto DRILL	CONTRAC	TOR:	NE		ENC/CEO :			BEGUN	J:	
DRILL			NE	В	DRILLER:	M. McGuire		Aug. 20, 2013		
Hole Size : Mobile B-53 Weather :					DIVILLEIV.	Mike St. John	n Ground Wa			Aug. 28, 2013
li iole 312	<u> </u>		vveatrier.				Ground wa	itei (Det	oui).	
~6"					Sunny, clea				t Encour	ntered
Drilling	Method :				Drilling Fluid :		Top of Roc	k (Depth	1):	
		3.25" H	SA			Not Used			5'-6"	
			Blow Count	Sample						
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE				TRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling Rate(min/ft)	or REC & RQD		DESCRIPTION		ASTM Class.	'	DESCRIPTION
			Kate(IIIII/It)	RQD				Class.		
_	SS-1	8	3-4-4-4	12"	5" Topsoil.	Carlo and Carlo Carlo	C			
	0-2'				Reddish brown fine to medium SAND with fine to coarse gravel, little silt, dry.					
<u> </u>										SAND
_										
5									5'6"	
	SS-2	>50	26-50/3"	3"	Weathered	rock fragments.				
	5'-7'									
-										
										Weathered Rock
10					Weathered	rock fragments.			10'6"	
	SS-3	>50	50/6"	4"	vvcatricica	Took iraginonia.				
	10'-10.5'									EOB @ 10'6"
<u>-</u>										
15										
<u>-</u>										
-										
	E TYPES:	trac				SPT Resistance				Approve/Date
S3=3" SPLIT SPOON few 5 to 10%										-
	LIT SPOOI			Cohesionless				-		
	ELBY TUB K CORE		ne 30 to 45% stly >50%	5-9 Lo 30-49 I						
111-1100	IN OUNE	IIIO	ouy /JU70	JU-49 I	JU15C 3U+	Y CI Y LICHNE	16-30 V-Stiff, 31	T IIaiu		1



PROJECT : Durham Water Main									SHE	ET	BORING NO.		
SITE L	OCATION:				JO	B NO.: <b>60275749.06.01</b>				1	of 1	B-5	
016 Tal	aatt Didaa	Drive			LO	CATION:				Elevation		otal Depth:	
	cott Ridge	Dilve			N:		E:						
Middleto	own, Ct CONTRAC	TOD :				C/CEO :				DECLIN	l.	12'	
		TOR.	NE	В			M. McGuir	е		BEGUN		Aug. 28, 2013	
DRILL	RIG :	1	Mobile B-53		DR	ILLER:	like St. Jol	hn		FINISH	ED:	Aug. 28, 2013	
Hole Size : Weather :									Ground Wa	iter (Dep	th):		
~6"						Sunny/cloudy, ~75				No	t Encour	ntered	
Drilling Method :						lling Fluid:			Top of Roc		Not Encountered		
										` .	,		
	ı	3.25" H		ı		Not Used				No	t Encour	ntered	
D 11-	0		Blow Count	Sample		OAMD	. –				0	TD A TIOD A DI IIO	
Depth	Sample	N	(per 6 in.)	Recovery		SAMP						TRATIGRAPHIC	
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIF	TION			ASTM	ı	DESCRIPTION	
			Rate(min/ft)	RQD						Class.			
						4" Pavement							
	00.4		44.05.00.40	0"		5" Base Gravel. Brown fine to	coarse SA	AND an	d Gravel,				
<u>-</u>	SS-1 1'-3'	55	11-25-30-19	8"		little silt, dry.							
	1-5												
-					1								
5													
					1								
	SS-2	16	4-7-9-12	17"		Brown fine to coarse SAND ar	nd GRAVEL	L, little	silt, moist.		;	Sand & Gravel	
	5'-7'												
					1								
10													
	SS-3	85	30-39-46-40	18"		Brown fine to coarse SAND ar	ad CDAVEI	little	oilt moiat				
	10'-12'	00	30-39-40-40	10	1	blown line to coarse SAND at	IU GRAVEL	L, IIIIIE	SIII, IIIOISI.				
											12'		
												EOB @ 12'	
					1								
45													
15					1								
-					1								
SAMPLE TYPES: trace 0 to 5%						SPT F	Resistance	<del></del>				Approve/Date	
	S3=3" SPLIT SPOON few 5 to 10%					OF FINESISTATIVE					11 2 22		
	SS=SPLIT SPOON little 15 to 25% Cohesionless				Density: 0-4 Very Loose Cohesive Consistency:			0-2 Very	Soft	1			
	ELBY TUB			5-9 Lo				_					
R=ROCK CORF mostly >50%			30-49					0 V-Stiff 31					



PROJE	CT·_							SHE	FT	BORING NO.		
	OCATION:		ater Main		JOB NO.:							
OITE E	OOATION.					60275749.06.01			of 1	B-6		
164 Tal	cott Ridge	Drive			LOCATION:	_		Elevation	DII.	Total Depth:		
Middleto					N:	E:				11'-3"		
DRILL	CONTRAC	TOR:	NEI	3	ENG/GEO: M. McGuire			BEGUN	1:	Aug. 28, 2013		
DRILL	RIG :		Mobile B-53		DRILLER:	Mike St. John		FINISH	ED:	Aug. 28, 2013		
Hole Siz	ze :		Weather:				Ground Wa	ter (Dep	oth):	, , , , , , , , , , , , , , , , , , ,		
	~6"				Sunny/cloudy	, ~80		Ne	Not Encountered			
Drilling Method :					Drilling Fluid :	,00	Top of Roc			intered		
					J			` .				
	1	3.25" H	1	C1-		Not Used		No T	t Encou	ıntered		
Depth	Sample	N	Blow Count (per 6 in.)	Sample Recovery		SAMPLE				STRATIGRAPHIC		
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM		DESCRIPTION		
(**)	, , , ,		Rate(min/ft)	RQD				Class.				
<u> </u>					2.5" Paveme	nt vel. Brown fine to medium SAN	ID little gravel					
	SS-1	64	12-31-33-30	14"	little silt, dry.	roi. Brown into to modium or av	ib, iidio gravoi,					
	1'-3'											
<u>-</u>					-							
5												
					1							
_	SS-2	9	5-5-4-4	19"	Brown fine to	coarse SAND, little gravel, little	e fines, moist.			Sand		
	5'-7'											
					1							
<u> </u>					-							
10												
10+					-							
	SS-3	>50	19-27-50/3"	11"	Brown fine to	medium SAND, little gravel, tra	ace silt, dry.		11'3"			
	10'-11'3"				-							
					1					EOB @ 11'3"		
		-										
1.5					1							
15					-							
					]							
<u>-</u>		1			-							
					]							
		<u> </u>										
	E TYPES:					SPT Resistance				Approve/Date		
	SPLIT SPO											
	SS=SPLIT SPOON little 15 to 25% Cohesionles							<del>-</del>				
	ELBY TUB			5-9 Lo				II				
R=ROCK CORE mostly >50%			30-49 1	Dense 50+ \	Very Dense	16-30 V-Stiff, 31	+ Hard		i i			



DDO IE	OT :							OLIF		DODING NO
PROJE	Dui		ater Main					SHE	:E1	BORING NO.
SITE L	OCATION:				JO	B NO.: <b>60275749.06.01</b>		1	of 1	B-7
Talcott	Ridge Drive	2			LO	CATION:		Elevation		otal Depth:
	-	•			N:	E:				401.011
Middleto	CONTRAC	TOP:				IC/CEO :		BEGUN		10'-3"
		,101.	NEI	В		IVI. IVICGUITE				Aug. 28, 2013
DRILL		ı	Mobile B-53		DF	RILLER: Mike St. John		FINISH		Aug. 28, 2013
Hole Siz	ze:		Weather:				Ground Wa	ater (Dep	oth):	
	~6"				F	Partly cloudy, ~80		No	t Encoun	tered
Drilling	Method :					lling Fluid :	Top of Roc			
	ı	3.25" H				Not Used		No	t Encoun	tered
Donth	Sample	N	Blow Count (per 6 in.)	Sample		SAMPLE			67	RATIGRAPHIC
Depth (ft)	Type/No.	Value	or Drilling	Recovery or REC &		DESCRIPTION		ASTM		DESCRIPTION
(11)	Турслио.	Value	Rate(min/ft)	RQD		DEGORII TION		Class.		DEGOTAL FIGH
			(							
						3.5" Pavement				
	SS-1	62	8-35-27-16	13"		4" Base Gravel. Brown fine to coarse SAND little silt, dry.	and GRAVEL,			
_	1'-3'	02	0 00 27 10	10		intio ont, dry.				
					1					
5									5	Sand & Gravel
	SS-2	54	11-22-32-24	16"		Brown fine to coarse SAND and GRAVEL, lit	ttle silt drv			
<del> </del>	5'-7'	<u> </u>			1		tuo omi, ary.			
					1					
10										
-									10'3"	
	SS-3	>50	50/3"	0		Empty spoon, no recovery.				
	10'-10'3"									EOB @ 10'3"
					1					
					1					
15										
<del> </del>					1					
SAMPI	I E TYPES:	trac	e 0 to 5%		1	SPT Resistance		1		Approve/Date
	SPLIT SPO					Of 1 Resistance				, ippiovo/bato
	LIT SPOO			Cohesionless	. Den	sity: 0-4 Very Loose Cohe	esive Consistency:	0-2 Very	Soft	1
	ELBY TUB			5-9 Lo		<del></del>	3-4 Soft, 5-8 M/Sti	-		
	K CORF	mos		30-491			16-30 V-Stiff 31			



PROJ	ECT: D	ub a us 10/	ntou Main				SHEI	ET	BORING NO.		
	LOCATION:		ater Main		JOB NO.: 60275749 06 04		_				
					60275749.06.01 LOCATION:		Elevation	of 1	B-8 Total Depth:		
		nd Laico	tt Ridge Drive	9	N: E:				·		
	town, Ct CONTRAC	TOR ·			ENC/CEO:		BEGUN:		12'		
	RIG:		NEI	3	DRILLER: M. McGuire		FINISHE		Aug. 28, 2013		
		ı	Mobile B-53		Mike St. John				Aug. 28, 2013		
Hole S	oize :		Weather:			Ground Wa	ater (Dept	ın) :			
	~6"				Partly cloudy, ~80		Not Encountered				
Drilling	Method :							ck (Depth):			
		3.25" H	SA		Not Used		Not	t Enco	untered		
			Blow Count	Sample	_	•					
Depti		N	(per 6 in.)	Recovery	SAMPLE			(	STRATIGRAPHIC		
(ft)	Type/No.	Value	or Drilling Rate(min/ft)	or REC & RQD	DESCRIPTION		ASTM Class.		DESCRIPTION		
			1(11111/11)				Ciuos.				
					3.5" Pavement 5" Base Gravel. Brown fine to coarse SAN	ID with some					
	SS-1	63	17-30-33-32	21"	fine to coarse gravel, little silt with cobbles						
	1'-3'										
5											
	00.0	. 50	04 50/48	0"	Brown fine to coarse SAND with some fine	to coarse			0121101		
	SS-2 5'-5'10"	>50	21-50/4"	6"	gravel, little silt with cobbles, dry.			,	Sand with Gravel		
	0 0 10										
10											
	SS-3	47	8-23-24-44	15"	Brown fine to coarse SAND with some fine gravel, little silt, moist.	to coarse					
	10'-12'	47	0-23-24-44	15	graver, fittle siit, moist.						
								12'	EOD @ 40!		
									EOB @ 12'		
					1						
15_											
					1						
					1						
	<u> </u>										
	LE TYPES: SPLIT SPO				SPT Resistance				Approve/Date		
	SPLIT SPOO PLIT SPOO			Cohesionless	esionless Density: 0-4 Very Loose Cohesive Consistency: 0-2 Very Soft						
	HELBY TUB			5-9 Lo		3-4 Soft, 5-8 M/Sti	-				
	CK CORE	mos		30-49 I		16-30 V-Stiff, 31					



PROJE	CT: Dur	ham W	ater Main					SHE	ET	BORING NO.		
	OCATION:		atel Midili		JOB NO.: <b>60275749</b>	06.04			of 1	В 0		
Davita	17 and Tala	a# D:da	- Daire		LOCATION:	.06.01		Elevation	of 1 on:	B-9 Total Depth:		
	17 and Talco	ott Klage	e Drive		N:	E:				·		
	own, Ct CONTRAC	TOR ·			ENG/GEO :			BEGUN	J·	12'		
DRILL		TOIX.	NEI	3	DRILLER:	M. McGuire		FINISH		Aug. 21, 2013		
Hole Si		ľ	Mobile B-53		DRILLER .	Orin Cone				Aug. 21, 2013		
Hole Si	ze :		Weather:				Ground Wa	ater (Dep	) (n)			
	~6"				Sunny, bright, ~75  Drilling Fluid: Top of Roc				8.5'			
Drilling	Method :							ck (Depth):				
		3.25" H	SA		Not U	sed		No	t Enco	untered		
l			Blow Count	Sample								
Depth	Sample	N	(per 6 in.)	Recovery	DE	SAMPLE		A CITTA A		STRATIGRAPHIC		
(ft)	Type/No.	Value	or Drilling Rate(min/ft)	or REC & RQD	DE	SCRIPTION		ASTM Class.		DESCRIPTION		
			1(11111/11)	45				C14055.				
					12" Asphlat Pavement Reddish brown fine to		fine to coarse					
	SS-1	44	30-33-11-11	12"	gravel, trace silt, dry.	mediam SAND with	line to coarse					
	1'-3'									Canad & Canada		
_										Sand & Gravel		
5									5'			
	SS-2 5'-7'	6	5-3-3-5	11"	Top 5": reddish brown Bottom 6": gray SILT a							
	5-7				moist.	nd Sand mixture, tr	race gravei,			Silt & Sand		
									9'			
10												
					Reddish brown fine to	medium SAND with	fine to coarse					
_	SS-3 10'-12'	42	30-22-20-17	10"	grave, trace silt, wet.					Sand & Gravel		
	10-12								12'			
										EOB @ 12'		
15												
-												
SAMPL	E TYPES:	trac	e 0 to 5%			SPT Resistance				Approve/Date		
S3=3" \$	SPLIT SPO	ON few	5 to 10%		SPT Resistance							
	LIT SPOOI		e 15 to 25%	Cohesionless	Density: 0-4 Very Loose	Co	ohesive Consistency:	0-2 Very	Soft			
	ELBY TUB	E som	ne 30 to 45%	5-9 Lo	ose 10-29 Med. Dense		3-4 Soft, 5-8 M/Sti	ff, 9-15 Sti	ff			
R=ROC	CK CORE	mos	stly >50%	30-49 1	30-49 Dense 50+ Very Dense 16-30 V-Stiff, 31+ Hard							



PROJE	CT: _							SHE	ET I	BORING NO.
	OCATION:		ater Main		JOB NO.:			_		
					LOCATION:	0275749.06.01		1 Elevation	of 1	B-10 Total Depth:
Route 1					N:	E:		Licvatic	)II.	Total Deptil.
Middleto		TOD						DEOUN		11'-3"
	CONTRAC	TOR:	NEI	В	ENG/GEO:	M. McGuire		BEGUN		Aug. 21, 2013
DRILL	RIG :	ı	Mobile B-53		DRILLER:	Orin Cone		FINISH	ED:	Aug. 21, 2013
Hole Siz	ze :		Weather:				Ground Wa	ater (Dep	oth):	
	~6"				Sunny, bright	, ~77			10.5	5'
Drilling	Method :		ļ.		Drilling Fluid :	•	Top of Roc	k (Depth	1):	
		3.25" H	ς Λ			Not Used		Ne	ot Encou	intered
	1	3.23 11	Blow Count	Sample		Not Osea		INC	LIICOL	intered
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE				STRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM		DESCRIPTION
			Rate(min/ft)	RQD				Class.		
					12" Pavemen	t				
	00.4	-00		0.11		medium SAND and fine to co	arse Gravel,			
_	SS-1 1'-3'	23	41-13-10-17	8"	trace silt, dry.					
	1 0				]					
<b> </b>					1					
5					D. dallah harra		· · · · · · · · · · · · · · · · · · ·			
	SS-2	64	32-30-34-52	12"	GRAVEL, trac	n fine to medium SAND and to silt, dry.	rine to coarse			Sand & Gravel
	5'-7'				1	•				
_					-					
					1					
10					Ton 6": Doddi	iah braum fina ta madium CAA	ID and fine to			
	SS-3	>50	10-33-50/3"	12"		ish brown fine to medium SAN ′EL, trace silt, wet.	ND and line to			
	10'-11'3"					llowish brown fine to medium	SAND and fine		11'3"	
<u> </u>					to coarse GR	AVEL, trace silt, wet.			11.3	EOB @ 11'-3"
					]					200 @ 11 0
-					-					
15										
					1					
⊢					-					
-					-					
		<u> </u>								
	E TYPES:					SPT Resistance				Approve/Date
	SPLIT SPO				<b>.</b>			0.5		
	LIT SPOO ELBY TUB			Cohesionless		Very Loose Co Med. Dense	hesive Consistency:	-		
	K CORE		stly >50%	5-9 Lo 30-49 l		ery Dense	3-4 Soft, 5-8 M/Sti 16-30 V-Stiff, 31		11	



DDO IE	OT .							CLIE	1	DODING NO
PROJE	Dui		ater Main					SHE	:=1	BORING NO.
SITE L	OCATION:				JOB NO.:	60275749.06.01		1	of 1	B-11
Route 1	7				LOCATION:			Elevation		otal Depth:
					N:	E:				401.01
Middleto	CONTRAC	TOP :			ENG/GEO:			BEGUN	<u> </u>	10'-3"
		TOIX.	NEI	3		M. McGuire	9			Aug. 27, 2013
DRILL		I	Mobile B-53		DRILLER:	Mike St. Joh		FINISH		Aug. 27, 2013
Hole Siz	ze:		Weather:				Ground Wa	iter (Dep	oth):	
	~6"				Partly cloud	lv ~80		No	ot Encou	ntered
Drilling	Method :		<u> </u>		Drilling Fluid :		Top of Roc			
	T	3.25" H				Not Used			8.5'	
Donth	Comple	N	Blow Count	Sample		CAMPLE				TDATIODADIJIO
Depth (ft)	Sample Type/No.	Value	(per 6 in.) or Drilling	Recovery or REC &		SAMPLE DESCRIPTION		ASTM		TRATIGRAPHIC DESCRIPTION
(11)	турелчо.	value	Rate(min/ft)	RQD		DESCRIPTION		Class.		DESCRIPTION
			Rate(mm/tt)	RQD				Ciass.		
					5" Topsoil.					
	SS-1	49	20-29-20-24	14"		own fine to medium SAND with	n gravel, little silt,			
	1'-3'	49	20-29-20-24	14	dry.					
	. 0									SAND & GRAVEL
_										
5										
	00.0	00	00 00 00 44	18"		own fine to coarse SAND and	GRAVEL, little silt,			
l ⊢	SS-2 5'-7'	66	20-30-36-44	10	dry.					
	3-7									
						0 FL ( 40)				
<u> </u>					Grinding fro	om 8.5' to 10'.			8'6"	
10										Washanad Daala
10 +					Empty spoo	on, no recovery.			10'6"	Weathered Rock
	SS-3	>50	50/3"	0		,				
	10'-12'									EOB @ 10'3"
_										
_										
15										
-										
<u> </u>					-					
CALAD:			0			ODT Desist				A
	E TYPES:	ON frac				SPT Resistance	!			Approve/Date
	SPLIT SPO			G 1	D '' "	[]		0.2.11	0.0	$\dashv$
	LIT SPOO ELBY TUB			Cohesionless		· ·	Cohesive Consistency:	0-2 Very		
	ELDT TUB	son mos		5-9 Lo		29 Med. Dense	3-4 Soft, 5-8 M/Sti 16-30 V-Stiff 31		11	



PROJE	CT: Dur	ham W	ater Main					SHE	ET	BORING NO.
SITE L	OCATION:		ator mani		JOB NO.:	60275749.06.01		1	of 1	B-12
2292 R	nute 17				LOCATION:	00270740.00.01		Elevation		otal Depth:
Middleto					N:	E:				12'
	CONTRAC	TOR:	NEI		ENG/GEO :	M. McGuire	`	BEGUN	J:	
DRILL	RIG :			5	DRILLER :			FINISH	ED:	Aug. 21, 2013
Hole Siz	7e ·		Mobile B-53 Weather:			Orin Cone	Ground Wa	l iter (Der	oth) ·	Aug. 21, 2013
							0.04.14.11			
Drilling	~6" Method :		<u> </u>		Partly cloud Drilling Fluid:		Top of Roc		ot Encour	ntered
Dillilling	wicthou .				Drilling Flata.		Top of Noc			
	1	3.25" H				Not Used		No	t Encour	ntered
Depth	Sample	N	Blow Count (per 6 in.)	Sample Recovery		SAMPLE			8.	TRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM		DESCRIPTION
(**)	, , , , , , , ,		Rate(min/ft)	RQD				Class.		
					C!! A such sit !	Davisant				
					6" Asphalt I Brown fine	ravement. to medium SAND and fine to c	oarse GRAVEL,			
	SS-1	44	29-27-17-17	12"	dry. FILL.					
	1'-3'									
-										Sand & Gravel
5										
	SS-2	37	9-16-21-23	15"		own fine to medium SAND and race silt, dry. TILL.	I fine to coarse			
	5'-7'	01	0 10 21 20	10	OI O (V LL, t	rado din, ary. Tibe.			6'6"	
										Glacial Till
										Glaciai IIII
10					Daddiah ha	anna fina ta madiina CAND and	I 6: t			
	SS-3	76	40-36-40-50	19"		own fine to medium SAND and race silt, top wet, bottom moist				
	10'-12'								12'	
										EOB @ 12'
										@
l										
15										
SAMPI	<u> </u> E TYPES:	trac	e 0 to 5%			SPT Resistance		<u> </u>		Approve/Date
	SPLIT SPO					C. I Resistance				, tpp:010/Date
	LIT SPOO			Cohesionless	Density: 0-4	Very Loose C	Cohesive Consistency:	0-2 Very	Soft	1
ST=SH	ELBY TUB	SE son	ne 30 to 45%	5-9 Lo	ose 10-	29 Med. Dense	3-4 Soft, 5-8 M/Sti	ff, 9-15 Sti	ff	
R=ROC	K CORE	mo	stly >50%	30-49 1	Dense 50+	- Very Dense	16-30 V-Stiff, 31	+ Hard		



I										
PROJE	Dui		ater Main					SHE	ET	BORING NO.
SITE L	OCATION:				JOB NO.:	60275749.06.01		1	of 1	B-13
2345 Ro	nute 17				LOCATION:			Elevation		otal Depth:
					N:	E:				441.0"
Middleto	CONTRAC	TOR ·			ENG/GEO :			BEGUN	J·	11'-3"
DRILL			NEI	В	DRILLER:	M. McGuire	9			Aug. 21, 2013
		ľ	Mobile B-53		DRILLER .	Orin Cone		FINISH		Aug. 21, 2013
Hole Siz	ze:		Weather:				Ground Wa	ater (Dep	oth):	
	~6"				Sunny, brig	ht, ~80		No	t Encour	ntered
Drilling I	Method:		•		Drilling Fluid :		Top of Roo	k (Depth	):	
		3.25" H	C A			Not Used		Nic	t Encour	atorod
	1	3.20 П	Blow Count	Sample		Not Oseu		INC	I Encour	itereu
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE			S	TRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM		DESCRIPTION
	71.		Rate(min/ft)	RQD				Class.		
<u> </u>						Pavement; 6" Concrete Road E to medium SAND, some fine g				
	SS-1	26	18-10-16-6	15"	dry.	to mediam SAND, some line g	raver, trace sitt,			
	1'-3'				1   1					
<u>-</u>					-					
					1					
5					Brown fine	to medium SAND with some fire	ne to coarse			
	SS-2	42	14-14-38-28		gravel, trac		ne to course			Gravelly Sand
	5'-7'				1					
-					-					
					1					
<u> </u>					-					
10					]					
	CC 2	>50	04 40 50/01	14"		to medium SAND with some fire	ne to coarse			
<u> </u>	SS-3 10'-12'	>50	24-46-50/3"	14	gravei, trac	e silt, moist.			11'3"	
	10 12				]					EOB @ 11'-3"
<u> </u>					-					
					]					
15										
'3+					1					
					]					
<del> </del>					1					
					]					
					1					
	E TYPES:	trac	e 0 to 5%			SPT Resistance				Approve/Date
	SPLIT SPO		5 to 10%			ı				_
	LIT SPOO		e 15 to 25%	Cohesionless	Density: 0-4	Very Loose C	Cohesive Consistency:	0-2 Very	Soft	
	ELBY TUB			5-9 Lo		29 Med. Dense	3-4 Soft, 5-8 M/St		ff	
IR=ROC	K CORF	mos	stlv >50%	30-491	Dense 504	- Very Dense	16-30 V-Stiff 31	+ Hard		1



PROJE	CT: Dur	ham W	ater Main					I	SHE	ET	BORING NO.	
	OCATION:		atel Midili		JOB NO.:	20275740 06 04			4	of 1	D 14A	
					LOCATION:	60275749.06.01			1 Elevatio	of 1 n:	B-14A Total Depth:	
	St and Rout	e 1/			N:	E:		ľ			·	
	own, Ct CONTRAC	TOR ·			ENG/GEO:				BEGUN	l·	12'	
DRILL		TOIX.	NEI	В	DRILLER:	M. McGuii	re		FINISH		Aug. 26, 2013	
		ı	Mobile B-53		DRILLER .	Mike St. Jo					Aug. 26, 2013	
Hole S	ze :		Weather:				Groui	nd Wat	er (Dep	th):		
	~6"				Partly cloudy	, ~70			Not Encountered			
Drilling	Method:				Drilling Fluid :		Top o	of Rock	ck (Depth):			
		3.25" H	SA			Not Used			No	t Enco	untered	
			Blow Count	Sample								
Depth		N	(per 6 in.)	Recovery		SAMPLE				,	STRATIGRAPHIC	
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION			ASTM		DESCRIPTION	
	1		Rate(min/ft)	RQD					Class.			
					7" Pavement	, 10" Concrete.						
	00.4	25	40.47.05	4.4"	Reddish brov	vn fine to medium SAND an	d fine to coal	rse				
-	SS-1 1'-3'	25	13-17-8-5	14"	GRAVEL, tra	ce siit, ary.						
	1'-3'				]							
					-							
5					D. 4" 1 1		16					
	SS-2	49	9-18-31-35	18"	Reddish brov GRAVEL, so	vn fine to medium SAND an me silt. drv.	id fine to coai	rse				
	5'-7'		0 10 01 00		]							
											Sand & Gravel	
					1							
-					-							
10					]							
	SS-3	67	14-36-31-47	20"		ine to medium SAND and filme silt, moist.	ne to coarse					
<del> </del>	10'-12'	01	14-30-31-47	20	GRAVEL, SO	ine siit, moist.				401		
	1									12'	EOD @ 40'	
											EOB @ 12'	
					1							
-	+											
15					]							
-	+				1							
					1							
-	1											
SAMPL	E TYPES:	trac	e 0 to 5%			SPT Resistanc	е				Approve/Date	
S3=3"	SPLIT SPO	ON few	5 to 10%		SPT Resistance							
	LIT SPOO		e 15 to 25%	Cohesionless	ohesionless Density: 0-4 Very Loose Cohesive Consistency: 0-2 Very Soft							
	ELBY TUB	E som	e 30 to 45%	5-9 Lo	oose 10-29	Med. Dense	3-4 Soft, 5-	-8 M/Stiff	, 9-15 Stif	ff		
R=RO	CK CORE	mos	stly >50%	30-49 1	30-49 Dense 50+ Very Dense 16-30 V-Stiff, 31+ Hard							



PROJE	CT: <b>Dur</b>	ham Wa	ater Main					SHE	ET	BORING NO.
SITE L	OCATION:				JOB NO.:	60275749.06.01		1	of 1	B-15
Route 1	7				LOCATION:			Elevation		otal Depth:
Middleto					N:	E:				12'
	CONTRAC	TOR:	NE	D.	ENG/GEO:	M. MaQuin		BEGUN	l:	
DRILL			NE	В	DRILLER:	M. McGuire		FINISH		Aug. 22, 2013
Hole Siz		<u> </u>	Mobile B-53 Weather :		DIVILLEIV.	Orin Cone	Ground Wa			Aug. 22, 2013
Hole Siz	∠e .		vveamer.				Ground wa	ater (Deb	ouri) .	
	~6"				Partly cloudy	v, ~70	-		t Encour	ntered
Drilling I	Method :				Drilling Fluid :		Top of Roc	k (Depth	):	
		3.25" H	SA			Not Used		No	t Encour	ntered
			Blow Count	Sample			•			
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE				TRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM		DESCRIPTION
			Rate(min/ft)	RQD				Class.		
					6" Pavemen					
	SS-1	30	68-20-10-3	14"	Reddish brown trace silt, dry	wn fine to medium SAND, so	me fine gravel,			
	0.5'-2.5'		00 20 10 0	<u> </u>	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
5					Reddish bro	wn fine to medium SAND, so	me fine GRAVEL.			
	SS-2	30	7-17-13-20	16"	dry.	,	,			
	5'-7'									Sand & Gravel
										Sand & Graver
<u> </u>										
40										
10					Reddish bro	wn SILTY fine SAND, some f	ine gravel moist			
	SS-3	21	8-10-11-12				g,			
	10'-12'								12'	
										EOB @ 12'
<u> </u>										
45										
15										
<u> </u>										
SVMDI	 E TYPES:	 	0 - 50'	-		CDT Dogistance	`			Approve/Data
	E TTPES. SPLIT SPO	ON few				SPT Resistance	•			Approve/Date
	LIT SPOO			Cohesionless	Density: 0-4	Very Loose (	Cohesive Consistency:	0-2 Very	Soft	1
	ELBY TUB			5-9 Lo		9 Med. Dense	3-4 Soft, 5-8 M/Sti	-		
	K CORE	mos		30-491		Very Dense	16-30 V-Stiff 31			



PROJE	CT: Dur	ham Wa	ater Main					SHE	ET	BORING NO.
SITE L	OCATION:				JO	B NO.: <b>60275749.06.01</b>		1	of 1	B-16
Route 1	7 at Little L	ane & C	ak Ter		LO	CATION:		Elevation		otal Depth:
Middleto			ar ror.		N:	E:				10'-2"
	CONTRAC	TOR:	NE		ΕN	G/GEO : M. McGuire		BEGUN	l:	Aug. 23, 2013
DRILL	RIG :				DR	ILLED:		FINISH	ED:	
Hole Siz		ľ	Mobile B-53 Weather :			Orin Cone	Ground Wa			Aug. 23, 2013
Drilling I	~6" Method :				Dril	Cloudy, ~72 ling Fluid :	Top of Rock		t Encour	itered
Dinning i					J		Top or reor			
	1	3.25" H	SA Blow Count	G1-		Not Used	<u> </u>	No	t Encour	itered
Depth	Sample	N	(per 6 in.)	Sample Recovery		SAMPLE			S	TRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM		DESCRIPTION
	"		Rate(min/ft)	RQD				Class.		
						6" Pavement, 3" Fill.				
						Reddish brown fine to medium SAND, some f	ine gravel,			
_	SS-1	72	6-35-37-27	12"		trace silt, dry.				
	1'-3'									
<u> </u>										
5										Gravelly Sand
	SS-2	9	2-3-6-41	0"		Reddish brown fine to medium SAND, some f dry.	ine GRAVEL,			
	5'-7'					•				
l										
10						Reddish brown SILTY fine SAND, some fine of	ravel moist		10'2"	
	SS-3	>50	50/2"	0"		reading brown oil in time of the gome time g	jravor, moist.			
	10'-10'2"									EOB @ 10'-2"
-										
15										
'3+										
_										
SAMPL	E TYPES:	trac	e 0 to 5%			SPT Resistance				Approve/Date
	SPLIT SPO		5 to 10%							
	LIT SPOO			Cohesionless		<del></del>	ive Consistency:	0-2 Very	Soft	
	ELBY TUB	E som	ie 30 to 45%	5-9 Lo	ose		4 Soft, 5-8 M/Stif	f, 9-15 Sti	ff	



PROJ	ECT: Dur	ham W	ater Main				SHE	ET	BORING NO.
SITE	LOCATION:		ater Mairi		JOB NO.: 60275740.06.04			of 1	B-17
470 D	outo 17				60275749.06.01 LOCATION:		Elevatio	of 1 n: T	otal Depth:
	oute 17				N: E:				·
	town, Ct CONTRAC	TOR ·			ENC/CEO:		BEGUN		10'-3"
	RIG:		NEI	3	INI. MCGuile	<del>=</del>	FINISH		Aug. 27, 2013
Hole S			Mobile B-53 Weather :		Mike St. Joh	nn Ground Wa			Aug. 27, 2013
noie 3	oize .		weather.			Ground wa	itei (Dep	ui).	
	~6"				Partly cloudy, ~80			t Encou	ntered
Drilling	Method :				Drilling Fluid :	Top of Roc	k (Depth	):	
		3.25" H	SA		Not Used			9.5'	
l			Blow Count	Sample					
Depth		N	(per 6 in.)	Recovery	SAMPLE				TRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling Rate(min/ft)	or REC & RQD	DESCRIPTION		ASTM Class.		DESCRIPTION
			Kate(IIIII/It)	KQD			Class.		
					8" Pavement, 12" Concrete.				
-									
-	SS-1 2'-4'	58	11-34-24-19	15"	Brown fine to medium SAND, some fine to	o coarse gravel.			
	2-4								
_ [									Oracially Canad
5									Gravelly Sand
	SS-2	>50	50/3"	0"	Empty spoon.				
	5'-7'								
-									
-									
40								9'6"	
10									Weathered Rock
	SS-3	>50	50/3"	0"	Empty spoon.			10'3"	
	10'-12'								EOB @ 10'3"
-									
-									
45									
15									
	+								
	1								
CAMP	LE TYPEO:	<u> </u> 	- 0: 50		CDT Desistence				Approve/Data
	LE TYPES: SPLIT SPO				SPT Resistance	:			Approve/Date
	PLIT SPOO			Cohesionless	Density: 0-4 Very Loose	Cohesive Consistency:	0-2 Veru	Soft	+
	HELBY TUB						-		
	CK CORE	mos			5-9 Loose 10-29 Med. Dense 3-4 Soft, 5-8 M/Stiff, 9-15 Stiff 30-49 Dense 50+ Very Dense 16-30 V-Stiff, 31+ Hard				



PROJI	ECT : Dur	ham Wa	ater Main					SHE	EET	BORING NO.		
SITE	LOCATION:				JOB NO.:	60275749.06.01		1	of 1	B-18		
/37 D	oute 17				LOCATION:	VV=1 V1 TV.VV.V I		Elevation		Total Depth:		
					N:	E:				·		
Durhai DRILL	CONTRAC	TOR:	h		ENG/GEO :			BEGUN	<b>1</b> :	12'		
	RIG:		NEI	3	DRILLER:	M. McGui		FINISH		Aug. 22, 2013		
Hole S		·	Mobile B-53 Weather :		DIVILLEIV.	Orin Con	e Ground Wa			Aug. 22, 2013		
l lole 3			vveatilei .				Ground We		ŕ			
D.:III	~6"				Light Rain	, ~65	T(D	Not Encountered				
Drilling	Method :							к (Deptn	k (Depth) :			
	_	3.25" H	SA		Not Used			No	t Enco	untered		
			Blow Count	Sample								
Depth		N Value	(per 6 in.)	Recovery		SAMPLE DESCRIPTION		ACTM	,	STRATIGRAPHIC DESCRIPTION		
(ft)	Type/No.	value	or Drilling Rate(min/ft)	or REC & RQD		DESCRIPTION		ASTM Class.		DESCRIPTION		
	1		1440(11111/11)					Ciuss.				
						nt; 8" Concrete. own fine to medium SAND wi	th fine to coorse					
	SS-1	103	38-50-53-19	6"		own fine to medium SAND wi ace silt, dry.	ui iiile to coarse					
	1'-3'				1	-						
-	1-3				-							
5										Sand with Gravel		
~+	5 06 20 50 40 24 4"				l I		th fine to coarse			Jana mai Jiavoi		
	SS-2 96 28-56-40-24 4" Reddish brown fine to medium SAND with fine to coarse GRAVEL, trace silt, wet.											
	5'-7'											
-									8.5'			
10										Silty Sand		
"								441	Only Carlo			
	SS-3 10'-12'	36	8-15-21-23	16"		lish brown SILTY SAND with brown fine to medium SAND,			11'	royally 9 Cilty Cand		
	10-12				some silt, w				12'	ravelly & Silty Sand		
										EOB @ 12'		
15												
- +												
					]							
-												
SAMP	<u> </u>	trac	e 0 to 5%		1 1	SPT Resistanc	e	1	<u>I</u>	Approve/Date		
	SPLIT SPO					2	-					
	PLIT SPOO			Cohesionless	Density: 0-4	Very Loose	Cohesive Consistency:	0-2 Very	Soft			
ST=SH	HELBY TUB	E som		5-9 Lo		9 Med. Dense	3-4 Soft, 5-8 M/Sti	-				
R=RO	CK CORE	mos	stly >50%	30-49 1	Dense 50+	Very Dense	16-30 V-Stiff, 31	+ Hard				



PROJE	CT: <b>D</b> ur	ham Wa	ater Main					SHE	ET	BORING NO.		
SITE L	OCATION:				JOB NO.: <b>60275749.06.01</b>			1 of 1		B-19		
417 Rou	ıto 17				LOCATION:					otal Depth:		
					N:	E:				441.011		
Durham	CONTRAC	TOR ·			ENG/GEO:	ENC/CEO:		BEGUN	]: 	11'-3"		
		TOIX.	NEI	В		M. McGuire				Aug. 27, 2013		
DRILL		I	Mobile B-53		DRILLER:	Mike St. Johr		FINISH		Aug. 27, 2013		
Hole Siz	ze :		Weather:				Ground Wa	ater (Dep	oth):			
	~6"				Overcast	t, ~75		9 ft				
Drilling I	Method :		•		Drilling Fluid		Top of Roo	k (Depth	):			
		3.25" H	SA			Not Used			8 ft			
		0.20 11	Blow Count	Sample		1101 0000			010			
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE			S	TRATIGRAPHIC		
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM	1	DESCRIPTION		
			Rate(min/ft)	RQD				Class.				
					7" Paveme	nt; 10" Concrete.						
						ddish brown fine to medium SAN	ND and fine to					
	SS-1	52	19-20-32-29	16"	coarse GR	AVEL, dry.			;	Sand & Gravel		
	1'-3'				Bottom 8":	brown fine to medium SAND.			3'			
					-							
<u> </u>					1							
5												
					1							
<u> </u>	SS-2 5'-7'	31	20-15-16-20	12"	Brown SIL	T, some fine to coarse sand, few	gravel.			Sandy Silt		
	5-7											
					1				8'			
<u> </u>									0			
10					]				10	/a athana d Daala		
10					1				V	/eathered Rock		
	SS-3	>50	20-54-50/3"	14"	Weathered	I rock fragments.			11'3"			
	10'-11'3"									EOB @ 11'3"		
<u> </u>					-					LOB @ 113		
					1							
15												
					1							
					1							
-					1 1							
SAMPL	E TYPES:	trac	e 0 to 5%			SPT Resistance				Approve/Date		
S3=3" S	PLIT SPO	ON few	5 to 10%									
SS=SPI	IT SPOO	N little	e 15 to 25%	Cohesionless	s Density: 0-	4 Very Loose Co	hesive Consistency:	0-2 Very	Soft			
ST=SH	ELBY TUB	E som	ne 30 to 45%	5-9 Lo	oose 10-	-29 Med. Dense	3-4 Soft, 5-8 M/St	iff, 9-15 Sti	ff			
R=ROC	K CORF	mos	stlv >50%	30-491	Dense 50-	+ Very Dense	16-30 V-Stiff 3	l+ Hard		1		



PROJE	CT: Dur	ham Wa	ater Main				SHE	ET	BORING NO.	
SITE L	OCATION:		ator mani		JOB NO.: 60275749 06 04			of 1	B-20	
					60275749.06.01 LOCATION:		Elevatio	of 1 n:	Total Depth:	
Route 1	1								·	
Durham, CT									17'	
	CONTRAC	TOR:	NEI	3	ENG/GEO : M. McGuire		BEGUN		Aug. 27, 2013	
DRILL	RIG :	-	Mobile B-53		DRILLER: Mike St. John		FINISHI	ED:	Aug. 27, 2013	
Hole Si	ze :		Weather:			Ground Wa	ter (Dep	th):	-	
	~6"				Cloudy, ~70			5.5	5'	
Drillina	Method :				Drilling Fluid :	Top of Rock	k (Depth		,	
		3.25" H			Not Used		No	t Enco	untered	
Donth	Comple	NI.	Blow Count	Sample	CAMPLE				CTDATIODADIUC	
Depth (ft)	Sample Type/No.	N Value	(per 6 in.) or Drilling	Recovery or REC &	SAMPLE DESCRIPTION		ASTM		STRATIGRAPHIC DESCRIPTION	
(11)	i ype/ivo.	value	Rate(min/ft)	RQD	DESCRIPTION		Class.		DEGUNI HON	
			(	-122						
					5" Pavement; 5" Gravel base; 5" Concrete					
	SS-1	77	32-30-47-50	12"	Reddish brown fine to medium SAND and fi GRAVEL, dry.	ne to coarse				
	1.5'-3.5'									
5					Reddish brown fine SAND, little fine to coan	as graval little			Sand & Gravel	
	SS-2	24	4-12-12-21	8"	silt, moist.	se gravei, little				
	5'-7'									
<u> </u>										
								8.5'		
-										
10										
	00.0	00	0.40.40.40	40"	De diffeh have Oll Teases See seed and				C:It	
F	SS-3 10'-12'	22	8-10-12-13	18"	Reddish brown SILT, some fine sand, wet.			Silt		
	10 12									
								13'		
-										
15									Gravelly Sand	
' +					Gray fine to coarse SAND, some fine to coa	rse gravel, little			Cravelly Dalla	
<u> </u>	SS-4	26	10-13-13-14	7"	silt, wet.	= '				
	15'-17'							17'		
									EOB @ 17'	
0.4.1.7										
	E TYPES:				SPT Resistance				Approve/Date	
	SPLIT SPO								_	
	LIT SPOO			Cohesionless		esive Consistency:	-			
	ELBY TUB			5-9 Lo		3-4 Soft, 5-8 M/Stif		f		
R=ROCK CORE mostly >50%			stly >50%	30-49 1	Dense 50+ Very Dense	16-30 V-Stiff, 31-	+ Hard			



PROJE	CT ·							SHE	ET	BORING NO.	
	Dui		ater Main		LIOD NO			3111	'	BOINING NO.	
SIIE L	OCATION:				JOB NO.: 60275749.06.01			1	of 1	B-21	
349 Roi	ute 17				LOCATION:		Elevation	on: T	otal Depth:		
Middleto	own Ct				N: E:					12'	
	CONTRAC	TOR:	NEI	D	ENG/GE	O: M. McGuire		BEGUN	1:	Aug. 22, 2013	
DRILL	RIG :			<b>D</b>	DRILLEF	) .		FINISH	ED:		
Hole Siz			Mobile B-53 Weather :			Orin Cone	Ground Wa			Aug. 22, 2013	
noie 312	<u>ze</u> .		vveatilei .				Ground Wa	ater (Det	oui).		
	~6"					Rain, ~75		Not Encountered			
Drilling	Method :				Drilling F	luid :	Top of Roc	k (Depth	1):		
		3.25" H	SA			Not Used		No	t Encou	ntered	
			Blow Count	Sample							
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE			S	TRATIGRAPHIC	
(ft)				ASTM		DESCRIPTION					
			Rate(min/ft)	RQD				Class.			
					3" Pav	vement.					
					1 1	sh brown fine to medium SAND, some					
<u> </u>	SS-1 0.5'-2.5'	18	16-12-6-6	10"	trace	trace silt, dry.					
	0.5-2.5										
					1						
<u>-</u>											
5											
	00.0	0.7	0.40.05.00	40"	]						
<u>-</u>	SS-2 5'-7'	37	6-12-25-23	18"	Redai	sh brown fine SAND, some fine gravel	, trace siit, dry.				
	3-1									Sand with Gravel	
					1						
					]						
10											
'0 +					Reddi	sh brown fine to medium SAND with fi	ne to medium				
	SS-3	46	11-21-25-58		gravel	, trace silt, moist.					
	10'-12'								12'		
					1					EOB @ 12'	
_											
l					1						
15											
					1						
<u>-</u>					-						
<b> </b>					1						
	E TYPES:	trac	e 0 to 5%			SPT Resistance				Approve/Date	
	SPLIT SPO		5 to 10%							_	
	LIT SPOO			Cohesionless			esive Consistency:	0-2 Very			
	ELBY TUB			5-9 Lo			3-4 Soft, 5-8 M/Sti		ff		
18=800	K CORF	mos	stlv >50%	30-49	Dense	50+ Very Dense	16-30 V-Stiff 31	+ Hard		1	



PROJI	ECT: Dur	hom W	ater Main				SHE	ET	BORING NO.		
SITE	of 1										
	oute 17				JOB NO.: <b>60275749.06.01</b> LOCATION:		1 Elevation	of 1 on:	B-21A Total Depth:		
					N: E:				11'-9"		
Durha DRILL	CONTRAC	TOR:	NICI		ENG/GEO: M. McCuire		BEGUN	]: 			
	RIG:		NEI	3	INDILLED :		FINISH		Aug. 27, 2013		
Hole S		ſ	Mobile B-53 Weather :		Mike St. Joh	n Ground Wa			Aug. 27, 2013		
l loic c			vvcatiici .			Ground We		тег (Берті) .			
Daillin	~6"				Sunny, ~75  Drilling Fluid :	Tan of Dan		t Encou	ıntered		
Drilling	Method :				Drilling Fluid :	Top of Roc	к (рертп	):			
	1	3.25" H		1	Not Used			11'-6	3"		
Donth	Cample	NI NI	Blow Count	Sample	CAMPLE				NTDATIODADI IIO		
Depth (ft)	Sample Type/No.	N Value	(per 6 in.) or Drilling	Recovery or REC &	SAMPLE DESCRIPTION		ASTM		STRATIGRAPHIC DESCRIPTION		
(11)	i ype/ivo.	value	Rate(min/ft)	RQD	DESCRIPTION		Class.		DEGOTAL FION		
				<u> </u>							
	-				5" Pavement; 4" Base Gravel.  Reddish brown fine to medium SAND and	I fine to coarse					
	SS-1	13	22-8-5-7	8"	GRAVEL, dry.	inie io coalse					
	1'-3'										
<b> </b>											
5											
	SS-2 5'-7'	3	2-1-2-12	20"	Brown fine to medium SAND with little silt,	, moist.			Sand & Gravel		
	5-7										
-					-						
10											
10+											
	SS-3	59	15-28-31-50/3"	20"	Brown fine to medium SAND, little silt, mo	ist.		11'6"			
	10'-11'9"				Bottom 3": Weathered Rock.			11'9" Weathered Rock			
					1				EOB @ 11'3"		
	1										
15											
'~+					1						
					1						
	1										
SAMP	_l LE TYPES:	trac	e 0 to 5%		I I SPT Resistance	<u> </u>	<u> </u>	1	Approve/Date		
	SPLIT SPO				or i redistance	·			7.1551.0407.0410		
	PLIT SPOO			Cohesionless	Density: 0-4 Very Loose	Cohesive Consistency:	0-2 Very	Soft	7		
	HELBY TUB			5-9 Lo		3-4 Soft, 5-8 M/Sti	-				
			stly >50%	30-49 1			+ Hard				



PROJI	ECT: Dur	ham W	ater Main					SHE	EET	BORING NO.		
SITE												
	oute 17				JOB NO.: <b>60275749.06.01</b> LOCATION:			Elevation	of 1 on:	B-22 Total Depth:		
					N:	E:				·		
	town, Ct CONTRAC	TOR ·			ENG/GEO :			BEGUN	J.	11'-3"		
	RIG:		NEI	3	DRILLER:	M. McGuii		FINISH		Aug. 22, 2013		
Hole S			Mobile B-53 Weather :		DIVILLELIV.	Orin Con				Aug. 22, 2013		
noie S	iize .		weather.				Ground vv	ater (Dep	ter (Depth) :			
	~6"			P	artly Sunny, Overd	east, ~75				untered		
Drilling	Method :				Drilling Fluid :		Top of Roo	ck (Depth	1):			
		3.25" H	SA			Not Used		No	t Enco	untered		
			Blow Count	Sample								
Depth		N	(per 6 in.)	Recovery		SAMPLE		A COTTO		STRATIGRAPHIC		
(ft)	Type/No.	Value	or Drilling Rate(min/ft)	or REC & RQD		DESCRIPTION		ASTM Class.		DESCRIPTION		
	+		Nate(IIIII/II)	KQD				Ciass.				
					6" Pavement.	fine to madicas CAND -	d fine to come					
	SS-1	35	18-20-15-13	12"	GRAVEL, trace	fine to medium SAND and silt, dry.	id fine to coarse					
	0.5'-2.5'					•						
-												
5												
"+					Reddish brown	fine to medium SAND an	id fine to coarse					
	SS-2	>50	31-50/3"	6"	GRAVEL, little	silt, moist.				Sand & Gravel		
	5'-7'											
					Grinding at 8'-9	)".						
10												
10					Reddish brown	fine to medium SAND wi	th fine to coarse					
	SS-3	>50	9-16-50/3"	12"	gravel, little silt	, moist.			11'3"			
	10'-11'3"									EOB @ 11'-3"		
	1											
15					]							
15	+											
	1											
	1				1							
	+											
	Ш											
SAMP	_  LE_TYPES:	trac	e 0 to 5%		<u> </u>	SPT Resistanc		1	<u> </u>	Approve/Date		
_	SPLIT SPO					OI I INCOISIGNO	<u> </u>			/ ipprove/Date		
	PLIT SPOO			Cohesionless	Density: 0-4 Ve	ry Loose	Cohesive Consistency:	0-2 Very	Soft			
	HELBY TUB			5-9 Lo		led. Dense	3-4 Soft, 5-8 M/St					
	CK CORE	mos		30-49 1								



PROJ	ECT: Dur	hom W	ater Main				SHE	ET	BORING NO.		
SITE	of 1	D 00									
					JOB NO.: <b>60275749.06.01</b> LOCATION:		Elevation	of 1 n:	B-23  Total Depth:		
	oute 17				N: E	<u>:</u>			•		
Durha	m, C1 . CONTRAC	TOR ·			ENC/CEO:		BEGUN		12 ft		
	RIG:		NEI	3	INDILLED :		FINISHE		Aug. 23, 2013		
Hole S			Mobile B-53 Weather :		Orin (				Aug. 23, 2013		
noie s	DIZE .		vveaulei .			Ground W	rater (Depi	ter (Depth) :			
	~6"				Partly Cloudy, ~75			t Encou	intered		
Drillin	g Method :				Drilling Fluid :	Top of Ro	ck (Depth)	):			
		3.25" H	SA		Not Used		Not	t Encou	intered		
l			Blow Count	Sample							
Dept		N	(per 6 in.)	Recovery	SAMPLE		A C	5	STRATIGRAPHIC		
(ft)	Type/No.	Value	or Drilling Rate(min/ft)	or REC & RQD	DESCRIPTION		ASTM Class.		DESCRIPTION		
			Kate(IIIII/II)	KQD			Ciass.				
					6" Pavement.	S 1 5 1					
	SS-1	55	41-31-24-11	18"	Reddish brown fine to medium SANI GRAVEL, trace silt, dry.	and fine to coarse					
•	0.5'-2.5'										
5									Sand & Gravel		
3-					Top 3": Reddish brown fine to mediu	um SAND and fine to			Sand & Graver		
	SS-2	>50	50-50/3"	18"	coarse GRAVEL, trace silt, dry.						
	5'-7'				Bottom 4": Brown fine to medium SA coarse gravel, dry.	AND, with some fine to					
					Grinding from 7'-8'.						
								9'			
10											
10_					Brown fine to medium SAND with so	me fine to coarse					
	SS-3	30	16-14-16-26	17"	gravel, some silt.			Gravelly & Silty Sand			
	10'-12'							12'			
									EOB @ 12'		
									200 @ 12		
1.5											
15_											
SAME	LE TYPES:	trac	e 0 to 5%		   SPT Resist	ance	1		Approve/Date		
	SPLIT SPO				OF I RESISE	шис			Approverbate		
	PLIT SPOO			Cohesionless	Density: 0-4 Very Loose	Cohesive Consistency	: 0-2 Very	Soft	7		
	HELBY TUB			5-9 Lo	<u> </u>	3-4 Soft, 5-8 M/S	_				
	CK CORE	mos		30-49 1							



PROJE	CT: Dur	ham W	ater Main					SHE	ET	BORING NO.
SITE L	OCATION:				JOB NO.:	60275749.06.01		1	of 1	B-24
256 Roi	uto 17				LOCATION:	00210140.00.01		Elevation		otal Depth:
					N:	E:				10'-9"
Durham DRILL	CONTRAC	TOR:			ENG/GEO:			BEGUN	]: 	
DRILL			NEI	3	DRILLER:	M. McGuire		FINISH		Aug. 23, 2013
Hole Siz			Mobile B-53 Weather :		DIVILLETY:	Orin Cone	Ground Wa			Aug. 23, 2013
Hole Siz	ze .		vveatrier.				Ground wa	itei (Dep	)UI).	
	~6"				Partly Clou				t Encour	ntered
Drilling	Method :				Drilling Fluid : Top of Ro				):	
		3.25" H	SA		Not Used				t Encour	ntered
			Blow Count	Sample	CAMPLE					
Depth	Sample	N Value	(per 6 in.)	Recovery or REC &		SAMPLE DESCRIPTION		ASTM		TRATIGRAPHIC DESCRIPTION
(ft)	Type/No.	value	or Drilling Rate(min/ft)	RQD		DESCRIPTION		Class.	'	DESCRIPTION
			rtate(iiiii/it)	RQD				Citass.		
					6" Paveme		h			
	SS-1	28	27-17-11-9	14"	coarse gra	own fine to medium SAND with vel, dry.	n some fine to			
	0.5'-2.5'					, •				
-										Gravelly Sand
5									5'	
"+					Reddish br	own fine to coarse SAND, little	e fine to coarse			
	SS-2	31	12-18-13-55	18"	gravel, son	ne silt, moist.				
_										Sand
10										
10					Reddish br	own fine to medium SAND, littl	le fine to coarse			
	SS-3	>50	49-50/3"	11"		ne silt, moist.			10'9"	
	10'-10'9"									EOB @ 10'9"
_										
45										
15										
_										
SVIVIDI	E TYPES:	<u> </u>	0.4- 50/			CDT Desistence	`			Approve/Data
	E TYPES: SPLIT SPO					SPT Resistance	<del>;</del>			Approve/Date
	LIT SPOO			Cohesionless	Density: 0	4 Very Loose	Cohesive Consistency:	0-2 Very	Soft	1
	ELBY TUB			5-9 Lo		29 Med. Dense	3-4 Soft, 5-8 M/Sti	-		
	K CORE	mos		30-49 I		+ Very Dense	16-30 V-Stiff, 31			



PROJE	CT: <b>D</b> ui	ham W	ater Main					SHE	ET	BORING NO.
SITE L	OCATION:				JO	B NO.: <b>60275749.06.01</b>		1	of 1	B-25
Davita 4	7 0 Davida	00			LO	CATION:		Elevation		otal Depth:
	7 & Route	68			N:	E:				
Middleto		TOD :						DECLIN		8'
	CONTRAC	TOR:	NEI	В		G/GEO: M. McGuire		BEGUN		Aug. 23, 2013
DRILL	RIG :	1	Mobile B-53		DR	ILLER: Orin Cone		FINISH	ED:	Aug. 23, 2013
Hole Siz	ze :		Weather:				Ground Wa	ater (Dep	oth):	
	~6"				-	Partly Cloudy, ~75		Nc	t Encou	ntered
Drillina	Method :					ling Fluid :	Top of Roo			ntered
		3.25" H	T .	l	ļ	Not Used		No	t Encou	ntered
Danth	0	N.	Blow Count	Sample		CAMPLE			0	TDATIODADUIO
Depth	Sample	N Value	(per 6 in.)	Recovery		SAMPLE DESCRIPTION		ACTM		TRATIGRAPHIC DESCRIPTION
(ft)	Type/No.	value	or Drilling Rate(min/ft)	or REC & RQD		DESCRIPTION		ASTM Class.		DESCRIPTION
			Kate(min/it)	RQD	Н			Class.		
					- 1	Pavement.				
	SS-1	64	12-39-25-18	13"	1 1	Reddish brown fine to medium SAND, little fin	ne to coarse			
	0.5'-2.5'	04	12-39-25-16	13		GRAVEL, dry.				
	0.0 2.0									
										Sand & Gravel
-					1					Saliu & Glavei
5										
	SS-2	>50	50/3"	3"		Reddish brown fine to medium SAND and fin GRAVEL, dry.	e to coarse			
	5'-5'3"	/30	30/3	3		GRAVEL, dry.				
						Grinding at 5'-6' and 7'-8'.				
									8'	
-					1					50D 0 0
						Auger Refusal @ 8', possible boulder.				EOB @ 8'
10										
-										
					1					
15										
-					1					
-					-					
CAMDI	E TVDEO:	l	0 : 50:		Ш	CDT Decister				Approxis/Data
II .	E TYPES: SPLIT SPO					SPT Resistance				Approve/Date
	LIT SPOO			Cohosissi	. D	situ. 0.4 Voru Loose	rivo Consister	0.237	Coft	-
	ELBY TUB			Cohesionless 5-9 Lo		<del></del>	sive Consistency:	0-2 Very		
	CK CORF	mo		30-49 L			-4 Soft, 5-8 M/St 6-30 V-Stiff 31		11	



PROJE	CT: Dur	hom W	otor Main					SHI	EET	BORING NO.		
	OCATION:		ater Main		JOB NO.:	75740 00 04		$\dashv$	of 1			
202 Ro					LOCATION:	275749.06.01		Elevati	of 1 on:	B-26 Total Depth:		
					N:	E:						
Durhan	ONTRAC	TOR ·			ENG/GEO:			BEGUI	۸.	10 ft		
DRILL			NEI	3	DRILLER:	M. McGuii		FINISH		Aug. 26, 2013		
Hole Si			Mobile B-53 Weather :		DIVILLEN .	Mike St. Jo				Aug. 26, 2013		
noie Si	ze .		weather.				Ground	Water (De	JIII) .			
	~6"				Cloudy, ~70  Drilling Fluid: Top of Roc				Not Encountered			
Drilling	Method :				Drilling Fluid : Top of Roc			Rock (Depth	າ) :			
		3.25" H	SA		Not Used				6 ft			
			Blow Count	Sample	SAMDI E							
Depth		N	(per 6 in.)	Recovery		SAMPLE				STRATIGRAPHIC		
(ft)	Type/No.	Value	or Drilling Rate(min/ft)	or REC & RQD		DESCRIPTION		ASTM Class.		DESCRIPTION		
			Kate(IIIII/II)	NUD								
						ement, 4" base material.						
	SS-1	37	12-22-15-12	12"	Reddish brown GRAVEL, trace	fine to medium SAND, so	ome fine to coar	se				
	1'-3'	<u> </u>	10 12		J	, w. j.						
_										Sand & Gravel		
_												
5	+											
	SS-2	>50	22-38-50/3"	9"	Reddish brown	weathered Rcok.			6'			
	5'-6'3"											
<del> </del>												
	ļ									Weathered Rock		
									4.01			
10									10'			
	SS-3	>50	50/0"	0	Empty spoon.	Split spoon refusal at 10 f	t.			EOB @ 10'		
	10'											
	+											
	ļ											
	1											
	†											
15	1											
	1											
-	<del> </del>											
-												
	E TYPES:				SPT Resistance					Approve/Date		
	SPLIT SPO											
	LIT SPOO				ohesionless Density: 0-4 Very Loose Cohesive Consistency: 0-2 Very Soft							
	ELBY TUB			5-9 Loose 10-29 Med. Dense 3-4 Soft, 5-8 M/Stiff, 9-15 Stiff								
K=KU	CK CORE	mos	stly >50%	30-49 I	30-49 Dense 50+ Very Dense 16-30 V-Stiff, 31+ Hard							



PROJE	CT· -							SHE	FT T	BORING NO.
	OCATION:		ater Main		JOB NO.: 600			-		
SITE L	OUATION.				602	275749.06.01			of 1	B-27
Ricket L	ane				LOCATION:			Elevation	on:	Total Depth:
Durham					N:	E:				12 ft
DRILL	CONTRAC	TOR :	NEI	3	ENG/GEO:	M. McGuire		BEGUN	1:	Aug. 21, 2013
DRILL	RIG :		Mobile B-53		DRILLER:	Orin Cone		FINISH	ED:	Aug. 21, 2013
Hole Siz	ze :		Weather:		•		Ground Wa	ater (Dep	oth):	
	~6"				Sunny, Bright,	~70		Nc	ot Encou	ıntered
Drilling	Method :				Drilling Fluid :	7.0	Top of Roc			into ou
		004				Natiliand		NI-	.4	
		SSA	Blow Count	Sample		Not Used		INC	ot Encou	ınterea
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE				STRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM		DESCRIPTION
			Rate(min/ft)	RQD				Class.		
					3" Pavement.					SAND
					1				1.5'	OAND
_	SS-1 0.5'-2.5'	45	14-18-27-40	12"		liddle 4": Reddish brown SAI ddish brown fine to medium S				
	0.5-2.5				GRAVEL, dry.		SAIND and line			
					]					
<u>-</u>					1					
5					]					
	SS-2	51	16-22-29-33	12"	Reddish brown	SAND and fine GRAVEL, G	Ι ΔΟΙΔΙ ΤΙΙΙ			
-	5'-7'	- 51	10-22-23-33	12	Treddisii biowii	OAND and line ONAVEE, O	ILACIAL TILL.			
l ⊨					1					GLACIAL TILL
					1					
l ⊢					-					
10					]					
	SS-3	55	12-25-30-36		Poddish brown	SAND and fine GRAVEL, GI	ACIAL TILL			
<del> </del>	10'-12'	55	12-25-50-50		Reddisii biowii	SAND and line GRAVEL, GI	LACIAL TILL.			
	_								12'	
										EOB @ 12'
					1					
<u> </u>					1					
15										
					1					
l					1					
					]					
					1					
<u> </u>										
SAMPL	E TYPES:	trac	e 0 to 5%			SPT Resistance			1	Approve/Date
	PLIT SPO	ON few	5 to 10%							
SS=SPI	IT SPOO	N little	e 15 to 25%	Cohesionless	s Density: 0-4 Ver	ry Loose Coh	esive Consistency:	0-2 Very	Soft	
	ELBY TUB	E som	ne 30 to 45%	5-9 Lo	oose 10-29 M	ed. Dense	3-4 Soft, 5-8 M/Sti	ff, 9-15 Sti	ff	
R=ROC	K CORE	mos	stly >50%	30-49	Dense 50+ Very	y Dense	16-30 V-Stiff, 31	+ Hard		



PROJE	CT: <b>Dur</b>	ham Wa	ater Main					SHE	ET	BORING NO.
SITE L	OCATION:				JO	B NO.: <b>60275749.06.01</b>		1	of 1	B-28
159 Rou	ıto 17				LO	CATION:		Elevation		otal Depth:
					N:	E:				40.5
Durham DRILL	CONTRAC	TOR ·		_	FN	C/CEO:		BEGUN	]·	12 ft
DRILL		71011.	NEI	В		M. McGuire  Miller: Mile St. John		FINISH		Aug. 28, 2013
		ı	Mobile B-53		אטן	Mike St. John	Ta			Aug. 28, 2013
Hole Siz	ze :		Weather:				Ground Wa	iter (Dep	oth):	
	~6"					Partly Cloudy, ~75			4'-9"	
Drilling I	Method:		•		Dri	lling Fluid :	Top of Roc	k (Depth	):	
		3.25" H	SA			Not Used		No	t Encou	ntered
			Blow Count	Sample						
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE			S	TRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM		DESCRIPTION
			Rate(min/ft)	RQD				Class.		
						8" Pavement.				
					Ī	Reddish brown fine to medium SAND, little fin	e to coarse			
<u> </u>	SS-1 1'-3'	36	10-16-20-22	18"		gravel, trace silt, moist.				
	1-5									
<u> </u>										
5										
	SS-2	20	9-10-10-11	16"		Reddish brown fine to medium SAND, little fin gravel, some silt, wet.	e to medium			Sand & Gravel
	5'-7'		0 10 10 11		1	graver, come one, week				cana a cravor
<u> </u>					1					
-					1					
10										
	SS-3	47	26-27-20-13	11"						
<u> </u>	10'-12'	47	20-21-20-13	11		Reddish brown fine to medium SAND, some f	ine to coarse			
						GRAVEL, trace silt, wet. Possible weathered			12'	
										EOB @ 12'
<u> </u>					1					
15										
-					1					
<u> </u>										
SAMPL	L E TYPES:	trac	e 0 to 5%		1	SPT Resistance		1		Approve/Date
	PLIT SPO									11 2 22
SS=SPI	IT SPOO	N little	e 15 to 25%	Cohesionless	s Den	sity: 0-4 Very Loose Cohes	ive Consistency:	0-2 Very	Soft	
ST=SH	ELBY TUB	SE som	ne 30 to 45%	5-9 Lo	ose	10-29 Med. Dense 3-	4 Soft, 5-8 M/Sti	ff, 9-15 Sti	ff	
R=ROC	K CORE	mos	stly >50%	30-49	Dense	50+ Very Dense	5_30 V_Stiff 31	+ Hard		



PROJE	CT: Dur	ham W	ater Main					SHE	ET	BORING NO.
SITE L	OCATION:				JOB NO.:	60275749.06.01		1	of 1	B-29
Old Cor	motory Doo	d			LOCATION:	00270740100101		Elevation		otal Depth:
	metary Roa	iu			N:	E:				
Durham	n, CT CONTRAC	TOD :			ENG/GEO:			BEGUN	l·	12 ft
		TOR.	NEI	В		M. McGuire	•			Aug. 21, 2013
DRILL	RIG :		Mobile B-53		DRILLER:	Orin Cone		FINISH		Aug. 21, 2013
Hole Siz	ze:		Weather:				Ground Wa	ater (Dep	oth):	
	~6"				Sunny, Brig	ht. ~70		No	t Encou	ntered
Drilling	Method :				Drilling Fluid :		Top of Roc			
		004				National		NI-	.4 [	
		SSA	Blow Count	Sample		Not Used		INC	t Encou	nterea
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE			9	TRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM		DESCRIPTION
(1-1)	, , , ,		Rate(min/ft)	RQD				Class.		
-					2" Pavemei	nt. own fine to medium SAND with	some fine to			
	SS-1	>50	13-60-50/3"	12"	coarse grav		Some inte to			
	0.5'-2.5'				1					
-					1					Gravelly Sand
5									5'	
					Mottled fine	to medium SAND and fine to	coarse GRAVEL.			
	SS-2	>50	38-60-50/3"	12"	dry. GLAC		,			
	5'-7'									
-					1					
					Grinding at	7'-8' and 8.5'-9'.				
										GLACIAL TILL
					1					OLITONIE TIEL
10							0041/5			
	SS-3	30	10-15-15-18	2"	dry. GLAC	medium SAND and fine to coa	arse GRAVEL,			
	10'-12'		10 10 10 10		1   1   2   3   3   3   3   3   3   3   3   3					
_					_				12'	
										EOB @ 12'
					1					
_										
15										
					1					
-					-					
					]					
-					1					
SAMDI	<u> </u> E TYPES:	teco	e 0 to 5%			SPT Resistance				Approve/Date
	E TTPES. SPLIT SPO					SET RESISIBILE				Approve/Date
	LIT SPOO			Cohesionless	Density 0-4	Very Loose C	ohesive Consistency:	0-2 Very	Soft	-
	ELBY TUB			5-9 Lo		29 Med. Dense	3-4 Soft, 5-8 M/Sti	- '		
	CK CORF	mos		30-491		Very Dense	16-30 V-Stiff 31			



PROJE	CT ·							SHE	FT T	BORING NO.
	Dui		ater Main		IOP NO:			-		
SIIE L	OCATION:					275749.06.01			of 1	B-30
97 Map	le Avenue				LOCATION:			Elevation	on:	Total Depth:
Durham	, CT				N:	E:				12 ft
	CONTRAC	TOR:	NEI	3	ENG/GEO:	M. McGuire		BEGUN	1:	Aug. 20, 2013
DRILL	RIG :		Mobile B-53		DRILLER:	Orin Cone		FINISH	ED:	Aug. 20, 2013
Hole Siz	ze :		Weather:			01111 00110	Ground Wa	iter (Dep	oth):	7 tag. 20, 2010
	011				O Printe	75				or to so al
Drilling	~6" Method :				Sunny, Bright, Drilling Fluid:	~/5	Top of Roc		ot Encou	ınterea
Dilling	wicthou .				Drilling Flaid .		Top of Noc	к (Бериі	١) .	
	1	3.25" H				Not Used		No	t Encou	ıntered
Donth	Comple	NI.	Blow Count	Sample		CAMPLE				
Depth (ft)	Sample Type/No.	N Value	(per 6 in.) or Drilling	Recovery or REC &		SAMPLE DESCRIPTION		ASTM	,	STRATIGRAPHIC DESCRIPTION
(11)	турелчо.	value	Rate(min/ft)	RQD		DESCRIPTION		Class.		DESCRIPTION
			(							
<u> </u>					3" Pavement.	CAND and ODAVIEL fine to				
	SS-1	22	3-5-17-22	3"	trace silt, dry.	SAND and GRAVEL, fine to	medium sand,			Sand & Gravel
	0.5'-2.5'									
<u> </u>									3.5'	
5										
"+					Reddish brown	fine to medium SAND, little fi	ne gravel, dry.			
L	SS-2	29	5-12-17-19		GLACIAL TILL.		3 , - ,			
	5'-7'									
					1					
l ⊢										GLACIAL TILL
l.,					1					
10					Reddish brown	fine to medium SAND, little fi	ne gravel			
	SS-3	20	13-10-10-15	12"	moist. GLACIA		no gravor,			
	10'-12'								12'	
<u> </u>									12	
L										EOB @ 12'
					1					
15										
l ⊢										
					]					
l ⊢										
	E TYPES:		e 0 to 5%			SPT Resistance				Approve/Date
	SPLIT SPO		5 to 10%							
	LIT SPOO			Cohesionless			esive Consistency:	-		
	ELBY TUB			5-9 Lo			8-4 Soft, 5-8 M/Sti		ff	
IK=ROC	K CORE	mos	stly >50%	30-49	Dense 50+ Ver	y Dense	16-30 V-Stiff, 31	+ Hard		1



חחס יד	OT .							1 01:5	1	DODINO NO
PROJE	Dui		ater Main		T -			SHE	:=1	BORING NO.
SITE L	OCATION:				JOB NO.: 6	0275749.06.01		1	of 1	B-31
119 Ma	ple Avenue				LOCATION:			Elevation	n:	Total Depth:
Durham					N:	E:				12 ft
	CONTRAC	TOR:	N.E.		ENG/GEO:			BEGUN	J:	
DRILL			NE	В	DRILLER:	M. McGuire/W		FINISH		Aug. 20, 2013
			Mobile B-53		DIVILLENT.	Orin Cor				Aug. 20, 2013
Hole Siz	ze :		Weather:				Ground W	ater (Dep	otn):	
	~6"				Sunny, Brigh	t, ~75				untered
Drilling	Method:				Drilling Fluid :		Top of Roo	k (Depth	1):	
		3.25" H	SA			Not Used		No	ot Enco	untered
			Blow Count	Sample			· · · · · ·			
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE			;	STRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM		DESCRIPTION
			Rate(min/ft)	RQD				Class.		
					3" Pavement					
					Mottled fine t	o medium SAND, little fine	to coarse gravel,			
<u> </u>	SS-1 0.5'-2.5'	42	13-25-17-18	10"	dry.					
	0.5-2.5									Sand
					]					
<u> </u>					Grinding at 3	ft.				
5									5'	
	SS-2	69	20 20 20 25	0		Danaikh dill farar auddinar				
	5'-7'	09	28-39-30-25	0	Empty spoon	. Possibly till from cuttings				
					]					
										GLACIAL TILL
<u>-</u>					-					GENOINE TIEL
10										
-						vn SILT with little fine grave	el, dry. GLACIAL			
	SS-3	62	15-27-35-34	9"	TILL.					
	10'-12'								12'	
										EOB @ 12'
<u>-</u>					-					_02 @
45					]					
15					-					
					-					
					]					
					1					
	E TYPES:					SPT Resistant	ce			Approve/Date
	SPLIT SPO						T			_
	LIT SPOO			Cohesionless		Very Loose	Cohesive Consistency:	_		
	ELBY TUB			5-9 Lo		Med. Dense	3-4 Soft, 5-8 M/St		ff	
IK=KOC	K CORE	mos	stly >50%	30-49 1	Dense 50+ V	ery Dense	16-30 V-Stiff, 3	l+ Hard		1



PROJE	CT:	ham W	ater Main				SHE	EET	BORING NO.		
	OCATION:		atel Midili		JOB NO.: <b>60275749.06.01</b>			of 1	B-32		
150 Ma	nlo Avonuo				LOCATION:		Elevation		Total Depth:		
	ple Avenue				N: E:				12 ft		
Durhan DRILL	CONTRAC	TOR:	NE		ENG/GEO:		BEGUN	N:			
DRILL			NEI	В	IVI. IVICGUITE/V		FINISH		Aug. 19, 2013		
Hole Si			Mobile B-53 Weather :		Orin Co		Water (Der		Aug. 19, 2013		
l loic of			vvcatilei .			Orouna		,			
Deilling	~6"				Sunny, Bright ~76	Tan of F		Not Encountered k (Depth):			
Drilling	Method :				Drilling Fluid :	коск (рертг	1):				
	1	3.25" H		1	Not Used		No	Not Encountered			
Donth	Comple	NI.	Blow Count	Sample	CAMPLE				CTDATIONADIUG		
Depth (ft)	Sample Type/No.	N Value	(per 6 in.) or Drilling	Recovery or REC &	SAMPLE DESCRIPTION		ASTM		STRATIGRAPHIC DESCRIPTION		
(11)	i yponto.	valao	Rate(min/ft)	RQD	Describing the second s	Class.		BECOKE HOW			
					Oli Danasari						
<del> </del>					3" Pavement.						
	SS-1	41	18-25-16-7	8"	Top 3": Coarse Gravel.						
	0.5'-2.5'				Bottom 4": Reddish brown SILT with fe GLACIAL TILL.	w fine gravei, dry	′.				
_					Grinding at 2.5' and 4.5'.						
5											
	SS-2	17	12-9-8-12	12"	Reddish brown SILT with little fine to co fine to coarse sand, moist. GLACIAL T	ie		GLACIAL TILL			
	5'-7'										
-											
10					Reddish brown SILT with little fine to co	arse GRAVEI					
	SS-3	144	54-66-78-60	12"	moist. GLACIAL TILL.	Jaioc Orvivee,					
	10'-12'						12'				
									EOB @ 12'		
-									200 @ 12		
15											
' +					1						
					1						
SAMPL	E TYPES:	trac	e 0 to 5%		SPT Resistan	ce			Approve/Date		
S3=3" :	SPLIT SPO	ON few	5 to 10%		OI I INCOISIGNA						
	LIT SPOO				ohesionless Density: 0-4 Very Loose Cohesive Consistency: 0-2 Very Soft						
	ELBY TUB			5-9 Loose 10-29 Med. Dense 3-4 Soft, 5-8 M/Stiff, 9-15 Stiff							
K=RO	CK CORE	mos	stly >50%	30-49 1	30-49 Dense 50+ Very Dense 16-30 V-Stiff, 31+ Hard						



PROJE	CT: <b>D</b> ur	ham Wa	ater Main					SHE	ET	BORING NO.
SITE L	OCATION:				JOB NO.:	60275749.06.01		1	of 1	B-33
17 Rout	- 68				LOCATION:			Elevation		otal Depth:
					N:	E:				401.411
Durham	CONTRAC	TOR ·			ENG/GEO :			BEGUN		10'-4"
		TOIX.	NEI	3		M. McGuir	e			Aug. 26, 2013
DRILL		ı	Mobile B-53		DRILLER:	Mike St. Jo		FINISH		Aug. 26, 2013
Hole Siz	ze:		Weather:				Ground Wa	ater (Dep	oth):	
	~6"				Cloudy	. ~75		No	t Encour	ntered
Drilling I	Method :		!		Drilling Fluid		Top of Roo			
	1	3.25" H		C1-		Not Used		No	t Encour	ntered
Depth	Sample	N	Blow Count (per 6 in.)	Sample Recovery		SAMPLE			0	TRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM		DESCRIPTION
(11)	Турслио.	value	Rate(min/ft)	RQD		DEGORII TION		Class.		DECORII TIOI
			(							
					7" Pavem					
	SS-1	57	18-26-31-30	12"	trace silt,	e to medium SAND, some fine t	to coarse gravel,			
	1'-3'	07	10 20 01 00	12	liace siit,	ury.				
					†					
5					]					
	SS-2	>50	50/3"		Empty spo	oon				Sand & Gravel
<del> </del>	5'-7'	730	30/3		_ Limpty spt	5011.				Jana & Graver
					]					
-					-					
					]					
10										
'0+					Reddish b	prown fine to medium SAND, so	ome fine to coarse			
	SS-3	>50	50/4"	3"		ice silt, dry.			10'4"	
	10'-10'4"									EOB @ 10'-4"
<u> </u>					1					
					]					
<u> </u>					1					
15					]					
<u> </u>					-					
<u> </u>					1					
CAMPI	E TVDEC:	l	- 0: 50			CDT Designation				Approve/Date
l .	E TYPES: SPLIT SPO	ON fow				SPT Resistance	<del>.</del>			Approve/Date
	LIT SPOO			Cohos:1	Danaitry	A Voru Loose	Cabasina Commister	0.237-	. Coft	-
	ELBY TUB			Cohesionless		· · · · · ·	Cohesive Consistency:	0-2 Very		
	K CORF	som		5-9 Lo		0-29 Med. Dense	3-4 Soft, 5-8 M/Sti		11	



PROJ	ECT: Dur	ham W	ater Main					SHE	ET	BORING NO.	
SITE	LOCATION:		ater mairi		JOB NO.: 6027	5749.06.01		-	of 1	B-34	
194 M	anla Avanua				LOCATION:	5/49.06.01		Elevation	of 1 n:	Total Depth:	
	aple Avenue	:			N:	E:				12 ft	
	m, CT . CONTRAC	TOR:	NICI		ENG/GEO :	NA MaQuina (M)	0	BEGUN	l		
	RIG:		NE	3	DRILLER :	M. McGuire/W.		FINISH		Aug. 19, 2013	
Hole S		ſ	Mobile B-53 Weather :			Orin Cone	Ground W			Aug. 19, 2013	
11010			vvcatioi.				Ground W				
Drillin	~6" g Method :				Sunny, Bright ~7 Drilling Fluid:	5	Top of Do	Not Encountered			
יווווווון								ж (Бериі	).		
	1	3.25" H			N	ot Used		Not Encountered			
Dept	n Sample	N	Blow Count (per 6 in.)	Sample Recovery		SAMPLE				STRATIGRAPHIC	
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM	`	DESCRIPTION	
	7,1		Rate(min/ft)	RQD				Class.			
					3" Pavement.						
					Reddish brown SI	LTY fine SAND with litt	le fine gravel,				
	SS-1 0.5'-2.5'	34	16-17-17-18	13"	moist.						
	0.5-2.5										
					-						
5_					Boddish brown SI	LTY fine SAND with litt	lo fino graval				
	SS-2	29	9-12-17-19	12"		n sand lenses, moist.	ie ilile gravei,			SILTY SAND	
	5'-7'										
					Little grinding at 8	ft.					
10											
					Reddish brown fir	ne SANDY SILT, little fir	ne to coarse				
	SS-3	94	9-35-59-50	12"	gravel, trace coars	se sand, moist.					
	10'-12'								12'		
										EOB @ 12'	
15											
7											
	<u> </u>									T	
_	LE TYPES:				SPT Resistance					Approve/Date	
	SPLIT SPO PLIT SPOO			Cohosionis	Slees Dansitus 0.4 Vary Loges Cabasius Consistence			0.2 Va	Soft	_	
	HELBY TUB										
	CK CORE	mos			30-49 Dense 50+ Very Dense 16-30 V-Stiff, 31+ Hard						



PROJ	ECT: Dur	ham W	ater Main				SHEE	ET	BORING NO.		
SITE	LOCATION:		ater mairi		JOB NO.: <b>60275749.06.01</b>		1 ,	of 1	D 35		
Manla	Avenue				60275749.06.01 LOCATION:		Elevation	of 1 n: 7	B-35  Total Depth:		
					N: E:				12 ft		
Durha DRILL	CONTRAC	TOR:	NEI		ENG/GEO : M. MaCuiro/M/	Cona	BEGUN:	<u> </u>			
DRILL	RIG:			3	IVI. IVICGUII E/VV		FINISHE	D :	Aug. 20, 2013		
Hole S			Mobile B-53 Weather:		Orin Cond	e Ground Wa			Aug. 20, 2013		
11010			vvcatioi.			Ground We	ater (Bept				
Drilling	~6" g Method :				Sunny, Bright, ~75  Drilling Fluid: Top of Ro			10 ft			
ווווווען											
		3.25" H			Not Used		Not Encountered				
Depth	Sample	N	Blow Count (per 6 in.)	Sample Recovery	SAMPLE			9	TRATIGRAPHIC		
(ft)	Type/No.	Value	or Drilling	or REC &	DESCRIPTION ASTM				DESCRIPTION		
( -7	7,5		Rate(min/ft)	RQD			Class.				
					3" Pavement.						
	1 .				Mottled SAND & GRAVEL, mostly fine sa	and, some gravel,					
-	SS-1	47	15-26-21-20	12"	trace fines, moist.			2.5'	Sand & Gravel		
	0.5'-2.5'										
-											
5					Reddish brown SILTY fine SAND with litt						
	SS-2	10	4-3-7-9	11"	moist.	lie ilile gravei,			Silty Sand		
	5'-7'										
-											
-											
								9'			
10					Grinding around 9 ft.						
					Mottled fine SAND and fine to coarse GF	RAVEL, little fines,					
-	SS-3 10'-12'	43	27-20-23-20	11"	wet.				Sand & Gravel		
	10-12							12'			
									EOB @ 12'		
-											
-											
15											
					1						
[											
					1						
0.41.45	 					_			A		
_	LE TYPES: SPLIT SPO				SPT Resistance				Approve/Date		
	SPLIT SPOO			Cohesionless	lless Density: 0-4 Very Loose Cohesive Consistency			Soft	+		
	HELBY TUB			Cohesionless Density:         0-4 Very Loose         Cohesive Consistency:         0-2 Very Soft           5-9 Loose         10-29 Med. Dense         3-4 Soft, 5-8 M/Stiff, 9-15 Stiff							
	CK CORE	mos			5-9 Loose 10-29 Med. Dense 5-4 Soft, 5-8 M/Stiff, 9-15 Stiff 30-49 Dense 50+ Very Dense 16-30 V-Stiff, 31+ Hard						



PROJE	CT: Dur	ham W	ater Main					SHE	ET	BORING NO.
SITE L	OCATION:				JOB NO.:	60275749.06.01		1	of 1	B-36
Maple A	Venue				LOCATION:			Elevation		otal Depth:
-					N:	E:				01.441
Durham DRILL	CONTRAC	TOR ·			ENG/GEO:			BEGUN	J.	9'-11"
DRILL			NE	В	DRILLER:	M. McGuire/W.		FINISH		Aug. 20, 2013
			Mobile B-53		DRILLER .	Orin Cone				Aug. 20, 2013
Hole Siz	ze :		Weather:				Ground Wa	ater (Dep	oth):	
	~6"				Sunny, Brigl	ht, ~80			ot Encour	ntered
Drilling	Method:				Drilling Fluid:		Top of Roc	k (Depth	1):	
		3.25" H	SA			Not Used		No	ot Encour	ntered
			Blow Count	Sample			!			
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE			S	TRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM	l I	DESCRIPTION
			Rate(min/ft)	RQD				Class.		
					3" Pavemer	nt.				
						AVELLY SANDk, fine to mediu	um sand, some			
-	SS-1 0.5'-2.5'	50	21-26-24-26	3"	fine to coars	se gravel, dry.				
	0.5-2.5									Sand
					-					
5					]					
	SS-2	>50	33-39-50/3"	7"	Top 3": Mot few fines, m	ttled fine to medium Sand, little	e coarse gravel,		6'	
	5'-6'3"	- 00	00 00 00/0	<u>'</u>	J 1 '	Reddish brown GLACIAL TILL				
_										
										GLACIAL TILL
					1					
					Reddish bro	own SILT with few coarse grav	vel dry GLACIAL			
10	SS-3	>50	50/3"	2"	TILL.	with oil I with lew coarse grav	rei, dry. OL/tol/tL		9'11"	
	9'8"-9'11"									EOB @ 9'-11"
-					1					
					]					
					1					
_					<u> </u>					
15										
					1					
					-					
					-					
SAMPL	E TYPES:	trac	e 0 to 5%		<u> </u>	SPT Resistance	<u> </u>	1	ı	Approve/Date
	SPLIT SPO									11 2 22
SS=SP	LIT SPOO	N littl	e 15 to 25%	Cohesionless	Density: 0-4	Very Loose	Cohesive Consistency:	0-2 Very	Soft	
ST=SH	ELBY TUB	E son	ne 30 to 45%	5-9 Lo	oose 10-2	9 Med. Dense	3-4 Soft, 5-8 M/Sti	ff, 9-15 Sti	ff	
R=ROC	K CORE	mo	stlv >50%	30-49	Dense 50+	Very Dense	16-30 V-Stiff 31	+ Hard		



PROJI	ECT: Dur	ham W	ater Main				SHE	ET	BORING NO.		
SITE	LOCATION:		ater Mairi		JOB NO.: 60275740 06 04		1	of 1	D 27		
					60275749.06.01 LOCATION:		1 Elevation	of 1 n:	B-37 Total Depth:		
Talcot					N: E:				·		
Durha	m, CT CONTRAC	TOR ·			FNC/CFO:		BEGUN	l·	12'		
	RIG:	TOIX.	NE	3	DRILLER: M. McGuire/W	/. Song	FINISH		Aug. 20, 2013		
		ı	Mobile B-53		Orin Cor				Aug. 20, 2013		
Hole S	ize :		Weather:			Ground Wa	ater (Dep	oth):			
	~6"				Sunny, Bright, ~70			Not Encountered			
Drilling	Method:				Drilling Fluid :	Top of Roo	k (Depth	(Depth):			
	SS	SA/3.25"	'HSA		Not Used		No	Not Encountered			
			Blow Count	Sample		•					
Depth		N	(per 6 in.)	Recovery	SAMPLE				STRATIGRAPHIC		
(ft)	Type/No.	Value	or Drilling	or REC &	DESCRIPTION		ASTM		DESCRIPTION		
<u> </u>	1		Rate(min/ft)	RQD			Class.				
					2" Pavement.						
	00.4	00	10.10.0.5	0"	Reddish brown fine to medium SAND, for	ew fine to coarse					
-	SS-1 22 16-16-6-3 6" gravel, trace fines, moist.										
	0.0-2.0										
<del> </del>											
5					Reddish brown fine to medium SAND, little fin to coarse gravel, little fines, moist.				Sand		
	SS-2	87	24-43-44-16	12"							
	5'-7'		_ 1 10 44 10		9.370, 1100, 11100						
	1										
					grinding at 7.5 ft, occasional cobbles.						
	1										
	+										
10								10'			
	SS-3	37	7-18-19-22	16"	Reddish brown SILT, non-plastic, little fi gravel, moist.	ne sand, trace fine					
	10'-12'	31	1-10-19-22	10	graver, moist.				SILT		
	1							12'	-		
									EOB @ 12'		
	1										
	1										
15											
-	+										
-	+										
	1										
SAMP	 LE_TYPES:	trac	e 0 to 5%		I I SPT Resistand				Approve/Date		
_	SPLIT SPO								11		
SS=SF	PLIT SPOO			Cohesionless	Density: 0-4 Very Loose	Cohesive Consistency:	0-2 Very	Soft			
ST=SH	HELBY TUB	E som	ne 30 to 45%	5-9 Lo	ose 10-29 Med. Dense	3-4 Soft, 5-8 M/Sti	iff, 9-15 Stif	ff			
R=RO	CK CORE	mos	stly >50%	30-49 1	Dense 50+ Very Dense	16-30 V-Stiff, 31	+ Hard				



PROJ	ECT: Dur	ham W	ater Main					SHE	EET	BORING NO.		
SITE	LOCATION:		ato Ivialii		JOB NO.: 6027	5749.06.01		1	of 1	B-38		
10 Ma	iden Lane				LOCATION:	5749.06.01		Elevation		Total Depth:		
					N:	E:				10'-9"		
Durha DRILL	. CONTRAC	TOR:	NE	D	ENG/GEO :	M. McGuir		BEGUN	<b>1</b> :			
DRILL	RIG:			В	DRILLER :			FINISH	ED:	Aug. 27, 2013		
Hole S			Mobile B-53 Weather:			Mike St. Jo	nn Ground W			Aug. 27, 2013		
11010			Wodinor .									
Drilling	~6" g Method :				Light, Cloudy, ~80 Drilling Fluid:	0	Top of Po		Not Encountered (Depth):			
ווווווון					Drilling Fluid .		TOP OF KO	ск (Берп				
	1	3.25" H		I	N	ot Used		1	5 f	<u> </u>		
Depti	n Sample	N	Blow Count (per 6 in.)	Sample Recovery		SAMPLE				STRATIGRAPHIC		
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM	`	DESCRIPTION		
,	7,		Rate(min/ft)	RQD				Class.				
					5" Pavement.							
					1							
	SS-1 >50 50/3"		0	Empty spoon.	rse Sand & Gravel, little	a silt faw aabblaa						
	0.5'-0.75'			for the cuttings.	se Sand & Graver, illie	e siit, iew cobbies			Sand & Gravel			
5_									5'			
	SS-2	>50	33-50/3"	6"	Weathered rock.							
	5'-5'9"											
										Weathered Rock		
10												
10_									4.01011			
	SS-3	>50	24-50/3"	6"	Weathered rock.				10'9"			
	10'-10'9"									EOB @ 10'9"		
					1							
15												
					1							
					1							
	LE TYPES:	trace	e 0 to 5%			SPT Resistance	е			Approve/Date		
	SPLIT SPO					Т						
	PLIT SPOOI					•	Cohesive Consistency:					
	HELBY TUB CK CORE	E som		5-9 Lo 30-49 I			3-4 Soft, 5-8 M/S		II			
	ON OUNE	IIIOS	uy /3070	3U-49 I	July D	CIIOC	16-30 V-Stiff, 3	ı⊤ 11dIU		1		



PROJE	CT: <b>D</b> ur	ham W	ater Main					SHE	ET	BORING NO.
SITE L	OCATION:				JOB NO.:	60275749.06.01		1 1	of 1	B-39
Maiden	Pond				LOCATION:			Elevation		otal Depth:
					N:	E:				401
Durham DRILI	CONTRAC	TOR ·		_	ENG/GEO :		_	BEGUN	J·	12'
DRILL			NEI	3	DRILLER:	M. McGuire/W.		FINISH		Aug. 20, 2013
			Mobile B-53		DRILLER.	Orin Cone				Aug. 20, 2013
Hole Siz	ze :		Weather:				Ground Wa	ater (Dep	oth):	
	~6"				Sunny, Brigl	ht, ~70			t Encou	ntered
Drilling	Method :				Drilling Fluid:		Top of Roo	ck (Depth	):	
		3.25" H	SA			Not Used		No	t Encou	ntered
			Blow Count	Sample			<u>!</u>			
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE			S	TRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM		DESCRIPTION
			Rate(min/ft)	RQD				Class.		
					9" Pavemer	nt.				
	20.4				1					
<u> </u>	SS-1 1'-3'	29	12-13-16-15	11"	Brown fine t	o coarse SAND, some grave	l.			
	1-5									
										Sand & Gravel
<del> </del>										Sand & Graver
5										
	SS-2	18	10-9-9-10	18"	Reddish bro	own CLAY, some silt, moist.				
	5'-7'				1 1000000000000000000000000000000000000	0 <u>2</u> 7, 0 0 0, 0				
									8'	
					1					
<u>-</u>										
10										Clayey Silt
	SS-3	11	3-4-7-8	24"	Peddish hro	own CLAY, some silt, moist.				
<del> </del>	10'-12'	11	3-4-7-0	24	i Reduisii bic	own CLAT, some siit, moist.				
									12'	
										EOB @ 12'
<u> </u>										
15										
					1					
<u>-</u>										
<del> </del>										
SAMPL	E TYPES:	trac	e 0 to 5%		1 1	SPT Resistance	e	1	<u> </u>	Approve/Date
II .	SPLIT SPO									1
SS=SPI	LIT SPOO	N little	e 15 to 25%	Cohesionless	Density: 0-4	Very Loose	Cohesive Consistency:	0-2 Very	Soft	
ST=SHI	ELBY TUB	SE som	ne 30 to 45%	5-9 Lo	ose 10-2	29 Med. Dense	3-4 Soft, 5-8 M/St	iff, 9-15 Sti	ff	
R=ROO	K CORF	mos	stlv >50%	30-49 1	Dense 50±	Very Dense	16-30 V-Stiff 3	1+ Hard		



PROJE	CT: Dur	ham W	ater Main					SHE	EET	BORING NO.	
SITE L	OCATION:				JOB NO.:	60275749.06.01		1	of 1	B-40	
Brick La	no				LOCATION:	00210140.00.01		Elevation		otal Depth:	
					N:	E:				40!	
Durham DRILL	CONTRAC	TOR:			ENG/GEO :			BEGUN	J:	12'	
DRILL			NEI	3	DRILLER:	M. McGuire		FINISH		Aug. 21, 2013	
Hole Siz			Mobile B-53 Weather :		DIVILLEIV.	Orin Cone	Ground Wa			Aug. 21, 2013	
1 1016 31	2 <del>C</del> .		vveatrier.				Ground W	ater (Dep	)(II) .		
	~6"				Sunny, Brig				7'-2"		
Drilling	Method :				Drilling Fluid :		Top of Roo	k (Depth	1):		
		3.25" H	SA			Not Used		No	t Encour	ntered	
			Blow Count	Sample							
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE				TRATIGRAPHIC	
(ft)	Type/No.	Value	or Drilling	or REC & RQD		DESCRIPTION		ASTM Class.		DESCRIPTION	
			Rate(min/ft)	RQD				Class.			
					3" Paveme						
	SS-1	37	12-21-16-11	14"	Reddish broten	own fine to medium SAND, so	me fine gravel,				
	0.5'-2.5'	07	12 21 10 11	17	trace siit, di	, y.					
5					grinding at	4.5 ft depth.				Gravelly Sand	
	SS-2	22	7-11-11-8	16"	Reddish br	own fine SAND, some fine gra	vel, trace silt.				
	5'-7'										
									9'		
10											
	SS-3	7	2-3-4-7	23"	Reddish br	own SILTY SAND.				Silty Sand	
	10'-12'				110001011011	o o.e o			4.01	only ound	
									12'		
										EOB @ 12'	
15											
-											
<u> </u>											
SAMPL	E TYPES:	trac	e 0 to 5%		<u> </u>	SPT Resistance	<b>;</b>	1	1	Approve/Date	
	SPLIT SPO									11 2 22	
	LIT SPOO		e 15 to 25%	Cohesionless	Density: 0-4	Very Loose	Cohesive Consistency:	0-2 Very	Soft	7	
ST=SH	ELBY TUB	SE son	ne 30 to 45%	5-9 Lo	ose 10-	29 Med. Dense	3-4 Soft, 5-8 M/St	 iff, 9-15 Sti	ff		
R=ROC				30-49 I	9 Dense 50+ Very Dense 16-30 V-Stiff, 31+						



PROJE	CT: <b>D</b> ui	ham Wa	ater Main					SHE	ET	BORING NO.
SITE L	OCATION:				JOB NO.:	60275749.06.01		1 1	of 1	B-41
Brick La	200				LOCATION:	70210110100101		Elevation		otal Depth:
					N:	E:				
Durham	CONTRAC	TOR ·			ENG/GEO:			BEGUN	]·	6'
DRILL		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	NE	В	DRILLER:	M. McGuire		FINISH		Aug. 28, 2013
		ľ	Mobile B-53		DRILLER :	Mike St. Johr				Aug. 28, 2013
Hole Si	ze:		Weather:				Ground Wa	ater (Dep	oth):	
	~6"				Light, Cloudy	/, ~75		No	t Encou	ntered
Drilling	Method:				Drilling Fluid :		Top of Roc	k (Depth	):	
		3.25" H	SA			Not Used			5 ft	
		0.20 11	Blow Count	Sample		1401 0300	<u> </u>		O II	
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE			S	TRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM		DESCRIPTION
			Rate(min/ft)	RQD				Class.		
					3.5" Paveme	nt				
						wn fine to medium SAND, som	ne clay, little silt,			
	SS-1 1'-3'	14	10-6-8-10		dry.					
	1-3									Clayey Sand
					]					
_					-					
5									5'	
	SS-2	>50	50/0"	0"	Empty spoon				6'	Possible Rock
	5'	730	30/0			ıl at 6 ft depth.				
					]   ]	•				EOB @ 6'
					1					
10										
					]					
					-					
					-					
					]					
15										
" -					-					
					-					
_										
					1					
CAAAD:		<u> </u>	0	1		ODT Decision				A
	E TYPES: SPLIT SPO			<u> </u>		SPT Resistance				Approve/Date
	LIT SPOO			Cohosionl	Doneityr 0.4	Vary Loosa	shaqiya Cansistan	0.2 Va	Soft	+
	ELBY TUB			Cohesionless 5-9 Lo		Very Loose Co  Med. Dense	3-4 Soft, 5-8 M/Sti	0-2 Very ff 9-15 Sti		
	CK CORF	mos		30-491		Very Dense	16-30 V-Stiff 31			



PROJE	ECT: Dur	hom W	ater Main					SHE	ET	BORING NO.	
	OCATION:		atel Midili		JOB NO.: 6027E7	10.06.04			of 1		
					LOCATION: 6027574	19.06.01		1 Elevation	of 1 on:	B-42 Total Depth:	
Brick L					N:	E:				•	
Durhar DRILL	n, CT CONTRAC	TOR ·			ENG/GEO :			BEGUN	1.	12'	
DRILL			NEI	3	DRILLER:	M. McGuire	9	FINISH		Aug. 28, 2013	
			Mobile B-53		DRILLER .	Mike St. Joh				Aug. 28, 2013	
Hole S	ize :		Weather:				Ground Wa	ater (Dep	otn):		
	~6"				Light, Cloudy, ~75				8'		
Drilling	Method :				Drilling Fluid :		Top of Roc	(Depth):			
		3.25" H	SA		Not	Used		Not Encountered			
			Blow Count	Sample			·				
Depth		N	(per 6 in.)	Recovery	SAMPLE DESCRIPTION				STRATIGRAPHIC		
(ft)	Type/No.	Value	or Drilling Rate(min/ft)	or REC & RQD	ل ا	ESCRIPTION		ASTM Class.		DESCRIPTION	
			Kate(mm/it)	KŲD				Ciass.			
					3.5" Pavement; 4" B						
			18"	Brown fine to coarse little silt.	SAND, some fine to	coarse gravel,			Sand & Gravel		
	1'-3'		2 .0 .0								
_											
									4'		
5											
"+											
	SS-2			t.							
	5'-7'									Silty Clay	
										Only Oldy	
									9'		
10											
10					Reddish brown fine to	o medium SAND, sor	me silt, little fine				
	SS-3	29	3-11-18-16	16"	gravel, wet.	•				Silty Sand	
	10'-12'								12'		
										EOB @ 12'	
-											
15											
'3+											
-											
SAMPI	 _E_TYPES:	trac	e 0 to 5%			SPT Resistance				Approve/Date	
	SPLIT SPO					51 1 110010101100				7.000000000	
	LIT SPOO			Cohesionless	Density: 0-4 Very Loos	e C	Cohesive Consistency:	0-2 Very	Soft		
	IELBY TUB			5-9 Lo		<b>—</b>	3-4 Soft, 5-8 M/Sti	-			
R=RO	CK CORE	mos	stly >50%	30-49 1	Dense 50+ Very Dense		16-30 V-Stiff, 31	+ Hard			



PROJ	ECT: Dur	hom W	ater Main					;	SHEET	BORING NO.		
	LOCATION:		atel Midili		JOB NO.:	275749.06.01		$\overline{}$	1 of 1	D 42		
Dialor					LOCATION:	2/5/49.06.01		Elev	1 of 1 ration:	B-43 Total Depth:		
Picket					N:	E:				·		
Durha DRILL	m, C1 CONTRAC	TOR ·		_	ENG/GEO:			BEC	BUN:	12'		
	RIG:		NEI	3	DRILLER:	M. McGuii			SHED:	Aug. 26, 2013		
Hole S			Mobile B-53 Weather :		DIVILLEIV.	Mike St. Jo		d Water (		Aug. 26, 2013		
noie 3	oize .		vveatilei .				Ground	u vvalei (	Бериі) .			
D. III.	~6"				Cloudy, ~7	5	T	D I - /D	Not Encountered			
Drilling	Method :				Drilling Fluid :		l op of	Rock (De	(Depth):			
		3.25" H	SA			Not Used			Not Encountered			
			Blow Count	Sample		044515				0.7.0.4.7.0.0.4.0.11.0		
Depth (ft)	Sample Type/No.	N Value	(per 6 in.) or Drilling	Recovery or REC &		SAMPLE DESCRIPTION		AS'	rm	STRATIGRAPHIC DESCRIPTION		
(11)	i ype/iio.	value	Rate(min/ft)	RQD		DESCRIPTION		Cla		DEGGINI HON		
			(	<u> </u>								
					1.5" Pavement	t. n fine to medium SAND, lit	tle fine to med	ium				
	SS-1	57	14-28-29-29	18"	gravel, trace s		tile line to med	iuiii				
	1'-3'											
-												
_												
5												
							medium SAND, some fine to coarse			Sand & Gravel		
-	SS-2 5'-7'	30	11-14-16-15	10"	gravel, trace s					Cana a Craver		
	5-7											
-												
10												
						n fine to medium SAND, tra	ace fine grave	l,	11'			
-	SS-3 10'-12'	40	23-22-18-20	20"	trace silt, mois	t.			11			
	10 12								12'	Sand		
										EOB @ 12'		
-												
-												
15												
†												
-												
SAMP	LE TYPES:	trac	e 0 to 5%		•	SPT Resistanc	е		•	Approve/Date		
S3=3"	SPLIT SPO	ON few	5 to 10%									
	PLIT SPOO		e 15 to 25%	Cohesionless	Density: 0-4 Ve	ery Loose	Cohesive Consist	ency: 0-2	Very Soft			
	HELBY TUB			5-9 Lo		Med. Dense	3-4 Soft, 5-8					
R=RO	CK CORE	mos	stly >50%	30-49 1	Dense 50+ Ve	ry Dense	16-30 V-Stif	f, 31+ Har	d			



PROJI	ECT: AU	D	l. Oueneim	Decide and	Mandaus		SHE	ET	BORING NO.
	LOCATIO		k Crossing -	urnam	JOB NO.: 036101610-0002-00003				
					LOCATION -	3	1 Elevati	of 1	B-51 Total Depth:
			urham CT		LOCATION Durham, CT		Lievati	011.	·
			Main Crossi	i ig	N: E:		BEGUI	NI ·	12 ft. bgs
DRILL	DIC:	ACTOR	Northern Dri	Il Service	DOLL ED .		FINISH		9/22/14
URILL	RIG Mo	bileDrill	B-48		DRILLER: Tim/Justin	10 may ya di 10/ m/m			9/22/14
Hole S	oize :		Weather:			Ground Wate	er (Dept	n/Eiev	.):
D 111	3-inch			Sunn	y, Temperature ~ 70 F.	>1:	2 ft. beld	ow gro	und surface
Drilling	Method :				Drilling Fluid :	Top of Rock	(Deptn/	Elev.)	
	Но	llow Ste	m Auger		None		Not e	encour	ntered
Depth	Sample	N	Blow Count (per 6 in.)	Sample Recovery	SAMPLE			9	TRATIGRAPHIC
(ft)	Type/No.		or Drilling	or REC &	DESCRIPTION		USCS		DESCRIPTION
. ,	31		Rate(min/ft)	RQD			Class.		
	SS-1	8	2		Brown, Fine Sandy Loam, topsoil, r	oots, dry.			Topsoil
	4			]		•		0.9	
	4			2.0	Brownish red, Silty Till, few-trace cl	av trace fine sand			Silty Till
	2 4		1	· ·	•			Only Till	
4	SS-2 6 3			and angular gravel, slightly firm, dry					
-	SS-2	6	3	-	Brownish-red Silty Till, few-trace cla	ay, trace fine sand			
-			3	1.7	and angular gravel, slightly moist, s	light cohesion.			
	3								
4			6						
	SS-3	17	4		Brownish Red, Fine Sandy Silt, trad	ce clay and angular			
			8	] , _	fine gravel, dry.				
			9	1.7					
				1					
6	00.4		11						
-	SS-4	16	12	1	Same As Above				
-			7	1.0				6.8	
l ⊦			9		Yellow-brown, Clayey Silt Till, dry.				Clayey-Silt Till
88			7						
	SS-5	23	4		Brownish-red, Clayey Silt Till, few-t	race angular fine			
			10	1.0	gravel, dry.				
			13	1.8					
10			11	1					
1"+	00.0	0.4							
H	SS-6	24	11	1	Same As Above				
-			12	2.0					
-			12						
12			19						EOB 12 ft.
SAMPLE TYPES: trace 0 to 5%					SPT Resistance				Approve/Date
				Cohesia-1	nless Density 0-4 Very Loose Cohesiya Consistency		0.01/-	n, Coff	$\dashv$
					ionless Density 0-4 Very Loose Cohesive Consistency 9 Loose 10-29 Med. Dense 3-4 Soft, 5-8 M/Sti		-	•	
	=ROCK CORE mostly >50%				5-9 Loose 10-29 Med. Dense 3-4 Soft, 5-8 M/Stift 30-49 Dense 50+ Very Dense 16-30 V-Stiff, 31+				



PROJE	ROJECT : Allyn Brook Crossing - Dur					nam Meadows			ET	BORING NO.				
SITE I	OCATIO	N:			JO	<sup>B NO.:</sup> 036101610-0002-00003		1	of 1	B-52				
	Maple	e Ave, D	urham CT		LO	CATION Durham, CT		Elevati		Total Depth:				
,	Allyn Broo	k Water	Main Crossi	ng	N:	E:				12 ft. bgs				
DRILL	CONTRA	ACTOR	Northern Dri	II Service	ΕN	G/GEO W. Abrahams-Dematte		BEGU		9/22/14				
DRILL	RIG: Mo	bileDrill	B-48		DR	ILLER : Tim/Justin		FINISH		9/22/14				
Hole S	ize :		Weather:				Ground Wate	r (Dept	:h/Elev	.):				
	3-inch			Sunr		Γemperature ∼ 70 F.				und surface				
Drilling	Method :				Dri	lling Fluid :	Top of Rock (	(Depth/	Elev.)					
	Но	llow Ste	m Auger			None		Not	encour	ntered				
Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) or Drilling Rate(min/ft)	Sample Recovery or REC & RQD		SAMPLE DESCRIPTION		USCS Class.		TRATIGRAPHIC DESCRIPTION				
	SS-1	6	2			Brown, Fine Sandy Loam Topsoil, dry.			0.1	Topsoil				
			3	4.0		Brownish-red, Clayey Silt Till, trace angui	lar gravel, dry.			Silty Till				
			3	1.0		. , , , , , , , , , , , , , , , , , , ,	J , , , , ,			Ţ				
2	4		1											
	SS-2	13	6			Same As Above.			2.5					
			7			Yellowish-brown, Silt, platy (highly weath	ered rock).			t/Weathered Rock				
			6	1.0		, , , , , , , , , , , , , , , , , , ,	,			Till				
4			7											
	SS-3	7	3			Same As Above								
	000		3			odino / lo / loovo								
			4	1.4										
6			3											
	SS-4	5	3			Brownish-red, Fine Sand and Silt, trace a	angular							
			3	l		gravel. Weathered rock								
			2	0.9		g								
8			4											
	SS-5	14	3			Red/yellow-brown and gray-green Silty W	/eathered							
			6	1 7		Rock, dry.								
			8	1.7		•								
10			8	]										
+	SS-6	19	9			Same As Above								
			10	١ ا										
			9	1.2										
12			9							EOB 12 ft.				
	LE TYPE	S: trad			_	SPT Resistance				Approve/Date				
	S3=3" SPLIT SPOON few 5 to 10%													
					cesionless Density         0-4 Very Loose         Cohesive Consistency:         0-2 Very Soft           5-9 Loose         10-29 Med. Dense         3-4 Soft, 5-8 M/Stiff, 9-15 Stiff									
	SHELBY TUBE some 30 to 45% ROCK CORE mostly >50%								.oose Der		Soft, 5-8 M/Stiff 30 V-Stiff 31+		uH	



PROJ	ROJECT : Allyn Brook Crossing - Durl				nam Meadows			EET	BORING NO.
SITE	OCATIO	N:			JOB NO.: 036101610-0002-0000	)3	1	of 1	B-53
	Maple	e Ave, D	Ourham CT		LOCATION Durham, CT		Elevat		Total Depth:
	Allyn Broo	k Water	r Main Crossi	ng	N: E:				12 ft. bgs
DRILL	CONTRA	ACTOR	Northern Dril	I Service	ENG/GEO W. Abrahams-Dematte	Э	BEGU	N:	9/22/14
DRILL	RIG: Mo	bileDrill	B-48		DRILLER: Tim/Justin		FINISH	HED :	9/22/14
Hole S	ize :		Weather:			Ground Wat	er (Dept	h/Elev.	):
	3-inch			Sunn	ny, Temperature ~ 70 F.				und surface
Drilling	Method:				Drilling Fluid :	Top of Rock	(Depth/	Elev.):	
Hollov	v Stem Au	iger/3" (	Casing for Ro	ck Core	Water (rock core only)	6.5	feet be	low gro	und surface
Donth	Sample	N	Blow Count (per 6 in.)	Sample Recovery	SAMPLE			6	TRATIGRAPHIC
Depth (ft)	Type/No.		or Drilling	or REC &		I	USCS		DESCRIPTION
. ,	, , , , , , , , , , , , , , , , , , ,		Rate(min/ft)	RQD			Class.		
	SS-1	18	6		Brown, Fine Sandy Loam Topsoil,	dry.		0.1	Topsoil
			11	1.5	Brownish-red, Silty Fine Sand Till,	trace angular			Silty Till
			7	1.5	gravel, dry.				
2			6						
	SS-2 22 8			Same As Above plus trace rock fragments.					
			10	1.3					
			12	1.3					
4			7						
	SS-3	12	3		Same As Above plus few-trace cla	av.			
			4	4.0		•			
			8	1.6					
6			82						
	SS-4		100/5"		Redish-brown weathered rock, dry	v. Refusal 6.5 ft.		6.5	
				0.5	Roller-bit to 7.0 feet, collect 5-ft rul	n NX core.		Mi	caceous Siltstone
				0.5					
8	Rock	Core							
	min.		depth (ft bgs)		1				
	3	13	7-8		Micaceous Siltstone				
	3	40	8-9		Fracture zones at 7.8-9.7 feet and	10.8-11.3 feet bgs.			
	4	36	9-10	RQD		,			
	3	40	10-11	52%					
	4	31	11-12						
									EOB 12 ft.
SAMP	LE TYPE	S: tra	ce 0 to 5%		SPT Resist	ance			Approve/Date
	SPLIT SP								_
	PLIT SPO				less Density 0-4 Very Loose	Cohesive Consistency	_	ery Soft	
	SHELBY TUBE some 30 to 45% mostly >50%				Loose 10-29 Med. Dense  3 Dense 50+ Very Dense	3-4 Soft, 5-8 M/Stif		ull	

# ATTACHMENT 2 LABORATORY TESTING RESULTS



Atlanta Boston Chicago New York San Francisco www.geotesting.com

Technologies to manage risk for infrastructure

Trans	mittal			
TO: Wei Song			DATE: 10/31/2013	GTX NO: 300642
In the heart of				1950 On 71962 Stri
AECOM	1277 mg à 17		RE: Durham Meadows	Waterline
701 Edgewa	CAN CATALA			
Wakefield, N	MA 01880			
COPIES	DATE		DESCRIPTION	
	10/31/2013	October 2013 Laboratory T	est Report	
200200				
REMARKS:				
			1	1
			// 4	
		SIGNED:	Gre 1.	
CC:			Joe Tomei, Laboratory N	1anager
			5 00	1
		APPROVED BY:	for the	elled
			Nancy Hubbard, Project I	Manager



Technologies to manage risk for infrastructure Atlanta Boston Chicago New York San Francisco

www.geotesting.com

October 31, 2013

Wei Song AECOM 701 Edgewater Drive Wakefield, MA 01880

RE: Durham Meadows Waterline, Durham, CT (GTX-300642)

Dear Wei:

Enclosed are the test results you requested for the above referenced project. GeoTesting Express, Inc. (GTX) received six samples from you on 9/27/2013. These samples were labeled as follows:

Boring	Sample	Depth
B-6	SS-2	5-7 ft
B-9	SS-2	5-7 ft
B-19	SS-2	5-7 ft
B-24	SS-2	5-7 ft
B-32	SS-2	5-7 ft
B-42	SS-2	5-7 ft

GTX performed the following tests on these samples:

5 ASTM D422 - Grain Size Analyses - Sieve and Hydrometer 1 ASTM D422 - Grain Size Analysis - Sieve Only

As requested, the hydrometer portion of the grain size analysis was not performed if the sample contained less than 25% passing the No. 200 sieve.

The results presented in this report apply only to the items tested. This report shall not be reproduced except in full, without written approval from GeoTesting Express. The remainder of these samples will be retained for a period of sixty (60) days and will then be discarded unless otherwise notified by you. Please call me if you have any questions or require additional information. Thank you for allowing GeoTesting Express the opportunity of providing you with testing services. We look forward to working with you again in the future.

Respectfully yours

Joe Tomei

Laboratory Manager

GeoTesting Express, Inc. 125 Nagog Park Acton, MA 01720 Toll Free 800 434 1062 Fax 978 635 0266



Atlanta Boston Chicago New York San Francisco www.geotesting.com

Technologies to manage risk for infrastructure

## **Geotechnical Test Report**

10/31/2013

# GTX-300642 Durham Meadows Waterline

Durham, CT

Client Project No.: 60275749

Prepared for:

**AECOM** 



Client: **AECOM** 

Project: **Durham Meadows Waterline** 

Location: Durham, CT

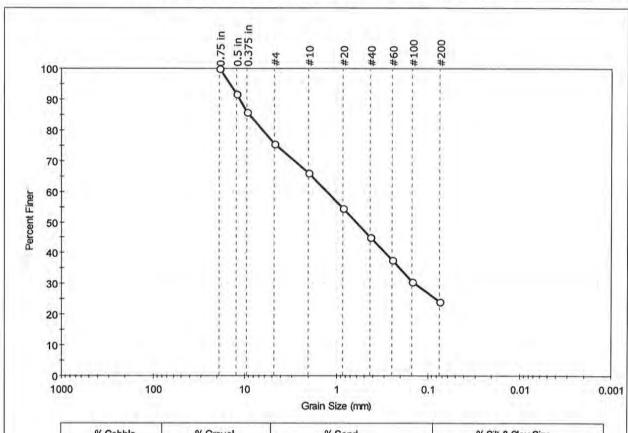
Project No: Boring ID: B-6 Tested By: Sample Type: jar jbr Sample ID: SS-2 Test Date: 10/07/13 Checked By: jdt 5-7 ft 277017 Depth: Test Id:

Test Comment: Less than 25% fines, hydrometer not performed per client request

Sample Description: Moist, reddish brown silty sand with gravel

Sample Comment:

#### Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
-	24.5	51.4	24.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 In	12.50	92		-
0,375 in	9,50	86		
#4	4.75	75		
#10	2.00	66		
#20	0.85	55		
#40	0.42	45		
#60	0.25	38		
#100	0.15	31		
#200	0.075	24		

Coc	efficients	
D <sub>85</sub> =9.0546 mm	D <sub>30</sub> = 0.1403 mm	
D <sub>60</sub> =1.2770 mm	D <sub>15</sub> = N/A	
D <sub>50</sub> =0.6098 mm	D <sub>10</sub> = N/A	
Cu =N/A	C <sub>c</sub> =N/A	

GTX-300642

Classification N/A **ASTM** AASHTO Stone Fragments, Gravel and Sand (A-1-b(0))

Sample/Test Description
Sand/Gravel Particle Shape: ROUNDED Sand/Gravel Hardness: HARD



Client: **AECOM** 

Project: **Durham Meadows Waterline** 

Location: Durham, CT

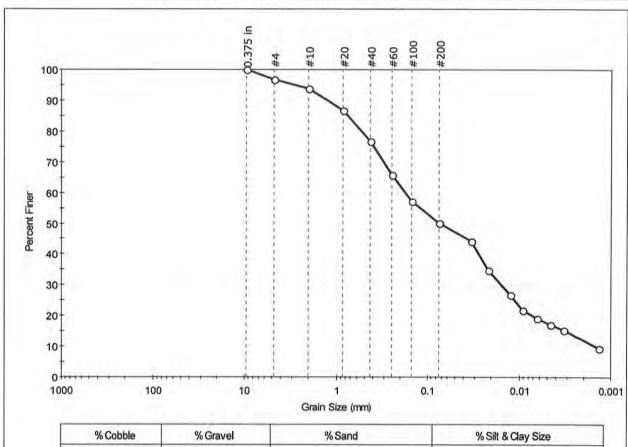
Project No: Boring ID: B-9 Sample Type: jar Tested By: jbr Sample ID: SS-2 Test Date: 10/08/13 Checked By: jdt Depth: 5-7 ft Test Id: 277018

Test Comment:

Sample Description: Moist, dark grayish brown sandy silt

Sample Comment:

#### Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	3.1	46.7	50.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9,50	100		
#4	4.75	97		
#10	2.00	94		
#20	0.85	87		
#40	0.42	77		
#60	0.25	66		
#100	0.15	57		
#200	0.075	50		
***	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
-44	0.0334	44		
***	0.0215	35		
(771)	0.0127	27		
***	0.0091	22		
111	0.0065	19		
984	0.0046	17		
797	0.0033	15		
	0.0014	10		

Co	efficients	
D <sub>85</sub> =0.7511 mm	D <sub>30</sub> = 0.0155 mm	
D <sub>60</sub> = 0.1774 mm	D <sub>15</sub> =0.0032 mm	
D <sub>50</sub> = 0.0732 mm	$D_{10} = 0.0015 \text{ mm}$	
Cu =118.267	$C_c = 0.903$	

GTX-300642

Classification **ASTM** N/A AASHTO Silty Soils (A-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape: ROUNDED

Sand/Gravel Hardness: HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



AECOM Client:

Project: **Durham Meadows Waterline** 

Location: Durham, CT

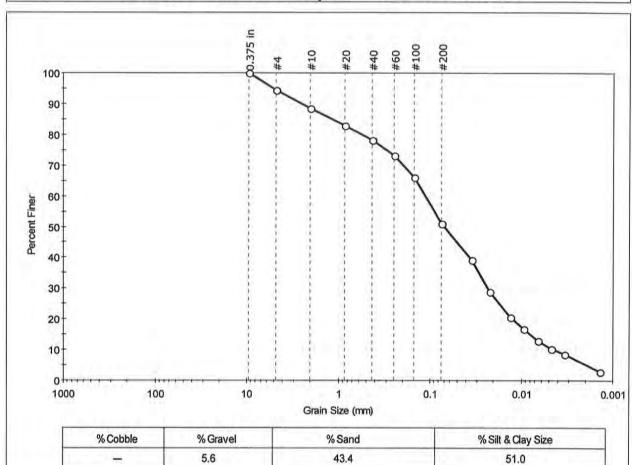
Project No: Boring ID: B-19 Sample Type: jar Tested By: jbr Sample ID: SS-2 Test Date: 10/08/13 Checked By: jdt Depth: 5-7 ft Test Id: 277019

Test Comment:

Sample Description: Moist, grayish brown sandy silt

Sample Comment:

#### Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	94		
#10	2.00	88		
#20	0.85	83		
#40	0.42	78		
#60	0.25	73		
#100	0.15	66		
#200	0.075	51		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
***	0.0347	39		
***	0.0222	29		
	0.0131	21		
484	0.0093	17		
***	0.0067	13		
***	0.0047	10		
107	0.0034	8		
400	0.0014	3		

Coefficients			
D <sub>85</sub> =1.1750 mm	D <sub>30</sub> = 0.0232 mm		
$D_{60} = 0.1134 \text{ mm}$	D <sub>15</sub> =0.0079 mm		
D <sub>50</sub> = 0.0701 mm	D <sub>10</sub> = 0.0045 mm		
Cu =25.200	C <sub>c</sub> =1.055		

GTX-300642

Classification **ASTM** AASHTO Silty Soils (A-4 (0))

Sample/Test Description Sand/Gravel Particle Shape: ROUNDED

Sand/Gravel Hardness: HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Client: AECOM

Project: **Durham Meadows Waterline** 

Location: Durham, CT

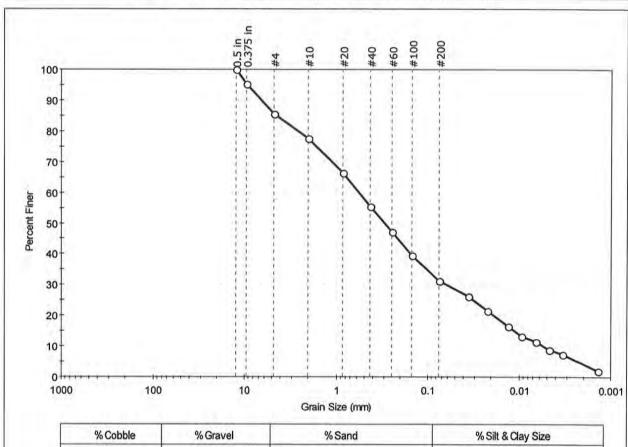
Project No: Boring ID: B-24 Sample Type: jar Tested By: jbr Sample ID: SS-2 Test Date: 10/08/13 Checked By: jdt Depth: 5-7 ft Test Id: 277020

Test Comment:

Sample Description: Moist, dark grayish brown silty sand

Sample Comment:

#### Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
-	14.5	54.3	31.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12,50	100	-	
0.375 in	9.50	95		
#4	4.75	85		
#10	2.00	78		
#20	0.85	66		
#40	0.42	56		
#60	0.25	47		
#100	0.15	40		
#200	0.075	31		
***	Particle Size (mm)	Percent Finer	Spec, Percent	Complies
***	0.0359	26		
(787)	0.0222	22		
***	0.0131	17		
***	0.0093	13		
***	0.0067	12		
***	0.0047	9		
	0.0034	7		
***	0.0014	2		

Coefficients				
D <sub>85</sub> =4.5035 mm	$D_{30} = 0.0630 \text{ mm}$			
D <sub>60</sub> =0.5651 mm	D <sub>15</sub> =0.0111 mm			
D <sub>50</sub> =0.3002 mm	$D_{10} = 0.0055 \text{ mm}$			
Cu =102.745	$C_c = 1.277$			

GTX-300642

Classification N/A **ASTM** 

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape: ROUNDED

Sand/Gravel Hardness: HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



AECOM Client:

Test Comment: Sample Description:

Project: **Durham Meadows Waterline** 

Location: Durham, CT

Boring ID: B-32 Sample ID: SS-2

Test Date: 10/08/13 Test Id: 277021

Sample Type: jar

Project No: Tested By: Checked By: jdt

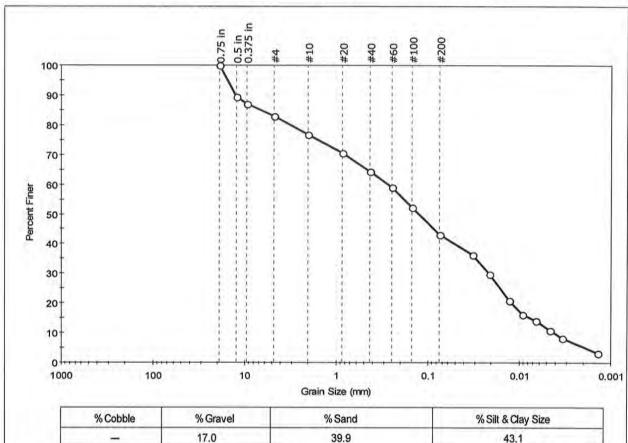
GTX-300642 jbr

Depth: 5-7 ft

Moist, dark brown silty sand with gravel

Sample Comment:

#### Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	17.0	39.9	43.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	89		
0,375 in	9.50	87		
#4	4.75	83		
#10	2,00	77		
#20	0.85	70		
#40	0.42	64		
#60	0.25	59		
#100	0.15	52		
#200	0,075	43		
***	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0327	36		
	0.0212	30	-	
777	0.0128	21		
	0.0092	16		
***	0.0066	14		
	0.0047	11		
	0.0033	8		
	0.0014	3		

Coefficients				
D <sub>85</sub> =6.7672 mm	$D_{30} = 0.0216 \text{ mm}$			
D <sub>60</sub> =0.2785 mm	D <sub>15</sub> =0.0075 mm			
D <sub>50</sub> =0.1263 mm	$D_{10} = 0.0042 \text{ mm}$			
C <sub>u</sub> =66.310	C <sub>c</sub> =0.399			

Classification ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape: ROUNDED

Sand/Gravel Hardness: HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Client: AECOM

Project: **Durham Meadows Waterline** 

Location: Durham, CT

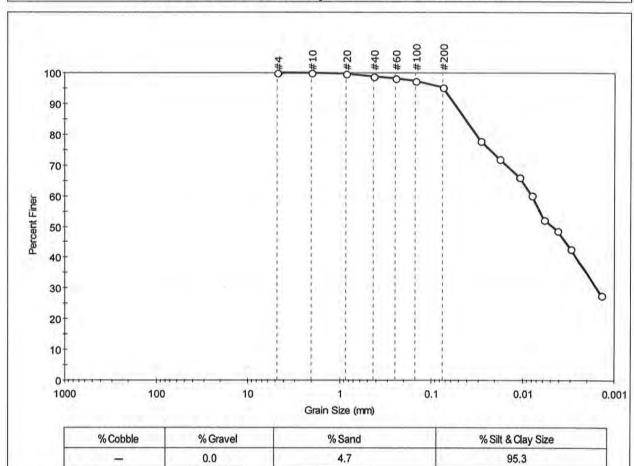
Project No: Boring ID: B-42 Sample Type: jar Tested By: jbr Sample ID: SS-2 Test Date: 10/09/13 Checked By: jdt Depth: 5-7 ft Test Id: 277022

Test Comment:

Sample Description: Moist, reddish brown clay

Sample Comment:

#### Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2,00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	98		
#100	0.15	97		
#200	0.075	95		
***	Particle Size (mm)	Percent Finer	Spec. Percent	Complles
	0.0287	78		
485	0.0181	72		
244	0.0108	66		
***	0.0080	60		
444	0.0059	52		
alata	0.0042	49		
144	0,0030	43		
***	0.0014	28		

Coe	efficients
D <sub>85</sub> =0.0425 mm	$D_{30} = 0.0016 \text{ mm}$
D <sub>60</sub> =0.0079 mm	D <sub>15</sub> = N/A
D <sub>50</sub> =0.0047 mm	$D_{10} = N/A$
Cu =N/A	C <sub>c</sub> =N/A

GTX-300642

Classification **ASTM** N/A AASHTO Silty Soils (A-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



#### WARRANTY and LIABILITY

GeoTesting Express (GTX) warrants that all tests it performs are run in general accordance with the specified test procedures and accepted industry practice. GTX will correct or repeat any test that does not comply with this warranty. GTX has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GTX may report engineering parameters that require us to interpret the test data. Such parameters are determined using accepted engineering procedures. However, GTX does not warrant that these parameters accurately reflect the true engineering properties of the *in situ* material. Responsibility for interpretation and use of the test data and these parameters for engineering and/or construction purposes rests solely with the user and not with GTX or any of its employees.

GTX's liability will be limited to correcting or repeating a test which fails our warranty. GTX's liability for damages to the Purchaser of testing services for any cause whatsoever shall be limited to the amount GTX received for the testing services. GTX will not be liable for any damages, or for any lost benefits or other consequential damages resulting from the use of these test results, even if GTX has been advised of the possibility of such damages. GTX will not be responsible for any liability of the Purchaser to any third party.

#### Commonly Used Symbols

A	pore pressure parameter for $\Delta\sigma_1-\Delta\sigma_3$	T	temperature
В	pore pressure parameter for $\Delta \sigma_3$	t	time
CIU	isotropically consolidated undrained triaxial shear test	U. UC	unconfined compression test
CR	compression ratio for one dimensional consolidation	UU, Q	unconsolidated undrained triaxial test
Co	coefficient of curvature, $(D_{30})^2/(D_{10} \times D_{60})$	u <sub>a</sub>	pore gas pressure
Cu	coefficient of uniformity, D <sub>60</sub> /D <sub>10</sub>	u <sub>c</sub>	excess pore water pressure
Ca	compression index for one dimensional consolidation	u, u <sub>w</sub>	pore water pressure
$C_{tt}$	coefficient of secondary compression	V	total volume
Cv	coefficient of consolidation	$v_{\rm g}$	volume of gas
c	cohesion intercept for total stresses	V <sub>g</sub>	volume of gas
e'	cohesion intercept for effective stresses	V,	volume of voids
D	diameter of specimen		100 THE RESIDENCE THE PROPERTY OF THE PARTY
D <sub>10</sub>	diameter at which 10% of soil is finer	Vw	volume of water
D <sub>15</sub>	diameter at which 15% of soil is finer	Vo	initial volume
D <sub>30</sub>	diameter at which 30% of soil is finer	Y.	velocity
D <sub>50</sub>	diameter at which 50% of soil is finer	W	total weight
D <sub>60</sub>	diameter at which 60% of soil is finer	$W_s$	weight of solids
D <sub>85</sub>	diameter at which 85% of soil is finer	$\mathbf{W}_{\mathbf{w}}$	weight of water
	displacement for 50% consolidation	W	water content
d <sub>50</sub>		We	water content at consolidation
d90	displacement for 90% consolidation	Wr	final water content
d100	displacement for 100% consolidation	WI	liquid limit
Е	Young's modulus	Wn	natural water content
e	void ratio	$W_p$	plastic limit
ec	void ratio after consolidation	Ws	shrinkage limit
e <sub>o</sub>	initial void ratio	Wo, Wi	initial water content
G	shear modulus	a	slope of q <sub>f</sub> versus p <sub>f</sub>
Gs	specific gravity of soil particles	a,	slope of q <sub>l</sub> versus p <sub>l</sub>
H	height of specimen	Yı	total unit weight
PI	plasticity index	Yd	dry unit weight
i	gradient	Yes	unit weight of solids
Ko	lateral stress ratio for one dimensional strain	Yw	unit weight of water
k	permeability	8	strain
LI	Liquidity Index	Evol	volume strain
$m_{\rm v}$	coefficient of volume change	Eh. Ev	horizontal strain, vertical strain
n	porosity	μ	Poisson's ratio, also viscosity
PI	plasticity index	σ	normal stress
Pe	preconsolidation pressure	o*	effective normal stress
p	$(\sigma_1 + \sigma_3)/2$ , $(\sigma_v + \sigma_h)/2$	σ <sub>c</sub> , σ' <sub>c</sub>	consolidation stress in isotropic stress system
p'	$(\sigma'_1 + \sigma'_3)/2$ , $(\sigma'_v + \sigma'_h)/2$	σh, σ'h	horizontal normal stress
p'c	p' at consolidation	σ,, σ',	vertical normal stress
Q	quantity of flow	g <sub>1</sub>	major principal stress
q	$(\sigma_1, \sigma_3)/2$	σ <sub>2</sub>	intermediate principal stress
qr	q at failure	<b>G</b> 3	minor principal stress
$q_o, q_i$	initial q	τ	shear stress
qe	q at consolidation	φ	friction angle based on total stresses
S	degree of saturation	sp*	friction angle based on effective stresses
SL	shrinkage limit	φ'.	residual friction angle
Su	undrained shear strength		φ for ultimate strength
T	time factor for consolidation	Puli	y to oriniate strength



Client: AECOM

Project: Allyn Brook Crossing Location: Durham, CT

Boring ID: B-51 Sample Type: bag Tested By: GA Sample ID: SS-4 Test Date: 10/03/14 Checked By: jdt

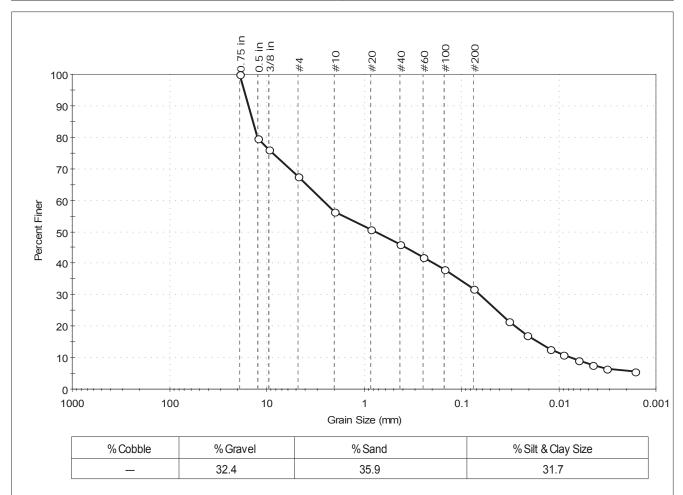
Depth: 6-8 ft Test Id: 309337

Test Comment: ---

Sample Description: Moist, reddish brown silty sand with gravel

Sample Comment: ---

#### Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	80		
3/8 in	9.50	76		
#4	4.75	68		
#10	2.00	56		
#20	0.85	51		
#40	0.42	46		
#60	0.25	42		
#100	0.15	38		
#200	0.075	32		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0328	21		
	0.0211	17		
	0.0123	13		
	0.0089	11		
	0.0063	9		
	0.0045	8		
	0.0032	6		
	0.0017	5		

 $\begin{array}{c|cccc} & \underline{\text{Coefficients}} \\ D_{85} = 13.9558 \text{ mm} & D_{30} = 0.0652 \text{ mm} \\ D_{60} = 2.6471 \text{ mm} & D_{15} = 0.0164 \text{ mm} \\ D_{50} = 0.7580 \text{ mm} & D_{10} = 0.0076 \text{ mm} \\ C_u = 348.303 & C_c = 0.211 \end{array}$ 

Project No:

GTX-302373

<u>Classification</u> ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape: ANGULAR

Sand/Gravel Hardness : SOFT

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Client: AECOM

Project: Allyn Brook Crossing Location: Durham, CT

Boring ID: B-51 Sample Type: bag Tested By: GA Sample ID: SS-6 Test Date: 10/03/14 Checked By: jdt

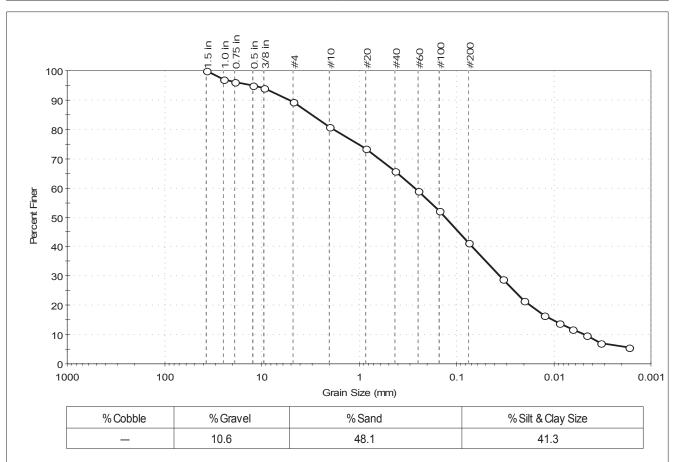
Depth: 10-12 ft Test Id: 309338

Test Comment: ---

Sample Description: Moist, reddish brown silty sand

Sample Comment: ---

#### Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1.0 in	25.00	97		
0.75 in	19.00	96		
0.5 in	12.50	95		
3/8 in	9.50	94		
#4	4.75	89		
#10	2.00	81		
#20	0.85	73		
#40	0.42	66		
#60	0.25	59		
#100	0.15	52		
#200	0.075	41		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0331	29		
	0.0202	21		
	0.0126	17		
	0.0088	14		
	0.0064	12		
	0.0046	10		
	0.0033	7		
	0.0017	6		

<u>Coefficients</u>				
$D_{85} = 3.0421 \text{ mm}$	$D_{30} = 0.0355 \text{ mm}$			
$D_{60} = 0.2683 \text{ mm}$	$D_{15} = 0.0102 \text{ mm}$			
$D_{50} = 0.1305 \text{ mm}$	$D_{10} = 0.0047 \text{ mm}$			
$C_{11} = 57.085$	$C_c = 0.999$			

GTX-302373

Project No:

<u>Classification</u> <u>ASTM</u> N/A

AASHTO Silty Soils (A-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape: ANGULAR

Sand/Gravel Hardness : SOFT

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Client: AECOM

Project: Allyn Brook Crossing Location: Durham, CT

Location:Durham, CTProject No:GTX-302373Boring ID:B-52Sample Type:bagTested By:GASample ID:SS-5Test Date:10/03/14Checked By:jdt

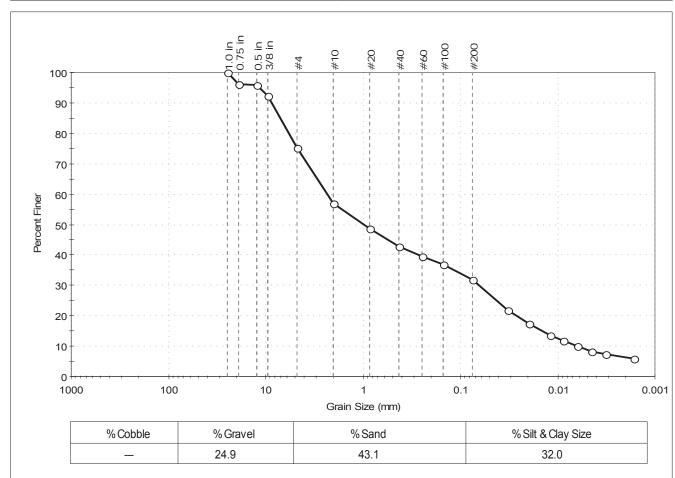
Depth: 8-10 ft Test Id: 309339

Test Comment: ---

Sample Description: Moist, reddish brown silty sand with gravel

Sample Comment: ---

### Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.0 in	25.00	100		
0.75 in	19.00	96		
0.5 in	12.50	96		
3/8 in	9.50	92		
#4	4.75	75		
#10	2.00	57		
#20	0.85	49		
#40	0.42	43		
#60	0.25	40		
#100	0.15	37		
#200	0.075	32		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0328	22		
	0.0200	17		
	0.0119	14		
	0.0088	12		
	0.0063	10		
	0.0045	8		
	0.0032	7		
	0.0017	6		

<u>Coefficients</u>				
D <sub>85</sub> = 7.0658 mm	$D_{30} = 0.0637 \text{ mm}$			
D <sub>60</sub> = 2.3044 mm	$D_{15} = 0.0143 \text{ mm}$			
D <sub>50</sub> = 0.9838 mm	$D_{10} = 0.0061 \text{ mm}$			
$C_u = 377.770$	$C_c = 0.289$			

<u>Classification</u> <u>ASTM</u> N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape: ANGULAR

Sand/Gravel Hardness: SOFT

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65

Separation of Sample: 10 Sieve



Client: AECOM

Project: Allyn Brook Crossing Location: Durham, CT

Boring ID: B-53 Sample Type: bag Tested By: GA Sample ID: SS-3 Test Date: 10/03/14 Checked By: jdt

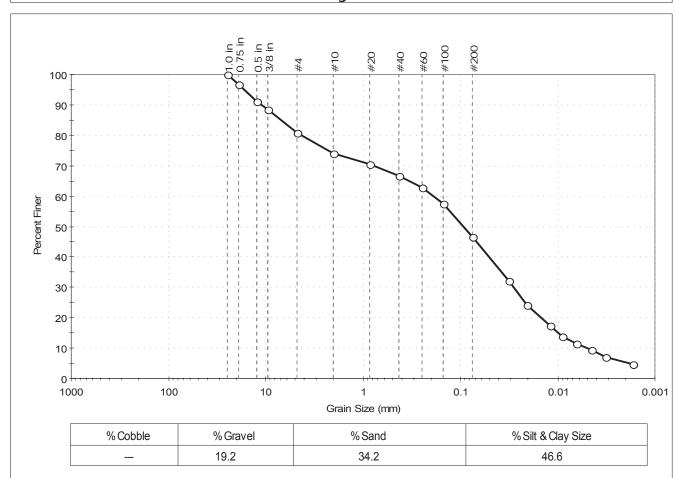
Depth: 4-6 ft Test Id: 309340

Test Comment: ---

Sample Description: Moist, reddish brown silty sand with gravel

Sample Comment: ---

### Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.0 in	25.00	100		
0.75 in	19.00	97		
0.5 in	12.50	91		
3/8 in	9.50	88		
#4	4.75	81		
#10	2.00	74		
#20	0.85	70		
#40	0.42	67		
#60	0.25	63		
#100	0.15	57		
#200	0.075	47		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0318	32		
	0.0208	24		
	0.0119	17		
	0.0089	14		
	0.0064	12		
	0.0045	9		
	0.0032	7		
	0.0017	5		

<u>Coefficients</u>				
D <sub>85</sub> = 6.9560 mm	$D_{30} = 0.0282 \text{ mm}$			
D <sub>60</sub> = 0.1923 mm	$D_{15} = 0.0097 \text{ mm}$			
D <sub>50</sub> = 0.0932 mm	$D_{10} = 0.0050 \text{ mm}$			
$C_u = 38.460$	$C_c = 0.827$			

Project No:

GTX-302373

Classification N/A

AASHTO Silty Soils (A-4 (0))

**ASTM** 

<u>Sample/Test Description</u> Sand/Gravel Particle Shape: ANGULAR

Sand/Gravel Hardness: SOFT

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65

Separation of Sample: 10 Sieve

# ATTACHMENT 3 ENVIRONMENTAL SAMPLING RESULTS

### **ENVIRONMENTAL DATA REPORT**

### Subsurface Investigation Results for the Durham Meadows Waterline RD Durham, CT

### I. INTRODUCTION

During the geotechnical soil boring program, several samples were also collected for environmental analyses (volatile organic compounds (VOCs) and extractable total petroleum hydrocarbons (ETPH). Borings selected for analysis were based on their proximity to active and former gasoline stations, and the analyses selected were based to provide information for evaluating disposal of excavated soils from these areas during construction of the water-line. Sampling and analysis were performed in accordance with the Sampling and Analysis Plan (SAP) Waterline Remedial Design Addendum (AECOM, 2013) to the latest version of the Sampling and Analysis Plan for Merriam Manufacturing Company Inc. Study Area; Pre-remedial Design Investigation; Durham Meadows Superfund Site, Durham, Connecticut (AECOM, 2010.)

### II. SAMPLE LOCATIONS

Samples were collected at intervals of 1 to 3, 5 to 7, 10 to 12, and 15 to 17 feet below grade surface (bgs) at boring location B-20 and at 1-3, 5-7, and 10-12 feet bgs at boring location B-21. Samples were collected simultaneously with the geotechnical boring program.

### III. SAMPLE ANALYSES

Samples were analyzed for VOCs through EPA's Contract Laboratory Program (CLP) Routine Analytical Services (RAS) by Statement of Work SOM01.2 and for ETPH through EPA's Delivery of Analytical Services (DAS) by DAS method D-127.1. Results from these analyses are presented in the attached Data Summary Tables (DSTs.) The DSTs provide a cross-reference between the sample no. in the lab report and the Sample ID (which includes the location and interval.) Pages from the lab reports for sample results are also attached.

### IV. DATA QUALITY

In accordance with the SAP, data was not scheduled for formal validation because it is intended only for waste characterization purposes. However, all CLP data is automatically validated to EPA Region 1's *Tier 1, Stage 2B Electronic* level of validation. Therefore, the validated results are presented in the attached DST for the VOC analyses.

Field QC included collection of a field duplicate for the 5 to 7 interval at boring location B-20, and the data for this field duplicate is presented in the DST.

For the VOCs, validation result in the data for several target compounds considered unusable. However, none of these compounds (1,1-dichloroethane, bromochloromethane, 1,4-dioxane, dibromochloromethane, and 1,2-dibromo-3-chloropropane) are typically associated with petroleum releases, so there in no impact on using the data to evaluate potential petroleum contamination.

For the ETPH analysis, summary QC was evaluated, and no deficiencies indicating data quality issues were identified.

#### V. DATA INTERPRETATION

For evaluation purposes (and to identify potential impacts on disposal of spoils) data were compared to the Connecticut GA, GAA Pollutant Mobility Criteria (PMC). Although these values may not be appropriate for determining disposal criteria, it serves as a conservative baseline for evaluating the data.

### **VOCs**

There were no detections of target compounds benzene, ethylbenzene, toluene, or xylenes, compounds collectively called BTEX and associated with a gasoline release. Therefore, it is reasonable to assume there are no impacts from any releases of gasoline to the soils in the areas near the borings.

Acetone was detected in two samples, but at three orders of magnitude below its respective PMC.

The 1 to 3 foot bgs sample from boring B20 had chlorinated compounds chloroform and trichloroethene (TCE) detections. Both were below their PMC concentrations.

No other VOC analytes were detected.

#### **ETPH**

The 1-3 foot interval from B21 had an ETPH concentration (1,200 mg/kg) above the PMC of 500 mg/kg. ETPH may be an indicator of the presence of lower volatility petroleum fractions (such as diesel fuel and no. 2 heating oil.) Positive ETPH results can also result from other materials, such as asphalt. The boring log associated with this sample (B21A) indicates the location had five inches of asphalt at ground surface. Fall-in from this asphalt layer has the potential to create a 'false positive', i.e. not related to a petroleum release, in the sample. Samples from deeper intervals (5 to 7 feet and 10 to 12 feet bgs) were below the PMC, indicating no vertical distribution of ETPH above the PMC at this location. The boring log did not indicate the presence of staining or odor in the borings at this location, whose presence might indicate the soil is contaminated from a petroleum release.

#### <u>Attachments</u>

Data Summary Tables VOC lab report pages ETPH lab report pages

SITE: Durham Meadows Area A CASE NO.: 43591

### DATA SUMMARY TABLE Volatile Organics Analysis, (SOM01.2) Soil (ug/Kg)

SDG NO.: A3Q89

	Son (ug/K	<i>5,</i>		
eport Sample No.	A3Q89	A3Q90	A3QA1	A3Q91
ECOM Sample ID	SB-B20-1-3	SB-B20-5-7	FB-SB-B20-5-7	SB-B20-10-12
Lab Sample ID	M1551-01B	M1551-02B	M1551-08B	M1551-03B
Date Sampled	08/27/13	08/27/13	08/27/13	08/27/13
Date Received	08/28/13	08/28/13	08/28/13	08/28/13
Date Analyzed	09/06/13	09/06/13	09/06/13	09/06/13
% Solids	92	88	87	84
Dilution Factor	1	1	1	1
olume of Sample	5.4 g	3.9 g	7.7 g	7.7 g
Comments	· ·	FD of A3QA1	FD of A3Q90	· ·
CRQL				
				3.9 U
5.0	5.0 U	7.3 U	3.7 U	3.9 U
5.0	5.0 U	7.3 U	3.7 U	3.9 U
5.0	5.0 U	7.3 U	3.7 U	3.9 U
10	11	15 U	16	7.8 U
5.0	5.0 U	7.3 U	3.7 U	3.9 U
5.0	5.0 U	7.3 U	3.7 U	3.9 U
5.0	5.0 U	7.3 U	3.7 U	3.9 U
5.0	5.0 U	7.3 U	3.7 U	3.9 U
5.0		7.3 U		3.9 U
				3.9 U
				3.9 U
				7.8 U
				3.9 U
				78 R
				3.9 U
				3.9 U
				7.8 U
				3.9 U
				7.8 U
				3.9 U
5.0	5.0 U	7.3 U	3.7 U	3.9 U
5.0	5.0 R	7.3 U	3.7 U	3.9 U
5.0	5.0 U	7.3 U	3.7 U	3.9 U
5.0	5.0 R	7.3 U	3.7 U	3.9 U
5.0	5.0 U	7.3 U	3.7 U	3.9 U
	5.0 U			3.9 U
				3.9 U
5.0	0.0 0	7.5 5	0.7 0	0.00
	ECOM Sample ID Lab Sample ID Date Sampled Date Received Date Analyzed % Solids Dilution Factor olume of Sample Comments  CRQL  5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.	ECOM Sample No. ECOM Sample ID Lab Sample ID Date Sample ID Date Sampled Date Received Date Analyzed % Solids 92 Dilution Factor olume of Sample Comments	### Page 10	Seport Sample   No.   COM Sample   D

SITE: Durham Meadows Area A CASE NO.: 43591

### DATA SUMMARY TABLE Volatile Organics Analysis, (SOM01.2) Soil (ug/Kg)

**SDG NO.: A3Q89** 

	Son (ug/K	3,		
port Sample No. COM Sample ID Lab Sample ID	A3Q92 SB-B20-15-17 M1551-04B	A3Q93 SB-B21-1-3 M1551-05B	A3Q94 SB-B21-5-7 M1551-06B	A3Q95 SB-B21-10-12 M1551-07B
Date Received Date Analyzed	08/28/13 09/06/13	08/28/13 09/06/13	08/28/13 09/06/13	08/27/13 08/28/13 09/06/13
% Solids Dilution Factor Dlume of Sample	83 1 8.6 g	93 1 6.2 g	1	92 1 7.1 g
Comments				
	3511	4311	3611	3.8 U
				3.8 U
5.0	3.5 U	4.3 U	3.6 U	3.8 U
5.0	3.5 U	4.3 U	3.6 U	3.8 U
5.0	3.5 U	4.3 U	3.6 U	3.8 U
5.0	3.5 U	4.3 U	3.6 U	3.8 U
5.0	3.5 U	4.3 U	3.6 U	3.8 U
5.0	3.5 U	4.3 U	3.6 U	3.8 U
10	7.0 U	8.6 U	7.2 U	7.6 U
5.0	3.5 U	4.3 U	3.6 U	3.8 U
5.0	3.5 U		3.6 U	3.8 U
				7.6 U
				3.8 U
				3.8 U 3.8 U
				3.8 U
				3.8 U
				3.8 U
				3.8 U
				76 R
				3.8 U
				3.8 U
				3.8 U
5.0	3.5 U	4.3 U	3.6 U	3.8 U
5.0	3.5 U	4.3 U	3.6 U	3.8 U
10	7.0 U	8.6 U	7.2 U	7.6 U
5.0	3.5 U	4.3 U	3.6 U	3.8 U
5.0	3.5 U	4.3 U	3.6 U	3.8 U
5.0	3.5 U	4.3 U	3.6 U	3.8 U
5.0		4.3 U	3.6 U	3.8 U
10	7.0 U	8.6 U		7.6 U
				3.8 U 3.8 U
				3.8 U 3.8 U
				3.8 U
				3.8 U
				3.8 U
				3.8 U
				3.8 U
0.0	5.5 <b>5</b>		5.5 5	5.5 5
	COM Sample ID Lab Sample ID Date Sampled Date Received Date Analyzed % Solids Dilution Factor clume of Sample Comments  CRQL  5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.	Dort Sample No.   COM Sample ID   Lab Sample ID   Date Sample ID   Date Sample ID   Date Sampled   Date Received   Date Analyzed   % Solids   83   Dilution Factor   1   S.6   G   Comments   CRQL   S.0   3.5   U   5.0   3	Description   Description	Description   Description

SITE: Durham Meadows Area A

CASE NO.: 0336M SDG NO.: D10650 DATA SUMMARY TABLE ETPH Analysis (D-127.1) Soil (mg/Kg)

Traffic Repor	t Sample No.	D10650	D10651	D10662	D10652
AECO	M Sample ID	SB-B20-1-3	SB-B20-5-7	FB-SB-B20-5-7	SB-B20-10-12
Lá	ab Sample ID	M1545-01A	M1545-02A	M1545-08A	M1545-03A
	ate Sampled	08/27/13	08/27/13	08/27/13	08/27/13
D	ate Received	08/28/13	08/28/13	08/28/13	08/28/13
D	ate Extracted	09/10/13	09/10/13	09/10/13	09/10/13
D	ate Analyzed	09/24/13	09/24/13	09/25/13	09/24/13
	% Solids	92	89	87	80
D	ilution Factor	5	5	1	1
Mass/Volur	ne of Sample	10.1 g	10.6 g	10.4 g	10.1 g
	Comments		FD of D10662	FD of D10651	
Analyte	RL				
Extractable Total Petroleum Hydrocarbon	40	330	190	200	8.9 J

SITE: Durham Meadows Area A

CASE NO.: 0336M SDG NO.: D10650 DATA SUMMARY TABLE ETPH Analysis (D-127.1) Soil (mg/Kg)

Traffic Repo	rt Sample No.	D10653	D10654	D10655	D10656
AECC	OM Sample ID	SB-B20-15-17	SB-B21-1-3	SB-B21-5-7	SB-B21-10-12
L	ab Sample ID	M1545-04A	M1545-05A	M1545-06A	M1545-07A
1	Date Sampled	08/27/13	08/27/13	08/27/13	08/27/13
Г	Date Received	08/28/13	08/28/13	08/28/13	08/28/13
Г	ate Extracted	09/10/13	09/10/13	09/10/13	09/10/13
[	Date Analyzed	09/24/13	09/24/13	09/25/13	09/24/13
	% Solids	83	93	88	92
Γ	Dilution Factor	1	20	1	1
Mass/Volume of Sample		10.4 g	10 g	10.1 g	10.1 g
	Comments				
Analyte	RL				
Extractable Total Petroleum Hydrocarbon	40	6 J	1200	30	61

EPA	SAMPLE	NO.	
A3Q	89		

Lab Name: MITKEM LABOR	ATORIES	Contract:	EP-W-11-033	
Lab Code: MITKEM	Case No.: 43	Mod. Ref	No.: SDG N	Io.: A3Q89
Matrix: (SOIL/SED/WATER	) SOIL	Lab Samp	le ID: M1551-01B	
Sample wt/vol: 5.	40 (g/mL) G	Lab File	ID: V506067.D	
Level: (TRACE/LOW/MED)	LOW	Date Rece	eived: 08/28/2013	
% Moisture: not dec.	7.7	Date Ana	lyzed: 09/06/2013	
GC Column: DB-624	ID: 0.2	25 (mm) Dilution	Factor: 1.0	
Soil Extract Volume:		(uL) Soil Alic	quot Volume:	(uL)
Purge Volume: 10.0		(mL)		

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/Kg) µG/KG	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	11	
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	45	
	1,1,1-Trichloroethane	5.0	U
	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
	Benzene	5.0	U
	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	U

EPA	SAMPLE	NO.	
A3Q	89		

Lab Name: MITKEM LABOR	ATORIES	Contract: E		EP-W-11-033		
Lab Code: MITKEM	Case No.: 43591		Mod. Ref No.:	SDG No.: A3Q89		
Matrix: (SOIL/SED/WATER	SOIL		Lab Sample ID:	M1551-01B		
Sample wt/vol: 5.	40 (g/mL) <u>G</u>		Lab File ID:	V506067.D		
Level: (TRACE/LOW/MED)	LOW		Date Received:	08/28/2013		
% Moisture: not dec.	7.7		Date Analyzed:	09/06/2013		
GC Column: DB-624	ID: 0.25	(mm)	Dilution Factor:	1.0		
Soil Extract Volume:		(uL)	Soil Aliquot Vol	ume:	(uL)	
Purge Volume: 10.0		(mL)				

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG	Q
79-01-6	Trichloroethene	25	
108-87-2	Methylcyclohexane	5.0	U
	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-pentanone	10	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
95-47-6	o-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	EPA	SAMPLE	NO.
Ž	A3Q89	)	

Lab N	Name: MITKEM LABORATORIES				Contract:			EP-W-11-033				
Lab C	Code:	MITKE	M (	Case No.:	43591		Mod	d. Ref No.:	:	SDG No.:	A3Q89	
Matri	.x: (S	OIL/SE	D/WATER)	SOIL			Lal	b Sample II	):	M1551-01B		
Sampl	e wt/	vol:	5.4	0 (g/mL)	G		Lal	b File ID:		V506067.D		
Level	: (TR	ACE or	LOW/MED	) LOW			Dat	te Received	1:	08/28/2013		
% Moi	sture	: not	dec.	7.7			Dat	te Analyzed	1:	09/06/2013		
GC Cc	lumn:	DB-6	524	ID:	0.25	(mm)	Di:	lution Fact	cor:	1.0		
Soil	Extra	ct Vol	ume:			(uL)	So	il Aliquot	Volu	ume:		(uL)
CONCE	NTRAT	ION UN	IITS: (ug	/L or ug/	Kg) μG	:/KG	Pu	rge Volume:	10	. 0		(mL)
C.	AS NUM	/IBER		COMPOUN	D NAME			RT		EST. CONC.	Ç	Q
	E9	9667961	Total Alk	anes				N/A				

<sup>&</sup>lt;sup>1</sup>EPA-designated Registry Number.

EPA	SAMPLE	NO.	
A3Q	90		

Lab Name: MITKEM LABORATORIES				Contract:	EP-W-11-033		
Lab Code:	MITKEM	Case No.:	43591		Mod. Ref No.:	SDG No.: A3Q89	
Matrix: (So	OIL/SED/WATER	R) SOIL			Lab Sample ID:	M1551-02B	
Sample wt/	vol:3.	90 (g/mL)	G		Lab File ID:	V506068.D	
Level: (TR	ACE/LOW/MED)	LOW			Date Received:	08/28/2013	
% Moisture	: not dec.	12			Date Analyzed:	09/06/2013	
GC Column:	DB-624	ID:	0.25	(mm)	Dilution Factor:	1.0	
Soil Extra	ct Volume:			(uL)	Soil Aliquot Vol	ume:(u	ıL)
Purge Volum	me: 10.0			(mL)			

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG	0
		7.3	- ~
	Dichlorodifluoromethane		U
	Chloromethane	7.3	U
	Vinyl chloride	7.3	U
	Bromomethane	7.3	U
	Chloroethane	7.3	U
75-69-4	Trichlorofluoromethane	7.3	U
75-35-4	1,1-Dichloroethene	7.3	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	7.3	U
67-64-1	Acetone	15	U
75-15-0	Carbon disulfide	7.3	Ū
79-20-9	Methyl acetate	7.3	U
75-09-2	Methylene chloride	7.3	U
156-60-5	trans-1,2-Dichloroethene	7.3	U
1634-04-4	Methyl tert-butyl ether	7.3	U
75-34-3	1,1-Dichloroethane	7.3	U
156-59-2	cis-1,2-Dichloroethene	7.3	U
78-93-3	2-Butanone	15	U
74-97-5	Bromochloromethane	7.3	U
67-66-3	Chloroform	7.3	U
71-55-6	1,1,1-Trichloroethane	7.3	U
110-82-7	Cyclohexane	7.3	U
56-23-5	Carbon tetrachloride	7.3	U
71-43-2	Benzene	7.3	U
107-06-2	1,2-Dichloroethane	7.3	U
123-91-1	1,4-Dioxane	150	U

EPA	SAMPLE	NO.	
A3Q	90		

Lab Name: MITKEM LABORATORIES			Contract: E		EP-W-11-033		
Lab Code: MI	TKEM	Case No.:	43591		Mod. Ref No.:	SDG No.: A3Q89	
Matrix: (SOII	L/SED/WATER	) SOIL			Lab Sample ID:	M1551-02B	
Sample wt/vol	l:3.	90 (g/mL)	G		Lab File ID:	V506068.D	
Level: (TRACE	E/LOW/MED)	LOW			Date Received:	08/28/2013	
% Moisture: r	not dec.	12			Date Analyzed:	09/06/2013	
GC Column: I	DB-624	ID:	0.25	(mm)	Dilution Factor:	1.0	
Soil Extract	Volume:			(uL)	Soil Aliquot Vol	ume:	(uL)
Purge Volume:	10.0			(mL)			

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/Kg) µG/KG	Q
79-01-6	Trichloroethene	7.3	U
108-87-2	Methylcyclohexane	7.3	U
	1,2-Dichloropropane	7.3	U
75-27-4	Bromodichloromethane	7.3	U
10061-01-5	cis-1,3-Dichloropropene	7.3	U
108-10-1	4-Methyl-2-pentanone	15	U
108-88-3	Toluene	7.3	U
10061-02-6	trans-1,3-Dichloropropene	7.3	U
79-00-5	1,1,2-Trichloroethane	7.3	U
127-18-4	Tetrachloroethene	7.3	U
591-78-6	2-Hexanone	15	U
124-48-1	Dibromochloromethane	7.3	U
106-93-4	1,2-Dibromoethane	7.3	U
	Chlorobenzene	7.3	U
	Ethylbenzene	7.3	U
179601-23-1	m,p-Xylene	7.3	U
	o-Xylene	7.3	U
100-42-5	Styrene	7.3	U
75-25-2	Bromoform	7.3	U
	Isopropylbenzene	7.3	U
	1,1,2,2-Tetrachloroethane	7.3	U
	1,3-Dichlorobenzene	7.3	U
	1,4-Dichlorobenzene	7.3	U
	1,2-Dichlorobenzene	7.3	U
	1,2-Dibromo-3-chloropropane	7.3	U
	1,2,4-Trichlorobenzene	7.3	U
87-61-6	1,2,3-Trichlorobenzene	7.3	U

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	EPA	SAMPLE	NO.
Ž	A3Q9(	)	

Lab Name: MIT	KEM LABORAT	DRIES			Con	tract:		Eb-M-TT-03	3		
Lab Code: MIT	KEM Ca	ase No.:	43591		Mod	. Ref No.	:		SDG No.:	A3Q89	
Matrix: (SOIL/	SED/WATER)	SOIL			Lab	Sample II	):	M1551-02B			
Sample wt/vol:	3.90	(g/mL)	G		Lab	File ID:		V506068.D			
Level: (TRACE	or LOW/MED)	LOW			Dat	e Received	d:	08/28/2013	}		
% Moisture: no	t dec. 1	2			Dat	e Analyzeo	d:	09/06/2013	3		
GC Column: DB	-624	ID:	0.25	(mm)	Dil	ution Fact	tor:	1.0			
Soil Extract V	olume:			(uL)	Soi	l Aliquot	Volu	ıme:			(uL)
CONCENTRATION	UNITS: (ug/	L or ug/K	(g) μG	/KG	Pur	ge Volume	: 10	.0			(mL)
CAS NUMBER		COMPOUND	NAME			RT		EST. CO	NC.	Q	)
E96679	Total Alka	nes				N/A					

<sup>&</sup>lt;sup>1</sup>EPA-designated Registry Number.

EPA	SAMPLE	NO.	
A3Q	91		

Lab Name: MITKEM LABOR	ATORIES			Contract:	EP-W-11-033
Lab Code: MITKEM	Case No.:	43591		Mod. Ref No.:	SDG No.: A3Q89
Matrix: (SOIL/SED/WATER	SOIL			Lab Sample ID:	M1551-03B
Sample wt/vol: 7.	70 (g/mL)	G		Lab File ID:	V506069.D
Level: (TRACE/LOW/MED)	LOW			Date Received:	08/28/2013
% Moisture: not dec.	16			Date Analyzed:	09/06/2013
GC Column: DB-624	ID:	0.25	(mm)	Dilution Factor:	1.0
Soil Extract Volume:			(uL)	Soil Aliquot Vol	ume: (uL)
Purge Volume: 10.0			(mL)		

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/Kg) µG/KG	Q
75-71-8	Dichlorodifluoromethane	3.9	U
74-87-3	Chloromethane	3.9	U
75-01-4	Vinyl chloride	3.9	U
74-83-9	Bromomethane	3.9	U
75-00-3	Chloroethane	3.9	U
75-69-4	Trichlorofluoromethane	3.9	U
75-35-4	1,1-Dichloroethene	3.9	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	3.9	U
67-64-1		7.8	U
75-15-0	Carbon disulfide	3.9	U
79-20-9	Methyl acetate	3.9	U
75-09-2	Methylene chloride	3.9	U
	trans-1,2-Dichloroethene	3.9	U
	Methyl tert-butyl ether	3.9	U
75-34-3	1,1-Dichloroethane	3.9	U
156-59-2	cis-1,2-Dichloroethene	3.9	U
78-93-3	2-Butanone	7.8	U
74-97-5	Bromochloromethane	3.9	U
67-66-3	Chloroform	3.9	U
71-55-6	1,1,1-Trichloroethane	3.9	U
	Cyclohexane	3.9	U
56-23-5	Carbon tetrachloride	3.9	U
71-43-2	Benzene	3.9	U
	1,2-Dichloroethane	3.9	U
123-91-1	1,4-Dioxane	78	U

EPA	SAMPLE	NO.
A3Q	91	

Lab Name: MITKEM LAR	BORATORIES		Contract:	EP-W-11-033	
Lab Code: MITKEM	Case No.: 43591		Mod. Ref No.:	SDG No.: A3Q89	
Matrix: (SOIL/SED/WA	TER) SOIL		Lab Sample ID:	M1551-03B	
Sample wt/vol:	7.70 (g/mL) G		Lab File ID:	V506069.D	
Level: (TRACE/LOW/ME	D) LOW		Date Received:	08/28/2013	
% Moisture: not dec.	16		Date Analyzed:	09/06/2013	
GC Column: DB-624	ID: 0.25	(mm)	Dilution Factor:	1.0	
Soil Extract Volume:		(uL)	Soil Aliquot Vol	ume: (uI	( ۲
Purge Volume: 10.0		(mL)			

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/Kg) μG/KG	Q
79-01-6	Trichloroethene	3.9	U
108-87-2	Methylcyclohexane	3.9	U
78-87-5	1,2-Dichloropropane	3.9	U
	Bromodichloromethane	3.9	U
10061-01-5	cis-1,3-Dichloropropene	3.9	U
108-10-1	4-Methyl-2-pentanone	7.8	U
108-88-3		3.9	U
	trans-1,3-Dichloropropene	3.9	U
79-00-5	1,1,2-Trichloroethane	3.9	U
127-18-4	Tetrachloroethene	3.9	U
591-78-6	2-Hexanone	7.8	U
124-48-1	Dibromochloromethane	3.9	U
106-93-4	1,2-Dibromoethane	3.9	U
	Chlorobenzene	3.9	U
	Ethylbenzene	3.9	U
179601-23-1	m,p-Xylene	3.9	U
95-47-6	o-Xylene	3.9	U
100-42-5	Styrene	3.9	U
	Bromoform	3.9	U
98-82-8	Isopropylbenzene	3.9	U
79-34-5	1,1,2,2-Tetrachloroethane	3.9	U
541-73-1	1,3-Dichlorobenzene	3.9	U
	1,4-Dichlorobenzene	3.9	U
	1,2-Dichlorobenzene	3.9	U
	1,2-Dibromo-3-chloropropane	3.9	U
120-82-1	1,2,4-Trichlorobenzene	3.9	U
87-61-6	1,2,3-Trichlorobenzene	3.9	U

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	EPA	SAMPLE	NO.	
Α	.3Q91	L		

Lab	Name:	MITKE	M LABORAT	ORIES			Contract:	EP-W-11-033		
Lab	Code:	MITKE	<u>М</u> С	ase No.:	43591		Mod. Ref No.:	SDG No.	: <u>A3Q8</u>	9
Matı	rix: (S	OIL/SE	D/WATER)	SOIL			Lab Sample ID:	M1551-03B		
Sam	ple wt/	vol:	7.70	(g/mL)	G		Lab File ID:	V506069.D		
Leve	el: (TR.	ACE or	LOW/MED)	LOW			Date Received:	08/28/2013		
% Mo	oisture	: not	dec. $1$	6			Date Analyzed:	09/06/2013		
GC (	Column:	DB-6	24	ID:	0.25	(mm)	Dilution Factor:	: 1.0		
Soi	l Extra	ct Vol	ume:			(uL)	Soil Aliquot Vol	lume:		(uL)
CONC	CENTRAT	ION UN	ITS: (ug/	L or ug/F	(g) μG	KG	Purge Volume: 1	0.0		(mL)
	CAS NUN	MBER		COMPOUND	NAME		RT	EST. CONC.		Q
01		τ	Jnknown-01	L			11.024	7.2	2 J	
	E	9667961	rotal Alka	anes			N/A			

<sup>&</sup>lt;sup>1</sup>EPA-designated Registry Number.

EPA	SAMPLE	NO.	
A3Q	92		

Lab Name: MITKEM LABOR	ATORIES		Contract:	EP-W-11-033
Lab Code: MITKEM	Case No.:	43591	Mod. Ref No.:	SDG No.: A3Q89
Matrix: (SOIL/SED/WATER	) SOIL		Lab Sample ID:	M1551-04B
Sample wt/vol: 8.	60 (g/mL)	G	Lab File ID:	V506070.D
Level: (TRACE/LOW/MED)	LOW		Date Received:	08/28/2013
% Moisture: not dec.	17		Date Analyzed:	09/06/2013
GC Column: DB-624	ID:	0.25 (mm)	Dilution Factor:	1.0
Soil Extract Volume:		(uL)	Soil Aliquot Vol	ume: (uL)
Purge Volume: 10.0		(mL)		

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/Kg) µG/KG	Q
75-71-8	Dichlorodifluoromethane	3.5	U
74-87-3	Chloromethane	3.5	U
75-01-4	Vinyl chloride	3.5	U
74-83-9	Bromomethane	3.5	U
75-00-3	Chloroethane	3.5	U
75-69-4	Trichlorofluoromethane	3.5	U
75-35-4	1,1-Dichloroethene	3.5	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	3.5	U
67-64-1	Acetone	7.0	U
75-15-0	Carbon disulfide	3.5	U
79-20-9	Methyl acetate	3.5	U
75-09-2	Methylene chloride	3.5	U
156-60-5	trans-1,2-Dichloroethene	3.5	U
1634-04-4	Methyl tert-butyl ether	3.5	U
75-34-3	1,1-Dichloroethane	3.5	U
156-59-2	cis-1,2-Dichloroethene	3.5	U
78-93-3	2-Butanone	7.0	U
74-97-5	Bromochloromethane	3.5	U
67-66-3	Chloroform	3.5	U
	1,1,1-Trichloroethane	3.5	U
110-82-7	Cyclohexane	3.5	U
56-23-5	Carbon tetrachloride	3.5	U
71-43-2	Benzene	3.5	U
	1,2-Dichloroethane	3.5	U
123-91-1	1,4-Dioxane	70	U

EPA	SAMPLE	NO.	
A3Q	92		

Lab Name: MITKEM LABORATORIES				Contract:	EP-W-11-033		
Lab Code: MITKEM	Case No.:	43591		Mod. Ref No.:	SDG No.: A3Q89		
Matrix: (SOIL/SED/WATER	) SOIL			Lab Sample ID:	M1551-04B		
Sample wt/vol: 8.	60 (g/mL)	G		Lab File ID:	V506070.D		
Level: (TRACE/LOW/MED)	LOW			Date Received:	08/28/2013		
% Moisture: not dec.	17			Date Analyzed:	09/06/2013		
GC Column: DB-624	ID:	0.25	(mm)	Dilution Factor:	1.0		
Soil Extract Volume:			(uL)	Soil Aliquot Vol	ume:	(uL)	
Purge Volume: 10.0			(mL)				

79-01-6       Trichloroethene       3         108-87-2       Methylcyclohexane       3         78-87-5       1,2-Dichloropropane       3         75-27-4       Bromodichloromethane       3         10061-01-5       cis-1,3-Dichloropropene       3		Q U
108-87-2       Methylcyclohexane       3         78-87-5       1,2-Dichloropropane       3         75-27-4       Bromodichloromethane       3         10061-01-5       cis-1,3-Dichloropropene       3		U
78-87-5       1,2-Dichloropropane       3         75-27-4       Bromodichloromethane       3         10061-01-5       cis-1,3-Dichloropropene       3	.5	
75-27-4Bromodichloromethane310061-01-5cis-1,3-Dichloropropene3		U
10061-01-5 cis-1,3-Dichloropropene 3	.5	U
	.5	U
	.5	U
108-10-1   4-Methyl-2-pentanone 7	.0	U
108-88-3 Toluene 3	.5	U
10061-02-6 trans-1,3-Dichloropropene 3	.5	U
79-00-5   1,1,2-Trichloroethane 3	.5	U
127-18-4 Tetrachloroethene 3	.5	U
591-78-6 2-Hexanone 7	. 0	U
124-48-1 Dibromochloromethane 3	.5	U
106-93-4 1,2-Dibromoethane 3	.5	U
		U
100-41-4 Ethylbenzene 3	.5	U
71 2	.5	U
95-47-6 o-Xylene 3	.5	U
100-42-5 Styrene 3	.5	U
	.5	U
	.5	U
79-34-5   1,1,2,2-Tetrachloroethane 3	.5	U
·		U
,	.5	U
, , , , , , , , , , , , , , , , , , , ,		U
, 1 1	.5	U
120-82-1   1,2,4-Trichlorobenzene 3	.5	U
87-61-6   1,2,3-Trichlorobenzene 3	.5	U

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA	SAMPLE	NO.
A3Q92	2	

Lab Name: MITKEM LABORATORIES	Contract: EP-W-11-033
Lab Code: MITKEM Case No.: 43591	Mod. Ref No.: SDG No.: A3Q89
Matrix: (SOIL/SED/WATER) SOIL	Lab Sample ID: M1551-04B
Sample wt/vol: 8.60 (g/mL) G	Lab File ID: V506070.D
Level: (TRACE or LOW/MED) LOW	Date Received: 08/28/2013
% Moisture: not dec. 17	Date Analyzed: 09/06/2013
GC Column: DB-624 ID: 0.25 (mm)	Dilution Factor: 1.0
Soil Extract Volume: (uL)	Soil Aliquot Volume: (uL
CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG	Purge Volume: 10.0 (mL
CAS NUMBER COMPOUND NAME	RT EST. CONC. Q
01 Unknown-01	11.034 7.2 J
E9667961 Total Alkanes	N/A

<sup>&</sup>lt;sup>1</sup>EPA-designated Registry Number.

EPA	SAMPLE	NO.	
A3Q	93		

Lab Name: MITKEM LABORATORIES			Contract:	EP-W-11-033		
Lab Code: MITKEM	Case No.: 43591		Mod. Ref No.:	SDG No.: A3Q89		
Matrix: (SOIL/SED/WATER	SOIL		Lab Sample ID:	M1551-05B		
Sample wt/vol: 6.	20 (g/mL) G		Lab File ID:	V506071.D		
Level: (TRACE/LOW/MED)	LOW		Date Received:	08/28/2013		
% Moisture: not dec.	6.7		Date Analyzed:	09/06/2013		
GC Column: DB-624	ID: 0.25	(mm)	Dilution Factor:	1.0		
Soil Extract Volume:		(uL)	Soil Aliquot Vol	ume:	(uL)	
Purge Volume: 10.0		(mL)				

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/Kg) μG/KG	Q
75-71-8	Dichlorodifluoromethane	4.3	U
74-87-3	Chloromethane	4.3	U
75-01-4	Vinyl chloride	4.3	U
74-83-9	Bromomethane	4.3	U
75-00-3	Chloroethane	4.3	U
75-69-4	Trichlorofluoromethane	4.3	U
75-35-4	1,1-Dichloroethene	4.3	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	4.3	U
67-64-1	Acetone	8.6	U
75-15-0	Carbon disulfide	4.3	U
79-20-9	Methyl acetate	4.3	U
75-09-2	Methylene chloride	4.3	U
156-60-5	trans-1,2-Dichloroethene	4.3	U
1634-04-4	Methyl tert-butyl ether	4.3	U
75-34-3	1,1-Dichloroethane	4.3	U
156-59-2	cis-1,2-Dichloroethene	4.3	U
78-93-3	2-Butanone	8.6	U
74-97-5	Bromochloromethane	4.3	U
67-66-3	Chloroform	4.3	U
71-55-6	1,1,1-Trichloroethane	4.3	U
110-82-7	Cyclohexane	4.3	U
56-23-5	Carbon tetrachloride	4.3	U
71-43-2	Benzene	4.3	U
107-06-2	1,2-Dichloroethane	4.3	U
123-91-1	1,4-Dioxane	86	U

EPA	SAMPLE	NO.	
A3Q	93		

Lab Name: MITKEM LABOR	ATORIES		Contract:	EP-W-11-033		
Lab Code: MITKEM	Case No.:	43591	Mod. Ref No.:	SDG No.: A3Q89		
Matrix: (SOIL/SED/WATER	SOIL		Lab Sample ID:	M1551-05B		
Sample wt/vol: 6.	20 (g/mL)	G	Lab File ID:	V506071.D		
Level: (TRACE/LOW/MED)	LOW		Date Received:	08/28/2013		
% Moisture: not dec.	6.7		Date Analyzed:	09/06/2013		
GC Column: DB-624	ID:	0.25 (mm	n) Dilution Factor:	1.0		
Soil Extract Volume:		(uI	S) Soil Aliquot Vol	ume: (uL)		
Purge Volume: 10.0		(mI				

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/Kg) μG/KG	Q
79-01-6	Trichloroethene	4.3	U
108-87-2	Methylcyclohexane	4.3	U
	1,2-Dichloropropane	4.3	U
75-27-4	Bromodichloromethane	4.3	U
10061-01-5	cis-1,3-Dichloropropene	4.3	U
108-10-1	4-Methyl-2-pentanone	8.6	U
108-88-3	Toluene	4.3	U
10061-02-6	trans-1,3-Dichloropropene	4.3	U
	1,1,2-Trichloroethane	4.3	U
127-18-4	Tetrachloroethene	4.3	U
591-78-6	2-Hexanone	8.6	U
124-48-1	Dibromochloromethane	4.3	U
106-93-4	1,2-Dibromoethane	4.3	U
	Chlorobenzene	4.3	U
	Ethylbenzene	4.3	U
179601-23-1		4.3	U
	o-Xylene	4.3	U
100-42-5	Styrene	4.3	U
75-25-2		4.3	U
98-82-8	Isopropylbenzene	4.3	U
	1,1,2,2-Tetrachloroethane	4.3	U
541-73-1	1,3-Dichlorobenzene	4.3	U
	1,4-Dichlorobenzene	4.3	U
95-50-1	1,2-Dichlorobenzene	4.3	U
	1,2-Dibromo-3-chloropropane	4.3	U
120-82-1	1,2,4-Trichlorobenzene	4.3	U
87-61-6	1,2,3-Trichlorobenzene	4.3	U

VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EP	Α	SAMPLE	NO.	
A3Q	93	3		

Lab Name: MITKEM LABORATORIES		Contract: EP-W-II-U33											
Lab	Code:	MITKE	M Ca	ase No.:	43591		Mod	l. Ref No.	:		SDG No.:	A3Q89	)
Matı	rix: (S	OIL/SE	D/WATER)	SOIL			Lab	Sample I	D:	M1551-05B	}		
Sam	ple wt/	vol:	6.20	(g/mL)	G		Lab	File ID:		V506071.D	)		
Leve	el: (TR	ACE or	LOW/MED)	LOW			Dat	e Receive	d:	08/28/201	.3		
% Mc	oisture	: not	dec. 6	. 7			Dat	e Analyze	d:	09/06/201	3		
GC (	Column:	DB-6	524	ID:	0.25	(mm)	Dil	ution Fac	tor:	1.0			
Soi	l Extra	ct Vol	ume:			(uL)	Soi	l Aliquot	Volu	ume:			(uL)
CON	CENTRAT	'ION UN	IITS: (ug/I	or ug/k	(g) μG	/KG	Pur	ge Volume	: 10	.0			(mL)
	CAS NUI	MBER		COMPOUND	NAME			RT		EST. C	ONC.		Q
01			Unknown-01					11.025			16	J	
	E.	9667961	Total Alka	neg			1	NT / 7\					

<sup>&</sup>lt;sup>1</sup>EPA-designated Registry Number.

EPA	SAMPLE	NO.	
A3Q	94		

Lab Name: MITKEM LABOR.	ATORIES		Contract:	EP-W-11-033
Lab Code: MITKEM	Case No.:	43591	Mod. Ref No.:	SDG No.: A3Q89
Matrix: (SOIL/SED/WATER	SOIL		Lab Sample ID:	M1551-06B
Sample wt/vol: 8.	00 (g/mL)	G	Lab File ID:	V506072.D
Level: (TRACE/LOW/MED)	LOW		Date Received:	08/28/2013
% Moisture: not dec.	13		Date Analyzed:	09/06/2013
GC Column: DB-624	ID:	0.25 (m	m) Dilution Factor:	1.0
Soil Extract Volume:		(u	L) Soil Aliquot Vol	ume: (uL)
Purge Volume: 10.0		( m	L)	

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/Kg) µG/KG	Q
75-71-8	Dichlorodifluoromethane	3.6	U
74-87-3	Chloromethane	3.6	U
75-01-4	Vinyl chloride	3.6	U
74-83-9	Bromomethane	3.6	U
75-00-3	Chloroethane	3.6	U
75-69-4	Trichlorofluoromethane	3.6	U
75-35-4	1,1-Dichloroethene	3.6	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	3.6	U
67-64-1	Acetone	7.2	U
75-15-0	Carbon disulfide	3.6	U
79-20-9	Methyl acetate	3.6	U
75-09-2	Methylene chloride	3.6	U
156-60-5	trans-1,2-Dichloroethene	3.6	U
	Methyl tert-butyl ether	3.6	U
75-34-3	1,1-Dichloroethane	3.6	U
156-59-2	cis-1,2-Dichloroethene	3.6	U
78-93-3	2-Butanone	7.2	U
74-97-5	Bromochloromethane	3.6	U
67-66-3	Chloroform	3.6	U
	1,1,1-Trichloroethane	3.6	U
110-82-7	Cyclohexane	3.6	U
56-23-5	Carbon tetrachloride	3.6	U
71-43-2		3.6	U
	1,2-Dichloroethane	3.6	U
123-91-1	1,4-Dioxane	72	U

A3Q94

Lab Name: MITKEM LABOR	ATORIES		Contract:	EP-W-11-033
Lab Code: MITKEM	Case No.:	43591	Mod. Ref No.:	SDG No.: A3Q89
Matrix: (SOIL/SED/WATER	SOIL		Lab Sample ID:	M1551-06B
Sample wt/vol: 8.	00 (g/mL)	G	Lab File ID:	V506072.D
Level: (TRACE/LOW/MED)	LOW		Date Received:	08/28/2013
% Moisture: not dec.	13		Date Analyzed:	09/06/2013
GC Column: DB-624	ID:	0.25 (mm	n) Dilution Factor:	1.0
Soil Extract Volume:		(uL	) Soil Aliquot Vol	ume: (uL)
Purge Volume: 10.0		(mI	1)	

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG	Q
79-01-6	Trichloroethene	3.6	U
108-87-2	Methylcyclohexane	3.6	U
78-87-5	1,2-Dichloropropane	3.6	U
75-27-4	Bromodichloromethane	3.6	U
10061-01-5	cis-1,3-Dichloropropene	3.6	U
108-10-1	4-Methyl-2-pentanone	7.2	U
108-88-3	Toluene	3.6	U
10061-02-6	trans-1,3-Dichloropropene	3.6	U
79-00-5	1,1,2-Trichloroethane	3.6	U
127-18-4	Tetrachloroethene	3.6	U
591-78-6	2-Hexanone	7.2	U
124-48-1	Dibromochloromethane	3.6	U
106-93-4	1,2-Dibromoethane	3.6	U
108-90-7	Chlorobenzene	3.6	U
100-41-4	Ethylbenzene	3.6	U
179601-23-1	m,p-Xylene	3.6	U
95-47-6	o-Xylene	3.6	U
100-42-5	Styrene	3.6	U
75-25-2	Bromoform	3.6	U
98-82-8	Isopropylbenzene	3.6	U
79-34-5	1,1,2,2-Tetrachloroethane	3.6	U
541-73-1	1,3-Dichlorobenzene	3.6	U
106-46-7	1,4-Dichlorobenzene	3.6	U
95-50-1	1,2-Dichlorobenzene	3.6	U
96-12-8	1,2-Dibromo-3-chloropropane	3.6	U
120-82-1	1,2,4-Trichlorobenzene	3.6	U
87-61-6	1,2,3-Trichlorobenzene	3.6	U

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA	SAMPLE	NO.
A3Q94	1	

Lab	Lab Name: MITKEM LABORATORIES			Contract:			EP-W-11-033						
Lab	Code:	MITKE	lM Ca	ase No.:	43591		Mod	l. Ref No.	:		EDG No.:	A3Q89	9
Matı	cix: (S	OIL/SE	ED/WATER)	SOIL			Lak	Sample I	D:	M1551-06B			
Sam	ple wt/	vol:	8.00	(g/mL)	G		Lak	File ID:		V506072.D			
Leve	el: (TR	ACE or	LOW/MED)	LOW			Dat	e Receive	d:	08/28/2013			
% Mc	oisture	: not	dec. 13	3			Dat	e Analyze	d:	09/06/2013			
GC (	Column:	DB-6	524	ID:	0.25	(mm)	Dil	ution Fac	tor:	1.0			
Soi	l Extra	ct Vol	Lume:			(uL)	Soi	l Aliquot	Vol	ume:			(uL)
CON	CENTRAT	ION UN	NITS: (ug/I	or ug/k	(g) μG	/KG	Pur	ge Volume	: 10	.0			(mL)
	CAS NUI	MBER		COMPOUND	NAME			RT		EST. CON	NC.		Q
01			Unknown-01					11.030			8.8	J	
	E.	9667961	Total Alka	nec			1	NT / 7\					

<sup>&</sup>lt;sup>1</sup>EPA-designated Registry Number.

EPA	SAMPLE	NO.	
A3Q	95		

Lab Name: MITKEM LABOR	ATORIES		Contract:	EP-W-11-U33
Lab Code: MITKEM	Case No.:	43591	Mod. Ref No.:	SDG No.: A3Q89
Matrix: (SOIL/SED/WATER	) SOIL		Lab Sample ID:	M1551-07B
Sample wt/vol: 7.	10 (g/mL)	G	Lab File ID:	V506073.D
Level: (TRACE/LOW/MED)	LOW		Date Received:	08/28/2013
% Moisture: not dec.	7.8		Date Analyzed:	09/06/2013
GC Column: DB-624	ID:	0.25 (mm)	Dilution Factor:	1.0
Soil Extract Volume:		(uL)	Soil Aliquot Vol	ume: (uL)
Purge Volume: 10 0		(mT.)		

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG	Q
75-71-8	Dichlorodifluoromethane	3.8	U
74-87-3	Chloromethane	3.8	U
75-01-4	Vinyl chloride	3.8	U
74-83-9	Bromomethane	3.8	U
75-00-3	Chloroethane	3.8	U
75-69-4	Trichlorofluoromethane	3.8	U
75-35-4	1,1-Dichloroethene	3.8	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	3.8	U
67-64-1	Acetone	7.6	U
75-15-0	Carbon disulfide	3.8	U
79-20-9	Methyl acetate	3.8	U
75-09-2	Methylene chloride	3.8	U
156-60-5	trans-1,2-Dichloroethene	3.8	U
1634-04-4	Methyl tert-butyl ether	3.8	U
75-34-3	1,1-Dichloroethane	3.8	U
156-59-2	cis-1,2-Dichloroethene	3.8	U
78-93-3	2-Butanone	7.6	U
74-97-5	Bromochloromethane	3.8	U
67-66-3	Chloroform	3.8	U
71-55-6	1,1,1-Trichloroethane	3.8	U
110-82-7	Cyclohexane	3.8	U
56-23-5	Carbon tetrachloride	3.8	U
71-43-2	Benzene	3.8	U
107-06-2	1,2-Dichloroethane	3.8	U
123-91-1	1,4-Dioxane	76	U

EPA	SAMPLE	NO.	
A3Q	95		

Lab Name: MITKEM LABOR.	ATORIES		Contract:	EP-W-11-033		
Lab Code: MITKEM	Case No.: 43591		Mod. Ref No.:	SDG No.: A3Q89		
Matrix: (SOIL/SED/WATER	SOIL		Lab Sample ID:	M1551-07B		
Sample wt/vol: 7.	10 (g/mL) G		Lab File ID:	V506073.D		
Level: (TRACE/LOW/MED)	LOW		Date Received:	08/28/2013		
% Moisture: not dec.	7.8		Date Analyzed:	09/06/2013		
GC Column: DB-624	ID: 0.25	(mm)	Dilution Factor:	1.0		
Soil Extract Volume:		(uL)	Soil Aliquot Vol	ume: (uL)		
Purge Volume: 10.0		(mL)				

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/Kg) µG/KG	Q
79-01-6	Trichloroethene	3.8	U
108-87-2	Methylcyclohexane	3.8	U
78-87-5	1,2-Dichloropropane	3.8	U
	Bromodichloromethane	3.8	U
10061-01-5	cis-1,3-Dichloropropene	3.8	U
108-10-1	4-Methyl-2-pentanone	7.6	U
108-88-3	Toluene	3.8	U
10061-02-6	trans-1,3-Dichloropropene	3.8	U
79-00-5	1,1,2-Trichloroethane	3.8	U
127-18-4	Tetrachloroethene	3.8	U
591-78-6	2-Hexanone	7.6	U
124-48-1	Dibromochloromethane	3.8	U
106-93-4	1,2-Dibromoethane	3.8	U
108-90-7	Chlorobenzene	3.8	U
100-41-4	2	3.8	U
179601-23-1	m,p-Xylene	3.8	U
95-47-6	o-Xylene	3.8	U
100-42-5	Styrene	3.8	U
75-25-2	Bromoform	3.8	U
98-82-8	Isopropylbenzene	3.8	U
79-34-5	1,1,2,2-Tetrachloroethane	3.8	U
541-73-1	1,3-Dichlorobenzene	3.8	U
106-46-7	1,4-Dichlorobenzene	3.8	U
95-50-1	1,2-Dichlorobenzene	3.8	U
96-12-8	1,2-Dibromo-3-chloropropane	3.8	U
120-82-1	1,2,4-Trichlorobenzene	3.8	U
87-61-6	1,2,3-Trichlorobenzene	3.8	U

VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	EPA	SAMPLE	NO.	
P	43Q95	5		

Lab Name: MITKEM LABORATORIES		Co	ontract:	EP-W-11-033		
Lab Code: MITKEM	Case No.: 43591	Мс	od. Ref No.:	SDG No.:	A3Q89	
Matrix: (SOIL/SEI	O/WATER) SOIL	La	ab Sample ID:	M1551-07B		
Sample wt/vol:	7.10 (g/mL) G	La	ab File ID:	V506073.D		
Level: (TRACE or	LOW/MED) LOW	Da	ate Received:	08/28/2013		
% Moisture: not o	dec. 7.8	Da	ate Analyzed:	09/06/2013		
GC Column: DB-62	24 ID: 0.25	(mm) Di	lution Factor	: 1.0		
Soil Extract Volu	ume:	(uL) Sc	oil Aliquot Vo	lume:	(uL)	
CONCENTRATION UNI	ITS: (ug/L or ug/Kg) µG/	KG Pu	urge Volume: 1	.0.0	(mL)	
CAS NUMBER	COMPOUND NAME		RT	EST. CONC.	Q	
01 U	nknown-01		11.024	6.4	J	
E9667961T	otal Alkanes		N/A			

<sup>&</sup>lt;sup>1</sup>EPA-designated Registry Number.

EPA	SAMPLE	NO.	
A3Q	A1		

Lab Name: M	ATURIES			Contract:	EP-W-11-033		
Lab Code: M	IITKEM	Case No	.:	43591		Mod. Ref No.:	SDG No.: A3Q89
Matrix: (SOI	IL/SED/WATER	) SOIL				Lab Sample ID:	M1551-08B
Sample wt/vo	ol:7.	70 (g/m]	L)	G		Lab File ID:	V506074.D
Level: (TRAC	CE/LOW/MED)	LOW				Date Received:	08/28/2013
% Moisture:	not dec.	13				Date Analyzed:	09/06/2013
GC Column:	DB-624	I	D:	0.25	(mm)	Dilution Factor:	1.0
Soil Extract	Volume:				(uL)	Soil Aliquot Volu	ume:(uL
Durge Volume	a: 10 0				(mT.)		

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/Kg) µG/KG	Q
75-71-8	Dichlorodifluoromethane	3.7	U
74-87-3	Chloromethane	3.7	U
75-01-4	Vinyl chloride	3.7	U
74-83-9	Bromomethane	3.7	U
75-00-3	Chloroethane	3.7	U
75-69-4	Trichlorofluoromethane	3.7	U
75-35-4	1,1-Dichloroethene	3.7	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	3.7	U
67-64-1	Acetone	16	
75-15-0	Carbon disulfide	3.7	U
79-20-9	Methyl acetate	3.7	U
75-09-2	Methylene chloride	3.7	U
156-60-5	trans-1,2-Dichloroethene	3.7	U
	Methyl tert-butyl ether	3.7	U
75-34-3	1,1-Dichloroethane	3.7	U
156-59-2	cis-1,2-Dichloroethene	3.7	U
78-93-3	2-Butanone	6.8	J
74-97-5	Bromochloromethane	3.7	U
67-66-3	Chloroform	3.7	U
	1,1,1-Trichloroethane	3.7	U
110-82-7	Cyclohexane	3.7	U
56-23-5	Carbon tetrachloride	3.7	U
71-43-2	Benzene	3.7	U
	1,2-Dichloroethane	3.7	U
123-91-1	1,4-Dioxane	75	U

EPA	SAMPLE	NO.	
A3Q	A1		

Lab Name: MITKEM LABORATORIES		Contract:	EP-W-11-033		
Lab Code: MITKEM Case No.:	43591	Mod. Ref No.:	SDG No.: A3Q89		
Matrix: (SOIL/SED/WATER) SOIL		Lab Sample ID:	M1551-08B		
Sample wt/vol:7.70 (g/mL)	G	Lab File ID:	V506074.D		
Level: (TRACE/LOW/MED) LOW		Date Received:	08/28/2013		
% Moisture: not dec. 13		Date Analyzed:	09/06/2013		
GC Column: DB-624 ID: (	0.25 (mm)	Dilution Factor:	1.0		
Soil Extract Volume:	(uL)	Soil Aliquot Volu	ume:(uL		
Purge Volume: 10.0	(mL)				

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/Kg) μG/KG	Q
79-01-6	Trichloroethene	3.7	U
108-87-2	Methylcyclohexane	3.7	U
78-87-5	1,2-Dichloropropane	3.7	U
	Bromodichloromethane	3.7	U
10061-01-5	cis-1,3-Dichloropropene	3.7	U
108-10-1	4-Methyl-2-pentanone	7.5	U
108-88-3	Toluene	3.7	U
	trans-1,3-Dichloropropene	3.7	U
	1,1,2-Trichloroethane	3.7	U
127-18-4	Tetrachloroethene	3.7	U
	2-Hexanone	7.5	U
124-48-1	Dibromochloromethane	3.7	U
106-93-4	1,2-Dibromoethane	3.7	U
		3.7	U
	Ethylbenzene	3.7	U
179601-23-1	m,p-Xylene	3.7	U
95-47-6	o-Xylene	3.7	U
100-42-5	Styrene	3.7	U
75-25-2	Bromoform	3.7	U
98-82-8	Isopropylbenzene	3.7	U
79-34-5	1,1,2,2-Tetrachloroethane	3.7	U
	1,3-Dichlorobenzene	3.7	U
	1,4-Dichlorobenzene	3.7	U
	1,2-Dichlorobenzene	3.7	U
	1,2-Dibromo-3-chloropropane	3.7	U
120-82-1	1,2,4-Trichlorobenzene	3.7	U
87-61-6	1,2,3-Trichlorobenzene	3.7	U

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Ε	PA	SAMPLE	NO.	
А3	QA1	-		

Lab Name: MITKEM LABORATORIES (		Contract:		EP-W-11-033									
Lab	Code:	MITKE	M Ca	ase No.:	43591		Mod	l. Ref No.	:		SDG No.:	A3Q8	39
Matı	cix: (S	OIL/SE	D/WATER)	SOIL			Lab	Sample I	D:	M1551-08B			
Sam	ple wt/	vol:	7.70	(g/mL)	G		Lab	File ID:		V506074.D			
Leve	el: (TR	ACE or	LOW/MED)	LOW			Dat	e Receive	d:	08/28/201	3		
% Mc	oisture	: not	dec. <u>13</u>	3			Dat	e Analyze	d:	09/06/201	3		
GC (	Column:	DB-6	24	ID:	0.25	(mm)	Dil	ution Fac	tor:	1.0			
Soi	l Extra	ct Vol	ume:			(uL)	Soi	l Aliquot	Vol	ume:			(uL)
CON	CENTRAT	ION UN	IITS: (ug/I	or ug/K	(g) μG	/KG	Pur	ge Volume	: 10	.0			(mL)
	CAS NUI	MBER		COMPOUND	NAME			RT		EST. CO	DNC.	$\Box$	Q
01			Unknown-01					11.024			7.2	J	
	E.	9667961	Total Alka	neg				NT / 7\					

<sup>&</sup>lt;sup>1</sup>EPA-designated Registry Number.

# 1G - FORM I PEST PESTICIDE ORGANICS ANALYSIS DATA SHEET

D10650

Lab Name: SPECTRUM ANALYTICAL, INC.	Contract:	
Lab Code: MITKEM Case No.: M1545	Mod. Ref No.:	SDG No.: SM1545
Matrix: (SOIL/SED/WATER) SOIL	Lab Sample ID:	M1545-01A
Sample wt/vol:10.1 (g/mL) G	Lab File ID:	F1J1193.D/
% Moisture: 7.2 Decanted: (Y/N) N	Date Received:	08/28/2013
Extraction: (Type) SONC	Date Extracted:	09/10/2013
Concentrated Extract Volume: 1000 (uL)	Date Analyzed:	09/24/2013
Injection Volume:1.0 (uL) GPC Factor:1.00	Dilution Factor:	5.0
GPC Cleanup:(Y/N) N pH:	Sulfur Cleanup:	(Y/N) N

CAS NO.		CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
ETPH	Extractable Total Petroleum Hydrocarbon	330	

## 1G - FORM I PEST PESTICIDE ORGANICS ANALYSIS DATA SHEET

D10651

Lab Name: SPECTRUM ANALYTICAL, INC.	Contract:	
Lab Code: MITKEM Case No.: M1545	Mod. Ref No.: SDG No.: SM1545	_
Matrix: (SOIL/SED/WATER) SOIL	Lab Sample ID: M1545-02A	
Sample wt/vol: 10.6 (g/mL) G	Lab File ID: F1J1196.D/	
% Moisture: Decanted: (Y/N) N	Date Received: 08/28/2013	
Extraction: (Type) SONC	Date Extracted: 09/10/2013	
Concentrated Extract Volume: 1000 (uL)	Date Analyzed: 09/24/2013	
Injection Volume: 1.0 (uL) GPC Factor: 1.00	Dilution Factor: 5.0	
GPC Cleanup:(Y/N) N pH:	Sulfur Cleanup: (Y/N) N	

CAS NO.		CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
ETPH	Extractable Total Petroleum Hydrocarbon	190	

# 1G - FORM I PEST PESTICIDE ORGANICS ANALYSIS DATA SHEET

D10652

Lab Name: SPECTRUM ANALYTICAL, INC.	Contract:
Lab Code: MITKEM Case No.: M1545	Mod. Ref No.: SDG No.: SM1545
Matrix: (SOIL/SED/WATER) SOIL	Lab Sample ID: M1545-03A
Sample wt/vol: 10.1 (g/mL) G	Lab File ID: F1J1187.D/
% Moisture: Decanted: (Y/N) N	Date Received: 08/28/2013
Extraction: (Type) SONC	Date Extracted: 09/10/2013
Concentrated Extract Volume: 1000 (uL)	Date Analyzed: 09/24/2013
Injection Volume:1.0 (uL) GPC Factor:1.00	Dilution Factor: 1.0
GPC Cleanup:(Y/N) N pH:	Sulfur Cleanup: (Y/N) N

CAS NO.		CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
ETPH	Extractable Total Petroleum Hydrocarbon	8.9	J

Lab Name: SPECTRUM ANALYTICAL, INC.	Contract:
Lab Code: MITKEM Case No.: M1545	Mod. Ref No.: SDG No.: SM1545
Matrix: (SOIL/SED/WATER) SOIL	Lab Sample ID: M1545-04A
Sample wt/vol: 10.4 (g/mL) G	Lab File ID: F1J1188.D/
% Moisture: Decanted: (Y/N) N	Date Received: 08/28/2013
Extraction: (Type) SONC	Date Extracted: 09/10/2013
Concentrated Extract Volume: 1000 (uL)	Date Analyzed: 09/24/2013
Injection Volume:1.0 (uL) GPC Factor:1.00	Dilution Factor: 1.0
GPC Cleanup:(Y/N) N pH:	Sulfur Cleanup: (Y/N) N

CAS NO.		CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
ETPH	Extractable Total Petroleum Hydrocarbon	6.0	J

Lab Name: SPECTRUM ANALYTICAL, INC.	Contract:	
Lab Code: MITKEM Case No.: M1545	Mod. Ref No.:	SDG No.: SM1545
Matrix: (SOIL/SED/WATER) SOIL	Lab Sample ID:	M1545-05A
Sample wt/vol: 10.0 (g/mL) G	Lab File ID:	F1J1197.D/
% Moisture: 6.3 Decanted: (Y/N) N	Date Received:	08/28/2013
Extraction: (Type) SONC	Date Extracted:	09/10/2013
Concentrated Extract Volume: 1000 (uL)	Date Analyzed:	09/24/2013
Injection Volume:1.0 (uL) GPC Factor:1.00	Dilution Factor:	20.0
GPC Cleanup:(Y/N) N pH:	Sulfur Cleanup:	(Y/N) N

CAS NO.		CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
ETPH	Extractable Total Petroleum Hydrocarbon	1200	

Lab Name: SPECTRUM ANALYTICAL, INC.	Contract:	
Lab Code: MITKEM Case No.: M1545	Mod. Ref No.:	SDG No.: SM1545
Matrix: (SOIL/SED/WATER) SOIL	Lab Sample ID:	M1545-06A
Sample wt/vol:10.1 (g/mL) G	Lab File ID:	F1J1213.D/
% Moisture: Decanted: (Y/N) N	Date Received:	08/28/2013
Extraction: (Type) SONC	Date Extracted:	09/10/2013
Concentrated Extract Volume:1000 (uL)	Date Analyzed:	09/25/2013
Injection Volume: 1.0 (uL) GPC Factor: 1.00	Dilution Factor:	1.0
GPC Cleanup:(Y/N) N pH:	Sulfur Cleanup:	(Y/N) N

CAS NO.		CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
ETPH	Extractable Total Petroleum Hydrocarbon	30	

Lab Name: SPECTRUM ANALYTICAL, INC.	Contract:
Lab Code: MITKEM Case No.: M1545	Mod. Ref No.: SDG No.: SM1545
Matrix: (SOIL/SED/WATER) SOIL	Lab Sample ID: M1545-07A
Sample wt/vol:10.1 (g/mL) G	Lab File ID: F1J1189.D/
% Moisture: 7.6 Decanted: (Y/N) N	Date Received: 08/28/2013
Extraction: (Type) SONC	Date Extracted: 09/10/2013
Concentrated Extract Volume: 1000 (uL)	Date Analyzed: 09/24/2013
Injection Volume: 1.0 (uL) GPC Factor: 1.00	Dilution Factor: 1.0
GPC Cleanup:(Y/N) N pH:	Sulfur Cleanup: (Y/N) N

CAS NO.		CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
ETPH	Extractable Total Petroleum Hydrocarbon	61	

Lab Name: SPECTRUM ANALYTICAL, INC.	Contract:
Lab Code: MITKEM Case No.: M1545	Mod. Ref No.: SDG No.: SM1545
Matrix: (SOIL/SED/WATER) SOIL	Lab Sample ID: M1545-08A
Sample wt/vol:10.4 (g/mL) G	Lab File ID: F1J1214.D/
% Moisture: 12 Decanted: (Y/N) N	Date Received: 08/28/2013
Extraction: (Type) SONC	Date Extracted: 09/10/2013
Concentrated Extract Volume: 1000 (uL)	Date Analyzed: 09/25/2013
Injection Volume:1.0 (uL) GPC Factor:1.00	Dilution Factor: 1.0
GPC Cleanup:(Y/N) N pH:	Sulfur Cleanup: (Y/N) N

CAS NO.		CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
ETPH	Extractable Total Petroleum Hydrocarbon	200	



#### **GEOTECHNICAL DATA REPORT**

Geotechnical Subsurface Investigation for

The Durham Meadows Waterline Extension

Durham, Connecticut

AECOM Project No. 60275749.6.01 EPA Contract No. EP-S1-06-01 Task Order No. 0060-RD-RD-01D5

November 13, 2015

#### 1.1 Purpose of Report

The purpose of this Geotechnical Data Report (GDR) is to provide supporting data for the design and construction of a water main extension in Durham, Connecticut. The data was collected during a subsurface investigation that involved the drilling of test borings and the submittal of soil samples for laboratory testing.

#### 1.2 Subsurface Investigation

The subsurface investigation was performed from July 7 to 9, 2015 and consisted of the drilling of 15 test borings. The test borings ranged in depth from 12 to 27 feet and were drilled by General Borings of Prospect, Connecticut. The test boring locations are shown on the contract drawings.

#### 1.3 Soil Drilling and Sampling

Test borings were advanced using 3¼-inch hollow stem augers. Samples were collected at 5-foot intervals beginning at either ground surface or the top of pavement road base. Soil samples collected during the drilling program were logged and preserved by an AECOM geologist. The boring logs are provided in Attachment 1.

All boreholes were backfilled with soil cuttings or clean sand. The top of the street borings were finished with a cold asphalt patch that was tamped into place.

#### 1.4 Laboratory Testing

Twenty-one soil samples from the subsurface investigation were submitted to GeoTesting Express in Acton, MA for laboratory testing. A schedule of the laboratory testing is provided in Table 1 and the laboratory test results are provided in Attachment 2.

#### 1.5 Report Limitations

Subsurface conditions will vary beyond a borehole's location and conditions at and beyond a borehole may change over time as a result of construction activity. Groundwater levels will fluctuate with precipitation, season, construction activities, run-off controls, and other factors. As a result, water levels during construction may vary from those observed during the investigation program.

TABLE 1: Schedule of Laboratory Testing (2 pages)

				Index	lex & Physical Testing	sting		3	Corrosion Testing		
Boring	Sample ID	Depth (ff.)	Recovery	Sieve (ASTM D422)	Sieve & Hydrometer (ASTM D422)	Atterberg Limits (ASTM D4318)	Chlorides (ASTM D512)	Elect. Resist. (ASTM G57)	Ox. Reduction (EPA)	pH (ASTM D4972)	Sulfates (ASTM D516)
SB-1	SS-2	2 - 2	6	×							
SB-2	£-SS	10 - 12	22"		×	×					
SB-2	SS-5	20 - 22	6		×						
SB-3	2-SS	2 - 3	1.1'	×							
SB-4	2-SS	2 - 3	.9:0				×		×		×
SB-4	£-SS	10 - 12	1.2'		×						
SB-5	£-SS	10 - 12	1.8'		×	×					
SB-7	SS-2	2 - 2	1.5'					X		×	
SB-7	SS-3	10 - 12	0.9'		×						
SB-8	SS-2	2 - 2	16"	×							
SB-8	SS-5	20 - 22	14"		×						
SB-9	SS-3	10 - 12	10"		×						
SB-9	SS-4	15 - 17	14"	×							
SB-10	SS-2	5 - 7	1.3'	×							
SB-11	SS-2	5 - 7	1.3'	×							
SB-12	SS-2	5 - 7	0.9'					×		×	

TABLE 1: Schedule of Laboratory Testing (2 pages)

				)ul	Index & Physical Testing	sting		ပိ	Corrosion Testing	50	
Boring	Sample ID	Depth (ft.)	Recovery	Sieve (ASTM D422)	Sieve & Hydrometer (ASTM D422)	Atterberg Limits (ASTM D4318)	Chlorides (ASTM D512)	Elect. Resist. (ASTM G57)	Ox. Reduction (EPA)	pH (ASTM D4972)	Sulfates (ASTM D516)
SB-12	£-SS	10 - 12	1.6'		×	×					
SB-13	2-SS	2 - 3	'8.0				×		×		×
SB-13	£-SS	10 - 12	1.4'		X	×					
SB-14	SS-2	2 - 2	0.7'	×							
SB-15	SS-4	15 - 17	1.9'		X	×					

ATTACHMENT 1

**Boring Logs** 



PRO	JE	CT: Dur	ham M	eadows Wa	terline					SHE	EET	BORING NO.
SITE	L	OCATION				JOB NO	).: 60275749 - RAC2 (	0060 Task	11	1	of 1	SB-1
		_				LOCATION				Elevati		Total Depth:
		ŀ	Pickett L	_ane			E: 1019998.64			186.	4 ft.	20 ft.
DRIL	L	CONTRAC	CTOR:	General E	Borings	ENG/GE		atte/ A. Sa	vre	BEGUI		July 7, 2015
DRIL	L	RIG :	N	Mobile B-53		DRILLER			<u>,, c</u>	FINISH	HED :	July 8, 2015
Hole	Siz	ze :		Weather :			onn oddoon		Ground Wa	ater (Da	te/Dep	
	Δnr	orox. 8-incl	nes		Sur	nv 80s /	Cloudy, ~75 deg.			N	ot Dete	ermined
		Method :	100	l		Drilling F			Top of Roc			
		3 25-inch II	) Hallay	v Stem Auge	ers		Potable Water				14.5	feet
	Ì		3 1 101101	Blow Count	Sample		r stable trater				11.0	GENERALIZED
Dep			N	(per 6 in.)	Recovery		SAMPLE			SOIL	,	STRATIGRAPHIC
(ft)	)	Type/No.	Value	or Drilling	or REC & RQD		DESCRIPTION	ON		CLASS.	(	DESCRIPTION  dashed where inferred)
	T			Rate(min/ft)	RQD	Paver	ment (~2.5") & road base s	and w/ grave	əl		(1	uasneu where interreu)
							, ,	ŭ				
		SS-1	9	2-4-5-3	9"	Brown	n SILTY FINE SAND, some	fine gravel	dny			FILL
		(0.5-2.5)				Biowi	TOILTT TINE SAND, SOME	illie glavel,	uly			
	H					•					3'	
	H											
5_												
		SS-2	144	30-73-71-77	9"	Brown	n FINE TO MED. SAND, litt	le silt, few to	little fine to		S	SILTY FINE SAND,
	SS-2 144 30-73-71-77 9 (5-7)						ravel and rock fragments, f					SOME GRAVEL w/
	H										Si	EVERAL COBBLES & BOULDERS
	H											
10												
'-												
	H	SS-3 (10-10.25)		100/3"	<1"	No Re	ecovery					
		,										
		R-1 (10.5-13)		~1.5 min (avg.)			- 11.7': Black shale boulder - 13' Red brown FINE SAN		SILTY			
		, , , , , , , , , , , , , , , , , , , ,		(* 5)		CLAY	; fining downward					
	H					(auge	er to 15 ft.; began grinding a	at 14.5 ft.)				
15_	lacksquare						. 5 5 - 9	• ,			14.5'	
		R-2		2 min.	100%	Dad h	orown SILTSTONE; RQD =	80%				
		(15-17)		2 min.	Rec.	iven p	JOWN CIETO I CINE, RQD -	JU /U				RED BROWN
												SILTSTONE
	2 min.											
	2.5 min.					<u> </u>						
	3.5 min.										- Bott	tom of Boring @ 20 ft
Sample Types: trace 0 to 5%					to 5%	-	SPT Res	istance				Approve/Date
SS	SS Split Spoon few 5 to 10%					Cohesionless Density: Cohesive Consistency:		cy:				
ST	, i					0.4 A V ( ) A D D ( ) T ( ) A T ( ) W						
R		ock Core			to 45%	U-4 V6	ery Loose, 30-49 Dense 50+ Very Dense		a. Stiff, 9-15 ery Stiff, 31+			
	La	b Sample		mostly	>50%			<u> </u>			<u> </u>	



PRO	JE	CT: Du	rham M	eadows Wa	terline				SHE	ET	BORING NO.
SITE	E	OCATION				JC	OB NO.: 60275749 - RAC2 0060 Tasl	c 11	1	of 2	SB-2
			<b>5</b>			LC	OCATION: N: 734104.36		Elevation		Total Depth:
			Pickett L	_ane			E: 1020136.07		179.	5 ft.	25.33 ft.
DRIL	L	CONTRA	CTOR:	General E	Rorings	E١	NG/GEO: A. Sayre		BEGUN		July 7, 2015
DRIL	L	RIG:	N	Mobile B-53	2090	DF	RILLER: Jim Casson		FINISH	IED :	July 7, 2015
Hole	Si	ze :	•	Weather:			om cassen	Ground W	ater (Da	te/Dep	
Ι.	Δnr	orox. 8-inc	hes				Sunny 80s	Fsti	mated @	n 8 ft <i>(</i>	at time of drilling)
		Method:	1100			Dr	illing Fluid :		ock (Depth/Elev.) :		
		3 25-inch L	D Hollov	v Stem Auge	ers		None	Not Encountered			
		3.20 1110111	D Hollov	Blow Count	Sample		140110			LITOC	GENERALIZED
Dep	th	Sample	N	(per 6 in.)	Recovery		SAMPLE		SOIL	;	STRATIGRAPHIC
(ft	)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		CLASS.		DESCRIPTION
				Rate(min/ft)	RQD					(	dashed where inferred)
		SS-1	14	6-8-6-10	19"		5				
		(0-2)				İ	Dark brown SANDY SILT				
											POSSIBLE FILL
						ŀ					
5											
	SS-2 13 8-8-5-3 2"				2"						
		(5-7)	13	0-0-0-3		ŀ	Brown GRAVELLY SILT (poor recovery)				
		` ′									
										7'	
						İ					
10											SILT & CLAY
		SS-3	8	3-4-4-5	22"						SILT & CLAT
		(10-12)	0	3-4-4-0	22		Light brown SILTY CLAY; moist		(CL)		
		( - ,									
	F					l					
						ļ					
15											
1 -	Ī	00.4	00	04 00 00 15	4.4"		Danier OLAWEY OIL To come hould a come	and alcore		45	
		SS-4 (15-17)	92	21-32-60-45	14"		Brown CLAYEY SILT, some broken rock; n wet	nod. plastic,		15.5'	
		(10 17)									
											SILTY SAND W/
											GRAVEL
	<del>                                      </del>					<u> </u>					
Sample Types: trace 0 to 5%					) to 5%		SPT Resistance		•		Approve/Date
SS Split Spoon few 5 to 10%				few 5	to 10%						
ST					5 to 25%	·					
R	Rock Core some 30 to 45%					0-4 Very Loose, 30-49 Dense 5-8 Med. Stiff, 9-15 Stiff					
Lab Sample mostly >50% 50+ Very Dense 16-30 Very St						very Sunt, 31+	паго				



PROJ	IECT : D	urham M	eadows Wa	terline		SHE	EET BORING NO.
SITE	LOCATIO				JOB NO.: 60275749 - RAC2 0060 Task 11	2	of 2 SB-2
		5			LOCATION: N: 734104.36	Elevati	
		Pickett I	∟ane		E: 1020136.07		25.33 ft.
			Blow Count	Sample			
Depti			(per 6 in.) or Drilling	Recovery or REC &	SAMPLE DESCRIPTION	SOIL CLASS.	STRATIGRAPHIC DESCRIPTION
(ft)	Type/No	). Value	Rate(min/ft)	RQD	DESCRIPTION	02/100/	(dashed where inferred)
	00.5				D		,
<b> </b>	SS-5 (20-22)	32	12-15-17- 100/3"	9"	Brown FINE TO MED. SAND, some silt, little to some fine to crs. gravel, trace clay; wet		SILTY SAND W/
	` '						GRAVEL
_	1	1		1			
25	+						
	SS-6		100/4"	3"	Broken Rock & Crs. Gravel		Bottom of Boring @ 25.33 ft.
	(25-						
	1						
	-						
30							
	+	1					
		-					
35							
10							
40							
	1		1	1			
				<del> </del>			
	Types:			) to 5%	SPT Resistance		Approve/Date
	Split Spoon Shelby Tube			to 10% 5 to 25%	Cohesionless Density: Cohesive Consiste		
	Rock Core			) to 45%	5-9 Loose, 10-29 Med. Dense 0-2 Very Soft, 3-4 O-4 Very Loose, 30-49 Dense 5-8 Med. Stiff, 9-1	5 Stiff	
	Lab Sample			>50%	50+ Very Dense 16-30 Very Stiff, 31	+ Hard	



STEL CCATION:   JOB NO.   60275749 - RAC2 0060 Task 11   1 of 1   SB-3	PRO	JE	CT: Du	rham M	eadows Wa	torlina					SHE	ET	BORING NO.
Dillic   Contractor   Contrac	SITE	E			caaows wa	termie	JC	OB NO.: 60275749 - RAC2 00	60 Task	11	1	of 1	SB-3
Final Contractor   General Borings   E: 1020/10.29   B27.8 ft   12 ft			_				LC	NOATION!	oo raon				
DRILL RIG			ŀ	ckett L	_ane						187.	8 ft.	12 ft.
DRILLER:   Jim Casson	DRIL	L	CONTRAC	CTOR:	General F	Borings	E١	JC/CEO ·	tte.				
Hole Size :	DRIL	L	RIG :	N		20111190	DF	יוו בס .			FINISH	IED :	
Drilling Method   Sample   None	Hole	Si	ze :							Ground W	ater (Da	te/Dep	
Drilling Method :   Sample   None	١,	Apr	orox. 8-incl	hes				Cloudy. ~75 dea.			9.5 feet	t (at tin	ne of drilling)
Depth   Sample   N   (per 6 in.)   (per 6										Top of Roo			
Depth   Sample   N   (per 6 in.)   (per 6		3	3.25-inch II	D Hollov	v Stem Auge	ers		None			No	t Enco	ountered
Chassing   Chassing										L			GENERALIZED
Sample Types:   Trace   0 to 5%   Sample Types:   Trace   0 to 5%   Sample Types:   Trace   0 to 5%   Sample Types:   Trace   0 to 5%   Sample Types:   Trace   0 to 5%   Sample Types:   Trace   0 to 5%   Sample Types:   Trace   0 to 5%   Sample Types:   Sample Types:   Trace   0 to 5%   Sample Types:   Sample Types	Dep	th			.,	Recovery							
Sample Types:   trace   0 to 5%   Sample Types:   trace   0 to 5%   Sample Types:   Sample Types:   Table District Processing the sample Sample Types:   Sam	(ft)	)	Type/No.	Value	ŭ			DESCRIPTION	1		CLASS.		
SS-1		т			Rate(min/ft)	RQD		Payament (~2.5") & road base san	nd w/ grave	<u> </u>		(1	dashed where inferred)
0.5:2.5  43   37-24-19-22   1.2'   1.2'   1.2'   1.5'								, ,	· ·				FILL
0.8 - 1.2': Red brown SILT & FINE SAND, trace fine gravel; dry   2   2				13	37-24-10-22	1 2'					I ILL		
SS-2   98   34-45-53-62   1.1'		H	(0.5-2.5)	40	37-24-13-22	1.2	ł		SAND, tra	ce fine		2'	
SS-2 98 34-45-53-62 1.1'    10		L					gravel; dry						
SS-2 98 34-45-53-62 1.1'    10													
SS-2 98 34-45-53-62 1.1'    10	_						1						
SS-2   98   34-45-33-02   1.1	5_	╁	\$\$ 2 08 34.45.53.62 1:					l					
fragments; dry  SILTY FINE TO CRS. SAND  SS-3 40 27-19-21-18 1.5' (10-12)  Sample Types: SS Split Spoon few 5 to 10% SS Split Spoon few 5 to 10% SS Split Spoon few 5 to 10% ST Shelby Tube Rock Core Some 30 to 45% Some 30 to 45% SS Spit Spoon few 5 to 10% SS Spit S		L											
Sample Types:  Sample Types:  Sample Types:  Sample Types:  Solution of few 5 to 10%  Solution of few 5 to 10%  Solution of few 5 to 10%  Red brown FINE TO CRS. SAND, trace fine gravel; contains an approx. 2" to 3" dark brown to black layer near mid-sample, no odor; wet  Bottom of Boring @ 12 ft.  Sample Types:  Solution of Boring @ 12 ft.  Solution of Boring @ 12 ft.  Solution of Boring @ 12 ft.  Cohesionless Density:  Solution of Boring @ 12 ft.  Cohesionless Density:  Solution of Boring @ 12 ft.  Cohesionless Density:  Solution of Boring @ 12 ft.  Solution of Boring @ 12 ft.  Cohesionless Density:  Solution of Boring @ 12 ft.  Cohesionless Density:  Solution of Boring @ 12 ft.  Solution of Boring @ 12 ft.  Cohesionless Density:  Solution of Boring @ 12 ft.  Bottom of Boring @ 12 ft.									ic gravei/it	JOK		SI	LTY FINE TO CRS
SS-3   40   27-19-21-18   1.5'		H					ł					01	
SS-3   40   27-19-21-18   1.5'							ļ						
SS-3   40   27-19-21-18   1.5'													
SS-3   40   27-19-21-18   1.5'	10						1						
Sample Types: trace 0 to 5% SS Split Spoon few 5 to 10% ST Shelby Tube R Rock Core Some 30 to 45% R Rock Core Some 30 to 45% R Rock Core Some 30 to 45% SS-3 40 27-19-21-18 1.5 contains an approx. 2" to 3" dark brown to black layer near mid-sample, no odor; wet  Bottom of Boring @ 12 ft.  SPT Resistance Approve/Date  Cohesionless Density: Cohesive Consistency: 5-9 Loose, 10-29 Med. Dense 0-2 Very Soft, 3-4 Soft 5-8 Med. Stiff, 9-15 Stiff 5-8 Med. Stiff, 9-15 Stiff 5-8 Med. Stiff, 9-15 Stiff 5-8 Med. Stiff, 31+ Hard	10_	╁						Dod brown FINE TO CDC CAND	trace fine	~~~alı			
Sample Types: trace 0 to 5% SPT Resistance Approve/Date  SS Split Spoon few 5 to 10% ST Shelby Tube little 15 to 25% some 30 to 45% R Rock Core Some 30 to 45%  SPT Resistance Approve/Date  Cohesionless Density: Cohesive Consistency: 5-9 Loose, 10-29 Med. Dense 0-2 Very Soft, 3-4 Soft 5-8 Med. Stiff, 9-15 Stiff 5-30 Very Stiff, 31+ Hard		L		40	27-19-21-18	1.5'							
Sample Types:			(10-12)					near mid-sample, no odor; wet		-			
Sample Types: trace 0 to 5%  SPT Resistance Approve/Date  SS Split Spoon few 5 to 10%  ST Shelby Tube little 15 to 25% some 30 to 45%  R Rock Core Some 30 to 45%  SPT Resistance Ochesive Consistency:  Cohesive Consistency:  5-9 Loose, 10-29 Med. Dense 0-2 Very Soft, 3-4 Soft 5-8 Med. Stiff, 9-15 Stiff 16-30 Very Stiff, 31+ Hard							1					Bott	tom of Boring @ 12 ft.
Sample Types: trace 0 to 5%  SPT Resistance Approve/Date  SS Split Spoon few 5 to 10%  ST Shelby Tube little 15 to 25% some 30 to 45%  R Rock Core Some 30 to 45%  SPT Resistance Ochesive Consistency:  Cohesive Consistency:  5-9 Loose, 10-29 Med. Dense 0-2 Very Soft, 3-4 Soft 5-8 Med. Stiff, 9-15 Stiff 16-30 Very Stiff, 31+ Hard							ł						
Sample Types: trace 0 to 5%  SPT Resistance Approve/Date  SS Split Spoon few 5 to 10%  ST Shelby Tube little 15 to 25% some 30 to 45%  R Rock Core Some 30 to 45%  SPT Resistance Ochesive Consistency:  Cohesive Consistency:  5-9 Loose, 10-29 Med. Dense 0-2 Very Soft, 3-4 Soft 5-8 Med. Stiff, 9-15 Stiff 16-30 Very Stiff, 31+ Hard		L					ļ						
SS         Split Spoon         few         5 to 10%         Cohesionless Density:         Cohesive Consistency:           ST         Shelby Tube         little         15 to 25%         5-9 Loose, 10-29 Med. Dense         0-2 Very Soft, 3-4 Soft           R         Rock Core         some         30 to 45%         0-4 Very Loose, 30-49 Dense         5-8 Med. Stiff, 9-15 Stiff           50+ Very Dense         16-30 Very Stiff, 31+ Hard	15												
SS         Split Spoon         few         5 to 10%         Cohesionless Density:         Cohesive Consistency:           ST         Shelby Tube         little         15 to 25%         5-9 Loose, 10-29 Med. Dense         0-2 Very Soft, 3-4 Soft           R         Rock Core         some         30 to 45%         0-4 Very Loose, 30-49 Dense         5-8 Med. Stiff, 9-15 Stiff           50+ Very Dense         16-30 Very Stiff, 31+ Hard													
SS         Split Spoon         few         5 to 10%         Cohesionless Density:         Cohesive Consistency:           ST         Shelby Tube         little         15 to 25%         5-9 Loose, 10-29 Med. Dense         0-2 Very Soft, 3-4 Soft           R         Rock Core         some         30 to 45%         0-4 Very Loose, 30-49 Dense         5-8 Med. Stiff, 9-15 Stiff           50+ Very Dense         16-30 Very Stiff, 31+ Hard		-					ł						
SS         Split Spoon         few         5 to 10%         Cohesionless Density:         Cohesive Consistency:           ST         Shelby Tube         little         15 to 25%         5-9 Loose, 10-29 Med. Dense         0-2 Very Soft, 3-4 Soft           R         Rock Core         some         30 to 45%         0-4 Very Loose, 30-49 Dense         5-8 Med. Stiff, 9-15 Stiff           50+ Very Dense         16-30 Very Stiff, 31+ Hard													
SS         Split Spoon         few         5 to 10%         Cohesionless Density:         Cohesive Consistency:           ST         Shelby Tube         little         15 to 25%         5-9 Loose, 10-29 Med. Dense         0-2 Very Soft, 3-4 Soft           R         Rock Core         some         30 to 45%         0-4 Very Loose, 30-49 Dense         5-8 Med. Stiff, 9-15 Stiff           50+ Very Dense         16-30 Very Stiff, 31+ Hard													
SS         Split Spoon         few         5 to 10%         Cohesionless Density:         Cohesive Consistency:           ST         Shelby Tube         little         15 to 25%         5-9 Loose, 10-29 Med. Dense         0-2 Very Soft, 3-4 Soft           R         Rock Core         some         30 to 45%         0-4 Very Loose, 30-49 Dense         5-8 Med. Stiff, 9-15 Stiff           50+ Very Dense         16-30 Very Stiff, 31+ Hard							7						
SS         Split Spoon         few         5 to 10%         Cohesionless Density:         Cohesive Consistency:           ST         Shelby Tube         little         15 to 25%         5-9 Loose, 10-29 Med. Dense         0-2 Very Soft, 3-4 Soft           R         Rock Core         some         30 to 45%         0-4 Very Loose, 30-49 Dense         5-8 Med. Stiff, 9-15 Stiff           50+ Very Dense         16-30 Very Stiff, 31+ Hard							-						
SS         Split Spoon         few         5 to 10%         Cohesionless Density:         Cohesive Consistency:           ST         Shelby Tube         little         15 to 25%         5-9 Loose, 10-29 Med. Dense         0-2 Very Soft, 3-4 Soft           R         Rock Core         some         30 to 45%         0-4 Very Loose, 30-49 Dense         5-8 Med. Stiff, 9-15 Stiff           50+ Very Dense         16-30 Very Stiff, 31+ Hard													
ST Shelby Tube   little 15 to 25%   5-9 Loose, 10-29 Med. Dense   0-2 Very Soft, 3-4 Soft   Some 30 to 45%   50+ Very Dense   5-8 Med. Stiff, 9-15 Stiff   16-30 Very Stiff, 31+ Hard	' ''										Approve/Date		
R Rock Core some 30 to 45% 0-4 Very Loose, 30-49 Dense 5-8 Med. Stiff, 9-15 Stiff 16-30 Very Stiff, 31+ Hard		· · ·						•					
50+ Very Dense 16-30 Very Stiff, 31+ Hard		,					0 1 2000, 10 20 Mod. Bolloc						
	``									,			



PROJ	ECI: Du	rham M	eadows Wa	terline					SHE	:E I	BURING NO.			
SITE	LOCATION				JOB NO.:	60275749 - RAC2 0	060 Task	11	1	of 1	SB-4			
					LOCATION:				Elevati		Total Depth:			
		Pickett I	_ane			E: 1021108.24			193.	4 ft.	12 ft.			
DRILL	CONTRAC	CTOR:	General E	Borinas	ENG/GEO:		atte		BEGU		July 8, 2015			
DRILL	RIG :	ľ	Mobile B-53		DRILLER:	Jim Casson			FINISH	IED :	July 8, 2015			
Hole S	Size :		Weather:					Ground Wa	ater (Da	te/Dep				
Aı	oprox. 8-inc	hes			Cloudy, ~	75 deg.			6 feet	(at tim	e of drilling)			
	g Method:				Drilling Fluid			Top of Roc		(Depth/Elev.):				
	3.25-inch I	D Hollov	w Stem Auge	ers		None			No	ot Encc	ountered			
			Blow Count	Sample							GENERALIZED			
Depth		N	(per 6 in.)	Recovery		SAMPLE			SOIL		STRATIGRAPHIC			
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTIO	N		CLASS.	١,	DESCRIPTION			
Т	+		Rate(min/ft)	RQD	Pavemen	t (~2.5") & road base sa	and and grav	vel		· ·	(dashed where inferred)			
	00.4		10.00.01.00		<u> </u>		_				avement/Road Base			
	SS-1 (0.5-2.5)	51	19-30-21-29	1.4'	gravel; dr	n FINE SAND, few to tr	ace crs. sar	id, trace fine		0.5'				
ŀ					(drill cuttin	ngs similar to above)				FII	NE TO CRS. SAND			
-					(arm cattir	igs similar to above)								
5														
	SS-2	167	34-85-82- 120	0.6'	Red brow	n FINE TO CRS. SAND	), few fine a	ravel:						
	(5-7)					ck fragments lodged in								
F										6.5'				
-														
L					(augering	advancement from 7 to	10 ft. is slo	w)			GLACIAL TILL			
10														
	SS-3	40	07.00.05.04	4.01	Dad bass	- FINE TO ODD CAND		4						
-	(10-12)	48	27-23-25-24	1.2'		n FINE TO CRS. SAND tle fines; Till, well graded		to crs.						
										Pot	tom of Boring @ 12 ft.			
L										BOU	ioni of Boring @ 12 it.			
45														
15		-												
-														
L														
<b> </b>					<del> </del>					1				
						25				<del> </del>				
Sample				to 5%	Cobs	SPT Resi		nivo Consister	0.4.	<del>                                     </del>	Approve/Date			
	Split Spoon Shelby Tube			to 10% to 25%		sionless Density: , 10-29 Med. Dense		sive Consisten	•	1				
	Rock Core			to 45%	0-4 Very L	.oose, 30-49 Dense	5-8 Med	ry Soft, 3-4 d. Stiff, 9-15	Stiff	1				
	ab Sample			>50%	50+	+ Very Dense	16-30 Ve	ery Stiff, 31+	Hard	1				



PRO.	JE	ات Dui	rham M	leadows Wa	terline					SHE	: <b>=</b> I	BURING NO.
SITE	L	OCATION				JC	OB NO.: 60275749 - RAC2 0060	0 Task	11	1	of 1	SB-5
			<b>.</b>			LC	OCATION: N: 734186.70			Elevati		Total Depth:
		l	Pickett I	Lane			E: 1021517.51			200.	8 ft.	12 ft.
DRIL	L (	CONTRAC	CTOR:	General E	Borinas	E١	NG/GEO: W. Abrahams-Dematte	;		BEGU		July 8, 2015
DRIL	L	RIG :	ľ	Mobile B-53		DF	RILLER: Jim Casson			FINISH	IED :	July 8, 2015
Hole	Siz	ze :		Weather:					Ground Wa	ater (Da	te/Dep	
4	App	rox. 8-inc	hes				Cloudy, ~75 deg.			8.5 feet	: (at tin	ne of drilling)
		Method :					illing Fluid :		Top of Roc			
	3	3.25-inch II	D Hollov	w Stem Auge	ers	None						ountered
	Ť			Blow Count	Sample	T						GENERALIZED
Dept		Sample	N	(per 6 in.)	Recovery		SAMPLE			SOIL		STRATIGRAPHIC
(ft)		Type/No.	Value	_	or REC & RQD		DESCRIPTION			CLASS.	,	DESCRIPTION  dashed where inferred)
	П			Rate(min/ft)	RQD	H	Pavement (~2.5") & road base sand	and grav	/el		(	uasneu where illieneu)
	Ы					ļ		•				FILL
		SS-1	27	17-17-10-10	1.5'		0 - 0.8': Red brown FINE SAND, trace dry	e fine to	crs. gravel;			
		(0.5-2.5)					0.8 - 1.5': Red brown SILT, trace clay	y			2'	
	Ħ					İ						
	Н					1						
5_							0.04.0		1			TERBEDDED SILT,
		SS-2	9	1-4-5-3	0.8'		0 - 0.4': Brown SILT, trace fine sand, moist	, occ. crs	. gravei;		F	INE SAND & CLAY
		(5-7)				Î	0.4 - 0.6' Gray SILT 0.6 - 0.8': Yellow brown FINE SAND					
	H					ł	0.6 - 0.8: Yellow Drown FINE SAND					
	Н					<b>.</b>						
10												
	П											
	Н	SS-3 (10-12)	25	5-10-15-20	1.8'	1	Red brown SILT & CLAY, trace fine s	sand		(CL)		
	Щ	()				<u> </u>					5 1	65 1 6 10 5
											Boti	tom of Boring @ 12 ft.
	H					1						
15_	H					-						
						İ						
	H					ł						
	Ш					ļ						
Sampl	e T	ypes:		trace 0	) to 5%		SPT Resistar	nce				Approve/Date
SS		lit Spoon			to 10%		Cohesionless Density:	Cohes	ive Consisten	cy:		
ST		elby Tube			to 25%		5-9 Loose, 10-29 Med. Dense 0-4 Very Loose, 30-49 Dense		y Soft, 3-4 I. Stiff, 9-15			
R		ock Core b Sample			) to 45% >50%				ry Stiff, 31+			



PROJE	·CT: Du	rham M	eadows Wa	terline					SHE	:ET	BORING NO.
SITE L	OCATION	•			JOB NO.:	60275749 - RAC2 (	060 Task	11	1	of 1	SB-7
	·	D: 1 '' 1			LOCATIO				Elevation		Total Depth:
	l	Pickett I	_ane			E: 1021556.08			199.	2 ft.	12 ft.
DRILL	CONTRAC	CTOR:	General E	Borings	ENG/GEC		atte		BEGU		July 8, 2015
DRILL	RIG:	N	Mobile B-53		DRILLER				FINISH	IED :	July 8, 2015
Hole Si	ze :		Weather:					Ground Wa	ater (Da	te/Dep	
Αp	prox. 8-inc	hes			Cloudy.	, ~75 deg.		~7.5 fe	et (poss	s. perc	hed water @ 6.5 ft.)
	Method:				Drilling Flu			Top of Roo			
	3.25-inch I	D Hollov	v Stem Auge	ers		None			No	t Enco	ountered
			Blow Count	Sample	None						GENERALIZED
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE			SOIL	;	STRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTIO	N		CLASS.		DESCRIPTION
			Rate(min/ft)	RQD	Davian					(	dashed where inferred)
					Paveme	ent (~2.5") & road base sa	and and gra	vei			FILL
	SS-1	19	17-10-9-14	1.1'		Red brown MED. TO FIN	IE SAND, tr	ace fine			FILL
-	(0.5-2.5)	19	17-10-9-14	1.1	gravel; 0.4' - 1.	ary .1': Red brown FINE SANI	D, some fine	e gravel,		2'	
<u> </u>					trace si	It					
										FI	NE TO CRS. SAND w/ GRAVEL
5								(Possible Fill)			
"+					0 - 1.0':	Red brown FINE TO ME			,		
<u> </u>	SS-2	51	29-26-15-15	1.5'		nd gravel; gravel is phylliti	c and subar	ngular to		6'	
	(5-7)				subrounded; wet 1.0 - 1.5': Red brown CLAYEY SILT						
H											STRATIFIED SILT AND FINE SAND
_											
10											
	SS-3	5	3-2-3-10	0.9'	Dod br	own SILT, some fine to me	ad aand litt	lo to four			
-	(10-12)	3	3-2-3-10	0.9	clay; str		eu. Sanu, iii	lie to lew			
<u> </u>										Dot	tom of Doring @ 10 ft
										Bott	tom of Boring @ 12 ft.
<b> </b>											
15											
-											
_											
Sample Types: trace 0 to 5%						SPT Resi	stance				Approve/Date
SS Split Spoon few 5 to 10%				Co	hesionless Density:	Cohe	sive Consister	ıcy:			
	helby Tube		little 15	to 25%		se, 10-29 Med. Dense		ry Soft, 3-4			
	ock Core			to 45%	6 0-4 Very Loose, 30-49 Dense 5-8 Med. Stiff, 9-15 Stiff 16-30 Very Stiff, 31+ Hard						
La	ab Sample		mostly	>50%	1	•		,	-		



PRO	JECT : Du	rham M	eadows Wa	terline			SHEE	BORING NO.		
SITE	LOCATION		0000110 110		JOB NO.: 60275749 - RAC2 0060 T	Task 11	1 o	of 2 SB-8		
					LOCATION: N: 734794.61	WOR II	Elevation			
		Pickett L	ane		E: 1021501.09		198.8	ft. 27 ft.		
DRILI	CONTRA	CTOR:	General E	Rorings	ENG/GEO : A. Sayre		BEGUN			
DRILI	RIG:		Mobile B-53	Johngs	DRILLER: Jim Casson		FINISHE			
Hole	Size :		Weather:		31111 0433011	Ground Wa	ater (Date			
Δ	pprox. 8-inc	has			Cloudy, ~75 deg.	Fetim	ated @ 6	∩ 6.5 ft (at time of drilling)		
	g Method:	1103			Drilling Fluid :			@ 6.5 ft. (at time of drilling)		
	3 25_inch I	D Hollov	v Stem Auge	are	None		Not	Encountered		
	3.23-1110111	Dilollov	Blow Count	Sample	None		1400	GENERALIZED		
Dept		N	(per 6 in.)	Recovery	SAMPLE		SOIL	STRATIGRAPHIC		
(ft)	Type/No.	Value	or Drilling	or REC &	DESCRIPTION		CLASS.	DESCRIPTION		
1			Rate(min/ft)	RQD			<del>                                     </del>	(dashed where inferred)		
					Pavement (3")					
	SS-1	8	10-4-4-5	7"	Brown SILTY FINE TO CRS. SAND, so	me fine to crs.		POSSIBLE FILL		
	(1-3)				gravel; dry					
								3'		
5										
	00.0	٥٢	40.00.45.40	40"	Danier FINE TO ODG CAND 1941s fine A					
	SS-2 (5-7)	35	16-20-15-10	16"	Brown FINE TO CRS. SAND, little fine t fines; well graded, dry	to crs. gravei, iew		FINE TO CRS. SAND		
	` ′							& GRAVEL		
10_										
	SS-3	24	10-11-13-13	16"	Brown FINE TO CRS. SAND, some fine	e to crs. gravel;				
	(10-12)				well graded, wet					
15										
	60.4	00	0.0.45.00	0.4"	Draws FINE TO ODG CAND 1941 5 cm	to one and the				
	SS-4 (15-17)	23	8-8-15-32	24"	Brown FINE TO CRS. SAND, little fine t well graded, wet	io cis. gravei;				
						18				
					<del> </del>			FINE SANDY SILT		
Sample	e Types	<u> </u>	trace 0	to 5%	SPT Resistance			Approve/Date		
Sample Types: trace 0 to 5%  SS Split Spoon few 5 to 10%						Cohesive Consisten	cy:	/ ipprove/bate		
	Shelby Tube		little 15	to 25%	5-9 Loose, 10-29 Med. Dense 0-	-2 Very Soft, 3-4	,			
R	Rock Core		some 30	to 45%	0-4 Very Loose, 30-49 Dense 5-8	8 Med. Stiff, 9-15 30 Very Stiff, 31+				
	Lab Sample		mostly	>50%	To-		· IGIG			



PRO	JE	CT: <b>D</b> ui	ham M	eadows Wa	terline			S	HEET	BORING NO.
SITE	L	OCATION				JO	B NO.: 60275749 - RAC2 0060 Task 11		2 of 2	SB-8
			Naka# I			LO	CATION: N: 734794.61	Elev	ation:	Total Depth:
		r	Pickett L	ane			E: 1021501.09			27 ft.
Dep (ft)		Sample Type/No.	N Value	Blow Count (per 6 in.) or Drilling Rate(min/ft)	Sample Recovery or REC & RQD		SAMPLE DESCRIPTION	SOI CLAS		STRATIGRAPHIC DESCRIPTION (dashed where inferred)
		SS-5 (20-22)	23	2-6-17-15	14"		Brown SILT, little to some fine sand, few to little med. t crs. sand, few fine gravel (in spoon tip), trace clay; wet		22'	FINE SANDY SILT
25_		SS-6	31	15-11-20-19	10"		Brown SILTY SAND & GRAVEL/ROCK FRAGMENTS			SILTY SAND & GRAVEL
		(25-27)	31	13-11-20-13	10		wet		Вс	ottom of Boring @ 27 ft.
30_										
35_	H									
40										
40_	H									
	H									
	H									
0.1	Ш				. F0/		CDT Decistance		_	Approve/Deta
Samp SS		ypes: olit Spoon			to 5% to 10%		SPT Resistance  Cohesionless Density: Cohesive Consis	encv.		Approve/Date
ST		nelby Tube			to 25%		5-9 Loose, 10-29 Med. Dense 0-2 Very Soft, 3	-		
R	Ro	ock Core		some 30	to 45%		0-4 Very Loose, 30-49 Dense 5-8 Med. Stiff, 9-50+ Very Dense 16-30 Very Stiff, 3	15 Stiff		
	La	b Sample		mostly	>50%		.,,			



PRO	JΕ	CT: <b>D</b> u	rham M	eadows Wa	terline					SHE	EET	BORING NO.
SITE	L	OCATION				JO	B NO.: <b>60275749 - RAC2 0060</b>	D Task '	11	1	of 2	SB-9
		·	D: 11			LO	OCATION: N: 734876.10			Elevati		Total Depth:
		l	Pickett L	∟ane			E: 1021511.25			199	9.4	27 ft.
DRIL	L	CONTRA	CTOR:	General E	Borinas	ΕN	IG/GEO: A. Sayre			BEGU		July 7, 2015
DRIL	L	RIG :	N	Mobile B-53		DF	RILLER: Jim Casson			FINISH	IED :	July 7, 2015
Hole	Siz	ze :		Weather :			Cilli Gaccoli		Ground Wa	ater (Da	te/Dep	
	۱nr	orox. 8-inc	hes				Sunny, 80s		Estim	ated @	6.5 ft	(at time of drilling)
		Method:	1100	l		Dri	Illing Fluid :		Top of Roc			
	3	3.25-inch L	D Hollov	w Stem Auge	ers		None			No	ot Enco	ountered
	Ť			Blow Count	Sample							GENERALIZED
Dep		Sample	N	(per 6 in.)	Recovery		SAMPLE			SOIL		STRATIGRAPHIC
(ft)	'	Type/No.	Value	or Drilling	or REC &		DESCRIPTION			CLASS.	,	DESCRIPTION
	П			Rate(min/ft)	RQD						(1	dashed where inferred)
		SS-1	35	10-15-20-18	10"		Dark brownish red SILTY SAND, trace	ce fine gr	avel; dry			
		(0-2)					·	J	, ,			
												SILTY SAND w/
	H					•						GRAVEL
5												
-		00.0	47	40.00.07.00	011		Dad have control of the control of t					
	H	SS-2 (5-7)	47	13-20-27-93	6"		Dark brown SAND, some silt, some fi dry	ine to cr	s. gravei;			
	Ш	(- ,										
											8'	
	H											
10_	H										F	INE SAND, SOME SILT
		SS-3	14	9-7-7-4	10"		Reddish brown FINE SAND, some sil	ilt, trace i	med. to crs.			SILI
		(10-12)					sand, trace clay; wet					
	H											
15						Ī					14'	
	Ħ											OIL TV OANIE 1411
	Н	SS-4 (15-17)	14	5-7-7-12	14"		Brownish red FINE TO CRS. SAND, I few silt; well graded, wet	little fine	crs. gravel,			SILTY SAND W/ GRAVEL
	Ш	(.0 17)										0.0.0.22
	П					Ì						
	Н					ŀ						
						_						
Sample Types: trace 0 to 5%						SPT Resistance					Approve/Date	
SS		olit Spoon			to 10%		Cohesionless Density:		ive Consisten	•		
ST R	ST Shelby Tube little 15 to 25% R Rock Core some 30 to 45%					0 4 1/4 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						
									ry Stiff, 31+			
	Rock Core some 30 to 45%  Lab Sample mostly >50%								, ,	- =		



PRO	JE	CT: <b>D</b> ui	rham M	eadows Wa	terline				SHE	ET	BORING NO.
SITE	L	OCATION				JO	B NO.: 60275749 - RAC2 0060 Task 11		2	of 2	SB-9
			Dialeatt I			LO	CATION: N: 734876.10		Elevation		Total Depth:
		r	Pickett L	ane			E: 1021511.25				27 ft.
Dep (ft)		Sample Type/No.	N Value	Blow Count (per 6 in.) or Drilling Rate(min/ft)	Sample Recovery or REC & RQD		SAMPLE DESCRIPTION	(	SOIL CLASS.		STRATIGRAPHIC DESCRIPTION dashed where inferred)
		SS-5 (20-22)	19	9-9-10-20	10"		Brownish red SILTY FINE SAND, some crs. gravel; v	<i>v</i> et			SILTY SAND W/ GRAVEL
25_											GIAVEE
	Ш	SS-6	82	7-22-60-	18"		Brown SILTY FINE TO MED. SAND, little fine to crs.				
		(25-27)		100/2"			gravel; wet			Botto	om of Boring @ 27 FT.
30											
35_ 40_											
Samp		ynos:		trace	) to 5%		SPT Resistance				Approve/Date
Samp		ypes: olit Spoon			to 5%		Cohesionless Density: Cohesive Cons	istenc	y:		Approverbate
ST		nelby Tube			to 25%		5-9 Loose, 10-29 Med. Dense 0-2 Very Soft,				
R	Ro	ock Core			) to 45%		0-4 Very Loose, 30-49 Dense 5-8 Med. Stiff, 50+ Very Dense 5-8 Med. Stiff, 16-30 Very Stiff,	9-15	Stiff		
	La	b Sample		mostly	>50%		10 00 Very Sun,	J.,			



PROJ	ECI: Du	rham M	leadows Wa	terline					SHE	== 1	BURING NO.	
SITE	LOCATION				JOB NO.: 60275749 - RAC2 0060 Task 11			1 1	of 1	SB-10		
					LOCATIO				Elevati		Total Depth:	
		Pickett I	Lane			E: 1021472.91			199.	8 ft.	12 ft.	
DRILL	CONTRA	CTOR:	General E	Borinas	ENG/GE		Dematte		BEGUI		July 8, 2015	
DRILL	RIG:		Mobile B-53	20111190	DRILLER				FINISHED: July 8, 2015			
Hole S	Size :		Weather:			J 34333		Ground W	ater (Da	te/Dep		
А	pprox. 8-inc	hes			Cloudy	y, ~75 deg.			6 feet	(at tim	e of drilling)	
	g Method :	,,,,,,			Drilling F			Top of Roo		`	<u> </u>	
	3.25-inch ID Hollow Stem Augers					None			No	ot Enco	ountered	
	1	1 10110	Blow Count	Sample		110110				Z EIIOC	GENERALIZED	
Deptl	Sample	N	(per 6 in.)	Recovery		SAME			SOIL		STRATIGRAPHIC	
(ft)	Type/No.	. Value	or Drilling	or REC &		DESCRI	PTION		CLASS.		DESCRIPTION	
			Rate(min/ft)	RQD	Paven	ment, red brown road b	ase (fine to me	d sand)		(	dashed where inferred)	
					l l'aven	nent, rea brown road t	ase (iiie to iiie	a. Jana)			FILL	
	SS-1 (0.5-2.5)	32	13-16-16-19	1.0'	Red b	rown FINE SAND, trac	e to few silt, dr	y				
-	(616 216)				•					2'		
-	-											
5												
	00.0	44	40 04 47 40	4.01	0 - 0.3	B': Red brown FINE TO	MED. SAND, 1	race fine to			RATIFIED FINE TO	
-	SS-2 (5-7)	41	19-24-17-19	1.3'		ravel, trace silt; dry ).5': Slaty Rock Fragm	anta			M	IED. SAND w/ SILT	
-						1.3': Red brown FINE		, little silt;				
					weakly	y stratified, wet						
					i							
10												
	SS-3	19	6-9-10-10	1.0'	Red h	rown FINE SAND & S	II T: wet					
	(10-12)				i tod b	10W111 1112 07 1112 Q 0	,					
										Bot	tom of Boring @ 12 ft.	
-					i i							
15												
1												
-					1							
-												
<b> </b>	1				t I							
							- · · ·					
	Types:			) to 5%			Resistance				Approve/Date	
	Split Spoon Shelby Tube			to 10% to 25%		Cohesionless Density:		esive Consister	•			
	Rock Core			) to 45%		oose, 10-29 Med. Dens ery Loose, 30-49 Dens	e 5-8 M	ery Soft, 3-4 ed. Stiff, 9-15	Stiff			
	Lab Sample			>50%		50+ Very Dense	16-30 \	ery Stiff, 31+	Hard			



PROJE	:Cl: Du	rham M	eadows Wa	terline					SHE		BURING NO.
SITE L	OCATION				JOB NO.: 60275749 - RAC2 0060 Task 11				1	of 1	SB-11
					LOCATION				Elevati		Total Depth:
		Pickett I	_ane			E: 1021415.19			200.	6 ft.	12 ft.
DRILL	CONTRAC	CTOR:	General E	Borinas	ENG/GEO		atte		BEGU		July 8, 2015
DRILL	RIG:	ľ	Mobile B-53		DRILLER :				FINISH	IED :	July 8, 2015
Hole Si	ze :		Weather:					Ground Wa	ater (Da	te/Dep	
Ap	prox. 8-inc	hes			Cloudy, <sup>2</sup>	~75 deg.			6 feet	(at tim	e of drilling)
	Method:				Drilling Flui			Top of Roo			
;	3.25-inch ID Hollow Stem Augers					None			No	t Enco	ountered
			Blow Count	Sample							GENERALIZED
Depth		N	(per 6 in.)	Recovery		SAMPLE			SOIL CLASS.		STRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling Rate(min/ft)	or REC & RQD		DESCRIPTIO	N		CLASS.		DESCRIPTION  dashed where inferred)
			Nate(IIIII/It)	NQD	Pavemer	nt (~1")				(	dashed where interredy
F	SS-1				<del> </del>						
L	(0.5-2.5)	20	6-7-13-12	0.4'	Red brov	wn FILL (silty fine sand, t	ew gravel);	dry			FILL
					†					3'	
-					†						
5											STRATIFIED FINE
	SS-2	28	12-13-15-16	1.3'		wn FINE SAND, little me		nd, little fine			SAND
	(5-7)				to crs. gr	avel, little silt; silt lense (	@ 5.6', wet				
					1						
-					<del> </del>						
L					<b>.</b>						
10											
	SS-3	10	4-4-6-9	1.4'	0 - 0.8': F loose. we	Red brown stratified FINI et	E SAND & F	FINES;			
	(10-12)				0.8 - 1.4'	: Red brown stratified FI	NE SAND, t	race silt;			
H					loose, we	et				Bot	tom of Boring @ 12 ft.
L					<b>.</b>						
					<u> </u>						
15											
"					1						
-					<del> </del>						
L					<b>.</b>						
					<u> </u>						
∣					†						
Sample 1	Types:	<u> </u>	trace	to 5%	$\vdash$	SPT Resi	stance				Approve/Date
	rypes: plit Spoon			to 5%	Cohe	esionless Density:	1	sive Consisten	cy:		Approverbale
	helby Tube			to 25%		e, 10-29 Med. Dense		ry Soft, 3-4	•		
R R	ock Core		some 30	to 45%	0-4 Very	Loose, 30-49 Dense 0+ Very Dense	5-8 Me	d. Stiff, 9-15 ery Stiff, 31+	Stiff		
La	ab Sample		mostly	>50%		o very Derise	10-30 V	ary Juli, 31+	ııaıu		



PROJE	Du	rham M	eadows Wa	terline					SHE	:E I	BURING NO.	
SITE L	OCATION	:			JOB NO.: 60275749 - RAC2 0060 Task 11			1	of 1	SB-12		
		M = 1 = 1 = 1 = 1			LC	OCATION: N: 735485.57			Elevation	on:	Total Depth:	
	ı	Maiden I	∟ane			E: 1021092.05			195	.46	12 ft.	
DRILL	CONTRA	CTOR:	General E	3orings	E١	NG/GEO: W. Abrahams-Dematte			BEGUN	۷:	July 9, 2015	
DRILL	RIG:	ı	Mobile B-53		DF	RILLER: Jim Casson			FINISHED: July 9, 2015			
Hole Si	ze :		Weather:				(	Ground Wa	ater (Da	te/Dep		
Ap	prox. 8-inc	hes		Cloud	v. s	ome drizzle, occ. sun, 70s			5.5 feet	t (at tir	me of drilling)	
	Method:					illing Fluid :	Ť		ock (Depth/Elev.):			
	3.25-inch I	D Hollov	w Stem Auge	ers		None			No	t Enco	ountered	
			Blow Count	Sample							GENERALIZED	
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE			SOIL		STRATIGRAPHIC	
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION			CLASS.		DESCRIPTION	
			Rate(min/ft)	RQD	L	To				(	(dashed where inferred)	
						Pavement (~6") & road base sand w/ grav	vel					
	00.4	44	10.45.04.00	4.01		0.051.00.05	<b>.</b>					
-	SS-1 (1-3)	41	10-15-21-26	1.2'	ł	0 - 0.5': Brown fine sand, trace silt, trace f (FILL)	iine g	gravei			FILL	
	( - /					0.5 - 1.2': Red brown fine to med. sand, tr		crs. sand,				
						trace fine gravel; FILL, poorly graded, dry	′					
5				<del>                                     </del>	ł	0 - 0.5': Dark brown fine sand and silt, trad	ce cr	rs. sand;				
	SS-2	26	10-14-12-16	0.9'		FILL, dry				a. ====		
	(5-7)					0.5 - 0.9': Red brown FINE SAND; fines d stratified FINE SAND & SILT; wet	lown	ward to a		6'		
					Ì					,		
<u> </u>				├──	ł					``	STRATIFIED FINE SAND & SILT	
											07 11 1D 01 01 E1	
10												
	00.0	40	0.0.0.44	4.01	1	Red brown SILT, trace to few clay, trace f	fine s	sand; wet,				
-	SS-3 (10-12)	18	9-9-9-11	1.6'	ł	non-plastic			(ML)			
	,			<u> </u>								
										Bott	tom of Boring @ 12 ft.	
-				<del> </del>	•							
15												
					1							
-				├──	ł							
					•							
Sample <sup>-</sup>	Typoo:		trace	) to 5%	⊢	SPT Resistance			<u> </u>	<del></del>	Approve/Data	
	ı ypes: plit Spoon			to 5% to 10%			ohesi	ve Consisten	ICV:		Approve/Date	
	helby Tube			5 to 25%		· ·		y Soft, 3-4	•			
	ock Core			to 45%		0-4 Very Loose, 30-49 Dense 5-8	Med.	Stiff, 9-15	Stiff			
	ab Sample			>50%		50+ Very Dense 16-30	) Ver	y Stiff, 31+	Hard			



PRO	JE	CT: Dui	rham M	eadows Wa	terline					SHE	ET	BORING NO.
SITE	E	OCATION		caaows wa	termie	JC	OB NO.: 60275749 - RAC2 00	60 Task	11	1	of 1	SB-13
		_				LC	OCATION: N: 735509.04	oo ruon	• •	Elevation		Total Depth:
		Ŋ	Maiden I	_ane			E: 1020585.22			191.:	3 ft.	12 ft.
DRIL	L	CONTRAC	CTOR:	General E	Borings	ΕN	NG/GEO: W. Abrahams-Demat	te		BEGUN		July 9, 2015
DRIL	L	RIG :	N	Mobile B-53		DF	RILLER: Jim Casson			FINISH	July 9, 2015	
Hole	Si	ze :		Weather :			CHIT GUGGOTT		Ground Wa	ater (Date/Depth) :		
Ι.	Δnr	orox. 8-inc	hes		Cloud	dy, some drizzle, occ. sun, 70s			5 feet	(at tim	e of drilling)	
		Method :	1100		Oloda	Drilling Fluid: Top of Rocl						
	,	3 25-inch II	D Hallov	v Stem Auge	ere		None			No	t Enco	ountered
	Blow Count Sample						None			140	LITOC	GENERALIZED
Dep	th	Sample	N	(per 6 in.)	Recovery		SAMPLE			SOIL		STRATIGRAPHIC
(ft		Type/No.	Value	or Drilling	or REC &		DESCRIPTION	1		CLASS.		DESCRIPTION
				Rate(min/ft)	RQD						(	dashed where inferred)
							Pavement (~5") & road base sand	w/ gravel				
	r					İ						
	H	SS-1 (1-3)	37	21-19-18-14	0.4'		0 - 0.4': Brown FILL (silt, fine sand	& gravel)				FILL
		(10)										
							(auger cuttings consist of brown fin and crs. gravel; siltier below 4-ft.)	ne sand, fe	w crs. sand		3'	
_							and ord. graver, dillier below 4 h.					
5_	╁						0 - 0.4': Red brown FINE SANDY S	SILT trace	crs sand		IN	TERBEDDED FINE
		SS-2	17	11-10-7-9	0.8'		trace fine gravel; moist		0.0.00.10,			AND, SILT & CLAY
		(5-7)					0.7 - 0.8': Gray SILT, trace clay; mo 0.4 - 0.7': Brown red CLAY & SILT;	oist . moiet				·
	H						0.4 - 0.7 . DIOWITTEU CLAT & SILT,	, moist				
	H											
							(auger cuttings consist of light brov	vn silt)				
10												
'-	T											
	-	SS-3 (10-12)	20	6-9-11-12	1.4'	ŀ	Brown CLAYEY SILT, fining down	to SILTY (	CLAY; moist	(CL)		
		(10-12)										
											Bott	tom of Boring @ 12 ft.
	H					İ						
	H											
15	L											
1 -												
						t						
	-											
	H					İ						
					OPT D					A		
Samp			·				ivo Consist	101/		Approve/Date		
SS ST		lit Spoon few 5 to 10% Cohesionless Density: Cohesive Consiste elby Tube little 15 to 25% 5-9 Loose 10-29 Med Dense 0-2 Very Soft 3-4					•					
R	, i				5-9 Loose, 10-29 Med. Dense 0-2 Very Soft, 3-4 Soft 5-8 Med. Stiff, 9-15 Stiff							
	Lab Sample mostly >50% 50+ Very Dense 16-30 Very Stiff,					ry Stiff, 31+	Hard					



PROJ	ECI: Du	rham M	leadows Wa	terline					SHE		BURING NO.	
SITE	LOCATION				JOB NO.: 60275749 - RAC2 0060 Task 11			1	of 1	SB-14		
					LOCATION				Elevati		Total Depth:	
		Maiden	Lane			E: 1020244.31			19 <sup>-</sup>	1.4	12 ft.	
DRILL	CONTRA	CTOR :	General E	Borinas	ENG/GEO:		atte		BEGUI		July 9, 2015	
DRILL	RIG:		Mobile B-53		DRILLER:	Jim Casson			FINISHED: July 9, 2015			
Hole S	Size :		Weather:					Ground Wa	ater (Da	te/Dep		
Α	pprox. 8-inc	hes		Cloud	v. some driz:	zle, occ. sun, 70s			5 feet	(at tim	e of drilling)	
	g Method :				Drilling Fluid			Top of Roo				
	3.25-inch I	D Hollo	w Stem Auge	ers		None			No	t Enco	ountered	
			Blow Count	Sample							GENERALIZED	
Deptl		N	(per 6 in.)	Recovery		SAMPLE			SOIL		STRATIGRAPHIC	
(ft)	Type/No.	Value	_	or REC & RQD		DESCRIPTIO	DN		CLASS.	,	DESCRIPTION  dashed where inferred)	
1			Rate(min/ft)	RQD	Pavemer	nt (~6") & road base san	d w/ gravel			(	FILL	
					 	, ,	-			1'	FILL	
	SS-1	56	30-28-28-31	0.8'	Dark red	brown FINE SAND, trac	e silt, trace	fine gravel;		'		
	(1-3)				dry							
ŀ					1						FINE SAND	
ŀ					<del> </del>							
5_												
	SS-2	23	15-11-12-12	0.7'	Brown FI	NE SAND, little med. to	crs. sand, li	ttle silt, little				
ľ	(5-7)				to few roo	ck fragments; wet						
ŀ					<del> </del>							
					(ougor o	uttingo indicato downwa	rd fining)					
					(auger cu	uttings indicate downwa	a iiriirig)					
10												
``	00.0	40	44.40.00.04		0 - 0.4': E	Brown FINE SAND, trac	e med. san	d, trace to				
	SS-3 (10-12)	40	14-18-22-24	0.7'	few silt; w		2D AV/EL			11'	CAND & CDAVE	
					0.4 - 0.7	: Brown FINE SAND & C	SKAVEL, Sa	turated			SAND & GRAVEL	
										Boti	tom of Boring @ 12 ft.	
ŀ					†							
15												
ľ												
ŀ					1							
					.							
-	Types:			) to 5%		SPT Resi	1				Approve/Date	
	Split Spoon			to 10%		esionless Density:	Cohe	sive Consister	icy:			
	Shelby Tube Rock Core			to 25% to 45%		e, 10-29 Med. Dense Loose, 30-49 Dense		ry Soft, 3-4 d. Stiff, 9-15				
	Lab Sample			>50%		+ Very Dense		ery Stiff, 31+				



PRO	PROJECT : Durham Meadows Waterline								EET BORING NO.		
SITE	L	OCATION				JOB NO.: <b>60275749 - RAC2 0060 Ta</b>	sk 11	1	of 2 SB-15		
						LOCATION: N: 735485.40		Elevati			
		Ņ	Maiden I	_ane		E: 1019985.46		187.	6 ft. 27 ft.		
DRIL	L	CONTRAC	CTOR:	General E	Borings	ENG/GEO: W. Abrahams-Dematte		BEGUI			
DRIL	L	RIG :	N	Mobile B-53		DRILLER: Jim Casson		FINISH	FINISHED: July 9, 2015		
Hole	Siz	ze :		Weather:		dini dadadii	Ground W	ater (Da	ter (Date/Depth) :		
	Δnr	orox. 8-incl	has		Cloud	dy, some drizzle, occ. sun, 70s			6.5 feet (at time of drilling)		
		Method:	103		Cloud	Drilling Fluid:	Top of Roo				
	•		D. Hallay	u Ctom Augu				` .	,		
		5.25-INCH II	יטווטח כ	v Stem Auge Blow Count	Sample	None		INC	ot Encountered GENERALIZED		
Dep	th	Sample	N	(per 6 in.)	Recovery	SAMPLE		SOIL	STRATIGRAPHIC		
(ft)	)	Type/No.	Value	or Drilling	or REC &	DESCRIPTION		CLASS.	DESCRIPTION		
	1			Rate(min/ft)	RQD	Pavement (~6") & road base sand w/ gra	(al		(dashed where inferred)		
						Favernerit (~o ) & road base sand w/ gra-	/ei				
		SS-1	21	18-12-9-5	0.9'	Light brown fine to med. sand, trace to fe	w cre sand				
	H	(1-3)		10 12 0 0	0.0	and fine gravel; well graded FILL, dry	W 013. Sana		FILL		
	L										
5											
-	Ħ					0 - 0.5': FILL, as above					
	H	SS-2 (5-7)	18	6-8-10-12	1.0'	0.5 - 1.0': Brown to gray MED. SAND, few	fine sand;		6'		
		(01)				poorly graded, dry					
									FINE TO CRS. SAND		
									(POSSIBLE FILL)		
	H										
10_											
		SS-3	34	9-14-20-35	1.3'	0 - 0.6': Yellow brown FINE TO CRS. SAI	ND, trace fine				
		(10-12)				gravel, trace silt; wet 0.6 - 1.3': Brown SILT & CLAY			11'		
	H										
	L										
									CILTY CLAY		
15									SILTY CLAY		
15-	H										
	L	SS-4	16	6-8-8-9	1.9'	Red brown SILTY CLAY, trace fine sand fine gravel; wet	enses, trace	(CL)			
		(15-17)				inic graver, wet					
	H										
	H										
Sample Types: trace 0 to 5%				trace 0	to 5%	SPT Resistance			Approve/Date		
SS Split Spoon few 5 to 10%						Cohesionless Density: Cohesive Consistency:					
ST Shelby Tube little 15 to 25%						5-9 Loose, 10-29 Med. Dense 0-2 Very Soft, 3-4 Soft 0-4 Very Loose, 30-49 Dense 5-8 Med. Stiff, 9-15 Stiff					
R						50+ Very Dense 5-8 Med. Stiff, 9-15 Stiff 16-30 Very Stiff, 31+ Hard					
	Lab Sample mostly >50%				~JU 70						



PRO	JE	CT: <b>Du</b> i	rham M	eadows Wa	terline		SH	EET	BORING NO.
SITE	L	OCATION				JOB NO.: <b>60275749 - RAC2 0060 Task 11</b>		of 2	SB-15
			1 m; al a m 1			LOCATION: N: 735485.40	Elevat	ion:	Total Depth:
		ľ	Maiden L	_ane		E: 1019985.46			27 ft.
Dep (ft)		Sample Type/No.	N Value	Blow Count (per 6 in.) or Drilling Rate(min/ft)	Sample Recovery or REC & RQD	SAMPLE DESCRIPTION	SOIL CLASS.		STRATIGRAPHIC DESCRIPTION  'dashed where inferred)
		SS-5 (20-22)	9	3-3-6-6	2.0'	Red brown SILTY CLAY; saturated			
									SILTY CLAY
25_		SS-6	20	3-5-15-11	1.6'	0 - 0.5': SILTY CLAY, as above 0.5 - 1.0': Red brown FINE SANDY SILT; saturated			
		(25-27)				1.0 - 1.6': Red brown SILT & GRAVEL; saturated			NDY & GRAVELLY SILT tom of Boring @ 27 ft.
30_									
35_									
40_									
	H								
	H								
Samp	le T	ypes:		trace (	) to 5%	SPT Resistance	<u> </u>		Approve/Date
SS		olit Spoon		few 5	to 10%	Cohesionless Density: Cohesive Consi	stency:		
ST R		nelby Tube ock Core			5 to 25% 5 to 45%	5-9 Loose, 10-29 Med. Dense 0-4 Very Loose, 30-49 Dense 5-8 Med. Stiff, 9-10-10-10-10-10-10-10-10-10-10-10-10-10-	-15 Stiff		
	La	b Sample		mostly	>50%	50+ Very Dense 16-30 Very Stiff,	oi+ mara		



PROJECT : Durham Meadows Waterline								SHE	ET	BORING NO.			
SITE	L	OCATION				JO	B NO.: <b>60275749 - RAC2 006</b>	60 Task	11	1	of 2	SB-16	
		_				LO	CATION: N: 735466.46			Elevati		Total Depth:	
		N	Maiden I	Lane			E: 1020019.31			188.	0 ft.	27 ft.	
DRIL	L	CONTRAC	CTOR:	General E	Rorings	ΕN	IG/GEO: W. Abrahams-Dematte	P		BEGUI		July 9, 2015	
DRIL	L	RIG :		Mobile B-53	Johngo	DF	RILLER: Jim Casson			FINISHED: July 9, 2015			
Hole	Siz	ze :		Weather :		<u> </u>	JIII Cassoii		Ground Wa	ater (Da	ter (Date/Depth) :		
	۸ ۵۲	orox. 8-incl	hoo		Cloud	dy, some drizzle, occ. sun, 70s			•	6 feet (at time of drilling)			
		Method:	162		Cioud		lling Fluid:		Top of Roc				
	•		D. Hallai	Ctara A			-		'	` .		,	
		3.∠5-INCN II	J HOIION	w Stem Auge Blow Count	Sample		None			INC	ot Enco	ountered GENERALIZED	
Dep	th	Sample	N	(per 6 in.)	Recovery		SAMPLE			SOIL	;	STRATIGRAPHIC	
(ft)	)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION			CLASS.		DESCRIPTION	
				Rate(min/ft)	RQD		D	/			(	dashed where inferred)	
							Pavement (~5") & road base sand w	v/ gravei					
		SS-1	44	43-24-20-14	0.7'		Brown to red brown, well graded FIL	l consi	oto of fino			FILL	
		(1-3)	44	43-24-20-14	0.7		crs. sand and fine gravel; dry	LL - COIISI	SIS OF TIME		3'		
		, ,											
5													
) <sup>3</sup> -	H												
		SS-2	8	6-3-5-8	0.7'		Gray FINE SANDY SILT; poorly grad	ded, moi	st			CLAYEY SILT w/	
		(5-7)									3/	ANDY INTERBEDS	
10													
		SS-3	13	7-6-7-8	1.5'								
		(10-12)	10	7-0-7-0	1.5		Red brown SILTY CLAY; moist						
	L												
	H												
15_	H												
		SS-4	15	4-6-9-9	1.5'		Red brown CLAYEY SILT; moist						
		(15-17)					John Ob (12) Oil I, molet						
	H												
	H												
	L												
Sample Types: trace 0 to 5% SPT Resistance				ance				Approve/Date					
SS Split Spoon few 5 to 10%			Cohesionless Density: Cohesive Consistency:		cy:								
ST Shelby Tube little 15 to 25%			5-9 Loose, 10-29 Med Dense 0-2 Very Soft, 3-4 Soft										
R					0-4 Very Loose, 30-49 Dense 50+ Very Dense		I. Stiff, 9-15 ry Stiff, 31+						
	Lab Sample mostly >50%						,, 01.						



PRO	PROJECT : Durham Meadows Waterline							EET BORING NO.
SITE	L	OCATION				JOB NO.: <b>60275749 - RAC2 0060 Task 11</b>	2	of 2 SB-16
			4 -: -! I			LOCATION: N: 735466.46	Elevati	on: Total Depth:
		IV	/laiden L	-ane		E: 1020019.31		27 ft.
Dep (ft)		Sample Type/No.	N Value	Blow Count (per 6 in.) or Drilling Rate(min/ft)	Sample Recovery or REC & RQD	SAMPLE DESCRIPTION	SOIL CLASS.	STRATIGRAPHIC
		SS-5 (20-22)	35	9-13-22-19	2.0'	0 - 0.7': CLAYEY SILT, as above 0.7 - 1.6': Red brown SILT, trace clay; moist to wet 1.6' - 2.0': Brown Silt, Fine Sand and Fine Gravel		CLAYEY SILT w/ SANDY INTERBEDS
25_		SS-6	17	6-7-10-13	2.0'	0 - 0.5': Red brown CLAYEY SILT; moist		25.5'
		(25-27)	17	0-7-10-13	2.0	0.5' - 1.0': Red brown MED. TO CRS. SAND; wet 1.0' - 2.0': Brown FINE TO MED. SAND; poorly graded, wet		FINE TO CRS. SAND  Bottom of Boring @ 27 ft.
30_								
35_	L							
40_								
	Н							
	Sample Types: trace 0 to 5%					SPT Resistance		Approve/Date
SS ST		olit Spoon nelby Tube			to 10% to 25%	Cohesionless Density: Cohesive Consister	-	
R	R Rock Core some 30 to 45%			some 30	to 45%	5-9 Loose, 10-29 Med. Dense 0-4 Very Loose, 30-49 Dense 50+ Very Dense 0-2 Very Soft, 3-4 5-8 Med. Stiff, 9-15 16-30 Very Stiff, 31+	Stiff	
	Lab Sample mostly >50%					,,,,,,,		

#### **ATTACHMENT 2**

**Laboratory Test Results** 



Boston Atlanta Chicago Los Angeles New York www.geotesting.com

Transm	nittal			
ro:				
Wei Song			DATE: 8/21/2015	GTX NO: 303489
AECOM			RE: Durham Meadow W	/ater Main
701 Edgewat	er Drive			
Wakefield, N	1A 01880		Ţ.	
		-		
COPIES	DATE		DESCRIPTION	
	8/21/2015	August 2015 Laboratory Test	Report	
EL LA DEC				
REMARKS:				
		SIGNED	2. 7	en
cc:		SIGNED:	Jonathan Campbell, Assista	
CC.			-Jonathan Campuell, Assisti	ant Laboratory Manage
		APPROVED BY:	bol T	



Boston Atlanta Chicago Los Angeles New York www.geotesting.com

August 21, 2015

Wei Song AECOM 701 Edgewater Drive Wakefield, MA 01880

RE: Durham Meadow Water Main, Durham, CT (GTX-303489)

Dear Wei:

Enclosed are the test results you requested for the above referenced project. GeoTesting Express, Inc. (GTX) received 21 samples from you on 7/21/2015. These samples were labeled as follows:

Boring	Sample	Depth
SB-1	SS-2	5-7 ft
SB-2	SS-3	10-12 ft
SB-2	SS-5	20-22 ft
SB-3	SS-2	5-7 ft
SB-4	SS-2	5-7 ft
SB-4	SS-3	10-12 ft
SB-5	SS-3	10-12 ft
SB-7	SS-2	5-7 ft
SB-7	SS-3	10-12 ft
SB-8	SS-2	5-7 ft
SB-8	SS-5	20-22 ft
SB-9	SS-3	10-12 ft
SB-9	SS-4	15-17 ft
SB-10	SS-2	5-7 ft
SB-11	SS-2	5-7 ft
SB-12	SS-2	5-7 ft
SB-12	SS-3	10-12 ft
SB-13	SS-2	5-7 ft
SB-13	SS-3	10-12 ft
SB-14	SS-2	5-7 ft
SB-15	SS-4	15-17 ft

GTX performed the following tests on these samples:

2 ASTM D4972 - pH

2 ASTM G 57 - Electrical Resistivity (Laboratory)

10 ASTM D422 - Grain Size Analyses - Sieve and Hydrometer

7 ASTM D422 - Grain Size Analysis - Sieve Only

5 ASTM D4318 - Atterberg Limits

GeoTesting Express, Inc. 125 Nagog Park Acton, MA 01720 Toll Free 800 434 1062 Fax 978 635 0266



Boston Atlanta Chicago Los Angeles New York

www.geotesting.com

GTX subcontracted with Fugro Consultants, Inc. of Houston, TX to perform ASTM D512-Chlorides and D516-Sulfates on two of your samples. See the attached test report for results.

GTX also subcontracted with Alpha Analytical of Westborough, MA to perform SM2580B- Oxidation-Reduction Potential of Soil on two of your samples. See the attached test report for results.

A copy of your test request is attached.

The results presented in this report apply only to the items tested. This report shall not be reproduced except in full, without written approval from GeoTesting Express. The remainder of these samples will be retained for a period of sixty (60) days and will then be discarded unless otherwise notified by you. Please call me if you have any questions or require additional information. Thank you for allowing GeoTesting Express the opportunity of providing you with testing services. We look forward to working with you again in the future.

Respectfully yours,

Jonathan Campbell

Assistant Laboratory Manager

GeoTesting Express, Inc. 125 Nagog Park Acton, MA 01720 Toll Free 800 434 1062 Fax 978 635 0266



Boston Atlanta Chicago Los Angeles New York www.geotesting.com

Geotec	hnical	Test	Ren	ort
CCCCC	IIIIICUI	1	110	

8/21/2015

# GTX-303489 Durham Meadow Water Main

Durham, CT

Client Project No.: 60275749-RAC2 0060; Task 03

Prepared for:

**AECOM** 



Project: Durham Meadow Water Main

Location: Durham, CT

Boring ID: --Sample Type: ---Tested By: Sample ID: ---Test Date: 07/28/15 Checked By: jdt

Project No:

GTX-303489

jbr

Depth: Test Id: 339591

# pH of Soil by ASTM D4972

Boring ID	Sample ID	Depth	Visual Description	pH of Soil in Distilled Water	pH of Soil in Calcium Chloride
SB-7	SS-2	5-7 ft	Moist, brown sandy clay with gravel	7.3	6.8
SB-12	SS-2	5-7 ft	Moist, brown silt	7.3	6.7

Notes: Sample Preparation: screened through #10 sieve

Method A, pH meter used



Client: AECOM
Project: Durham Medow Water Main
Location: Durham, CT
GTX#: 303489

Test Date: 07/28/15
Tested By: adu
Checked By: jdt

### Laboratory Measurement of Soil Resistivity Using the Wenner Four-Electrode Method by ASTM G57 (Laboratory Measurement)

Boring ID	Sample ID	Depth, ft.	Sample Description	Electrical Resistivity, ohm-cm	Electrical Conductivity, (ohm-cm) <sup>-1</sup>
SB-7	SS-2	5-7	Moist, brown sandy clay with gravel	2,789	3.59E-04
SB-12	SS-2	5-7	Moist, brown silt	9,297	1,08E-04

Notes:

Test Equipment: Nilsson Model 400 Soil Resistance Meter, MC Miller Soil Box

Water added to sample to create a thick slurry prior to testing (saturated condition). Electrical Conductivity is calculated as inverse of Electrical Resistivity (per ASTM G57)

Test conducted in standard laboratory atmosphere: 68-73 F



Project: Durham Meadow Water Main

Location: Durham, CT

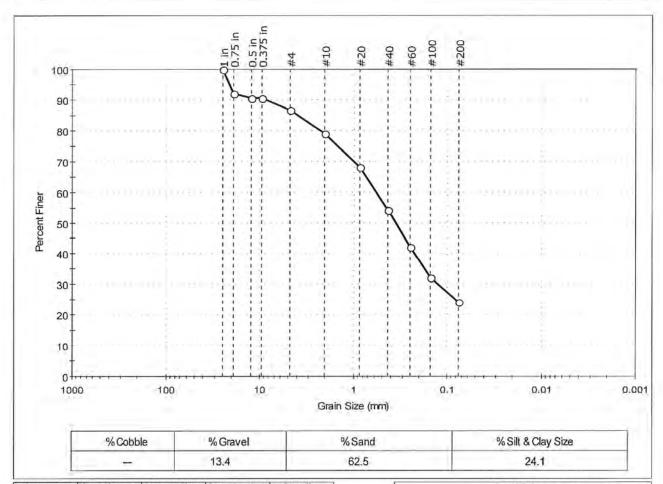
Boring ID: SB-1 Sample Type: bag Tested By: jbr Sample ID: SS-2 Test Date: 07/30/15 Checked By: jdt Depth: 5-7 ft Test Id: 339560

Depth: 5-7 ft
Test Comment: ---

Visual Description: Moist, brown silty sand

Sample Comment: ---

### Particle Size Analysis - ASTM D422



1 in 25.00 100 0.75 in 19.00 92 0.5 in 19.00 92 0.5 in 12.50 91 0.375 in 9.50 91 0.375 in 9.50 91 0.475 87 410 2.00 79 420 0.85 68 440 0.42 54 460 0.25 42 4100 0.15 32 4200 0.075 24	Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in 12,50 91 0.375 in 9,50 91 #4 4.75 87 #10 2.00 79 #20 0.85 68 #40 0.42 54 #60 0.25 42 #100 0.15 32	1 in	25.00	100		
0.375 in 9.50 91 #4 4.75 87 #10 2.00 79 #20 0.85 68 #40 0.42 54 #60 0.25 42 #100 0.15 32	0.75 in	19.00	92		
#4 4.75 87 #10 2.00 79 #20 0.85 68 #40 0.42 54 #60 0.25 42 #100 0.15 32	0.5 In	12,50	91	-	
#10 2.00 79 #20 0.85 68 #40 0.42 54 #60 0.25 42 #100 0.15 32	0.375 in	9.50	91		
#20 0.85 68 #40 0.42 54 #60 0.25 42 #100 0.15 32	#4	4.75	87		
#40 0.42 54 #60 0.25 42 #100 0.15 32	#10	2.00	79		
#60 0.25 42 #100 0.15 32	#20	0.85	68		
#100 0.15 32	#40	0.42	54		
	#60	0.25	42		
#200 0.075 24	#100	0.15	32		
	#200	0,075	24		
				-	

Coe	<u>efficients</u>
D <sub>85</sub> =3.9308 mm	D <sub>30</sub> = 0.1242 mm
D <sub>60</sub> =0.5641 mm	$D_{15} = N/A$
D <sub>50</sub> = 0.3510 mm	$D_{10} = N/A$
Cu =N/A	C <sub>c</sub> =N/A

Project No:

GTX-303489

ASTM N/A Classification

AASHTO Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape: ROUNDED

Sand/Gravel Hardness: HARD



Project: Durham Meadow Water Main

Location: Durham, CT

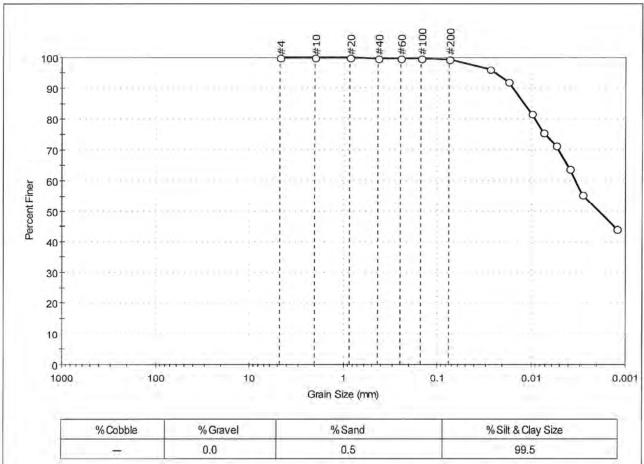
Boring ID: SB-2 Sample Type: bag Tested By: jbr Sample ID: SS-3 Test Date: 07/30/15 Checked By: jdt Test Id: Depth: 10-12 ft 339567

Test Comment:

Moist, reddish brown clay Visual Description:

Sample Comment:

### Particle Size Analysis - ASTM D422



	% Cobb	le	% Gravel	1.2	% Sand	%Si	It & Clay Size	
		- 1	0.0		0.5		99.5	
Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies	1 4	Coef	ficients	
			1.00	100000	Dec = 0.01	10 mm	Dan -N/A	

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	100		
#200	0.075	99		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
144	0.0274	96		
5.5	0.0173	92		
200	0.0100	82		
win.	0.0075	76		
-	0.0054	71		
-	0.0039	64		
	0.0028	56		
(F++)	0.0012	44		

Cor	<u>efficients</u>	
D <sub>85</sub> =0.0119 mm	$D_{30} = N/A$	
D <sub>60</sub> =0.0034 mm	D <sub>15</sub> =N/A	
D <sub>50</sub> = 0.0019 mm	$D_{10} = N/A$	
Cu =N/A	$C_c = N/A$	

GTX-303489

Project No:

<u>Classification</u> Lean clay (CL) **ASTM** AASHTO Clayey Soils (A-7-6 (21))

Sample/Test Description
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Project: Durham Meadow Water Main

Location: Durham, CT Boring ID: SB-2

Sample Type: bag Test Date:

Tested By: 07/31/15 Checked By: jdt

Project No:

GTX-303489

Sample ID: SS-5 Depth: 20-22 ft

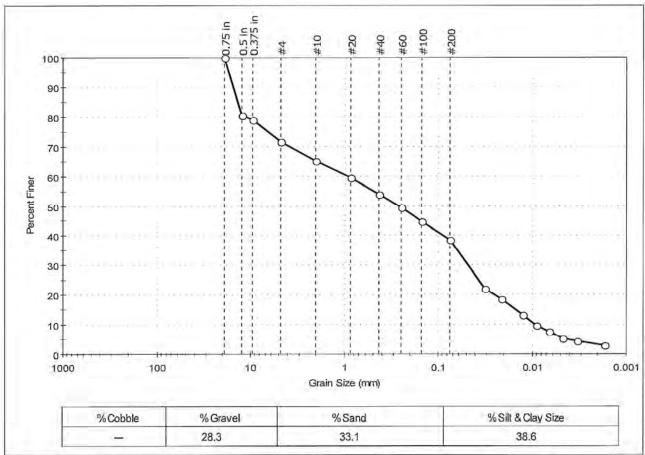
Test Id: 339568

Test Comment:

Moist, brown silty sand with gravel Visual Description:

Sample Comment:

### Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0,5 in	12.50	81		
0.375 in	9.50	79		
#4	4.75	72		
#10	2,00	65		
#20	0.85	60		
#40	0.42	54		
#60	0.25	49		
#100	0.15	45		
#200	0.075	39		
-	Particle Size (mm)	Percent Finer	Spec, Percent	Complies
- 141	0.0317	22		
77.7	0.0211	19		
***	0.0126	13		
0.75	0.0090	10		
-	0.0065	8		
***	0.0047	5		
***	0.0033	4		
***	0,0017	3		

Coefficients						
D <sub>85</sub> =13.7591 mm	$D_{30} = 0.0479 \text{ mm}$					
D <sub>60</sub> = 0.9043 mm	D <sub>15</sub> = 0.0150 mm					
D <sub>50</sub> = 0.2653 mm	$D_{10} = 0.0092 \text{ mm}$					
Cu =98.293	$C_c = 0.276$					

Classification ASTM N/A AASHTO Silty Soils (A-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape: ROUNDED

Sand/Gravel Hardness: HARD

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Project: Durham Meadow Water Main

Location: Durham, CT

Boring ID: SB-3 Sample Type: bag Tested By: Sample ID: SS-2 Test Date: 07/29/15 Checked By: jdt Test Id: 339561

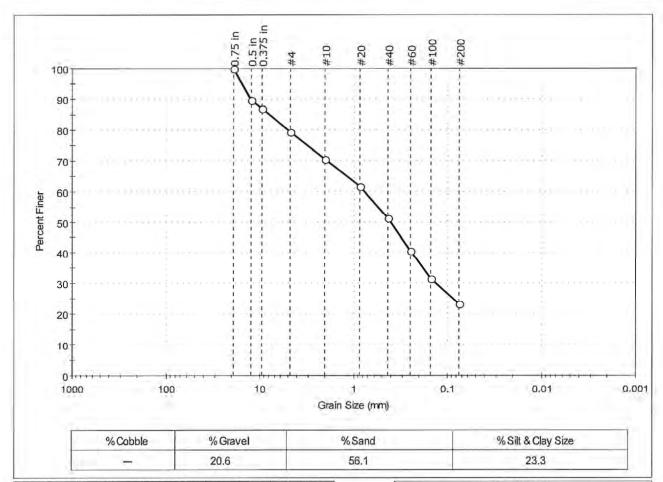
5-7 ft Depth:

Test Comment:

Moist, brown silty sand with gravel Visual Description:

Sample Comment:

### Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 In	12,50	90		
0,375 in	9,50	87		
#4	4.75	79		
#10	2.00	70		
#20	0.85	62		
#40	0.42	51		
#60	0.25	41	- 1	
#100	0.15	31		
#200	0.075	23		

Coe	efficients
D <sub>85</sub> =7.8402 mm	D <sub>30</sub> = 0.1323 mm
D <sub>60</sub> = 0.7624 mm	D <sub>15</sub> = N/A
D <sub>50</sub> = 0.3957 mm	$D_{10} = N/A$
$C_u = N/A$	C <sub>c</sub> =N/A

GTX-303489

Project No:

Classification **ASTM** N/A AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description Sand/Gravel Particle Shape : ANGULAR Sand/Gravel Hardness: HARD



Project: Durham Meadow Water Main

Location: Durham, CT

Boring ID: SB-4 Sample Type: bag Tested By: Sample ID: SS-3 Test Date: 07/28/15 Checked By: jdt

Test Id:

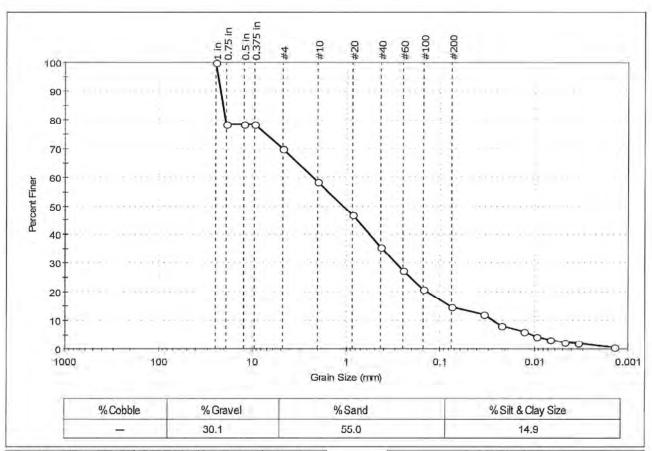
339569

Depth: 10-12 ft Test Comment:

Visual Description: Moist, brown silty sand with gravel

Sample Comment:

### Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0,75 in	19,00	78		
0.5 in	12.50	78		
0.375 in	9,50	78		
#4	4.75	70		
#10	2,00	58		
#20	0,85	47		
#40	0.42	36		
#60	0.25	2.7		
#100	0.15	21		
#200	0.075	15		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0340	12		
1011	0.0222	8		
	0,0127	6		
t-sid	0.0094	4		
5-44-c	0.0067	3		
1-11	0.0048	2		
200	0.0033	2		
	0.0014	1		

Coe	Coefficients	
D <sub>85</sub> =20.6453 mm	$D_{30} = 0.2959 \text{ mm}$	
D <sub>60</sub> = 2.2470 mm	D <sub>15</sub> =0.0760 mm	
D <sub>50</sub> = 1.0732 mm	D <sub>10</sub> = 0.0271 mm	
$C_{ij} = 82.915$	C <sub>c</sub> =1.438	

Project No:

GTX-303489

jbr

Classification N/A ASTM Stone Fragments, Gravel and Sand AASHTO (A-1-b (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape: ROUNDED

Sand/Gravel Hardness: HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Project: Durham Meadow Water Main

Location: Durham, CT
Boring ID: SB-5

Sample Type: bag Tested By: jbr Test Date: 07/28/15 Checked By: jdt

Project No:

GTX-303489

Depth: 10-12 ft Test Id: 339570

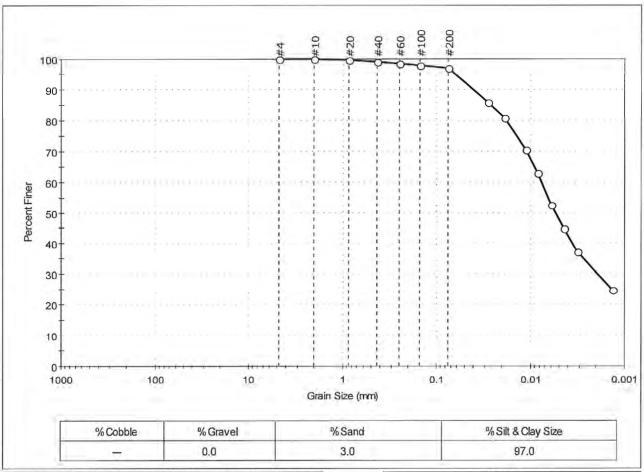
Test Comment:

Sample ID: SS-3

Visual Description: Moist, brown clay

Sample Comment: ---

### Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0,25	99		
<b>#100</b>	0.15	98		
#200	0.075	97		
***	Particle Size (mm)	Percent Finer	Spec, Percent	Complies
***	0.0284	86		
	0.0190	81		
	0.0111	71		
777	0.0083	63		
	0.0060	53		7
	0,0043	45		
-	0.0031	37		
	0.0013	25		

Coefficients			
D <sub>85</sub> =0.0264 mm	D <sub>30</sub> = 0.0019 mm		
D <sub>60</sub> = 0.0076 mm	$D_{15} = N/A$		
D <sub>50</sub> = 0.0054 mm	$D_{10} = N/A$		
$C_u = N/A$	C <sub>c</sub> =N/A		

ASTM Lean clay (CL)

AASHTO Clayey Soils (A-6 (18))

Sample/Test Description
Sand/Gravel Particle Shape : ---

Santa, S. E. C. T. C. S. C. C. S. C. P. C.

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Project: Durham Meadow Water Main

Location: Durham, CT

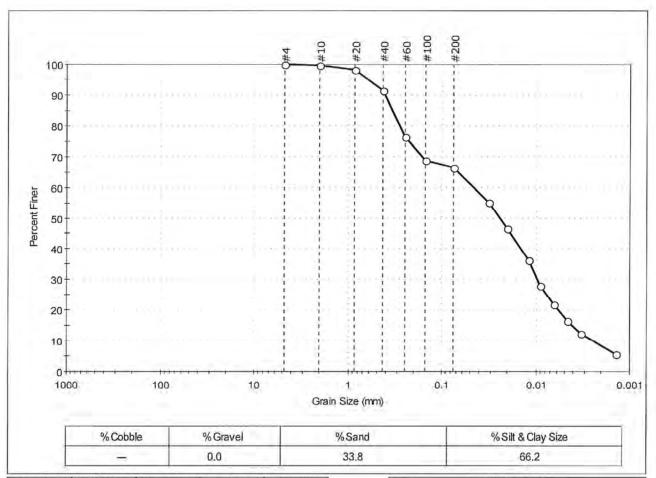
Boring ID: SB-7 Sample Type: bag Tested By: jbr Sample ID: SS-3 Test Date: 07/28/15 Checked By: jdt Depth: 10-12 ft Test Id: 339571

Depth: 10-12 ft
Test Comment: ---

Visual Description: Moist, brown sandy silt

Sample Comment: --

### Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4,75	100		
#10	2.00	100		
#20	0.85	-98		
#40	0.42	92		
#60	0.25	76		
#100	0.15	69		
#200	0.075	66		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
1111	0.0315	55		
1797	0.0203	47		
1777	0.0119	36		
	0.0089	28		
146	0.0064	22		
	0.0046	17		
~~	0.0033	12		
294	0.0014	6		

Co	Coefficients	
D <sub>85</sub> =0.3378 mm	$D_{30} = 0.0095 \text{ mm}$	
D <sub>60</sub> =0.0463 mm	D <sub>15</sub> =0.0040 mm	
D <sub>50</sub> = 0.0241 mm	$D_{10} = 0.0024 \text{ mm}$	
Cu =19.292	$C_c = 0.812$	

Project No:

GTX-303489

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness : ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Sample ID: SS-2

Project: Durham Meadow Water Main

Location: Durham, CT Boring ID: SB-8

Sample Type: bag Tested By: jbr Test Date: 07/29/15 Checked By: jdt

Project No:

GTX-303489

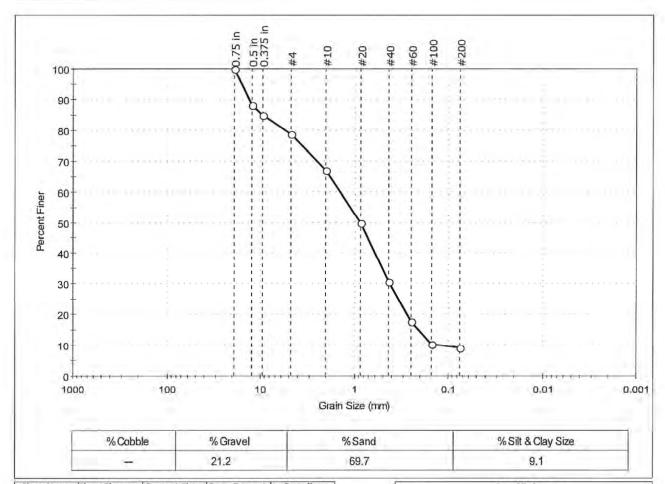
Depth: 5-7 ft Test Id: 339562

Test Comment: --

Visual Description: Moist, brown sand with silt and gravel

Sample Comment: --

# Particle Size Analysis - ASTM D422



	0.75 in	19.00		
Ī		19.00	100	
	0.5 in	12,50	88	
	0.375 in	9.50	85	
Т	#4	4.75	79	
Т	#10	2.00	67	
ī	#20	0.85	50	
Г	#40	0.42	31	
	#60	0.25	18	
Π	#100	0.15	10	
ī	#200	0.075	9,1	

Coefficients		
D <sub>85</sub> =9.4857 mm	D <sub>30</sub> = 0.4139 mm	
D <sub>60</sub> =1.4156 mm	D <sub>15</sub> =0.2083 mm	
D <sub>50</sub> =0.8586 mm	D <sub>10</sub> = 0.1290 mm	
Cu =10.974	$C_c = 0.938$	

ASTM N/A Classification

AASHTO Stone Fragments, Gravel and Sand (A-1-b (1))

Sample/Test Description Sand/Gravel Particle Shape : ANGULAR Sand/Gravel Hardness : HARD



Durham Meadow Water Main Project:

Location: Durham, CT

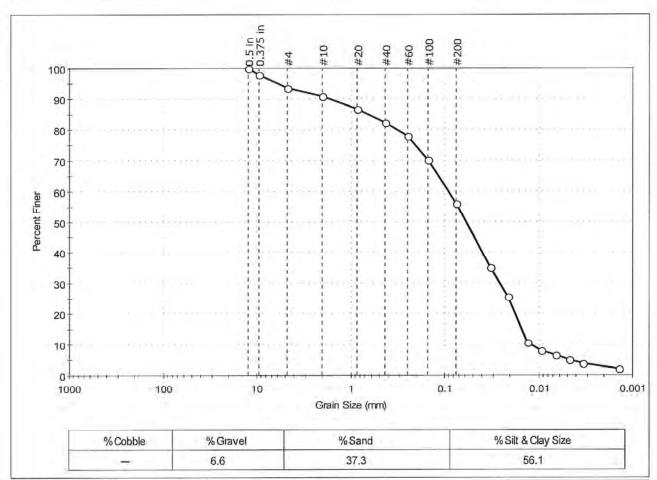
Project No: GTX-303489 Tested By: Boring ID: SB-8 Sample Type: bag jbr Test Date: 07/30/15 Checked By: jdt Sample ID: SS-5 339572 Test Id:

Depth: 20-22 ft Test Comment:

Visual Description: Moist, reddish brown sandy silt

Sample Comment:

### Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	98		
#4	4.75	93		
#10	2.00	91		
#20	0.85	87		
#40	0.42	82		
#60	0.25	78		
#100	0.15	70		
#200	0.075	56		
	Particle Size (mm)	Percent Finer	Spec, Percent	Complies
	0.0326	35		
04440	0.0212	26		
	0.0131	11		
	0.0093	8		
	0.0066	6		
	0.0047	5		
2495	0,0033	4		
3442	0.0014	2		

Coefficients			
D <sub>85</sub> =0.6562 mm	$D_{30} = 0.0258 \text{ mm}$		
D <sub>60</sub> = 0.0905 mm	D <sub>15</sub> =0.0151 mm		
D <sub>50</sub> = 0.0587 mm	D <sub>10</sub> =0.0122 mm		
$C_u = 7.418$	$C_c = 0.603$		

Classification **ASTM** N/A AASHTO Silty Soils (A-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape: ROUNDED

Sand/Gravel Hardness: HARD

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Project: Durham Meadow Water Main

Location: Durham, CT Boring ID: SB-9

Sample Type: bag Test Date: 07/29/15 Checked By: jdt

Tested By: jbr

Project No:

GTX-303489

Sample ID: SS-3 Depth: 10-12 ft

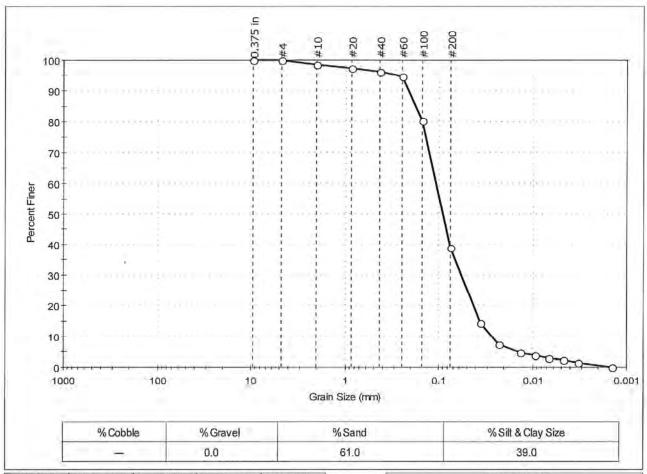
Test Id: 339573

Test Comment: Visual Description:

Moist, brown silty sand

Sample Comment:

### Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2,00	99		
#20	0.85	97		
#40	0.42	96		
#60	0.25	95		
#100	0.15	80		
#200	0.075	39		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
777	0.0361	15		
	0,0227	7		
-	0.0134	5		
-	0.0094	4		
-	0.0067	3		
1	0.0047	2		
1444	0.0033	2		
2.00	0.0014	0		

Cor	efficients
D <sub>85</sub> =0.1772 mm	D <sub>30</sub> = 0.0573 mm
D <sub>60</sub> =0.1067 mm	D <sub>15</sub> =0.0365 mm
D <sub>50</sub> =0.0902 mm	D <sub>10</sub> =0.0268 mm
Cu =3.981	$C_c = 1.148$

Classification **ASTM** N/A AASHTO Silty Soils (A-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Project: Durham Meadow Water Main

Location: Durham, CT Boring ID: SB-9

Sample Type: bag Test Date: 07/31/15 Project No: Tested By: jbr

GTX-303489

Sample ID: SS-4 Depth: 15-17 ft

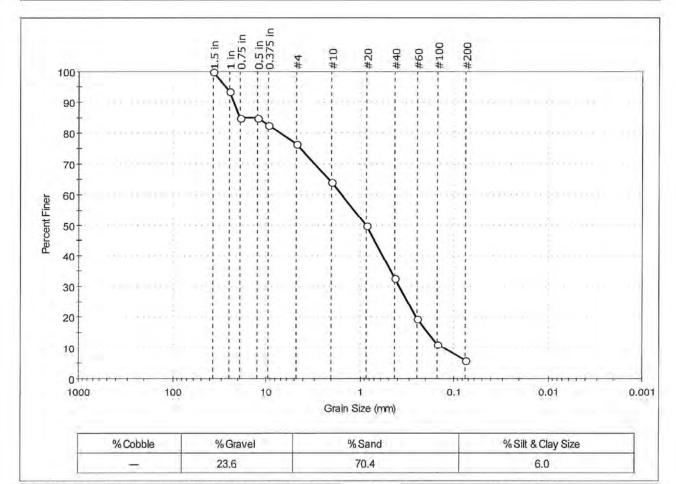
Test Id: 339563 Checked By: jdt

Test Comment:

Visual Description: Moist, brown sand with silt and gravel

Sample Comment:

# Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 In	37.50	100		
1 In	25.00	93		
0.75 In	19.00	85		
0.5 in	12.50	85		
0.375 in	9,50	83		
#4	4.75	76		
#10	2,00	64		
#20	0.85	50		
#40	0.42	33		
#60	0,25	19		
#100	0.15	11		
#200	0,075	6.0		

Coefficients		
D <sub>85</sub> =12,4420 mm	$D_{30} = 0.3807 \text{ mm}$	
D <sub>60</sub> = 1.5638 mm	D <sub>15</sub> =0.1909 mm	
D <sub>50</sub> = 0.8626 mm	D <sub>10</sub> = 0.1290 mm	
$C_0 = 12.122$	C <sub>c</sub> =0.718	

ASTM	Classification N/A
AASHTO	Stone Fragments, Gravel and Sand (A-1-b (1))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape: ROUNDED Sand/Gravel Hardness: HARD



Project: Durham Meadow Water Main

Location: Durham, CT Boring ID: SB-10

Sample Type: bag Test Date: 07/29/15

Project No: Tested By:

GTX-303489

Sample ID: SS-2 Depth: 5-7 ft

Test Id: 339564

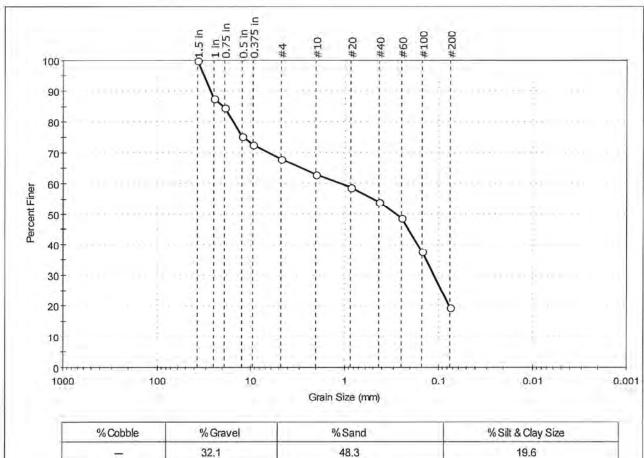
Checked By: jdt

Test Comment:

Visual Description: Moist, brown silty sand with gravel

Sample Comment:

# Particle Size Analysis - ASTM D422



% Cobble	% Gravel	%Sand	% Silt & Clay Size
_	32.1	48.3	19.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1,5 in	37,50	100		
1 in	25.00	88		
0.75 in	19.00	85		
0.5 in	12,50	75		
0.375 in	9,50	73		
¥4	4.75	68		
#10	2.00	63		
#20	0.85	59		
#40	0.42	54		
#60	0.25	49		
#100	0.15	38		
#200	0.075	20		

Coefficients		
D <sub>85</sub> =19.8178 mm	$D_{30} = 0.1116 \text{ mm}$	
D <sub>60</sub> = 1.1305 mm	D <sub>15</sub> = N/A	
D <sub>50</sub> = 0.2876 mm	D <sub>10</sub> = N/A	
$C_u = N/A$	$C_c = N/A$	

Classification **ASTM** N/A AASHTO Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape: ROUNDED Sand/Gravel Hardness: HARD



Project: Durham Meadow Water Main

Durham, CT Location:

Sample Type: bag

Project No: Tested By: jbr

GTX-303489

Boring ID: SB-11 Sample ID: SS-2 Depth: 5-7 ft

Test Date: 07/29/15 Test Id: 339565

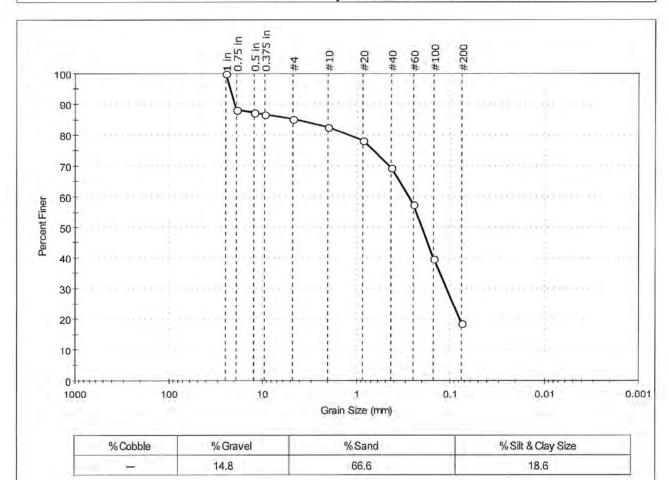
Checked By: jdt

Test Comment:

Moist, brown silty sand Visual Description:

Sample Comment:

### Particle Size Analysis - ASTM D422



1 in 25.00 100 0.75 in 19.00 88 0.5 in 12.50 87 0.375 in 9.50 87 #4 4.75 85 #10 2.00 82 #20 0.85 78 #40 0.42 69 #60 0.25 58	37 37 35
0.5 in         12,50         87           0.375 in         9,50         87           #4         4,75         85           #10         2,00         82           #20         0,85         78           #40         0,42         69           #60         0,25         58	37 37 35
0.375 in         9.50         87           #4         4.75         85           #10         2.00         82           #20         0.85         78           #40         0.42         69           #60         0.25         58	37 35
#4 4.75 85 #10 2.00 82 #20 0.85 78 #40 0.42 69 #60 0.25 58	85
#10 2.00 82 #20 0.85 78 #40 0.42 69 #60 0.25 58	Comment of the Commen
#20 0.85 78 #40 0.42 69 #60 0.25 58	12
#40 0.42 69 #60 0.25 58	A-1
#60 0.25 58	78
	39
	58
#100 0.15 40	10
#200 0.075 19	19

<u>Coefficients</u>		
D <sub>85</sub> =4.5326 mm	$D_{30} = 0.1090 \text{ mm}$	
D <sub>60</sub> = 0.2780 mm	D <sub>15</sub> =N/A	
D <sub>50</sub> =0.2009 mm	$D_{10} = N/A$	
Cu =N/A	C <sub>c</sub> =N/A	

Classification **ASTM** N/A AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape: ROUNDED Sand/Gravel Hardness: HARD



Project: Durham Meadow Water Main

Location: Durham, CT

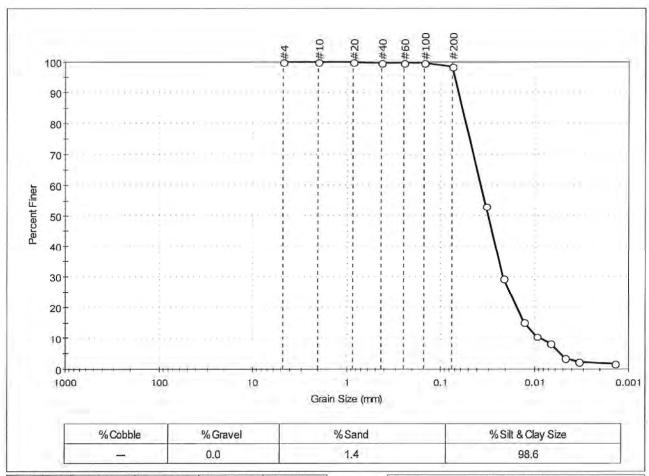
Boring ID: SB-12 Sample Type: bag Tested By: jbr Sample ID: SS-3 Test Date: 07/28/15 Checked By: jdt Depth: 10-12 ft Test Id: 339574

Depth: 10-12 ft
Test Comment: --

Visual Description: Moist, brown silt

Sample Comment: --

### Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	100		
#200	0.075	99		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0324	53		
142	0.0214	30		
***	0.0127	15	-	
1111	0.0094	11		
-	0.0067	8		
THE .	0.0048	4		
-	0.0034	2		
	0.0014	2	-	

Cor	<u>efficients</u>
D <sub>85</sub> =0.0583 mm	D <sub>30</sub> = 0.0216 mm
D <sub>60</sub> = 0.0367 mm	D <sub>15</sub> =0.0124 mm
D <sub>50</sub> =0.0306 mm	$D_{10} = 0.0086 \text{ mm}$
$C_{11} = 4.267$	$C_c = 1.478$

Project No:

GTX-303489

ASTM Silt (ML)

AASHTO Silty Soils (A-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Project: Durham Meadow Water Main

Durham, CT Location: Boring ID: SB-13

Sample Type: bag Test Date: 07/28/15

Project No: Tested By: jbr

GTX-303489

Sample ID: SS-3 Depth: 10-12 ft

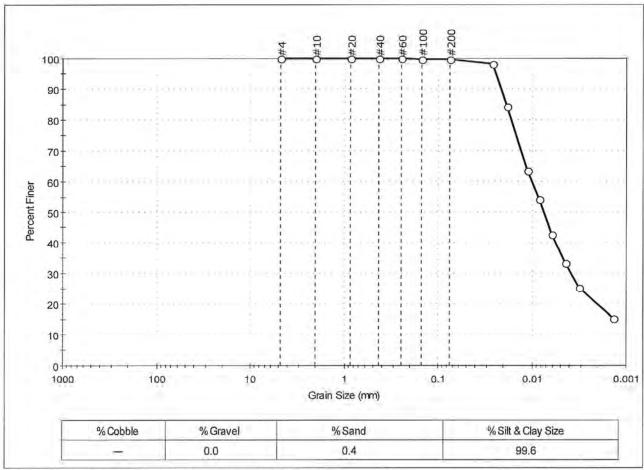
Test Id: 339575 Checked By: jdt

Test Comment:

Visual Description: Moist, brown clay

Sample Comment:

### Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	100		
#200	0.075	100		
***	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
1000	0,0264	98		
7446	0.0183	84		
1.444	0.0111	63		
OTT.	0.0084	54		
	0.0061	43		
	0.0044	33		
	0,0032	25		
144	0,0014	15		

Coe	efficients
D <sub>85</sub> =0.0187 mm	$D_{30} = 0.0038 \text{ mm}$
D <sub>60</sub> = 0.0100 mm	D <sub>15</sub> = N/A
D <sub>50</sub> = 0.0075 mm	$D_{10} = N/A$
CH =N/A	Cc =N/A

CU = N/A	Cc =N/A
ASTM	<u>Classification</u> Lean clay (CL)
AASHTO	Silty Soils (A-4 (9))

Sample/Test Description
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Project: Durham Meadow Water Main

Location: Durham, CT Boring ID: SB-14

Sample Type: bag Test Date: 07/29/1 Project No: Tested By: jbr

GTX-303489

Sample ID: SS-2

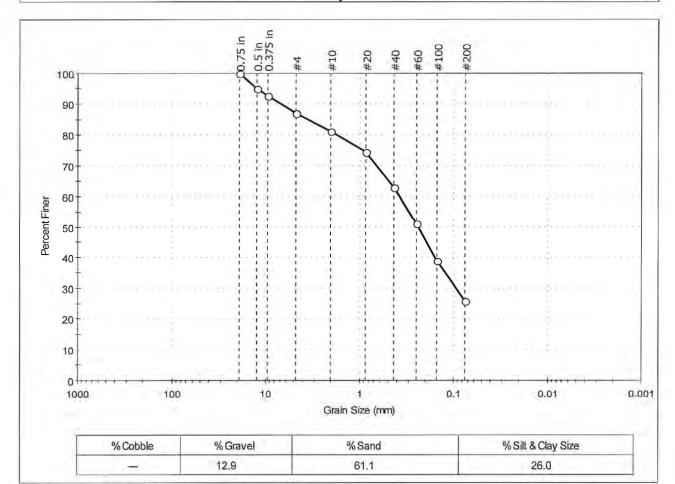
Test Date: 07/29/15 Test Id: 339566

15 Checked By: jdt

Depth: 5-7 ft Test Id: 339!
Test Comment: ---

Visual Description: Moist, brown silty sand Sample Comment: ---

### Particle Size Analysis - ASTM D422



0.75 in 19.00 100 0.5 in 12.50 95 0.375 in 9.50 93 #4 4.75 87 #10 2.00 81 #20 0.85 74 #40 0.42 63 #60 0.25 51 #100 0.15 39 #200 0.075 26	Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0,375 in 9,50 93  #4 4.75 87  #10 2.00 81  #20 0.85 74  #40 0.42 63  #60 0.25 51  #100 0,15 39	0.75 ln	19.00	100		
#4 4.75 87 #10 2.00 81 #20 0.85 74 #40 0.42 63 #60 0.25 51 #100 0.15 39	0,5 in	12,50	95		
#10 2.00 81 #20 0.85 74 #40 0.42 63 #60 0.25 51 #100 0.15 39	0.375 In	9,50	93		
#20 0.85 74 #40 0.42 63 #60 0.25 51 #100 0.15 39	#4	4.75	87		
#40 0.42 63 #60 0.25 51 #100 0.15 39	#10	2,00	81		
#60 0.25 51 #100 0,15 39	#20	0.85	74		
#100 0,15 39	#40	0.42	63		
	#60	0.25	51		
#200 0,075 26	#100	0,15	39		
	#200	0.075	26		

Coefficients								
D <sub>85</sub> =3.5256 mm	$D_{30} = 0.0930 \text{ mm}$							
D <sub>60</sub> = 0.3728 mm	D <sub>15</sub> = N/A							
D <sub>50</sub> = 0.2384 mm	$D_{10} = N/A$							
$C_u = N/A$	C <sub>c</sub> =N/A							

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape: ROUNDED Sand/Gravel Hardness: HARD



Project: Durham Meadow Water Main

Location: Durham, CT

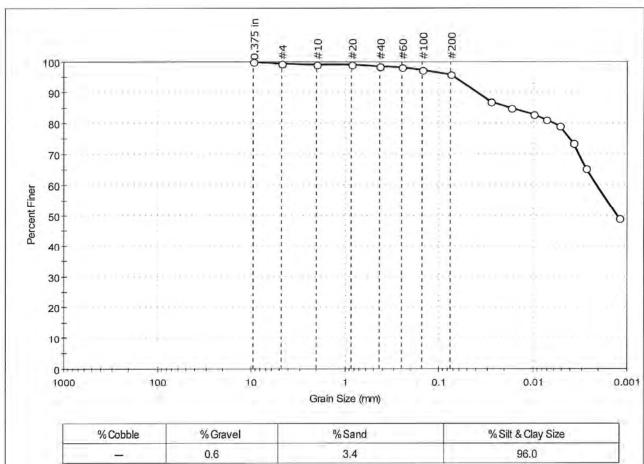
Sample Type: bag Tested By: jbr Boring ID: SB-15 Sample ID: SS-4 Test Date: 07/30/15 Checked By: jdt Test Id: 339576

Depth: 15-17 ft Test Comment:

Moist, reddish brown clay Visual Description:

Sample Comment:

### Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
-	0.6	3.4	96.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	99		
#10	2,00	99		
#20	0.85	99		
#40	0.42	99		
#60	0.25	98	-	-
#100	0.15	97		
#200	0.075	96		
-	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
-12	0.0283	87		
-1-	0.0170	85		
380	0.0099	83		
	0.0073	81		
	0.0052	79		
	0.0037	73		
_	0.0027	65		
-00-	0.0012	49		

Co	<u>Coefficients</u>							
D <sub>85</sub> =0.0167 mm	$D_{30} = N/A$							
D <sub>60</sub> =0.0021 mm	D <sub>15</sub> =N/A							
D <sub>50</sub> =0.0013 mm	D <sub>10</sub> =N/A							
$C_u = N/A$	Cc =N/A							

Project No:

GTX-303489

<u>Classification</u> Lean clay (CL) **ASTM** AASHTO Clayey Soils (A-7-6 (21))

Sample/Test Description
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute

Specific Gravity: 2.65



Project: Durham Meadow Water Main

Location: Durham, CT

Boring ID: SB-2 Sample Type: bag Tested By: Sample ID: SS-3 Test Date: 07/31/15 Checked By: jdt Test Id: 339577

Project No:

GTX-303489

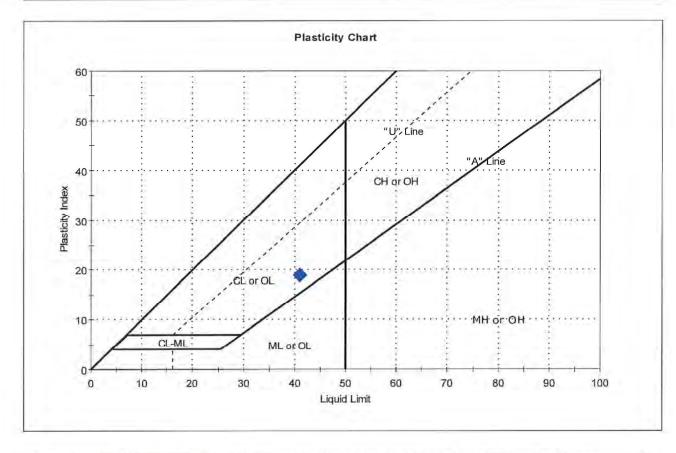
cam

Depth: 10-12 ft Test Comment:

Moist, reddish brown clay Visual Description:

Sample Comment:

### Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	SS-3	SB-2	10-12 ft	47	41	22	19	1.3	Lean clay (CL)

Sample Prepared using the WET method

0% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW Toughness: LOW



Project: Durham Meadow Water Main

Location: Durham, CT Boring ID: SB-5

Sample Type: bag Test Date:

Project No: Tested By: cam

GTX-303489

Sample ID: SS-3 Depth: 10-12 ft

Test Id:

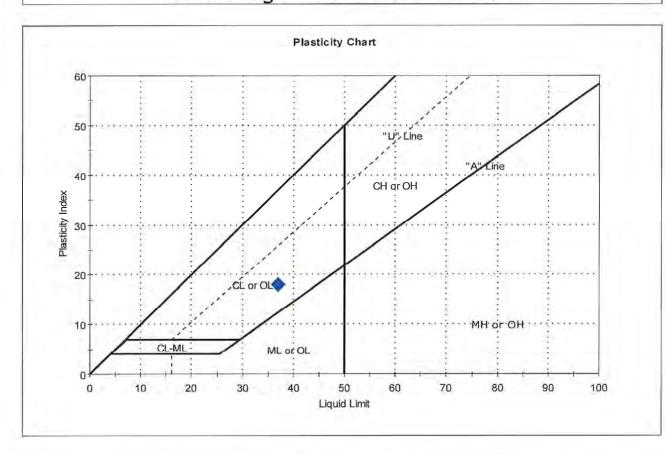
339578

07/30/15 Checked By: jdt

Test Comment:

Visual Description: Moist, brown clay Sample Comment:

### Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	SS-3	SB-5	10-12 ft	20	37	19	18	0.1	Lean clay (CL)

Sample Prepared using the WET method

1% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW Toughness: LOW



Project: Durham Meadow Water Main

Location: Durham, CT

GTX-303489 Project No: Boring ID: SB-12 Tested By: Sample Type: bag cam Sample ID: SS-3 Test Date: 07/29/15 Checked By: jdt Depth: 10-12 ft Test Id: 339579

Test Comment:

Visual Description: Moist, brown silt

Sample Comment:

# Atterberg Limits - ASTM D4318

### Sample Determined to be non-plastic

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	SS-3	SB-12	10-12 ft	26	n/a	n/a	n/a	n/a	Silt (ML)

0% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a

The sample was determined to be Non-Plastic



Project: Durham Meadow Water Main

Location: Durham, CT

Boring ID: SB-13 Sample Type: bag Tested By: cam
Sample ID: SS-3 Test Date: 07/30/15 Checked By: jdt
Depth: 10-12 ft Test Id: 339580

Project No:

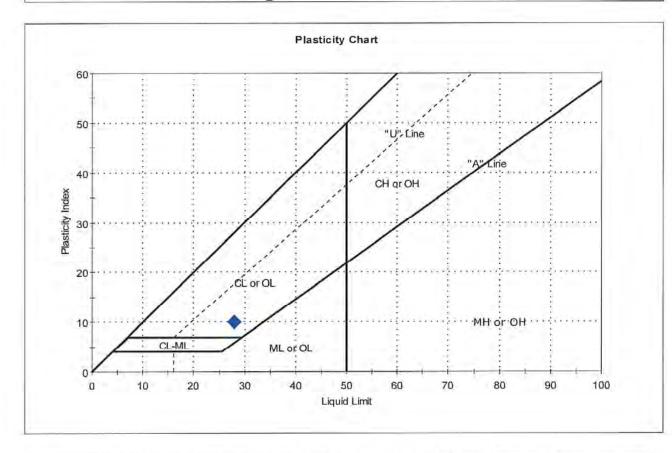
GTX-303489

Test Comment: ---

Visual Description: Moist, brown clay

Sample Comment: --

# Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	SS-3	SB-13	10-12 ft	22	28	18	10	0.4	Lean clay (CL)

Sample Prepared using the WET method

0% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW Toughness: LOW



Project: Durham Meadow Water Main

Location: Durham, CT

Project No: Boring ID: SB-15 Sample Type: bag Tested By: cam Sample ID: SS-4 Test Date: 07/31/15 Checked By: jdt

GTX-303489

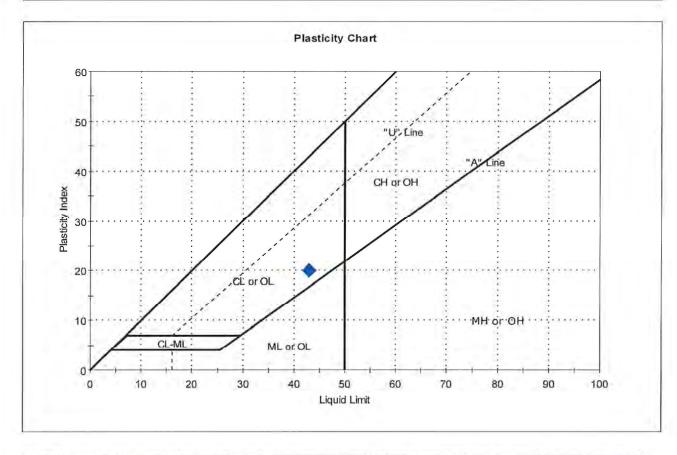
Depth: 15-17 ft Test Id: 339581

Test Comment:

Visual Description: Moist, reddish brown clay

Sample Comment:

### Atterberg Limits - ASTM D4318

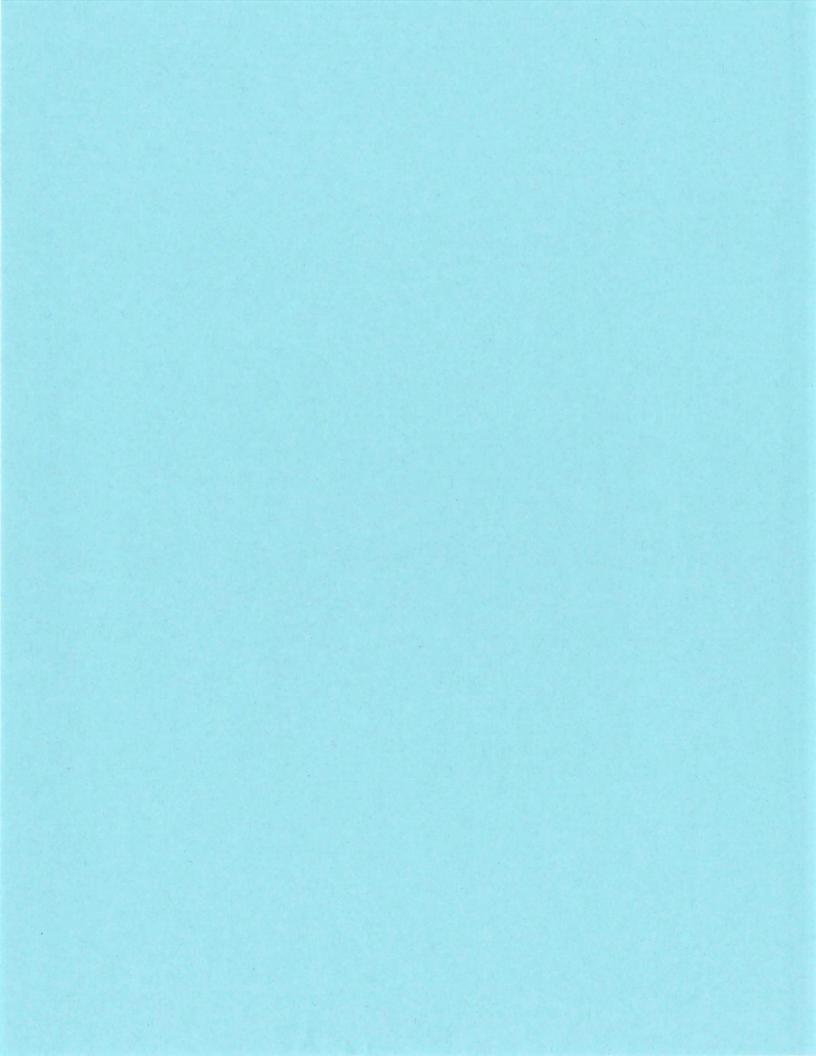


Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	SS-4	SB-15	15-17 ft	24	43	23	20	0.1	Lean clay (CL)

Sample Prepared using the WET method

1% Retained on #40 Sieve Dry Strength: HIGH

Dilatancy: SLOW Toughness: LOW



### FUGRO CONSULTANTS, INC.



6100 HILLCROFT PHONE (713) 369-5400 HOUSTON, TEXAS 77081 FAX (713) 369-5518

### **RESULTS OF TESTS**

PROJECT:

REPORTED TO:

DURHAM MEADOW WATER MAIN (GTX 303489)

SAMPLEID: SB-4, SS-2, 5 - 7'

REPORT DATE:

07-28-15

**CLIENT NUMBER:** JOB NUMBER:

04.1115-0003

FOR:

GEOTESTING EXPRESS, INC.

125 NAGOG PARK ACTION, MA 01720

REPORT NUMBER: DATE SAMPLED:

**ETHAN MARRO** 

TIME SAMPLED:

CLIENT

SAMPLED BY: DATE RECEIVED:

07-27-15

TIME RECEIVED:

0800

LAB NUMBER: 0728043 RECEIVED BY:

SD

PARAMETER	RESULTS	UNITS	METHOD	TIME/DATE	ANALYST
Sulfate, Soluble	< 100 *	mg/kg	ASTM D-516 **	1000/07-28-15	SD
Chloride, Soluble	< 100 *	mg/kg	ASTM D-512 **	1100/07-28-15	SD

SO4CL 070-15

Respectfully submitted,

Dry weight basis

Steve DeGregorio Chemist

SD

\*\* WATER EXTRACTION PERFORMED BY USING A 1:10 RATIO OF SAMPLE AND REAGENT WATER FOLLOWED BY CENTRIFUGE AND VACUUME FILTRATION. THE WATER EXTRACT IS THEN ANALYZED USING THE ASTM D-512 AND D-516 METHODS.

THE RESULTS RELATE AS TO THE LOCATION TESTED AND NO OTHER REFERENCE SHALL BE MADE. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN APPROVAL OF THE LABORATORY

### FUGRO CONSULTANTS, INC.



6100 HILLCROFT PHONE (713) 369-5400 HOUSTON, TEXAS 77081 FAX (713) 369-5518

### **RESULTS OF TESTS**

PROJECT:

DURHAM MEADOW WATER MAIN (GTX 303489)

SAMPLEID: SB-13, SS-2, 5 - 7'

REPORT DATE: CLIENT NUMBER: 07-28-15

REPORTED TO:

FOR:

GEOTESTING EXPRESS, INC.

JOB NUMBER: REPORT NUMBER: 04.1115-0003

125 NAGOG PARK ACTION, MA 01720

DATE SAMPLED:

TIME SAMPLED:

**ETHAN MARRO** 

SAMPLED BY:

CLIENT

DATE RECEIVED: TIME RECEIVED:

07-27-15 0800

LAB NUMBER: 0728044 RECEIVED BY:

SD

PARAMETER	RESULTS	UNITS	METHOD	TIME/DATE	ANALYST
Sulfate, Soluble	< 100 *	mg/kg	ASTM D-516 **	1000/07-28-15	SD
Chloride, Soluble	< 100 *	mg/kg	ASTM D-512 **	1100/07-28-15	SD

SO4CL 070-15

Respectfully submitted,

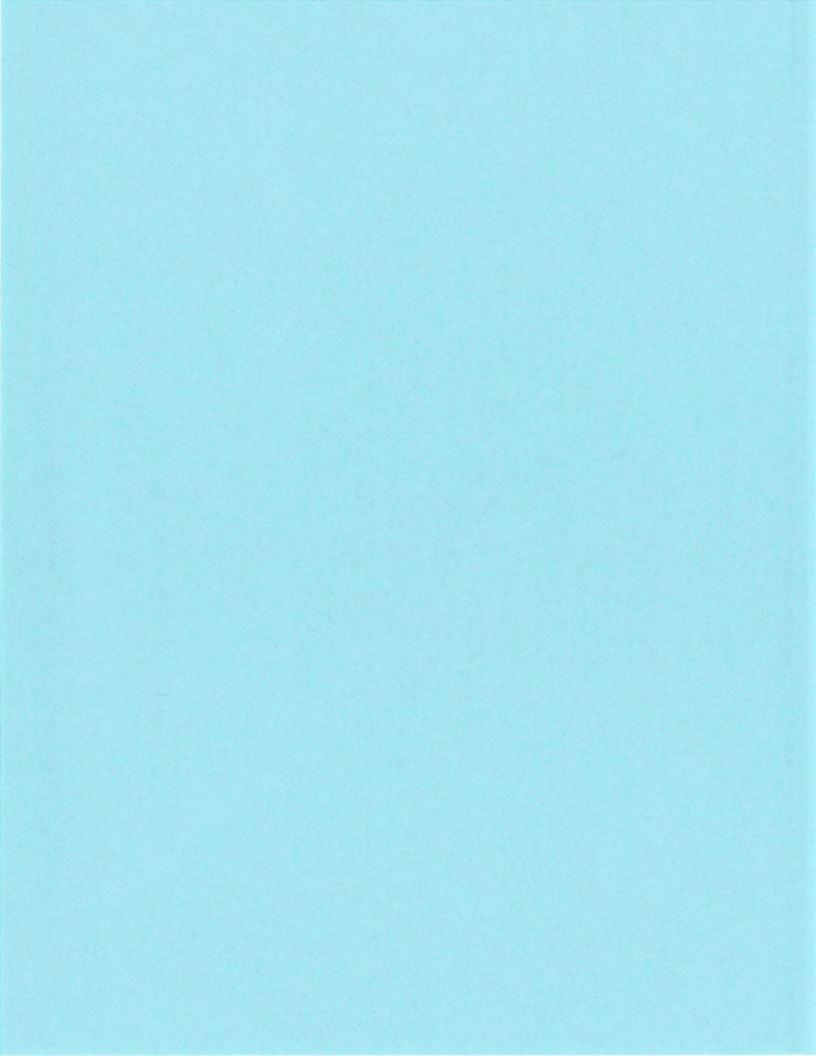
\* Dry weight basis

Steve DeGregorio Chemist

SD

\*\* WATER EXTRACTION PERFORMED BY USING A 1:10 RATIO OF SAMPLE AND REAGENT WATER FOLLOWED BY CENTRIFUGE AND VACUUME FILTRATION. THE WATER EXTRACT IS THEN ANALYZED USING THE ASTM D-512 AND D-516 METHODS.

THE RESULTS RELATE AS TO THE LOCATION TESTED AND NO OTHER REFERENCE SHALL BE MADE. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN APPROVAL OF THE LABORATORY.





### ANALYTICAL REPORT

Lab Number: L1516950

Client: Geo Testing Express

125 Nagog Park Acton, MA 01720

ATTN: Joe Tomei
Phone: (978) 893-1241

Project Name: DURHAM MEADOW WATER MAIN

Project Number: 303489

Report Date: 07/24/15

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), VA (460195), MD (348), IL (200077), NC (666), TX (T104704476), DOD (L2217), USDA (Permit #P-330-11-00240).

Eight Walkup Drive, Westborough, MA 01581-1019 508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



L1516950 07/24/15

Lab Number: Report Date:

Project Name: DURHAM MEADOW WATER MAIN

Project Number: 303489

Receive Date 07/22/15 07/22/15 07/22/15 00:00 07/22/15 00:00 Collection Date/Time DURHAM, CT DURHAM, CT Sample Location Matrix SOIL SS-2, SB-13, 5-7FT SS-2, SB-4, 5-7FT Client ID L1516950-02 Alpha Sample ID L1516950-01

Serial\_No:07241514:28

L1516950

Lab Number:

Project Name: DURHAM MEADOW WATER MAIN

Project Number: 303489 Report Date: 07/24/15

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

### HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

fina I Iny Lura L Trov

Authorized Signature:

Title: Technical Director/Representative

Date: 07/24/15

# INORGANICS & MISCELLANEOUS



Serial\_No:07241514:28

Project Name:

DURHAM MEADOW WATER MAIN

Lab Number:

L1516950

Project Number: 303489

Report Date:

07/24/15

SAMPLE RESULTS

Lab ID:

L1516950-01 SS-2, SB-13, 5-7FT

Client ID: Sample Location:

DURHAM, CT

Matrix:

Soil

Date Collected;

07/22/15 00:00

Date Received:

07/22/15

Field Prep:

Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westk	orough Lab	)								
Oxidation/Reduction Potential	260		mv	-	NA	1	-	07/23/15 05:20	68,1498	LH



Serial\_No:07241514:28

Project Name:

DURHAM MEADOW WATER MAIN

Lab Number:

L1516950

Project Number: 303489

Report Date:

07/24/15

SAMPLE RESULTS

Lab ID:

L1516950-02

Client ID:

SS-2, SB-4, 5-7FT Sample Location: DURHAM, CT

Matrix:

Soil

Date Collected:

07/22/15 00:00

Date Received:

07/22/15

Field Prep:

Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westh	orough Lak									
Oxidation/Reduction Potential	260		mν	-	NA	1	-	07/23/15 05:20	68,1498	LH



# Lab Control Sample Analysis Batch Quality Control

L1516950 Lab Number:

07/24/15

Report Date: **DURHAM MEADOW WATER MAIN** 

303489

Project Number: Project Name:

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qua	RPD Limits	
General Chemistry - Westborough Lab Associated sample	Associated sample(s)	): 01-02	ile(s): 01-02 Batch: WG805223-7	23-1					
Oxidation/Reduction Potential	100				90-110	÷		20	



<b>DURHAM MEADOW WATER MAIN</b>	303489
Project Name:	Project Number:

Lab Duplicate Analysis
Batch Quality Control

L1516950 07/24/15 Lab Number: Report Date:

arameter	Native Sam	ple D	<b>Duplicate Sample</b>	le Units	RPD	Qual	RPD Qual RPD Limits
Seneral Chemistry - Westborough Lab Associated	sample(s): 01-02	QC Batch ID:	01-02 QC Batch ID: WG805223-2	QC Sample:	L1516909-01	Client ID:	. QC Sample: L1516909-01 Client ID: DUP Sample
Oxidation/Reduction Potential	260		260	M	0		20

Serial\_No:07241514:28

Lab Number: L1516950

Project Name: DURHAM MEADOW WATER MAIN

Project Number: 303489 Report Date: 07/24/15

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information Custody Seal

Cooler

A Absent

Container Info	ormation			Temp			
Container ID	Container Type	Cooler	рН	deg C	Pres	Seal	Analysis(*)
L1516950-01A	Bag	A	N/A	4.0	Y	Absent	ORP-9045(1)
L1518950-02A	Bag	Α	N/A	4.0	Y	Absent	ORP-9045(1)



Project Name: DURHAM MEADOW WATER MAIN Lab Number: L1516950

Project Number: 303489 Report Date: 07/24/15

#### GLOSSARY

#### Acronyms

EDL -Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

 MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

 Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision
of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five
times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values;
although the RPD value will be provided in the report.

SRM Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

#### Footnotes

- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original

#### Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

#### Data Qualifiers

- A Spectra identified as "Aldol Condensation Product".
- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- Co-clution: The target analyte co-clutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

Report Format: Data Usability Report



Project Name:

**DURHAM MEADOW WATER MAIN** 

Lab Number:

L1516950

**Project Number:** 

303489

Report Date:

07/24/15

#### Data Qualifiers

- Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations
  of the analyte.
- E Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.
- H The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- The lower value for the two columns has been reported due to obvious interference.
- M Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P The RPD between the results for the two columns exceeds the method-specified criteria.
- Q The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- Analytical results are from sample re-analysis.
- RE Analytical results are from sample re-extraction.
- S -Analytical results are from modified screening analysis.
- J Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND -Not detected at the reporting limit (RL) for the sample.

Project Name:

**DURHAM MEADOW WATER MAIN** 

Lab Number:

L1516950

**Project Number:** 

303489

Report Date:

07/24/15

#### REFERENCES

Annual Book of ASTM (American Society for Testing and Materials) Standards following extraction by SW-846 EPA Method 9045C under the requirements of MADEP BWSC, WSC-CAM-VIB. August 2004.

#### LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



#### Certification Information

Last revised December 16, 2014

#### The following analytes are not included in our NELAP Scope of Accreditation:

Westborough Facility

EPA 524.2: Acetone, 2-Butanone (Methyl ethyl ketone (MEK)), Tert-butyl alcohol, 2-Hexanone, Tetrahydrofuran,

1,3,5-Trichlorobenzene, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Diethyl ether.

EPA 8260C: 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene, lodomethane (methyl iodide), Methyl methacrylate,

Azobenzene.

EPA 8270D: 1-Methylnaphthalene, Dimethylnaphthalene, 1,4-Diphenylhydrazine.

EPA 625: 4-Chloroaniline, 4-Methylphenol.

SM4500: Soil: Total Phosphorus, TKN, NO2, NO3.

EPA 9071: Total Petroleum Hydrocarbons, Oil & Grease.

**Mansfield Facility** 

EPA 8270D: Biphenyl.

EPA 2540D: TSS

**EPA TO-15**: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene,

Benzothiophene, 1-Methylnaphthalene.

#### The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

Drinking Water

EPA 200.8: Sb.As.Ba.Be.Cd.Cr.Cu.Pb.Ni.Se.Tl: EPA 200.7: Ba.Be.Ca.Cd.Cr.Cu.Na; EPA 245.1: Mercury:

EPA 300.0: Nitrate-N, Fluoride, Sulfate; EPA 353.2: Nitrate-N, Nitrite-N; SM4500NO3-F: Nitrate-N, Nitrite-N; SM4500F-C,

SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B

EPA 332: Perchlorate.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.

#### Non-Potable Water

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, Tl, Zn;

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, Ti, Tl, V, Zn;

EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC,

SM426C, SM4500NH3-BH, EPA 350.1: Ammonia-N, LACHAT 10-107-06-1-B; Ammonia-N, SM4500NO3-F,

EPA 353.2: Nitrate-N, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4,

SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.

EPA 624: Volatile Halocarbons & Aromatics,

EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT,

Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625: SVOC (Acid/Base/Neutral Extractables), EPA 600/4-81-045: PCB-Oil.

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF.

For a complete listing of analytes and methods, please contact your Alpha Project Manager

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Project Name: Durham Meadow Water Main   State Sections	WANTED SOUTH							AX.		M	MAIL		⊗ ⊠	ame as C	lient info	PO	
Standard   Continue	Λ		Droject Name: D	urham Mea	dow Water A	cie		DEX			dd'I Delive	rables					
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Time:   Sample   Sampler's	Client Information	M	Project Location:	Durham, C	F		State	Fed Prog	am				Criteri				
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Time:   Sampler   Sample	Acton, MA		ALPHA Quote #:							1			1				
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	(rev. 5-JAN-12)		1/2		1												



# SOIL CHAIN OF CUSTODY & TEST REQUEST

	CLIENT							ICE (corr	plete if d	ifferent f	INVOICE (complete if different from Client)	()			125 NC	125 Nagog Park			
Company: AECOM	COM				Comps	any:									ACION AS	ACION, MA UT ZO			
Address: 701	Address: 701 EDGEWATER DRIVE				Addres	Address:									078 43	800 434 1062 TOIL Free	0		
City, State, 2	City, State, Zip: WAKEFIELD, MA 01880				City, S	tate, Zip:									10011	32 0200 FUX			
Contact: wei song	SONG	Phone: 781.224.6092	61		Contac	#				Phone:	ne:								
E-mail: wei.sc	E-mail: wei.sons@aecom.com	Cell:			E-mail					Cell:					2358 P	2358 Perimeter Park Drive Suite 320	Drive	Suite 35	0
				۵.	PROJECT										Atlant	Atlanta, GA 30341			
Project Nam	Project Name: DURHAM MEADOWS WATER MAIN	NIN NIN			Client Project #: 60275749 - RAC2 0060; Task 03	ect #: 602	75749 - RA	C2 0060; Ta	T	Purchase	Purchase Order#:				770 64	770 645 6575 Tel			
Project Loca	Project Location: DURHAM, CT				GTX Sales Order #	s Order #	41.			Request	Requested Turnaround: STD	JTS:bunk			770 64	770 645 6570 Fax			
On-site Contact:	act:				E-mail:				-	Phone:			×)	' []	WWW.	www.geotesting.com	ш		
	SOIL		eti (t	ification ()	☐ SS4 G MT8	7.7.4.4	(	(i)	Ą		□ 869 CI				*noilabiloano	D 2434	noiesaion	-	
Boring ID	Sample ID	Depth	miJ gradrattA Brea d MT2A)	USCS - Class (ASTA D 2485	Grain Size: A: Sieve Only D Sieve & Hydromei	MTSA :vtiened © 8357 0 MTSA	erss a mica)	AYES (A MTZA)	STEP O MTSA) ivenD oilloaq2 (pag O MTSA)	Electrical Res (TS 9 MTSA)	Proctor Comp MTSA – Standard – MTSA – MTSA – bedilbed	Salifornia Bea 881 G MTSA)	Direct Shear* 080£ G MTSA)	Triaxial Shear' UU - ASTM D 285 CU - ASTM D 476 Styl MTSA - UO	O listremental C (ASTM D 2435	Permeability! N Conductivity* Fixed Wall – ASTM Flexible Wall – AST	DanfinoonU (8312 G MT2A)	Other:	Other:
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X	SEE ATTACHED TABLE	J.																	
									112								y		
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*Specify Tes	*Specify Test Conditions (Undisturbed or Remolded, Density and moisture, Test N	r Remolded, Density	and m	oisture, T	est Norm	al Loads,	Test Co	nfining S	ormal Loads, Test Confining Stresses, etc.)	atc.):									1
AUTHORIZE SIGNATURE:	AUTHORIZE BY SIGNING AND DATING	Ö	PRIN	PRINT NAME:	3		ent	7	T	DATE:	1/20	5	1	44	ncoming dverse co	For GTX Use Only Incoming Sample Inspection Performed Adverse conditions:	se Only ion Perfor	□ peq	
Relinquished By:	led By:	>		DATE:	1/06/1	5 Pm		Received By:	By:		1	NO	1	-		DATE:	5:00	23	
veilinguished by:	led by:		-15	DATE:		4	ž	Received By:	By:		-			,	٥F	DATE: TIME:			

Other:

Drapped of W/norr Samples 7/21/15 after 4pn

> Durham Meadow Water Main Laboratory Testing - REVISED (July 21, 2015)

Boring				capul	Index & Physical Testing	sting		O	Corrosion Testing	. 0	
	Sample ID	Depth (ft.)	Recovery	Sieve (ASTM D422)	Sieve & Hydrometer (ASTM D422)	Atterberg Limits (ASTM D4318)	Chlorides (ASTM D512)	Elect. Resist. (ASTM G57)	Ox. Reduction (EPA)	pH (ASTM D4972)	Sulfates (ASTM D516)
SB-1	SS-2	5-7	6	×			9				
SB-2	SS-3	10 - 12	22"		×	×					¥
SB-2	. SS-5	20-22	.g		×						
SB-3	SS-2	5-7	130	×							
SB-4	SS-2	5-7	.9.0				×		×		×
SB-4	SS-3	10 - 12	1.2'		×						
SB-5	SS-3	10 - 12	1.8		×	×					
SB-7	SS-2	5-7	1.5					×		×	
SB-7	SS-3	10 - 12	.6.0		×						
SB-8	SS-2	57	.91	×							
SB-8	SS-5	20 - 22	14"		×						
SB-9	SS-3	10 - 12	10"		×						
SB-9	SS-4	15-17	14"	×							
SB-10	SS-2	5-7	,3,	×							
SB-11	SS-2	5-7	1.3	×							
SB-12	SS-2	5-7	0.9'					×		×	
SB-12	SS-3	10-12	1,6'		×	×					3 I
SB-13	SS-2	5-7	0.8'				×		×	7	×
SB-13	SS-3	10-12	1,4		×	×					
SB-14	SS-2	2-7	0.7'	×							
SB-15	SS-4	15-17	1,9,		×	×					
		3	Quantity:	7	10	S	2	2	2	2	2
	Unit Pri	ce (GeoTest	Unit Price (GeoTesting Express):	\$75	\$135	\$75	\$65	\$75	\$90	\$30	\$65
			Cost:	\$525	\$1,350	\$375	\$130	\$150	\$180	\$60	\$130
		TOT	TOTAL COST:	\$2,900	900						



#### WARRANTY and LIABILITY

GeoTesting Express (GTX) warrants that all tests it performs are run in general accordance with the specified test procedures and accepted industry practice. GTX will correct or repeat any test that does not comply with this warranty. GTX has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material

GTX may report engineering parameters that require us to interpret the test data. Such parameters are determined using accepted engineering procedures. However, GTX does not warrant that these parameters accurately reflect the true engineering properties of the *in situ* material. Responsibility for interpretation and use of the test data and these parameters for engineering and/or construction purposes rests solely with the user and not with GTX or any of its employees.

GTX's liability will be limited to correcting or repeating a test which fails our warranty. GTX's liability for damages to the Purchaser of testing services for any cause whatsoever shall be limited to the amount GTX received for the testing services. GTX will not be liable for any damages, or for any lost benefits or other consequential damages resulting from the use of these test results, even if GTX has been advised of the possibility of such damages. GTX will not be responsible for any liability of the Purchaser to any third party.

#### Commonly Used Symbols

A	pore pressure parameter for $\Delta\sigma_1 - \Delta\sigma_3$	T	temperature
В	pore pressure parameter for $\Delta\sigma_3$	t	time
CIU	isotropically consolidated undrained triaxial shear test	U, UC	unconfined compression test
CR	compression ratio for one dimensional consolidation	UU, Q	unconsolidated undrained triaxial test
Ca	coefficient of curvature, $(D_{30})^2 / (D_{10} \times D_{60})$	ua	pore gas pressure
Cu	coefficient of uniformity, D <sub>60</sub> /D <sub>10</sub>	u <sub>e</sub>	excess pore water pressure
Cc	compression index for one dimensional consolidation	$u$ , $u_w$	pore water pressure
Ca	coefficient of secondary compression	V	total volume
Cv	coefficient of consolidation	Vs	volume of gas
C	cohesion intercept for total stresses	V.	volume of solids
c'	cohesion intercept for effective stresses	V.	volume of voids
D	diameter of specimen	V <sub>w</sub>	volume of water
$D_{10}$	diameter at which 10% of soil is finer	Vo	initial volume
Dis	diameter at which 15% of soil is finer	v	velocity
D <sub>30</sub>	diameter at which 30% of soil is finer	W	total weight
D <sub>50</sub>	diameter at which 50% of soil is finer	Ws	weight of solids
D <sub>60</sub>	diameter at which 60% of soil is finer	Ww	weight of water
D <sub>85</sub>	diameter at which 85% of soil is finer	W	water content
d <sub>50</sub>	displacement for 50% consolidation	We	water content at consolidation
d90	displacement for 90% consolidation	We	final water content
d <sub>100</sub>	displacement for 100% consolidation		liquid limit
E	Young's modulus	Wi	natural water content
e	void ratio	Wn	plastic limit
e <sub>c</sub>	void ratio after consolidation	Wp	Production of the sec
c <sub>o</sub>	initial void ratio	Ws	shrinkage limit initial water content
G	shear modulus	Wo, Wi	Carried Control of Con
G <sub>s</sub>	specific gravity of soil particles	α	slope of q <sub>f</sub> versus p <sub>f</sub>
H	height of specimen	a.	slope of q <sub>f</sub> versus p <sub>f</sub> '
PI	plasticity index	71	total unit weight
i	gradient	Yd	dry unit weight
	lateral stress ratio for one dimensional strain	Ys	unit weight of solids
Ko		Yw	unit weight of water
k	permeability	E	strain
Li	Liquidity Index	Eval	volume strain
$\mathbf{m}_{\mathrm{v}}$	coefficient of volume change	$E_{h_X} E_{Y}$	horizontal strain, vertical strain
n	porosity	μ	Poisson's ratio, also viscosity
PI	plasticity index	4	normal stress
Pc	preconsolidation pressure	$\alpha_{i}$	effective normal stress
p	$(\sigma_1 + \sigma_3)/2$ , $(\sigma_v + \sigma_h)/2$	Oc. O'c	consolidation stress in isotropic stress system
p'	$(\sigma'_1 + \sigma'_3)/2$ , $(\sigma'_{\gamma} + \sigma'_{h})/2$	Oh, Oh	horizontal normal stress
p'c	p* at consolidation	$\sigma_{v}, \sigma_{v}$	vertical normal stress
Q	quantity of flow	$\sigma_1$	major principal stress
q	$(\sigma_1 - \sigma_3) / 2$	152	intermediate principal stress
qc	q at failure	<b>G</b> 3	minor principal stress
qo, qi	initial q	τ	shear stress
q <sub>e</sub>	q at consolidation	φ	friction angle based on total stresses
S	degree of saturation	φ'	friction angle based on effective stresses
SL	shrinkage limit	φ <sub>r</sub>	residual friction angle
Su	undrained shear strength	φult	φ for ultimate strength
T	time factor for consolidation		



#### **GEOTECHNICAL DATA REPORT**

Geotechnical Subsurface Investigation For the Middletown Water Main Extension Project

WATER METER VAULT& BOOSTER PUMP STATION DESIGN

Durham Meadows Superfund Site USEPA Contract No.: EP-S1-06-01 Task Order No. 72
AECOM Project No.: 60445033.13

October 2017

#### 1.0 INTRODUCTION

The purpose of this Geotechnical Data Report (GDR) is to provide supporting data for the design and construction of a booster pump station and water meter vault. A pump station and meter vault will be built to augment the proposed Middletown to Durham water main extension. The proposed pump station and meter vault sites are located at 2083 and 2330 South Main Street in Middletown.

This GDR *does not* include data collected during earlier water main extension, Cherry Hill Storage Tank and Allyn Brook Crossing investigations.

#### 2.0 SUBSURFACE INVESTIGATION

One test boring was drilled at each of the proposed facility sites. The test borings were conducted on September 27 and September 28, 2017 by General Boring of Prospect, Connecticut. The test borings were drilled into bedrock and ranged in depth from 20 to 23 feet. The test boring locations are shown in Figures 1 and 2 and the boring logs are provided in Attachment 1.

#### 2.1 Utility Clearance

Each test boring location was hand cleared to a depth of five feet before the introduction of drilling equipment. The contractor also obtained utility clearances through *Call Before You Dig.* 

#### 2.2 Drilling and Sampling

The test borings were drilled using 3½-inch ID hollow stem augers and 3-inch NW casing. Soil samples were collected at 5-foot intervals beginning at ground surface. Soil samples collected during the drilling program were logged and preserved by an AECOM geologist.

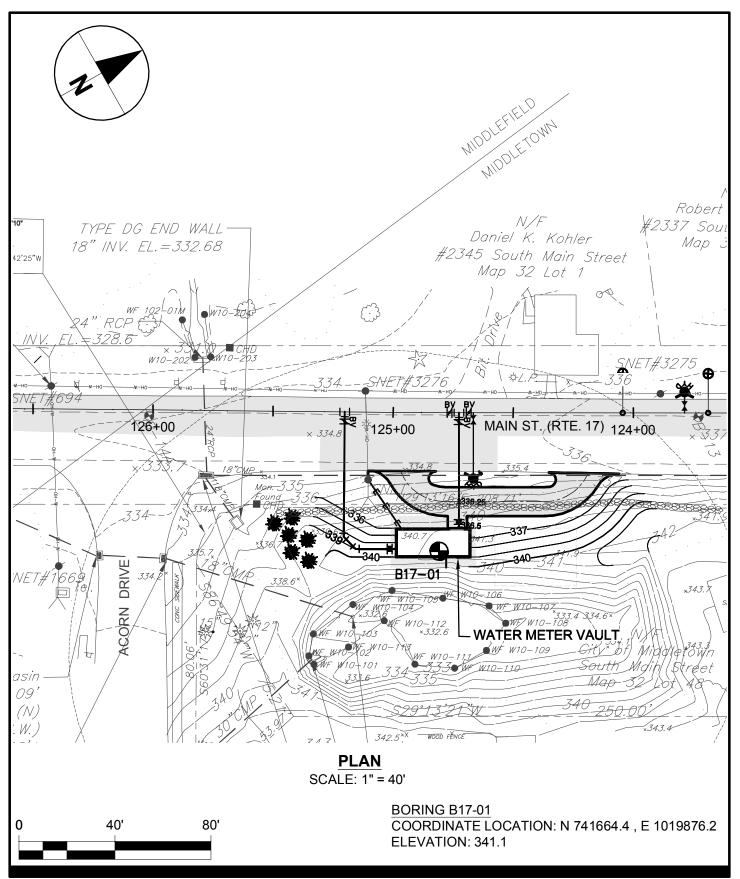
Bedrock was encountered and cored at each boring location. The boreholes were backfilled with soil cuttings or dry cement upon completion.

#### 3.0 LABORATORY TESTING

Two soil samples collected during the subsurface investigation were submitted for grain size analyses. Two rock core samples were submitted for unconfined compressive strength testing. The soil and rock samples were tested by GeoTesting Express in Acton, Massachusetts. The geotechnical laboratory test report is provided in Attachment 2.

#### 4.0 REPORT LIMITATIONS

Subsurface conditions will vary beyond a borehole's location and conditions at and beyond a borehole may change over time as a result of construction activity. Groundwater levels will fluctuate with precipitation, season, construction activities, run-off controls, and other factors. As a result, water levels during construction may vary from those observed during the investigation program.





AECOM TECHNICAL SERVICES, INC. 250 APOLLO DRIVE CHELMSFORD, MA 01824 PHONE: (978) 905-2100 SHEET REFERENCE **PROJECT** 

EPA CONTRACT NO. EP-S1-06-01 DURHAM MEADOWS WATERLINE RD.

CLIENT

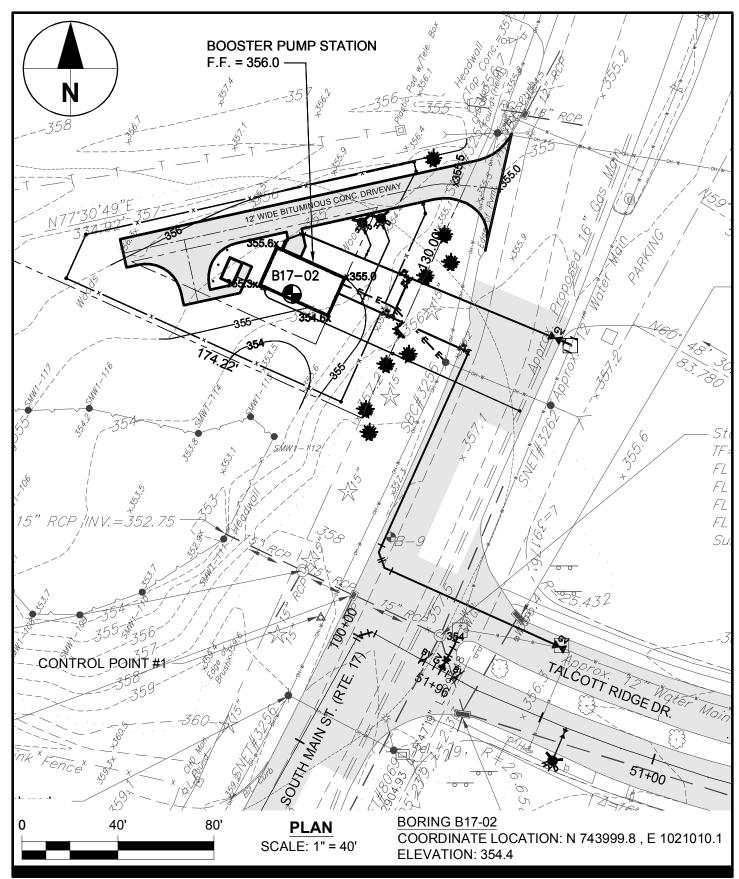
DURHAM AND MIDDLETOWN, CT. **PROJECT NUMBER** 

60445033-RAC2 072

DISCIPLINE CIVIL

SHEET TITLE BORING LOCATION PLAN I

SHEET NUMBER FIGURE 1





AECOM TECHNICAL SERVICES, INC. 250 APOLLO DRIVE CHELMSFORD, MA 01824 PHONE: (978) 905-2100 SHEET REFERENCE **PROJECT** 

EPA CONTRACT NO. EP-S1-06-01 DURHAM MEADOWS WATERLINE RD.

CLIENT

DURHAM AND MIDDLETOWN, CT. PROJECT NUMBER

60445033-RAC2 072

DISCIPLINE CIVIL

SHEET TITLE BORING LOCATION PLAN II

SHEET NUMBER FIGURE 2

**ATTACHMENT 1** 

**Test Boring Logs** 

NORT HORIZ VERT	ZONTA ICAL D	741 L DAT ATUN	ation  ,664.4   UM: _N  : _NAV   :h Main S	AD D8	83 8		INC GR	OUND SURF	RC	M E	OFFSET:  VERTICAL: 0 degree  ELEV. (FT): 341.1  YED?: Estimated		В	OGIC LOG 17-01 GE 1 of 2
DATE CONTI	RACTOF MENT: R ID/OD: ER TYP R LEVEI	/ END: R: G	9/28/20 eneral Boo rich D-50 25 in. / 7 in Safety THS (ft):	n.  Ne ba	ot Encounce filled weter ameter on Length	ntered in // cuttings	CASING ID HAMMER Overburde and grand Blows per Fe Minute per	ular material  oot ST Foot RC FV	- - - - - - - - - -	14 Ind Roc Fie	EXPLORATION TYPE/METHO CORE INFORMATION: NX	$Q_p = r$ $S_v = r$ anation $F_v = r$	Pocket Pocket Field Va	Penetrometer Strength Torvane Shear Strength ot Applicable, Not Measured
		Casing		_		E INFO	RMATIO			_	illionila bealing Ratio FID - Filotolonization Det	ector iv.,	1401 – 140	TAPPHOADIC, NOT WEASURED
Depth (ft)	Elev. (ft)	Pen. (bpf) or Core Rate (mpf)	Sample No.	П	Depth (ft)	Pen./ Rec. (in)	Blows Count or RQD	Field/ Laboratory Test Data	GRAPHIC LOG		Sample Description & Classification		H <sub>2</sub> 0 Depth	Remarks
-	340 —		GRAB		0 to 5	60/60	Hand Ex.				FILL - dry, red brown SILT (ML), little fin- coarse sand, few fine to coarse gravel, f occasional cobbles			Borehole hand cleared for utilities; no SPT samples were collected above 5 ft.
- - 5 -	335 —		SS-1	M	5 to 6.5	18/4	13-23- 91	Sieve & Hydrometer			Dry, red brown silty fine to coarse SAND gravel (SM), little to some fines, little fine	with gravel		Suspect that the poor recovery and high blow counts of SS-1 are likely due to the driving of coarse gravel or a small cobble
- 10	- 330 —		SS-2	X	10 to 10.42	5/3	75/5"		XXXXXXXXX	×××××××××××××××××××××××××××××××××××××××	Dry, red brown fine sandy SILT (ML) (Ro	ock Flour)		Steady Auger Grinding below 10-feet
	-	_							× × × × × × × × × × × × × × × × × × ×	X	-Probable Weathered or Soft Rock			
boundar gradual. at times Fluctuati	y betweer Water lev and unde ions of gro	n soil type yel readir or condition oundwate those pr	nt approxim- es, transition ngs have be ons stated. er may occuresent at the	ns m een i ir du	made F	PROJEC SITY/ST/	T NAME	nsultant): _A :: _Durham M Middletown, C T NUMBER:	lea CT	dc	ows	ΑΞ	CC	)M

NORT HORIZ VERT	ZONTA ICAL D	741 L DAT ATUN	ation  ,664.4   UM: _N   NAV   Main S	D8	83	NG:1	INC	CLINATION F	RON	OFFSET:  1 VERTICAL: 0 degree  2 ELEV. (FT): 341.1  EYED?: Estimated		B1	7-01 6E 2 of 2
		Casing				E INFO	RMATIO		_				
Depth (ft)	Elev. (ft)	Pen. (bpf) or Core Rate (mpf)	Sample No.		Depth (ft)	Pen./ Rec. (in)	Blows Count or RQD	Field/ Laboratory Test Data	GRAPHIC LOG	Sample Description & Classification		H <sub>2</sub> 0 Depth	Remarks
- 15 -	- 325 —	2 3	SS-3 RC-1	X	15 to 15.08 15.1 to 20.1	1/1 60/56	50/1" RQD = 52%	Unconfined Compression	X:X X:X X:X X:X X:X X:X X:X X:X X:X X:X	Spoon Bouncing - recovered trace amo red brown ROCK FRAGMENTS with ro (silt)  SANDSTONE: red brown, fine to coarse (mostly fine; coarse clasts to 3/4"), slig weathered, hard with occasional thin so (to 1-in.), horizontal to low angle beddin jointing, few moderate angle joints (45 t	ck flour e grained ntly ft layers g and	_	
	-	3								deg.), joints closely to moderately space coated	ed and silt		
- 20	_			Ц						End of Boring at 20.1 feet			
	320 —									·			
- 25	-	_											
-	315 —	-											
- 30 -	- 310 —												
boundar gradual. at times Fluctuati other fac	y betweer Water lev and unde ons of gro	n soil typo yel readin r condition oundwate those pr	nt approximes, transitiongs have beens stated. For may occure sent at the	ns r een ur du	made pue to	PROJEC	T NAME	nsultant): _/ : _ Durham N //iddletown, ( T NUMBER:	/lead CT	ows	A	CO	M

NORT HORIZ VERT	ZONTA	743 L DAT DATUM	ation 3,999.8 TUM: <u>N</u> I: NAV	AD D8	83 8		ING	ROUND SURF	RON ACE	OFFSET: _0 degree		В	OGIC LOG 17-02 GE 1 of 2
DATE S CONTR EQUIP AUGER HAMMI WATER	RACTOR MENT: R ID/OD ER TYP R LEVE	/ END: R: _GDietr : _ 3.2 E: _S L DEP1 TES: IDOI	9/27/20 eneral Bo rich D-50 25 in. / 7 in Safety	ring  n.  In e ba	ndetermir ackfilled v eter ameter	nate - poss w/ cuttings bpf = E mpf =	CASING III HAMMER sible wate and dry g Blows per F Minute per	Foot ST	14 grade = Und	CORE INFORM HAMMER DROI	Kevin Harten           ITYPE/METHOD:         3.25           ATION:         NX           P (inch):         30   Weight of Rods Weight of Hammer S	p = Pocket , = Pocket	As & NW Casing  Penetrometer Strength Torvane Shear Strength ine Shear Strength
			ec. = Recov	ery	Length			CB	R = C				ot Applicable, Not Measured
Depth (ft)	Elev. (ft)	Casing Pen. (bpf) or Core Rate (mpf)	Sample No.		Depth (ft)	Pen./ Rec. (in)	Blows Count or RQD	Field/ Laboratory Test Data	GRAPHIC LOG	Sam Descrip Classifi	tion &	H₂0 Depth	Remarks
-	-		GRAB		0 to 5	60/60	Hand Ex.			Dry, red brown SILT with the few fine to coarse gravel,  Materials coarsen with de gravelly fine to coarse SA few cobbles	occasional cobbles		Borehole hand cleared for utilities; no SPT samples were collected above 5 ft.
_ 5 -	350 —	_	SS-1		5 to 7	24/20	18-19- 41-46	Sieve & Hydrometer	××	Damp, well graded, red br SAND with gravel (SM), s gravel, little to few fines			Steady Auger Grind
- - 10	345 —	-	SS-2	X	10 to 10.08	1/0	60/1"		X	η No Recovery - spoon bou	ncing	J	below 7 ft. (possible weathered rock) Steam emanating from borehole @ 8 ft. (moisture from phreatic zone??)  Hard Auger Grind @ 10'1"  Spin NW casing to ~11 ft.
10	-	2	RC-1		12.75 to 17.75	60/60	RQD = 75%	Unconfined Compression		SANDSTONE: red brown, (clasts to 1.5"), hard, fresi moderately spaced horizo bedding (0 to 10 deg.), joi	h to slightly weathered, ontal to low angle		
boundary gradual. at times Fluctuation	y betweer Water lev and under ions of gro	n soil typ vel readii er conditio oundwate those pr	nt approxim res, transitio res, transitio res have be ons stated. er may occuresent at the e.	ns n een ur du	made le to	PROJEC	T NAME	onsultant): _A E: _Durham M Middletown, C CT NUMBER:	leado CT	ows	A	ECC	)M

NORT HORIZ VERT	ZONTA	743 L DAT DATUM	3,999.8 <b>'UM</b> : <u>N</u> / 1: <u>N</u> AV[	28	83 8	NG:1,	INC GR	OUND SURF	RON	VERTICAL:         0 degree           ELEV. (FT):         354.4	_	В	OGIC LOG 17-02 GE 2 of 2
LOCA	TION:		h Main S						_	YED?: Estimated	_		
Depth (ft)	Elev. (ft)	Casing Pen. (bpf) or Core Rate (mpf)	Sample No.			Pen./ Rec. (in)	Blows Count or RQD	Field/ Laboratory Test Data	GRAPHIC LOG	Sample Description & Classification		H <sub>2</sub> 0 Depth	Remarks
— 15 -	340 —	3								breakage largely indeterminate, silt of joint(s)	coated		
_	-	3											
-	-	2	RC-2		17.75 to 22.75	60/60	RQD = 88%			Red brown SANDSTONE, as above			
— 20	335 —	2											
-	-	2											
_	-	3								End of Boring at 22.75 feet			
- 25	330 —	-											
-	-	_											
-	325 —	_											
— 30 –	-	_											
boundar gradual. at times Fluctuati other fac	y betweer Water levand unde ions of gro	n soil typ vel readii r conditio undwate those pr	nt approxima es, transitior ngs have be ons stated. er may occur resent at the	ns r en r di	made Fue to C	ROJEC	T NAME ATE:!	onsultant): _A :: _Durham M Middletown, C CT NUMBER:	1ead CT	ows	A	CC	)M

#### **ATTACHMENT 2**

**Geotechnical Laboratory Test Report** 



Client: AECOM

Project:

**Durham Meadows-Booster Station** Location: Durham, CT

Boring ID: B17-01 Sample Type: jar Tested By: jbr Sample ID: SS-1 Test Date: 10/13/17 Checked By: emm

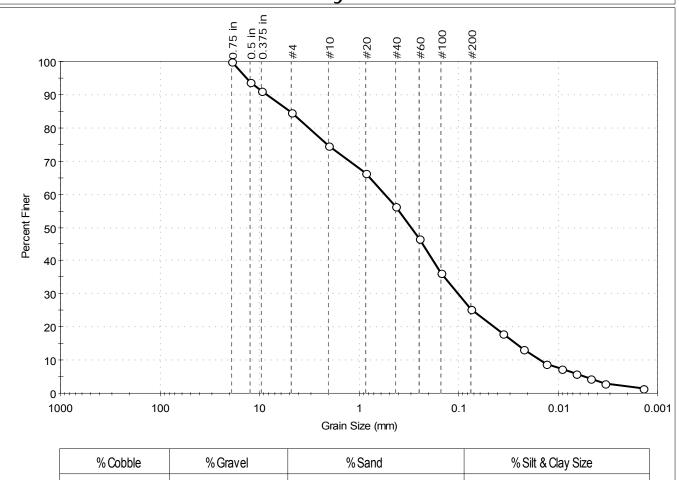
5-6.5 ft Test Id: Depth: 427687

Test Comment:

Moist, light reddish brown silty sand with gravel Visual Description:

Sample Comment:

#### Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	15.2	59.3	25.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	94		
0.375 in	9.50	91		
#4	4.75	85		
#10	2.00	75		
#20	0.85	66		
#40	0.42	56		
#60	0.25	47		
#100	0.15	36		
#200	0.075	25		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0362	18		
	0.0221	13		
	0.0133	9		
	0.0092	7		
	0.0066	6		
	0.0047	4		
	0.0034	3		
	0.0014	1		

<u>C</u>	<u>Coefficients</u>
$D_{85} = 4.8993 \text{ mm}$	$D_{30} = 0.1004 \text{ mm}$
$D_{60} = 0.5506 \text{ mm}$	$D_{15} = 0.0264 \text{ mm}$
$D_{50} = 0.3020 \text{ mm}$	$D_{10} = 0.0150 \text{ mm}$
$C_{u} = 36.707$	$C_c = 1.221$

Project No:

GTX-307127

Classification

N/A <u>ASTM</u>

<u>AASHTO</u> Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape: ANGULAR

Sand/Gravel Hardness: HARD

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute

Specific Gravity: 2.65

Separation of Sample: #200 Sieve



Client: AECOM

Project: **Durham Meadows-Booster Station** 

Location: Durham, CT

Boring ID: B17-02 Sample Type: jar Tested By: jbr Sample ID: SS-1 Test Date: 10/13/17 Checked By: emm

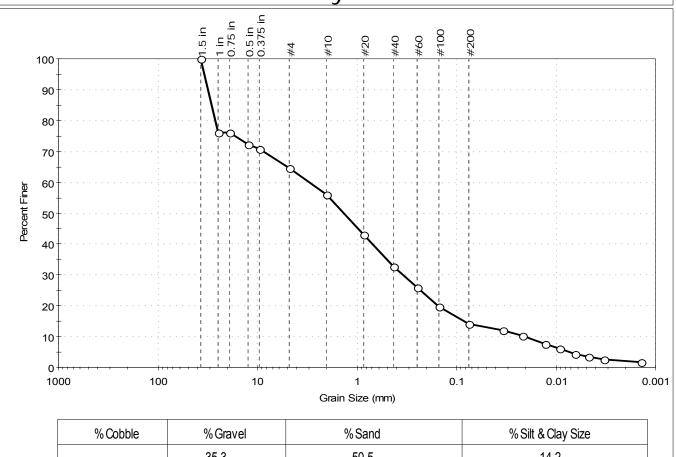
Depth: 5-7 ft Test Id: 427688

Test Comment:

Visual Description: Moist, reddish brown silty sand with gravel

Sample Comment:

#### Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	35.3	50.5	14.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	76		
0.75 in	19.00	76		
0.5 in	12.50	72		
0.375 in	9.50	71		
#4	4.75	65		
#10	2.00	56		
#20	0.85	43		
#40	0.42	33		
#60	0.25	26		
#100	0.15	20		
#200	0.075	14		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0340	12		
	0.0219	10		
	0.0129	8		
	0.0092	6		
	0.0064	4		
	0.0047	3		
	0.0033	3		
	0.0014	2		

Coeff	<u>icients</u>
D <sub>85</sub> = 29.0863 mm	$D_{30} = 0.3424 \text{ mm}$
D <sub>60</sub> = 2.9485 mm	$D_{15} = 0.0825 \text{ mm}$
D <sub>50</sub> = 1.3414 mm	$D_{10} = 0.0203 \text{ mm}$
C <sub>u</sub> =145.246	$C_c = 1.959$

Project No:

GTX-307127

Classification **ASTM** N/A

<u>AASHTO</u> Stone Fragments, Gravel and Sand (A-1-b(0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness: HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65

Separation of Sample: #200 Sieve



Client: AECOM

Project: Durham Meadows-Booster Station

Location: Durham, CT

Boring ID: --- Sample Type: --- Tested By: rlc Sample ID: --- Test Date: 10/12/17 Checked By: jsc

Project No:

GTX-307127

Depth: --- Test Id: 428019

### Bulk Density and Compressive Strength of Rock Core Specimens by ASTM D7012 Method C

Boring ID	Sample Number	Depth	Bulk Density, pcf	Compressive strength, psi	Failure Type	Meets ASTM D4543	Note(s)
B17-01	RC-1	15.1-20.1 ft	158	8578	1	No	3,*
B17-02	RC-1	12.75-17.75 ft	155	5619	1	Yes	

Notes: Density determined on core samples by measuring dimensions and weight and then calculating.

All specimens tested at the approximate as-received moisture content and at standard laboratory temperature.

The axial load was applied continuously at a stress rate that produced failure in a test time between 2 and 15 minutes.

Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure; 3 = Intact Material and Discontinuity Failure (See attached photographs)

- 1: Best effort end preparation. See Tolerance report for details.
- 2: The as-received core did not meet the ASTM side straightness tolerance due to irregularities in the sample as cored.
- 3: Specimen L/D < 2.
- 4: The as-received core did not meet the ASTM minimum diameter tolerance of 1.875 inches.
- 5: Specimen diameter is less than 10 times maximum particle size.
- 6: Specimen diameter is less than 6 times maximum particle size.

<sup>\*</sup>Because the indicated tested specimens did not meet the ASTM D4543 standard tolerances, the results reported here may differ from those for a test specimen within tolerances.

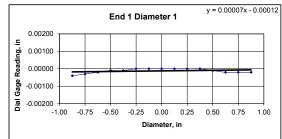


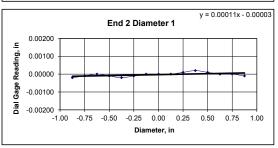
Client:	AECOM	Test Date:	10/12/2017
Project Name:	Durham Meadows- Booster Station	Tested By:	trm/rlc
Project Location:	Durham , CT	Checked By:	jsc
GTX #:	307127		
Boring ID:	B-17-01		
Sample ID:	RC-1		
Depth:	15.1-20.1 ft		
Visual Description:	See photographs		

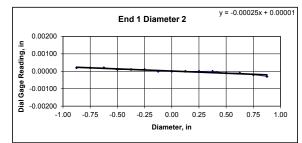
#### UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D4543

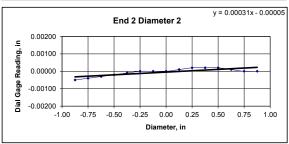
BULK DENSITY					DEVIATION FROM STRAIGHTNESS (Procedure S1)	
	1	2	Average			
Specimen Length, in:	3.38	3.39	3.39		Maximum gap between side of core and reference surface plate:	
Specimen Diameter, in:	1.96	1.96	1.96		Is the maximum gap ≤ 0.02 in.? YES	
Specimen Mass, g:	423.28					
Bulk Density, lb/ft3	158	Minimum Diameter Tolerence Met?	? Y	ES	Maximum difference must be < 0.020 in.	
Length to Diameter Ratio:	1.7	Length to Diameter Ratio Tolerance	e Met?	NO	Straightness Tolerance Met? YES	

END FLATNESS AND PARALL	ELISM (Proced	lure FP1)													
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00040	-0.00030	-0.00020	-0.00010	-0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	-0.00010	-0.00020	-0.00020	-0.00020
Diameter 2, in (rotated 90°)	0.00020	0.00020	0.00020	0.00010	0.00010	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	-0.00010	-0.00010	-0.00020	-0.00030
	Difference between max and min readings, in:														
											0° =	0.00040	90° =	0.00050	
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00020	-0.00010	0.00000	-0.00010	-0.00020	-0.00010	0.00000	0.00000	0.00000	0.00010	0.00020	0.00010	0.00000	0.00000	-0.00010
Diameter 2, in (rotated 90°)	-0.00050	-0.00040	-0.00030	-0.00020	-0.00010	0.00000	0.00000	0.00000	0.00010	0.00020	0.00020	0.00020	0.00010	0.00000	0.00000
											Difference between	een max and m	in readings, in:		
											0° =	0.0004	90° =	0.0007	
											Maximum differe	ence must be <	0.0020 in.	Difference = +	0.00035









	Tiatricss Tolerance Wet.	ILU	
DIAMETER 1			
End 1:			
	Slope of Best Fit Line	0.00007	
	Angle of Best Fit Line:	0.00401	
End 2:			
	Slope of Best Fit Line	0.00011	
	Angle of Best Fit Line:	0.00630	
Maximum Angi	ular Difference:	0.00229	
	Parallelism Tolerance Met?	YES	
	Spherically Seated		
DIAMETER 2			
DIAMETER 2	Spherically Seated		
DIAMETER 2 End 1:	Spherically Seated		
	Spherically Seated  Slope of Best Fit Line	0.00025	
	Spherically Seated	0.00025 0.01432	
	Spherically Seated  Slope of Best Fit Line Angle of Best Fit Line:		
End 1:	Spherically Seated  Slope of Best Fit Line Angle of Best Fit Line:  Slope of Best Fit Line	0.001432	
End 1:	Spherically Seated  Slope of Best Fit Line Angle of Best Fit Line:  Slope of Best Fit Line	0.01432	
End 1:	Spherically Seated  Slope of Best Fit Line Angle of Best Fit Line:  Slope of Best Fit Line	0.001432	
End 1:	Spherically Seated  Slope of Best Fit Line Angle of Best Fit Line:  Slope of Best Fit Line Angle of Best Fit Line:	0.001432 0.00031 0.01776 0.00344	

Flatness Tolerance Met?

PERPENDICULARITY (Procedure	e P1) (Calculated from End Flatness	(Calculated from End Flatness and Parallelism measurements above)									
END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?	Maximum angle of departure must be $\leq 0.25^{\circ}$					
Diameter 1, in	0.00040	1.960	0.00020	0.012	YES						
Diameter 2, in (rotated 90°)	0.00050	1.960	0.00026	0.015	YES	Perpendicularity Tolerance Met? YES					
END 2											
Diameter 1, in	0.00040	1.960	0.00020	0.012	YES						
Diameter 2, in (rotated 90°)	0.00070	1.960	0.00036	0.020	YES						



Client: **AECOM** Project Name: **Durham Meadows- Booster Station** Project Location: Durham, CT GTX #: 307127 Test Date: 10/12/2017 Tested By: rlc Checked By: jsc Boring ID: B-17-01 Sample ID: RC-1 Depth, ft: 15.1-20.1



After cutting and grinding



After break

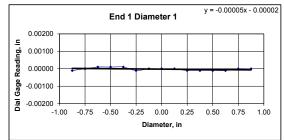


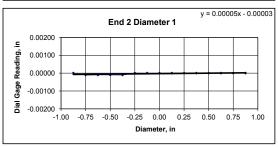
Client:	AECOM	Test Date:	10/11/2017
Project Name:	Durham Meadows- Booster Station	Tested By:	rlc
Project Location:	Durham , CT	Checked By:	jsc
GTX #:	307127		
Boring ID:	B-17-02		
Sample ID:	RC-1		
Depth:	12.75-17.75 ft		
Visual Description:	See photographs		

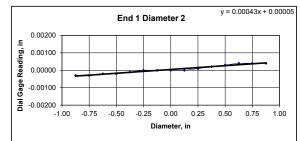
#### UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D4543

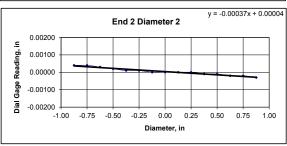
BULK DENSITY					DEVIATION FROM STRAIGHTNESS (Procedure S1)				
	1	2	Average						
Specimen Length, in:	4.07	4.07	4.07		Maximum gap between side of core and reference surface plate:				
Specimen Diameter, in:	1.98	1.97	1.98		Is the maximum gap ≤ 0.02 in.? YES				
Specimen Mass, g:	509.69								
Bulk Density, lb/ft3	155	Minimum Diameter Tolerence Met?	١	ES	Maximum difference must be < 0.020 in.				
Length to Diameter Ratio:	2.1	Length to Diameter Ratio Tolerance	Met?	ES	Straightness Tolerance Met? YES				

END FLATNESS AND PARALL	END FLATNESS AND PARALLELISM (Procedure FP1)															
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875	
Diameter 1, in	-0.00010	0.00000	0.00010	0.00010	0.00010	-0.00010	0.00000	0.00000	0.00000	-0.00010	-0.00010	-0.00010	-0.00010	0.00000	0.00000	
Diameter 2, in (rotated 90°)	-0.00030	-0.00030	-0.00020	-0.00020	-0.00010	0.00000	0.00000	0.00000	0.00000	0.00010	0.00020	0.00030	0.00040	0.00040	0.00040	
											Difference between max and min readings, in:					
											0° =	0.00020	90° =	0.00070		
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875	
Diameter 1, in	0.00000	-0.00010	-0.00010	-0.00010	-0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
Diameter 2, in (rotated 90°)	0.00040	0.00040	0.00030	0.00020	0.00010	0.00010	0.00000	0.00000	0.00000	0.00000	-0.00010	-0.00010	-0.00020	-0.00020	-0.00030	
											Difference between	Difference between max and min readings, in:				
											0° =	0.0001	90° =	0.0007		
											Maximum difference must be < 0.0020 in. Difference = + 0.00035					









	riatiless folerance wet:	TEO
DIAMETER 1		
End 1:		
	Slope of Best Fit Line	0.00005
	Angle of Best Fit Line:	0.00286
End 2:		
	Slope of Best Fit Line	0.00005
	Angle of Best Fit Line:	0.00286
Maximum Angi	ular Difference:	0.00000
	Parallelism Tolerance Met? Spherically Seated	YES
DIAMETER 2		
End 1:		
	Slope of Best Fit Line	0.00043
	Angle of Best Fit Line:	0.02464
End 2:		
End 2:	Slope of Best Fit Line	0.00037
End 2:		
	Slope of Best Fit Line	0.00037
	Slope of Best Fit Line Angle of Best Fit Line:	0.00037 0.02120
	Slope of Best Fit Line Angle of Best Fit Line: ular Difference:  Parallelism Tolerance Met?	0.00037 0.02120 0.00344
	Slope of Best Fit Line Angle of Best Fit Line: ular Difference:	0.00037 0.02120 0.00344
	Slope of Best Fit Line Angle of Best Fit Line: ular Difference:  Parallelism Tolerance Met?	0.00037 0.02120 0.00344

Flatness Tolerance Met?

PERPENDICULARITY (Procedure P1) (Calculated from End Flatness and Parallelism measurements above)						
END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?	Maximum angle of departure must be $\leq 0.25^{\circ}$
Diameter 1, in	0.00020	1.975	0.00010	0.006	YES	
Diameter 2, in (rotated 90°)	0.00070	1.975	0.00035	0.020	YES	Perpendicularity Tolerance Met? YES
END 2						
Diameter 1, in	0.00010	1.975	0.00005	0.003	YES	
Diameter 2, in (rotated 90°)	0.00070	1.975	0.00035	0.020	YES	



Client: AECOM Project Name: **Durham Meadows- Booster Station** Project Location: Durham, CT GTX #: 307127 Test Date: 10/12/2017 Tested By: rlc Checked By: jsc Boring ID: B-17-02 Sample ID: RC-1 Depth, ft: 12.75-17.75

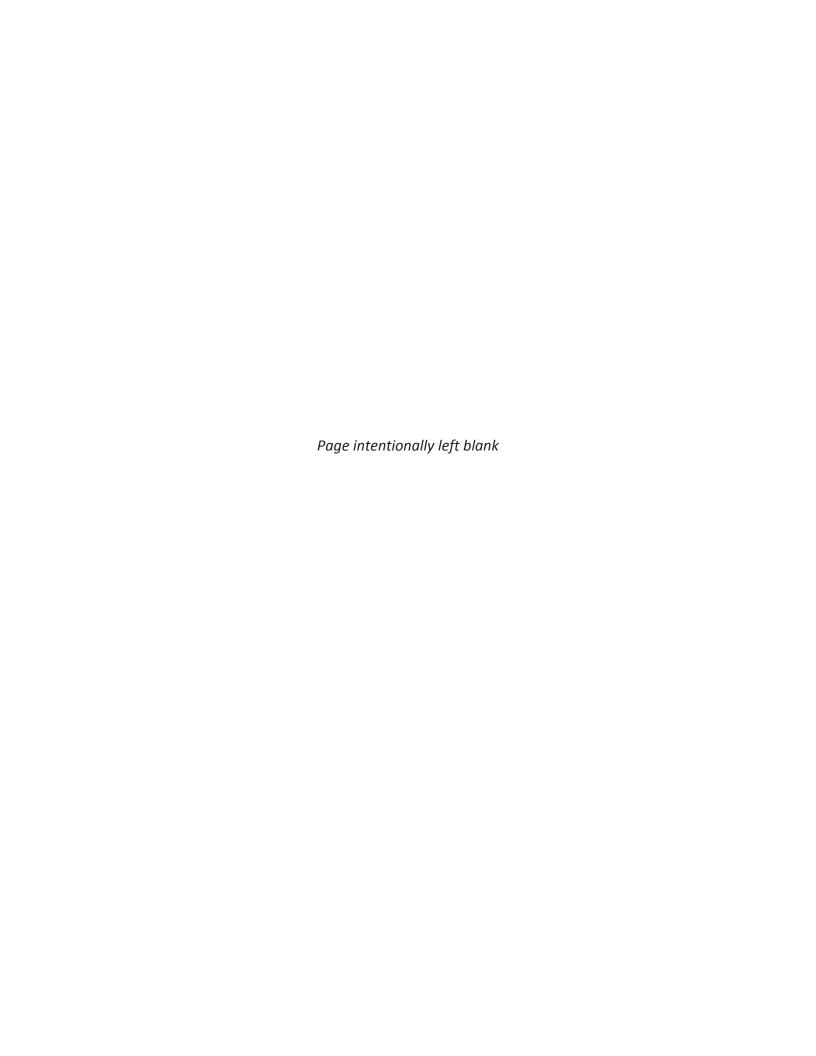


After cutting and grinding



After break

## APPENDIX B Water Service Work on Private Property Details by Address



	Town						
	Assessor's		Residential,	Water Service to	Water Service	Meter Pit	
	Map		Commercial or	Curb Stop only	Installation	Required	Well to be Abandoned
Drawing	Number	Address	Undeveloped	Curb Stop omy	(Including Meter)	пеципси	
Durham	. ramber	, radices	I	l.	I		
C-13	16	472 Main Street	Retail	Yes	No	No	No
C-13	16	475 Main Street	Residential	Yes	No	No	No
C-13	16	478R Main Street	Residential	Yes	No	No	No
C-13	6	484 Main Street	Residential	Yes	No	No	No
C-13	6	490 Main Street	Residential	Yes	No	No	No
C-13	6	514 Main Street (See Middlefield below)	Undeveloped	Yes	No	No	No
C-13	6	112 Oak Terrace	Residential	Yes	No	No	No
C-13	6	136 Oak Terrace	Residential	Yes	No	No	No
C-13	6	7 Royal Oak Drive	Residential	Yes	No	No	No
C-13	6	12 Royal Oak Drive	Residential	Yes	No	No	No
C-13	6	18R Packinghouse Hill Road	Residential	Yes	No	No	No
C-15	27	363 Main Street (service on Haddam Qtr Rd)	Commercial	Yes	No	No	No
C-15	27	376 Main Street 384 Main Street (1)	Commercial	Yes	No	No	No
C-15	16 16	385 Main Street (1)	Commercial	Yes	No No	No	No No
C-15	16	391 Main Street (1)	Residential	Yes Yes	No No	No	No No
C-15	16	395 Main Street (1)	Residential Residential		No No	No	
C-15 C-15	16	397 Main Street (1)	Residential	Yes Yes	No No	No No	No No
C-15	16	407 Main Street (1)	Residential	Yes	No	No	No
C-15	16	413 Main Street (1)	Residential	Yes	No	No	No
C-15	16	417 Main Street (1)	Residential	Yes	No	No	No
C-15	16	422 Main Street (1)	Commercial	Yes	No	No	No
C-15	16	423 Main Street (1)	Residential	Yes	No	No	No
C-15	16	425 Main Street	Residential	Yes	No	No	No
C-15	16	428 Main Street	Commercial	Yes	No	No	No
C-15	16	431 Main Street	Residential	Yes	No	No	No
C-15	16	435 Main Street	Residential	Yes	No	No	No
C-15	16	437 Main Street	Residential	Yes	No	No	No
C-15	16	441 Main Street	Residential	Yes	No	No	No
C-15	16	447 Main Street	Residential	Yes	No	No	No
C-15	16	448 Main Street	Commercial	Yes	No	No	No
C-15	16	454 Main Street	Commercial	Yes	No	No	No
C-15	16	457 Main Street	Residential	Yes	No	No	No
C-15	16	459 Main Street	Residential	Yes	No	No	No
C-15	16	460 Main Street	Residential	Yes	No	No	No
C-15	16	465 Main Street	Residential	Yes	No	No	No
C-15	27	Map 27, Lot 17	Undeveloped	Yes	No	No	No
C-15	16	Map 16, Lot 2 <sup>(1)</sup>	Undeveloped	Yes	No	No	No
C-15	16	Map 16, Lot 14	Undeveloped	Yes	No	No	No
C-15	16	13 Middlefield Road (1)	Residential	Yes - 2	No	No	No
C-15	16	35 Winsome Road <sup>(1)</sup>	Commercial	Yes	No	No	No
C-17	27	313 Main Street	Residential	No	Yes	No	Yes - 2
C-17	27	316 Main Street	Residential	No	Yes	No	Yes
C-17	27	321 Main Street	Commercial	No	Yes	No	Yes
C-17	27	322 Main Street	Residential	No No	Yes	No No	Yes
C-17 C-17	27 27	325 Main Street 327 Main Street	Commercial	No Ves	Yes	No No	Yes No
C-17	27	328 Main Street (service on Talcott La.)	Commercial Residential	Yes Yes	No No	No No	No No
C-17	27	336 Main Street	Commercial	Yes	No No	No	No
C-17	27	339 Main Street	Commercial	Yes	No No	No	No No
C-17	27	349 Main Street	Commercial	Yes	No	No	No
C-17	27	350 Main Street	Commercial	Yes - 3	No	No	No
C-17	27	357 Main Street	Commercial	Yes	No	No	No
C-17	27	360 Main Street	Commercial	Yes	No	No	No
C-19	38	257 Main Street	Residential	No	Yes	No	Yes
C-19	38	261 Main Street	Residential	No	Yes	Yes	Yes
C-19	38	262 Main Street	Residential	No	Yes	No	Yes
C-19	38	265 Main Street	Residential	No	Yes	No	Yes
C-19	38	267 Main Street	Residential	No	Yes	No	Yes
C-19	38	268 Main Street	Residential	No	Yes	No	Yes
C-19	38	271 Main Street	Residential	No	Yes	No	Yes
C-19	38	272 Main Street	Commercial	No	Yes	No	Yes
C-19	38	275 Main Street (2)	Residential	No	Yes	No	No
C-19	38	280 Main Street	Commercial	No	Yes	Yes	Yes
C-19	38	281R Main Street	Undeveloped	Yes	No	No	No
C-19	27	281 Main Street	Undeveloped	Yes	No	No	No
C-19	27	289 Main Street	Residential	No	Yes	No	Yes
C-19	27	293 Main Street	Residential	No	Yes	No	Yes
	27	297 Main Street	Residential	No	Yes	No	Yes

		T	T	ı	1		T
	Town		Residential,		Water Service		
	Assessor's		Commercial or	Water Service to	Installation	Meter Pit	Well to be Abandoned
	Map		Undeveloped	Curb Stop only	(Including Meter)	Required	
Drawing	Number	Address	Onacvelopea		(including wieter)		
C-19	38	298 Main Street (3)	Residential	Yes	Yes	No	Yes
C-19	27	303 Main Street	Residential	No	Yes	No	Yes
C-19	27	305R Main Street	Residential	No	Yes	Yes	Yes
C-19	27	307 Main Street	Residential	No	Yes	No	Yes
C-19	38	308 Main Street	Residential	No	Yes	No	Yes
C-19	38	312 Main Street	Residential	No		No	Yes
			+		Yes		
C-21	38	205 Main Street	Commercial	No	Yes	No	Yes
C-21	38	203R Main Street (4)	Commercial	No	Yes	Yes	2; Convert 1 to Monitoring Well
C-21	38	208 Main Street	Residential	No	Yes	No	Yes
C-21	38	215 Main Street	Residential	No	Yes	No	Yes
C-21	38	216 Main Street	Residential	No	Yes	No	Yes
C-21	38	220 Main Street	Residential	No	Yes	No	Yes
C-21	38	227 Main Street	Residential	No	Yes	No	Yes
C-21	38	228 Main Street	Commercial	No	Yes	No	Yes
C-21	38	228R Main Street	Commercial	No	Yes	No	Shares well at 228 Main
C-21	38	233 Main Street	Residential	No	Yes	No	Yes
C-21	38	235 Main Street	Residential	No	Yes	No	Shares well at 233 main
C-21	38	236 Main Street	Commercial	No	Yes	No	Yes
C-21	38	238 Main Street	Commercial	No	Yes	No	Yes
C-21	38	239 Main Street	Residential	No	Yes	No	Yes
C-21	38	242 Main Street	Residential	No	Yes	No	Yes
C-21	38	243 Main Street	Commercial	No	Yes	No	Yes
C-21	38	246 Main Street	Residential	No	Yes	No	Yes
C-21	38	248 Main Street	Residential	No	Yes	No	Yes
C-21	38	252 Main Street	Residential	No	Yes	No	Yes
C-21	38	253 Main Street	Residential	No	Yes	No	Yes
C-21	38	256 Main Street	Residential	No	Yes	No	Yes
C-21	38	Map 38 Lot 24 Main Street	Undeveloped	Yes	No	No	No
C-21	38	11 Maiden	Residential	No	Yes	No	Yes
C-21	38	17 Maiden	Residential	No	Yes	No	Yes
C-23	48	167 Main Street	Residential	No	Yes	No	Yes
C-23	48	168 Main Street	Residential	No	Yes	No	Yes
C-23	48	174 Main Street	Undeveloped (5)	Yes	No		Yes
						No	
C-23	48	175R Main Street	Residential	No	Yes	Yes	Yes
C-23	48	176 Main Street	Residential	No	Yes	No	Yes
C-23	48	177R Main Street	Residential	No	Yes	No	Yes
C-23	38	186 Main Street	Residential	No	Yes	No	Yes
C-23	38	188 Main Street	Residential	No	Yes	No	Yes
C-23	38	196 Main Street	Commercial	No	Yes	Yes	Yes
C-23	38	199 Main Street	Commercial	No	Yes	No	No
C-23	38	201 Main Street	Commercial	No	Yes	No	No
C-23	38	202 Main Street	Residential	No	Yes	No	Yes
C-23	48	Map 48 Lot 31 Main Street	Undeveloped	Yes	No	No	No
C-25	48	119 Main Street	Residential	No	Yes	No	Yes
C-25	48	120 Main Street	Residential	No	Yes	No	Yes
C-25	48	127 Main Street	Residential	No	Yes	No	Yes
C-25	48	128 Main Street	Residential	No	No	No	No
C-25	48	133 Main Street	Residential	No	No	No	No
C-25	48	151R Main Street	Residential	No	Yes	Yes	No <sup>(6)</sup>
C-25	48	153 Main Street	Residential	No	Yes	No	Yes
C-25	48	Mill Pond Road	Residential	No	No	No	3 Total: Yes 2, Convert 1 (4)
C-23	48						No
		22 John's Way	Residential	No	No	No	
C-27	48	7 Maple Avenue	Residential	No	No	No	Yes
C-27	48	13 Maple Avenue	Residential	No	Yes	No	Yes - 2
C-27	48	29 Maple Avenue	Residential	No	Yes	No	Yes
C-27	48	41 Maple Avenue	Residential	No	No	No	Yes
C-27	48	10 John's Way	Residential	No	Yes	Yes	Yes
C-27	48	17 John's Way	Residential	No	No	No	Yes
C-27	48	30 Town House Road	Commercial	No	No	No	Yes - 2
C-27/M-111	48	Map 48, Lot 6 (Durham Fairgrounds)	Commercial	No	No	No	2 Total: Yes 1, Convert 1 (4)
C-29	48	110 Maple Avenue	Residential	No	Yes	No	Yes
C-29	48	95R Maple Avenue	Residential	No	Yes	Yes	Yes
C-29	48	97R Maple Avenue	Residential	No	Yes	Yes	Yes
C-29	38	109 Maple Avenue	Residential	No	Yes	Yes	Yes
C-31	38	119 Maple Avenue	Residential	No	Yes	Yes	Yes
	20	126 Maple Avenue	Residential	No	Yes	No	Yes
C-31	38						
		129 Maple Avenue	Residential	No	Yes	Yes	No. uses well from church
C-31	38	129 Maple Avenue	Residential Residential	No No	Yes	Yes	No, uses well from church
C-31 C-31	38 38	133 Maple Avenue	Residential	No	Yes	No	Yes
C-31	38						

	Town		1				I
	Assessor's		Residential,	Water Service to	Water Service	Meter Pit	
	Map		Commercial or	Curb Stop only	Installation	Required	Well to be Abandoned
Drawing	Number	Address	Undeveloped	,	(Including Meter)		
C-31	37	148 Maple Avenue	Residential	No	Yes	No	Yes
C-31	37	158 Maple Avenue	Residential	No	Yes	No	Yes
C-31	37	162 Maple Avenue	Residential	No	Yes	No	Yes
C-31	38	17 Wallingford Road	Residential	No	Yes	No	Yes
C-31	38	22 Wallingford Road	Residential	No	Yes	Yes	Yes
C-31	37	47 Wallingford Road	Residential	No	Yes	No	Yes
C-31	37	Map 37, Lot 15	Undeveloped	Yes	No	No	Yes
C-33	37	166 Maple Avenue	Residential	No	Yes	No	Yes
C-33	37	172 Maple Avenue	Residential	No	Yes	No	Yes
C-33	38	173 Maple Avenue	Residential	No	Yes	No	Yes
C-33	38	175 Maple Avenue	Residential	No	Yes	No	Yes
C-33	37	176 Maple Avenue	Residential	No	Yes	No	Yes
C-33	37	184 Maple Avenue	Residential	No	Yes	No	Yes
C-33	38	187 Maple Avenue	Residential	No	Yes	No	Yes
C-33	37	188 Maple Avenue	Residential	No	Yes	No	Yes
C-33	37	200 Maple Avenue	Residential	No	Yes	No	Yes
C-33	37	206 Maple Avenue	Residential	No	Yes	No	Yes
C-33	37	212R Maple Avenue	Residential	No	Yes	Yes	Yes
C-35	26	214R Maple Avenue	Undeveloped	Yes	No	No	No
C-35	27	224 Maple Avenue	Residential	No	Yes	Yes	Yes
C-35	26	228R Maple Avenue	Residential	No	Yes	Yes	Yes
C-35	26	230 Maple Avenue	Residential	No	Yes	Yes	Yes
C-35	27	235 Maple Avenue	Residential	No	Yes	No	Yes
C-35	26	236 Maple Avenue	Residential	No	Yes	No	Yes
C-35	26	244 Maple Avenue	Residential	No	Yes	No	Yes
C-35	27	245 Maple Avenue	Residential	No	Yes	No	Yes
C-35	26	254 Maple Avenue	Residential	No	Yes	No	Yes
C-35	26	14 Talcott Lane	Residential	No	Yes	Yes	Yes
C-35	26	25 Talcott Lane	Residential	No	Yes	No	Yes
C-35	27	Map 27, Lot 8	Undeveloped	Yes - 3	No	No	Yes
C-37	38	18 Maiden Lane	Residential	No	Yes	No	Yes
C-37	38	19 Maiden Lane	Residential	No	Yes	No	Yes
C-37	38	24 Maiden Lane	Residential	No	Yes	No	Yes
C-37	38	29 Maiden Lane	Residential	No	Yes	No	Yes
C-37	38	35 Maiden Lane	Residential	No	Yes	No	Yes
C-37	38	36 Maiden Lane	Residential	No	Yes	No	Yes
C-39	38	63 Maiden Lane	Residential	No	Yes	No	Yes
C-39	38	78 Maiden Lane	Residential	No	Yes	No	Yes
C-39	38	96 Maiden Lane	Undeveloped	Yes	No	No	No
C-39	38	105 Maiden Lane	Residential	No	Yes	No	Yes
C-39	38	110 Maiden Lane	Residential	No	Yes	No	Yes
C-39	38	114R Maiden Lane	Residential	No	Yes	Yes	Yes
C-39	38	Map 39, Lot 35	Undeveloped	Yes	No	No	No
C-39	38	Map 39, Lot 34.1	Undeveloped	Yes	No	No	No
C-39	38	Map 38, Lot 29	Undeveloped	Yes	No	No	No
C-39	39	123 Maiden Lane	Residential	No	Yes	No	Yes
C-41	38	191 Main Street	Strong School	Tie into existing fire	and domestic servi	ces	
C-41	48	191 Main Street (south of Pickett Lane)	Korn school	Yes	No	No	Yes
C-41	38	Map 38, Lot 51 Pickett Lane	near cochnuag hs	Yes	No	No	Convert to Monitoring Well (4)
C-41	38	Map 38, Lot 51 Pickett Lane	North & East of Tennis	No	No	No	Yes - 2
C-41	38	Map 38, Lot 51 Pickett Lane	Courts	Yes	No	No	Yes
C-41	38	191 Main Street (south of Pickett Lane)	East of Tennis Courts		service, meter and		
C-41 C-43	38	191 Main Street (south of Pickett Lane)	Soccer fields  Basketball Courts		service, meter and		
C-43	38	191 Main Street (South of Pickett Lane)	High School		e and domestic servi		required
C-43	38	191 Main Street (East of Pickett Lane)	Korn School		e and domestic servi		
C-43	38	93R Maiden Lane (Service on Pickett La.)	Residential	No	Yes	No	Yes
Middletown	30	SSN WARDEN LANC (SCIVICE ON FICKELL LA.)	nesidential	140	1 1 1 5 1	140	1 (5)
C-3	32	214 Talcott Ridge Drive	Residential	Yes	No	No	No
C-3		216 Talcott Ridge Drive	Residential	Yes	No	No	No
C-3	32	224 Talcott Ridge Drive	Residential	Yes	No	No	No
C-5	32	182 Talcott Ridge Drive	Residential	No	No	No	No
C-5	32	199 Talcott Ridge Drive	Residential	No No	No No	No No	No No
C-5	32	204 Talcott Ridge Drive	Undeveloped	Yes			No No
C-5	32	164 Talcott Ridge Drive		No Yes	No No	No No	No No
C-7	32	8 Watch Hill Drive	Residential Residential	No No	No No	No No	No No
C-7	32	82 Watch Hill Drive			No No		
			Residential	No No	No	No	No No
C-7	32 32	68 Talcott Ridge Drive	Residential	No No	No No	No No	No No
		83 Talcott Ridge Drive	Residential		No		
C-7	32	88 Talcott Ridge Drive	Undeveloped	Yes	No	No	No No
C-7	32	105 Talcott Ridge Drive	Residential	No	No	No	No

Drawing	Town Assessor's Map Number	Address	Residential, Commercial or Undeveloped	Water Service to Curb Stop only	Water Service Installation (Including Meter)	Meter Pit Required	Well to be Abandoned
C-7	32	108 Talcott Ridge Drive	Undeveloped	Yes	No	No	No
C-7	32	124 Talcott Ridge Drive	Residential	No	No	No	No
C-7	32	142 Talcott Ridge Drive	Residential	No	No	No	No
C-9	32	Map 32, Lot 8 South Main St	St. of CT	No	No	No	No
C-9	32	2156 South Main Street	Residential	Yes	No	No	No
C-9	32	9 Talcott Ridge Drive	Residential	No	No	No	No
C-9	32	18 Talcott Ridge Drive	Undeveloped	Yes	No	No	No
C-9	32	33 Talcott Ridge Drive	Residential	No	No	No	No
C-9	32	48 Talcott Ridge Drive	Residential	No	No	No	No
C-11	32	2155 South Main Street	Residential	Yes	No	No	No
C-11	32	2175 South Main Street	Commercial	Yes	No	No	No
C-11	32	2200 South Main Street	Undeveloped	Yes	No	No	No
C-11	32	2286 South Main Street	Residential	Yes	No	No	No
C-11	32	2292 South Main Street	Residential	Yes	No	No	No
C-11	32	2296 South Main Street	Residential	Yes	No	No	No
C-11	32	2330 South Main Street	Residential	Yes	No	No	No
C-11	32	2332 South Main Street	Residential	Yes	No	No	No
C-11	32	2301 South Main Street	Commercial	Yes	No	No	No
C-11	32	2303 South Main Street	Commercial	Yes	No	No	No
C-11	32	2329 South Main Street	Residential	Yes	No	No	No
C-11	32	2337 South Main Street	Residential	Yes	No	No	No
C-11	32	2345 South Main Street	Residential	Yes	No	No	No
C-11	32	Map 32 Lot 48	Municipal		No - locatio	on of water meter v	ault
C-11	32	Map 32 Lot 55	Undeveloped	Yes (2)	No	No	No
1iddlefield							
C-13	21	Route 17 (See 514 Main Street Durham)	Undeveloped	Yes	No	No	No

<sup>|</sup> C-13 | Z1 | ROUTE 17 (See 514 Main Street Durnatin) | Joineveloped | res | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 1 and will be identified by Owner.

<sup>(5)</sup> House at #174 Main Street was demolished, but well is still on site

 $<sup>^{(6)}</sup>$  One well currently serves 151R and 153 Main Street

#### **Summary of Water Service Work on Private Property**

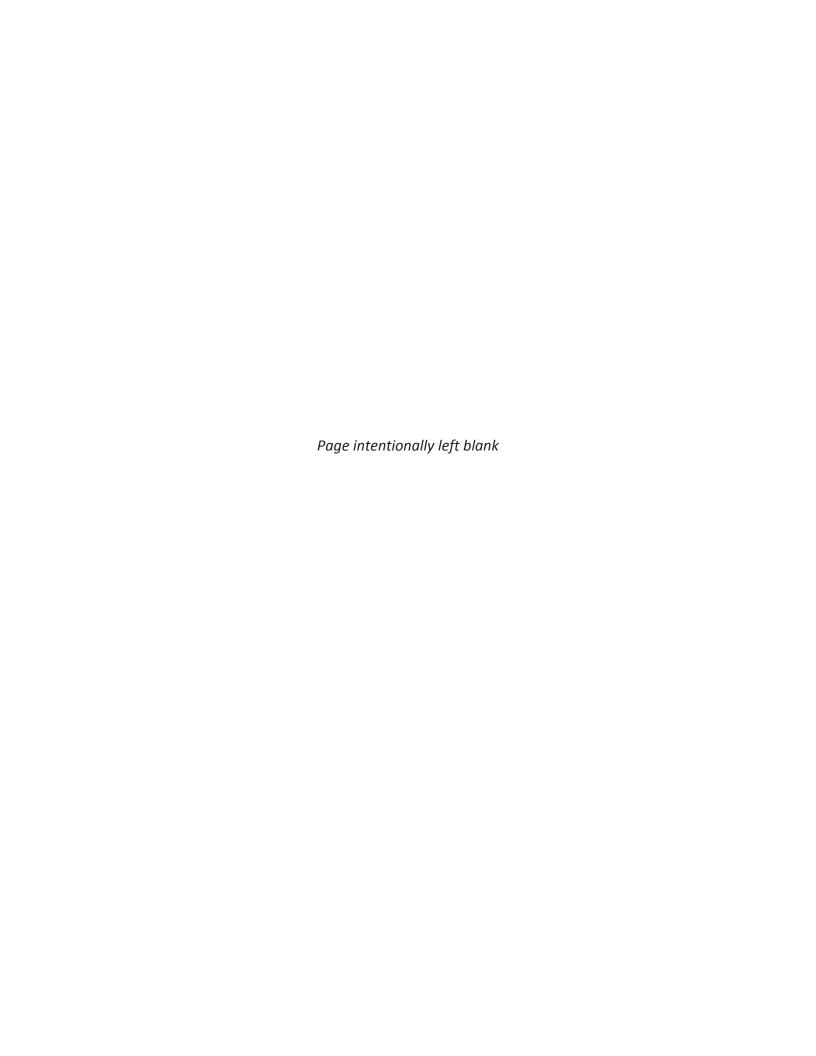
	ADDRESS	DRAWING No.	COMMENT
1	10 John's Way	C-27	
2	17 John's Way	C-27	Property already connected to water service, well to be abandoned.
3	119 Main Street	C-25	
4	120 Main Street	C-25	
5	127 Main Street	C-25	
6	151R Main Street	C-25	
7	153 Main Street	C-25	
8	167 Main Street	C-23	
9	168 Main Street	C-23	
10	175R Main Street	C-23	
11	176 Main Street	C-23	
12	177R Main Street	C-23	
13	186 Main Street	C-23	
14	188 Main Street	C-23	
15	196 Main Street	C-23	
16	199 Main Street	C-23	
17	201 Main Street	C-23	
18	202 Main Street	C-23	
19	203 Main Street	C-21	
20	205 Main Street	C-21	
21	208 Main Street	C-21	
22	215 Main Street	C-21	
23	216 Main Street	C-21	
24	220 Main Street	C-21	
25	227/227A Main Street	C-21	
26	233 Main Street	C-21	
27	235 Main Street	C-21	
28	228/228R Main Street	C-21	
29	236 Main Street	C-21	
30	238 Main Street	C-21	
31	239 Main Street	C-21	
32	242 Main Street	C-21	
33	243 Main Street	C-21	
34	246 Main Street	C-21	
35	248 Main Street	C-21	
36	252 Main Street	C-21	
37	253 Main Street	C-21	
38	256 Main Street	C-21	
39	257 Main Street	C-19	
40	261 Main Street	C-19	
41	262 Main Street	C-19	

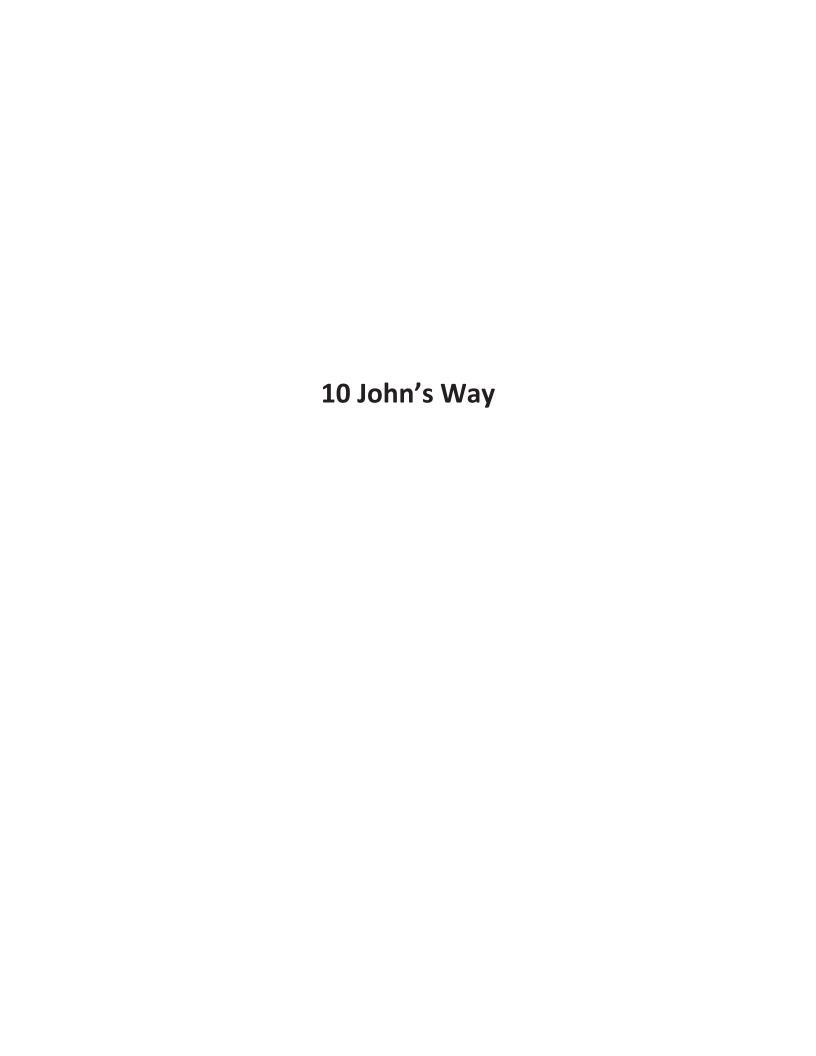
#### **Summary of Water Service Work on Private Property**

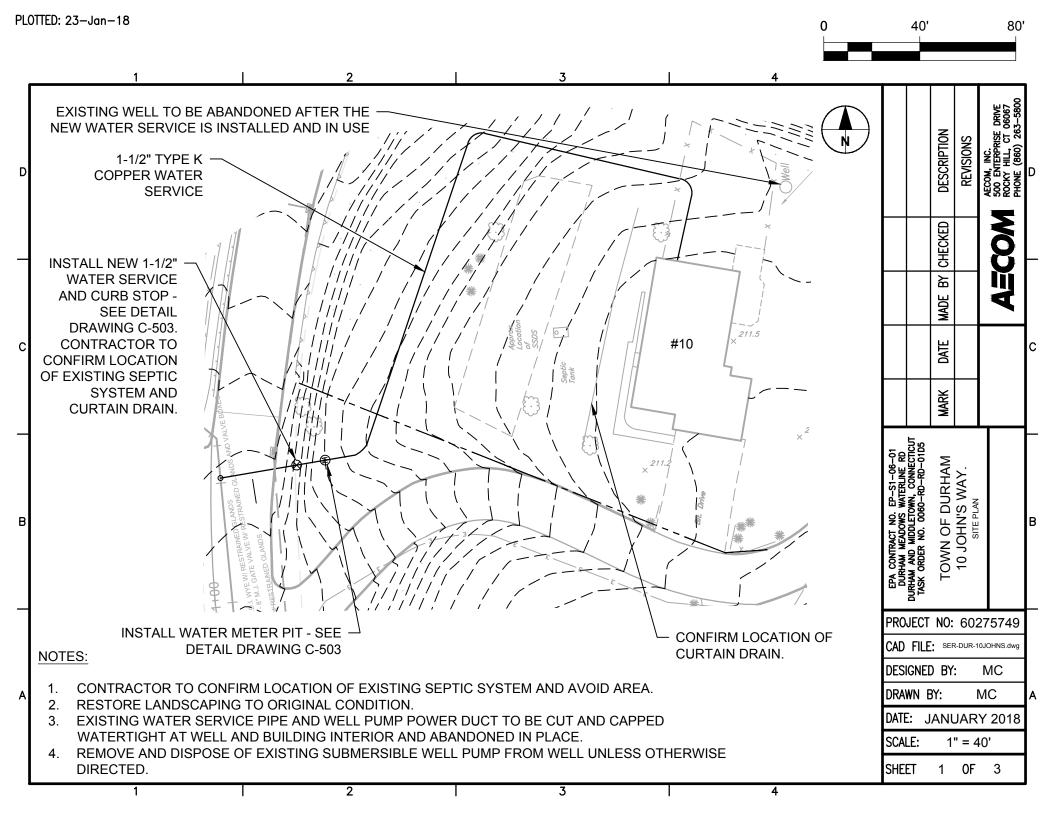
	ADDRESS	DRAWING No.	COMMENT
42	265 Main Street	C-19	
43	267 Main Street	C-19	
44	268 Main Street	C-19	
45	271 Main Street	C-19	
46	272 Main Street	C-19	
47	275 Main Street	C-19	
48	280 Main Street	C-19	
49	289 Main Street	C-19	
50	293 Main Street	C-19	
51	297 Main Street	C-19	
52	298 Main Street	C-19	Additional Water Service to street line was added due to proposed lot split
53	305R Main Street	C-19	
54	303 Main Street	C-19	
55	307 Main Street	C-19	
56	308 Main Street	C-19	
57	312 Main Street	C-19	
58	313 Main Street	C-17	
59	316 Main Street	C-17	
60	321 Main Street	C-17	
61	322 Main Street	C-17	
62	325 Main Street	C-17	
63	7 Maple Avenue	C-25	Already Connected to Water System, Well to be Abandoned
64	13 Maple Avenue	C-27	Water Service available at property line
65	29 Maple Avenue	C-27	
66	41 Maple Avenue	C-27	Already Connected to Water System, Well to be Abandoned
67	95R Maple Avenue	C-29	
68	97R Maple Avenue	C-29	
69	109 Maple Avenue	C-29	
70	110 Maple Avenue	C-29	
71	119 Maple Avenue	C-31	
72	126 Maple Avenue	C-31	No Permission to Access Property, interior information not available
73	129 Maple Avenue	C-31	
74	133 Maple Avenue	C-31	
75	139 Maple Avenue	C-31	
76	146 Maple Avenue	C-31	
77	148 Maple Avenue	C-31	
78	158 Maple Avenue	C-31	
79	162 Maple Avenue	C-31	
80	166 Maple Avenue	C-33	
81	172 Maple Avenue	C-33	
82	173 Maple Avenue	C-33	

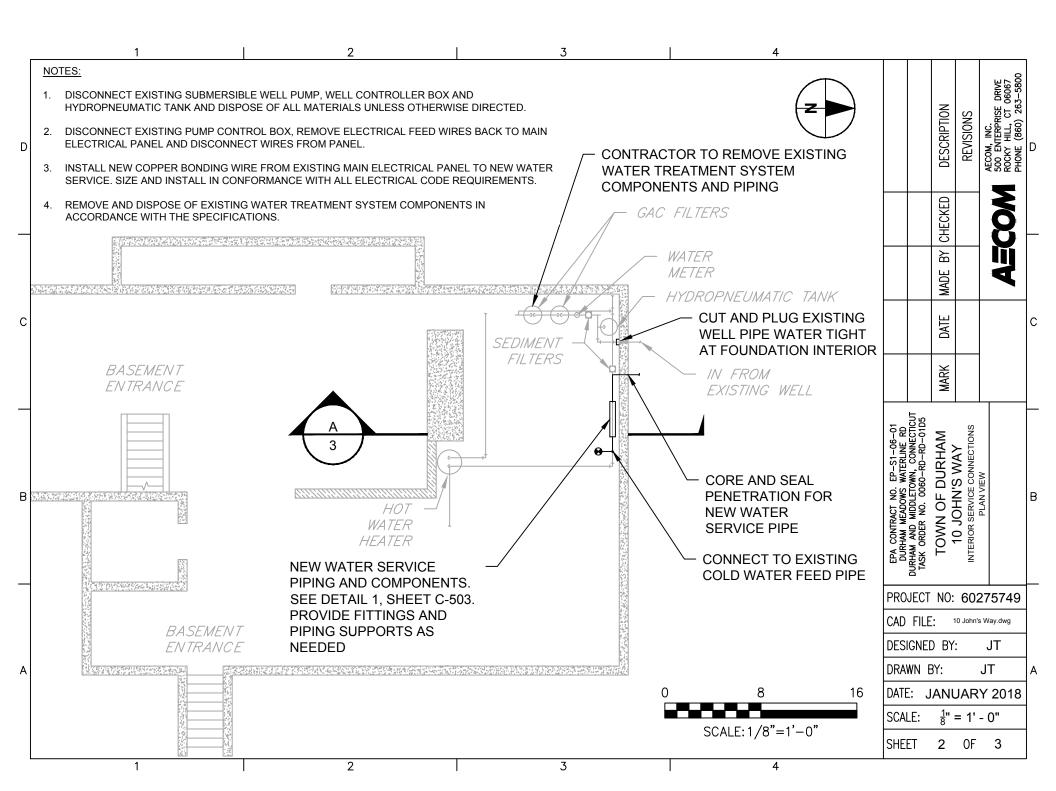
#### **Summary of Water Service Work on Private Property**

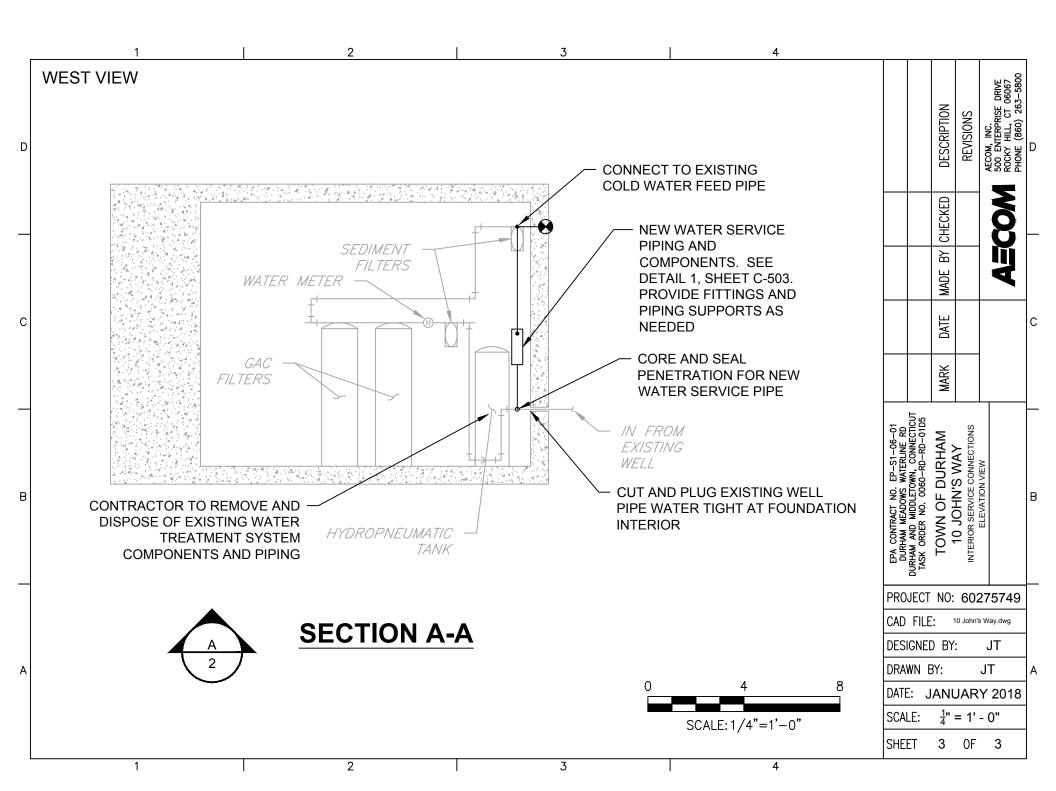
	ADDRESS	DRAWING No.	COMMENT
83	175 Maple Avenue	C-33	
84	176 Maple Avenue	C-33	
85	184 Maple Avenue	C-33	
86	187 Maple Avenue	C-33	
87	188 Maple Avenue	C-33	
88	200 Maple Avenue	C-33	
89	206 Maple Avenue	C-33	
90	212R Maple Avenue	C-33	
91	224 Maple Avenue	C-35	No Permission to Access Property, interior information not available
92	228R Maple Avenue	C-35	No Permission to Access Property, interior information not available
93	230 Maple Avenue	C-35	
94	235 Maple Avenue	C-35	
95	236 Maple Avenue	C-35	No Permission to Access Property, interior information not available
96	244 Maple Avenue	C-35	
97	245 Maple Avenue	C-35	
98	254 Maple Avenue	C-35	
99	11 Maiden Lane	C-21	
100	17 Maiden Lane	C-21	
101	18 Maiden Lane	C-37	
102	19 Maiden Lane	C-37	
103	24 Maiden Lane	C-37	
104	29 Maiden Lane	C-37	
105	35 Maiden Lane	C-37	
106	36 Maiden Lane	C-37	
107	63 Maiden Lane	C-39	No Permission to Access Property, interior information not available
108	78 Maiden Lane	C-39	
109	93R Maiden Lane	C-39	
110	105 Maiden Lane	C-39	
111	110 Maiden Lane	C-39	
112	114R Maiden Lane	C-39	
113	123 Maiden Lane	C-39	
114	17 Wallingford Road	C-31	
115	22 Wallingford Road	C-31	
116	47 Wallingford Road	C-31	
117	14 Talcott Lane	C-35	
	25 Talcott Lane	C-35	

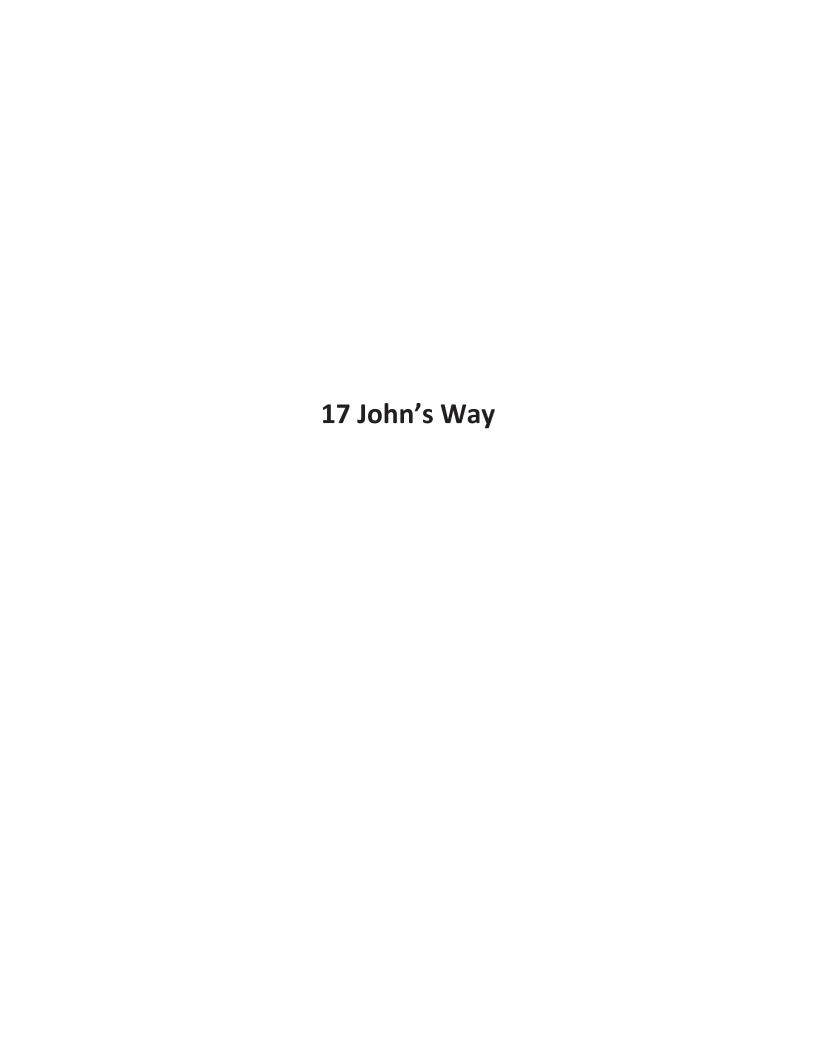


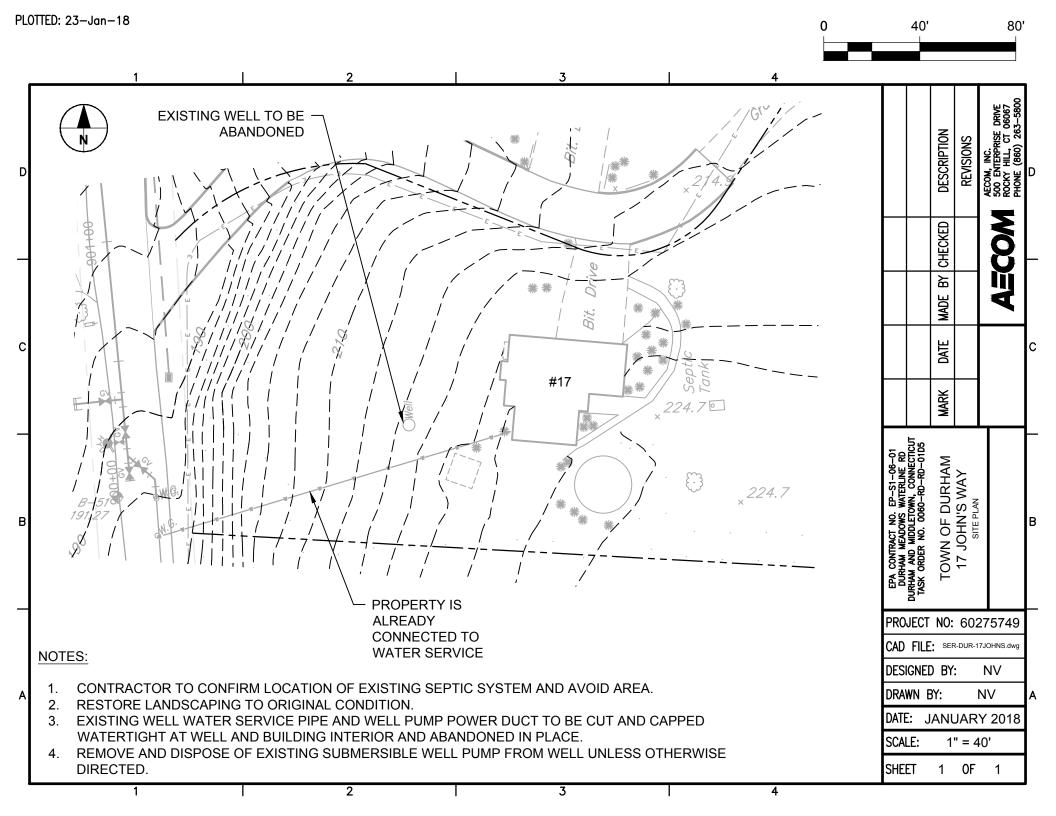


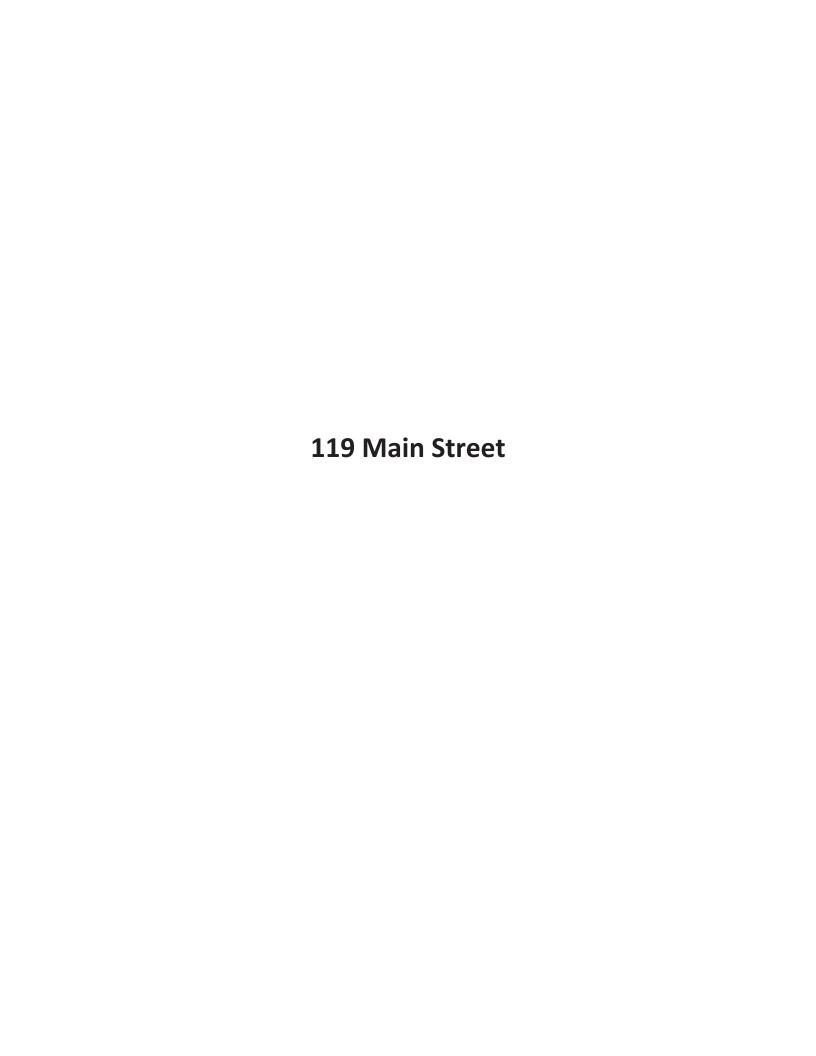


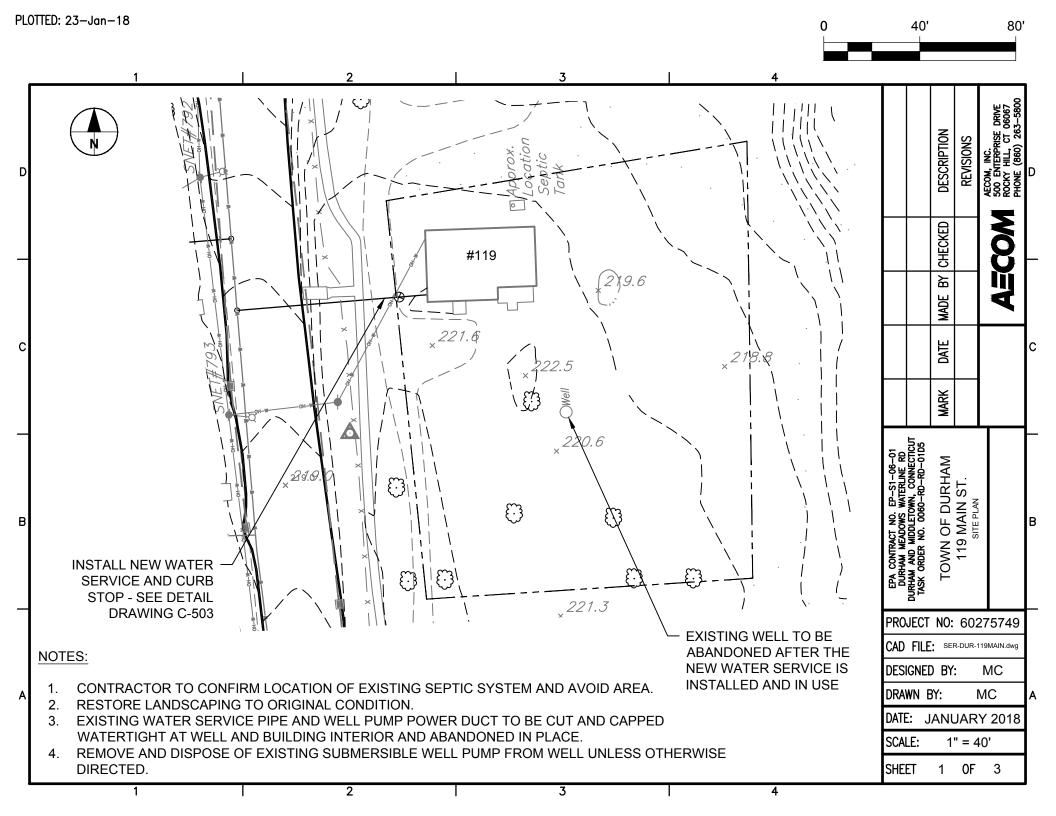


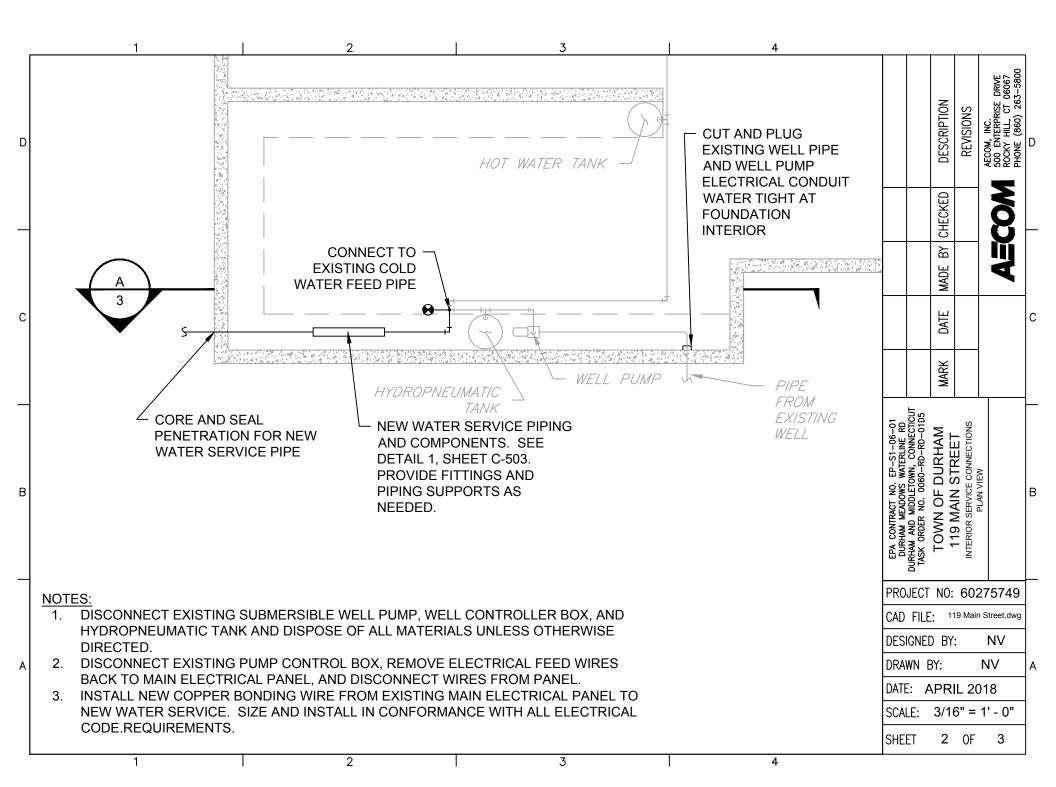


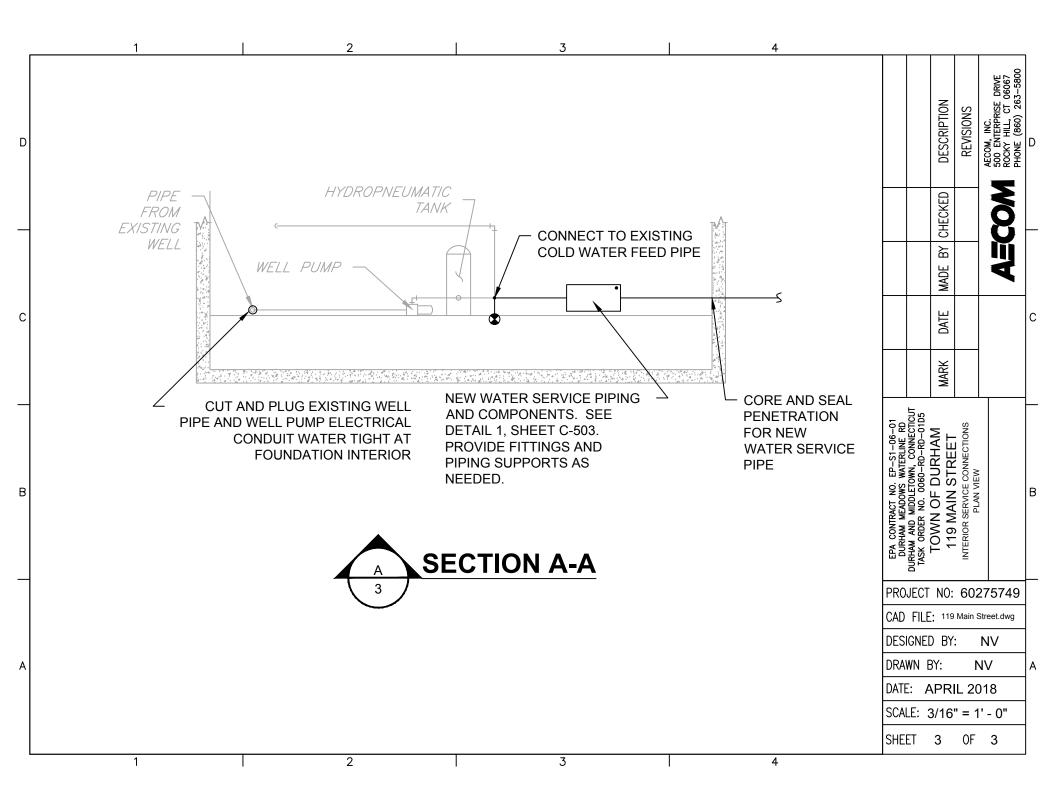


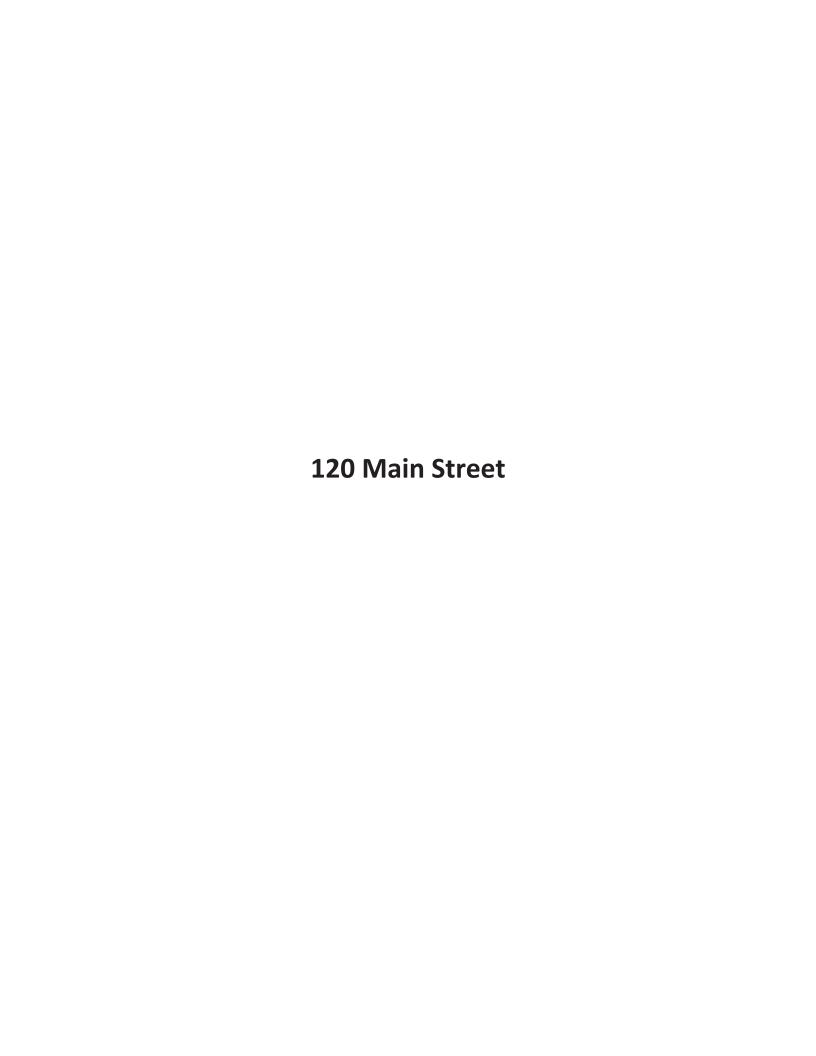


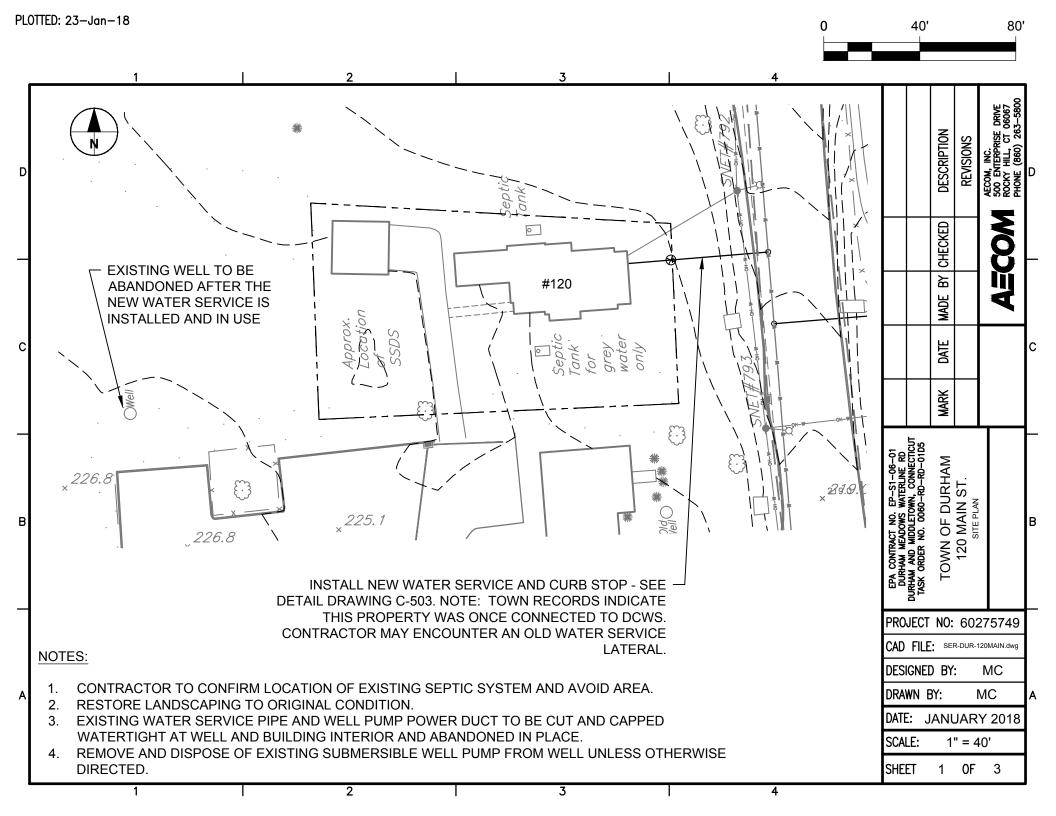


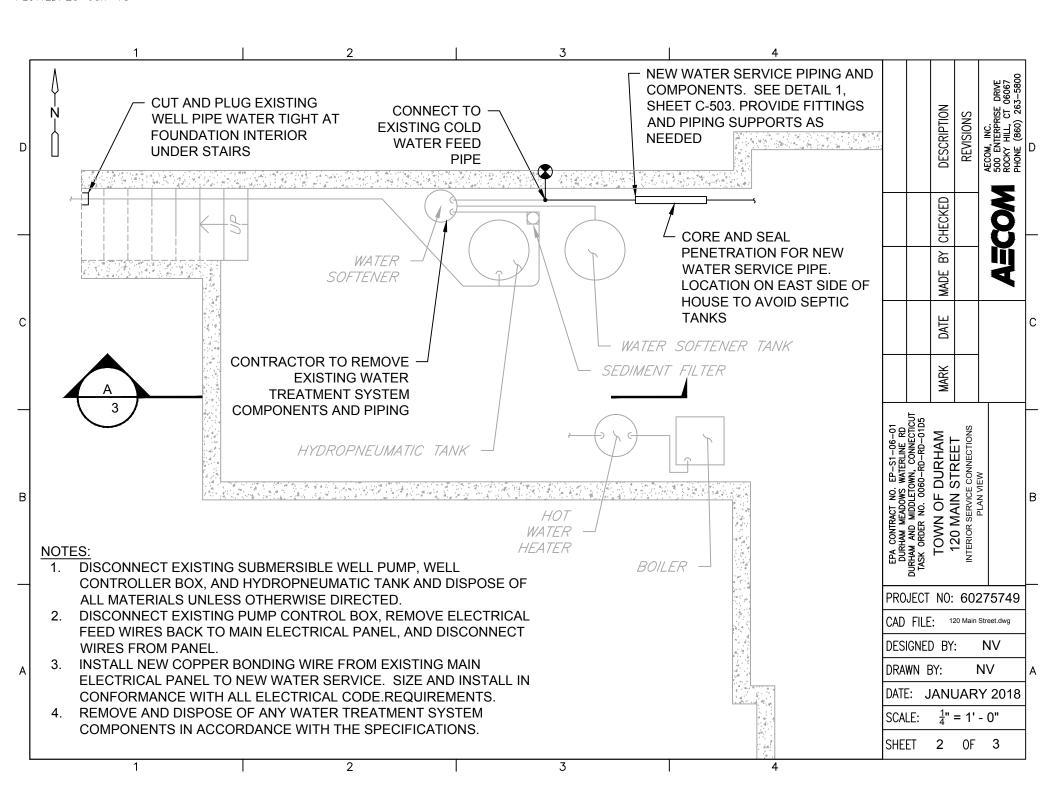


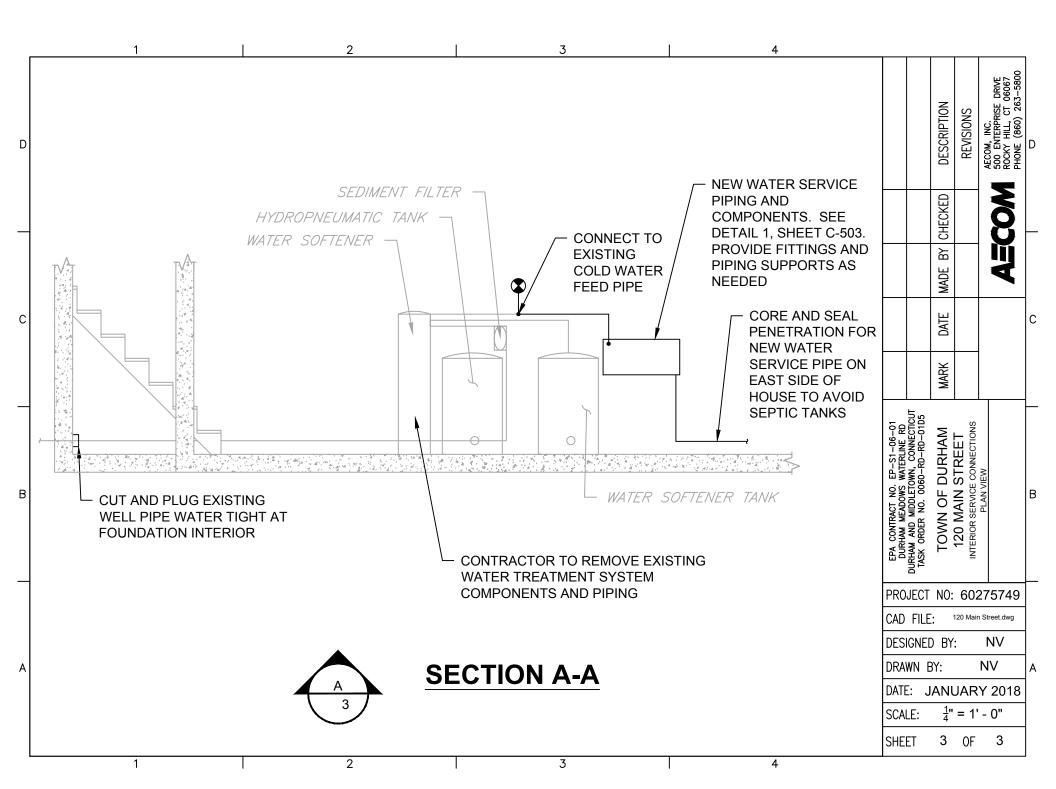


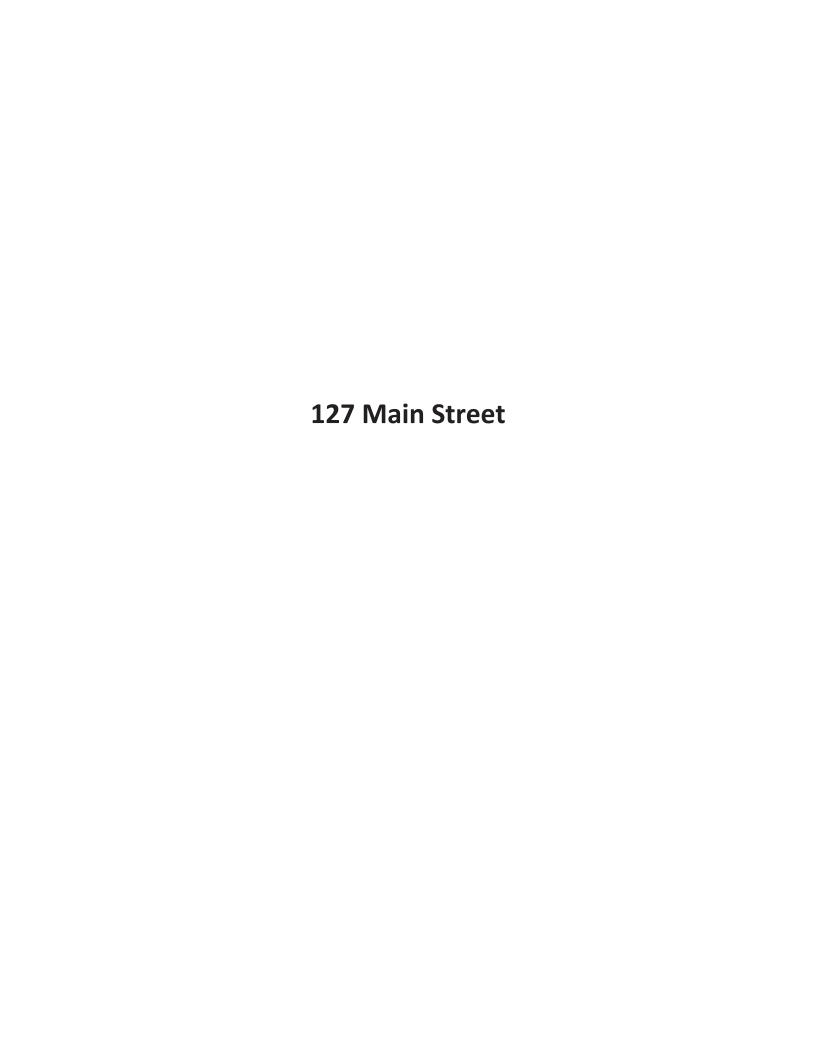


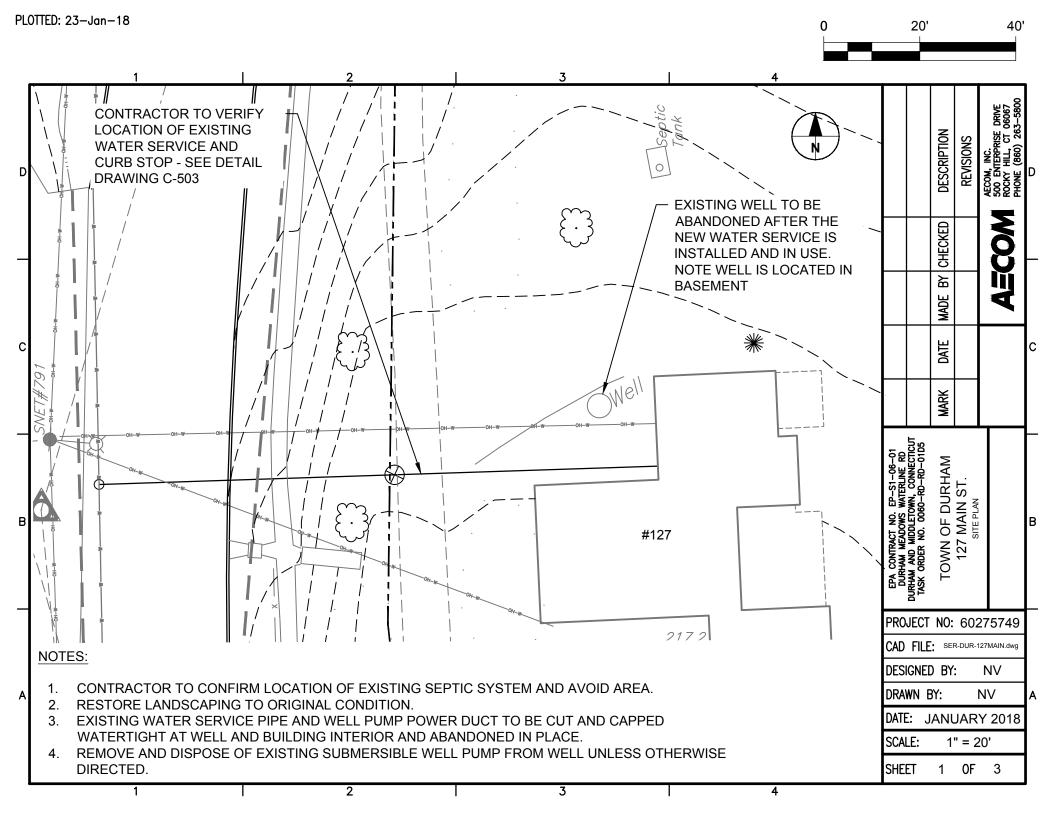


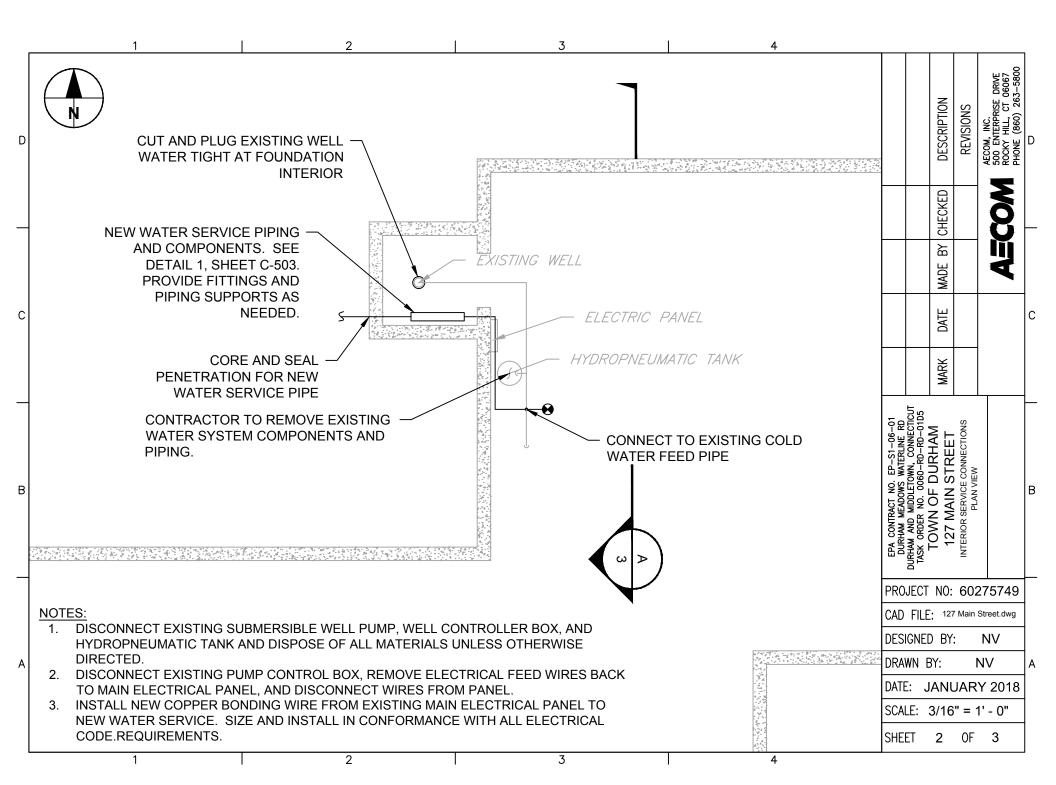


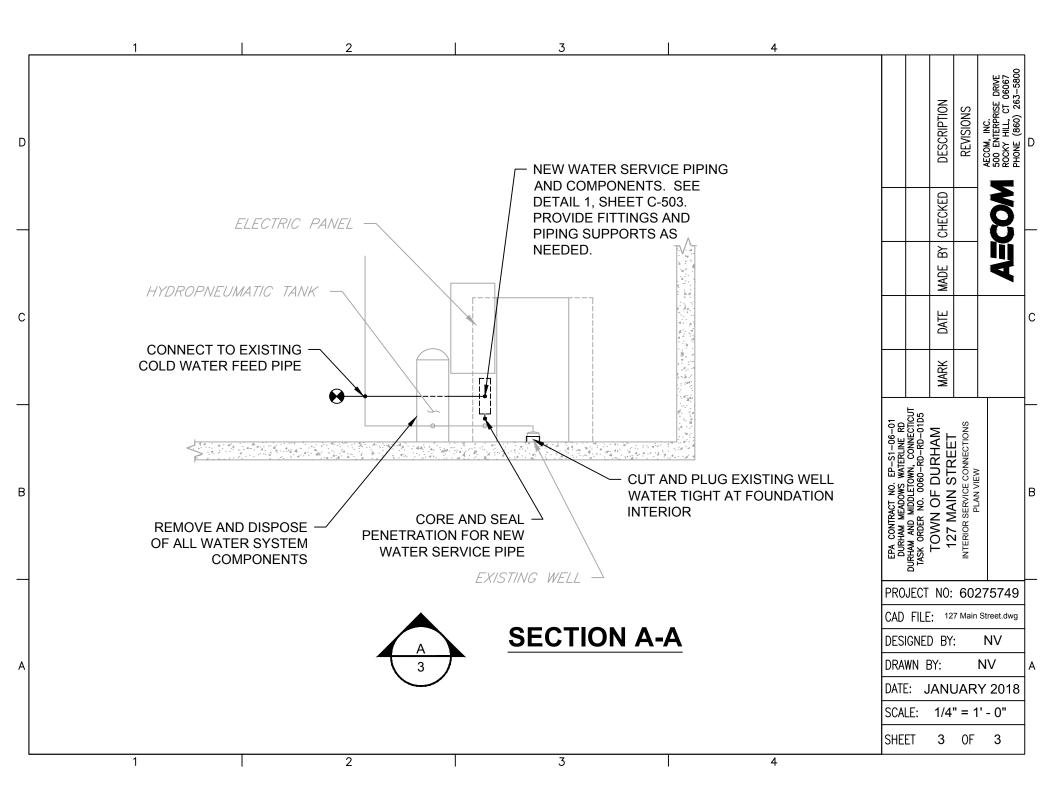




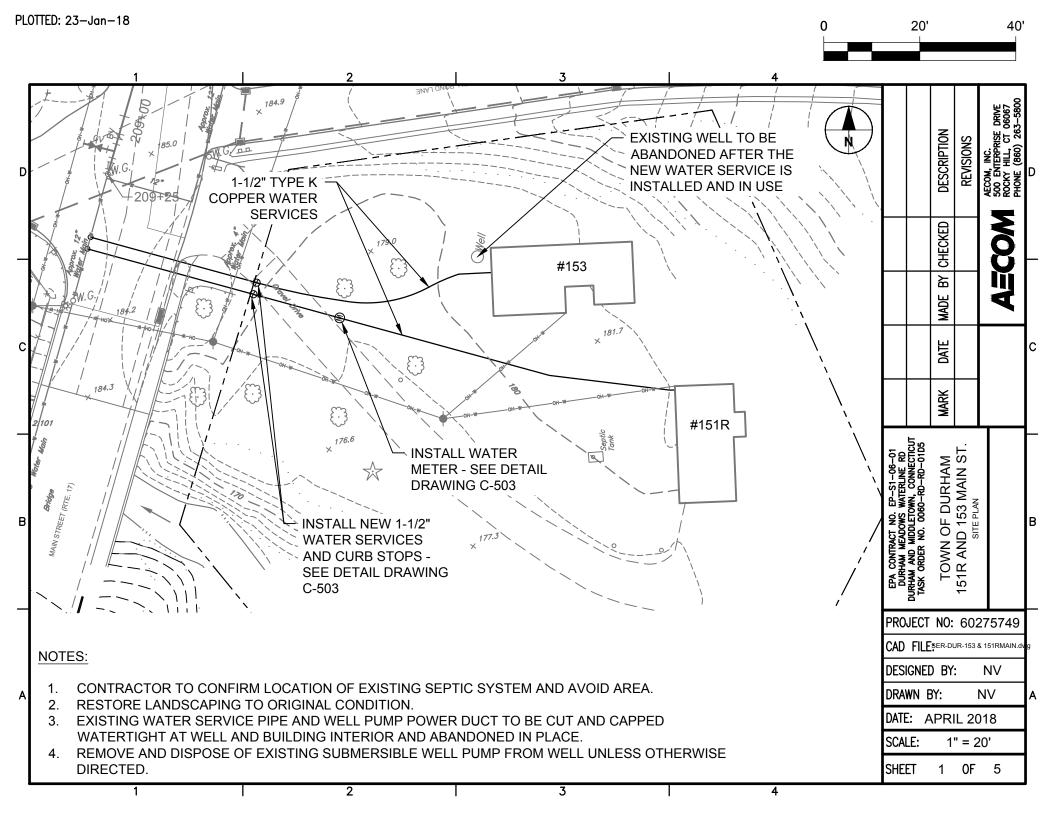


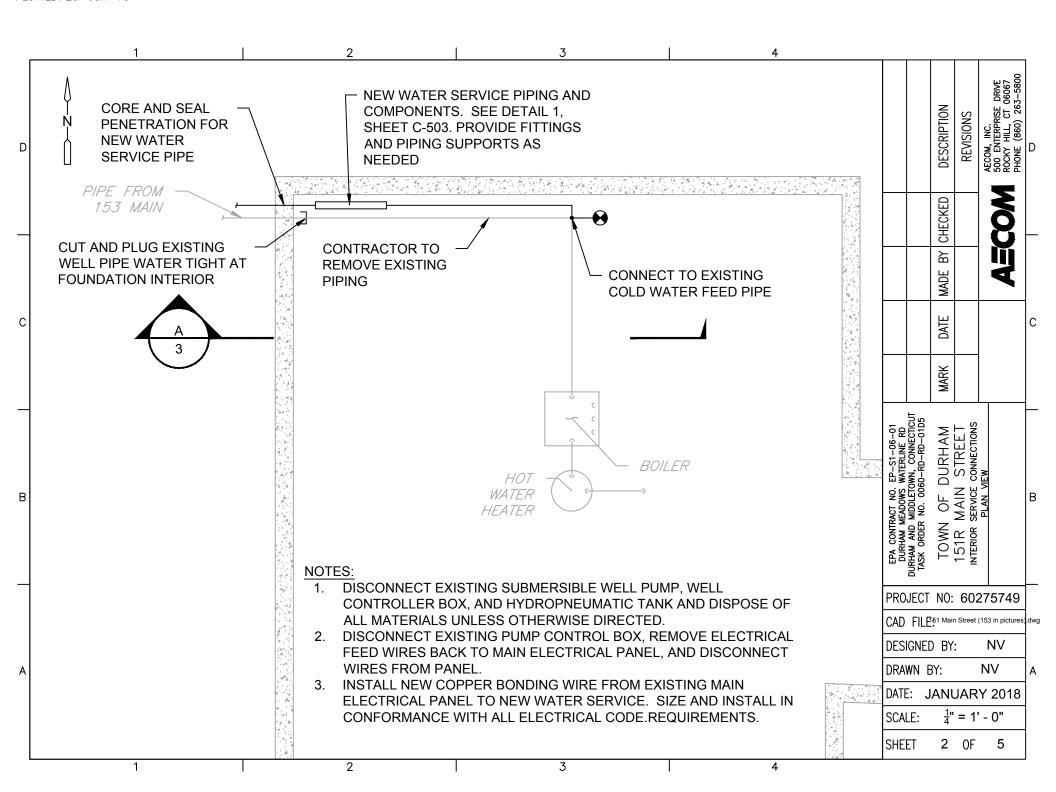


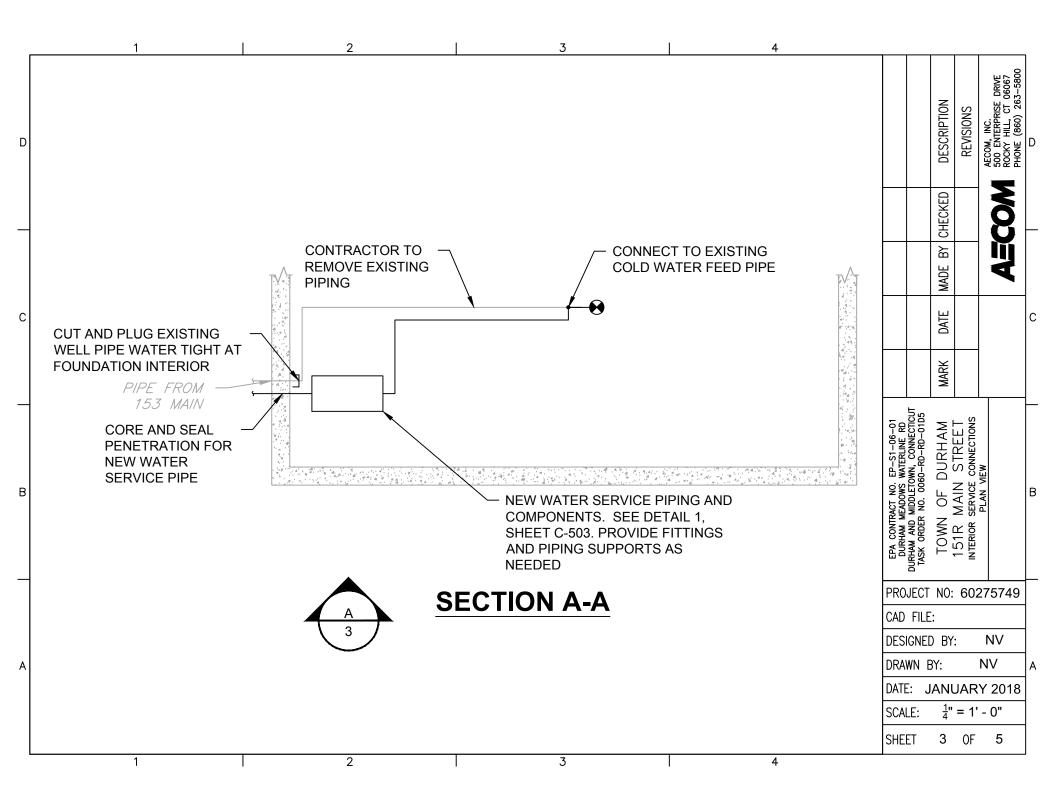


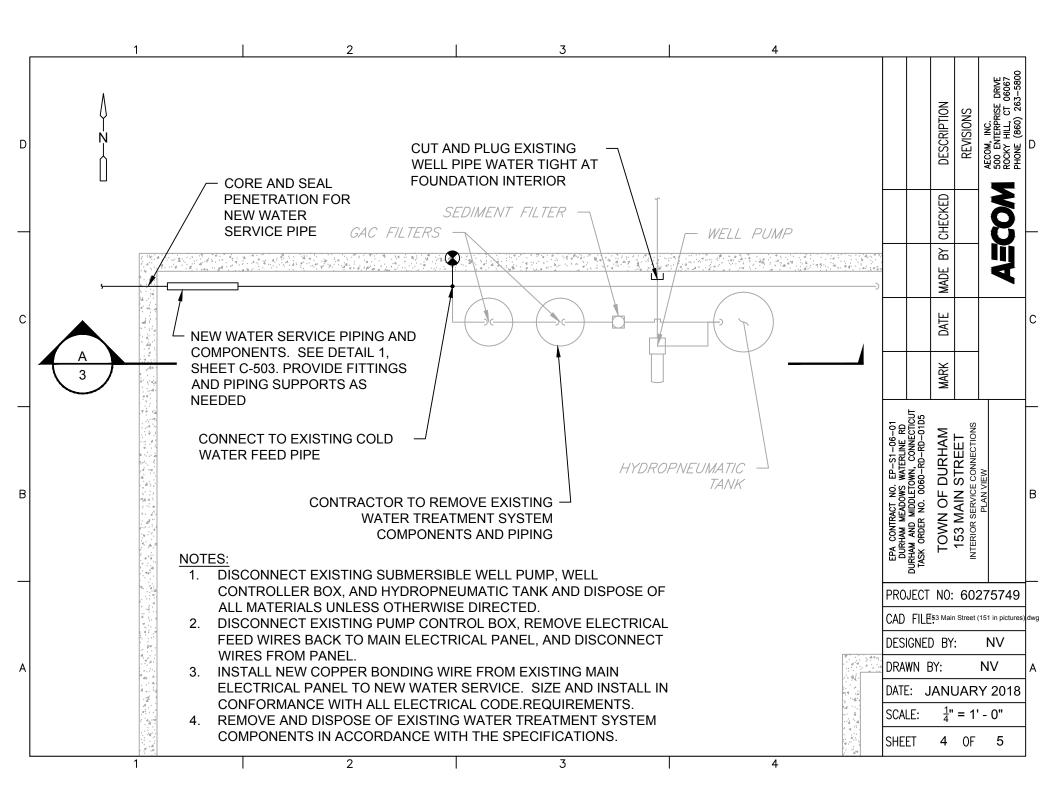


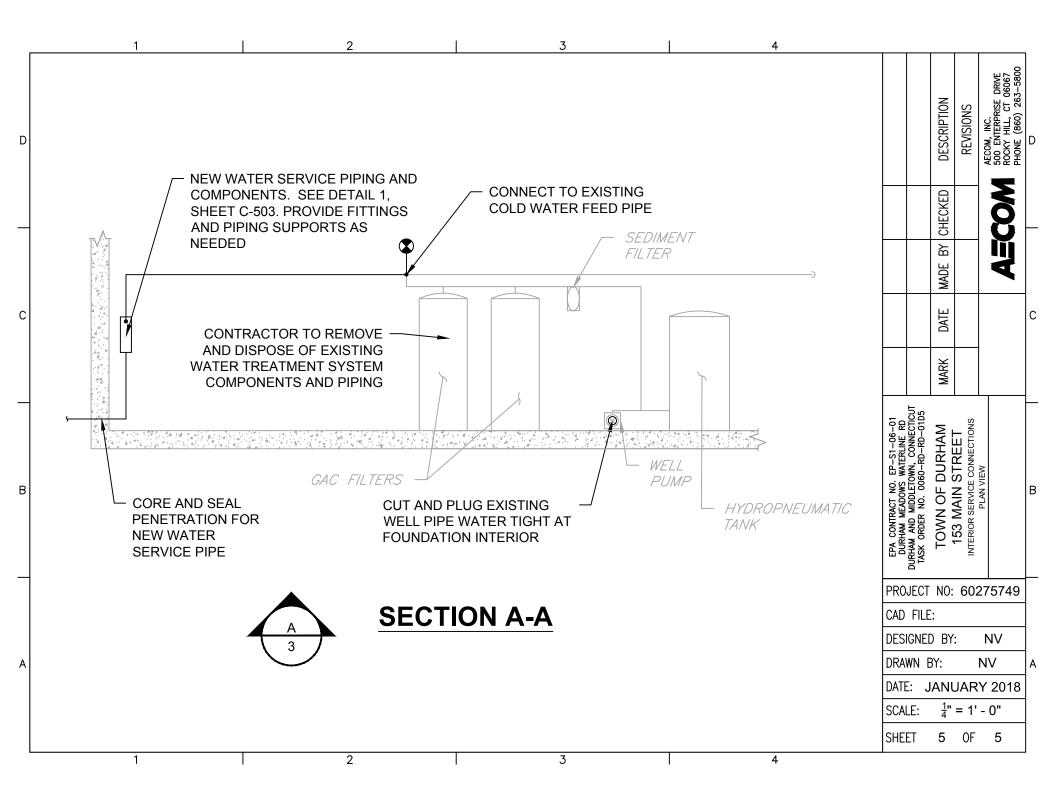




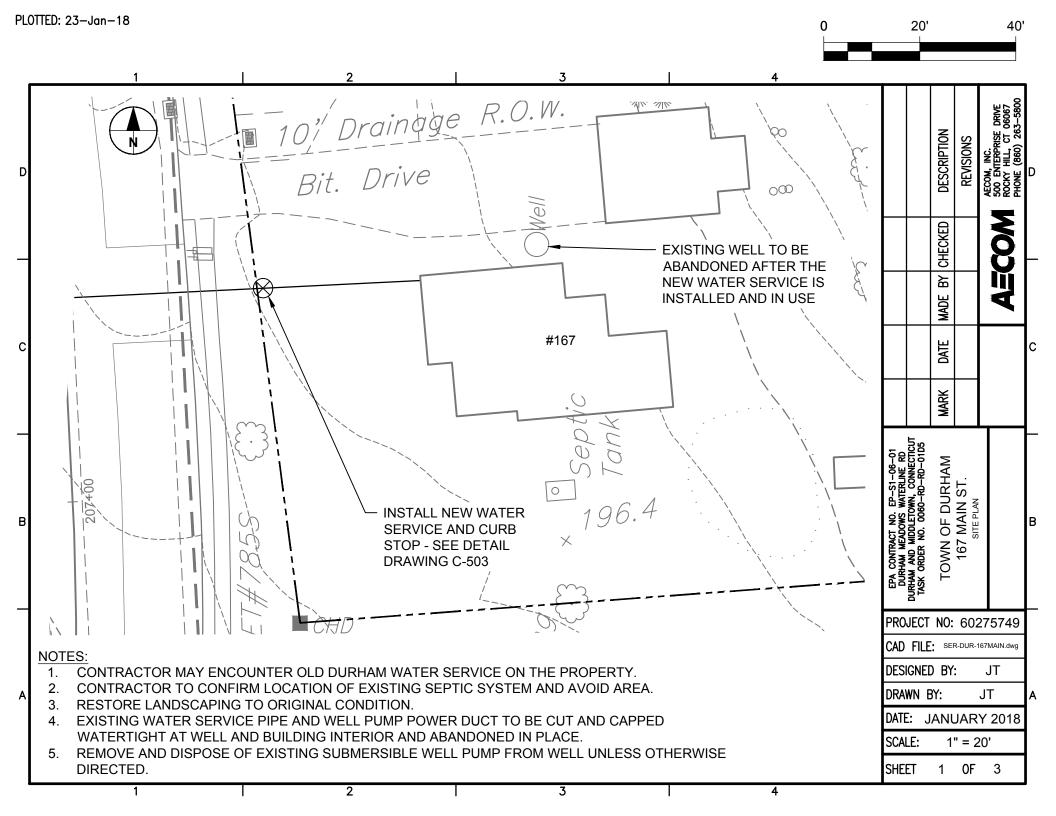


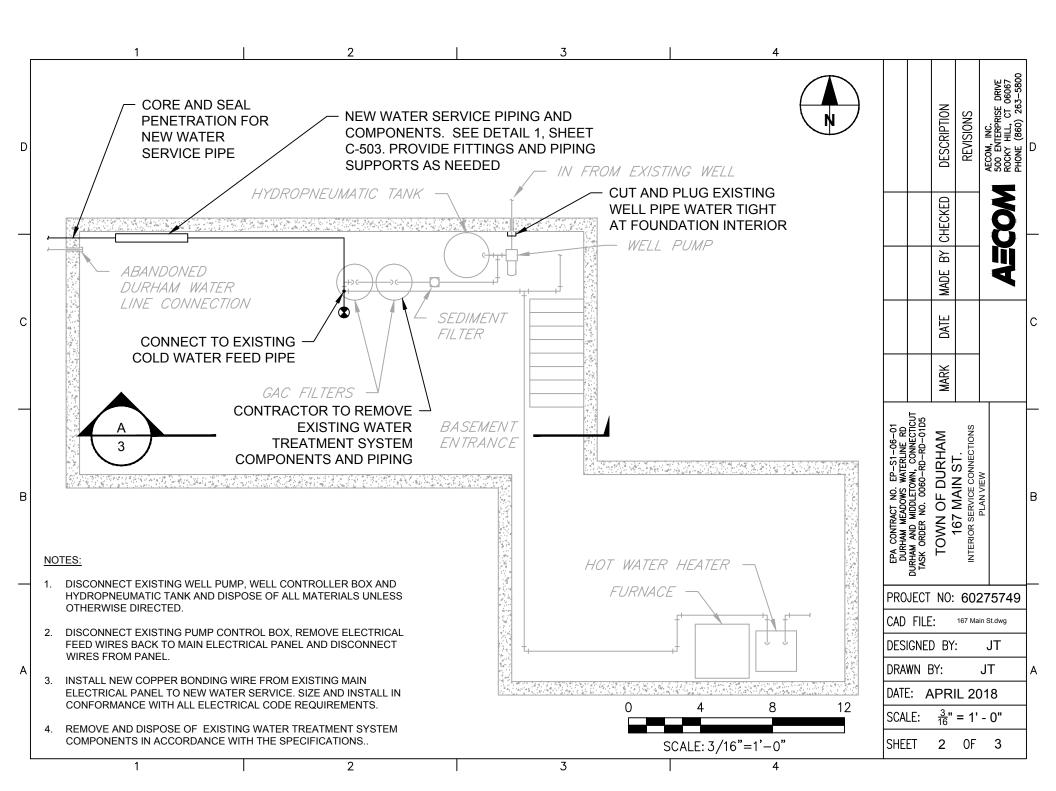


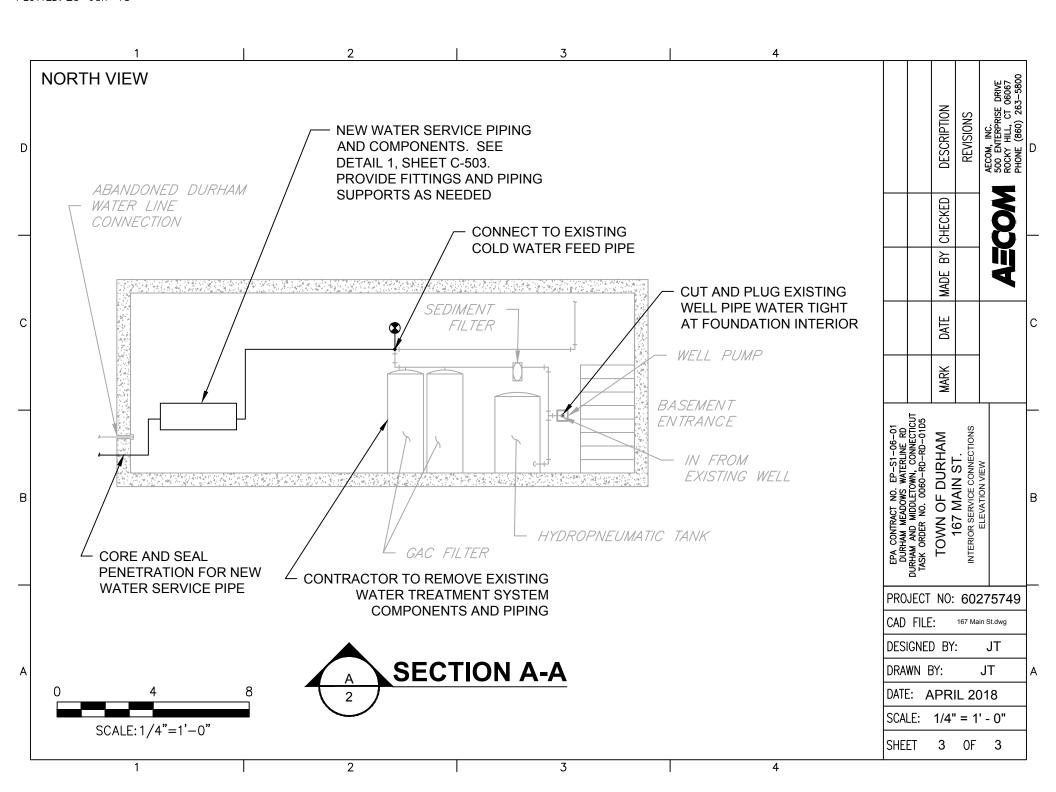




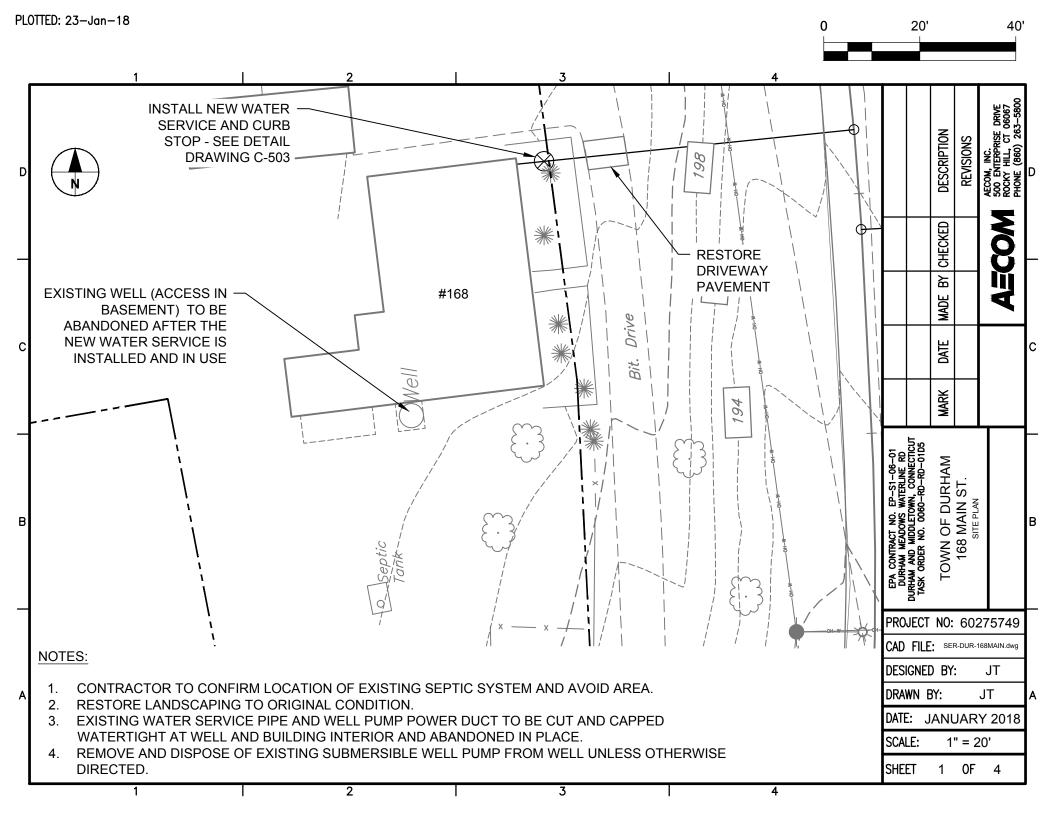


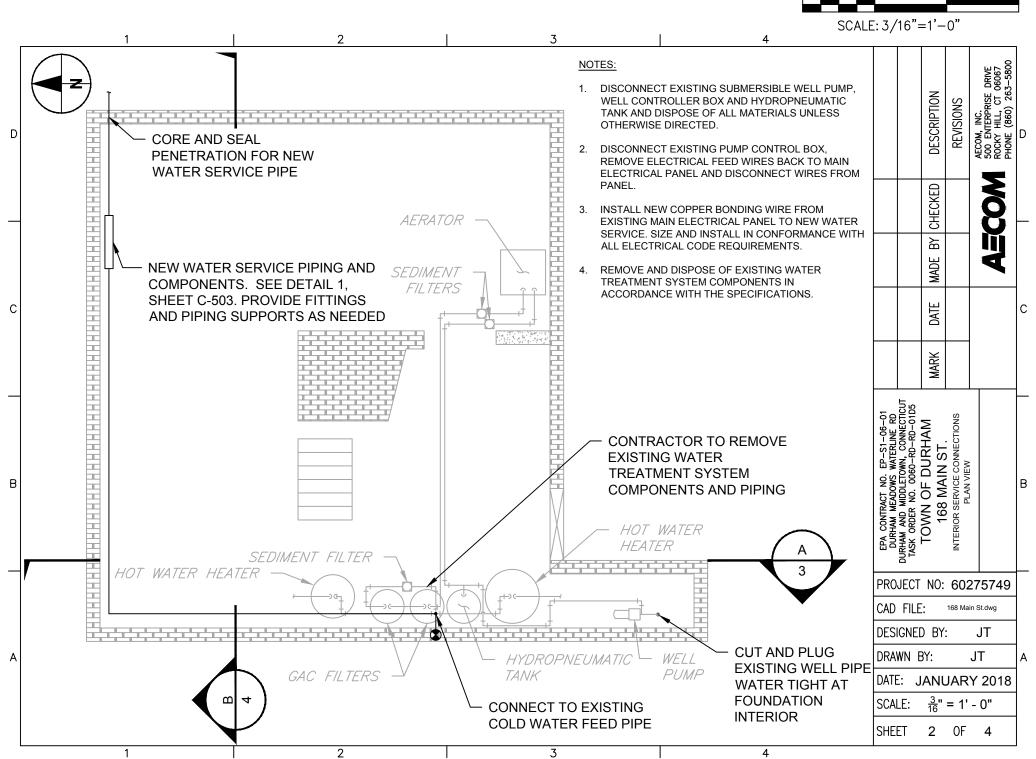


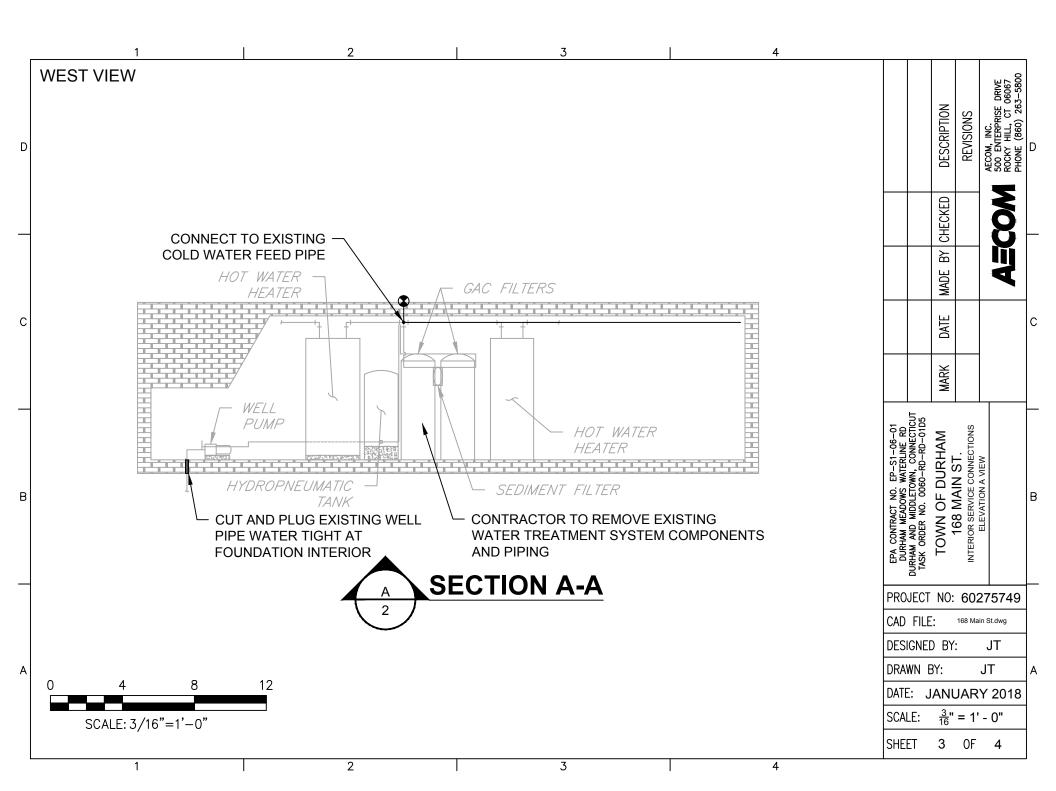


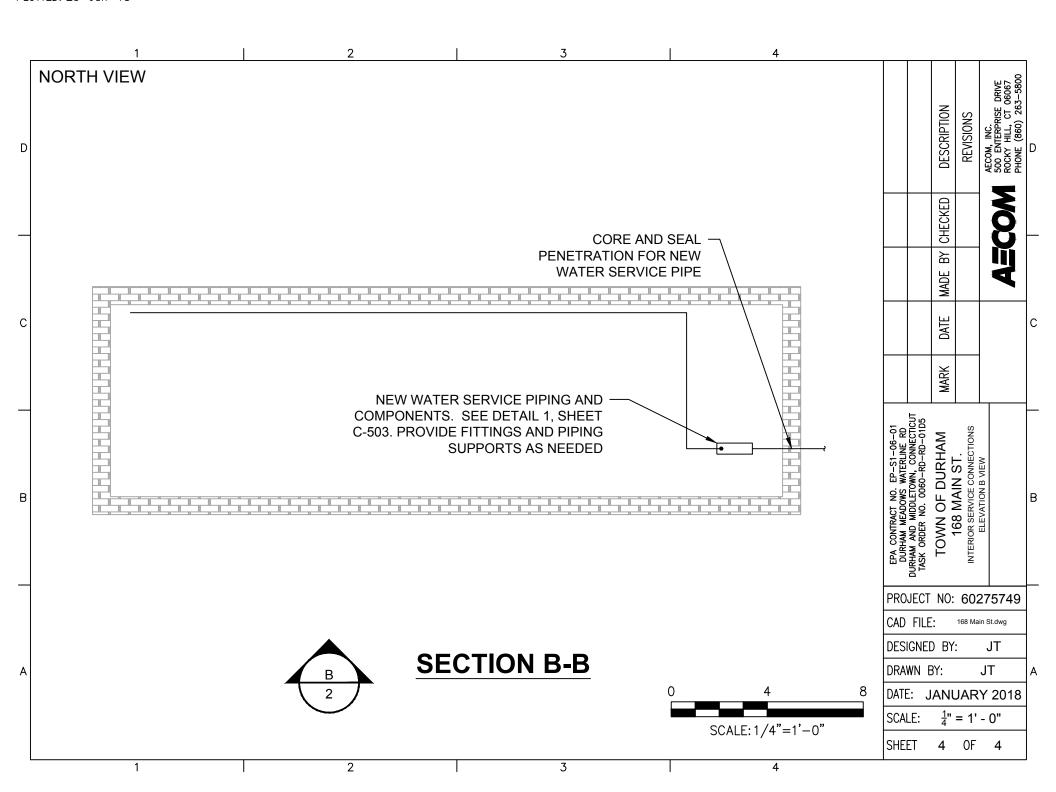


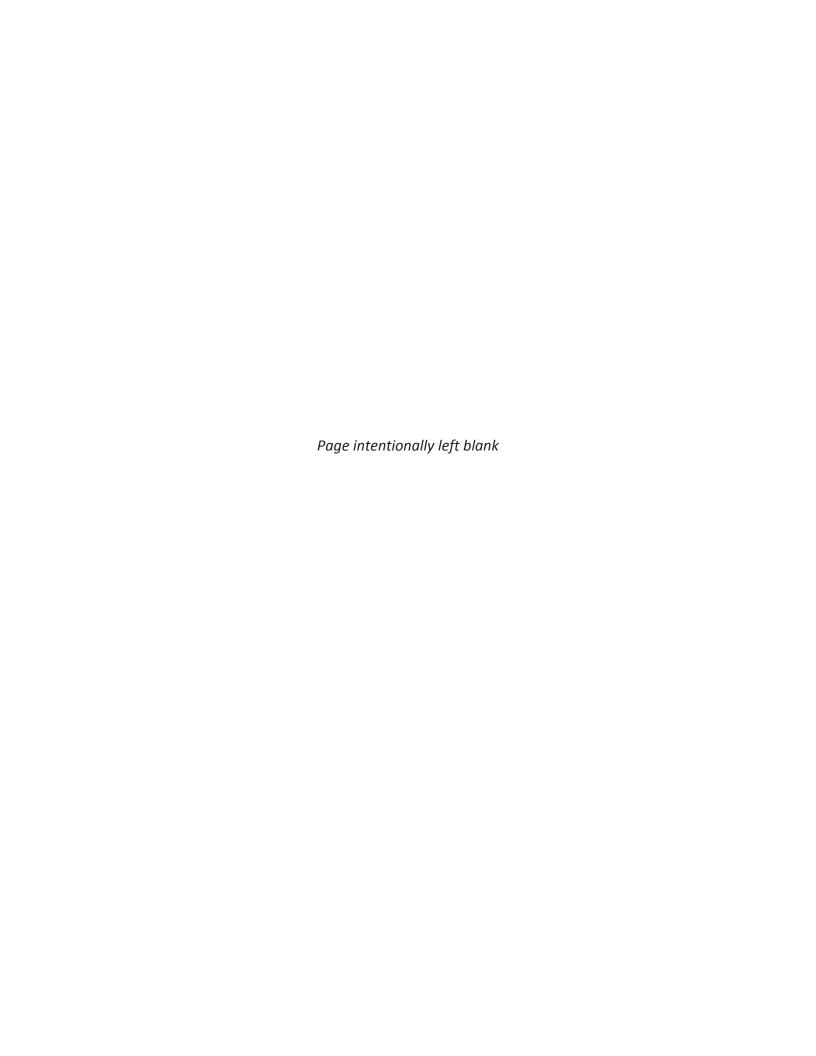


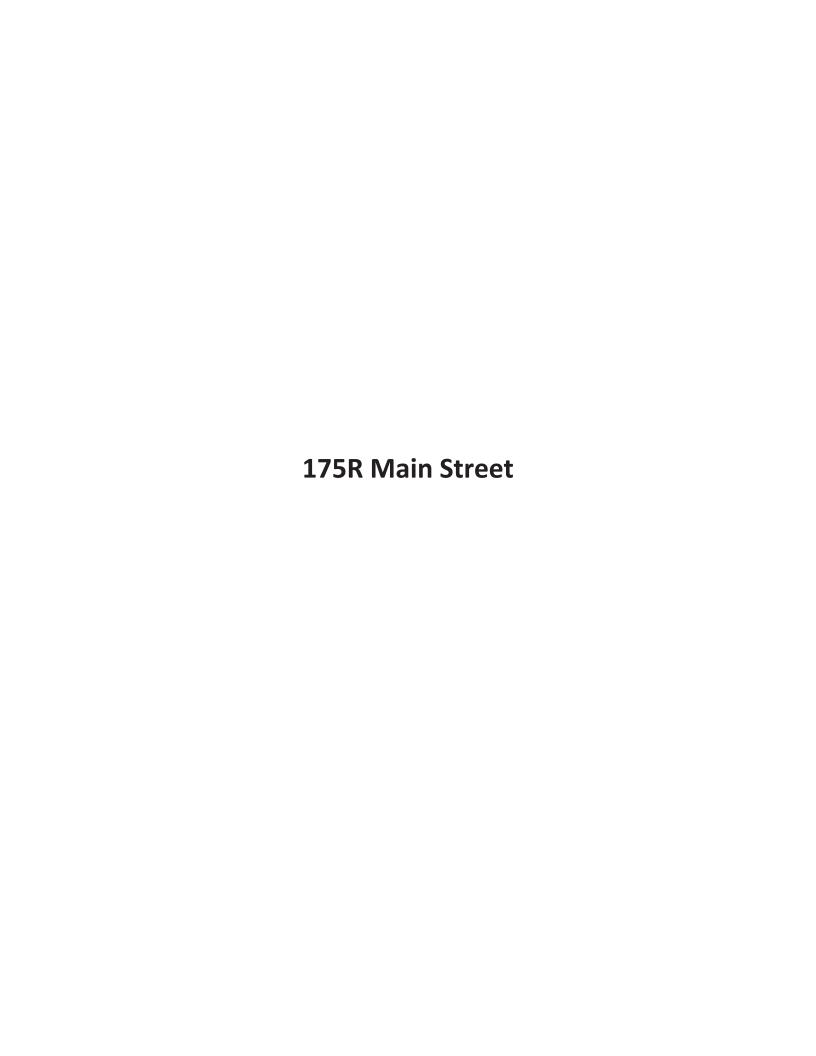


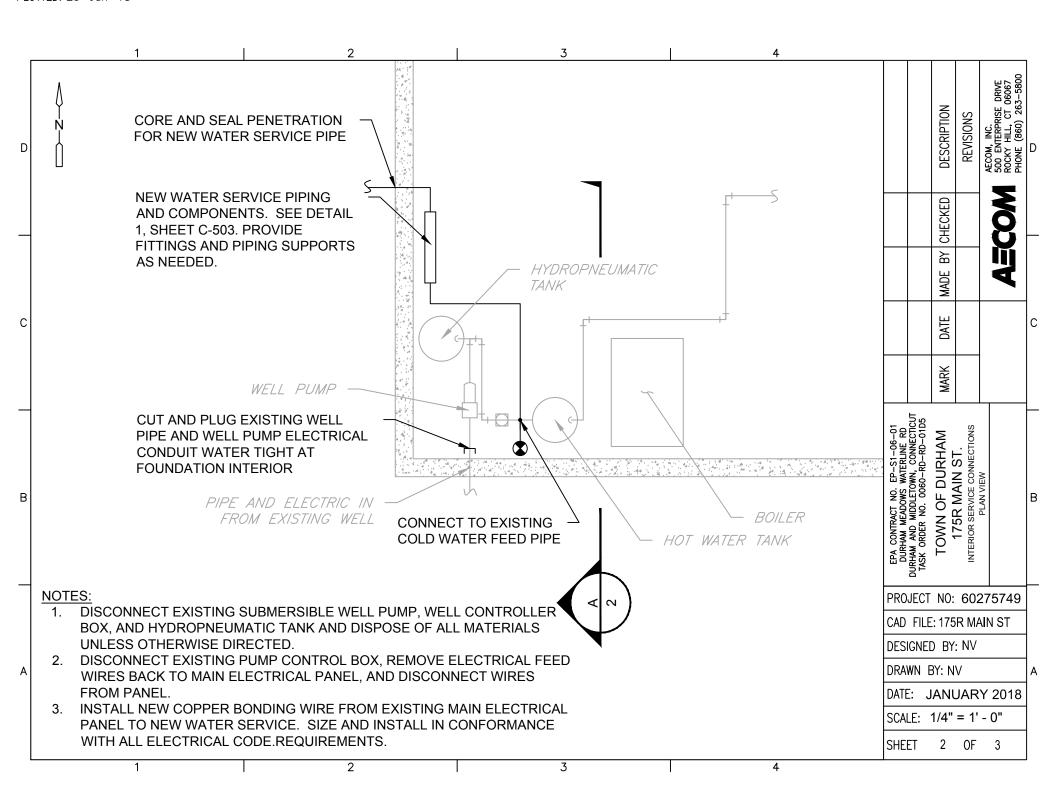


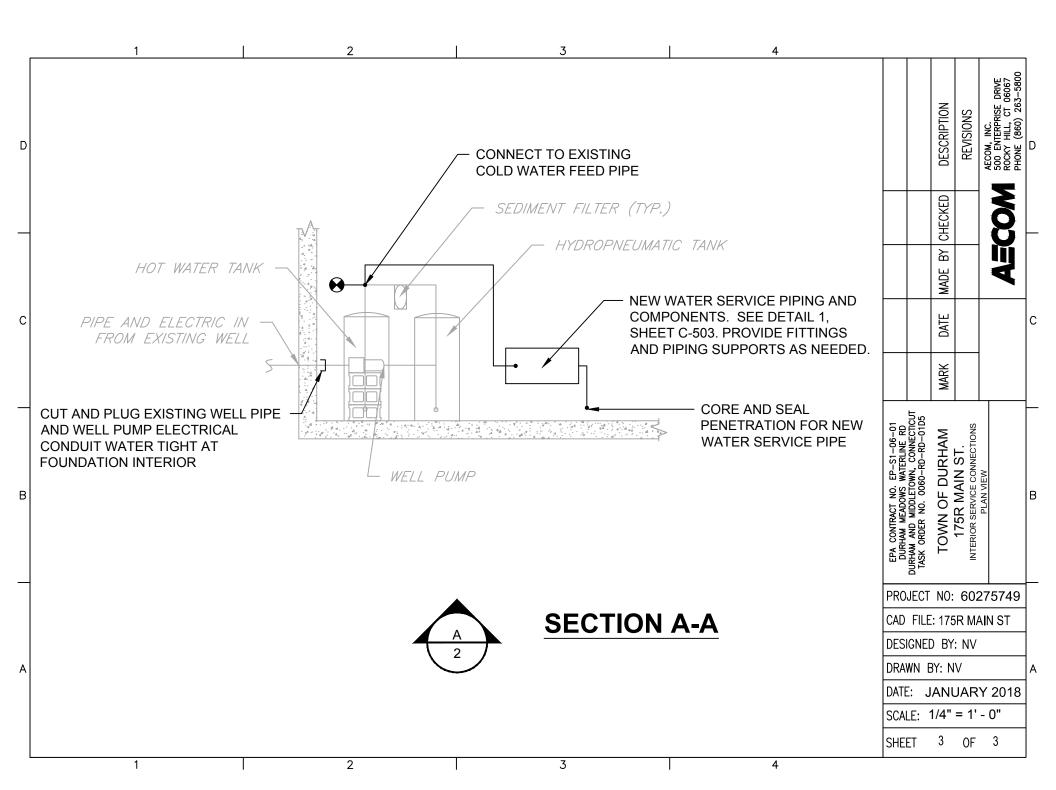


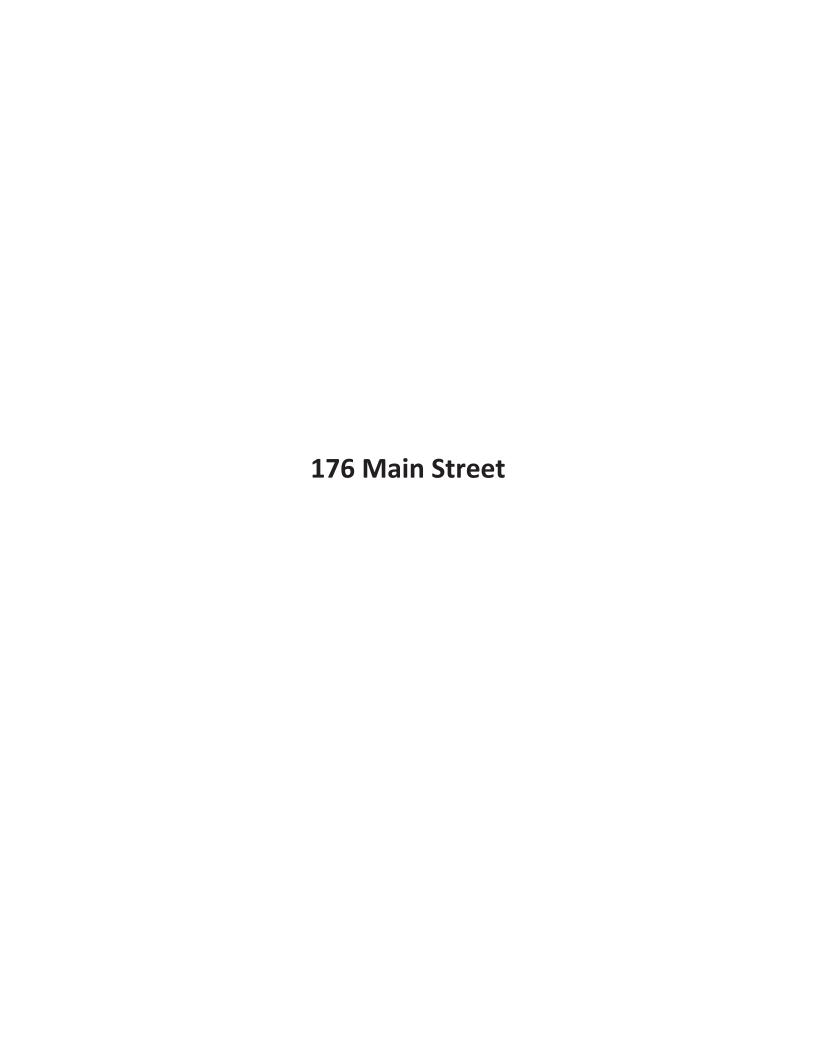


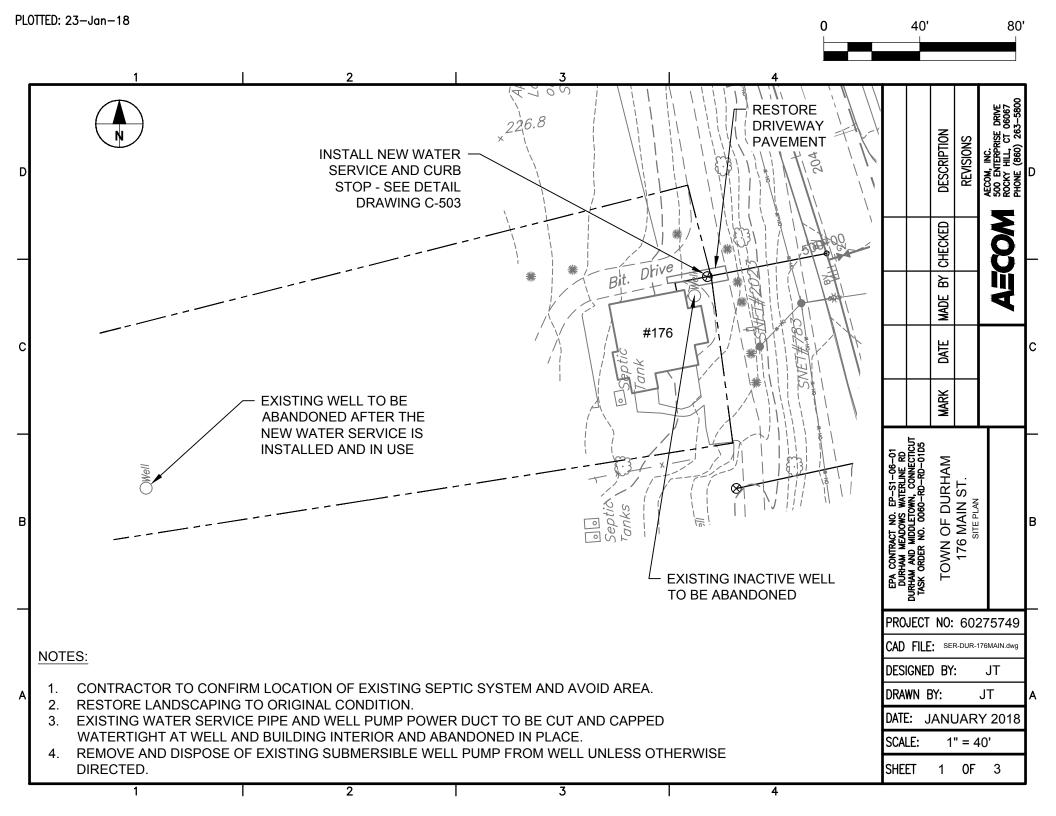


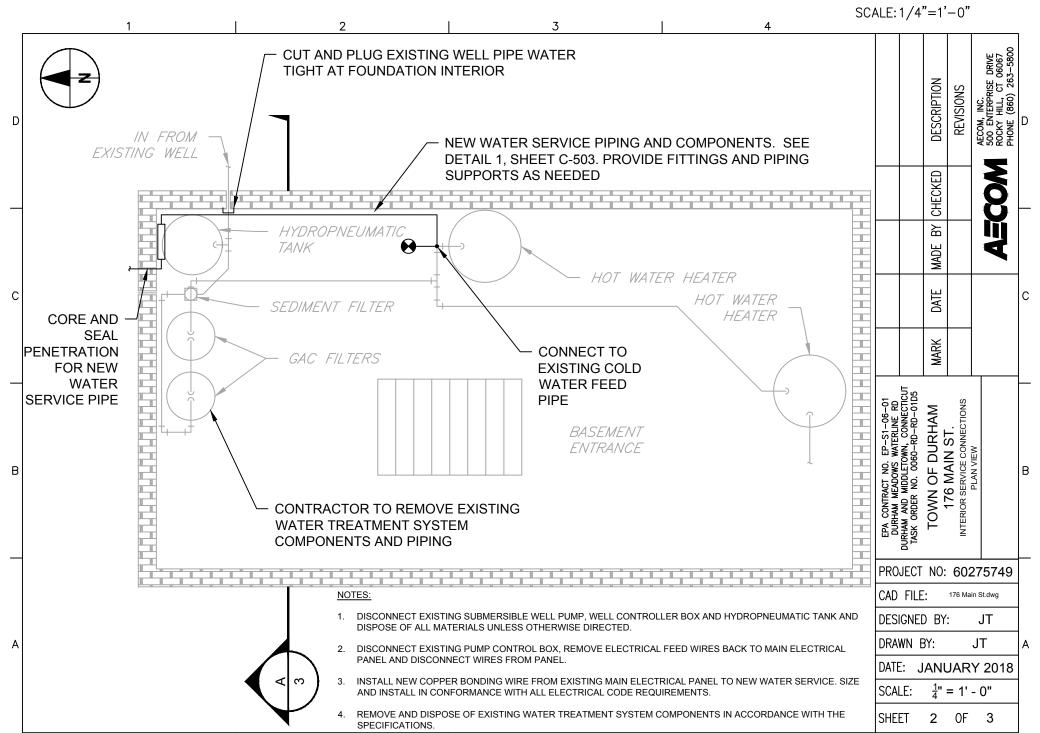


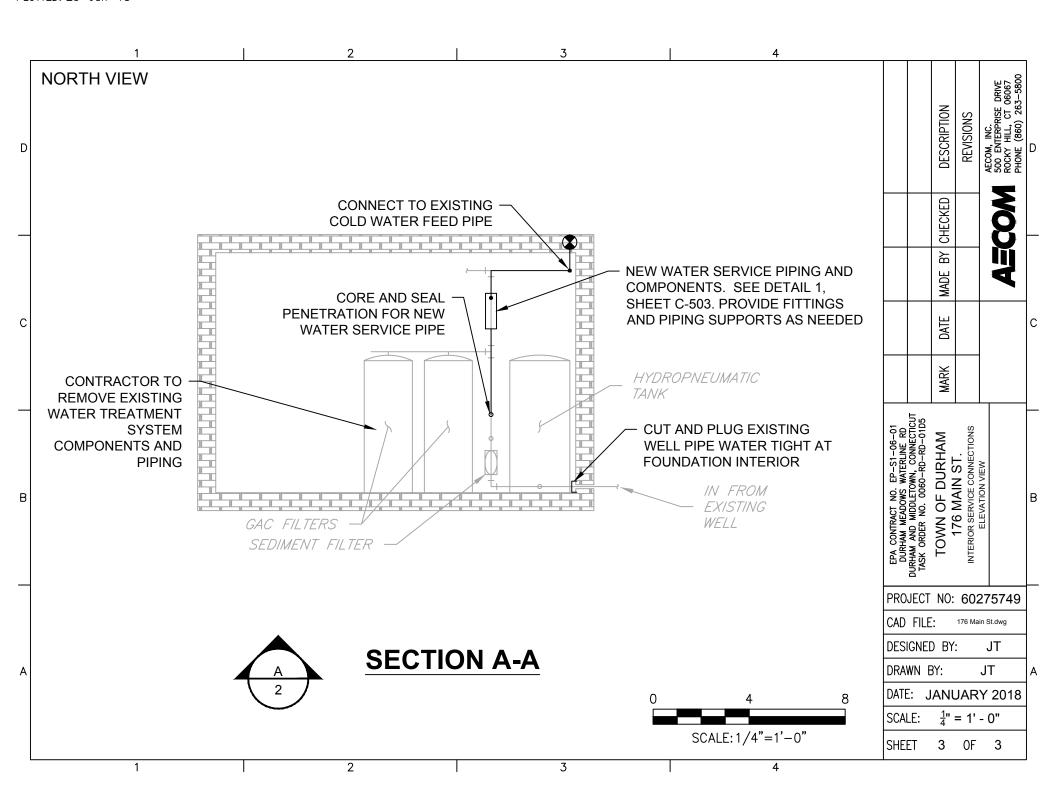




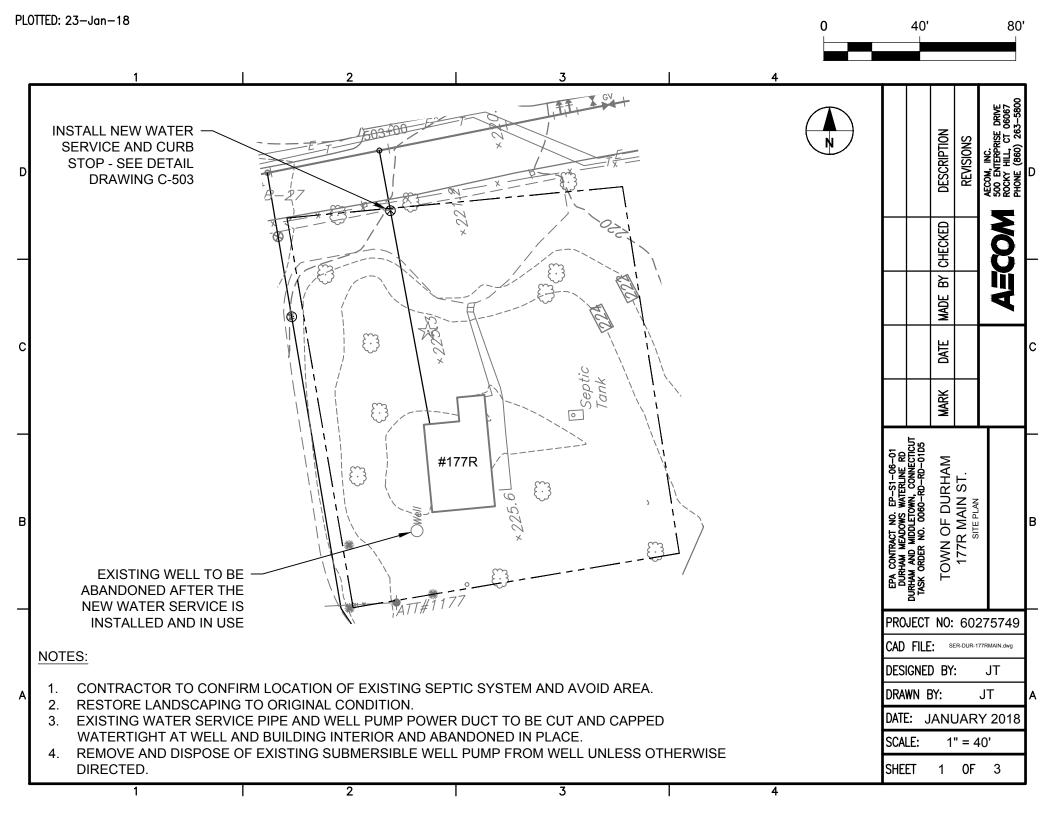


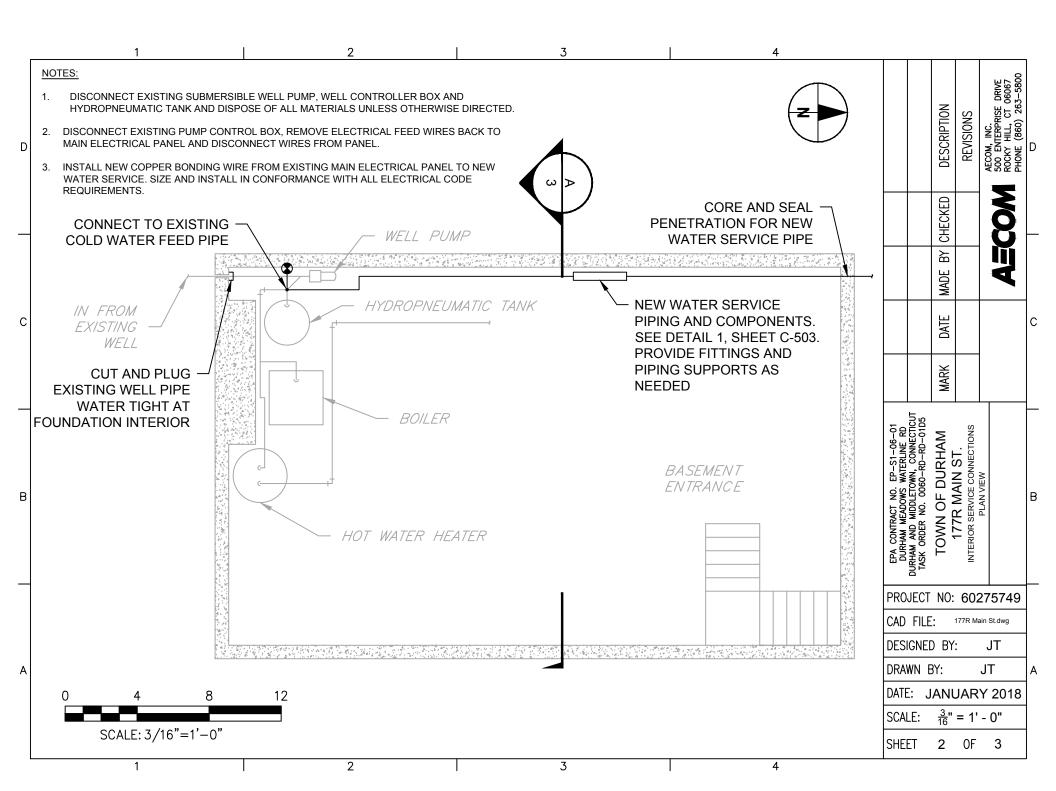


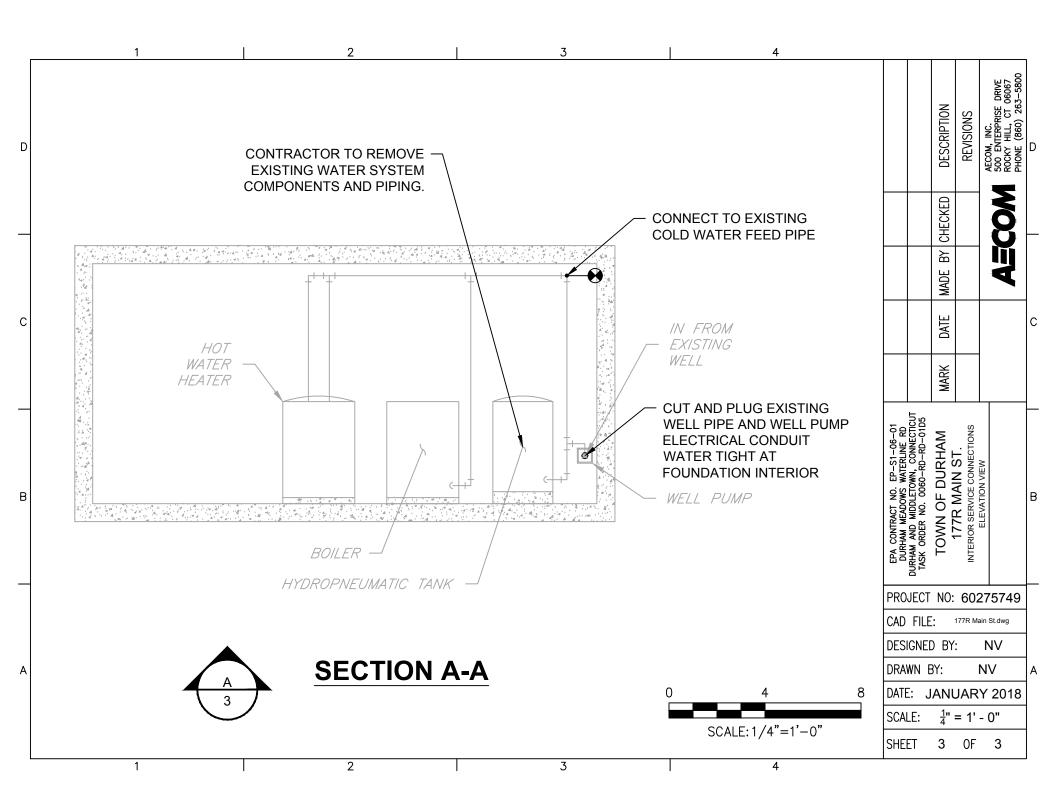


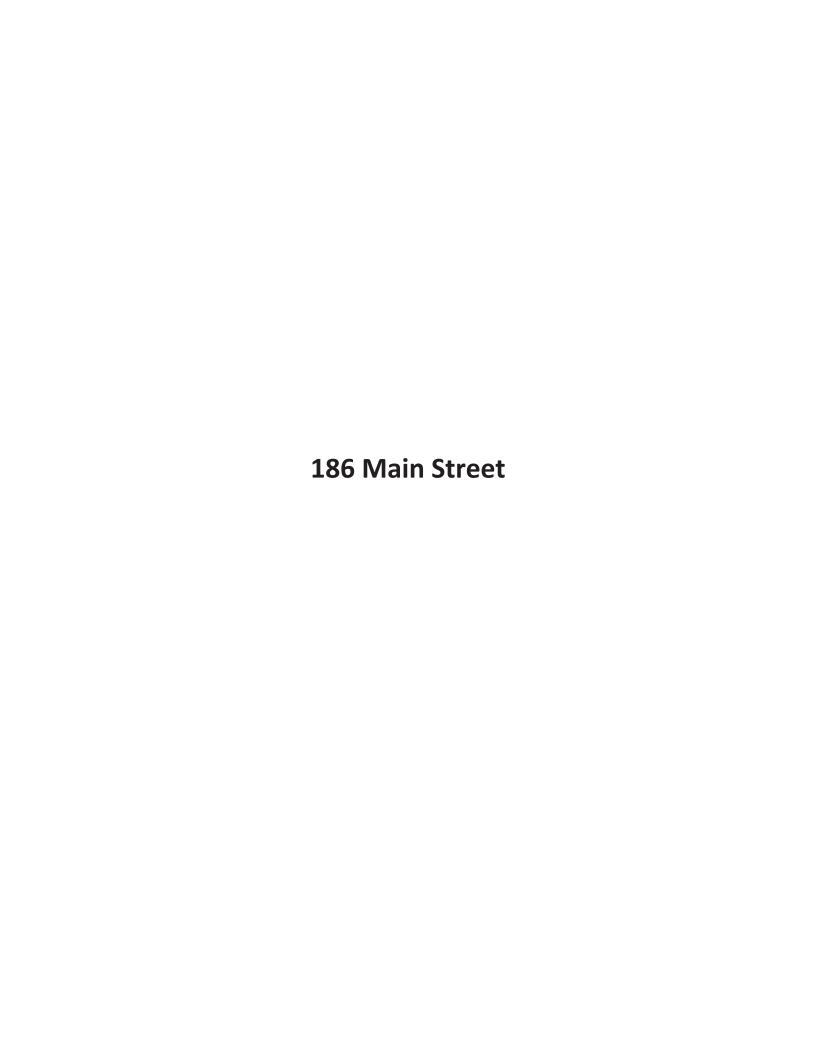


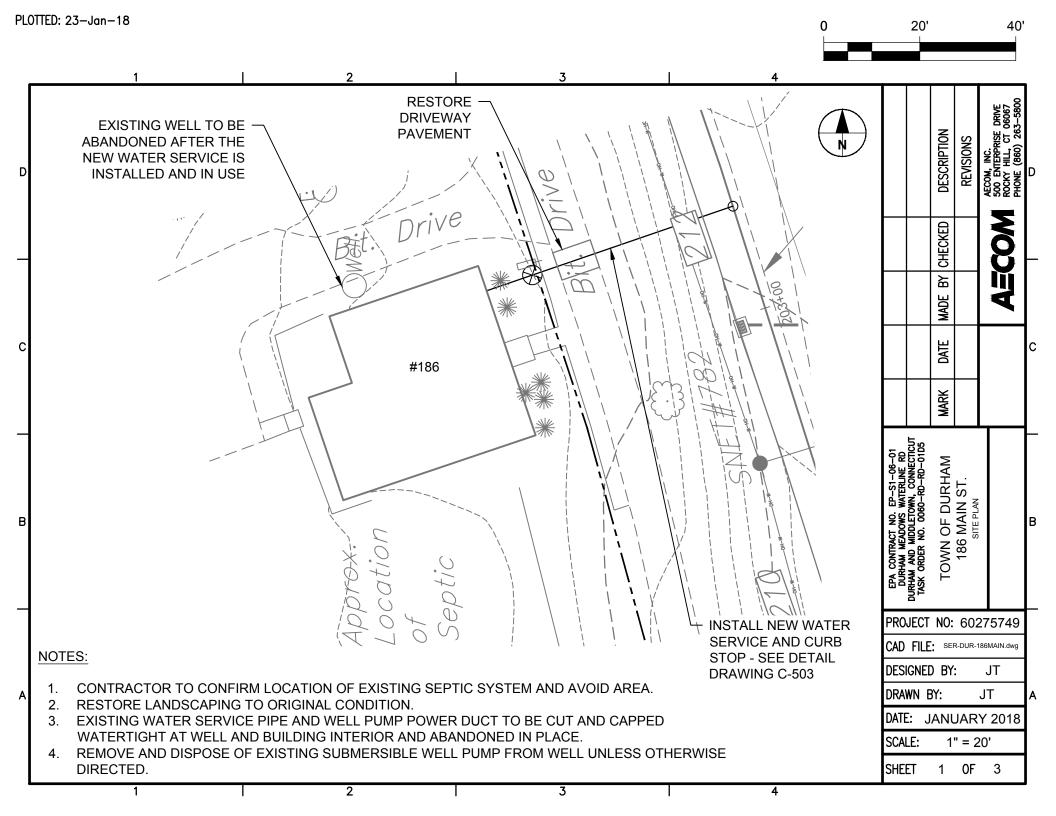


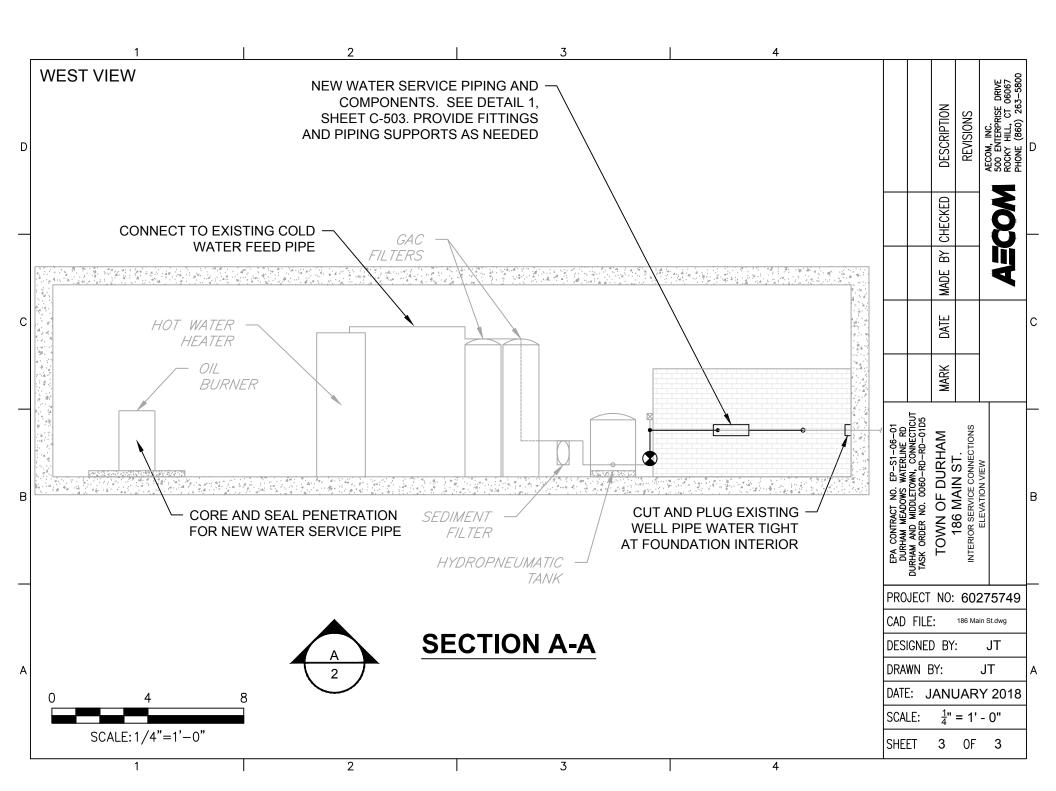


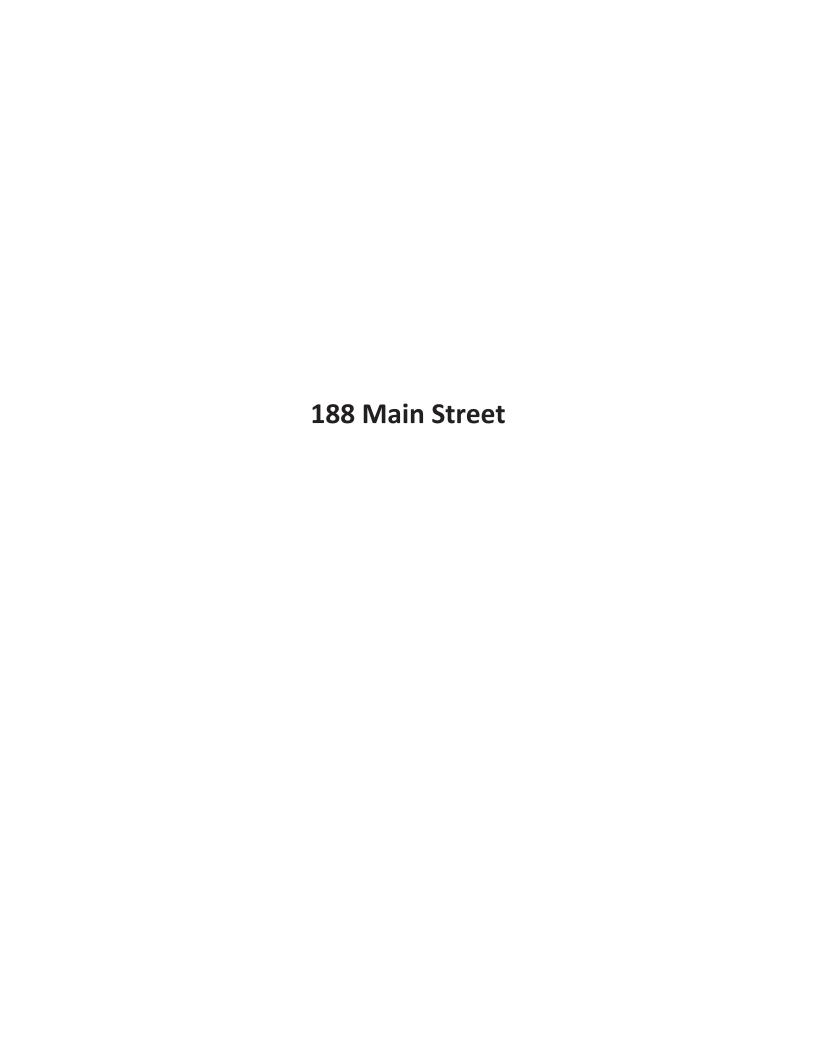


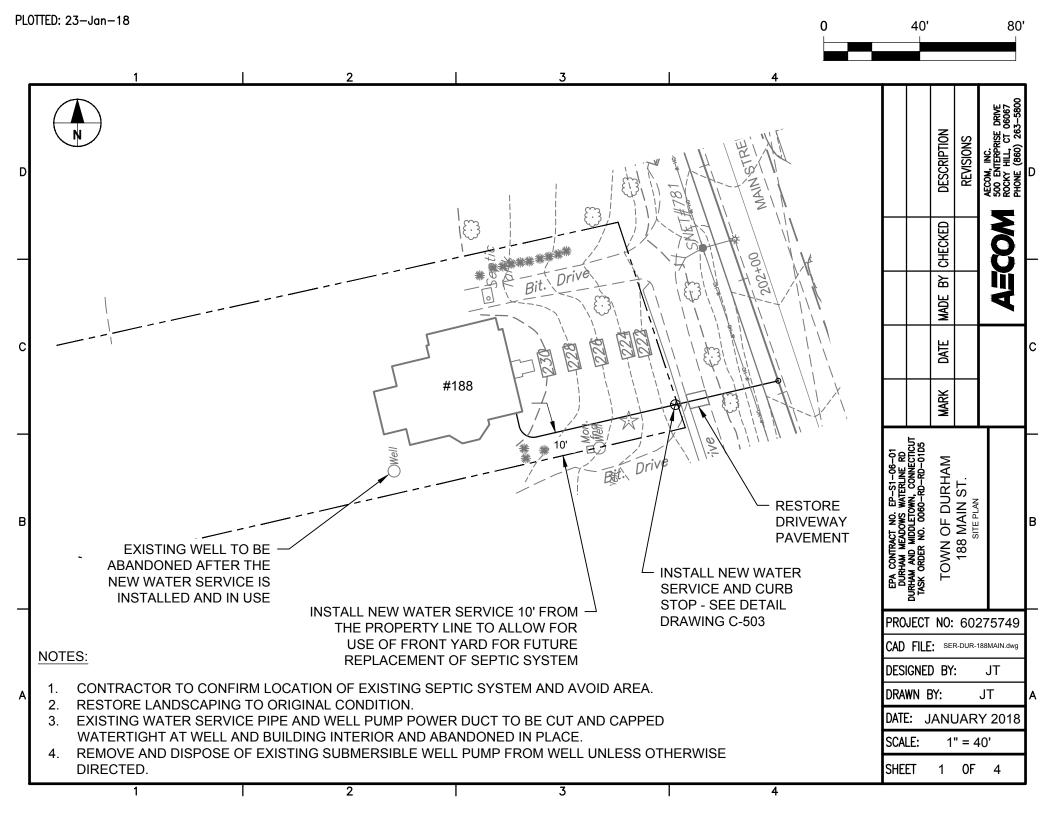


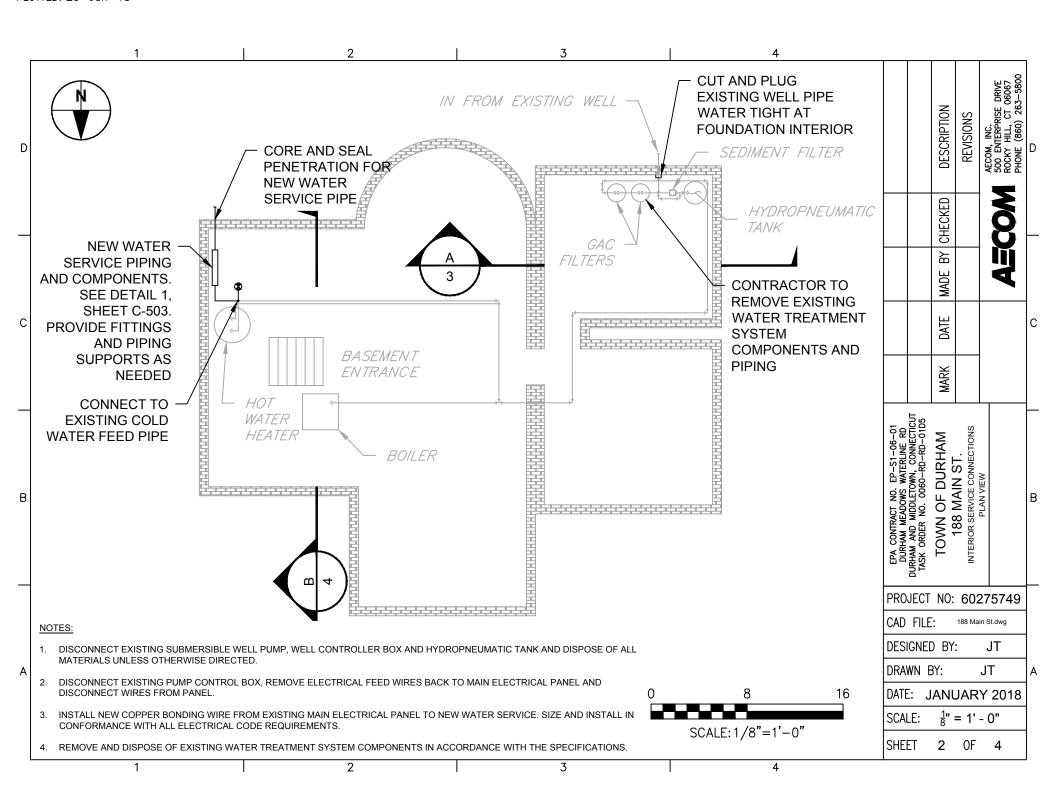


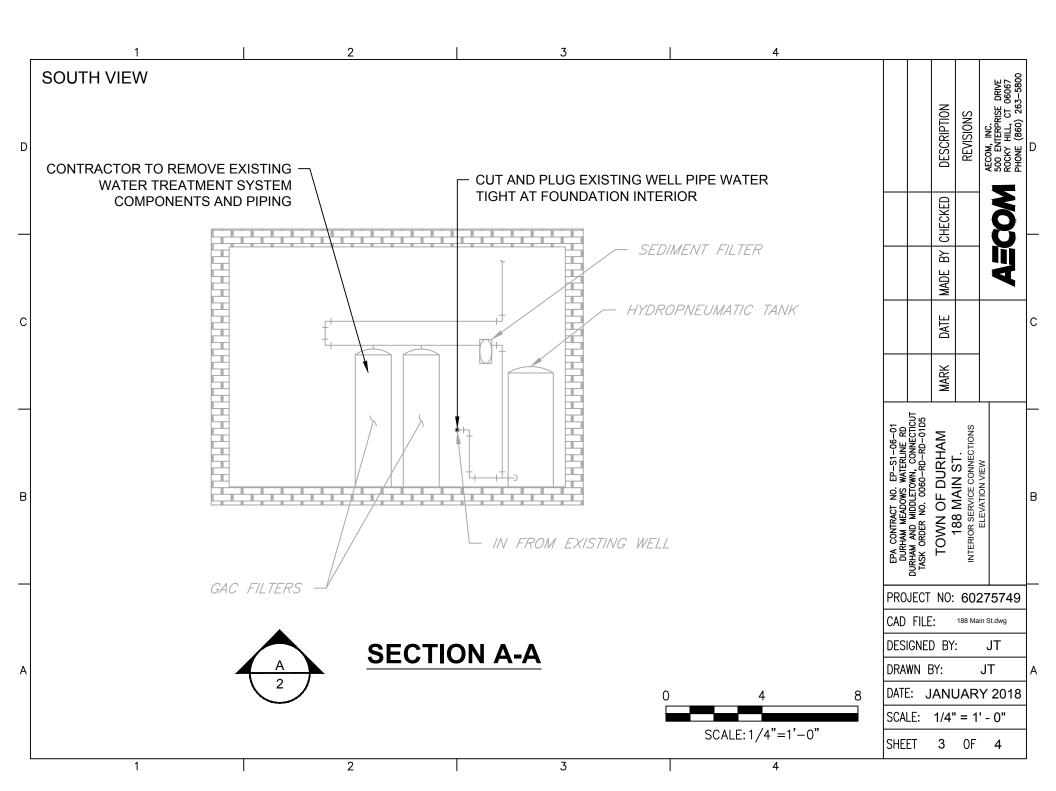


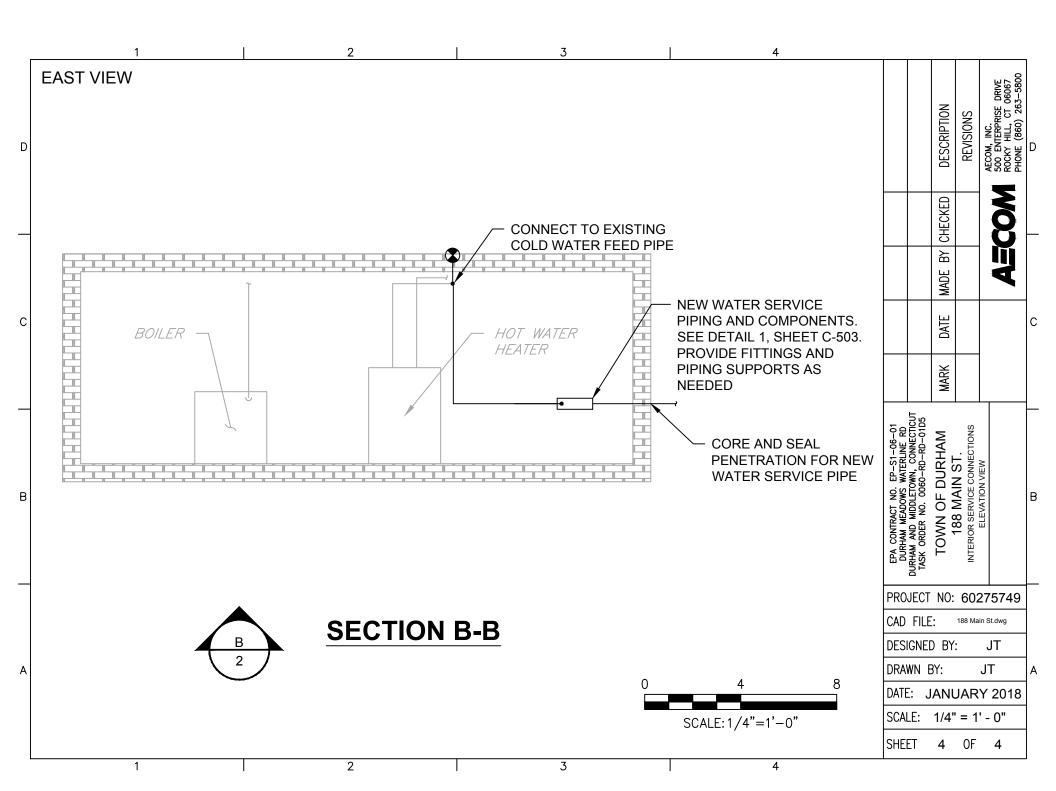


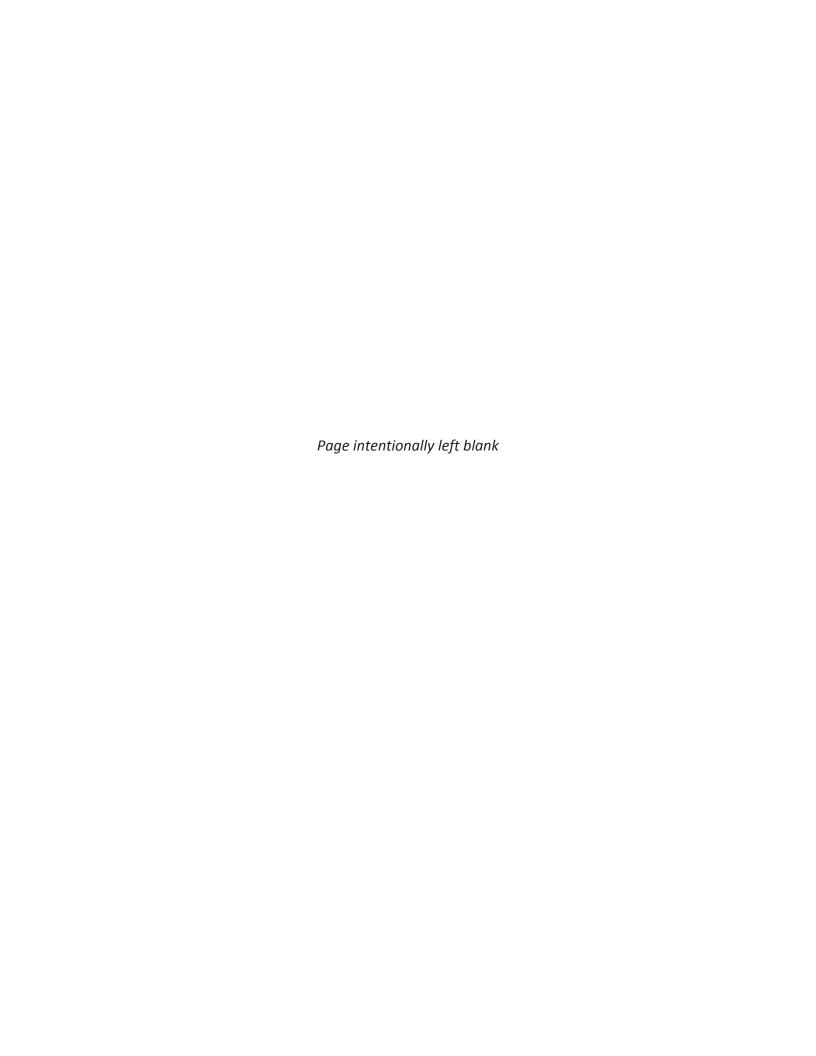


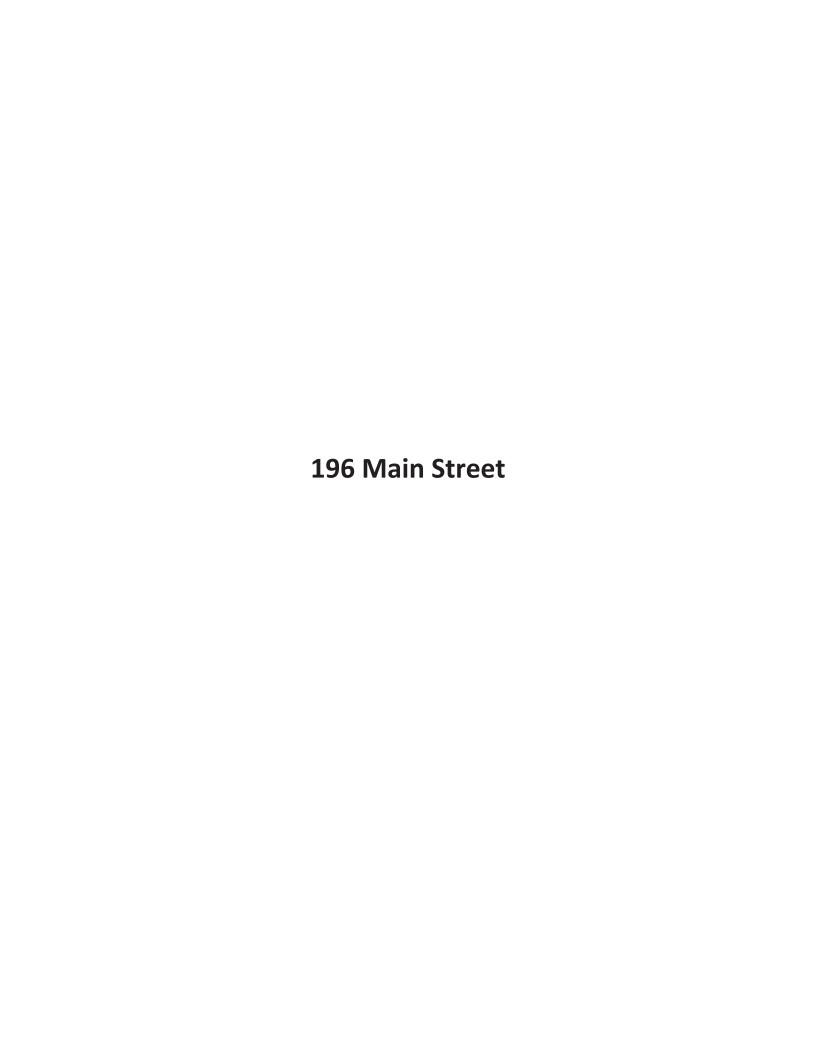


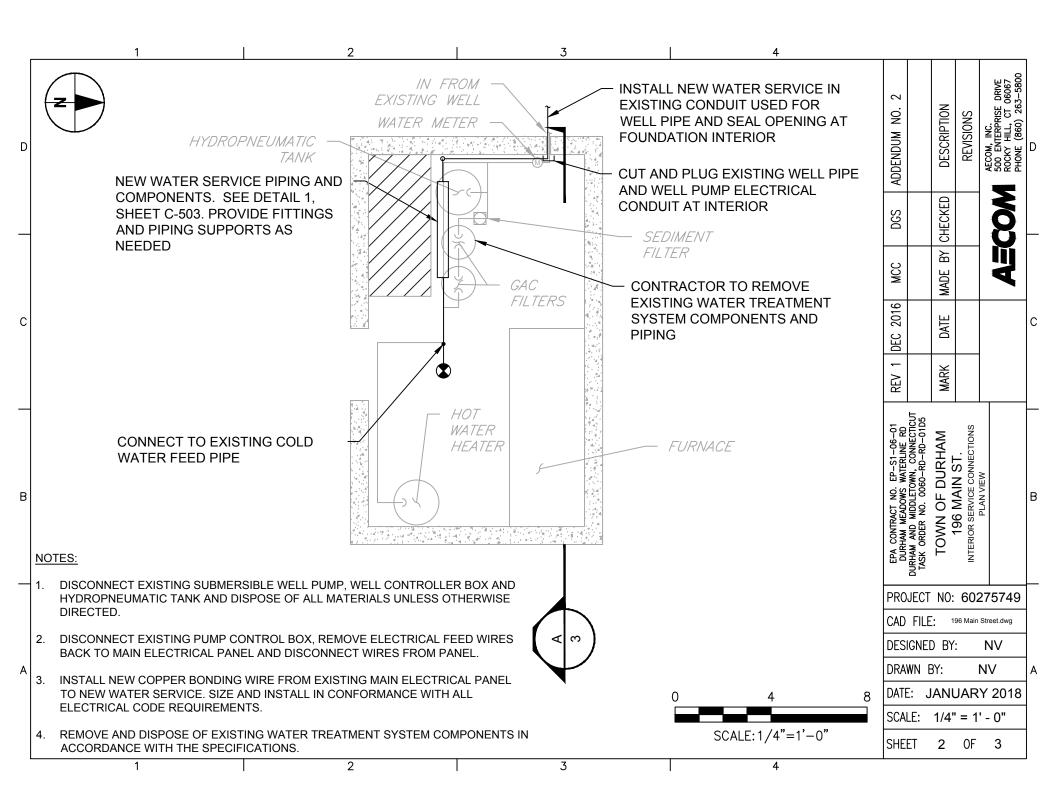


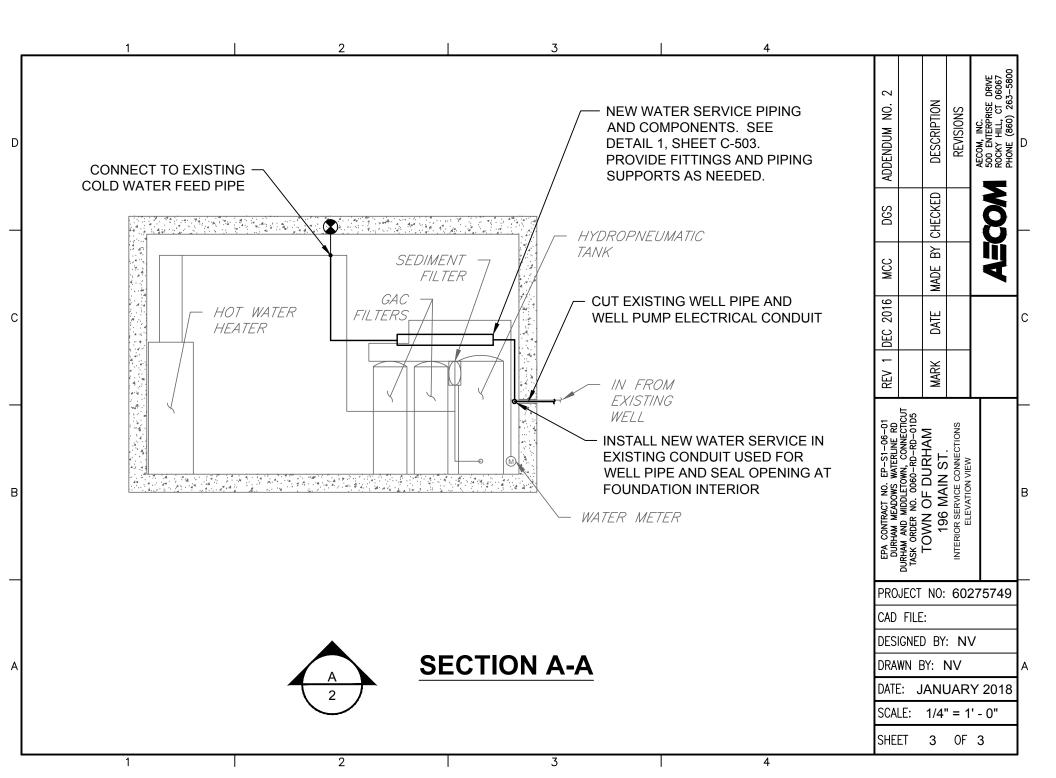


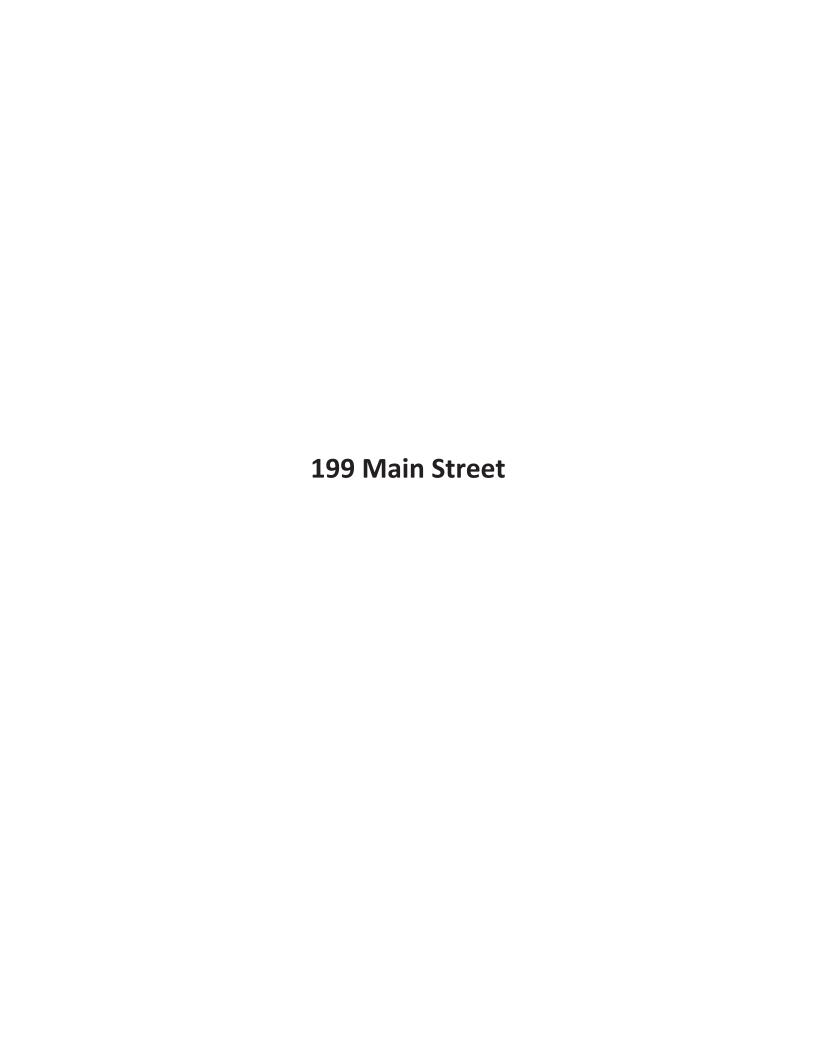


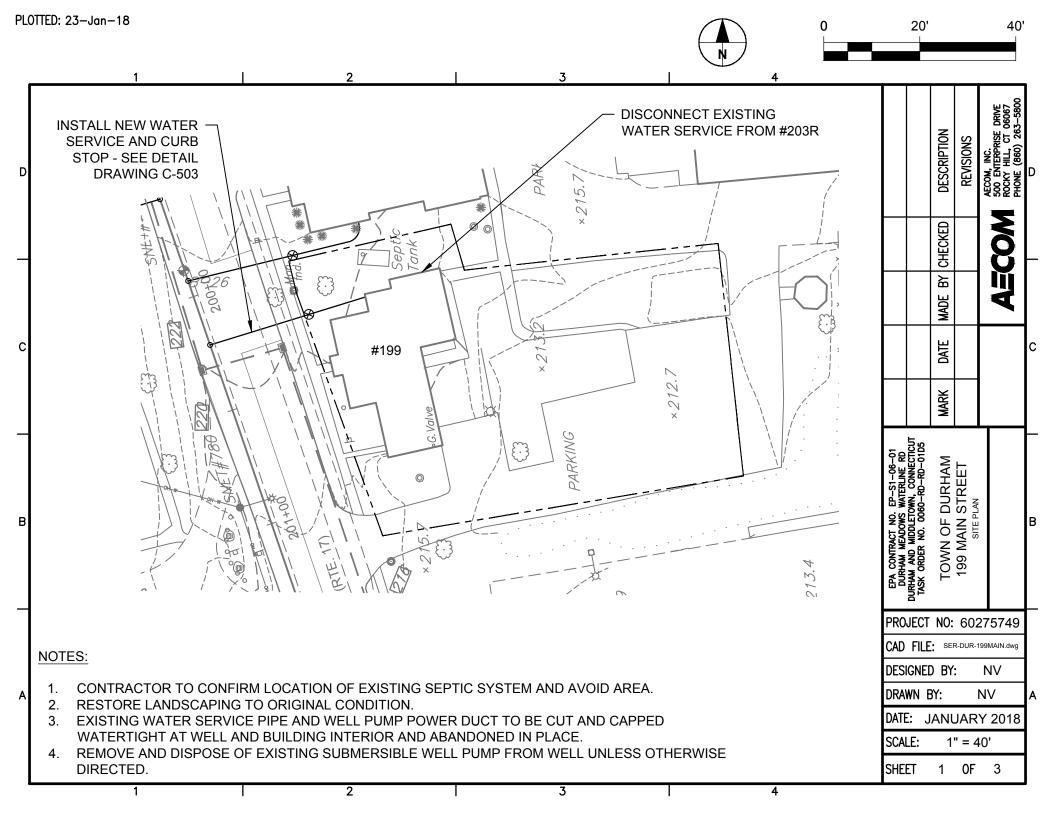


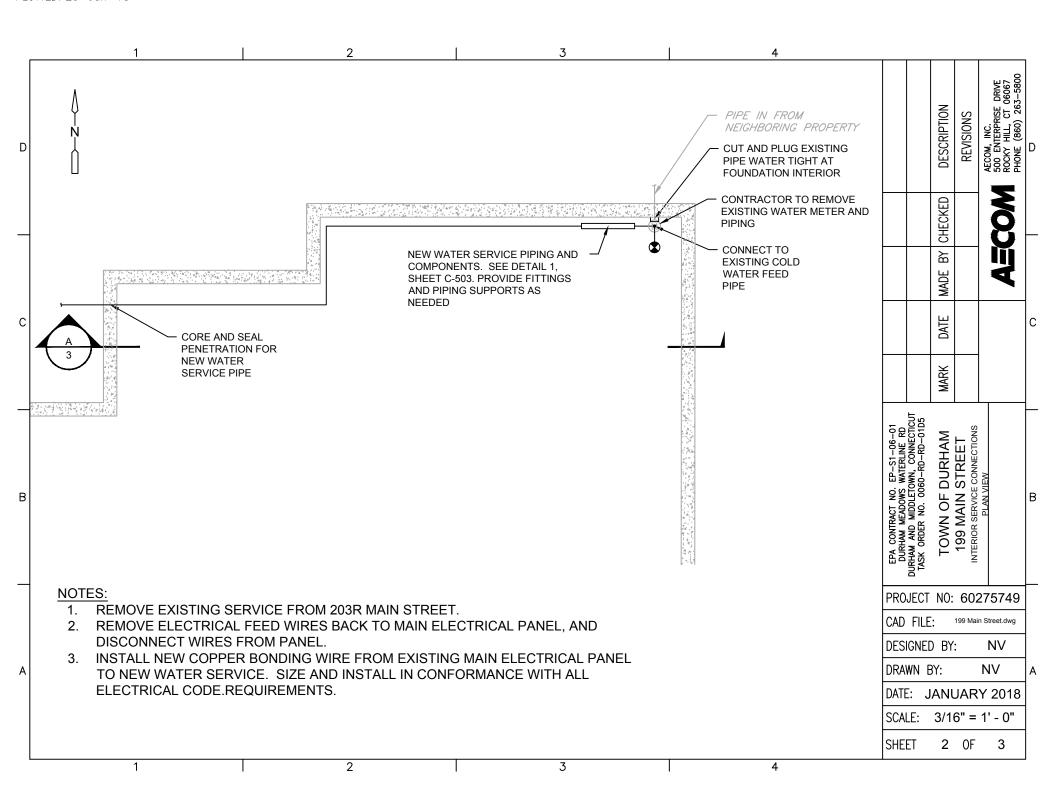


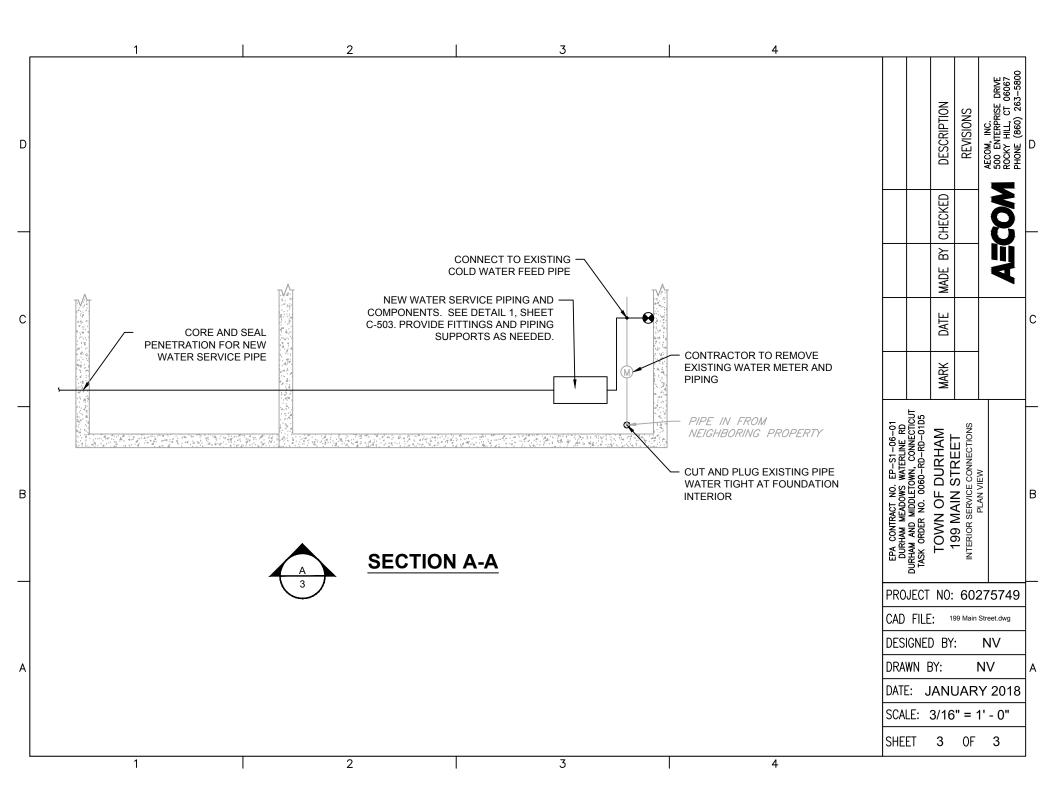


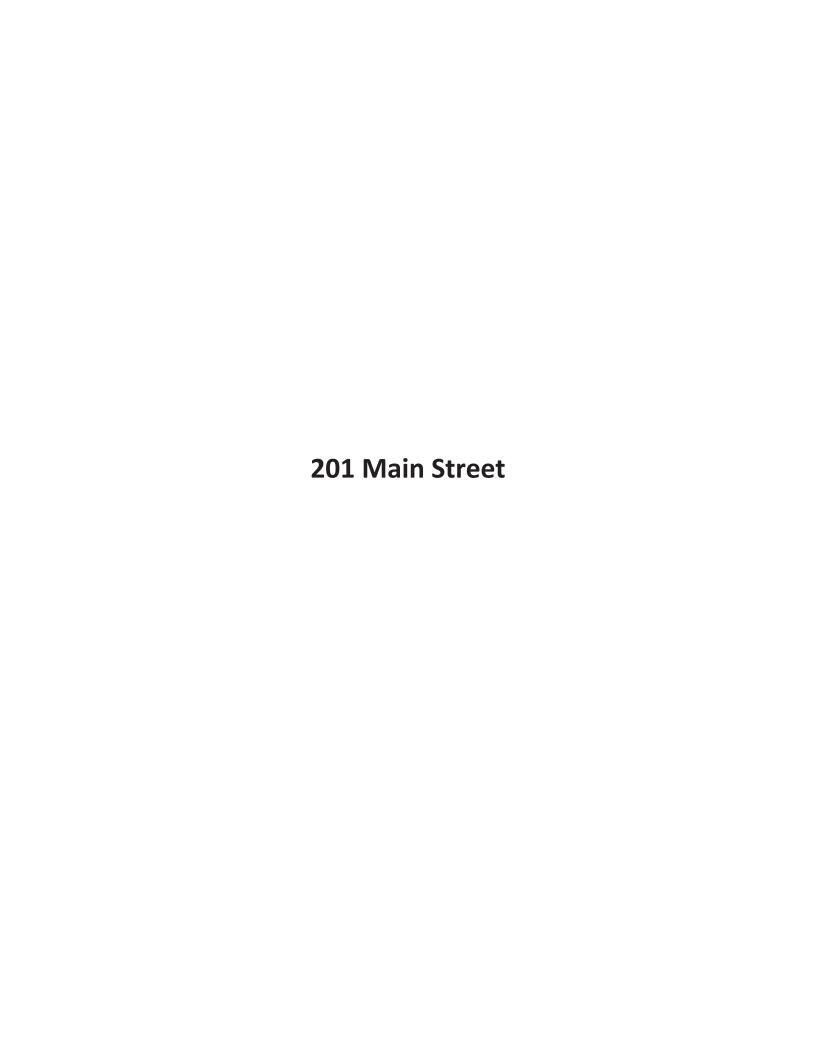


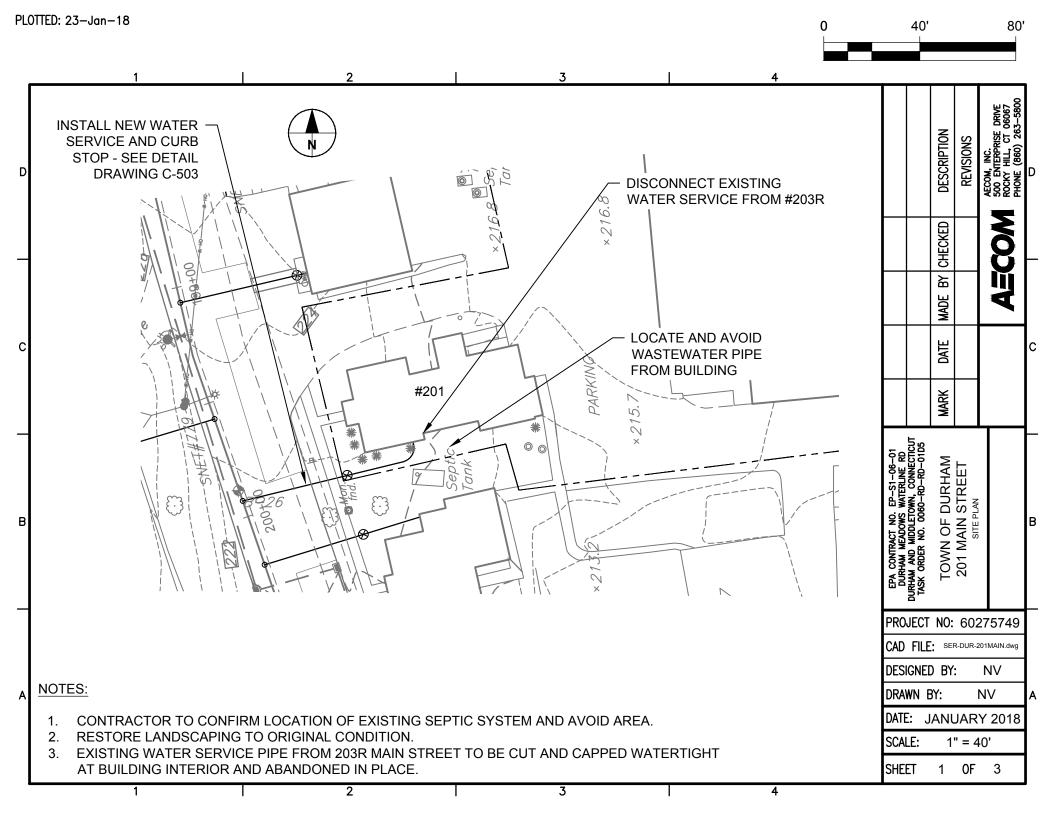


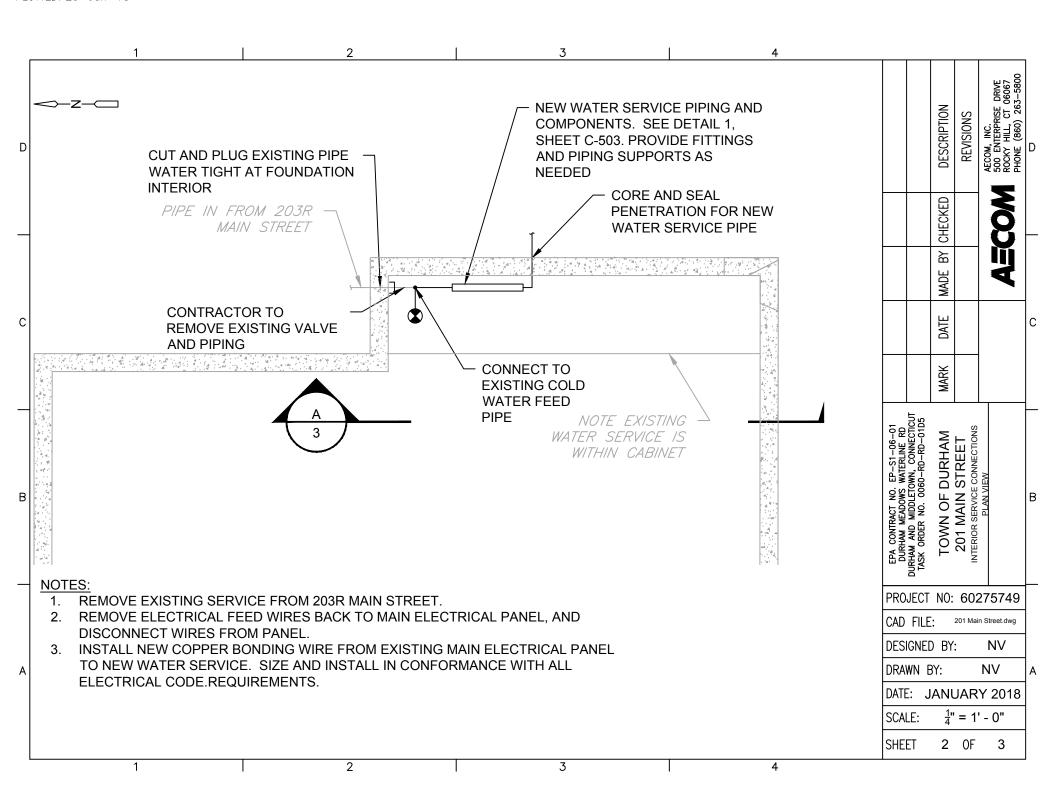


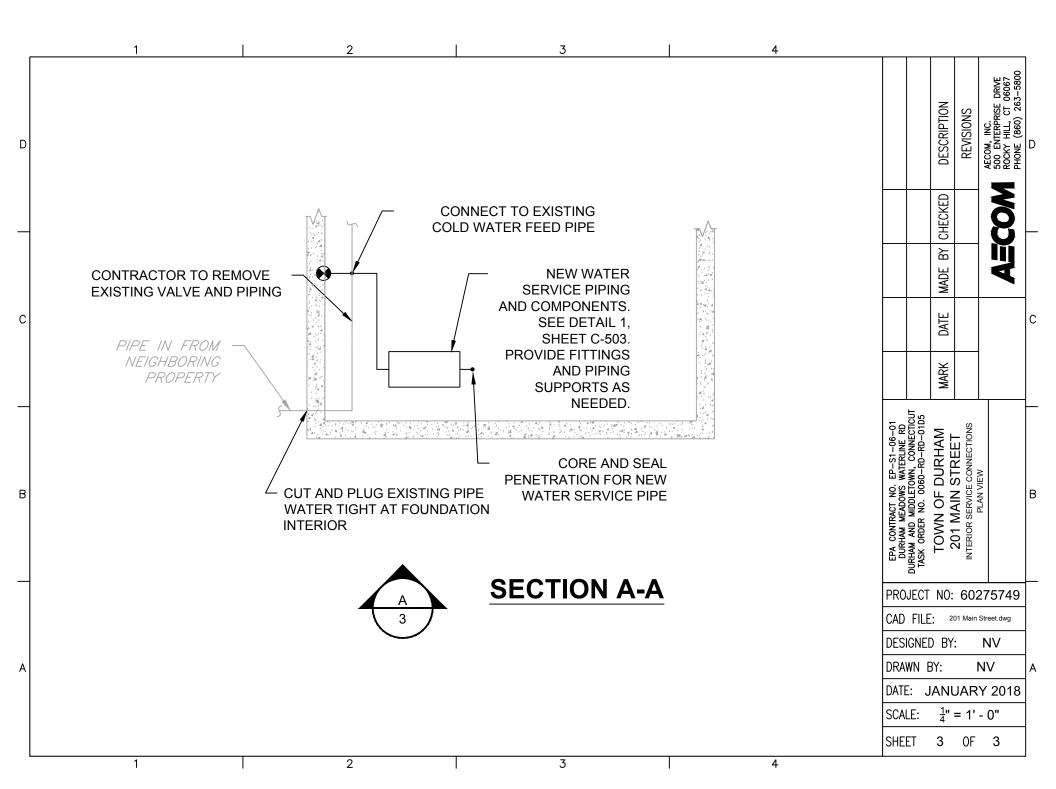


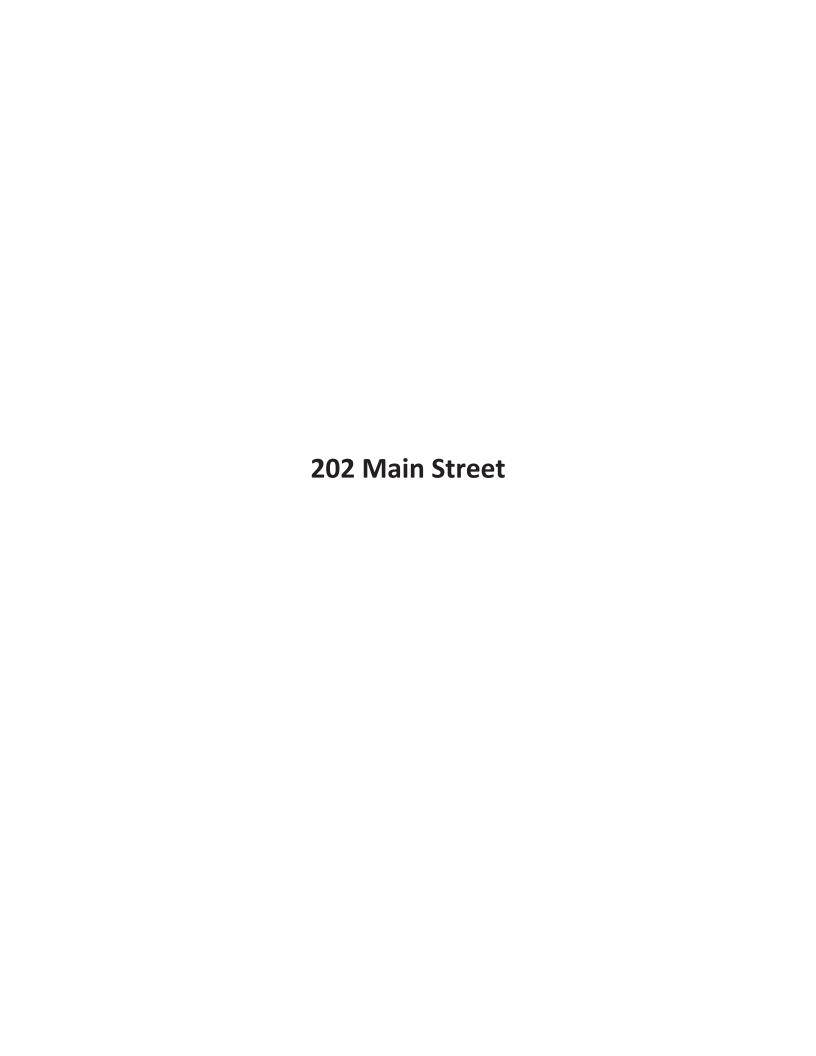


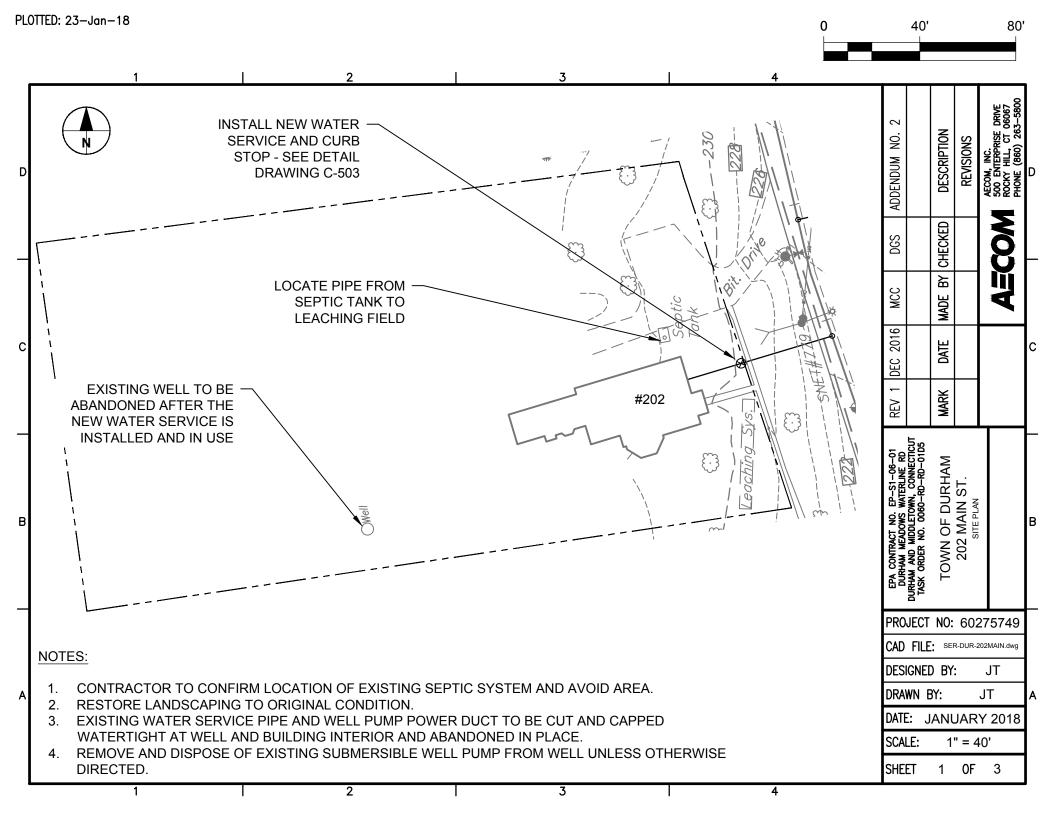


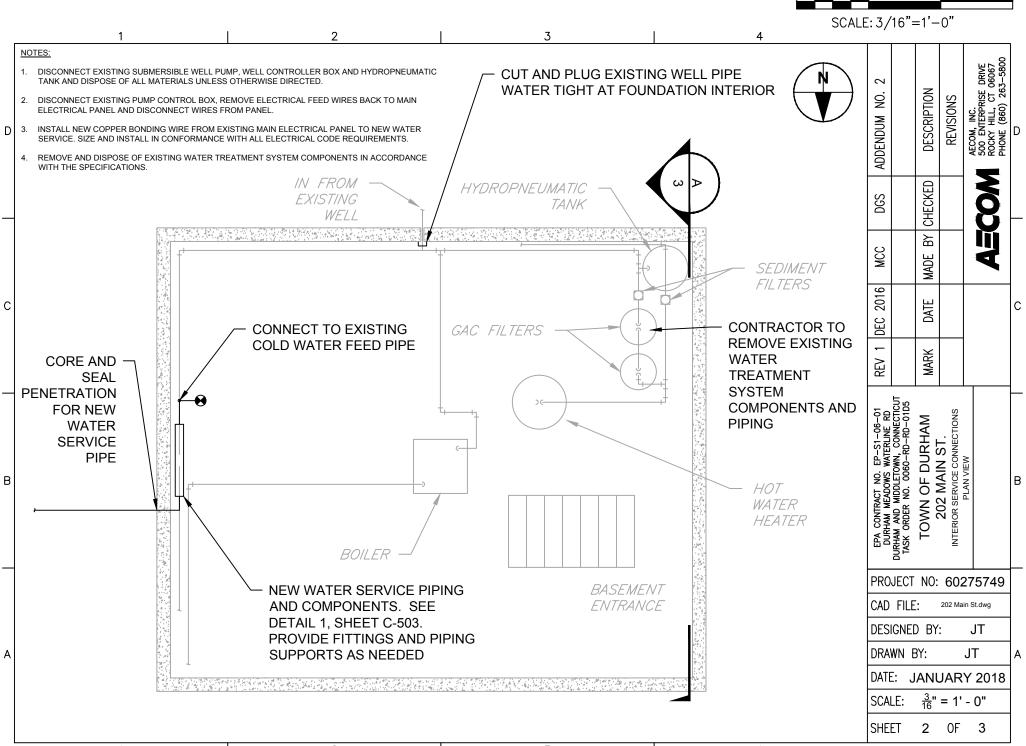


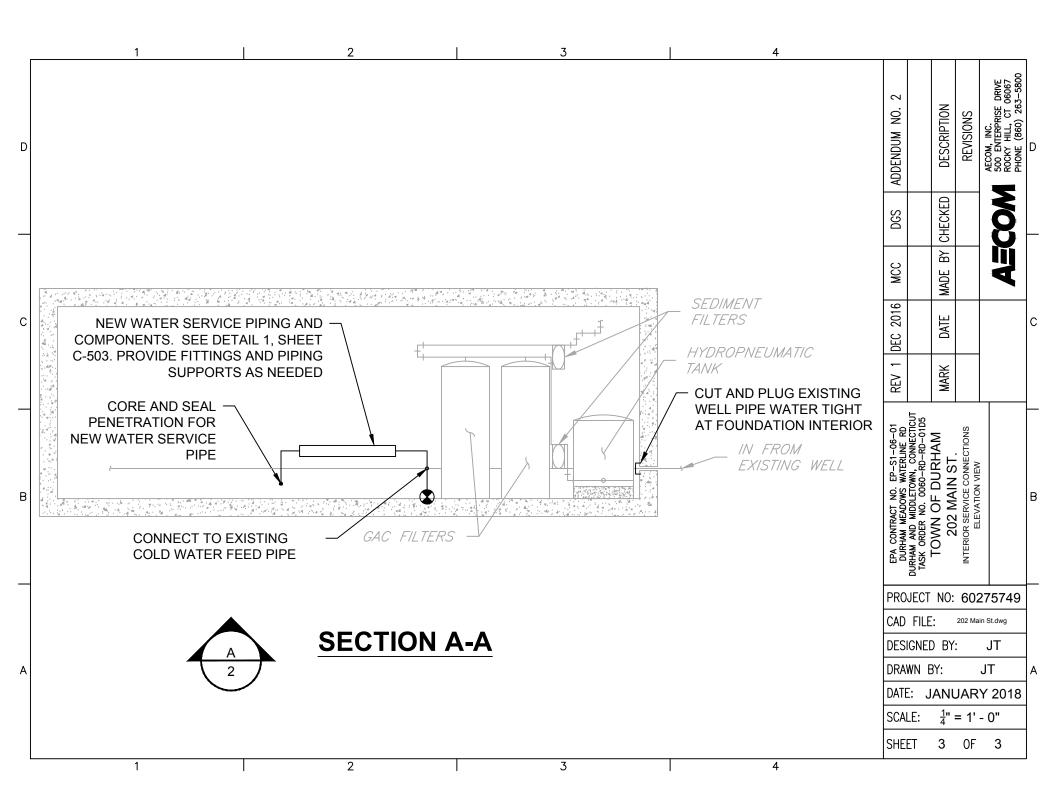


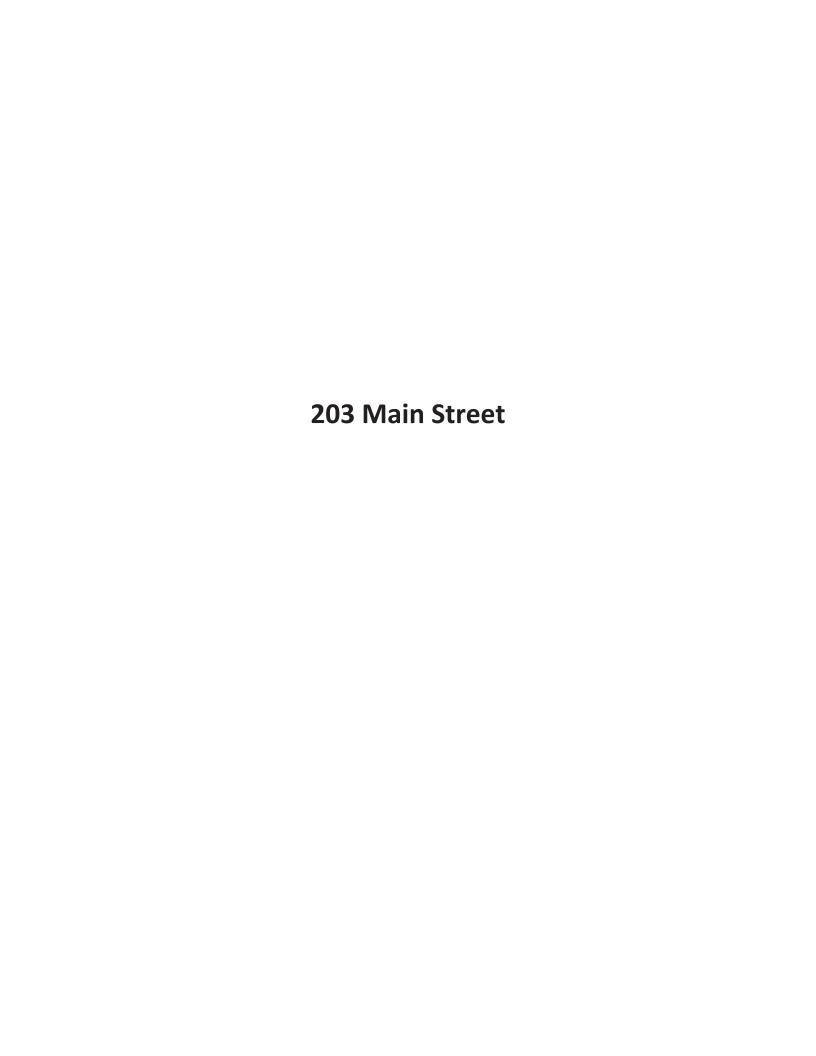


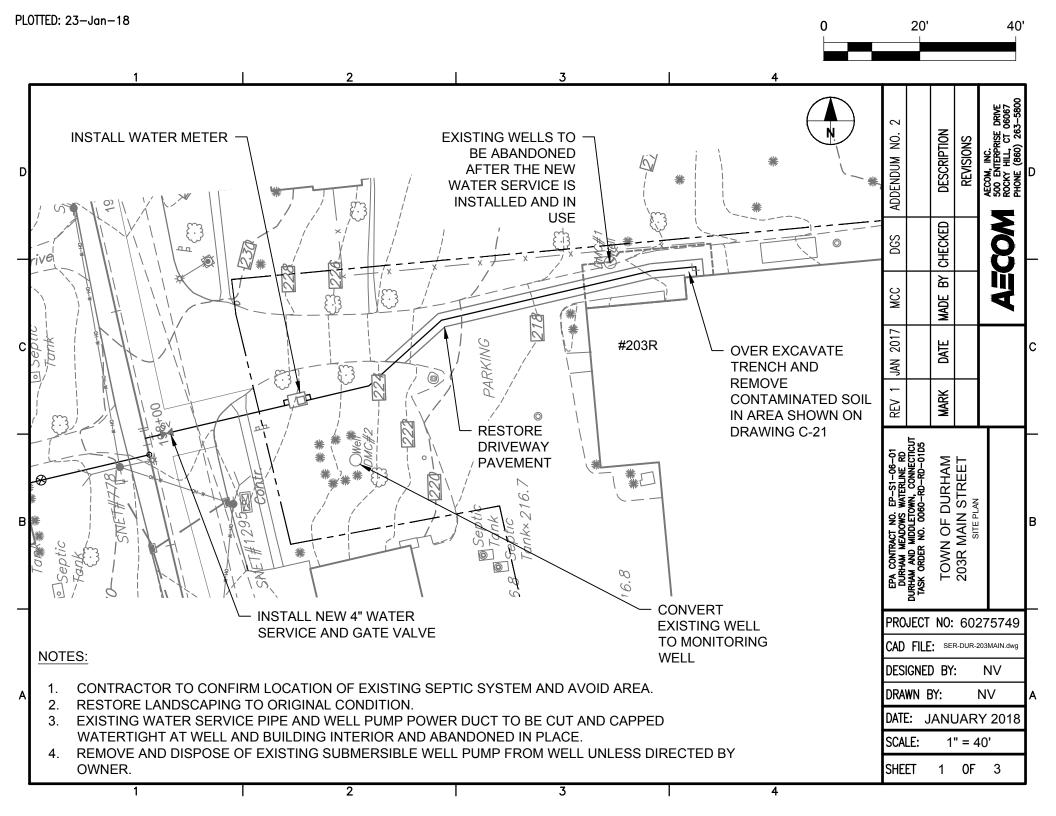


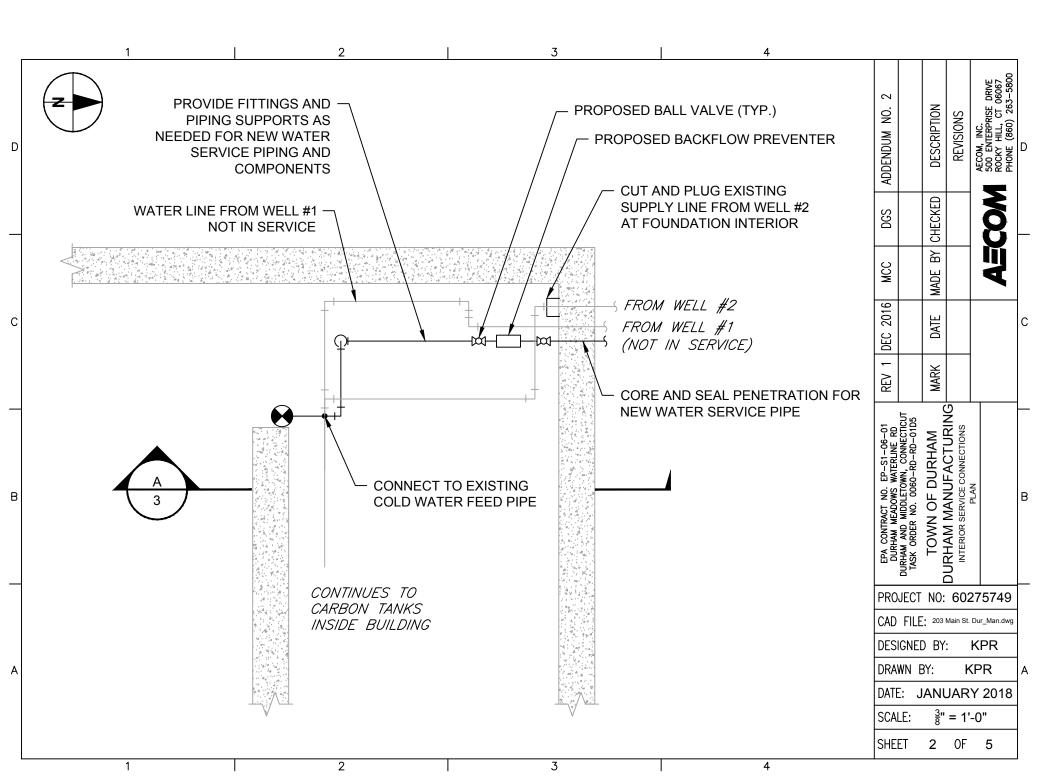


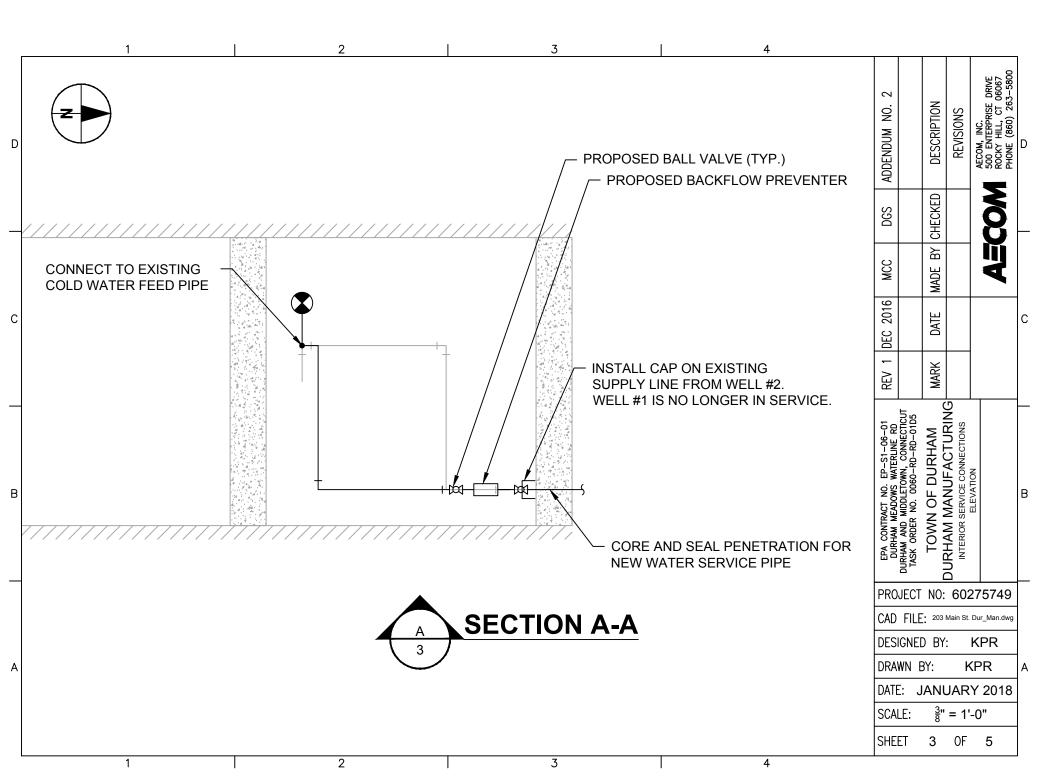


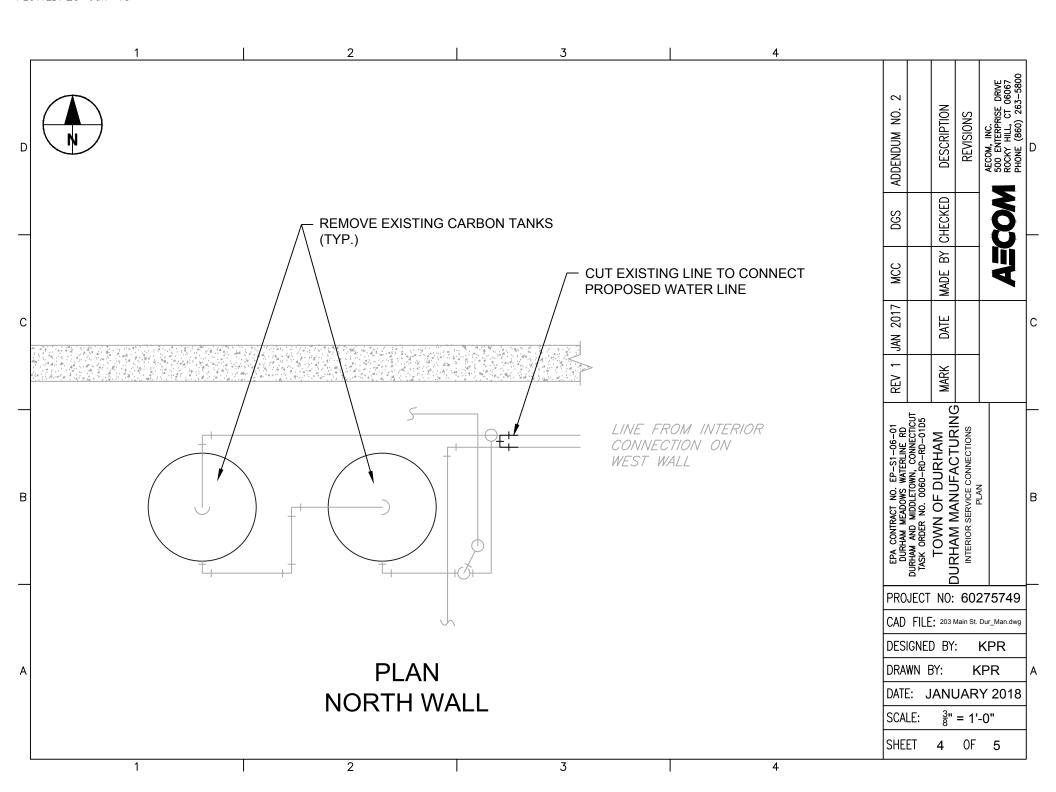


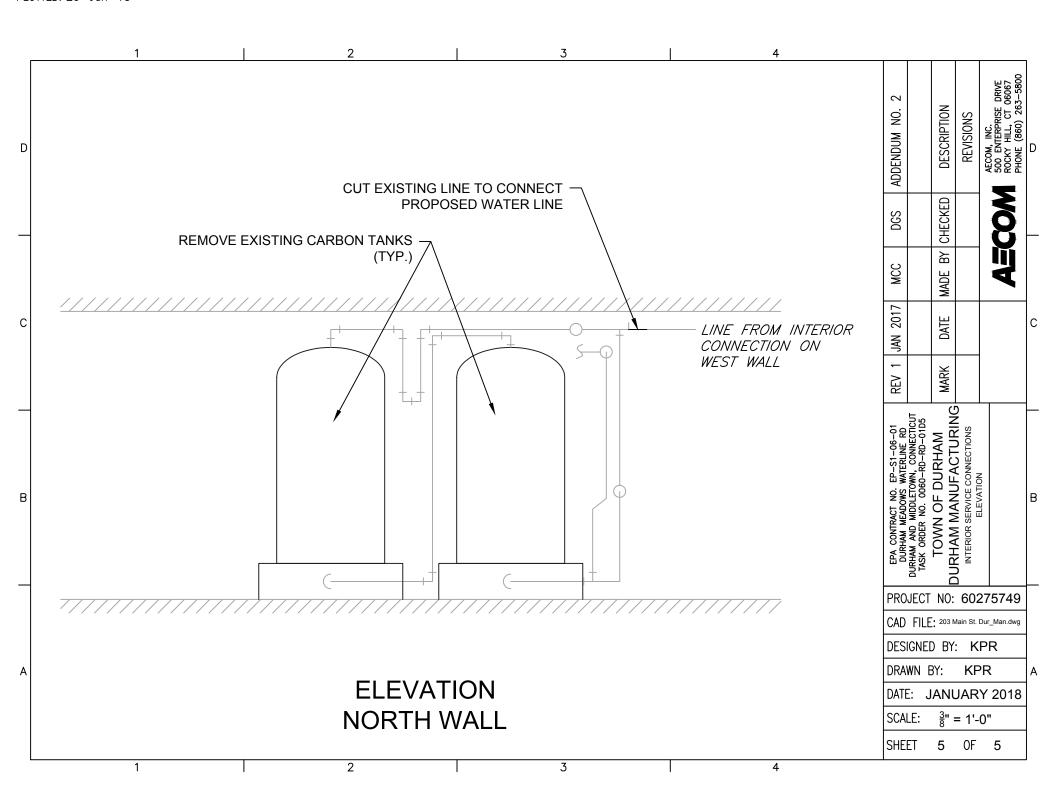


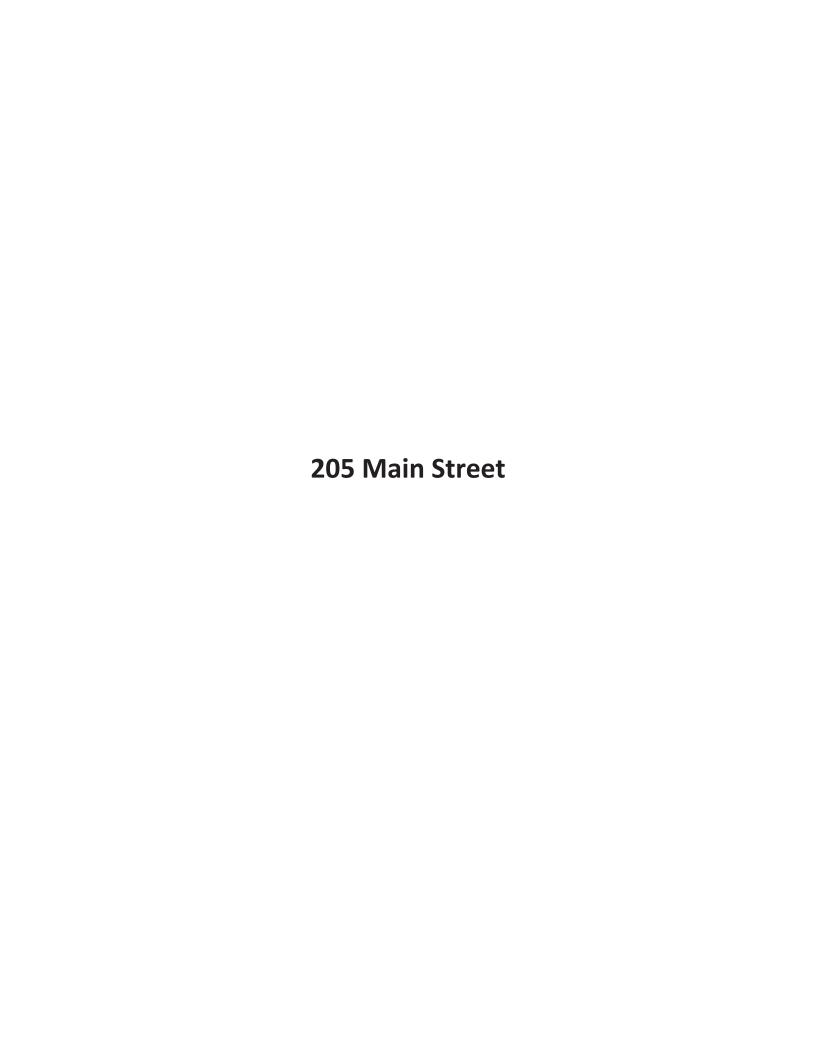


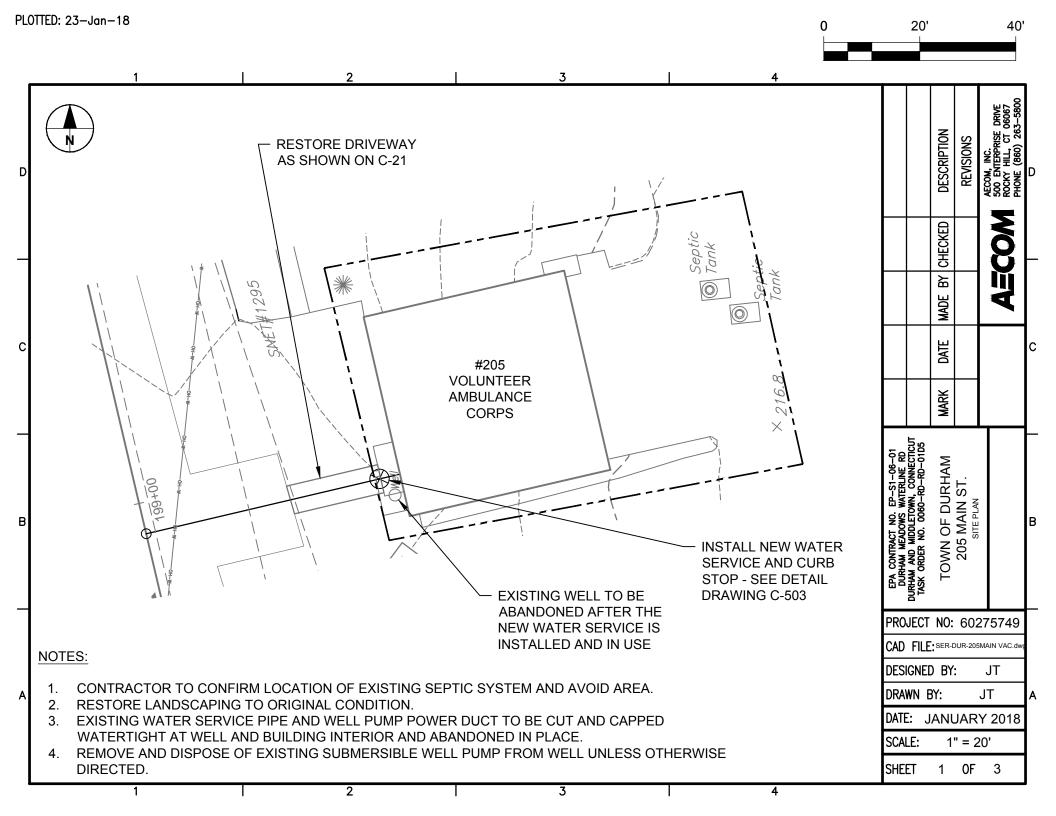


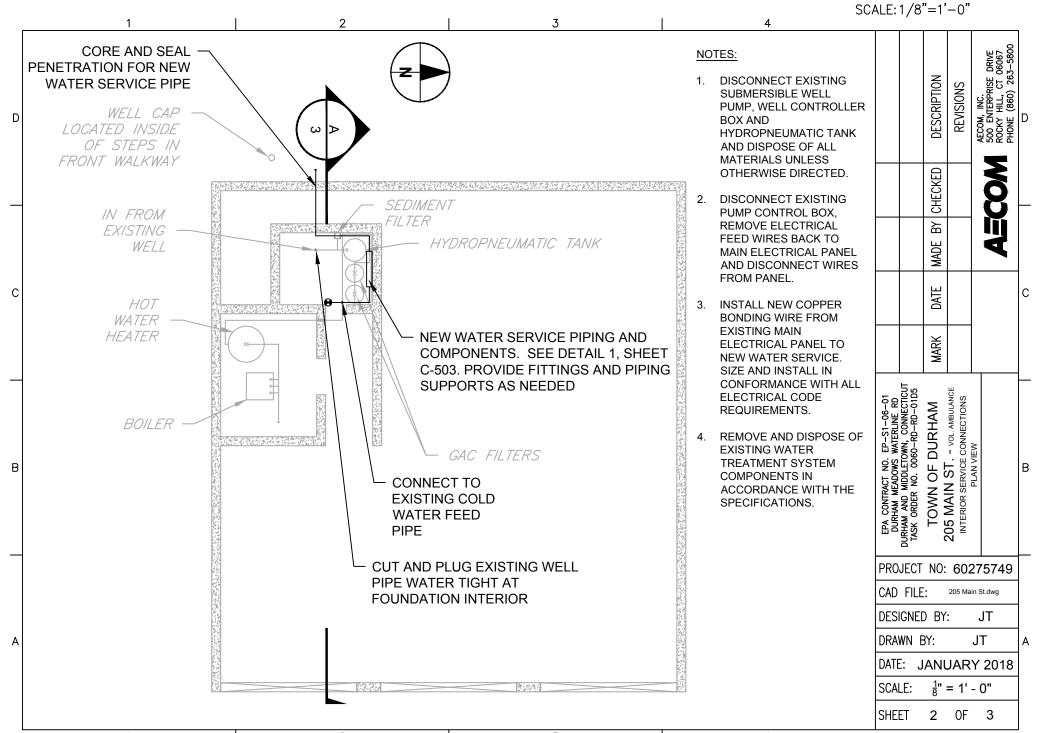


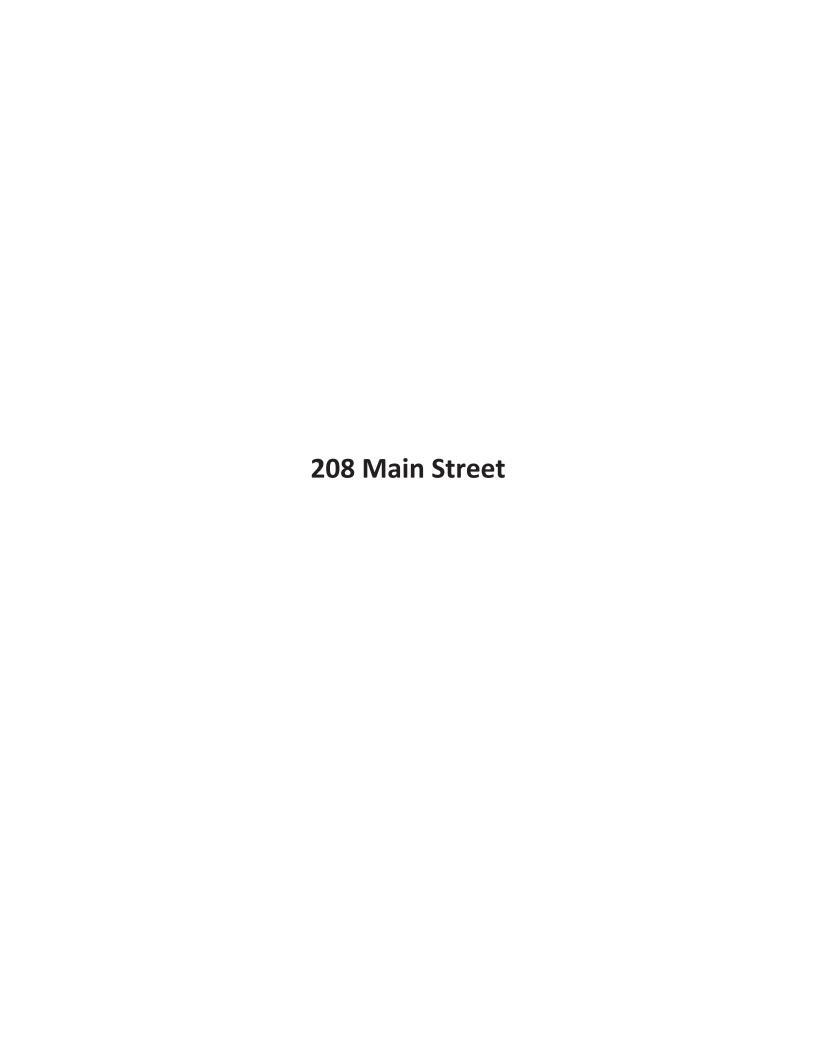


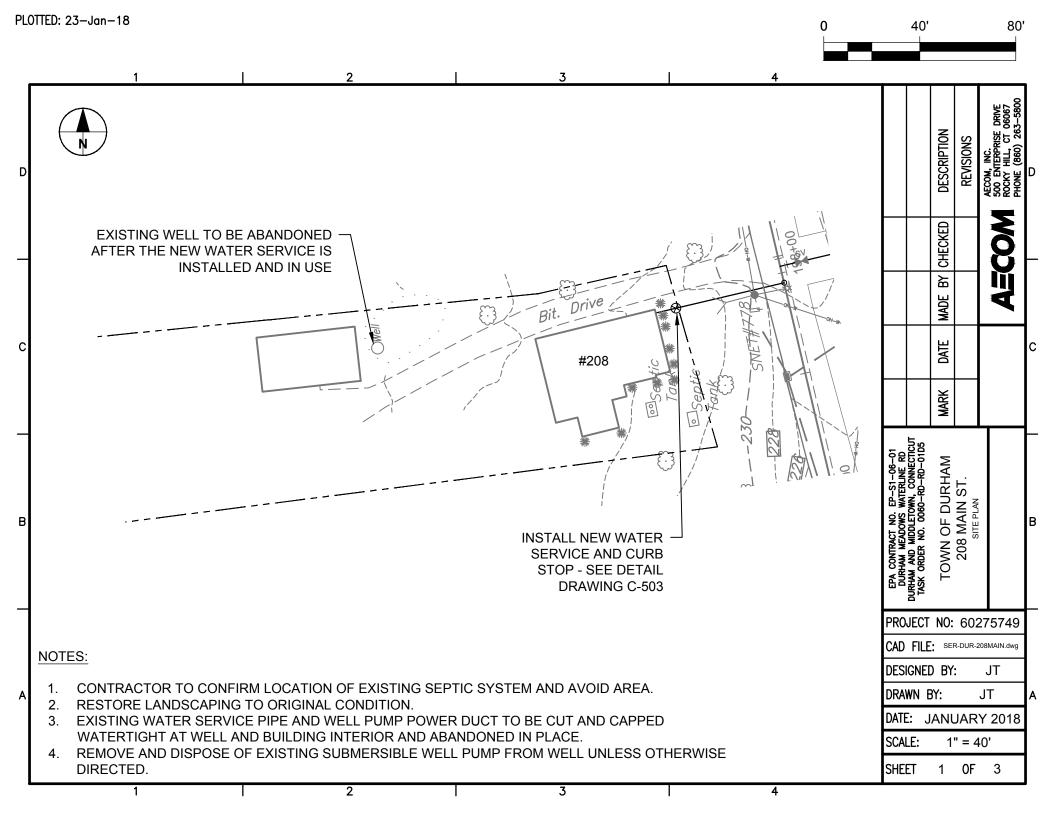


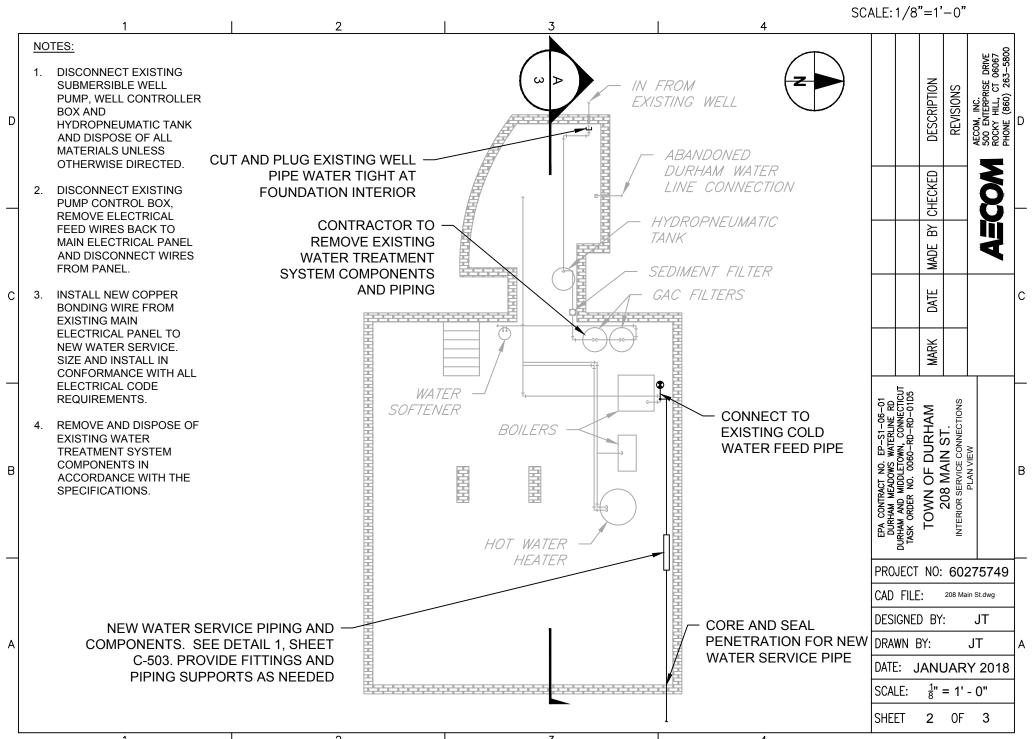


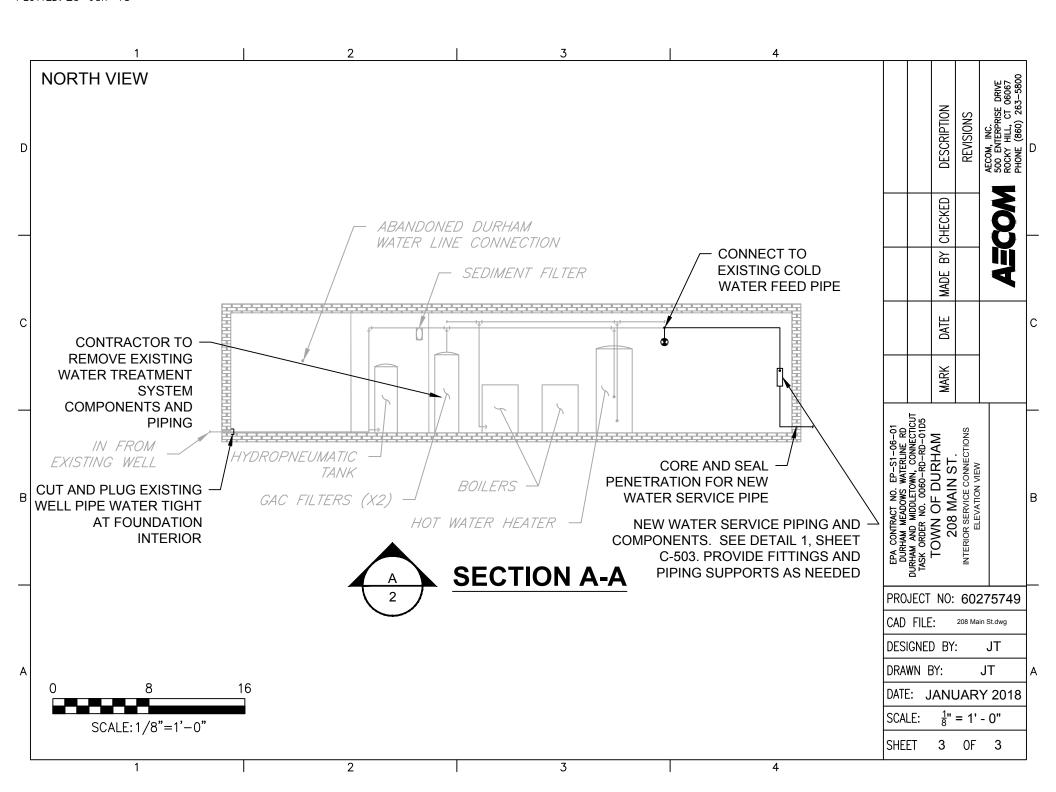


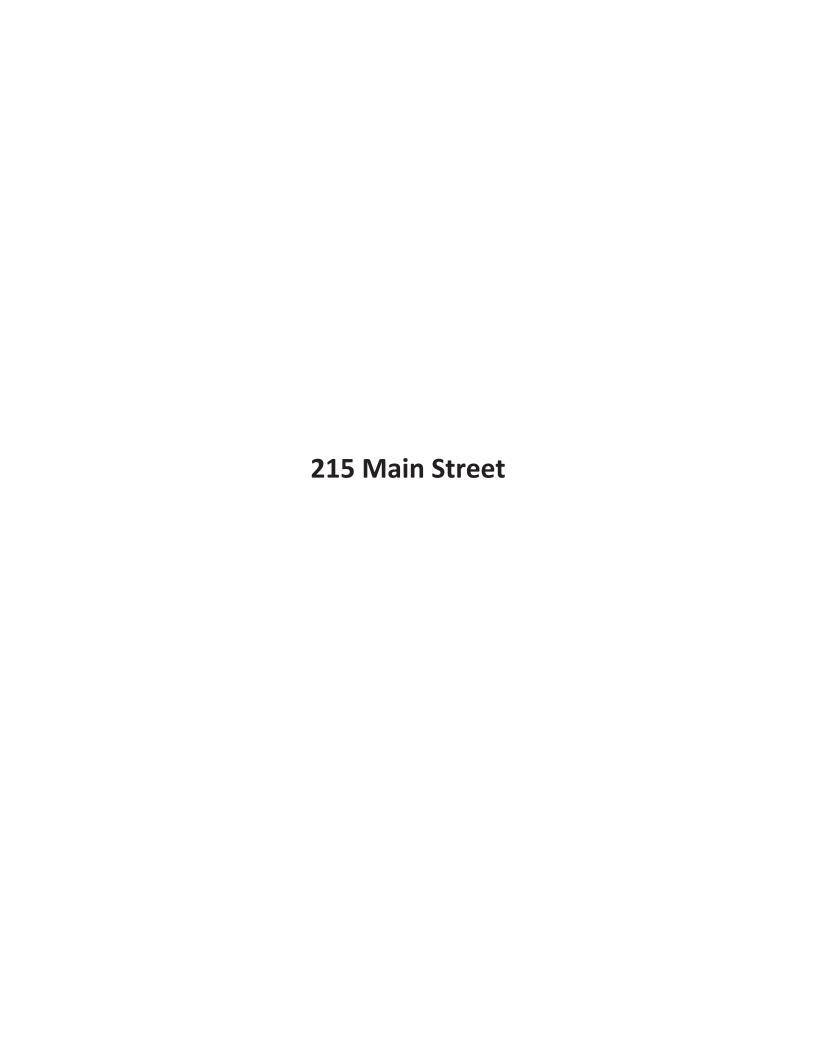


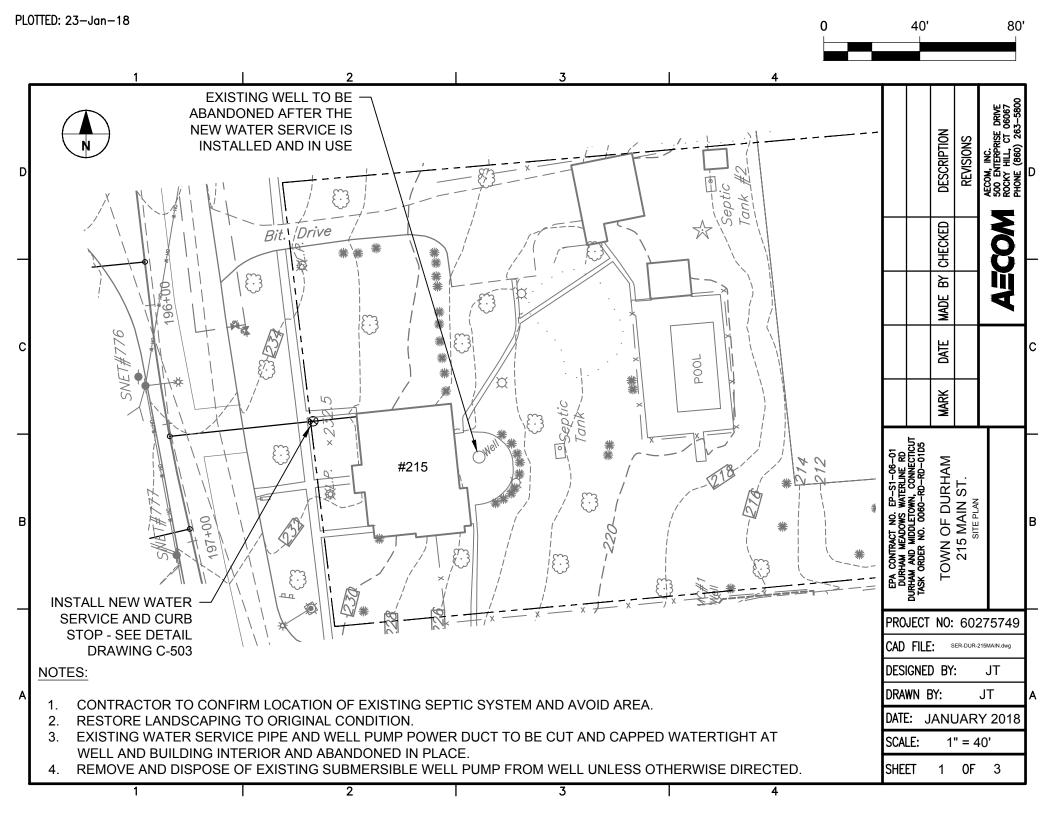








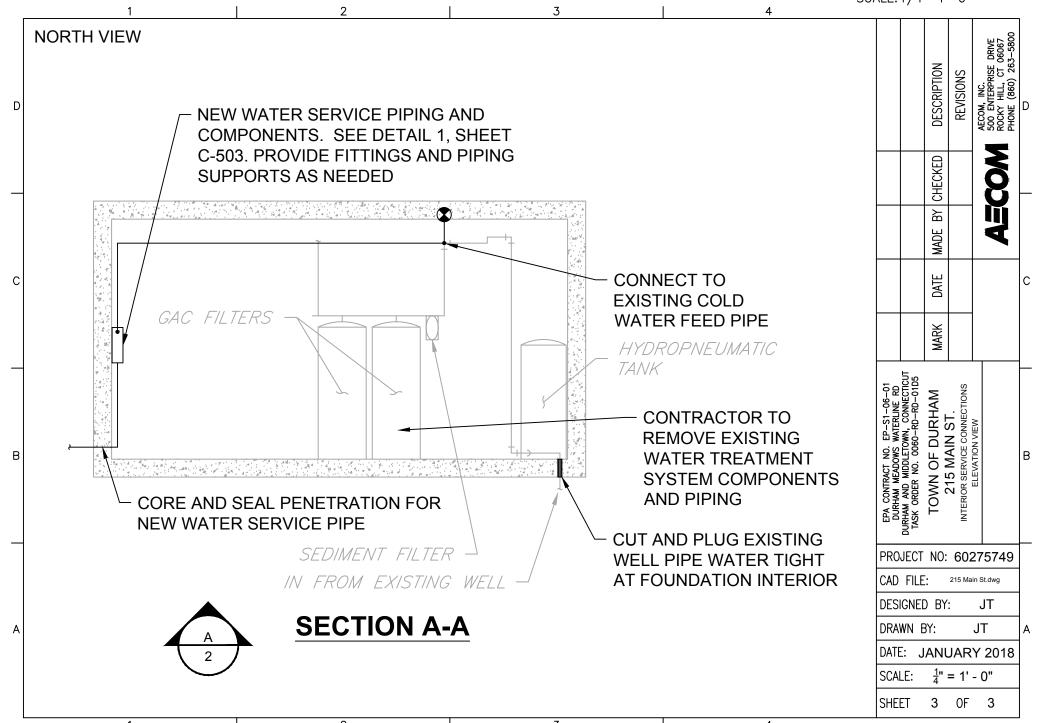


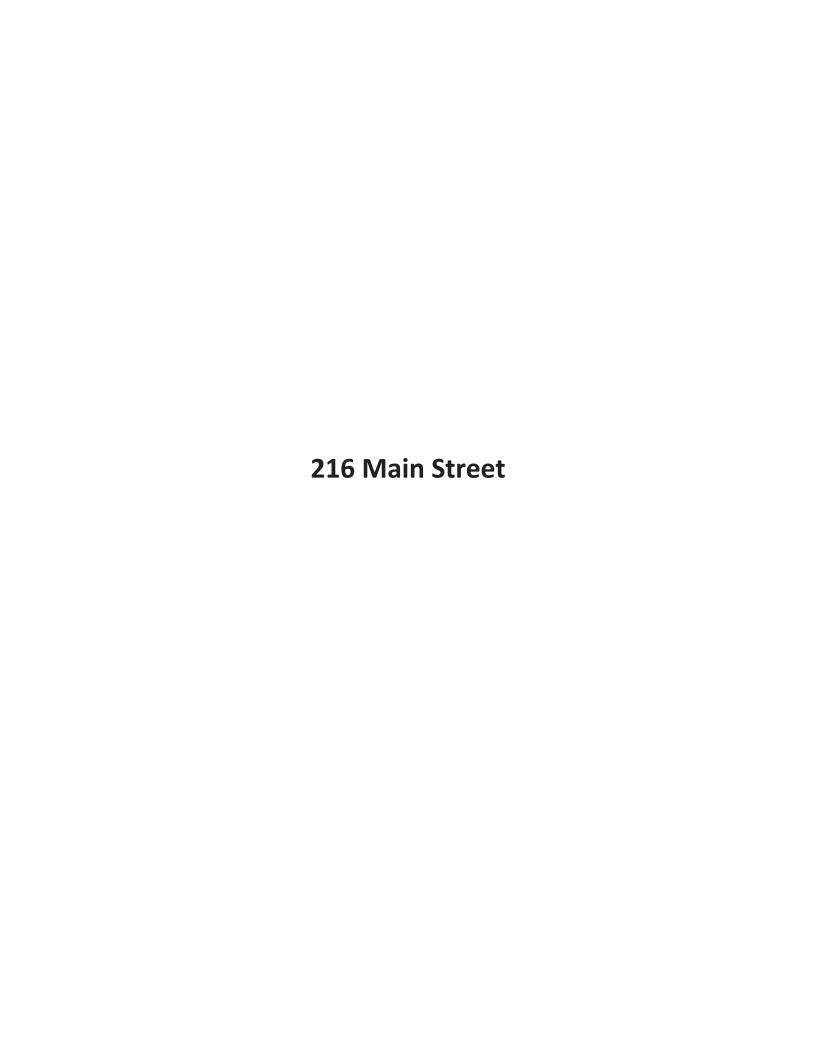


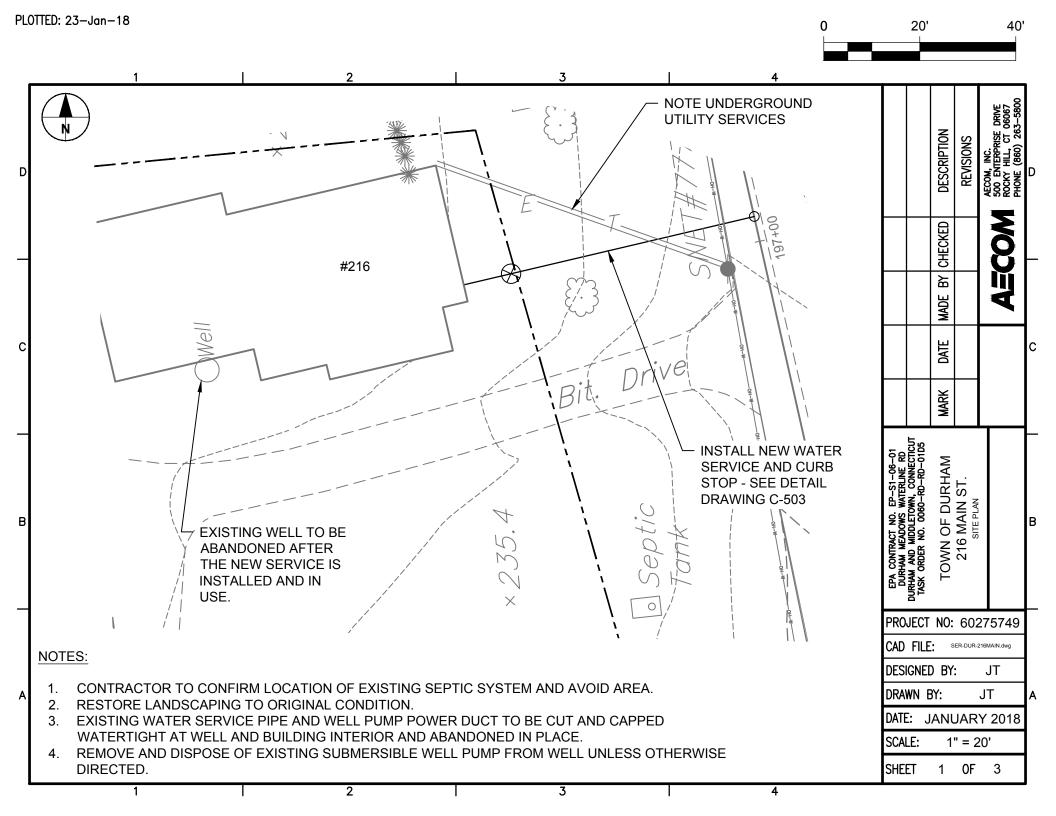
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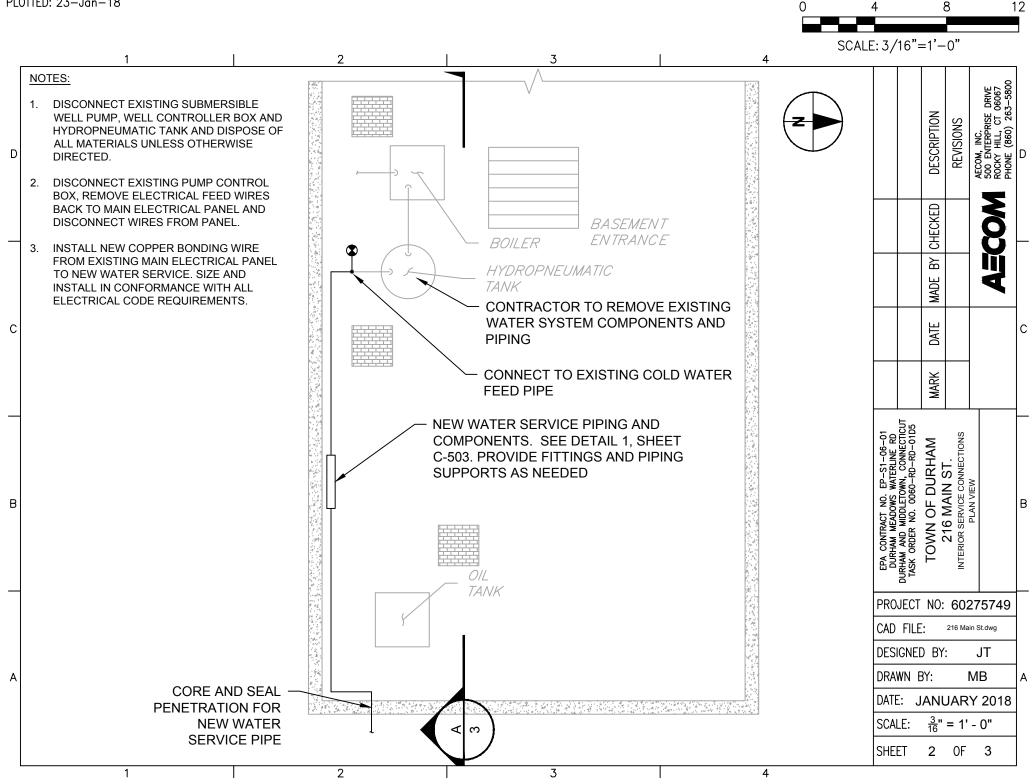
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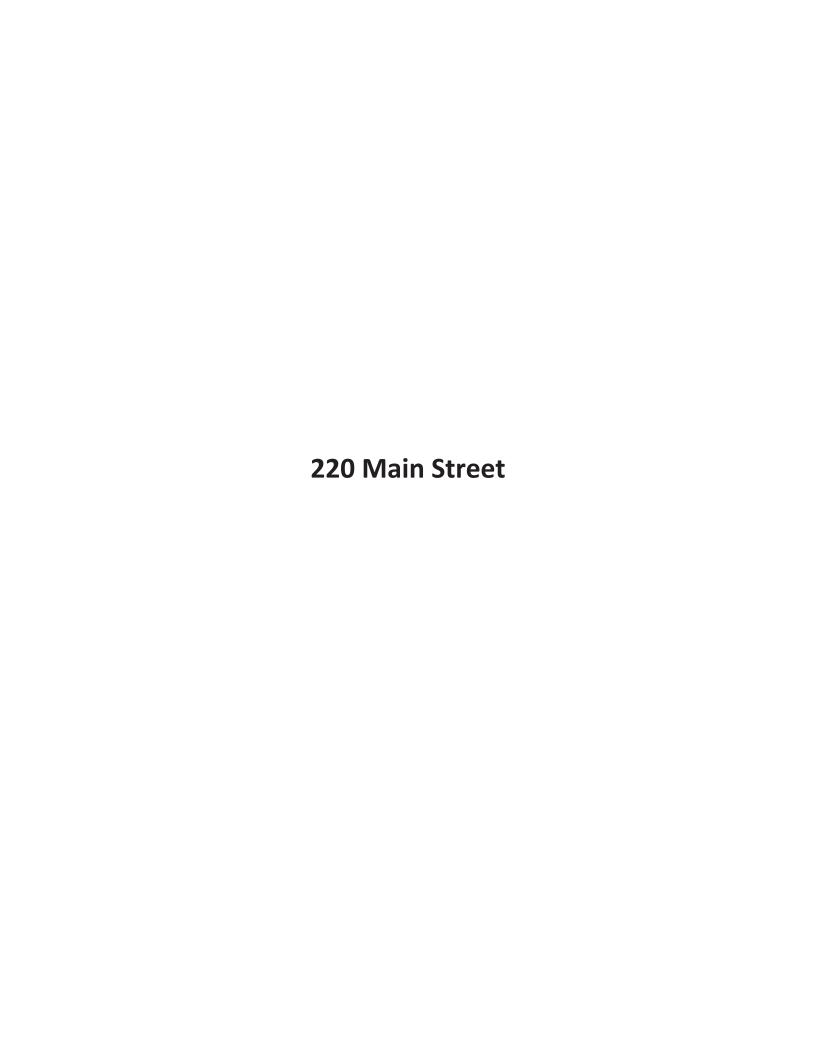
SCALE: 1/8"=1'-0" NOTES: 1. DISCONNECT EXISTING SUBMERSIBLE WELL PUMP. WELL CONTROLLER BOX AND HYDROPNEUMATIC TANK AND DISPOSE OF ALL MATERIALS UNLESS OTHERWISE DIRECTED. REVISIONS 2. DISCONNECT EXISTING PUMP CONTROL BOX. REMOVE ELECTRICAL FEED WIRES BACK TO MAIN ELECTRICAL PANEL AND DISCONNECT WIRES FROM PANEL. 3. INSTALL NEW COPPER BONDING WIRE FROM EXISTING MAIN ELECTRICAL PANEL TO NEW WATER SERVICE. SIZE AND INSTALL IN CONFORMANCE WITH ALL ELECTRICAL CODE REQUIREMENTS. CHECKED 4. REMOVE AND DISPOSE OF EXISTING WATER TREATMENT SYSTEM COMPONENTS IN ACCORDANCE WITH THE SPECIFICATIONS. IN FROM EXISTING WELL ሕ HYDROPNEUMATIC TANK MADE APARTMFNT CONTRACTOR TO REMOVE -DATE **EXISTING WATER TREATMENT** SYSTEM COMPONENTS AND MARK **PIPING CUT AND PLUG EXISTING** WELL PIPE WATER TIGHT AT SFDIMENT FILTER **FOUNDATION INTERIOR** BOIL FR GAC FILTERS WORKSHOP HOT WATER HFATFR CORE AND SEAL PENETRATION FOR CONNECT TO EXISTING **NEW WATER COLD WATER FEED PIPE** SERVICE PIPE PROJECT NO: 60275749 CAD FILE: 215 Main St.dwg **NEW WATER SERVICE PIPING AND** DESIGNED BY: COMPONENTS. SEE DETAIL 1, SHEET JT C-503. PROVIDE FITTINGS AND PIPING DRAWN BY: JT SUPPORTS AS NEEDED DATE: JANUARY 2018  $\frac{1}{9}$ " = 1' - 0" SCALE:

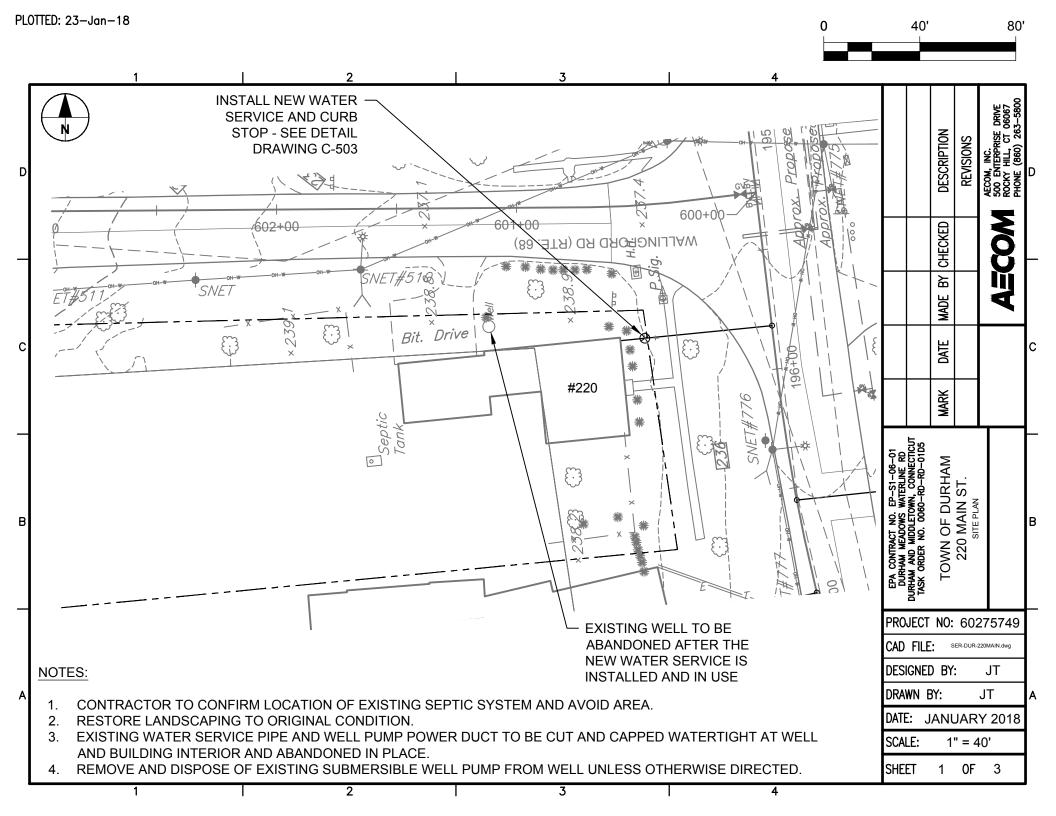


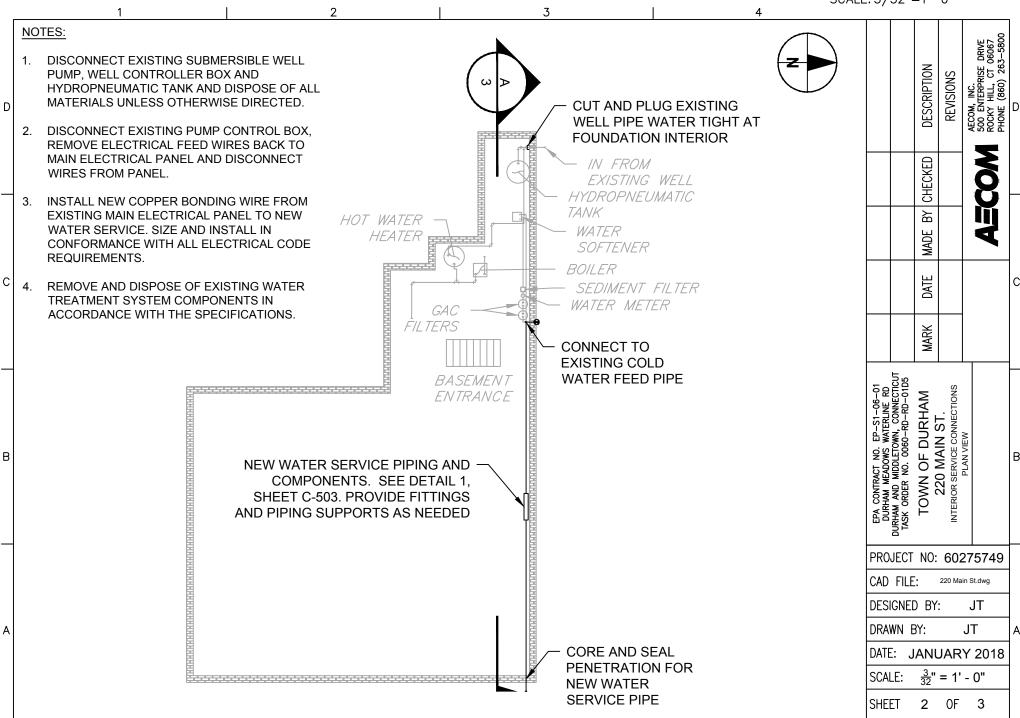


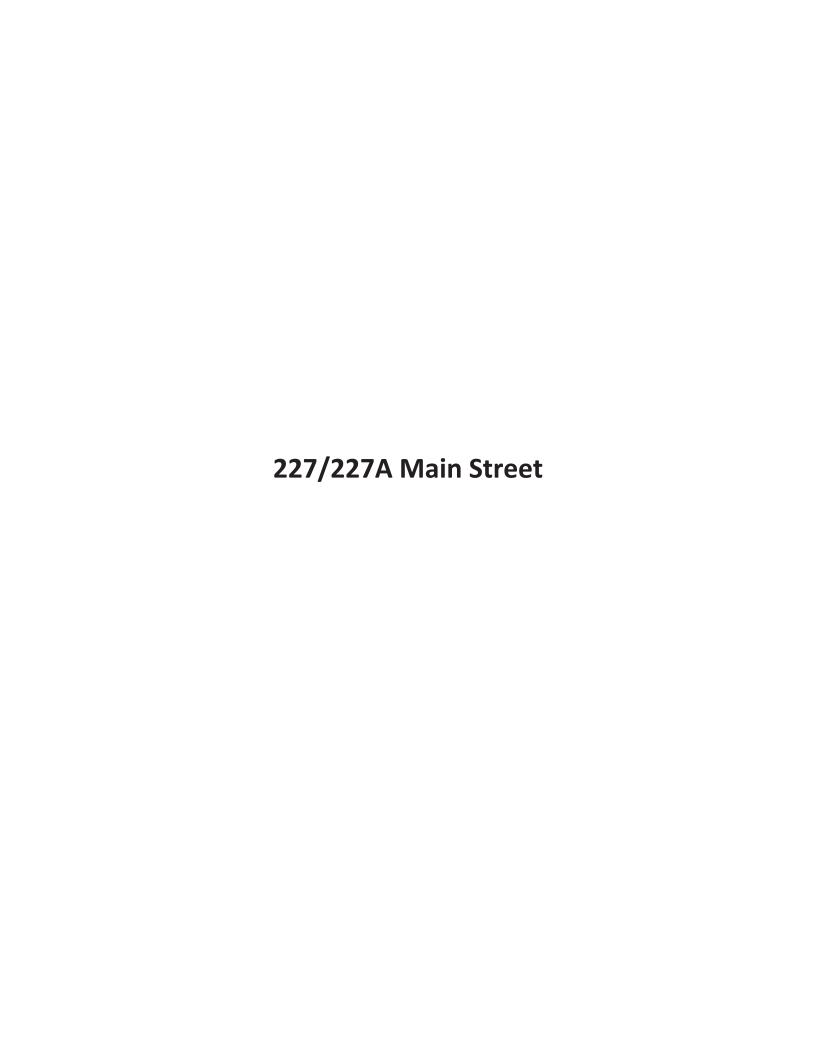


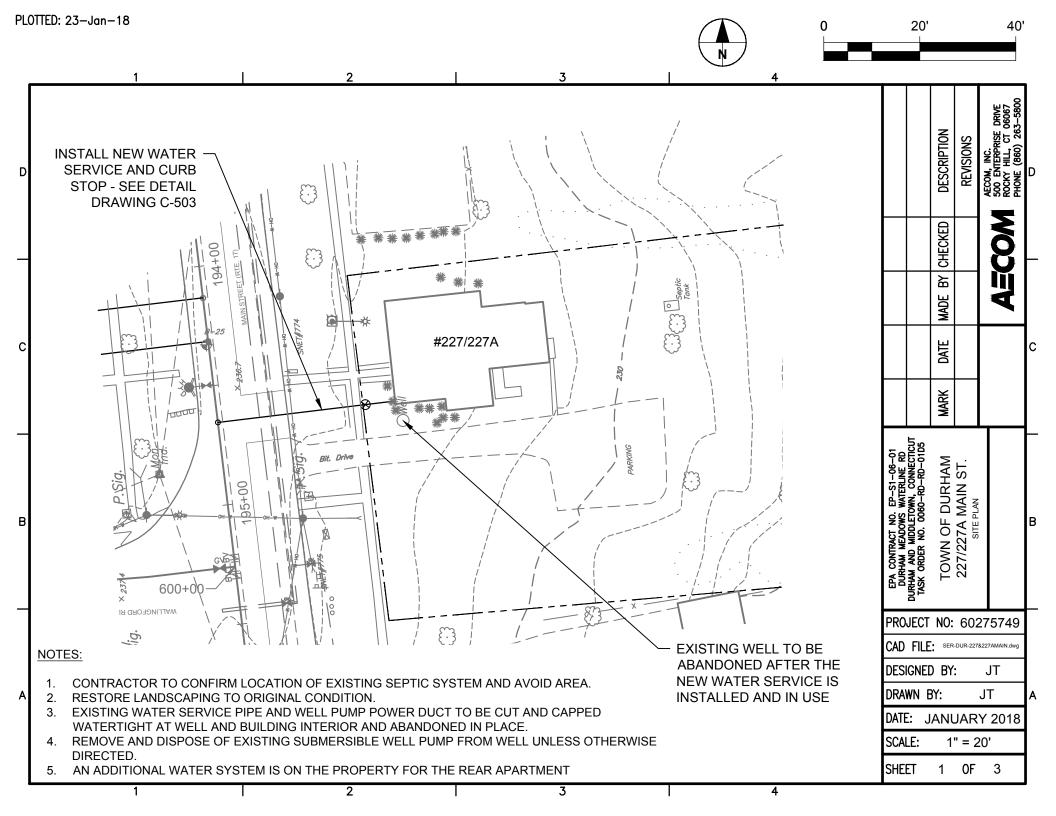


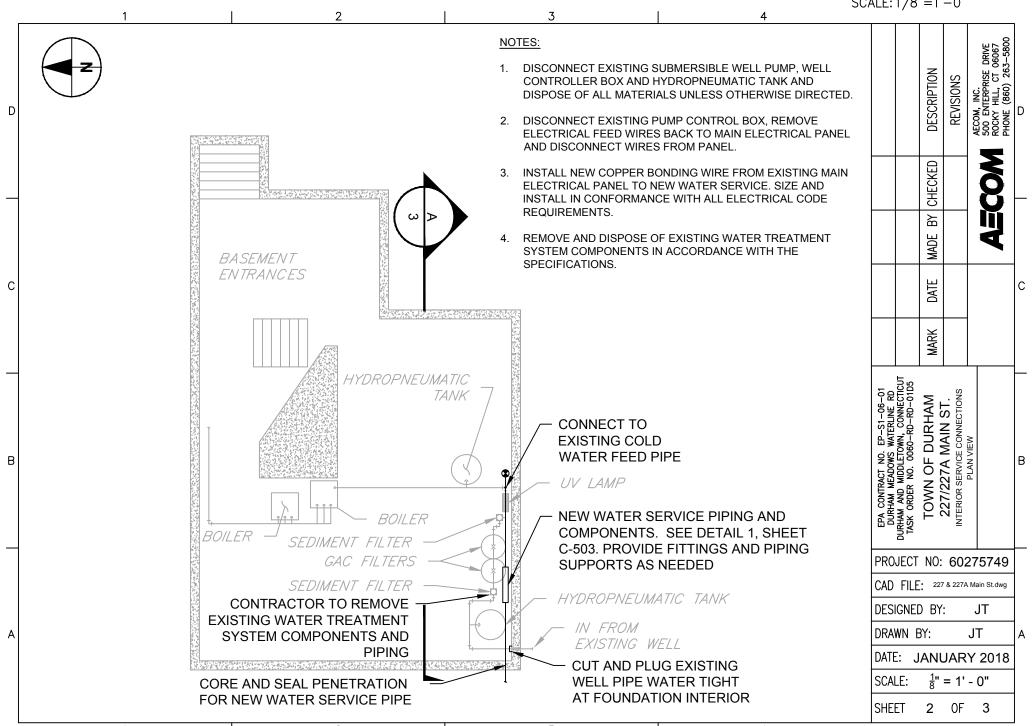


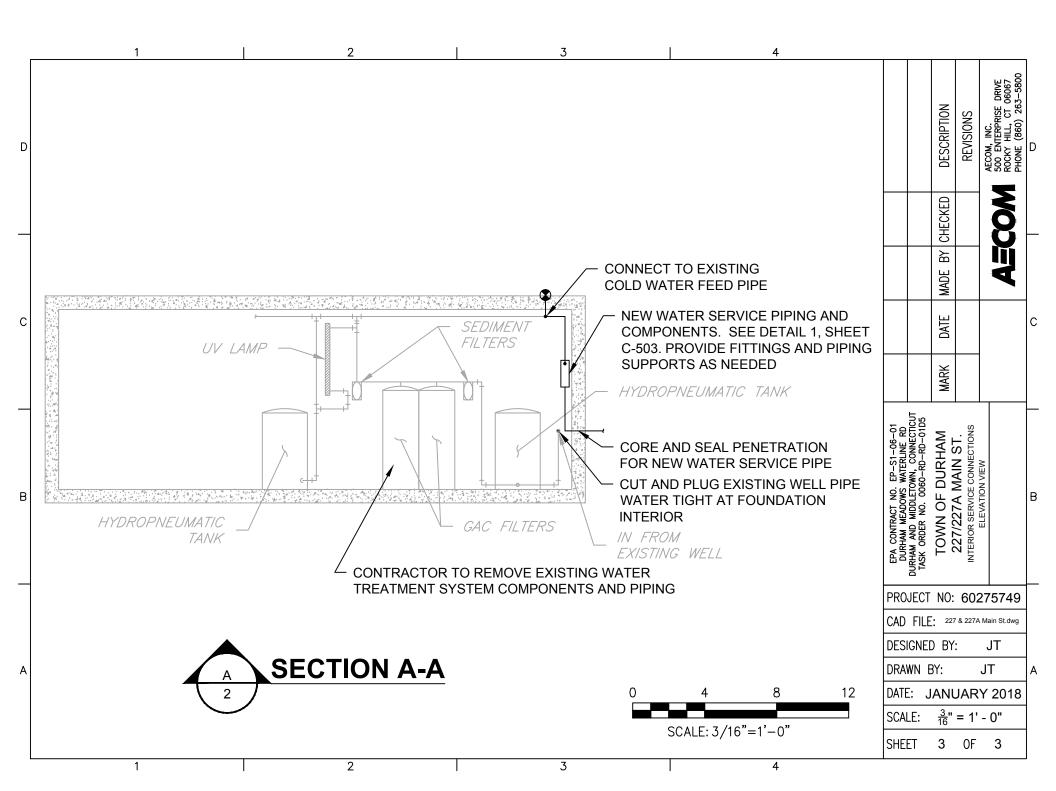


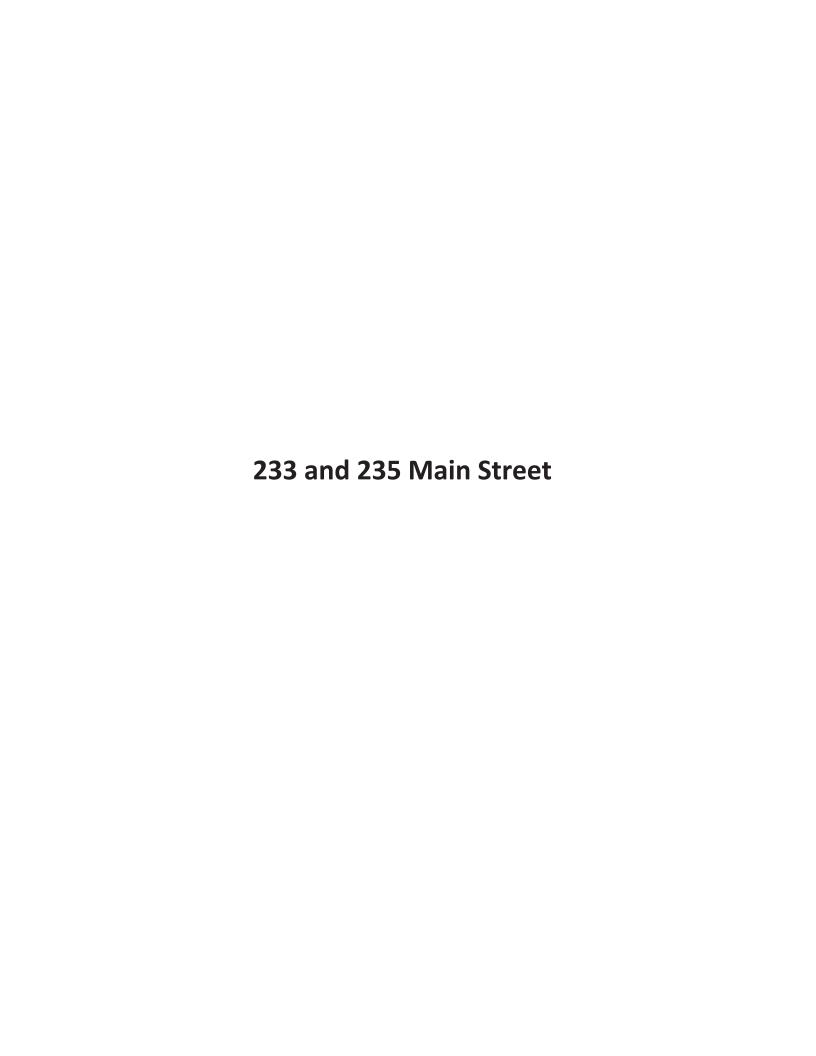


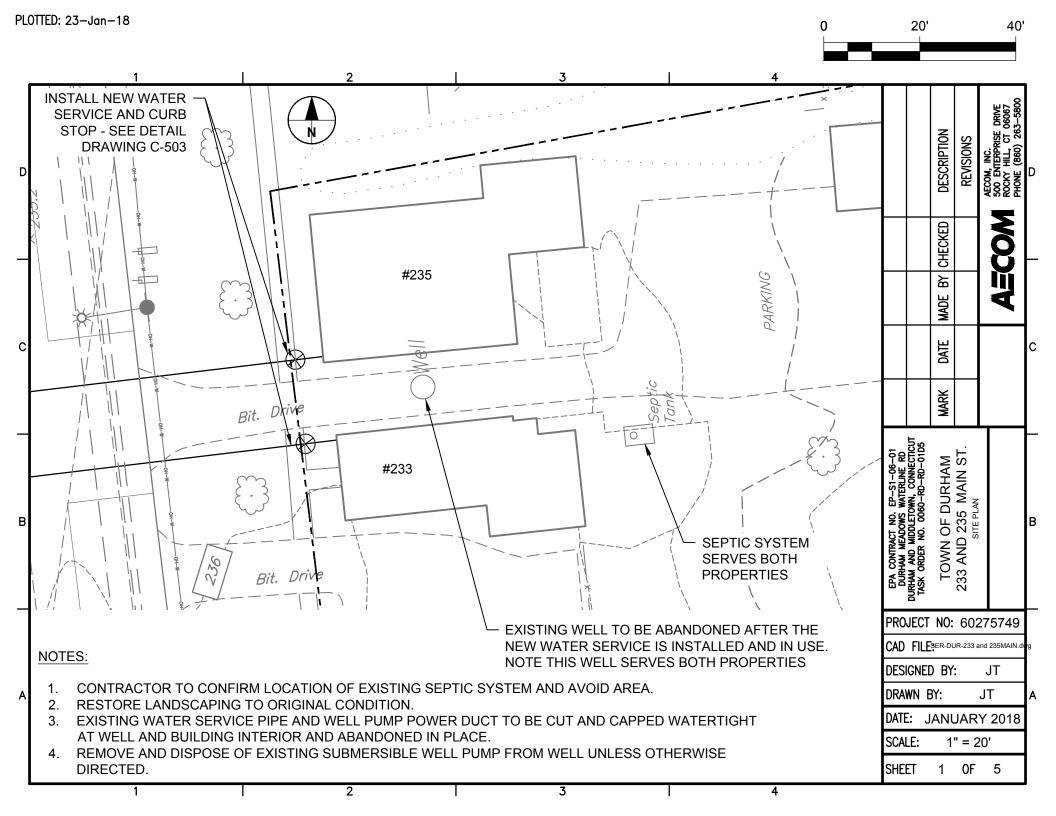


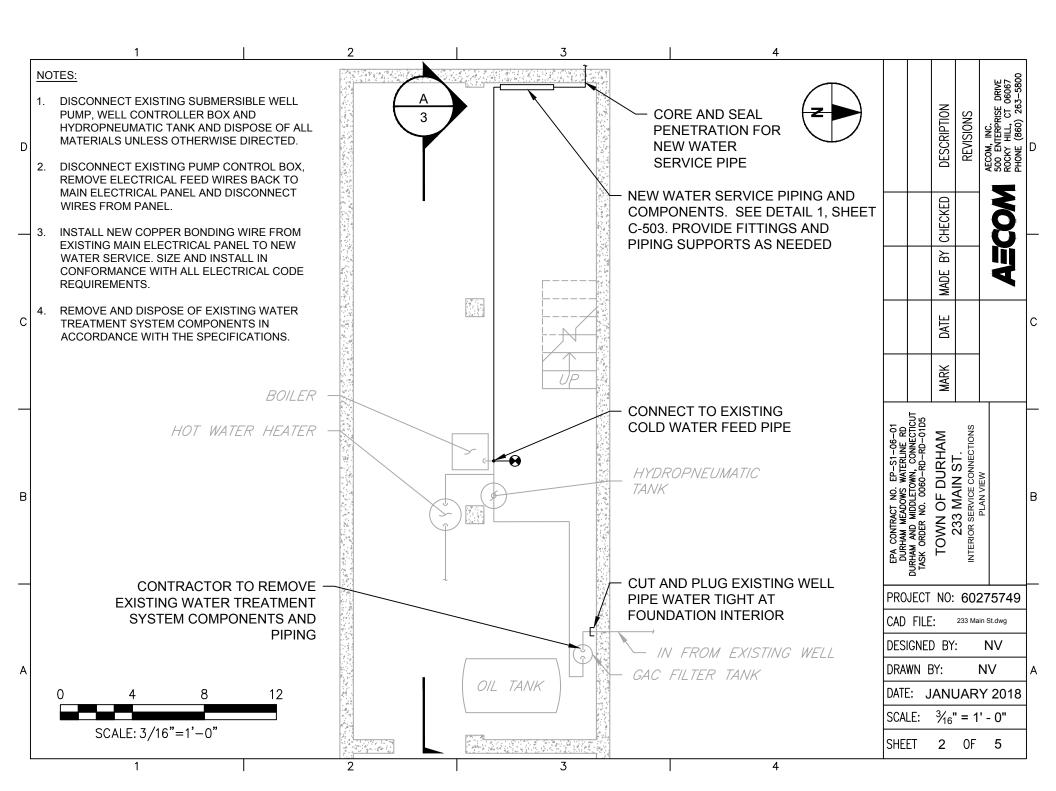


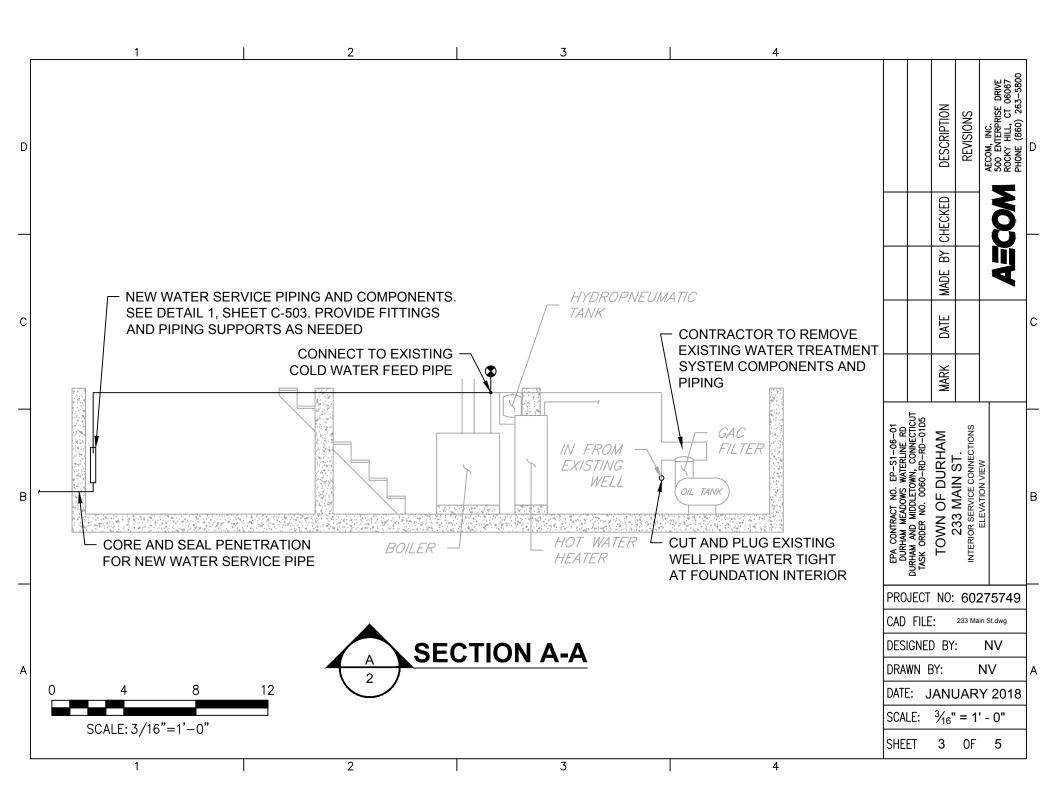


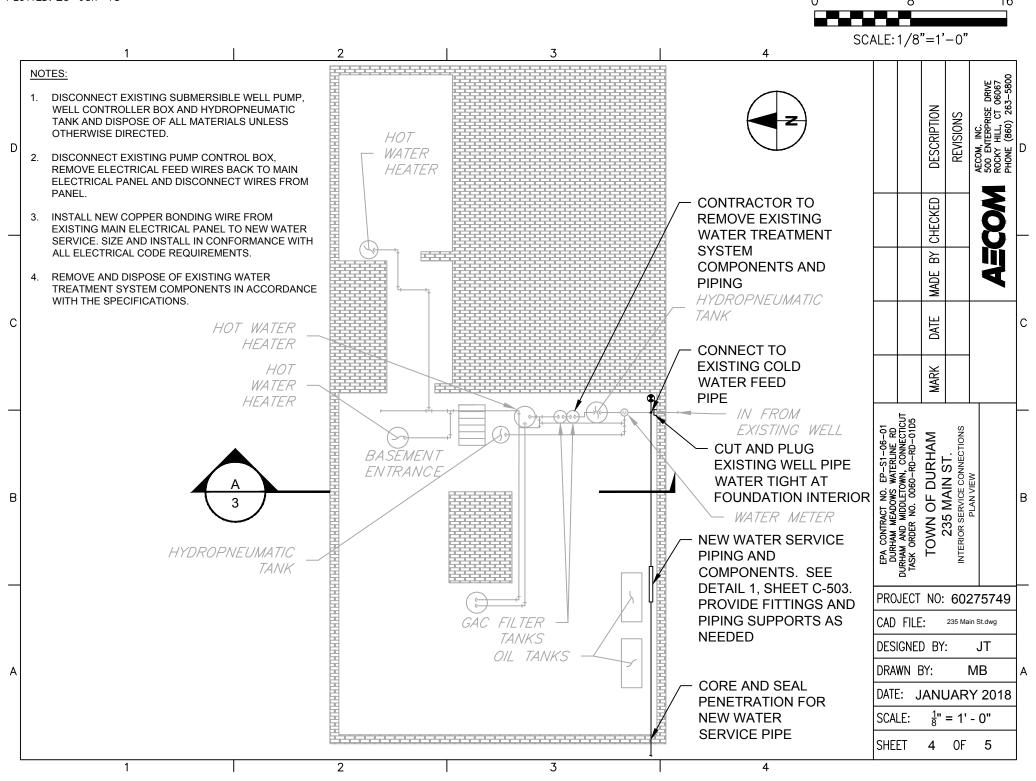


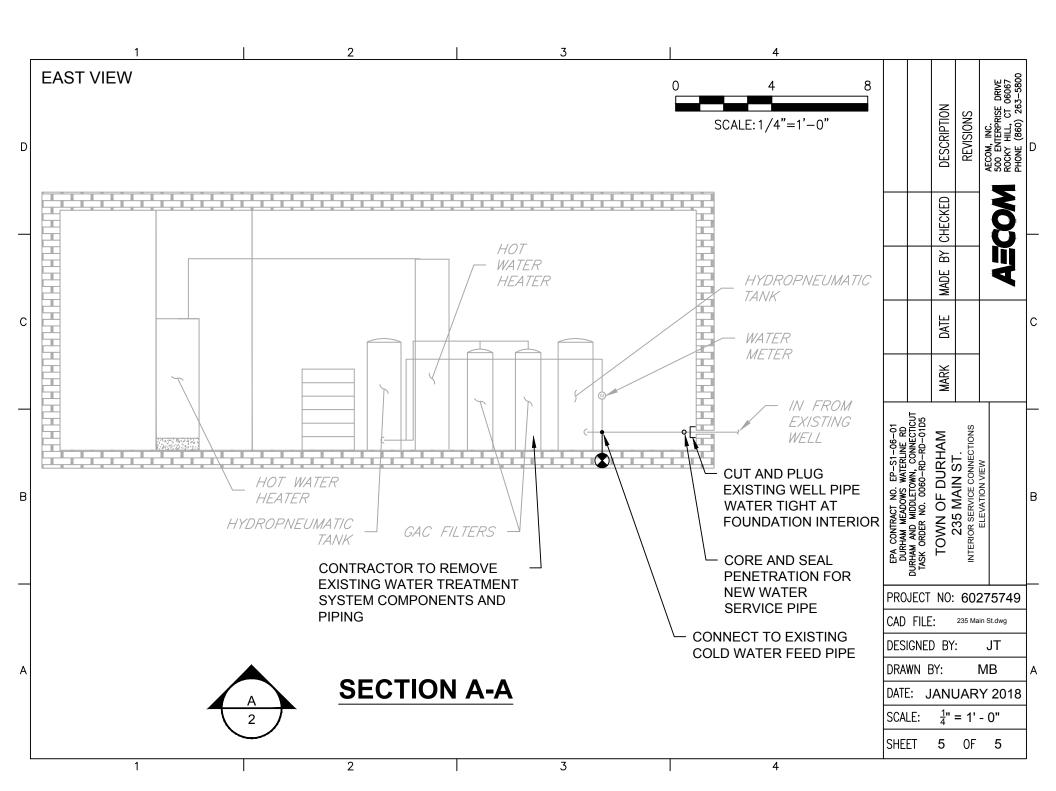




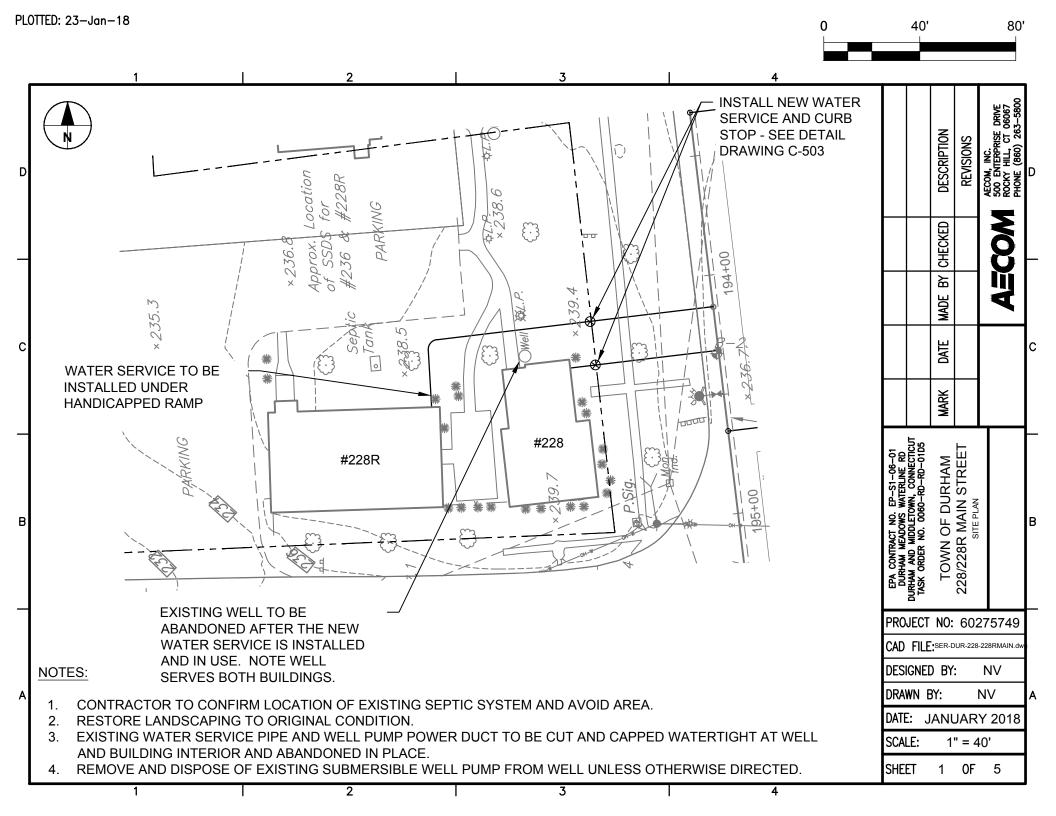


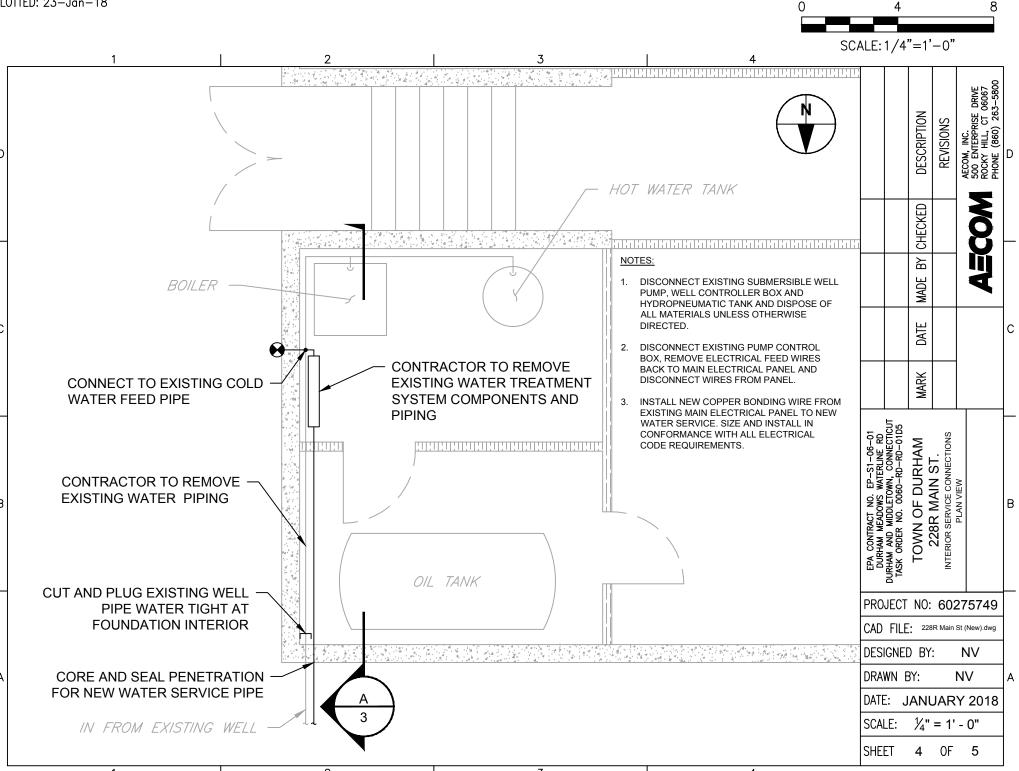


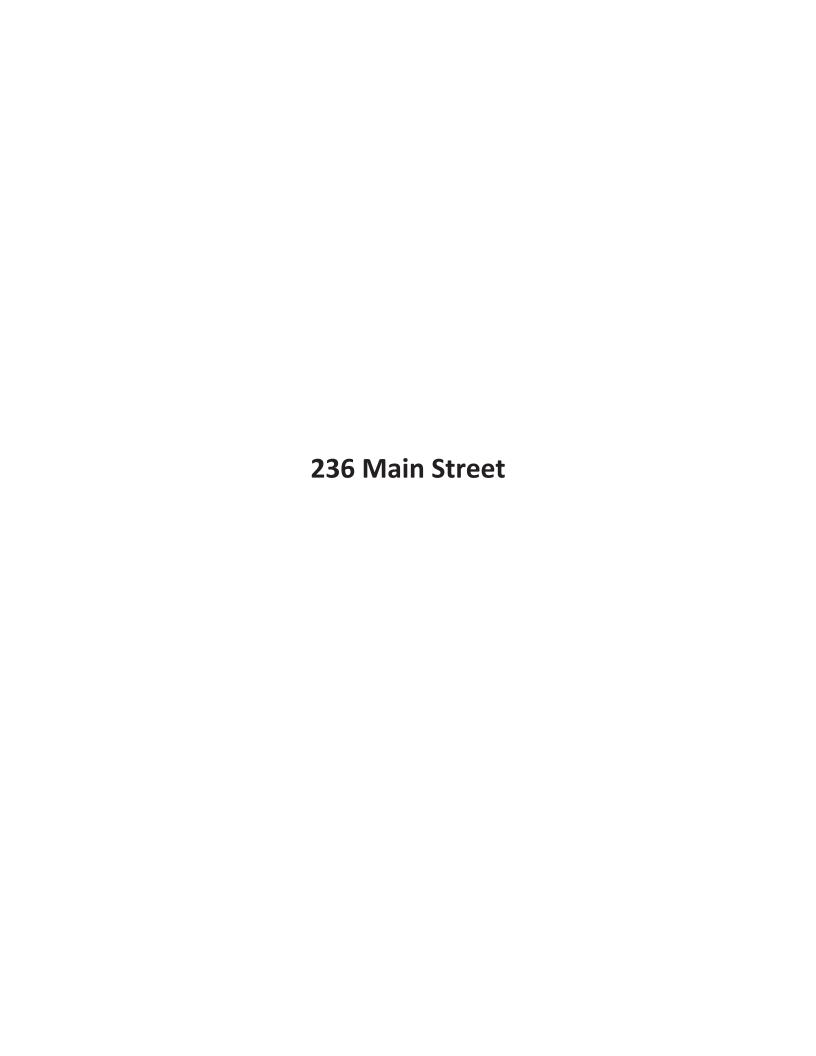


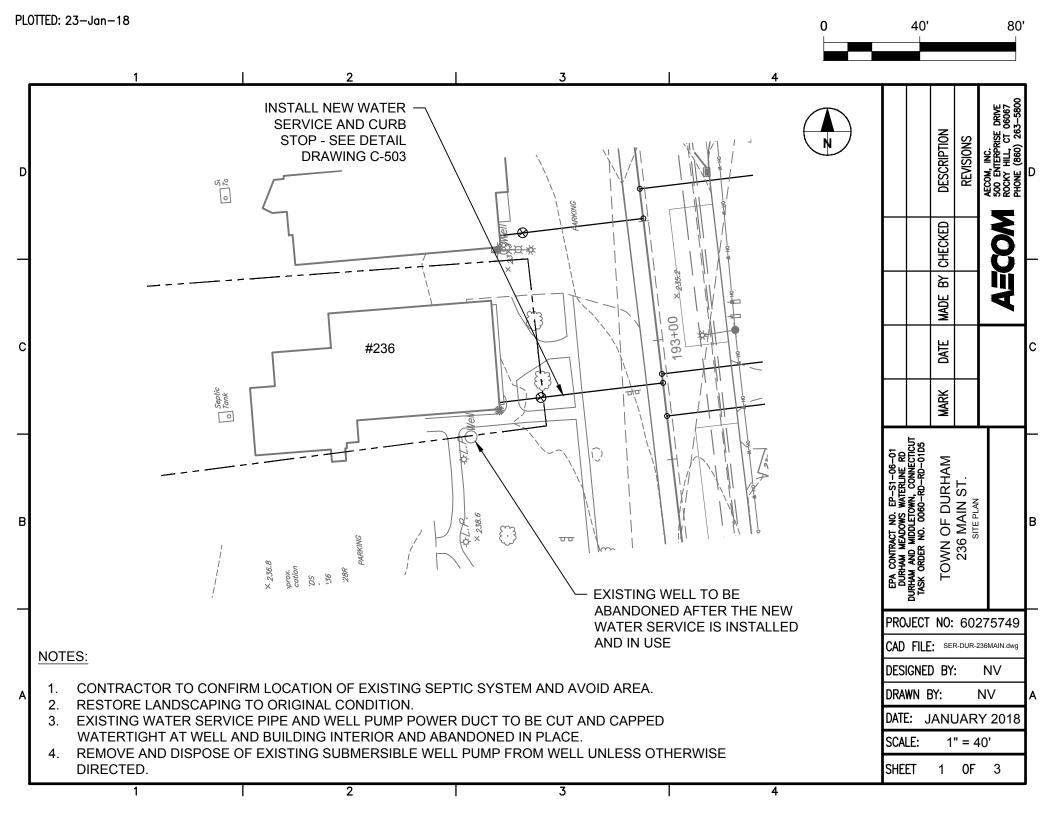


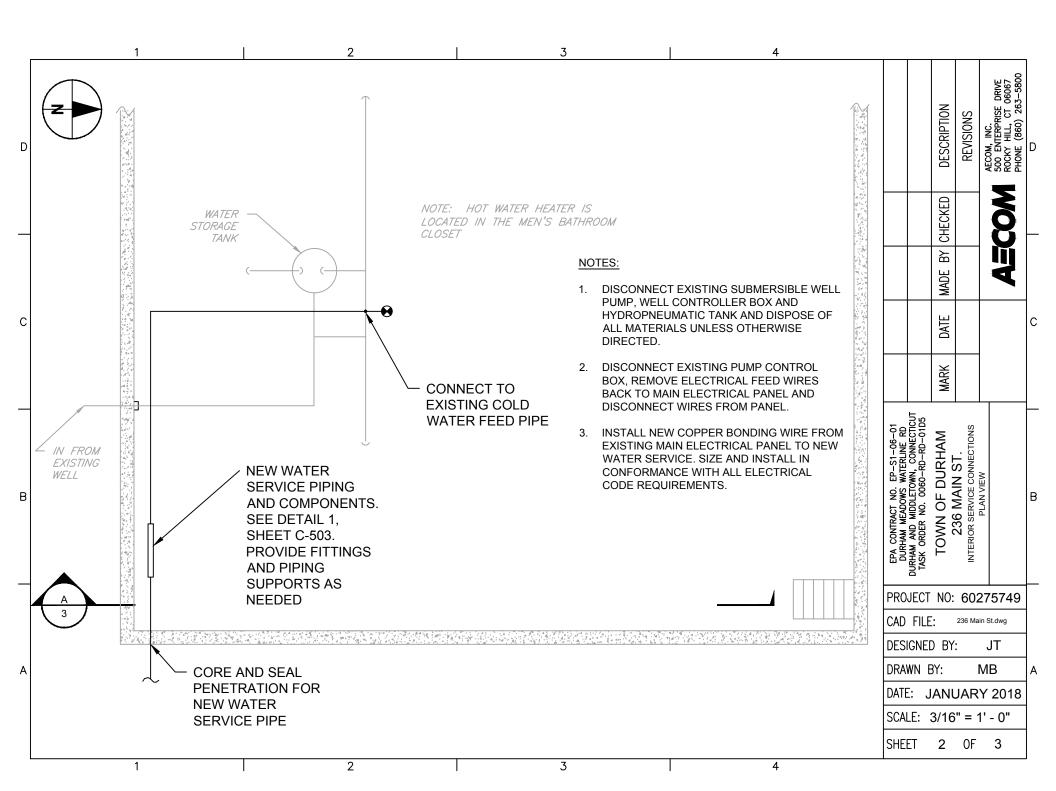


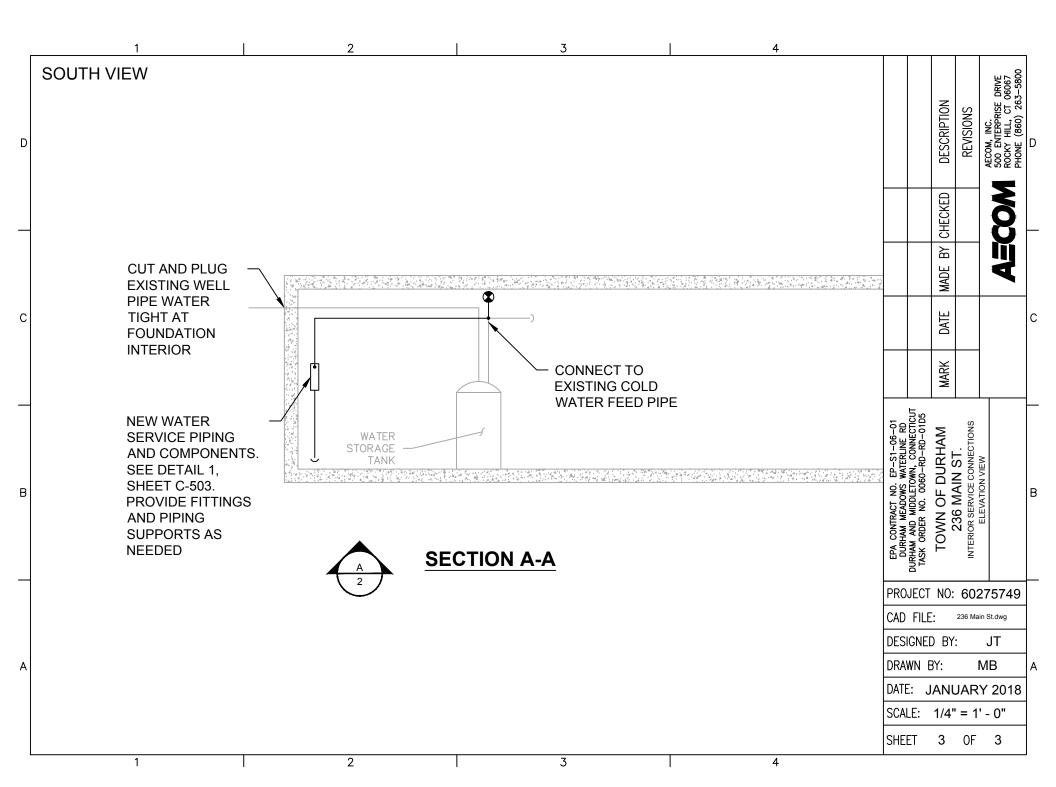


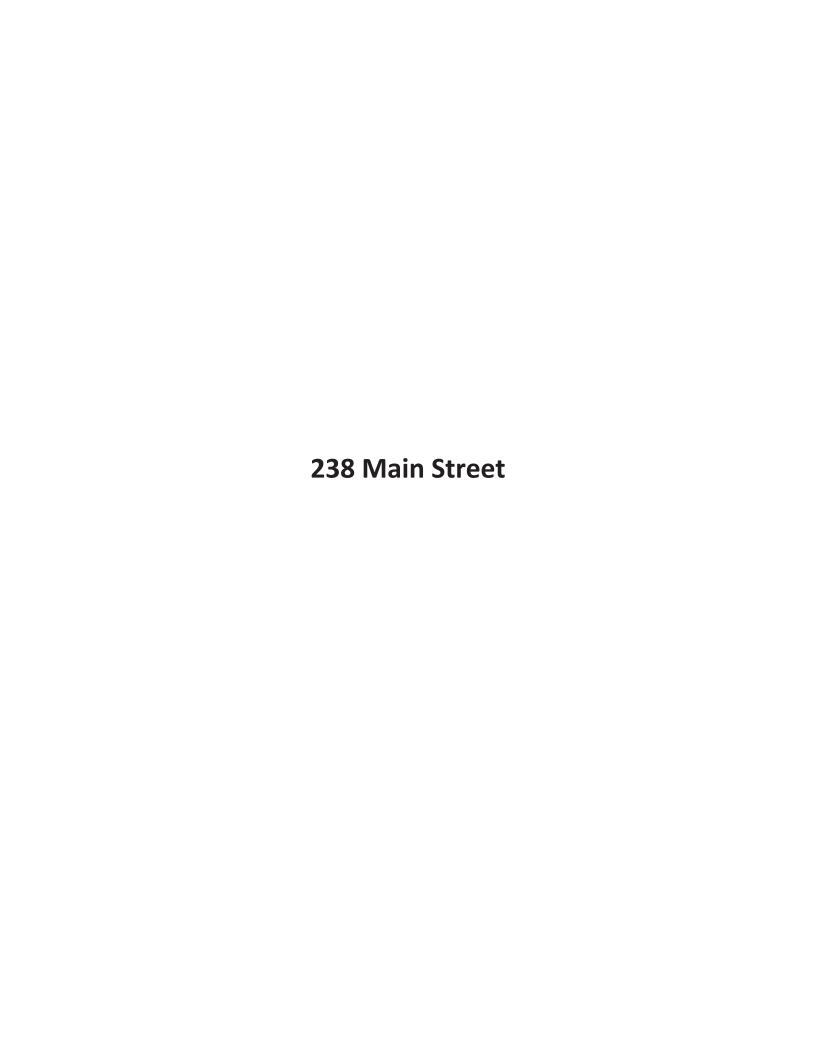


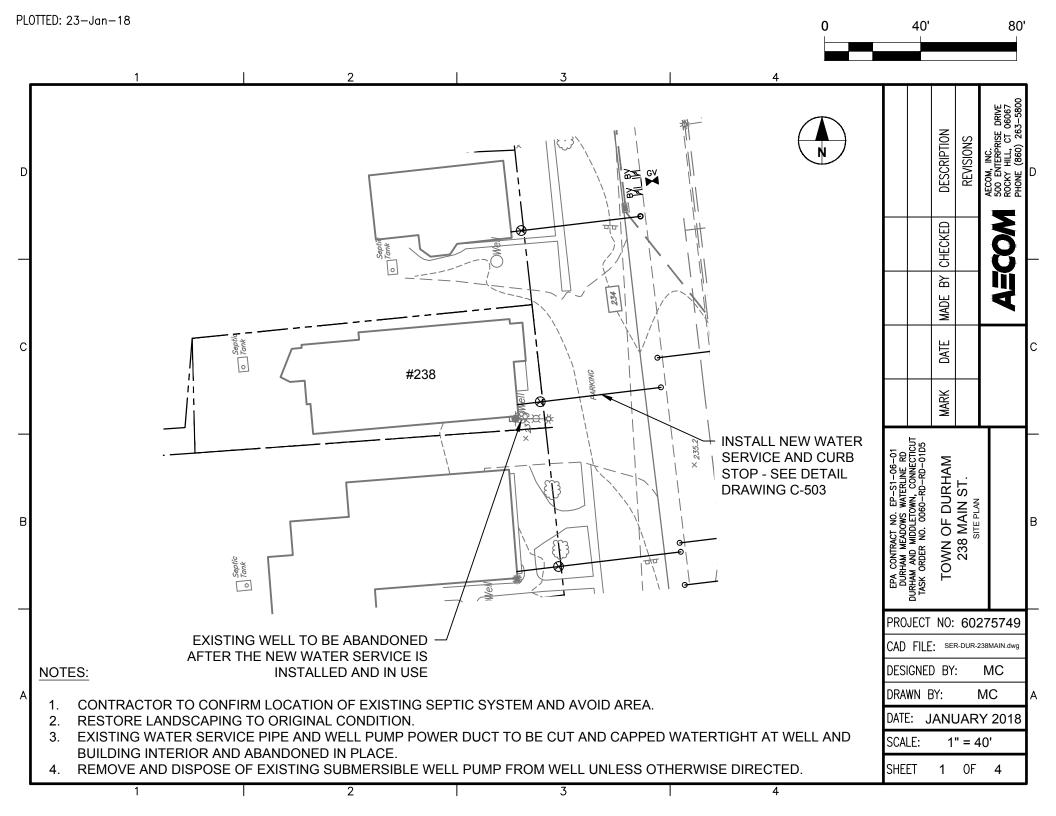


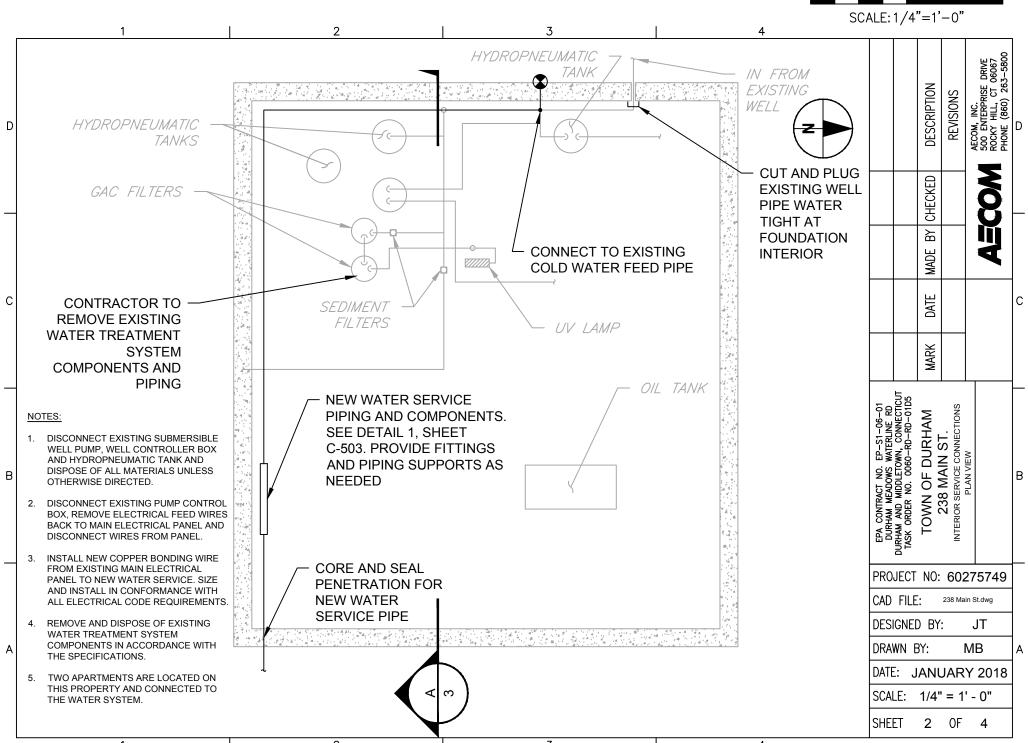


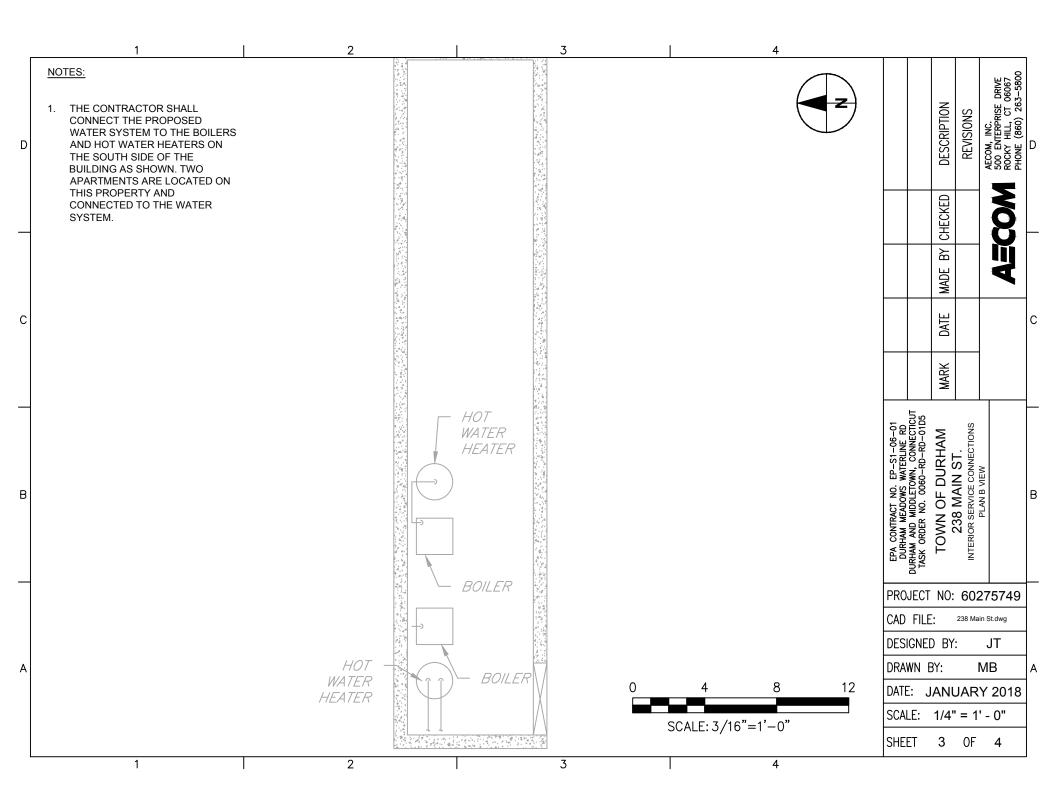


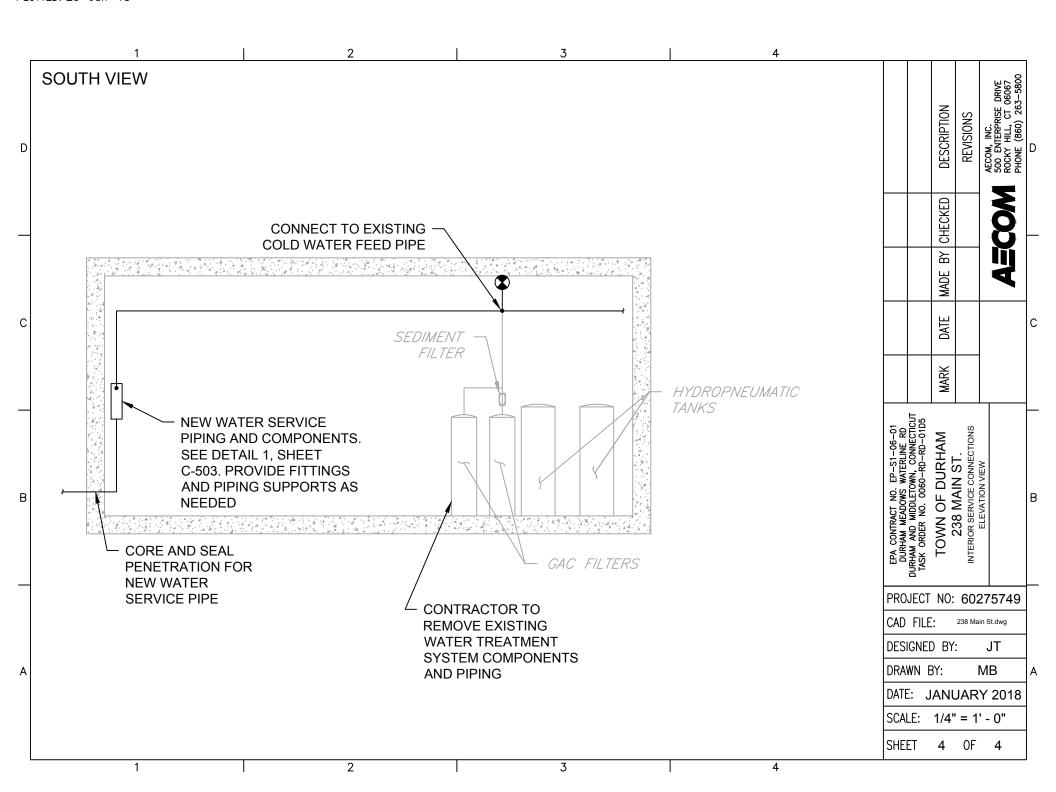


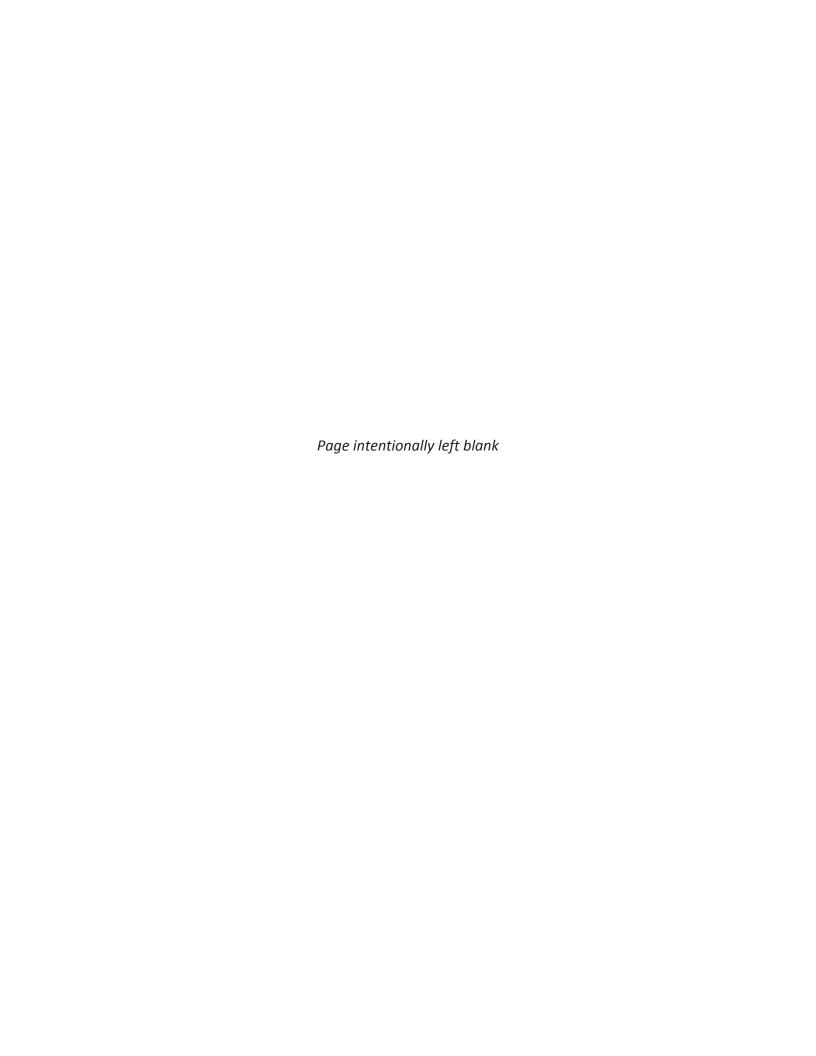


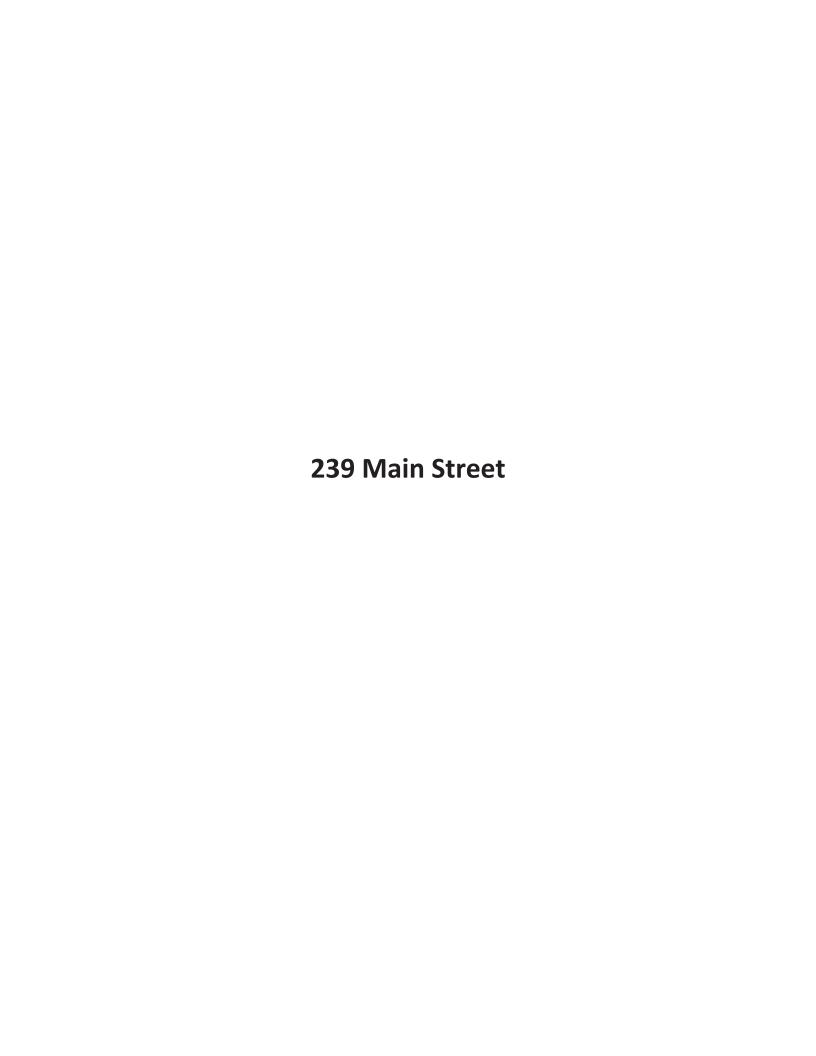


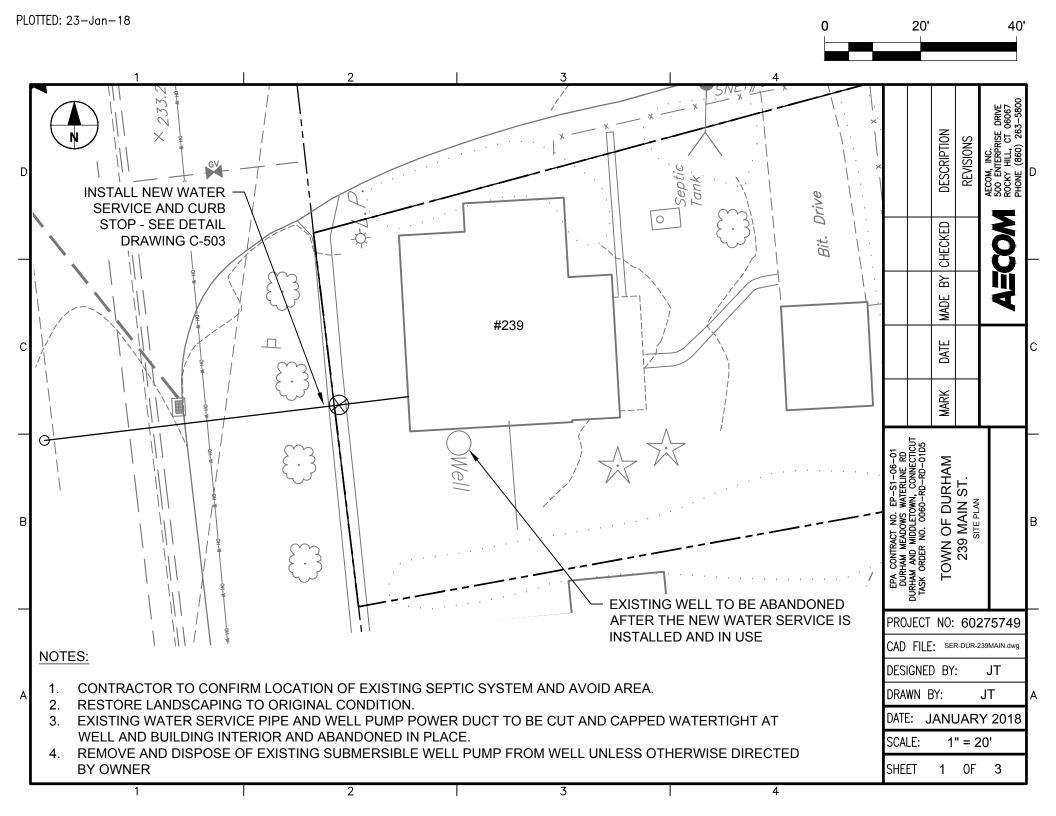


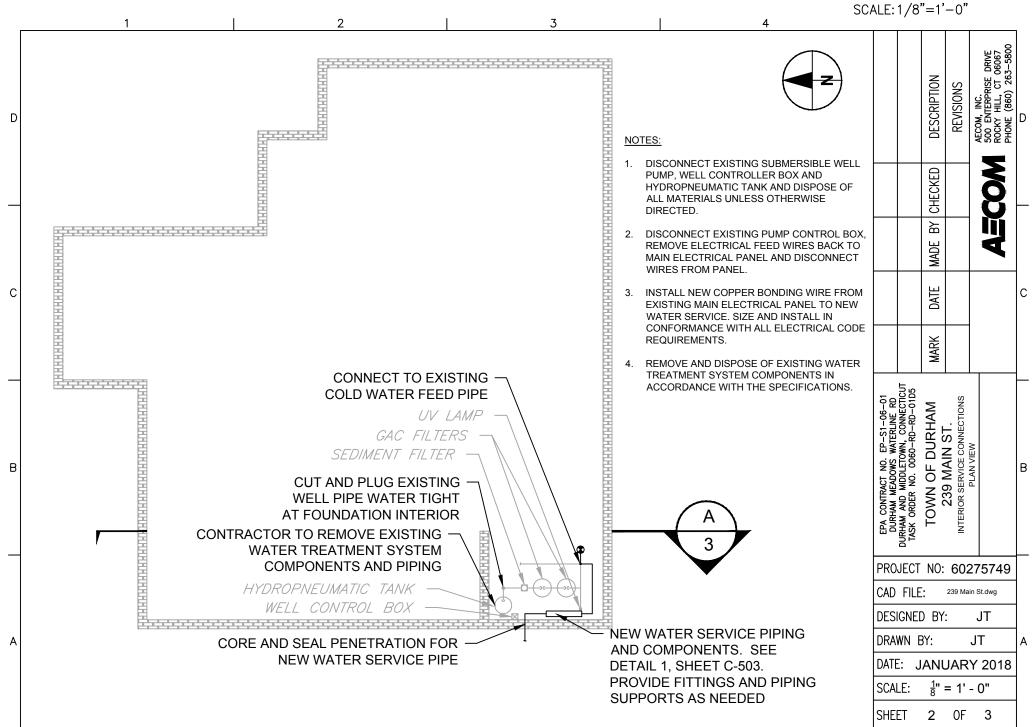




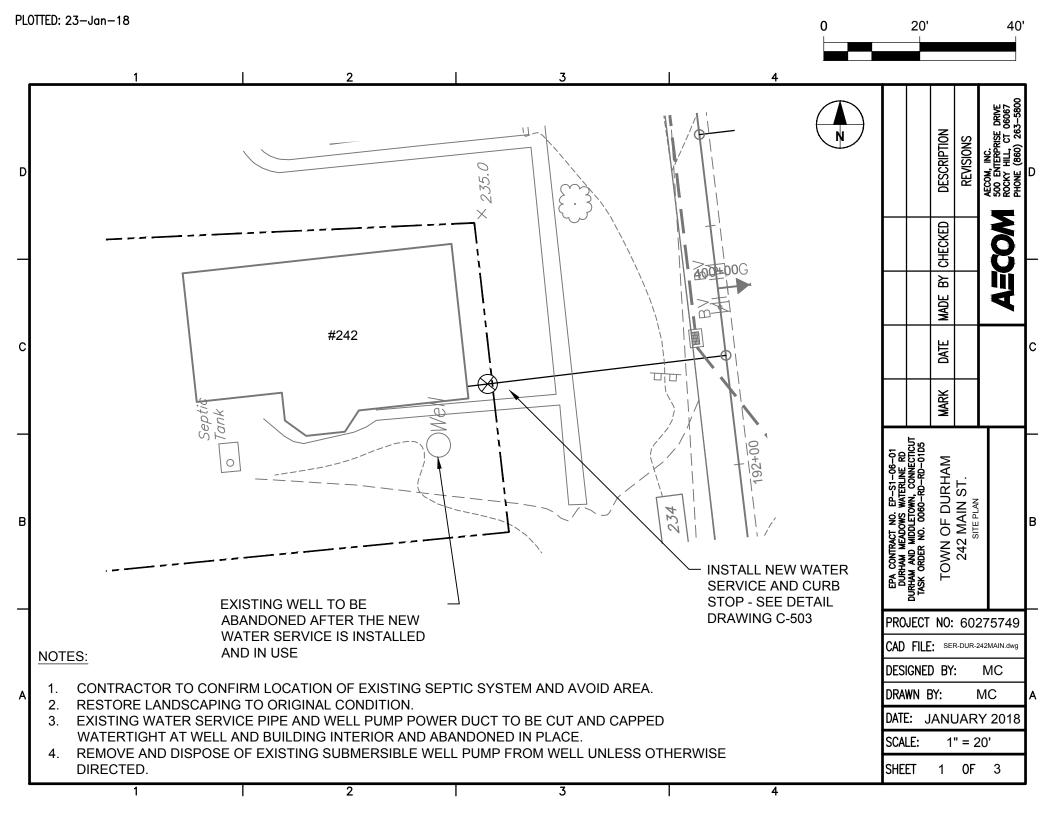


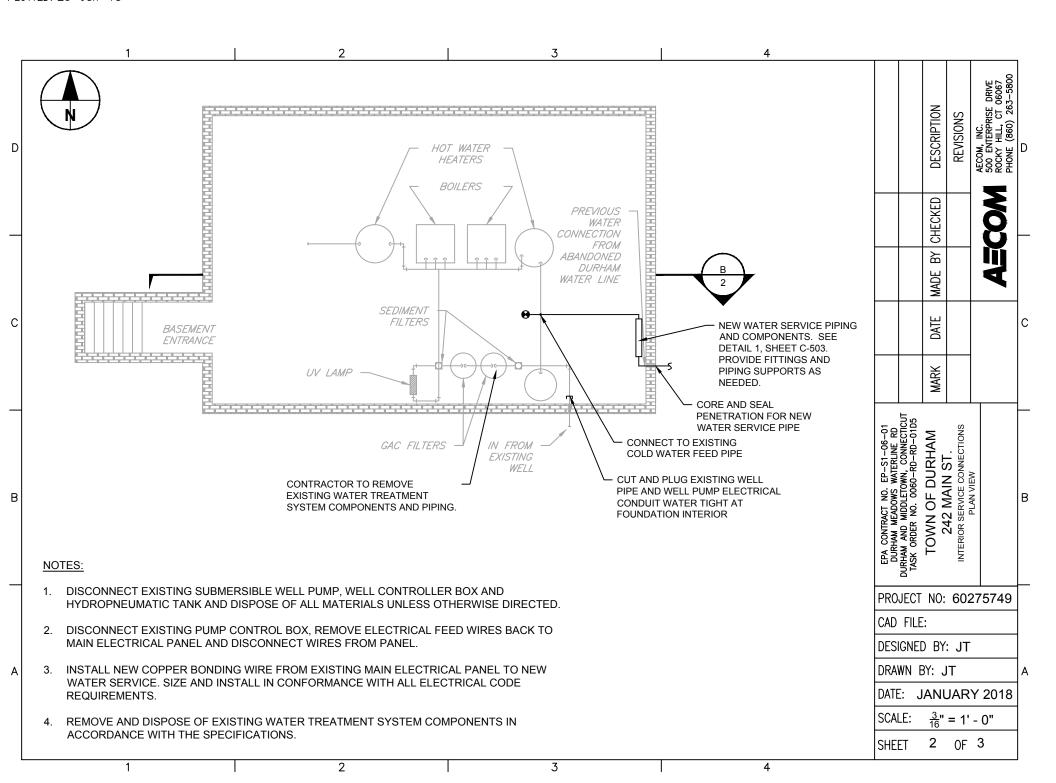


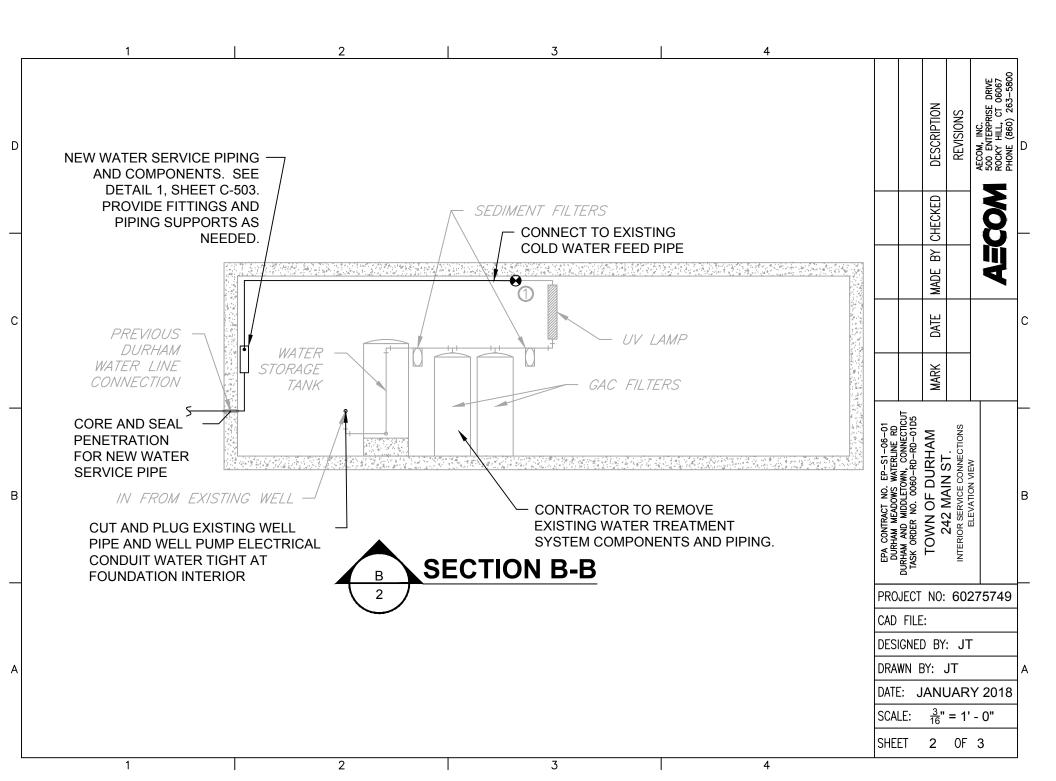


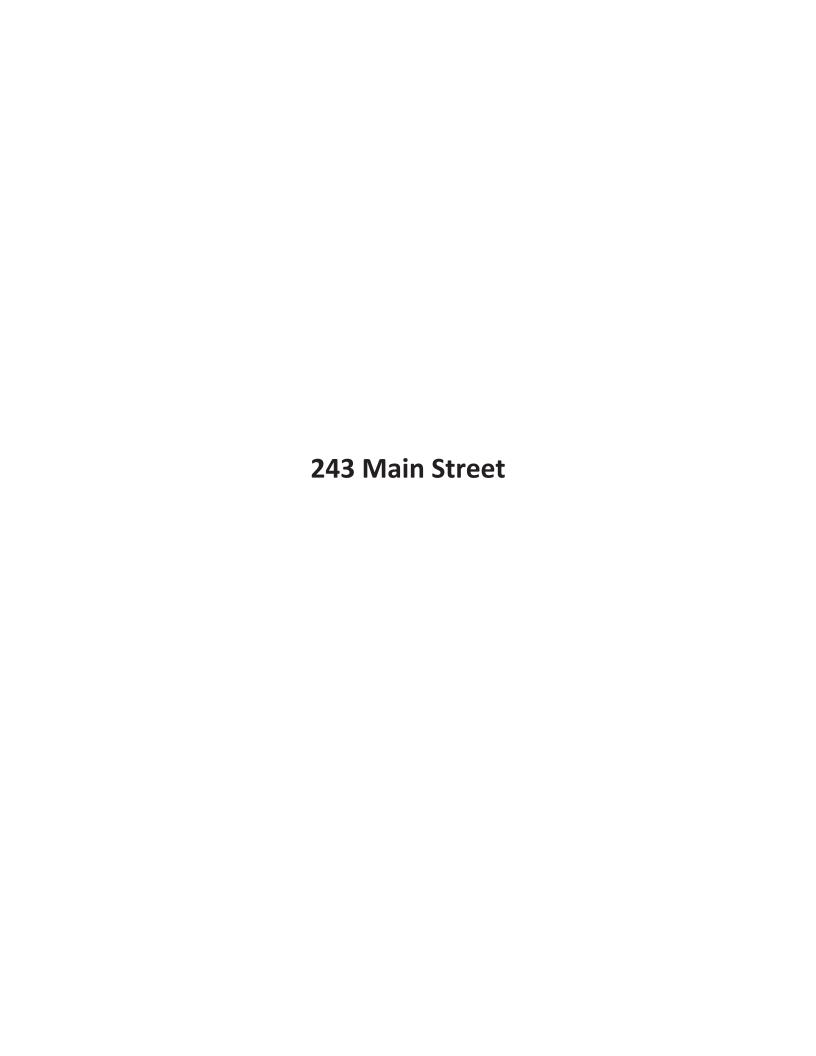


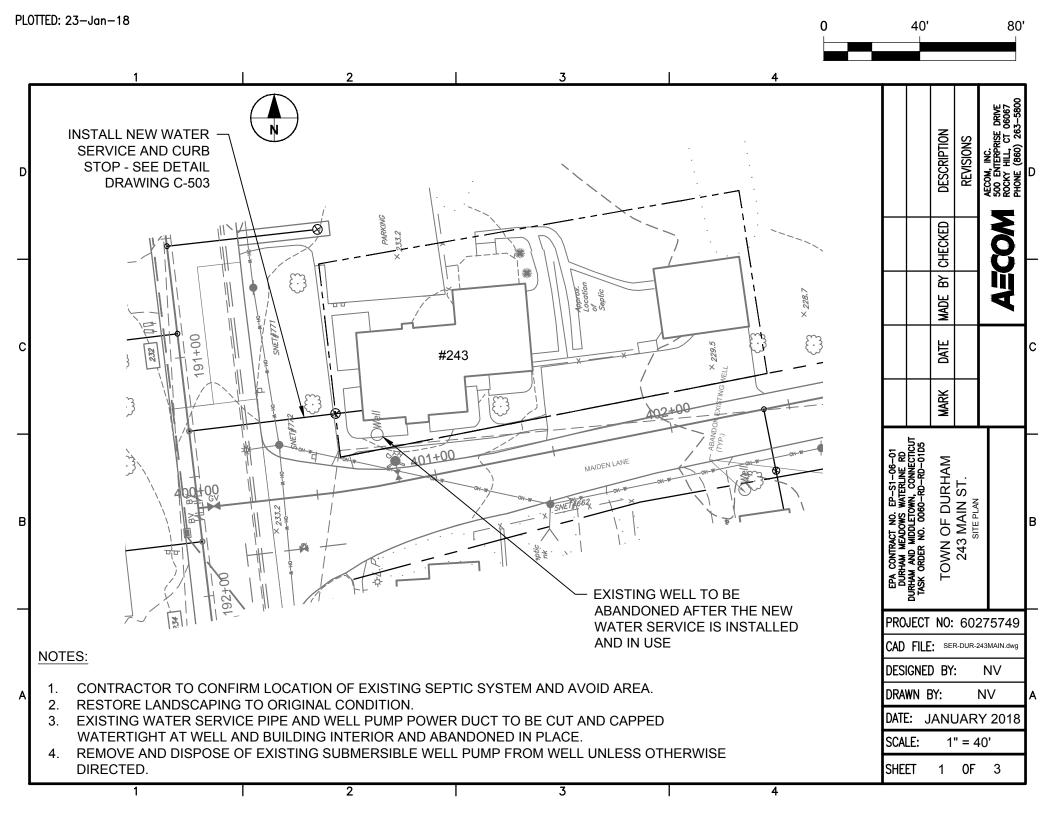


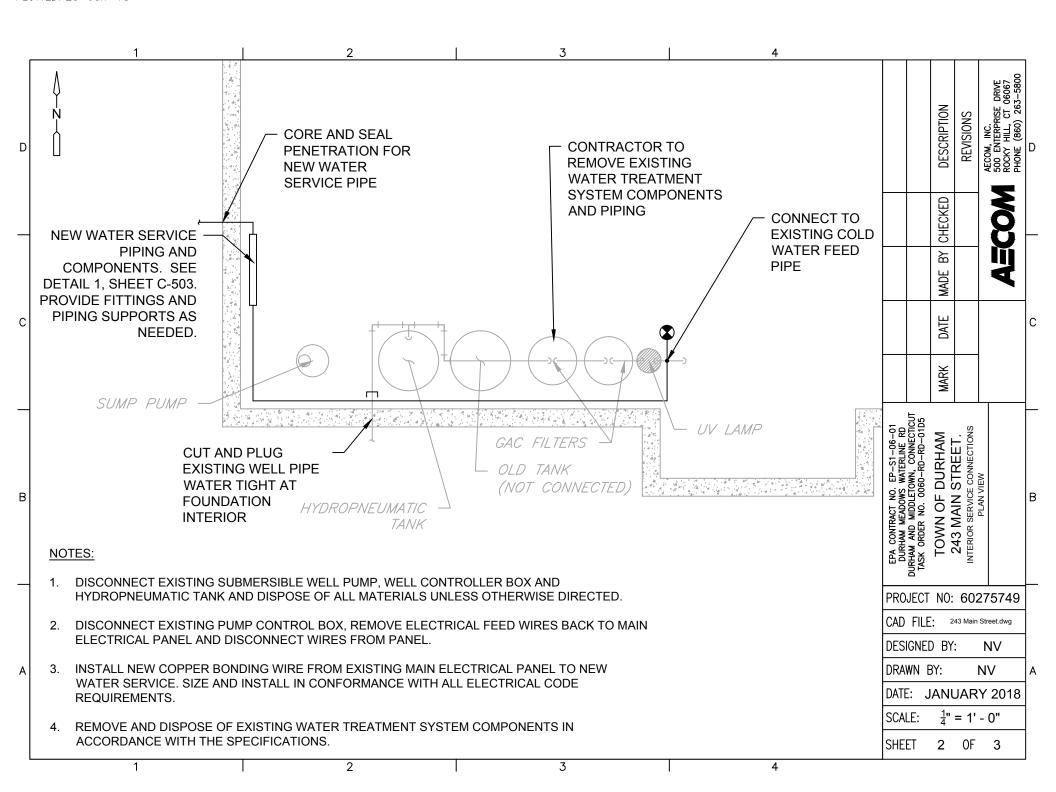


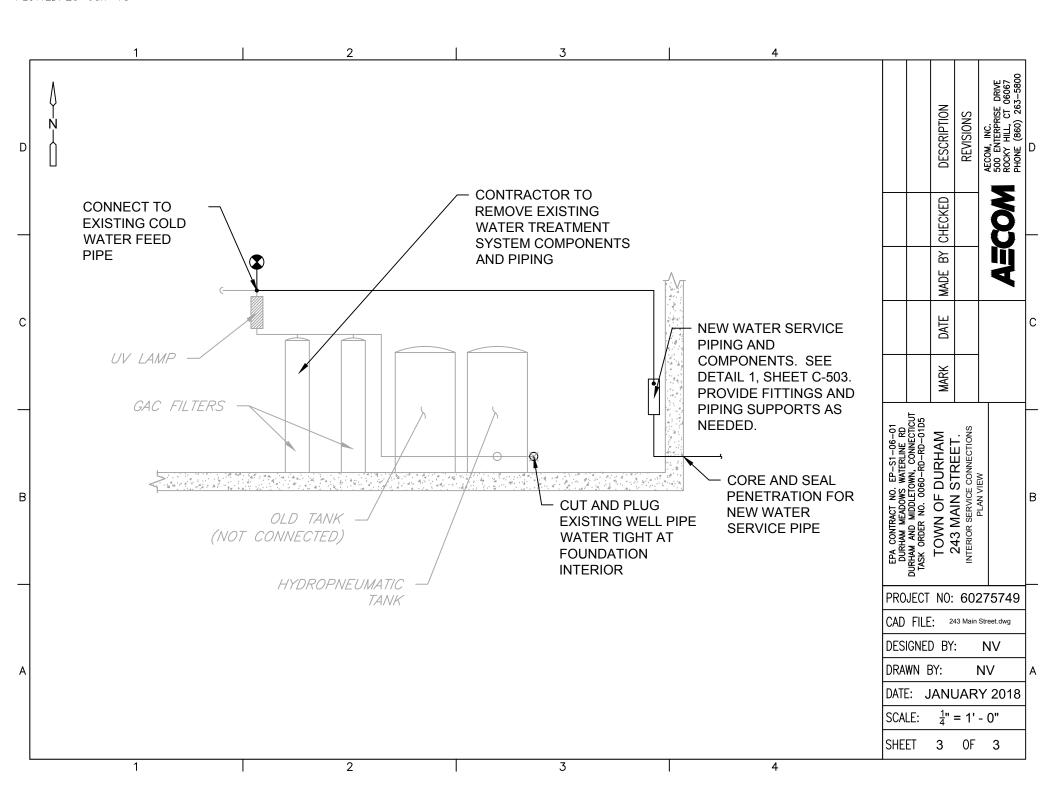


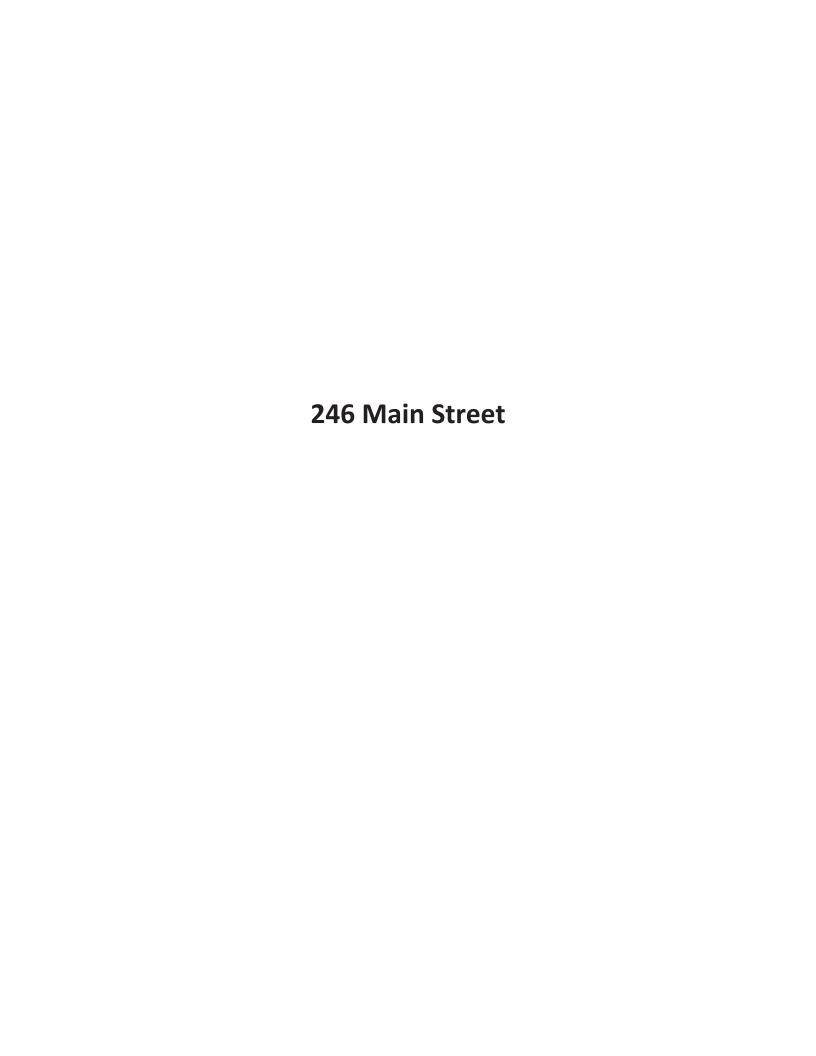


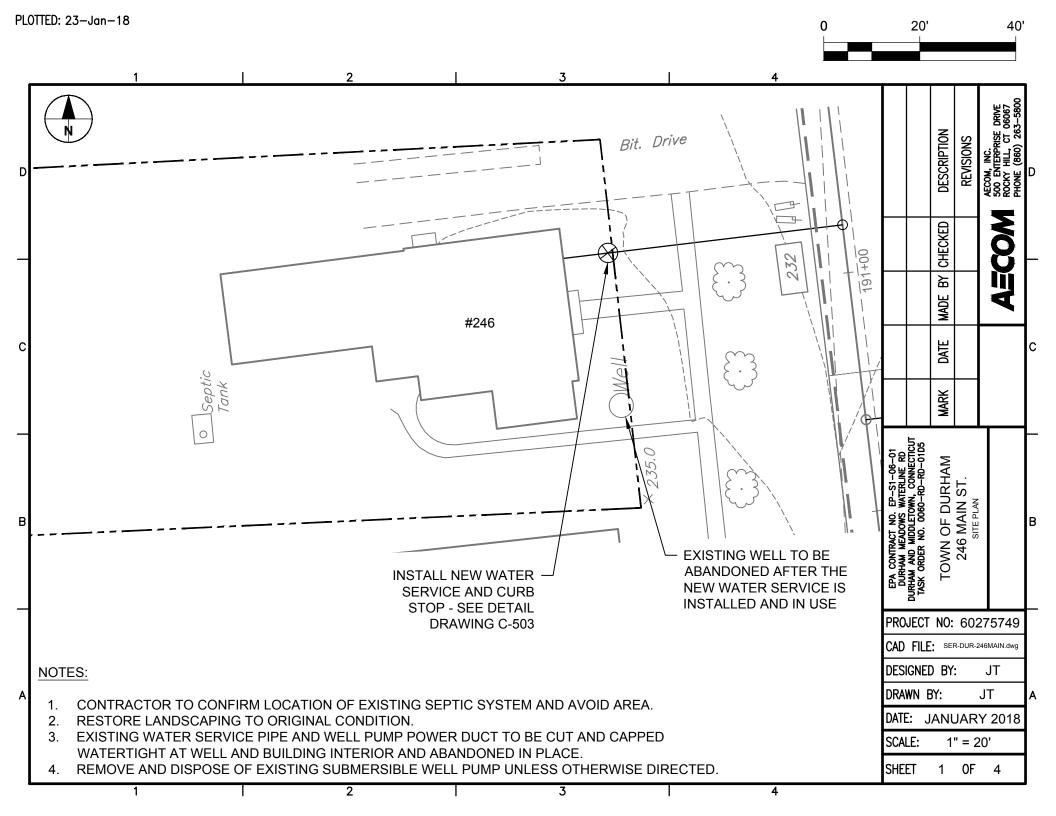


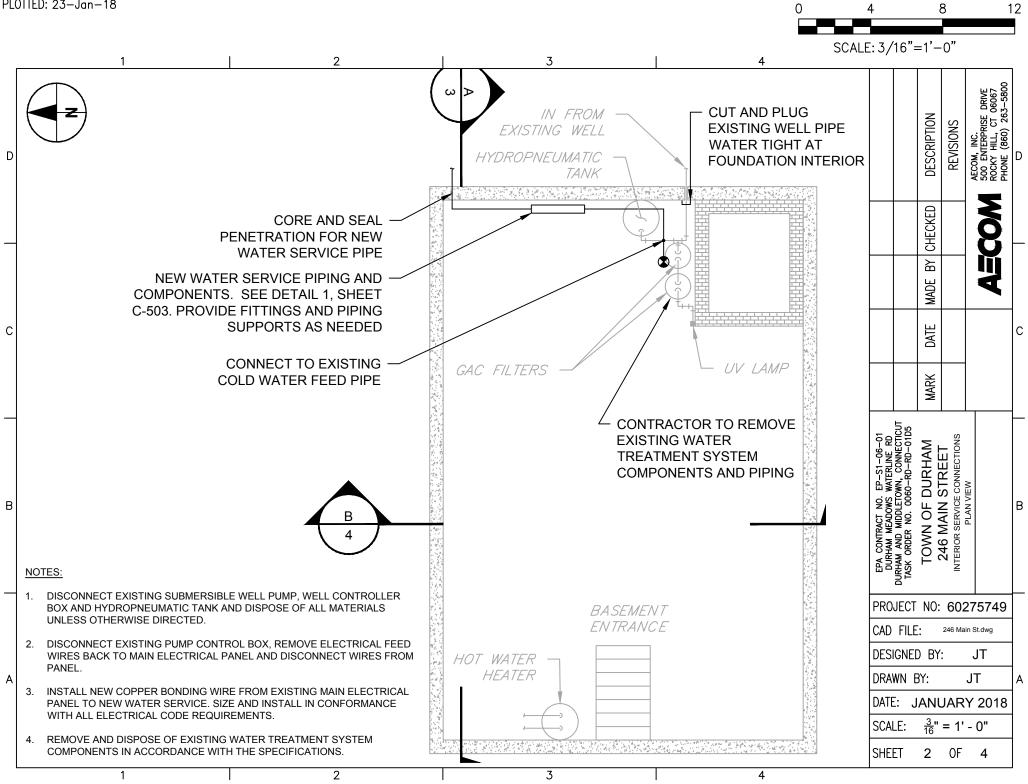


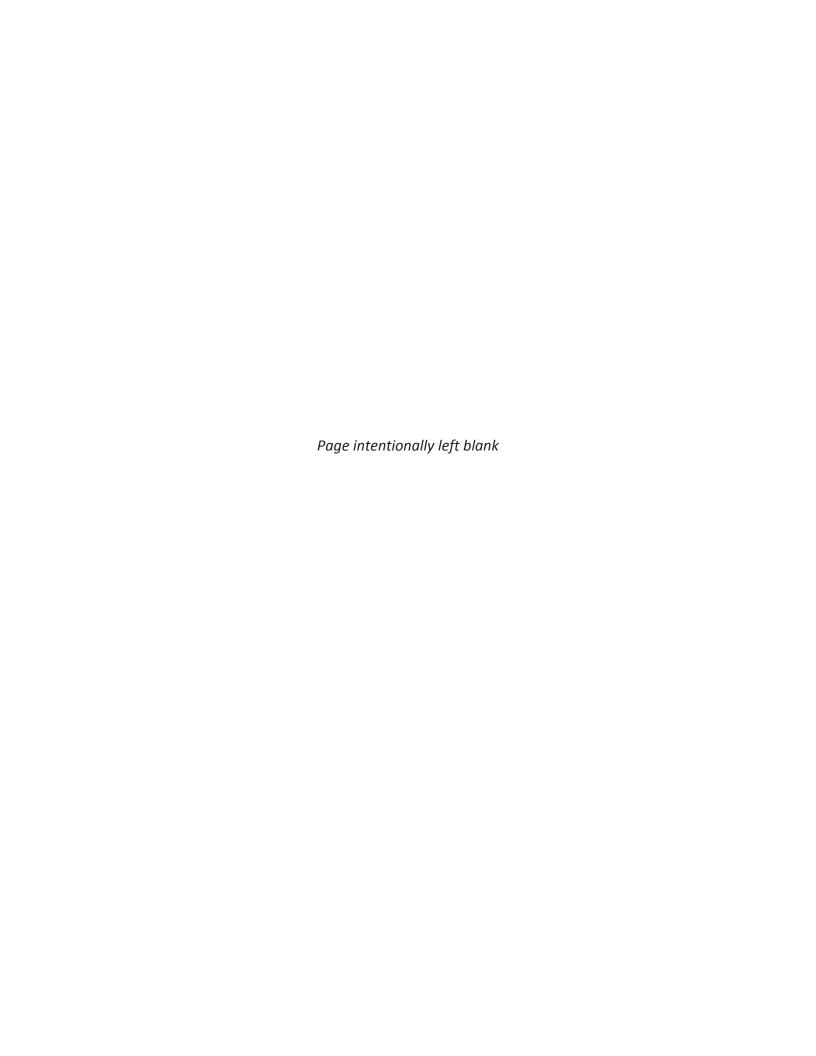




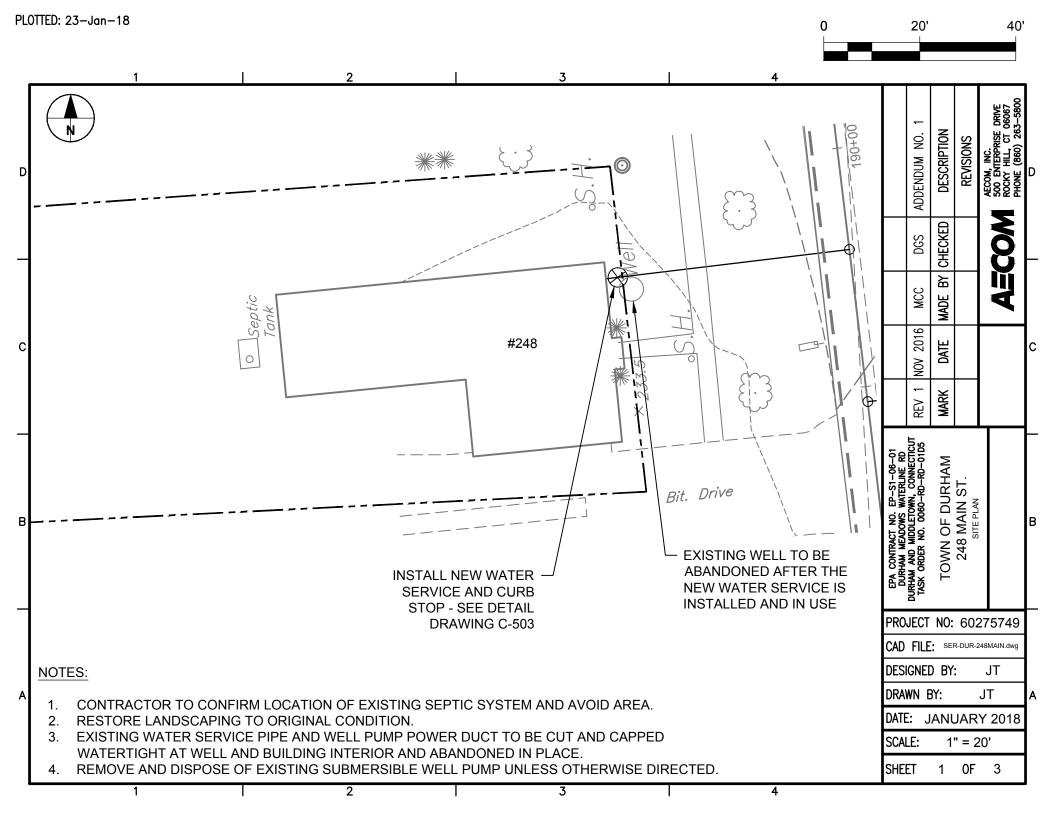




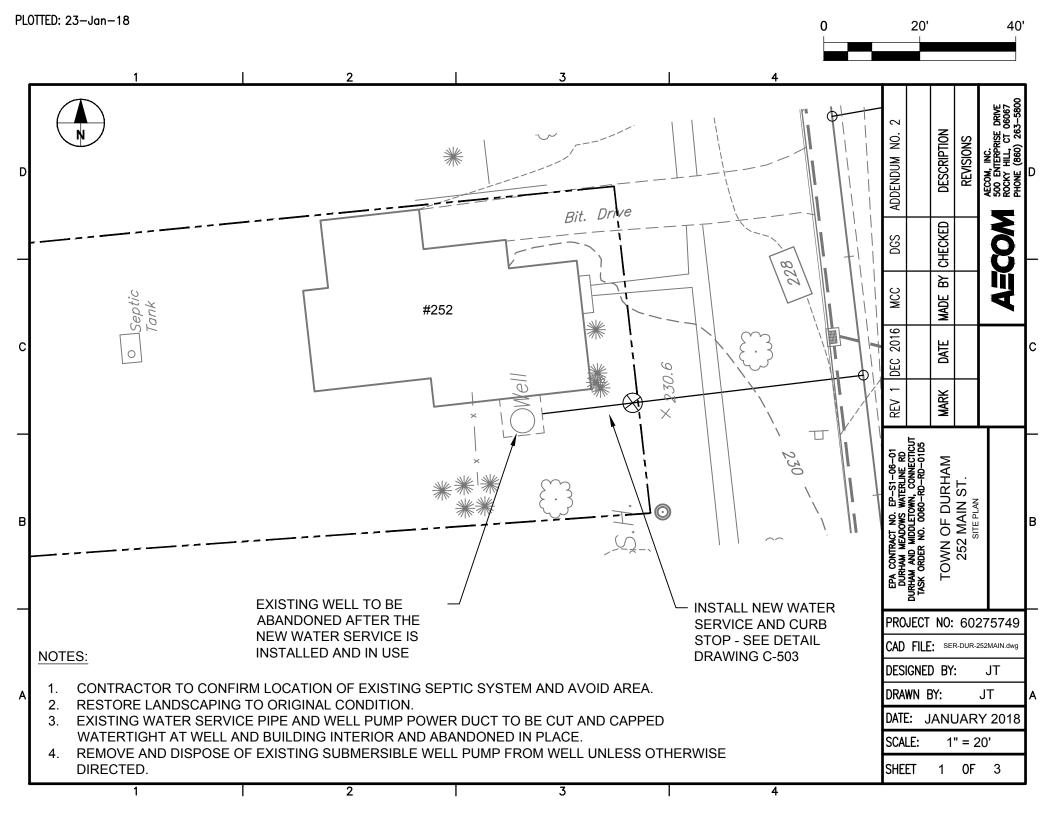


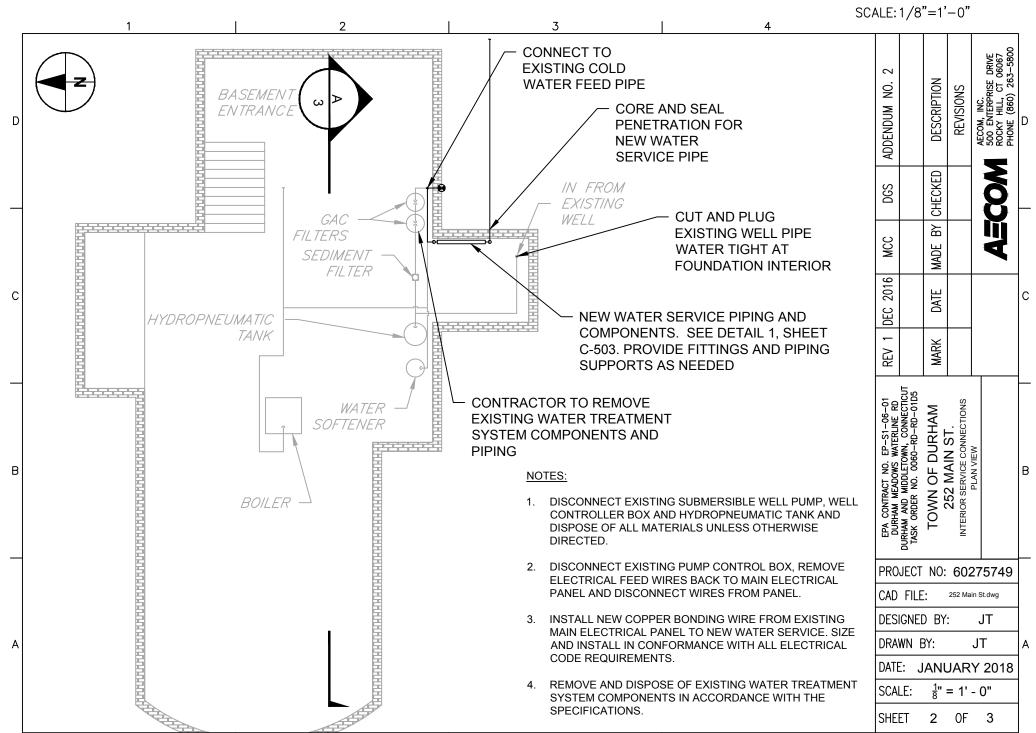


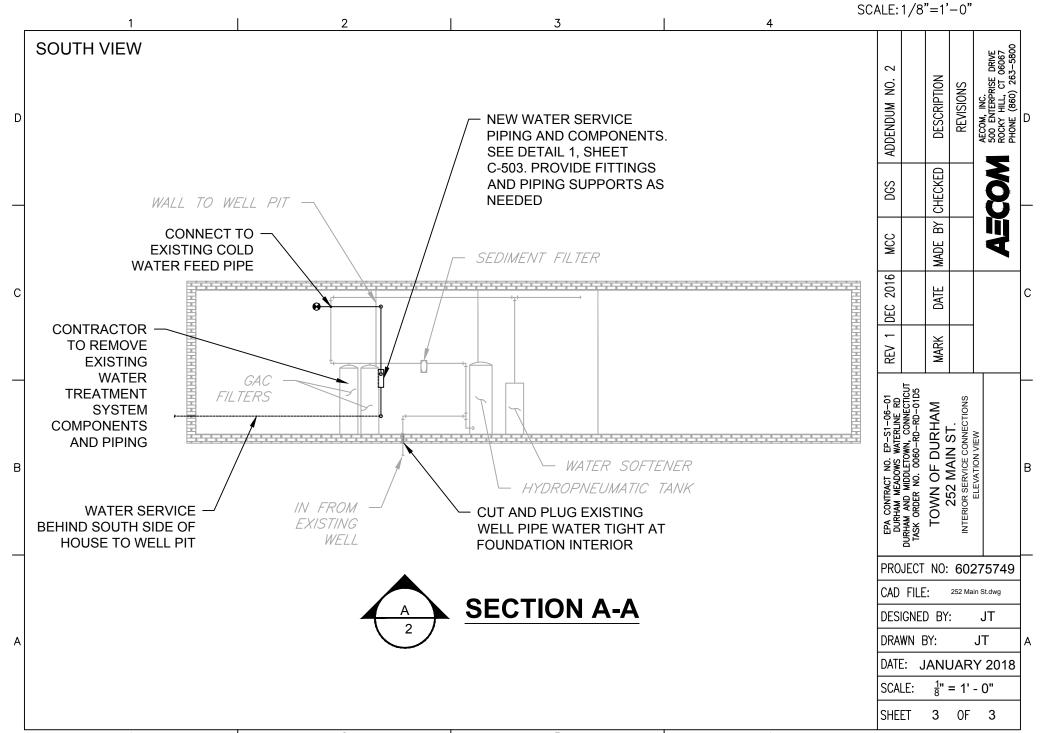




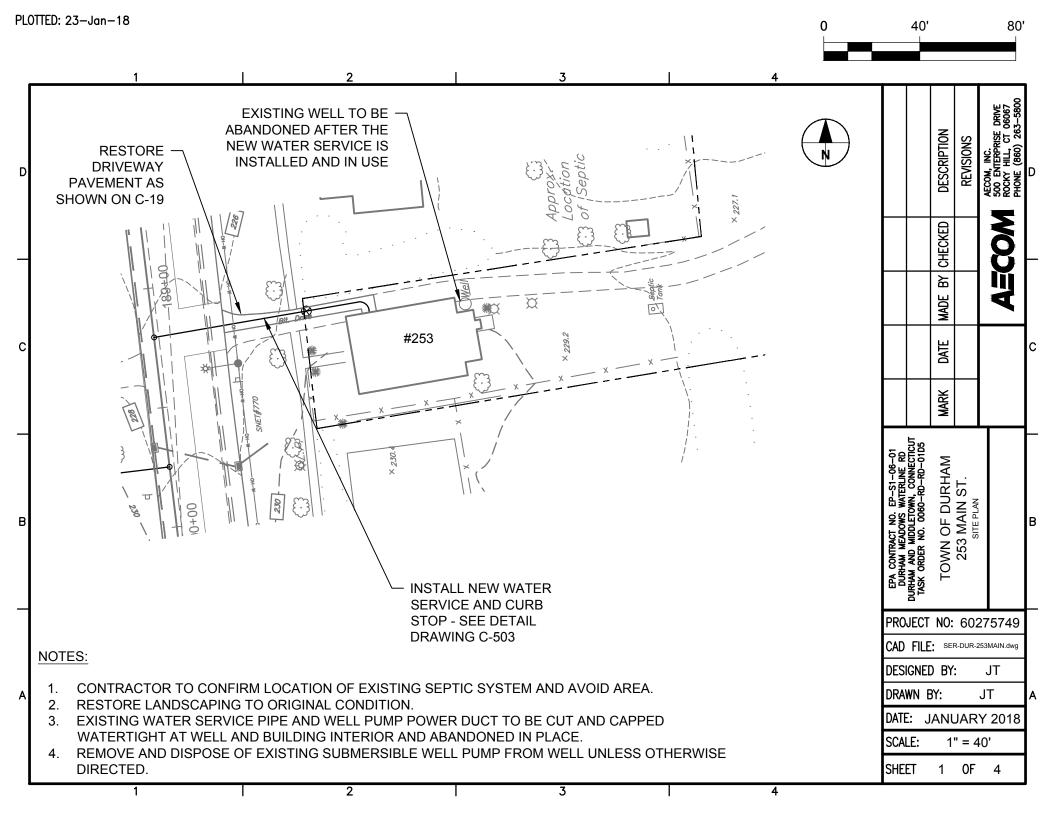


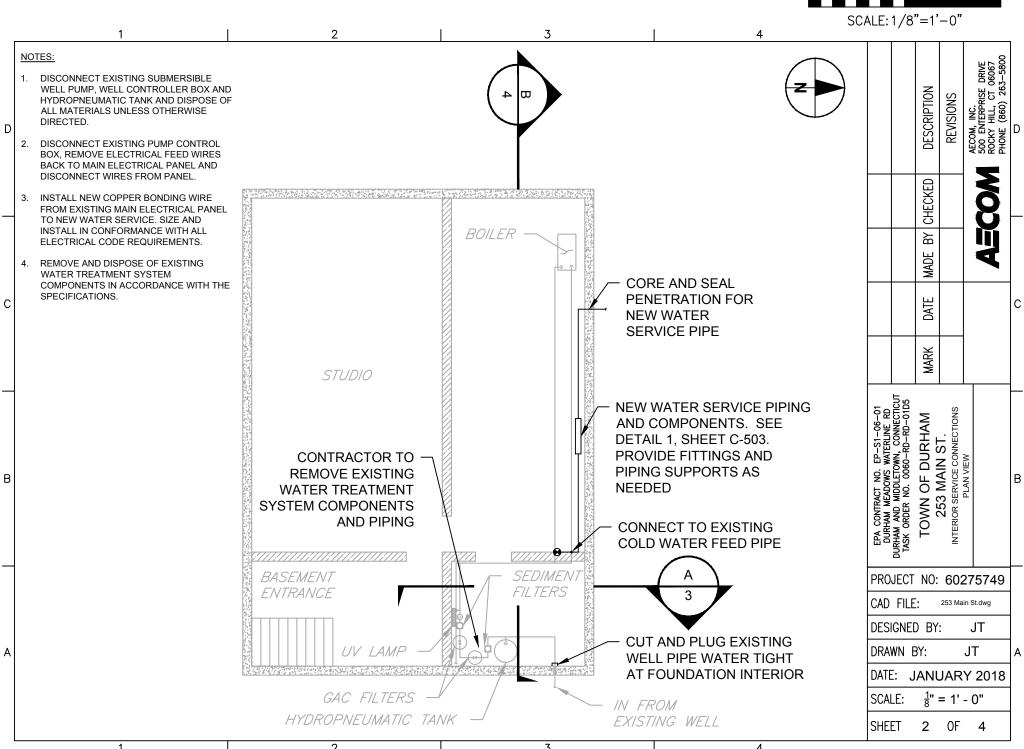


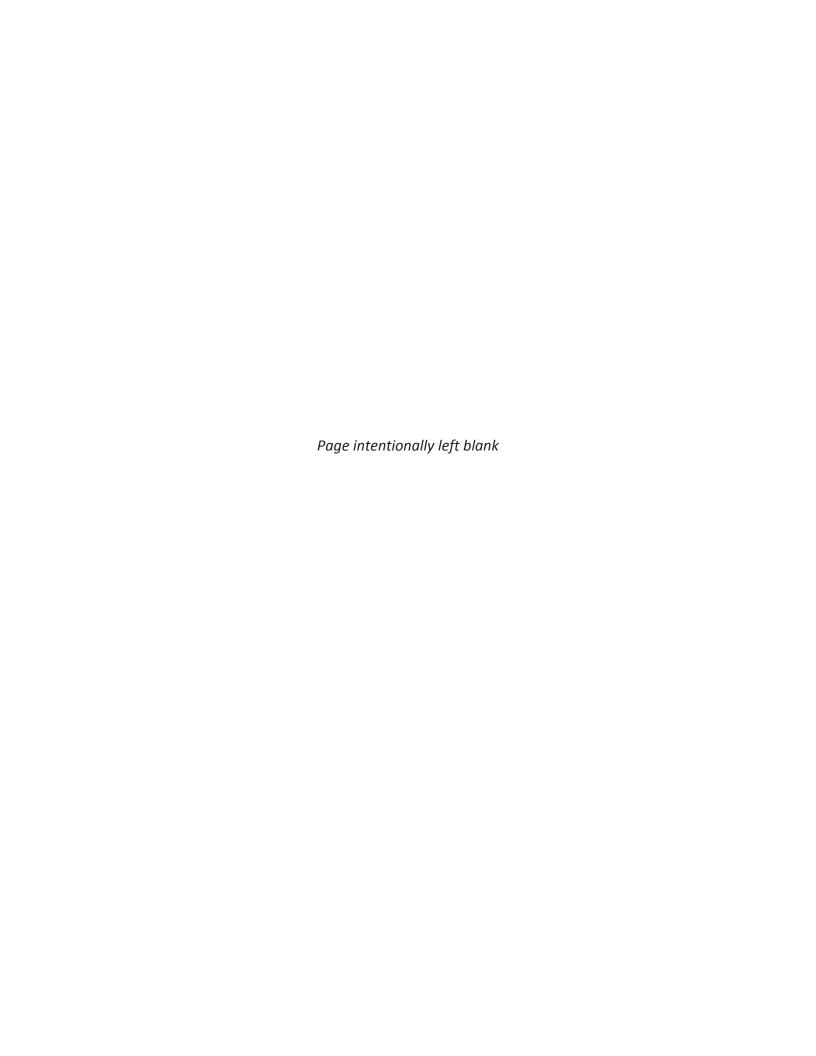


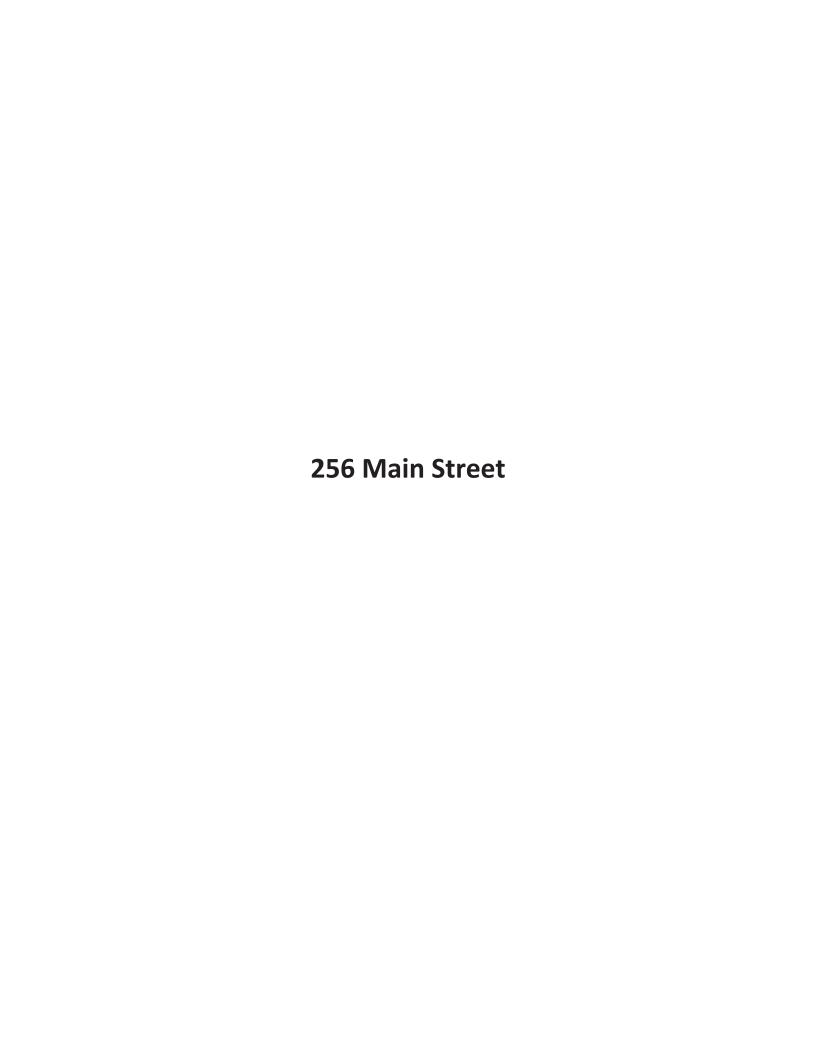


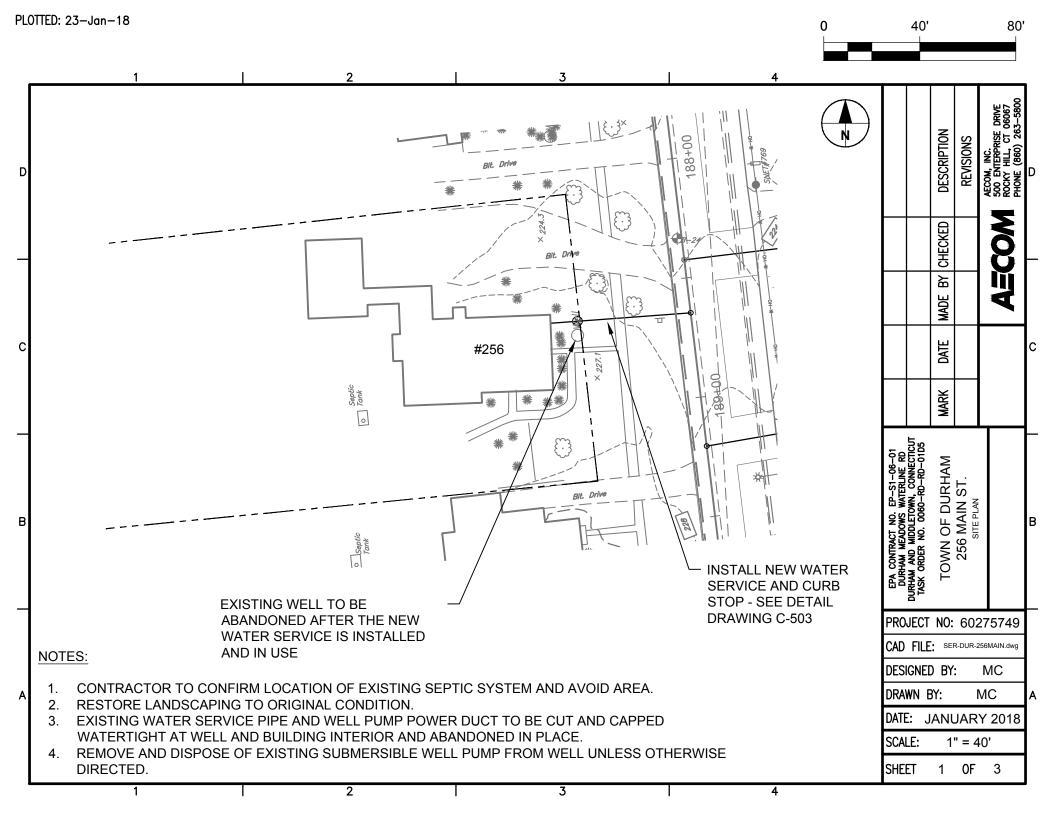


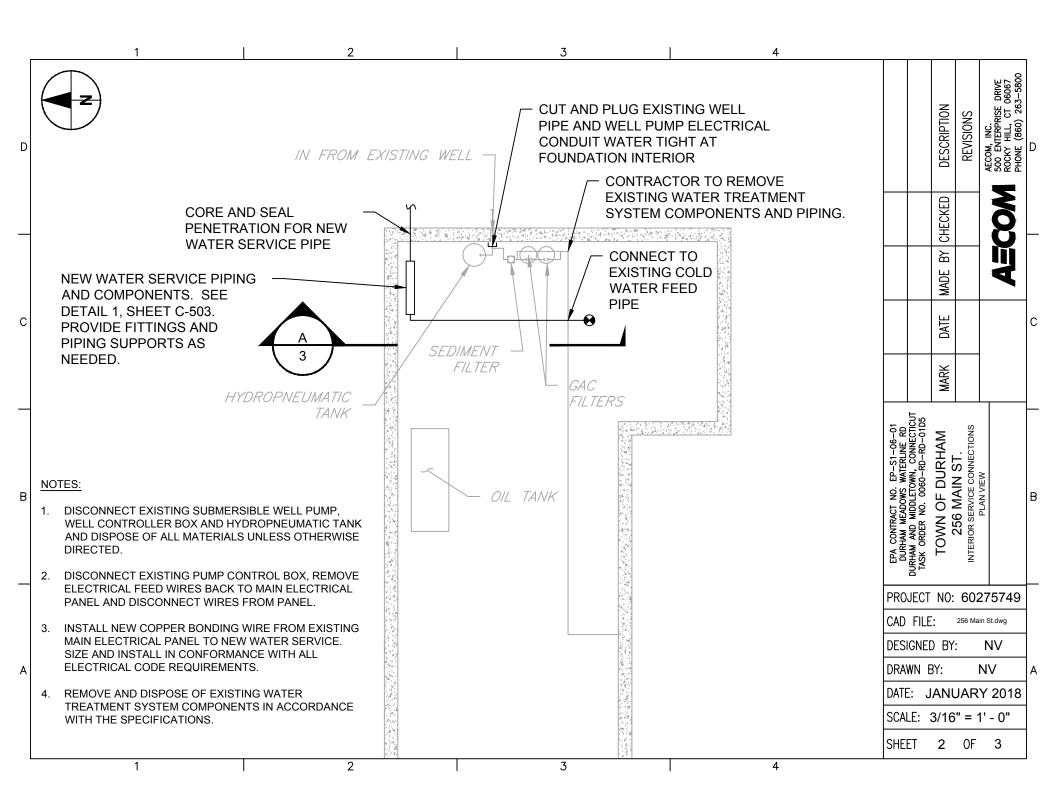


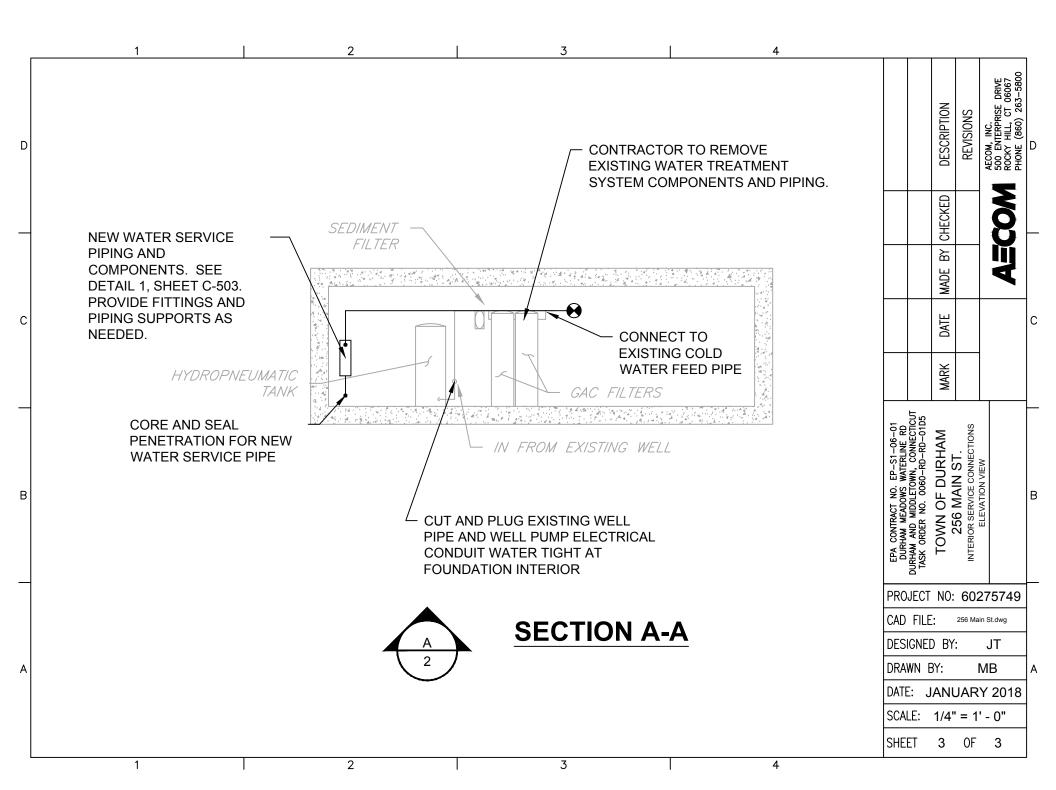


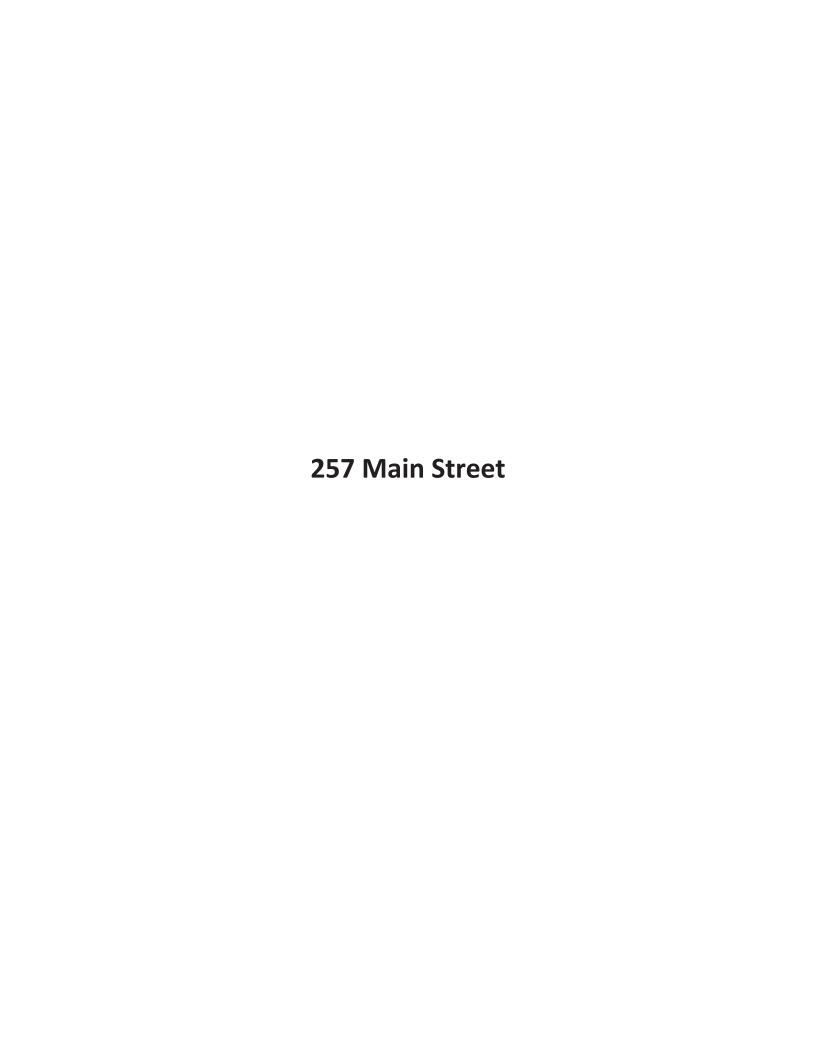


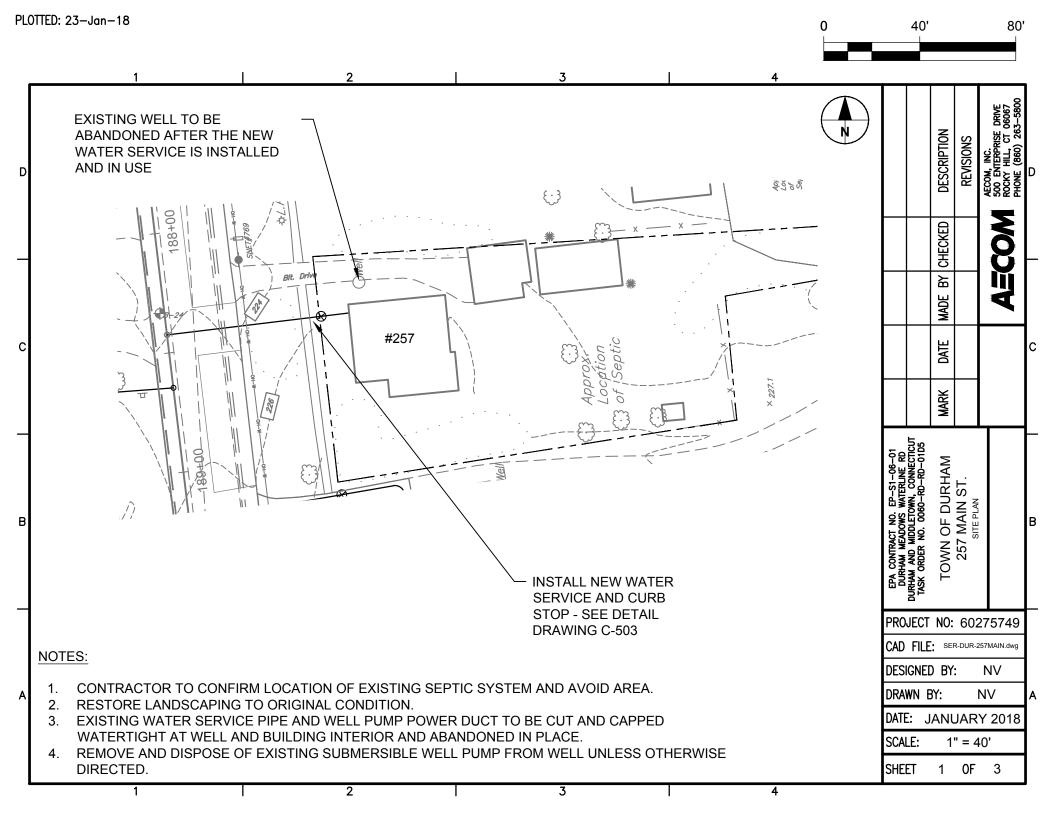


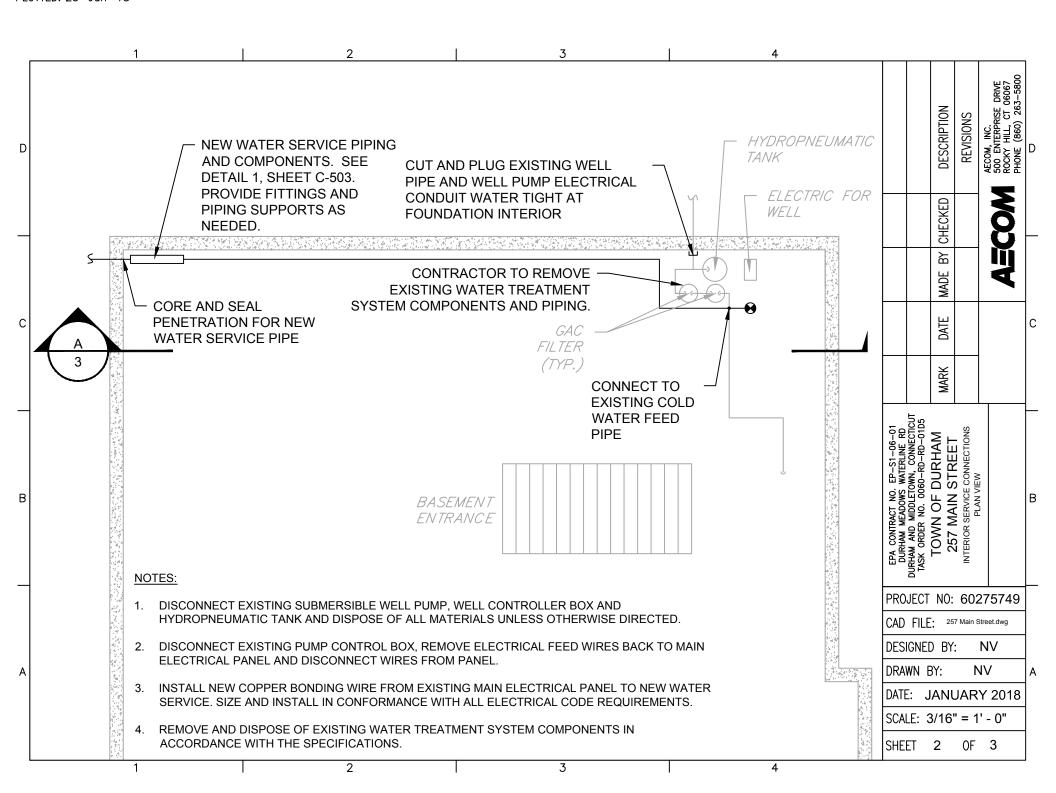


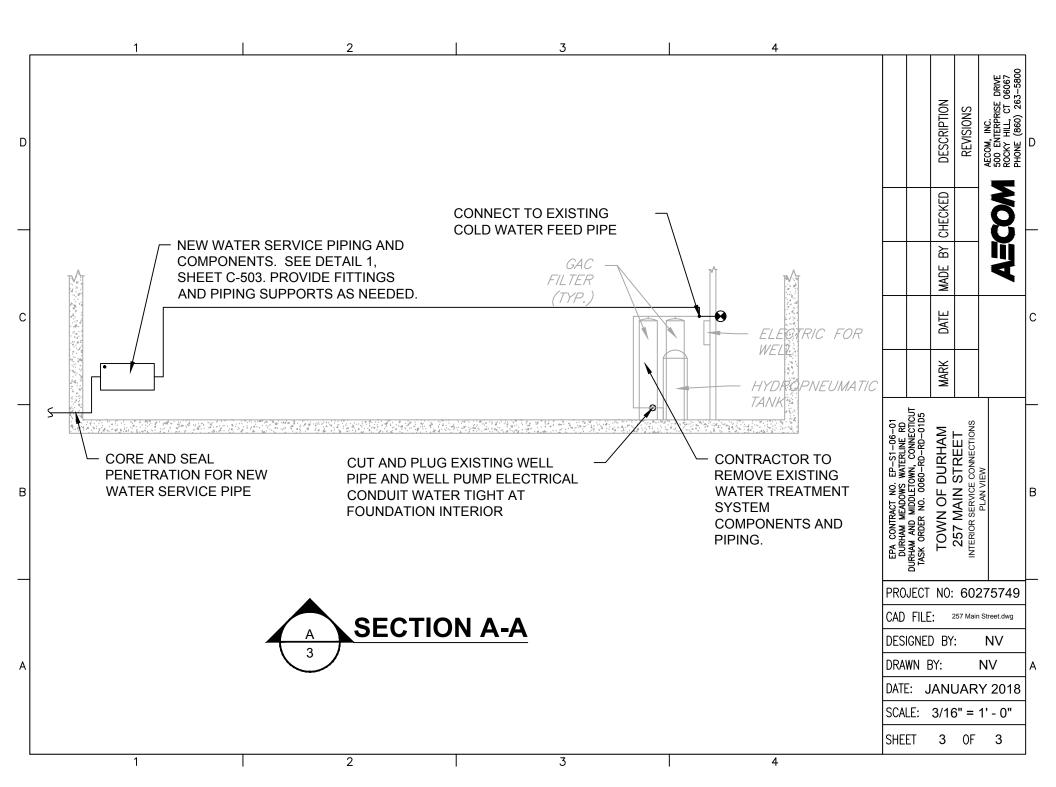


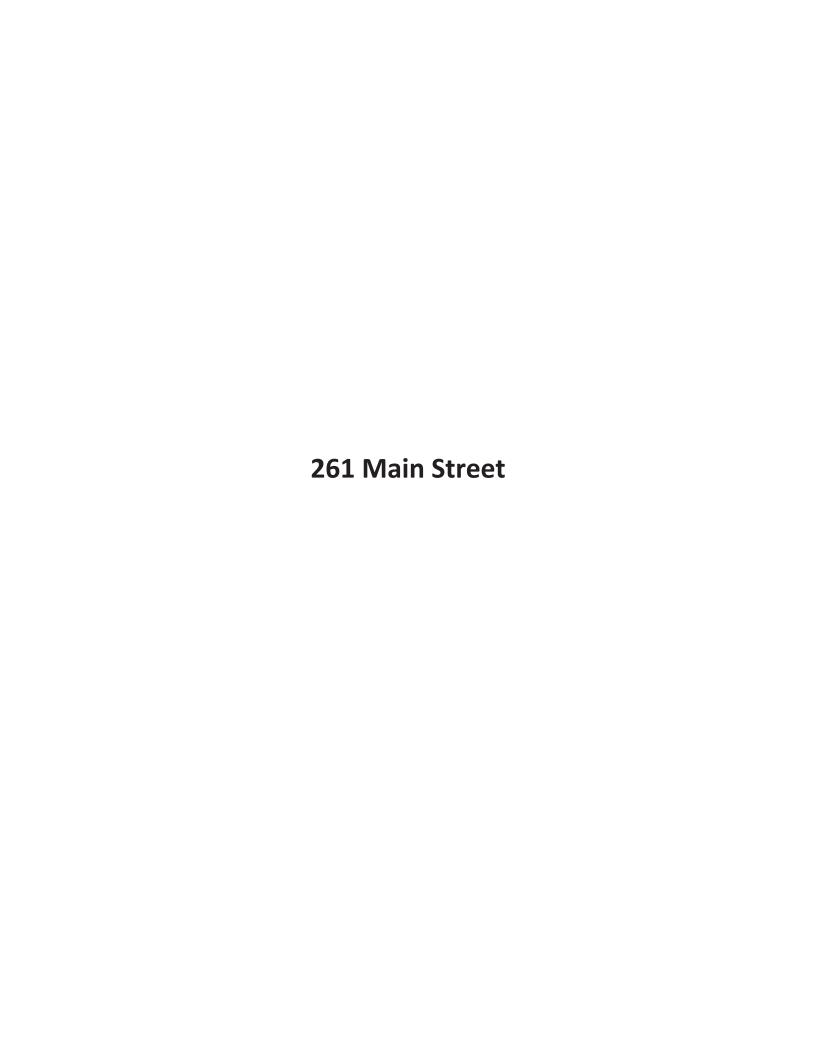


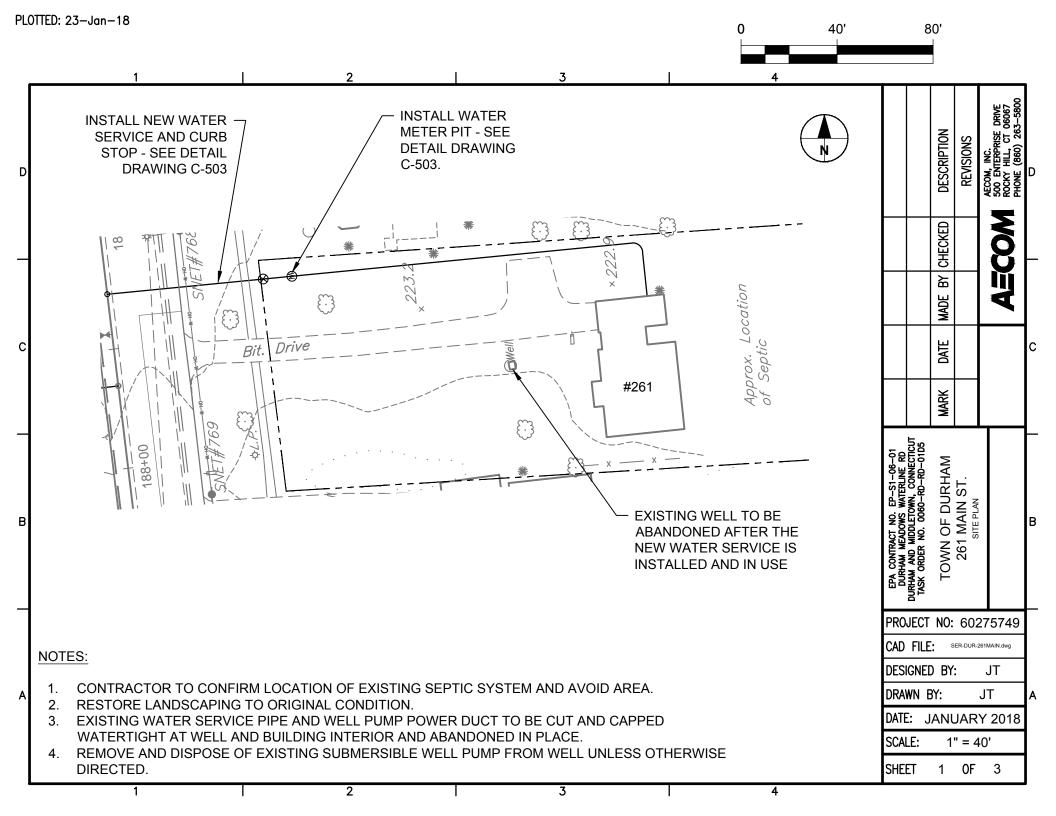


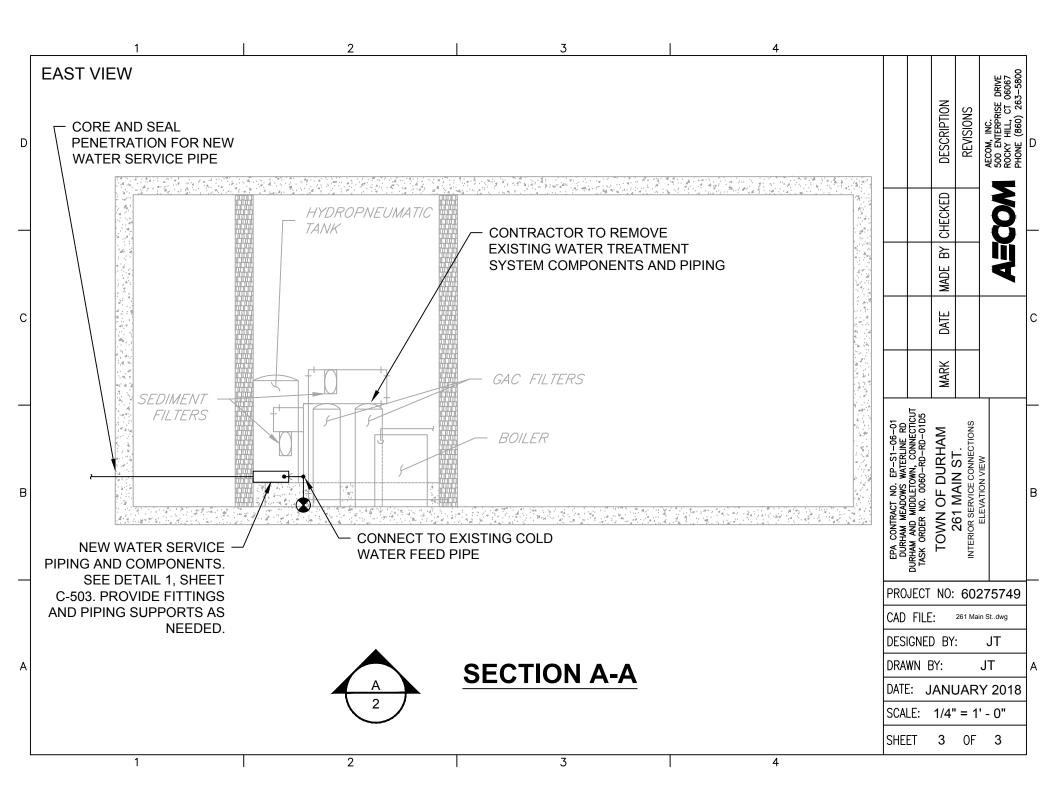


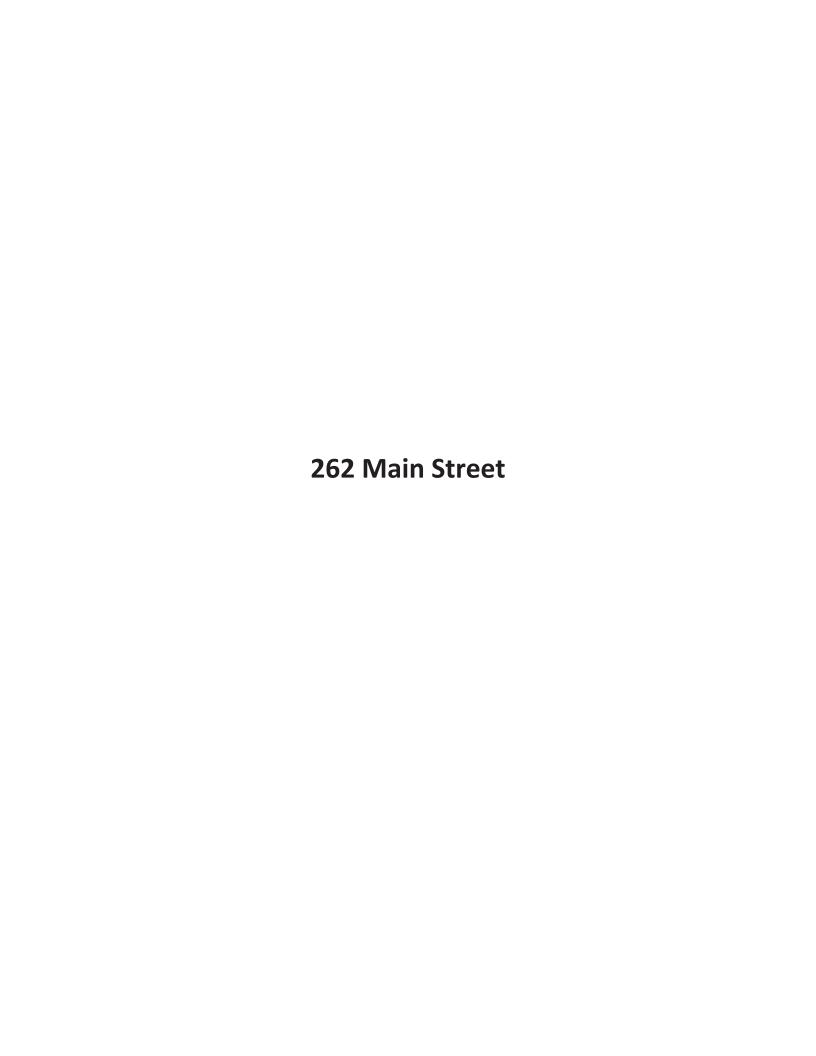


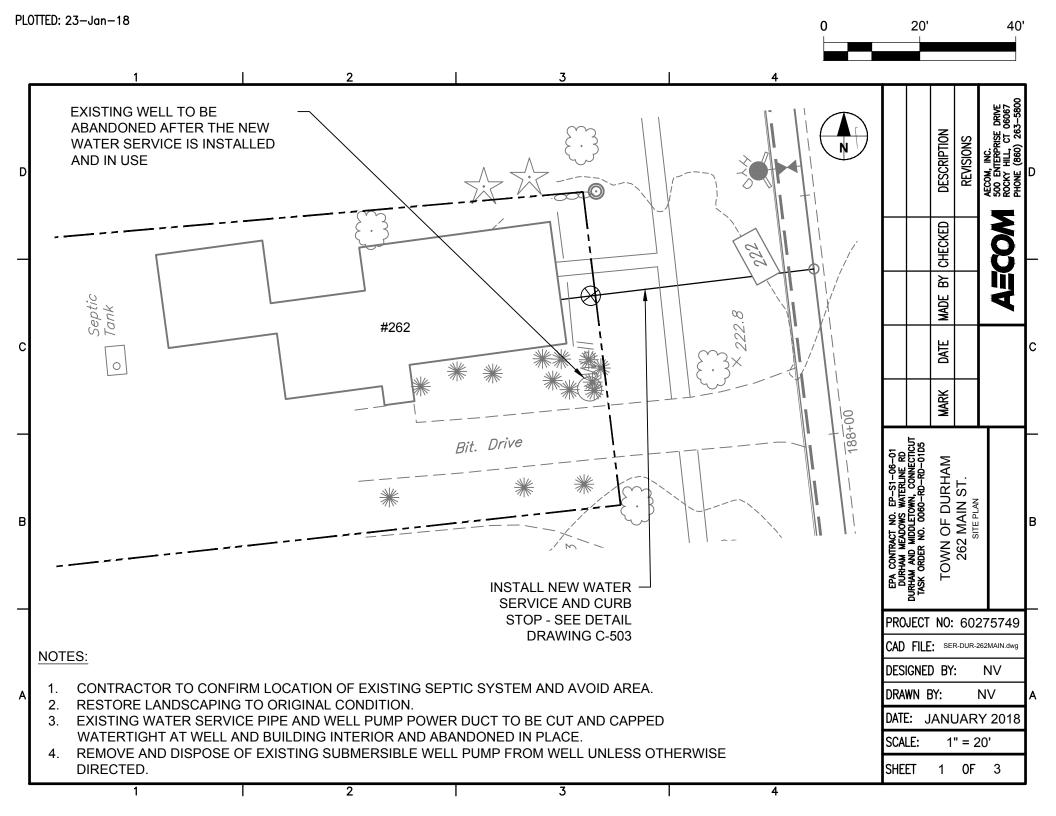


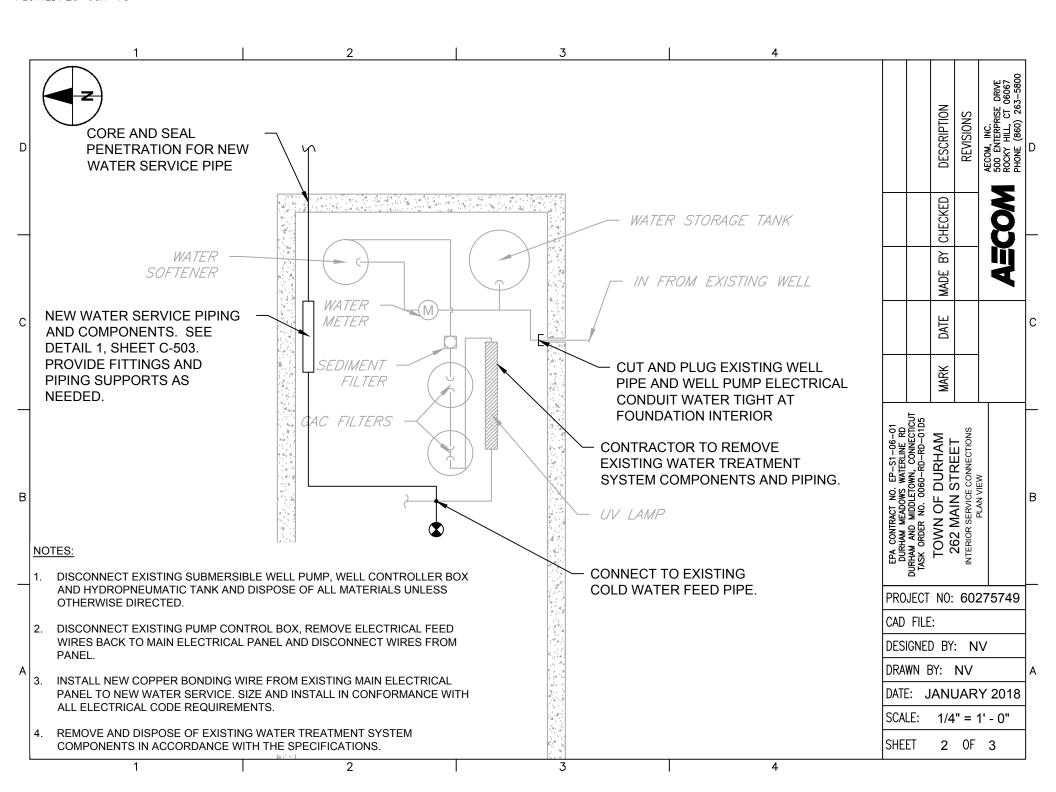


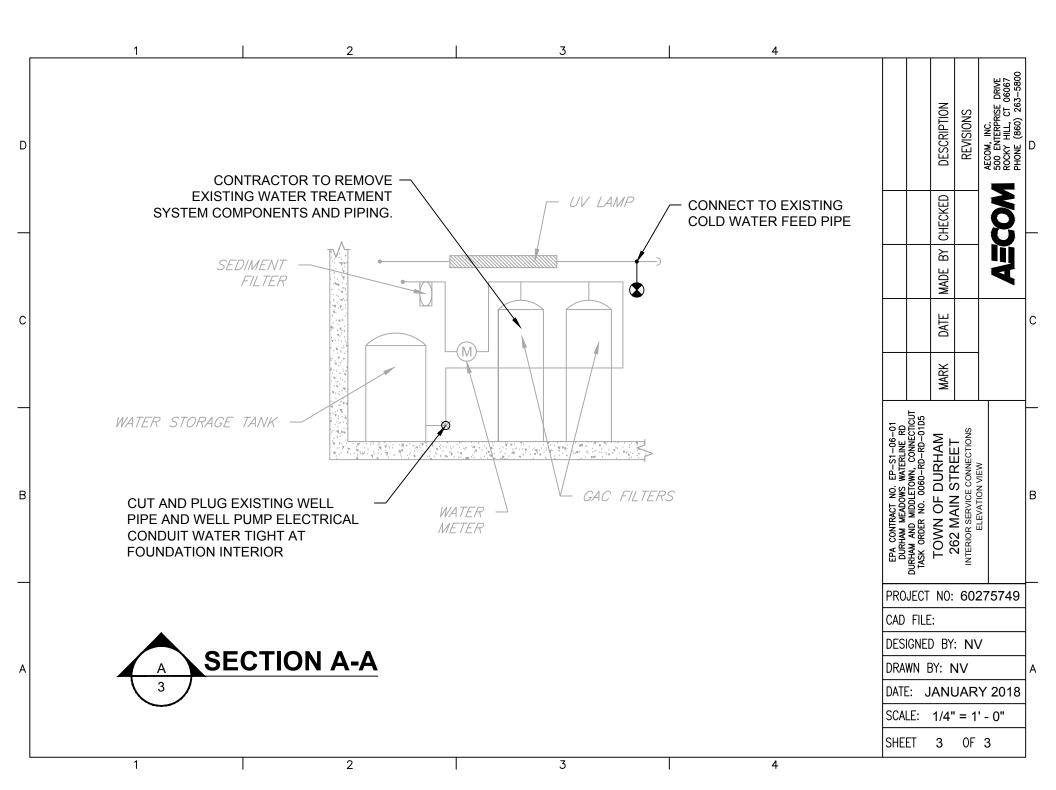




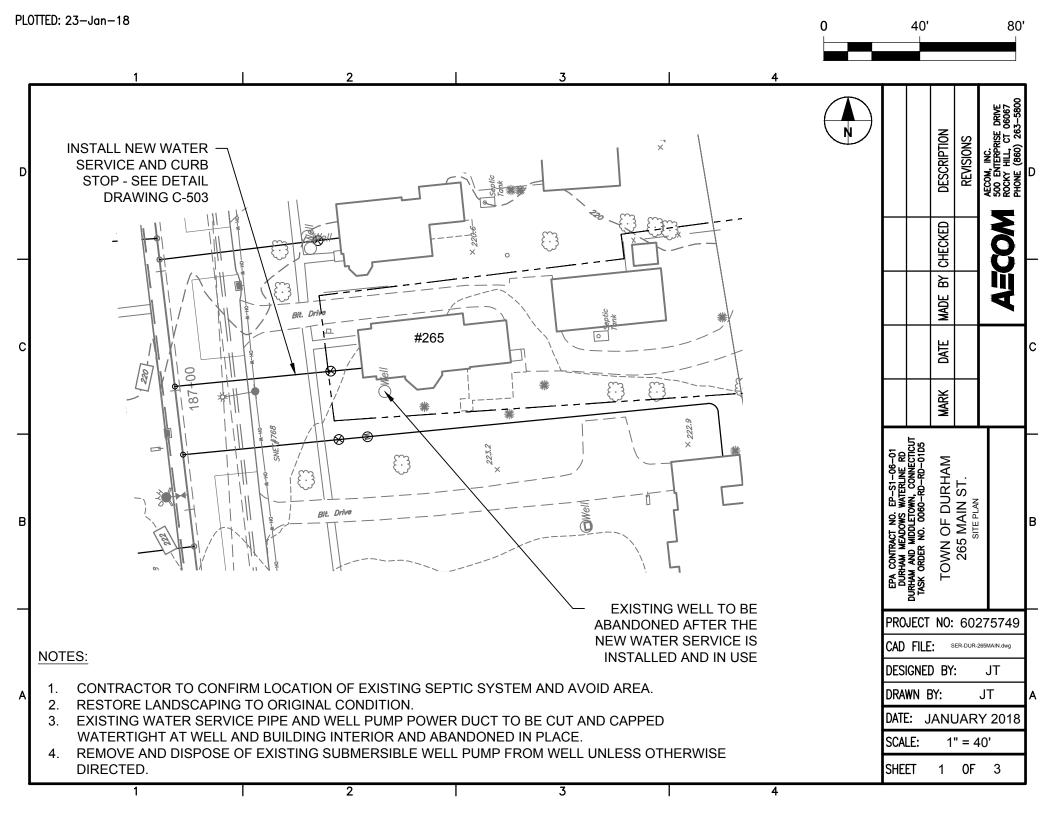












INSTALL NEW COPPER BONDING WIRE FROM EXISTING MAIN

WATER SERVICE. SIZE AND INSTALL

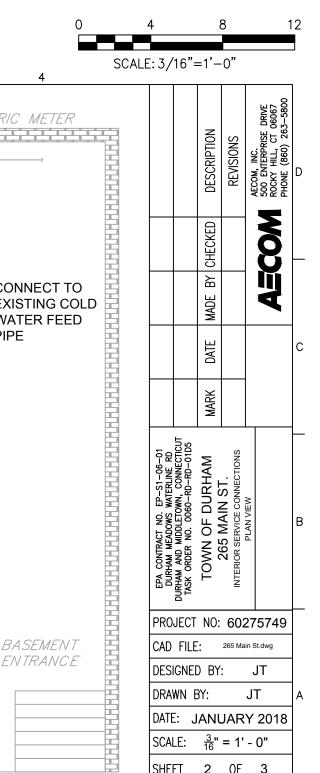
**ELECTRICAL PANEL TO NEW** 

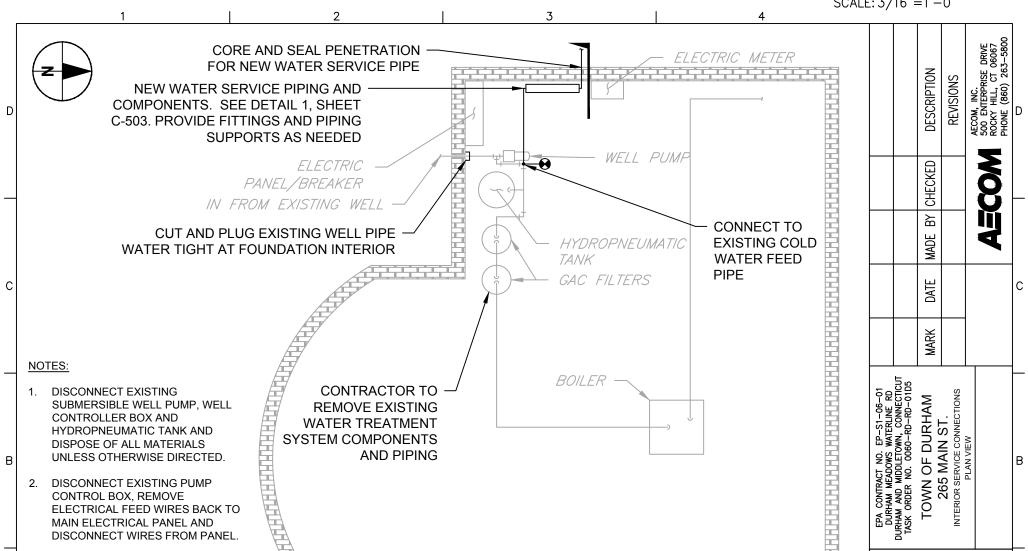
IN CONFORMANCE WITH ALL ELECTRICAL CODE REQUIREMENTS.

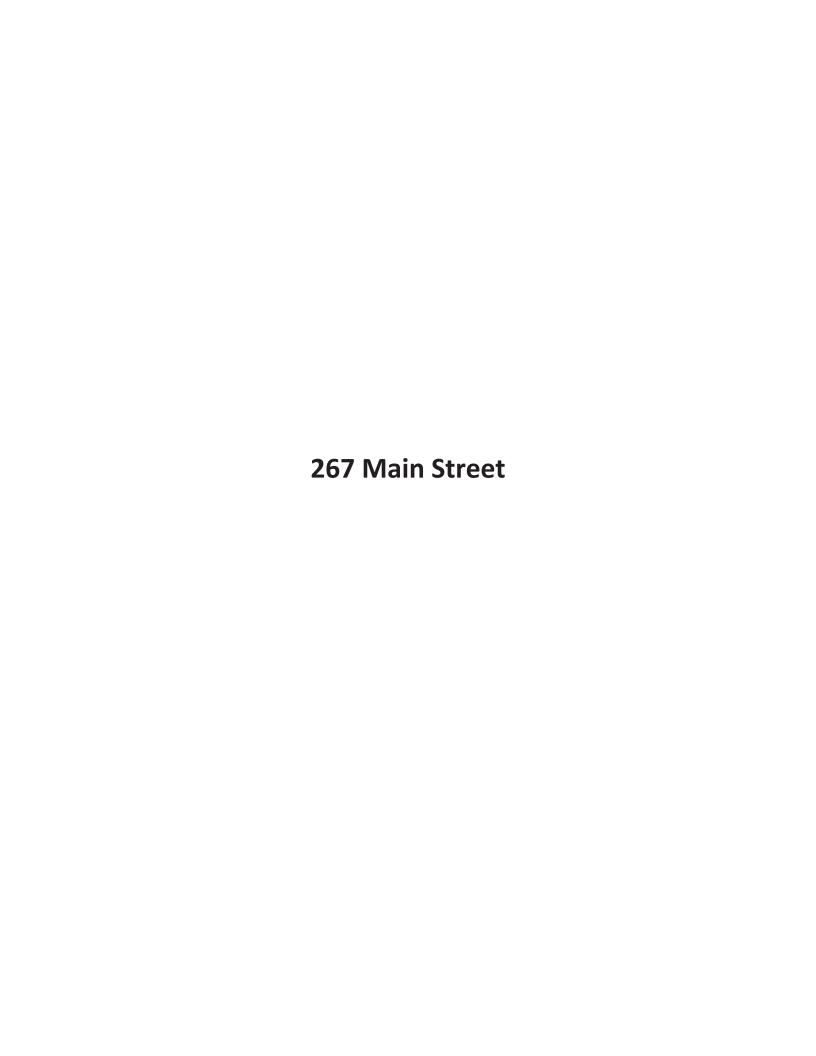
REMOVE AND DISPOSE OF

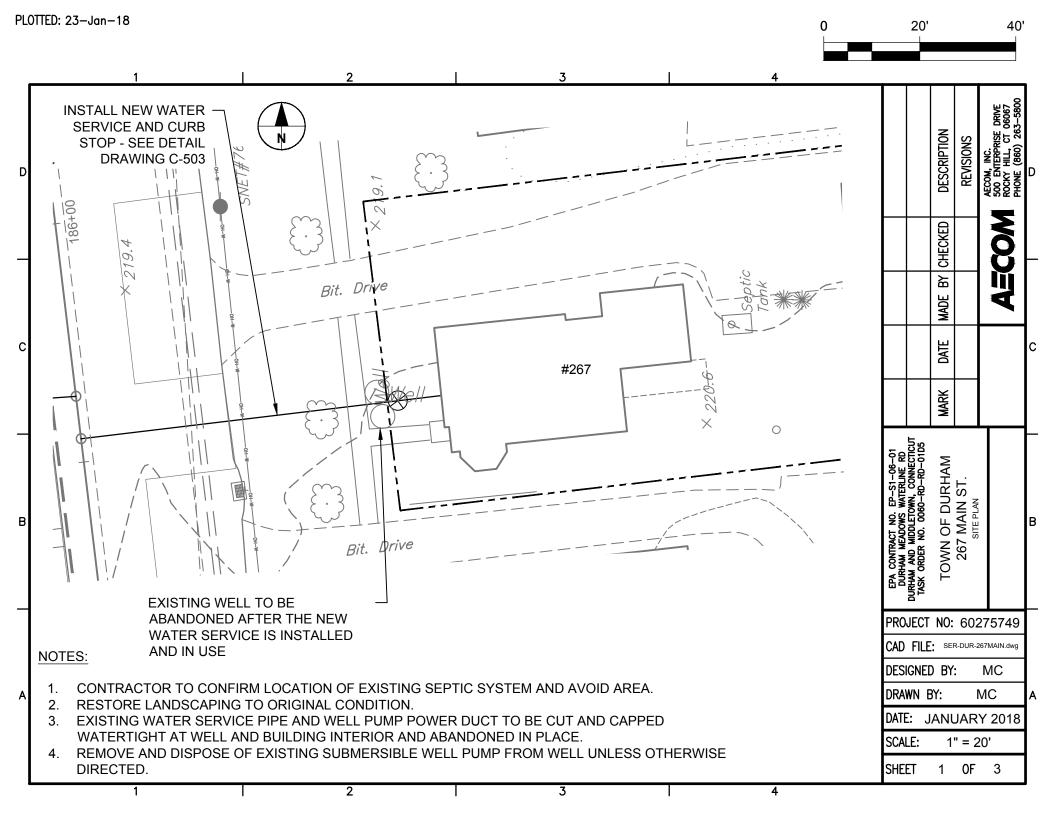
ACCORDANCE WITH THE SPECIFICATIONS.

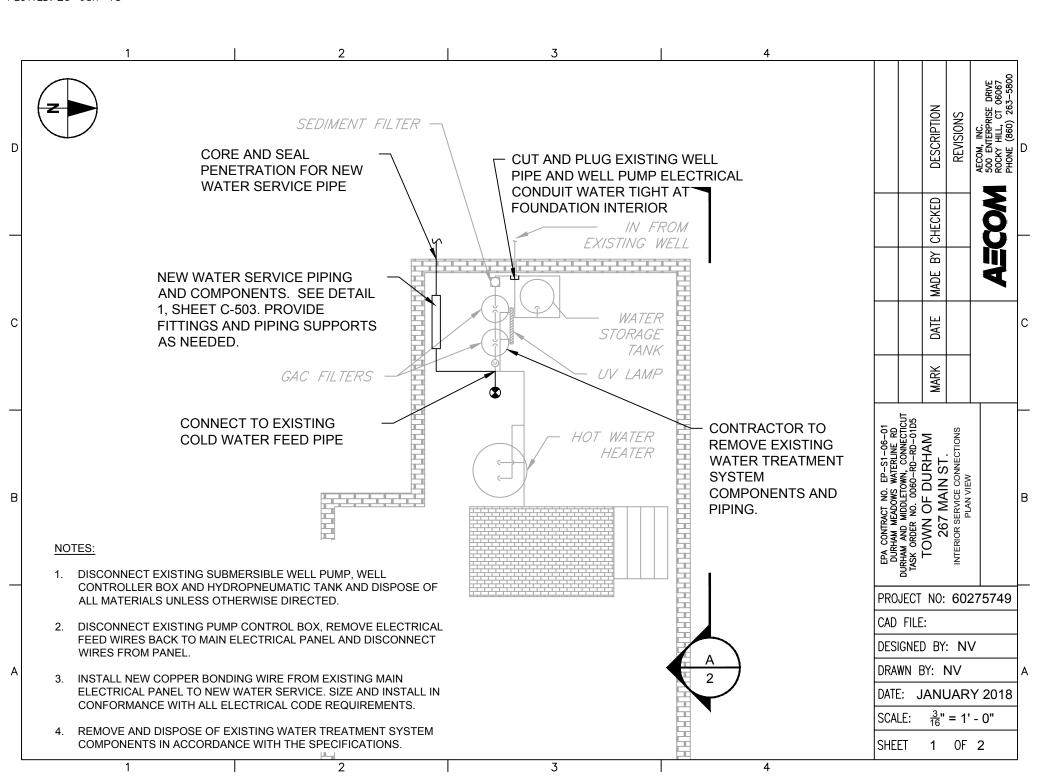
EXISTING WATER TREATMENT SYSTEM COMPONENTS IN

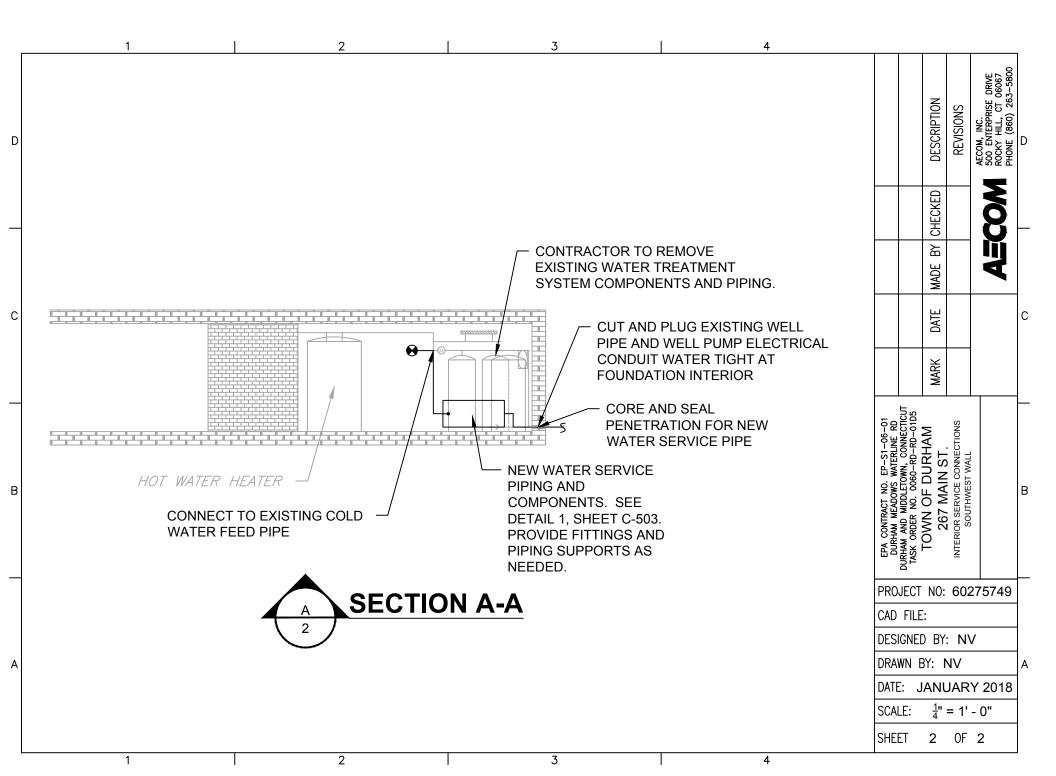


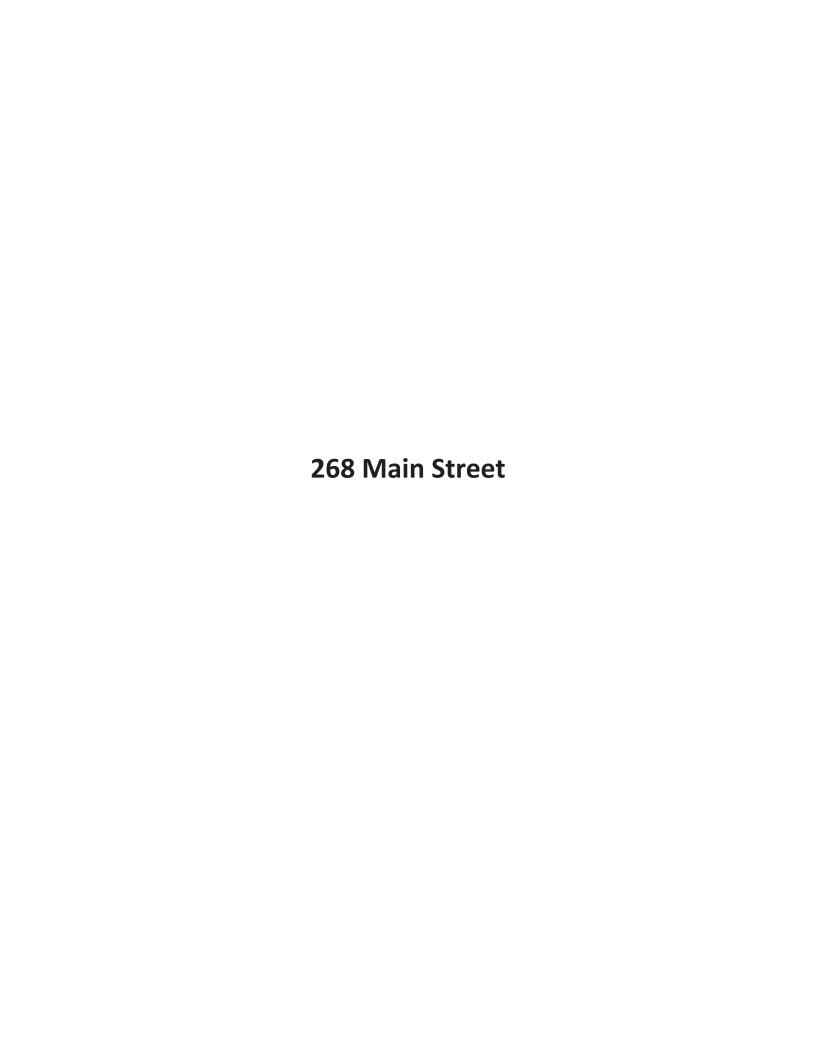


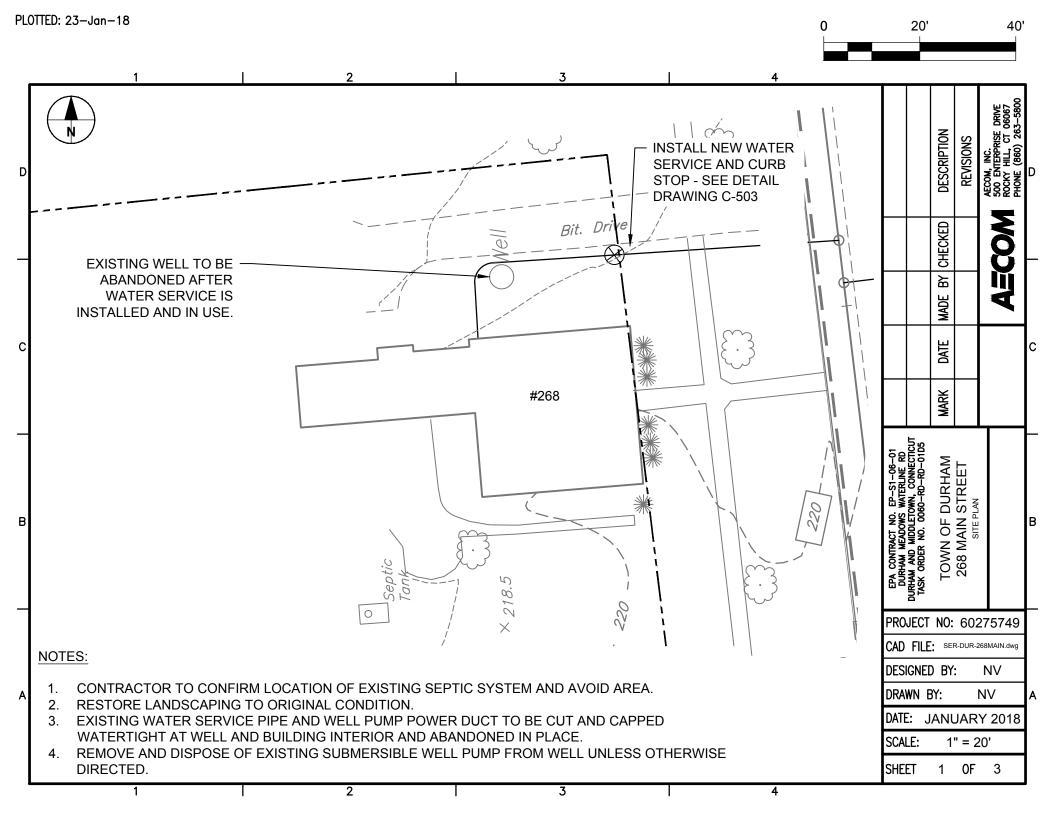


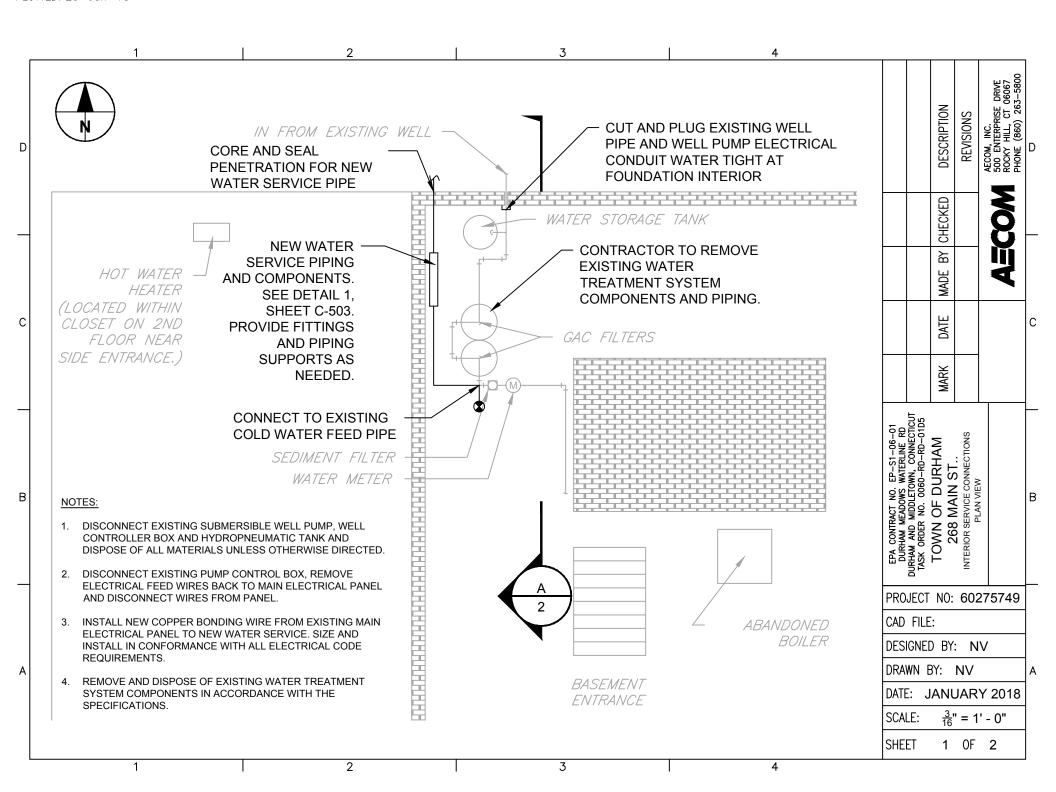


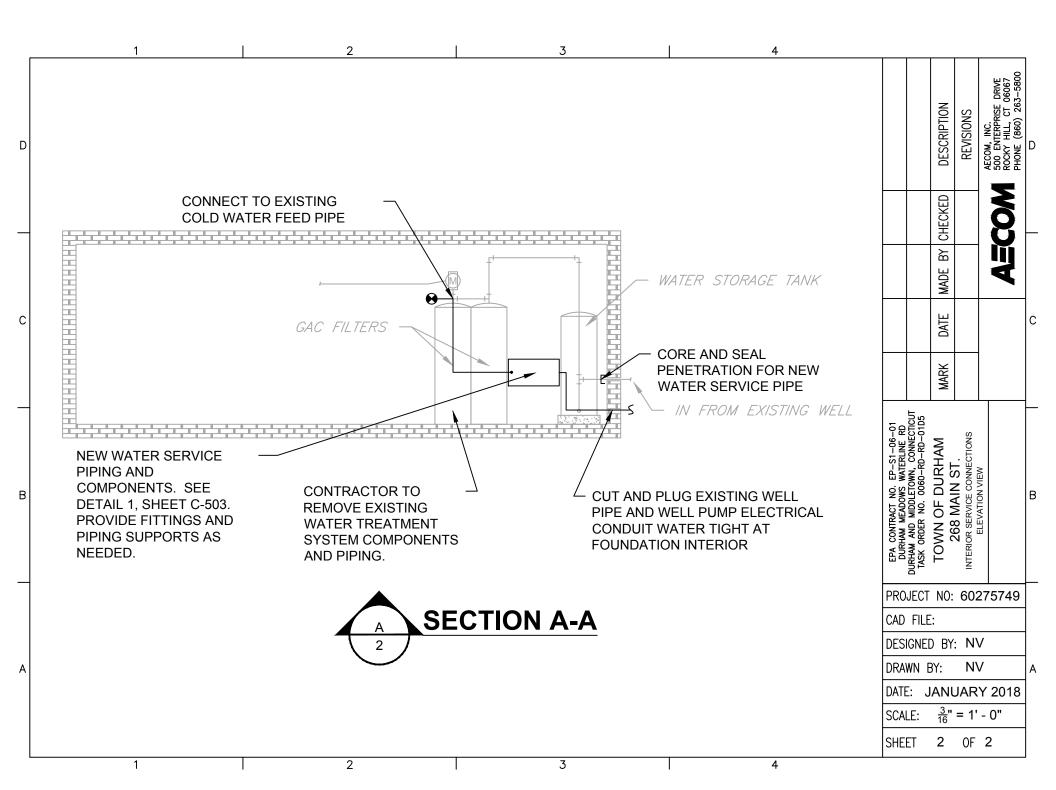


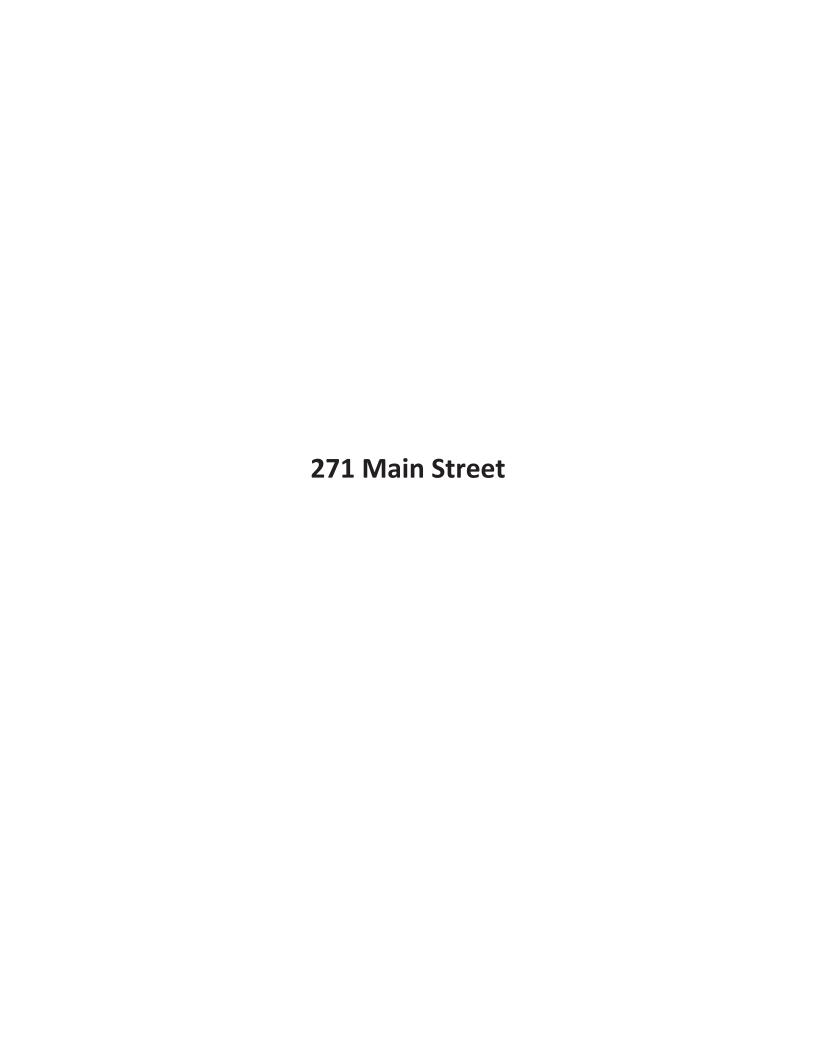


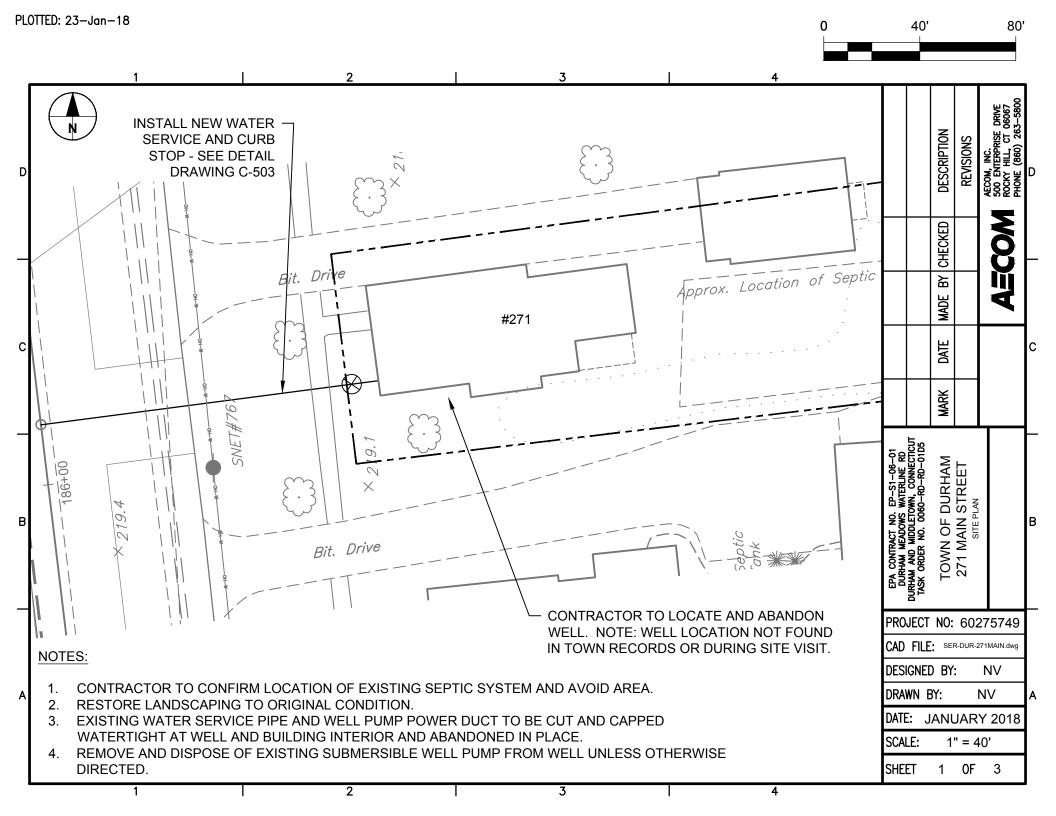


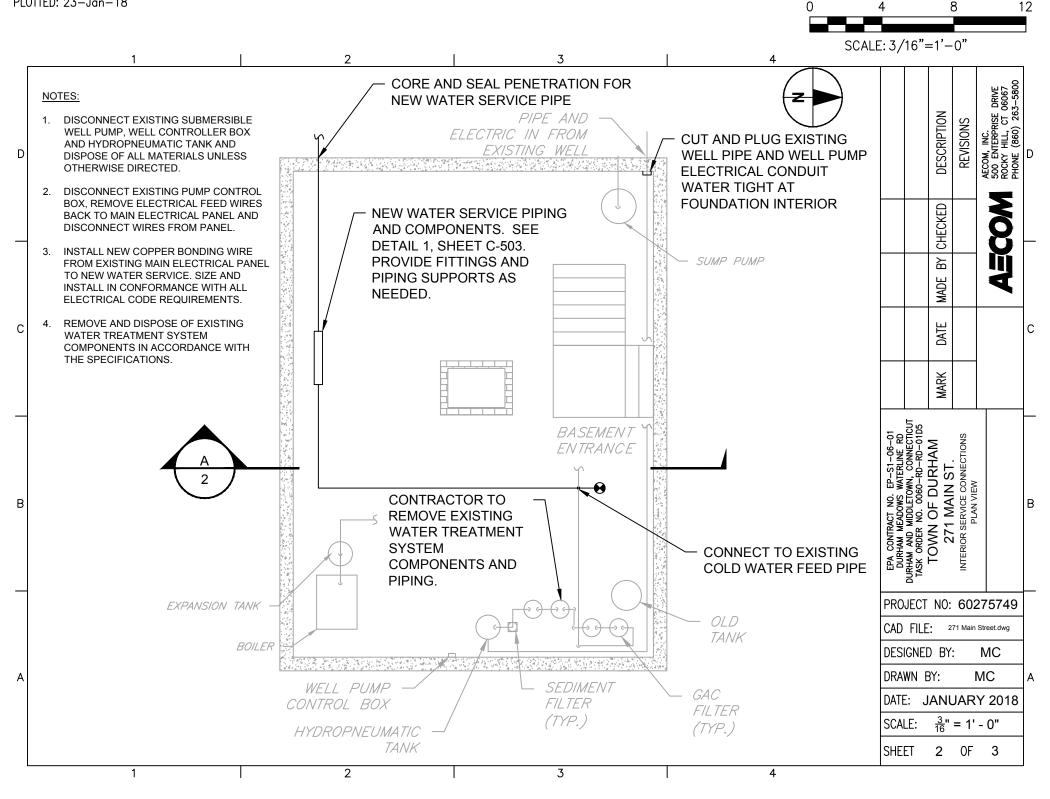


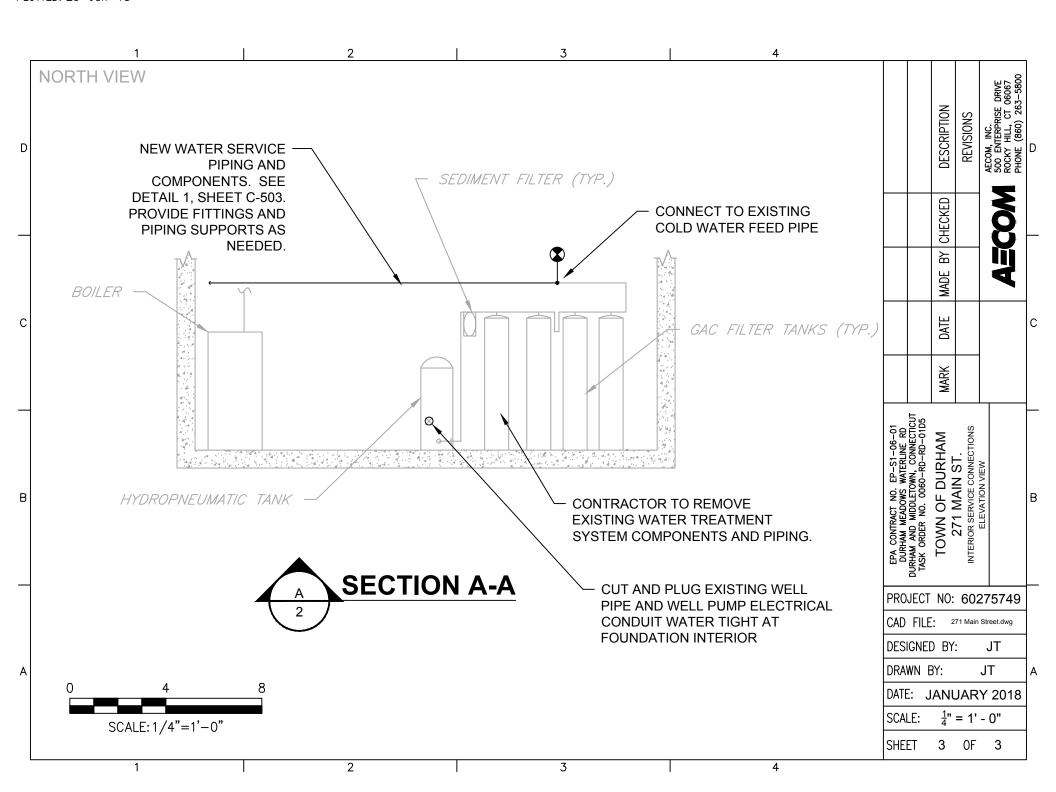




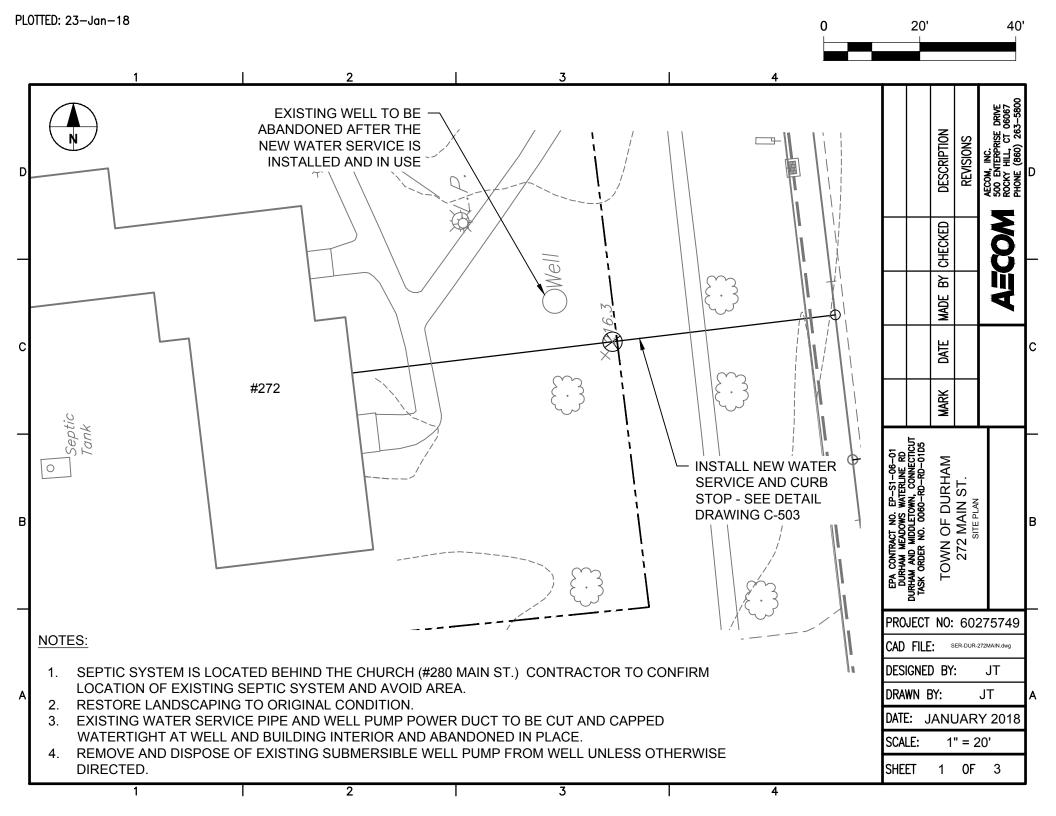




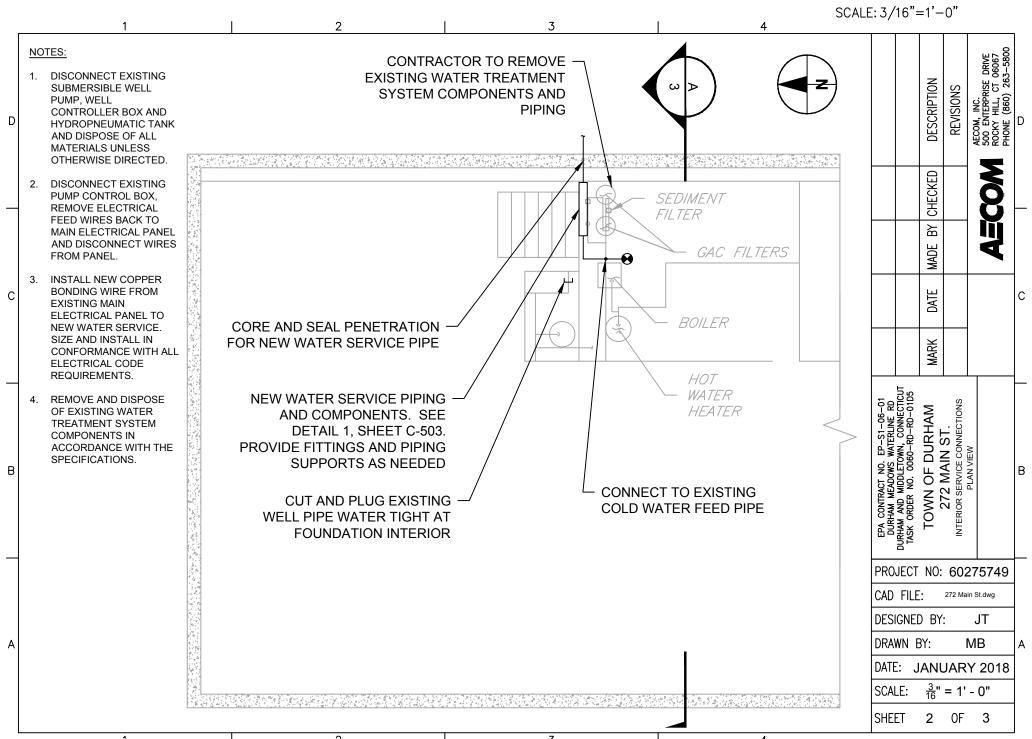


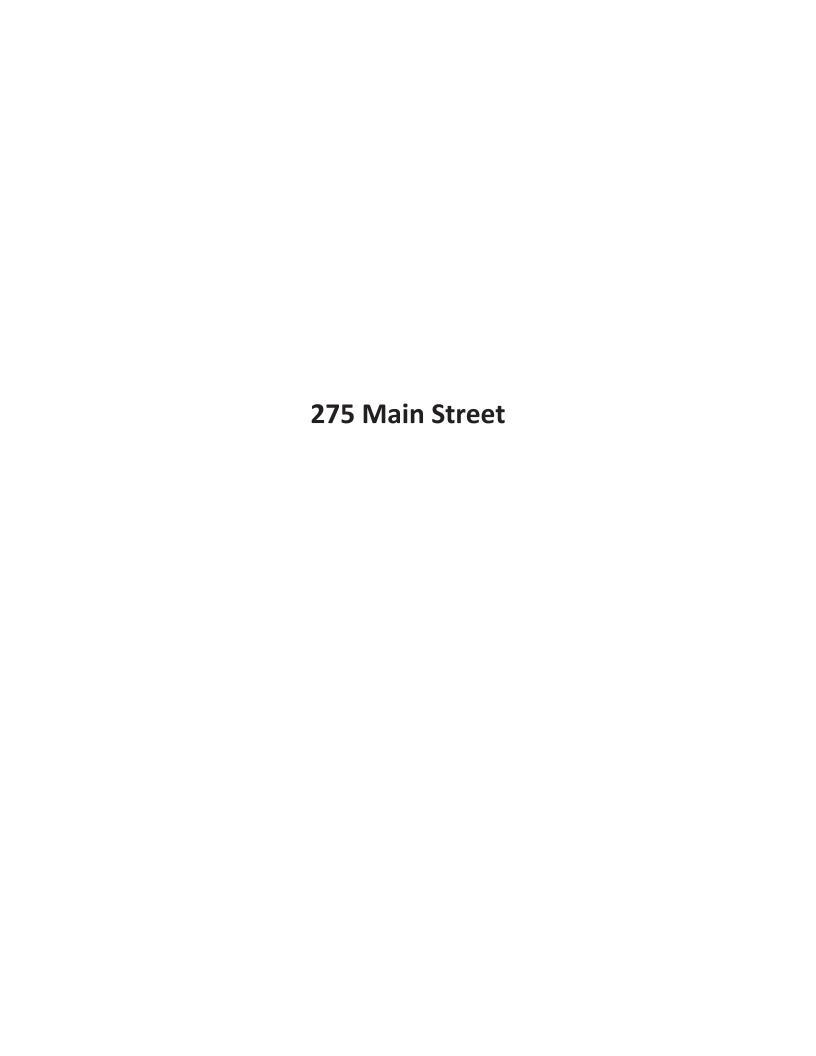


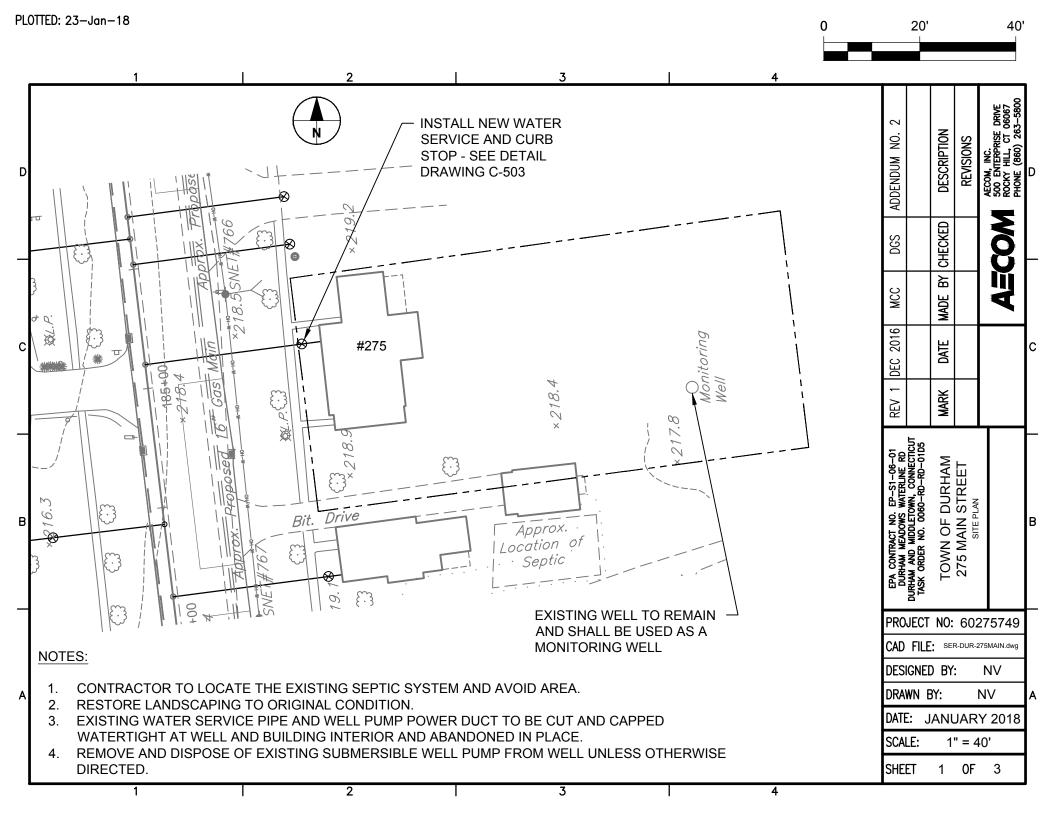


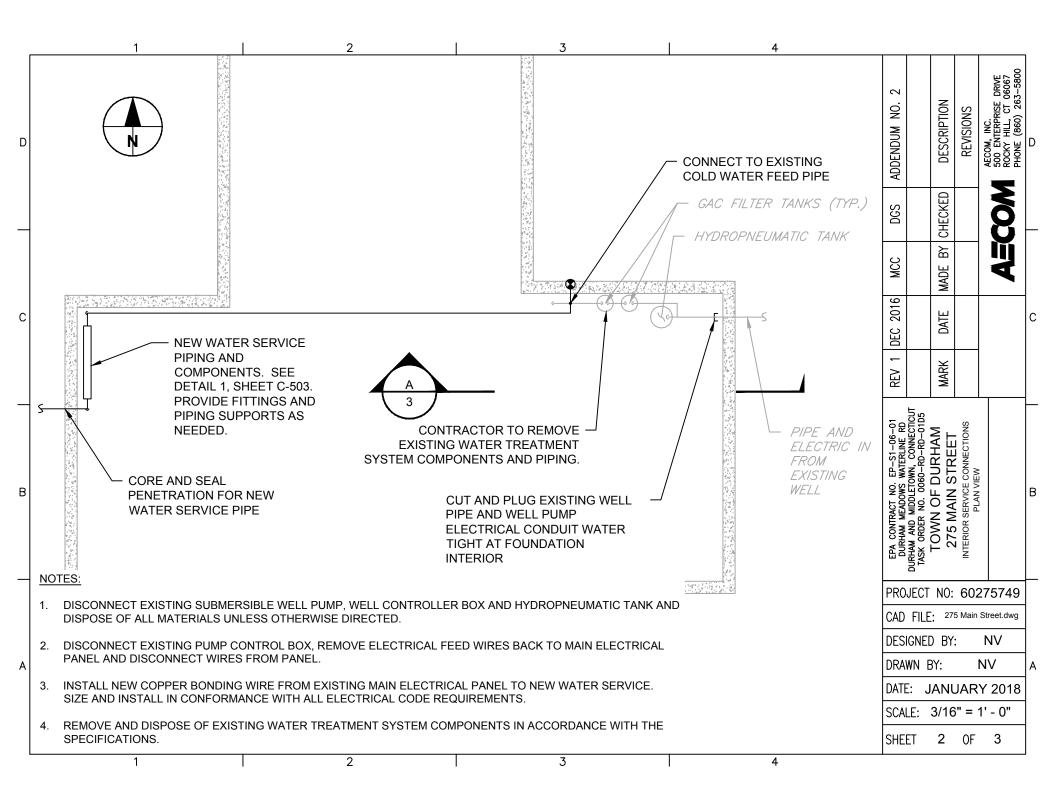


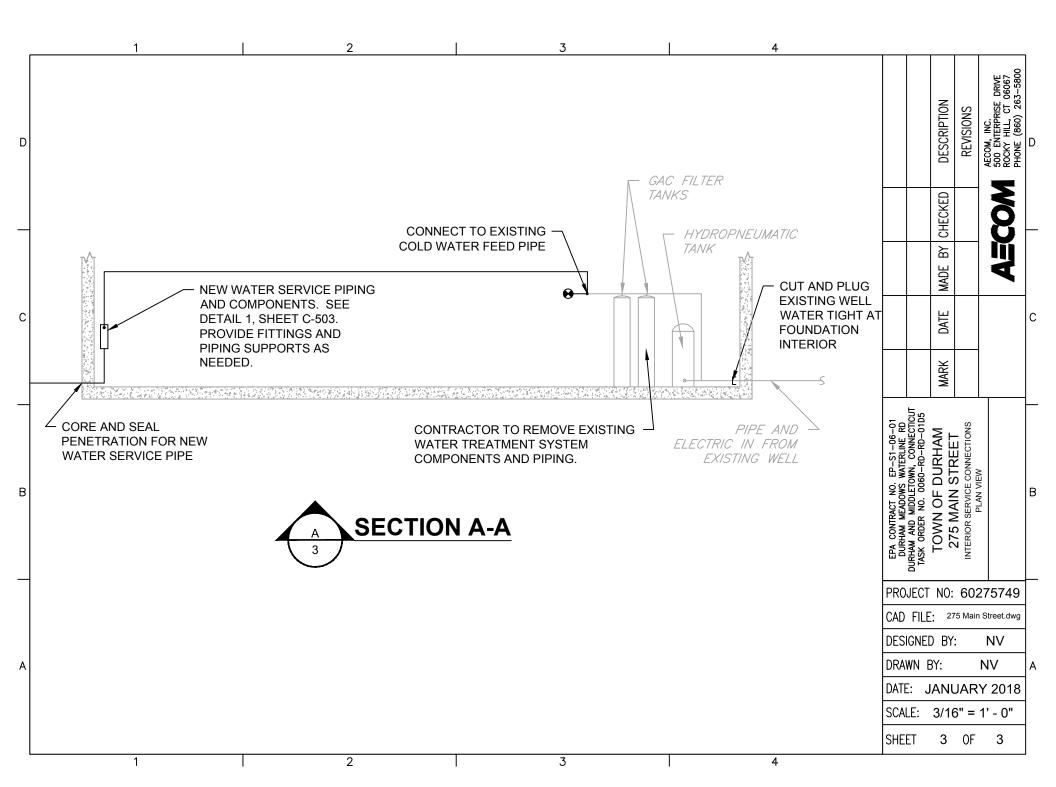
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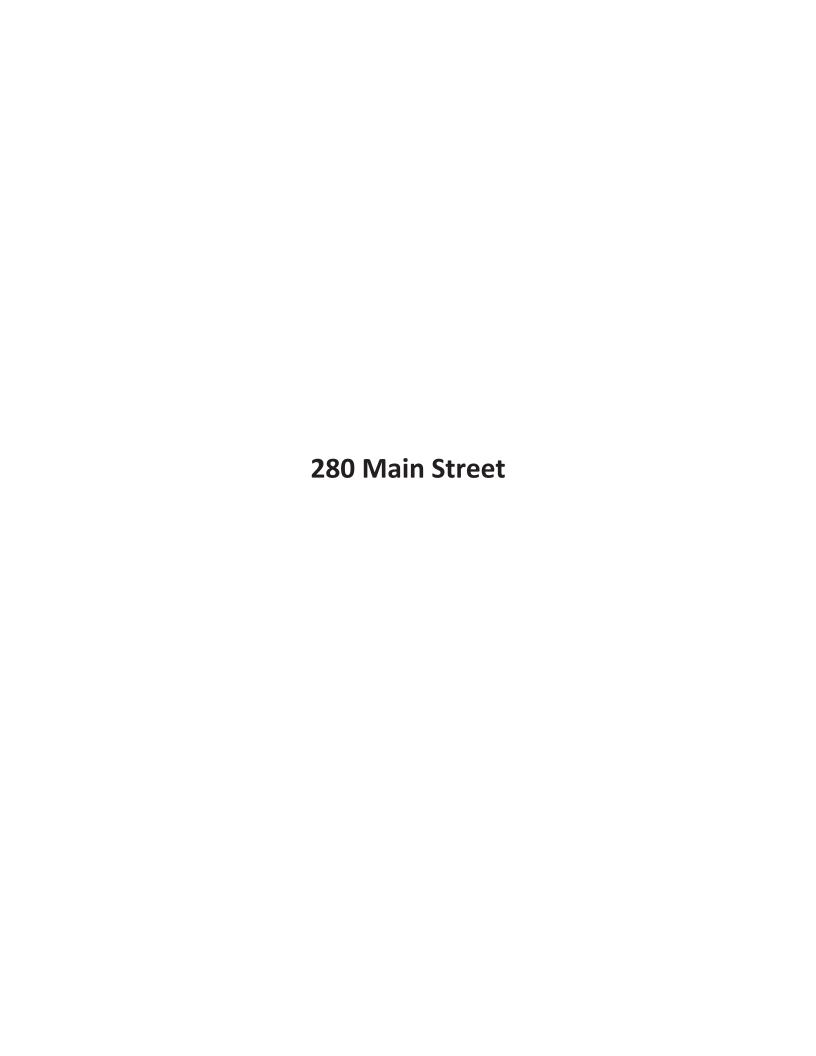


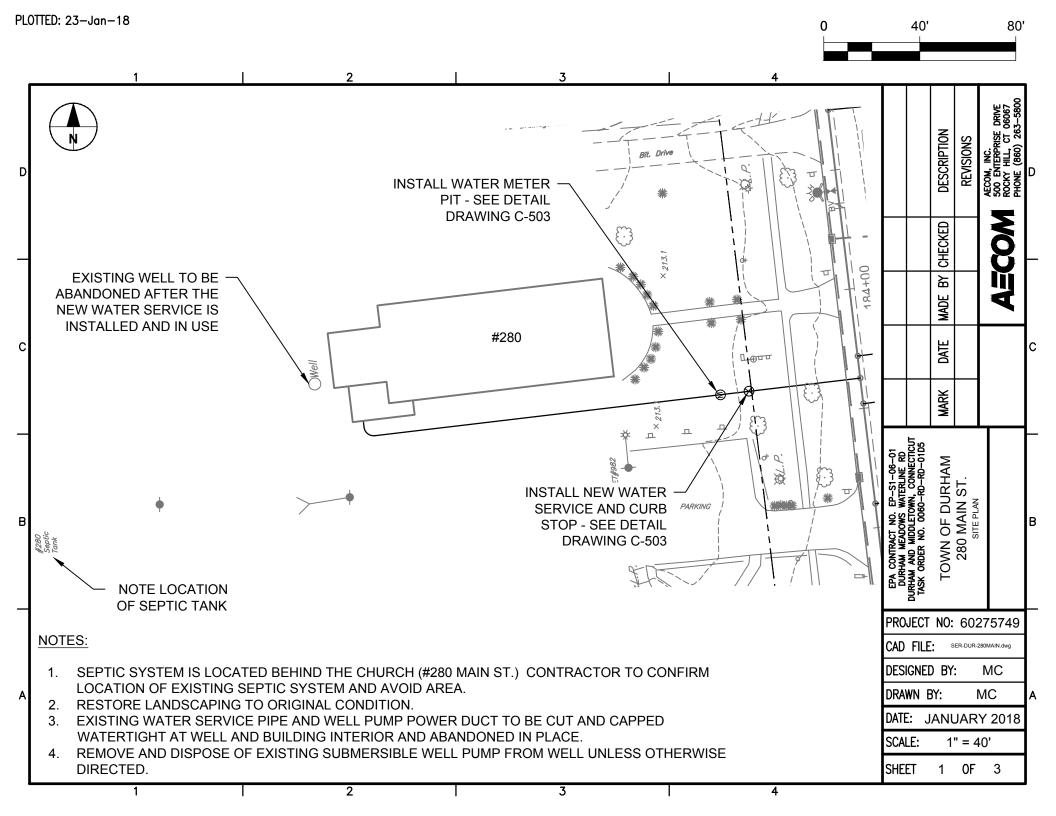


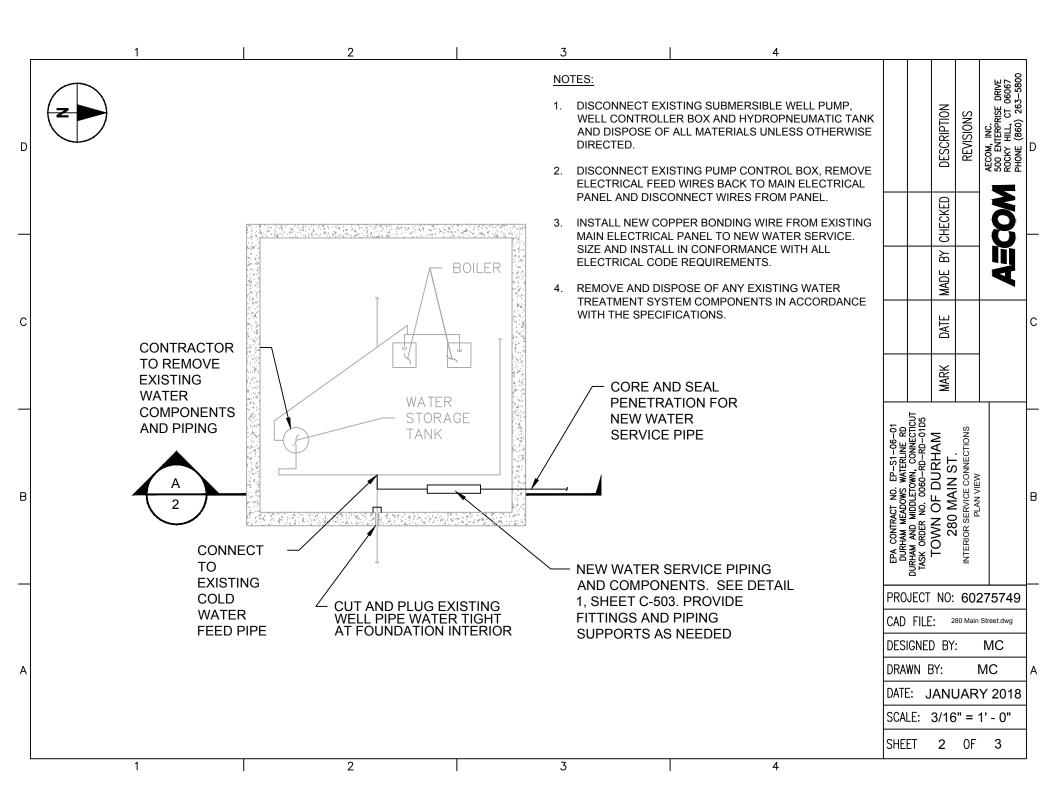


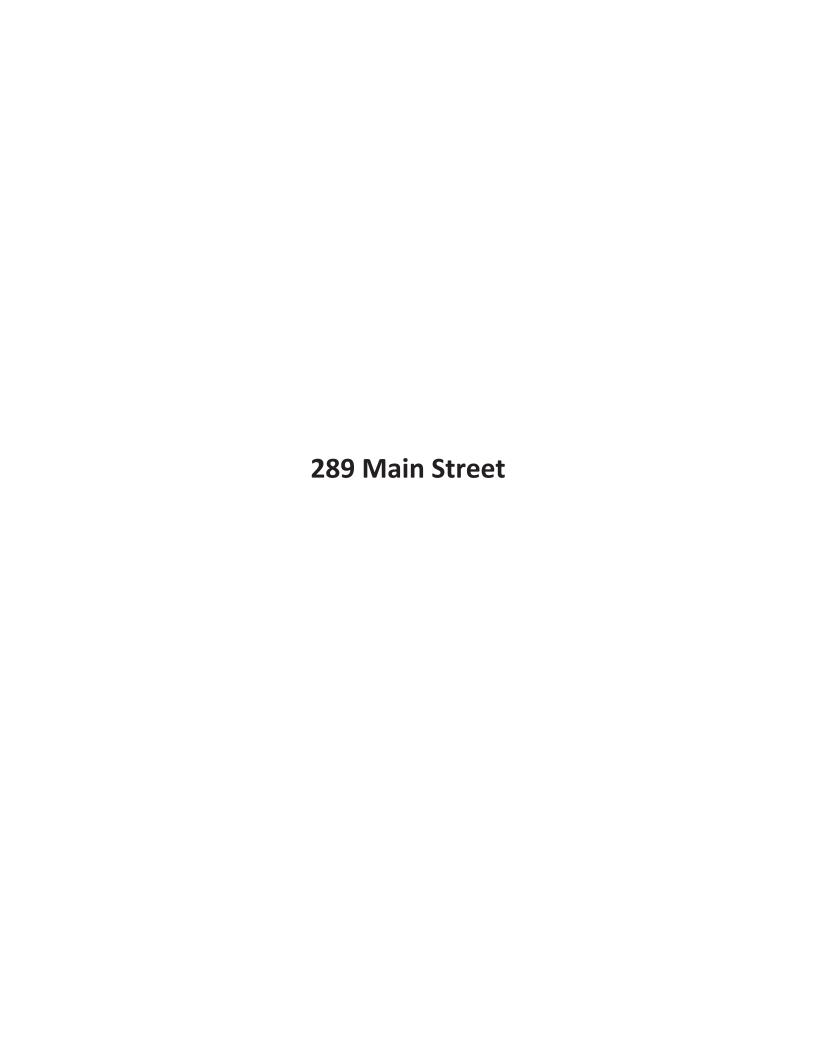


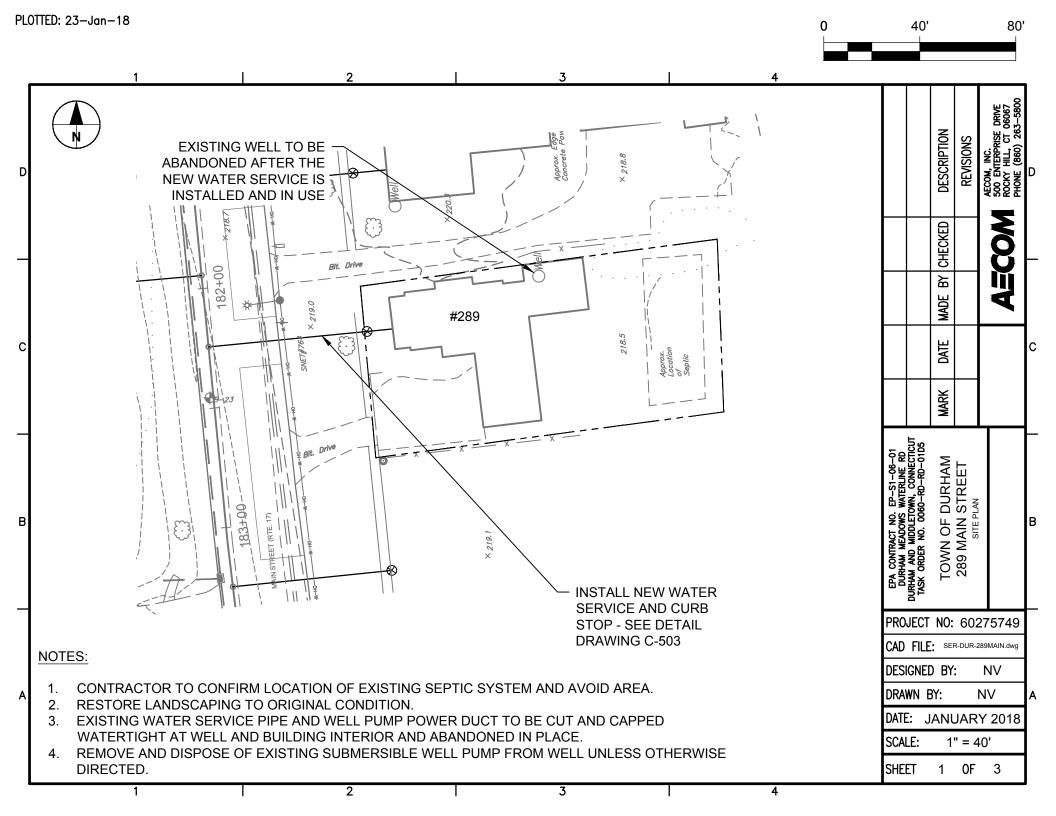


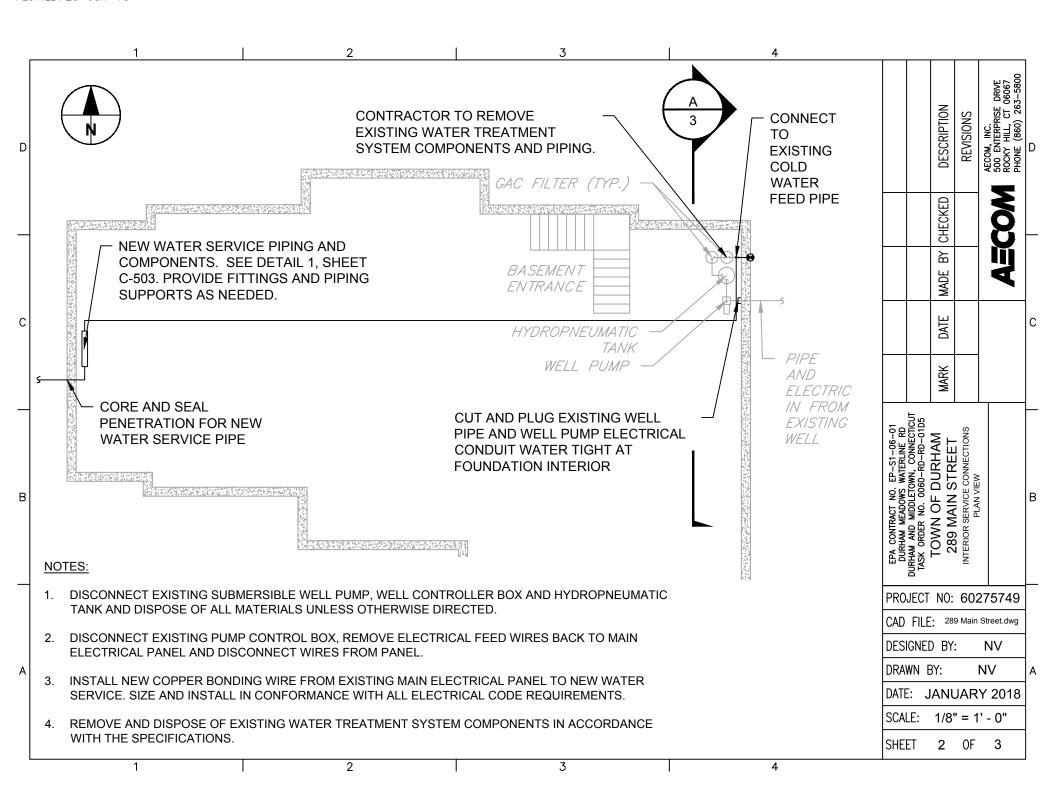


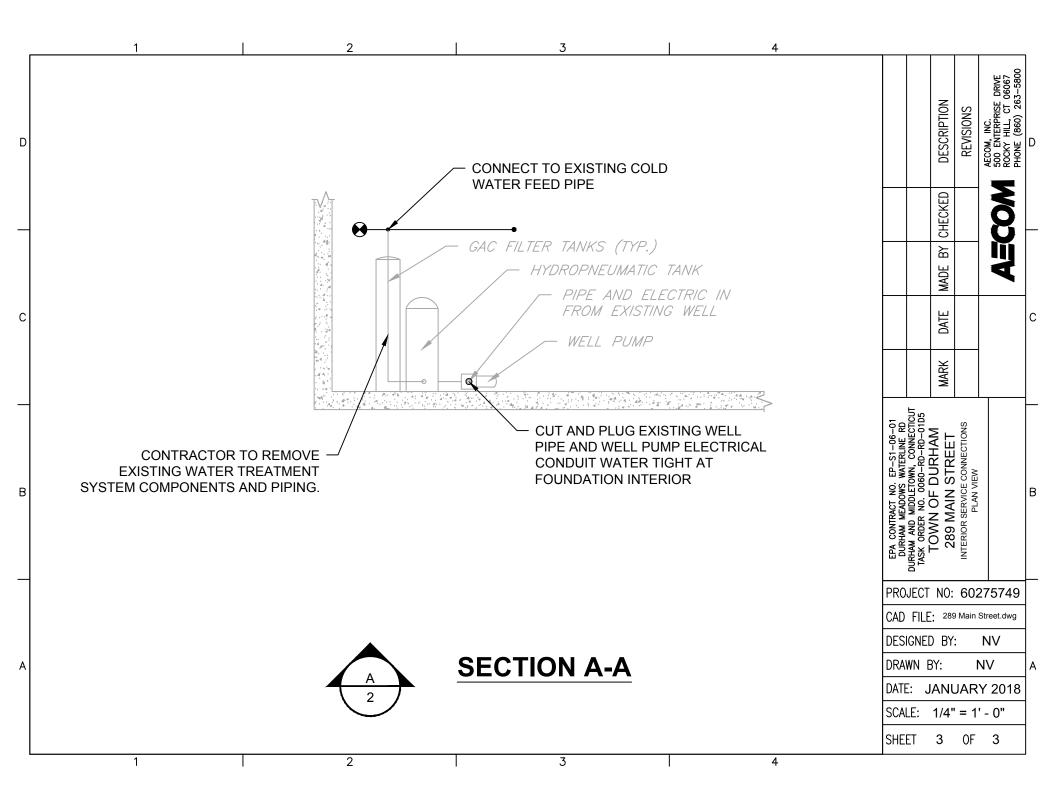




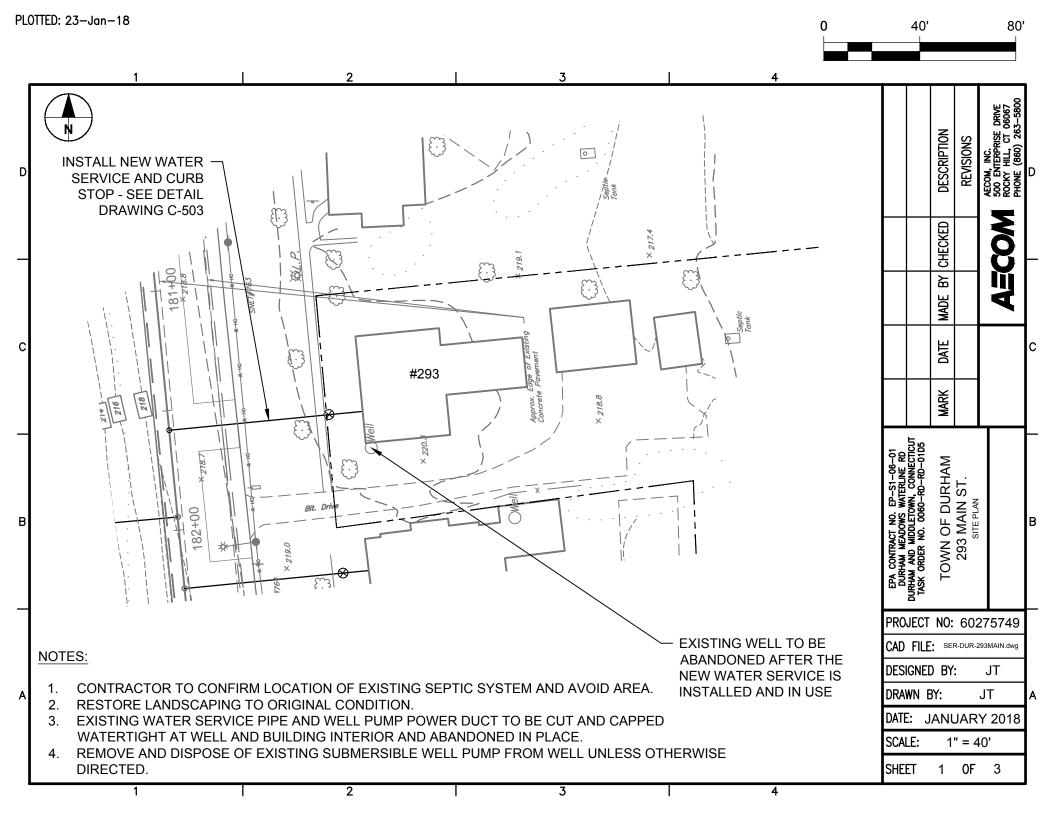


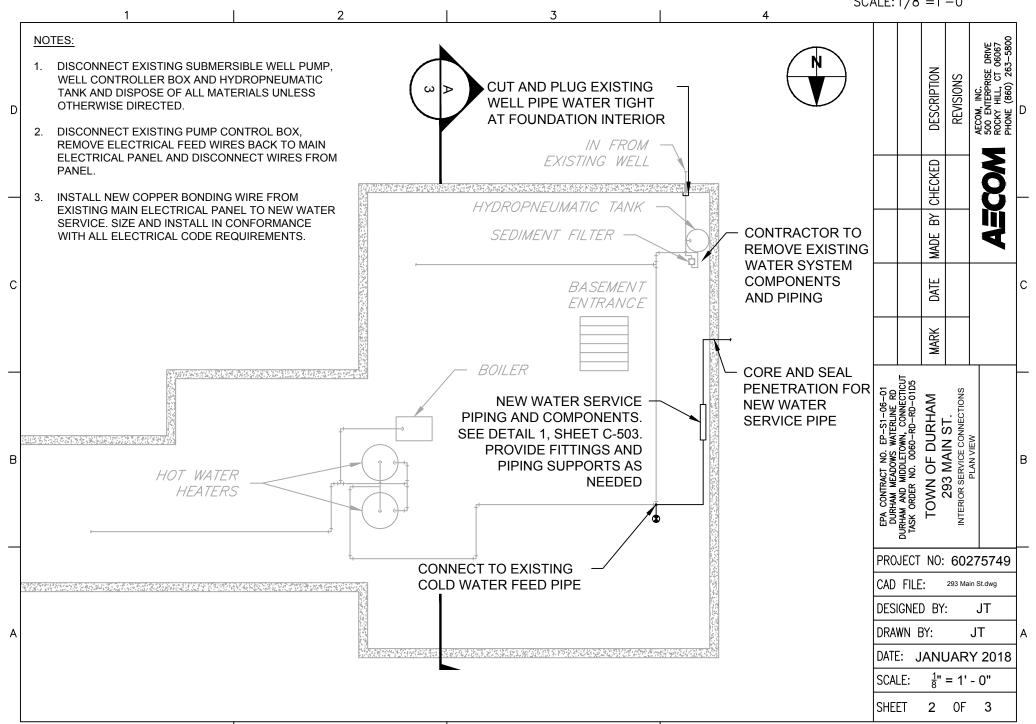


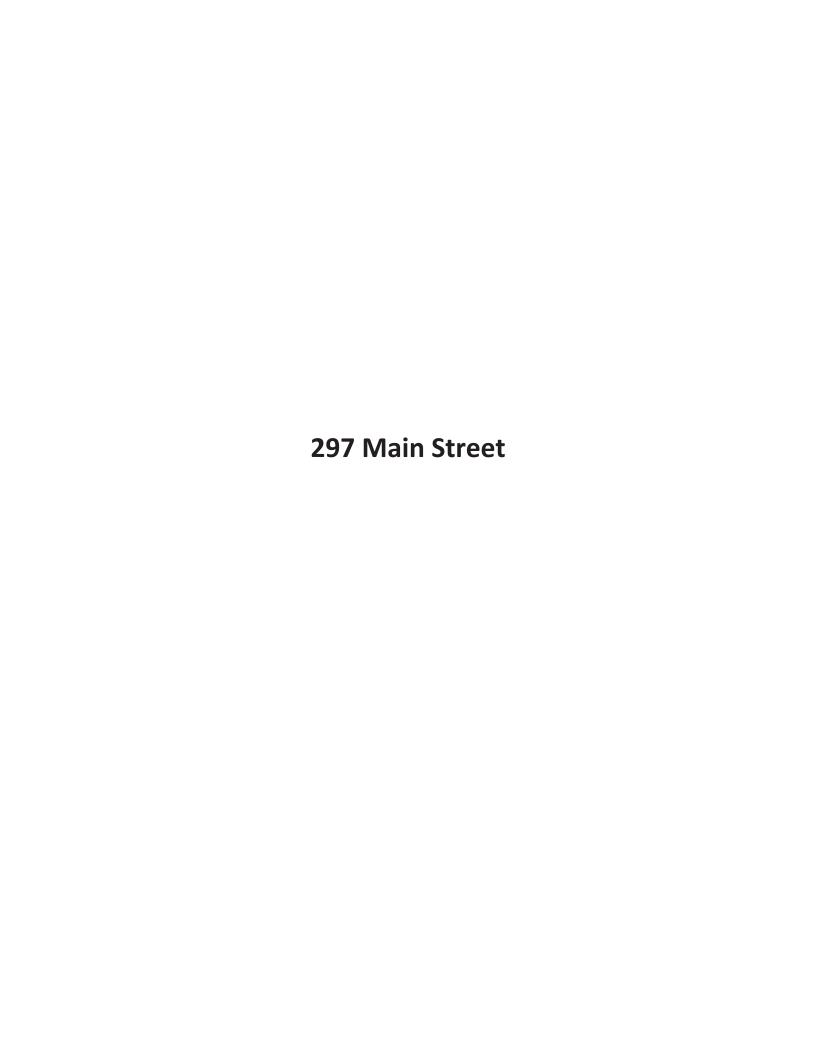


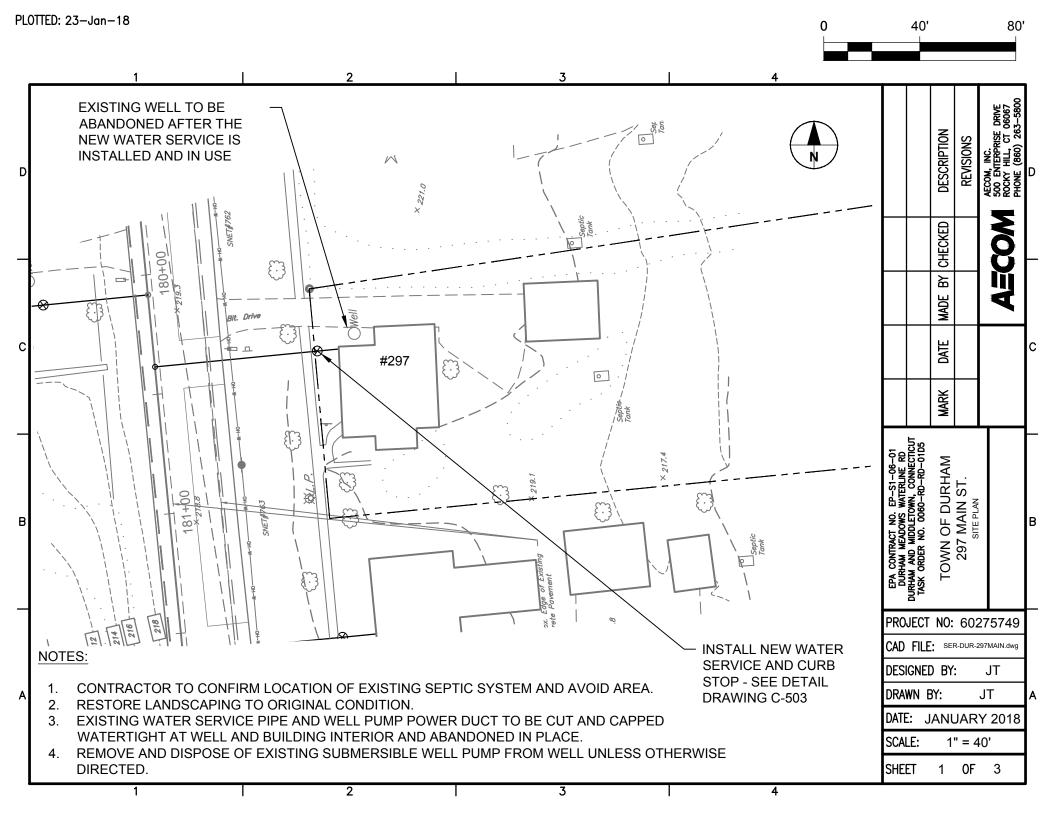


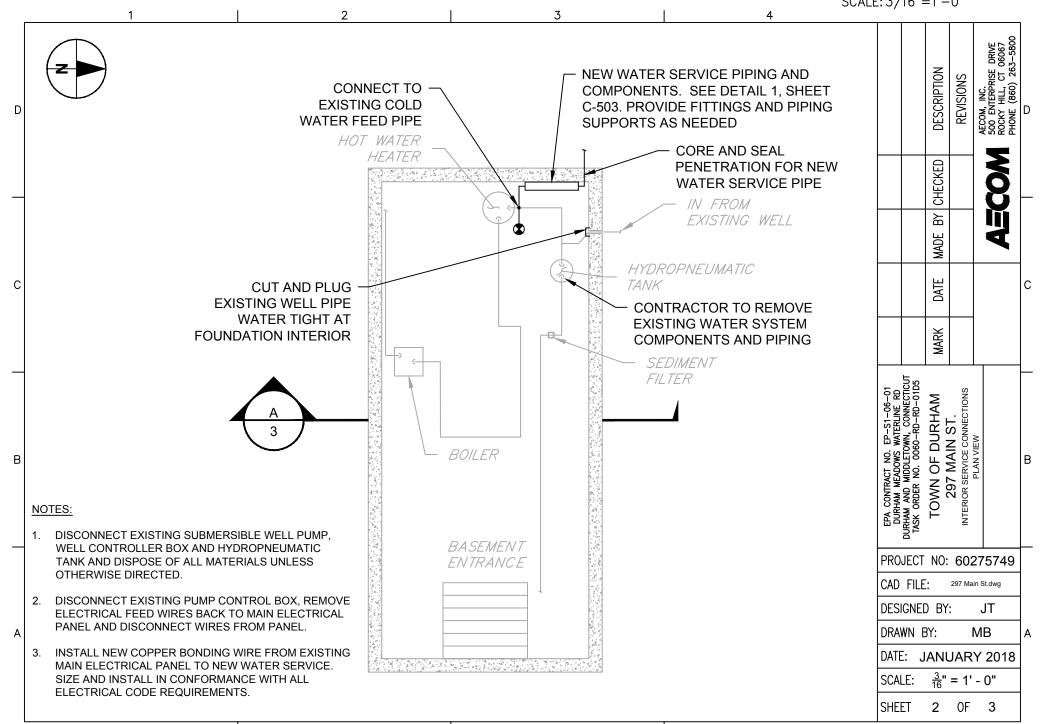


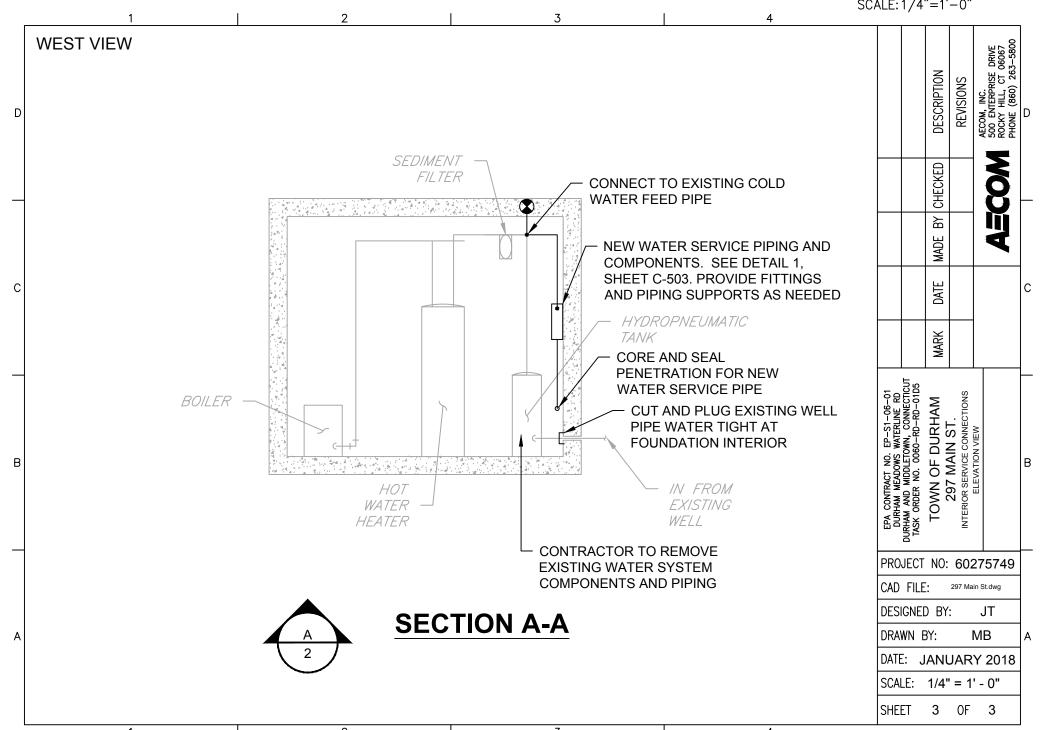


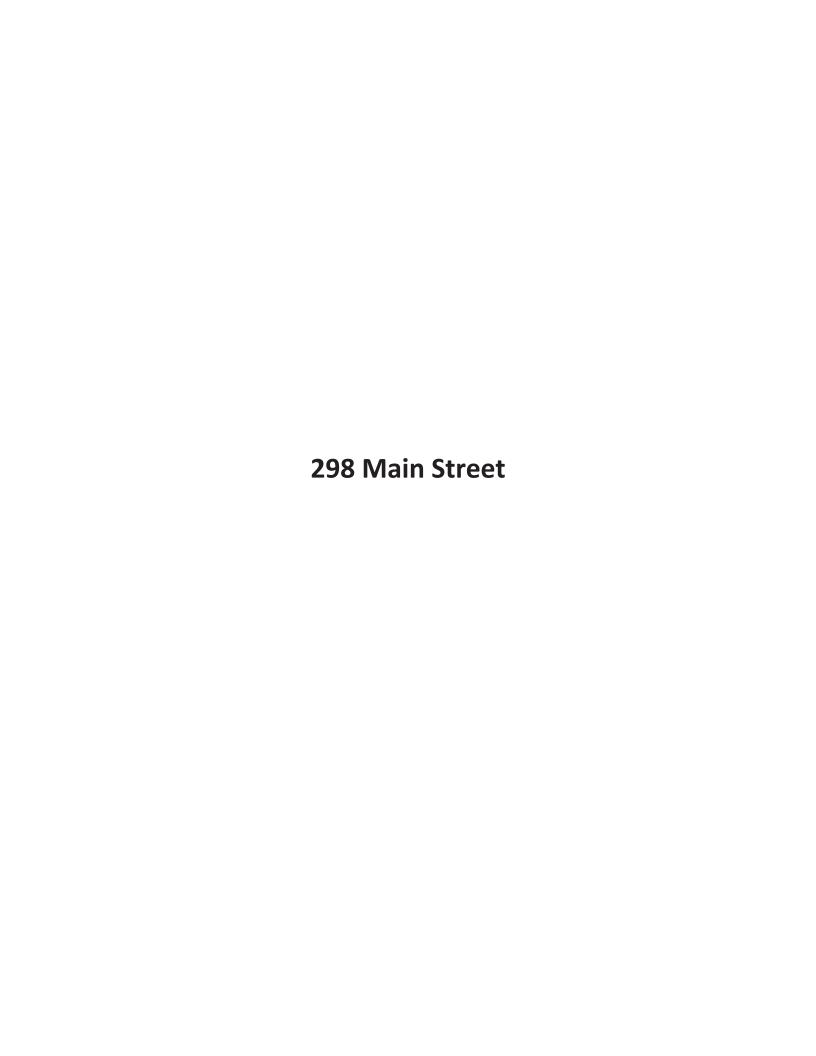


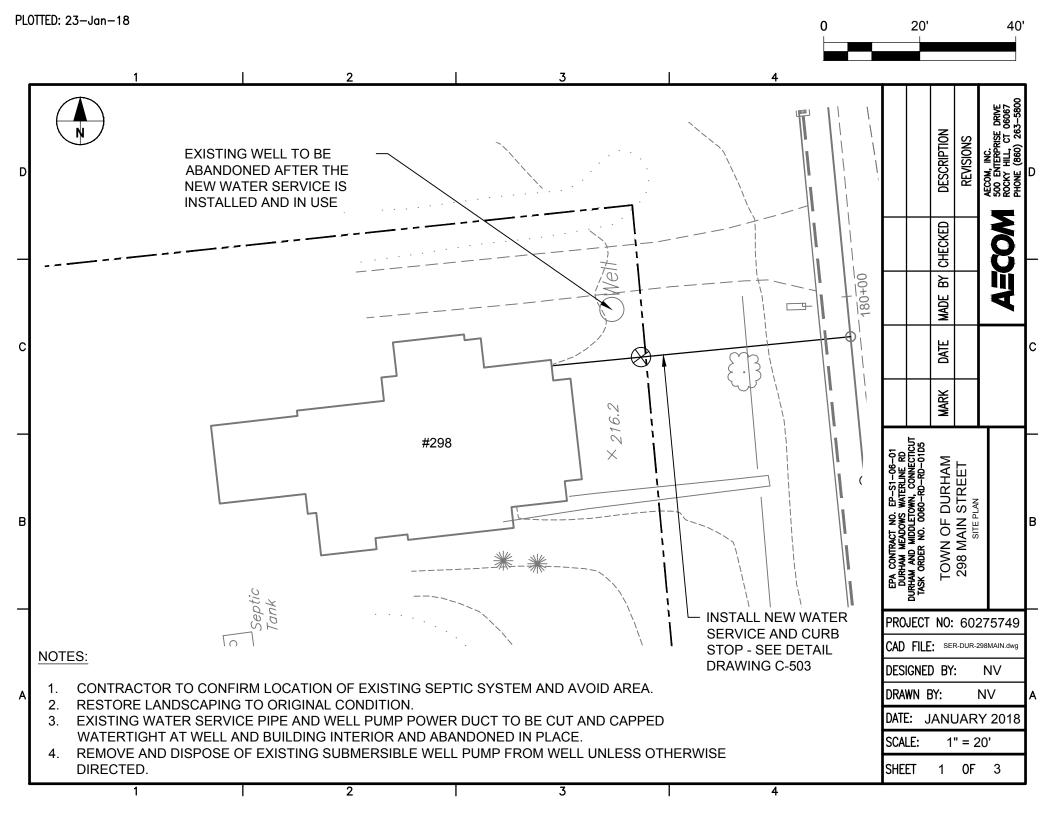


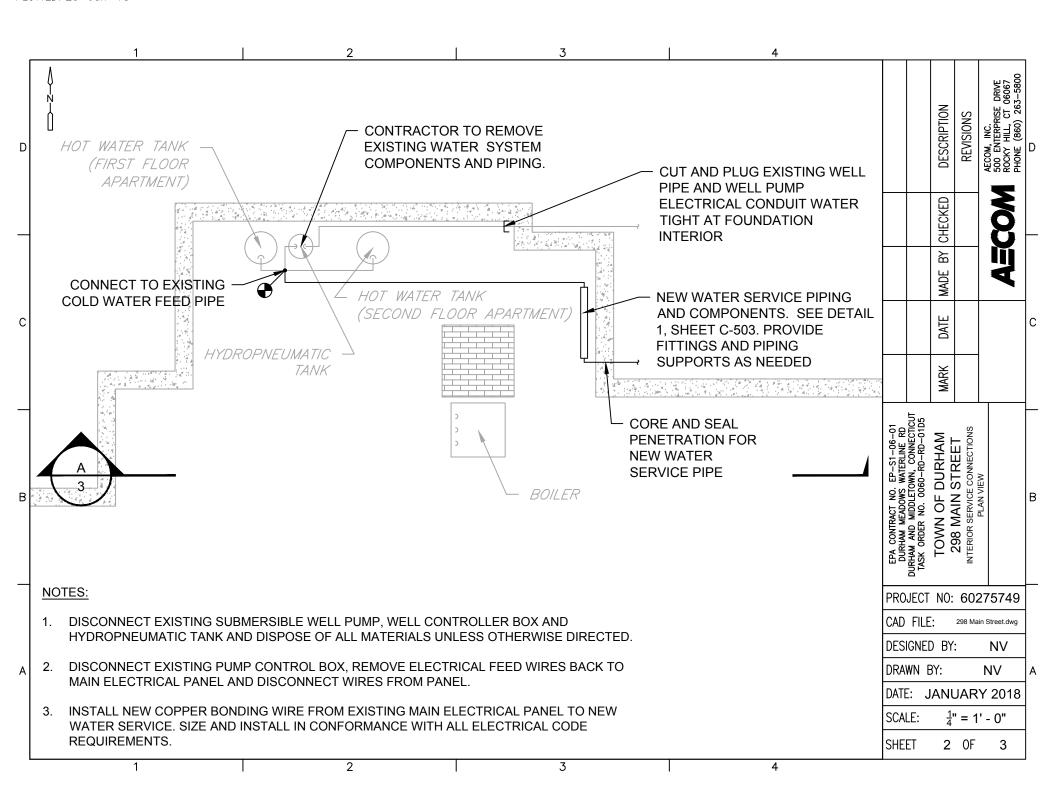


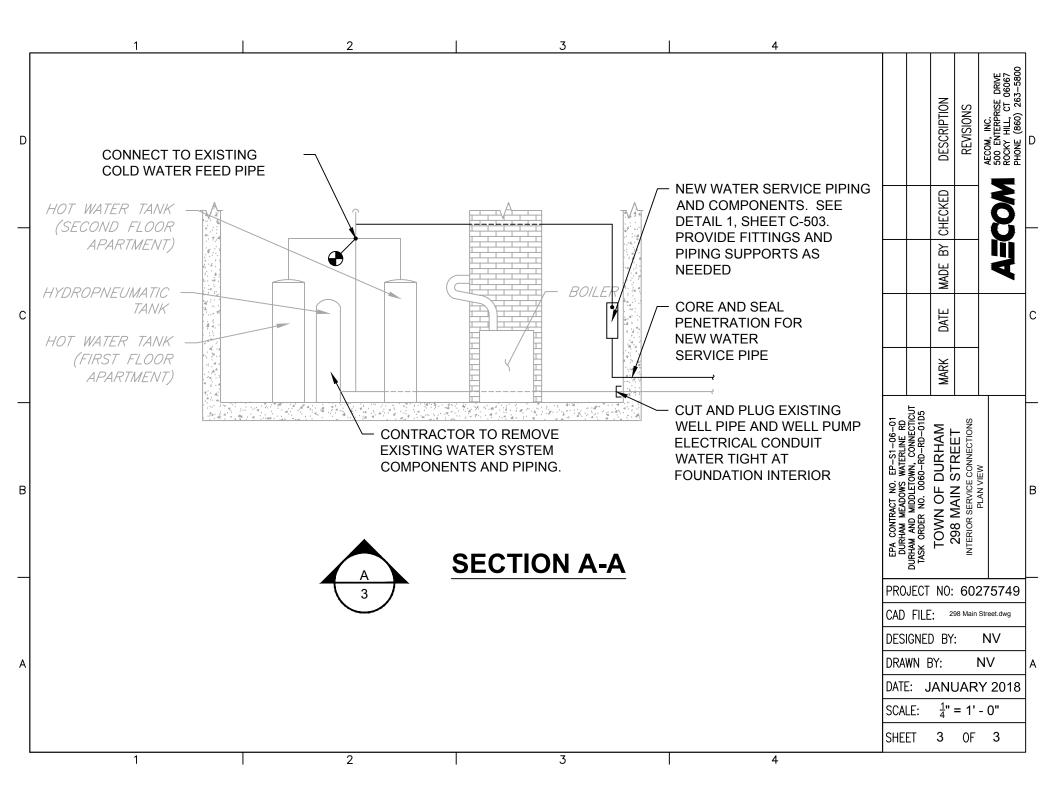




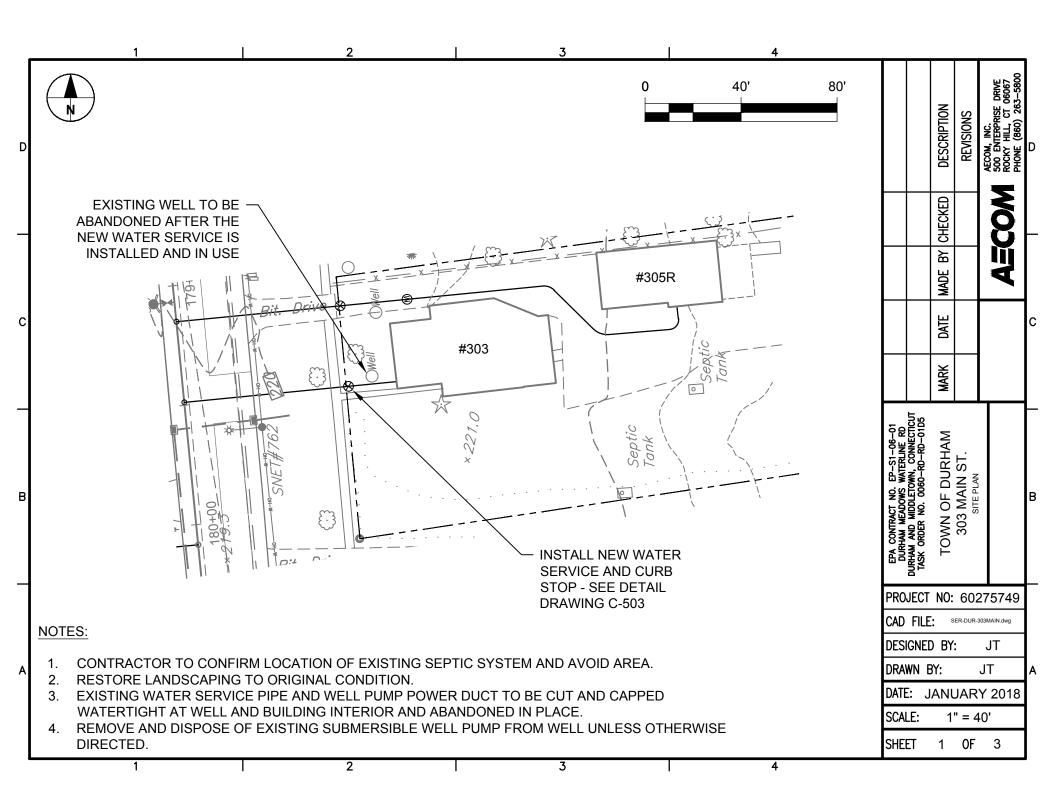


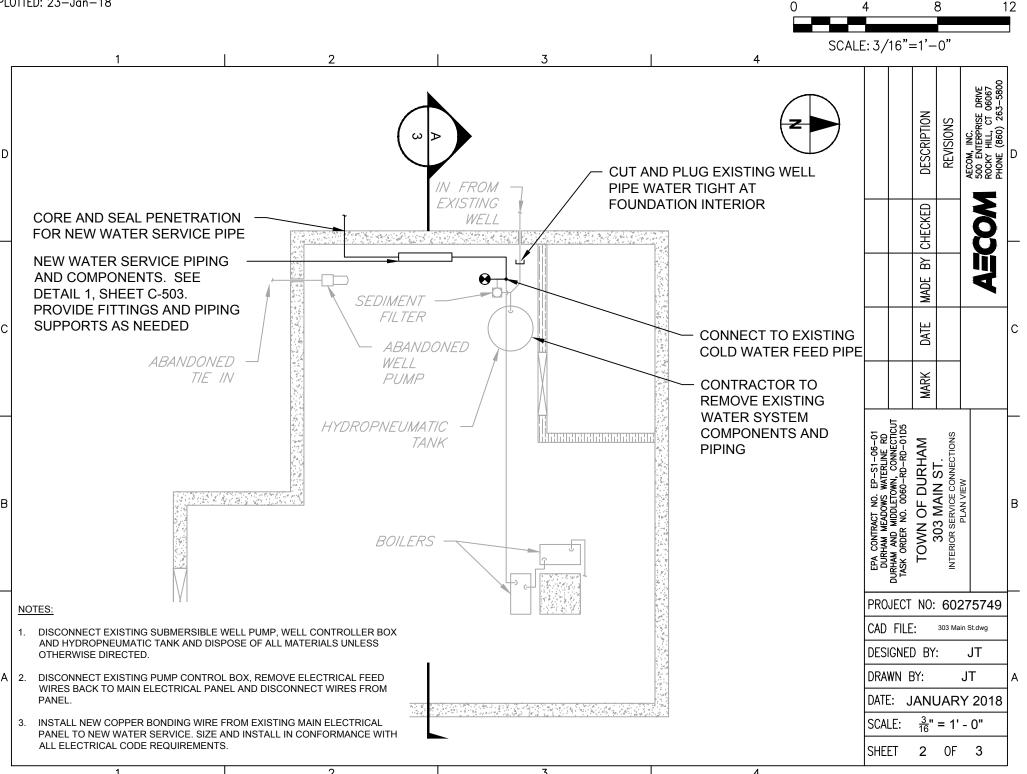


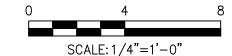


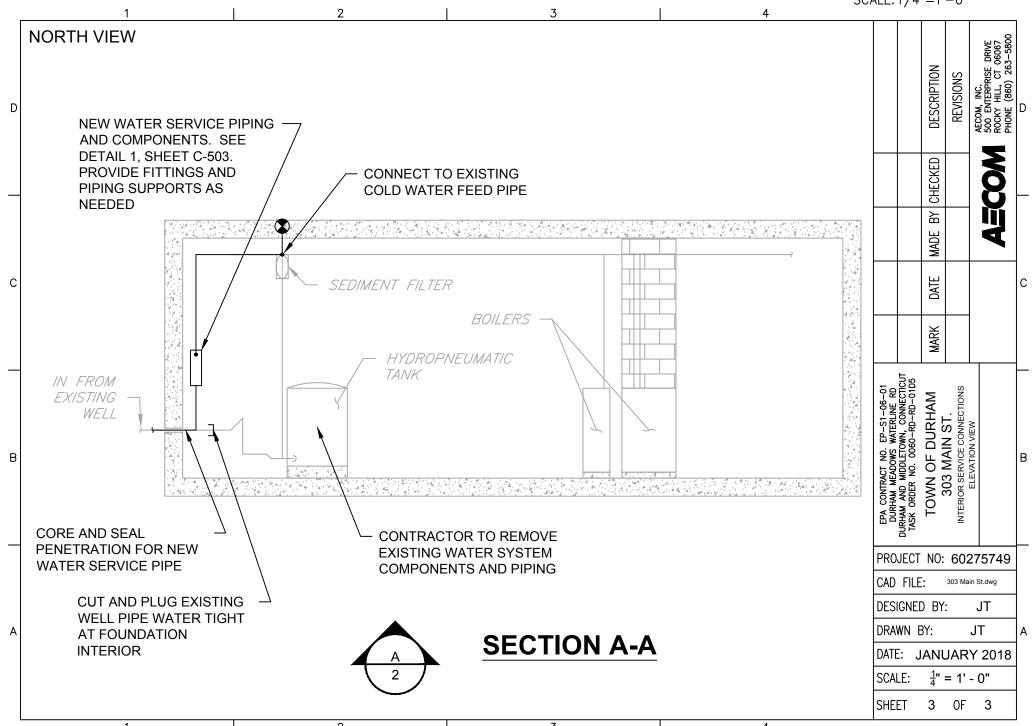


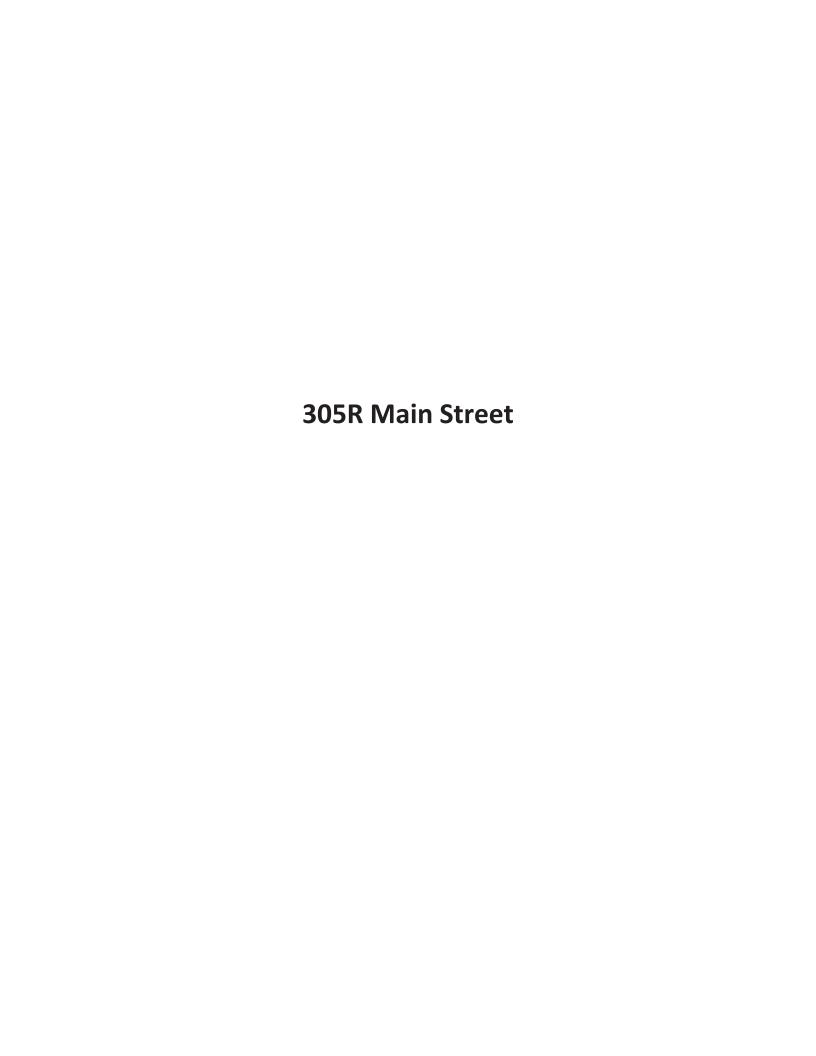


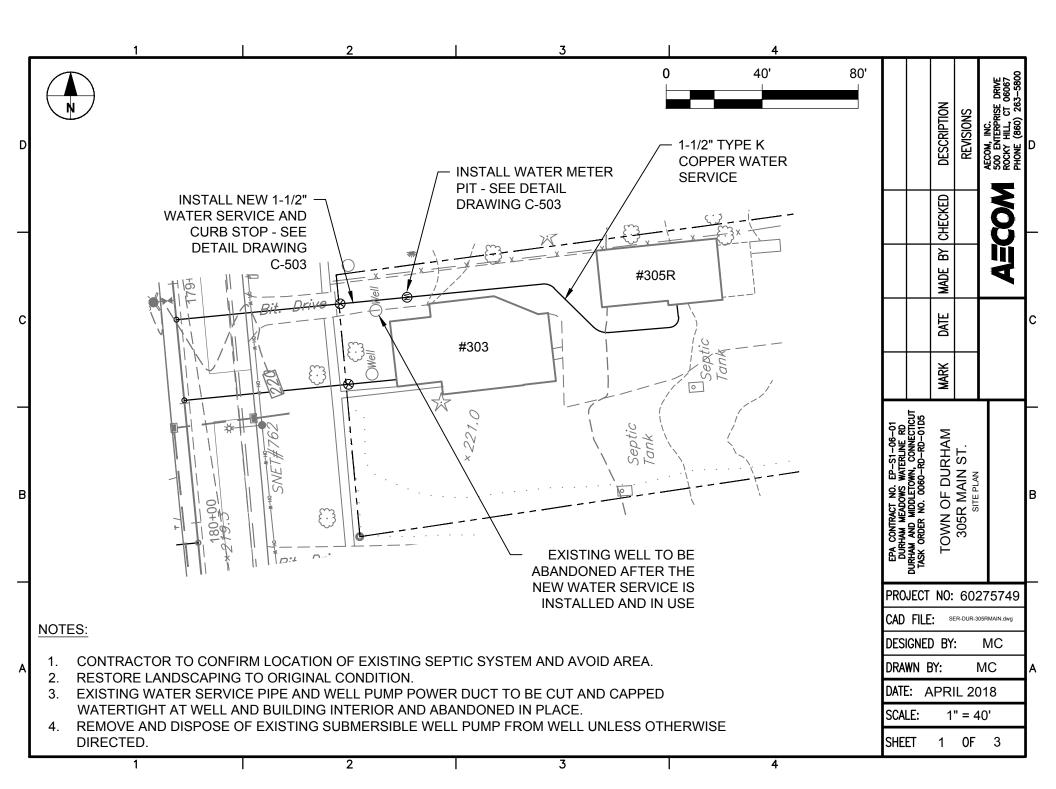


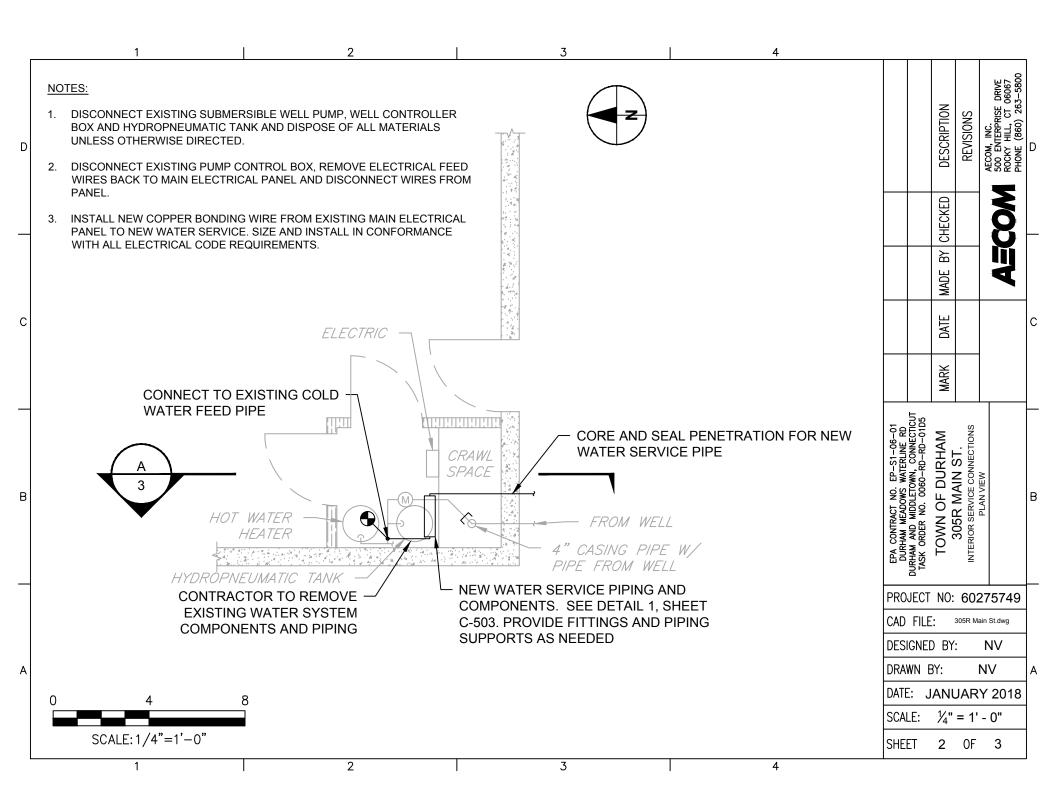


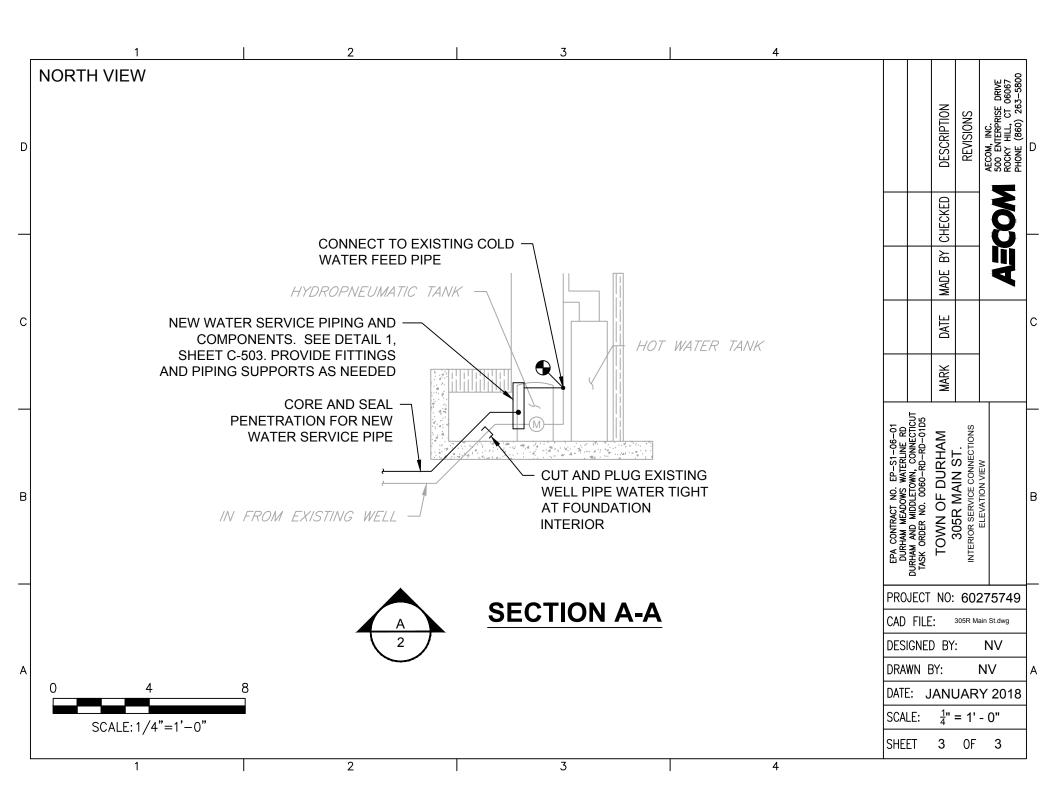




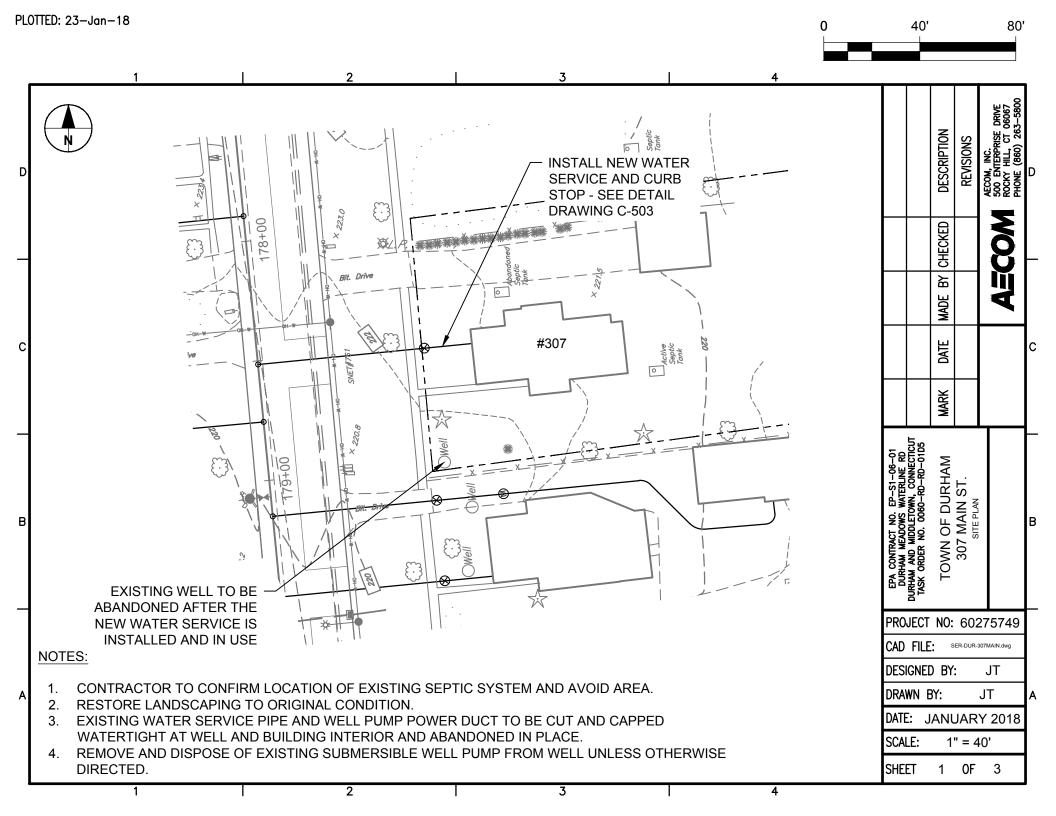




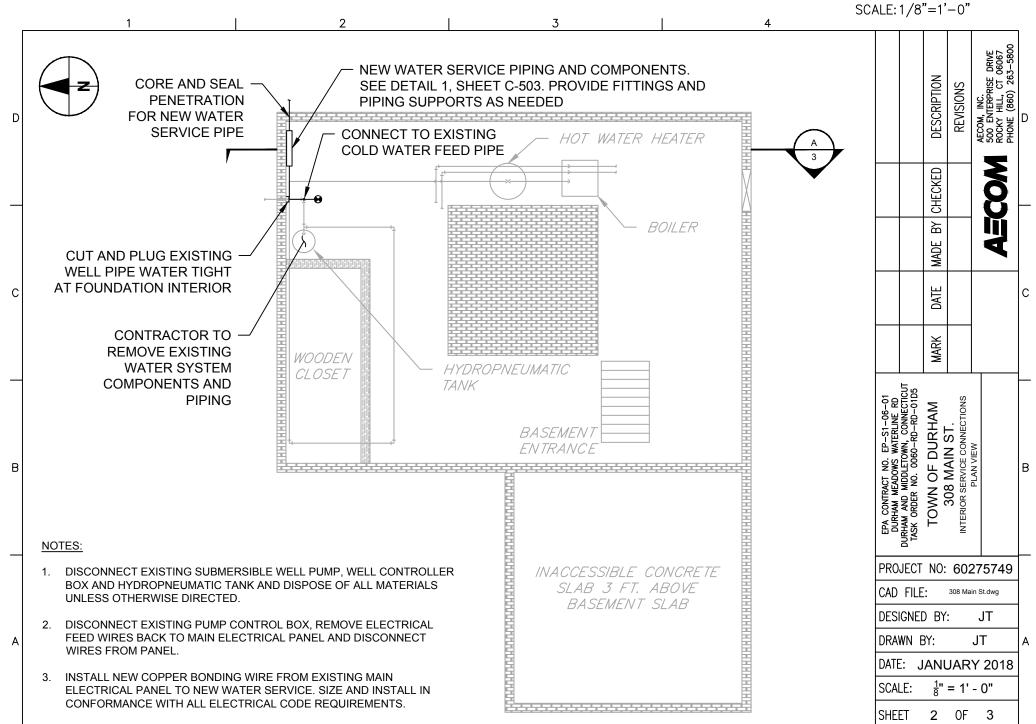


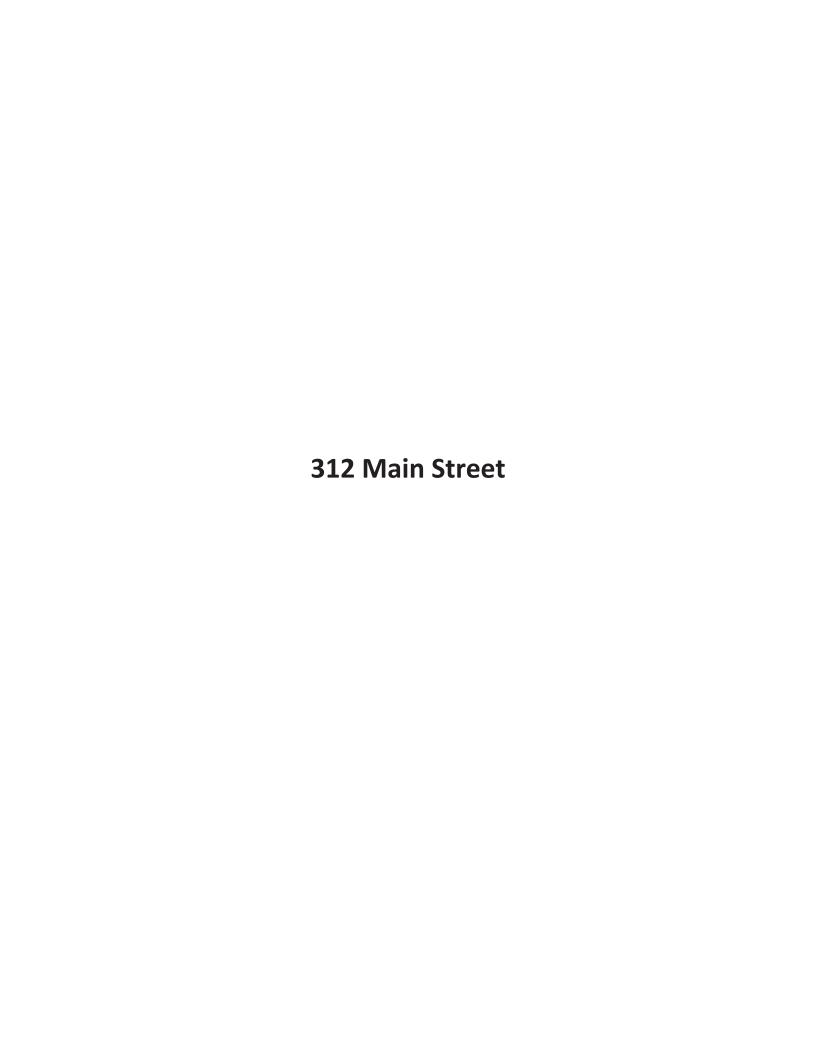


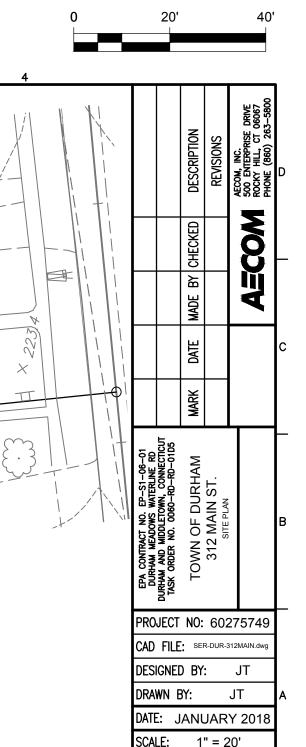






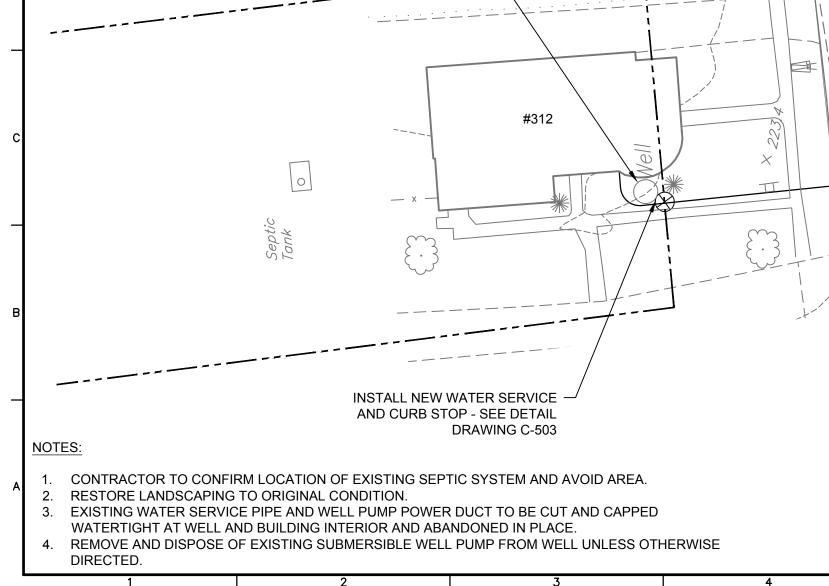






1 OF 3

SHEET



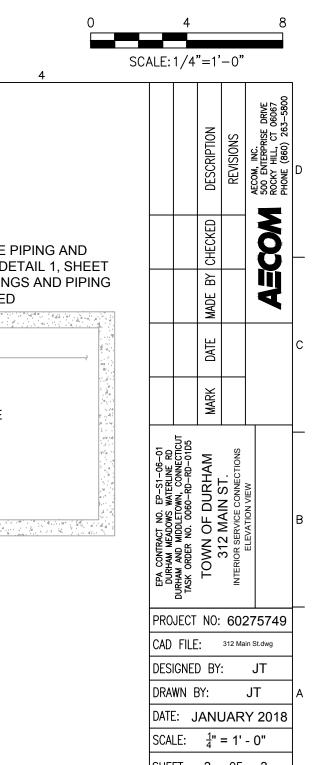
Bit. Drive

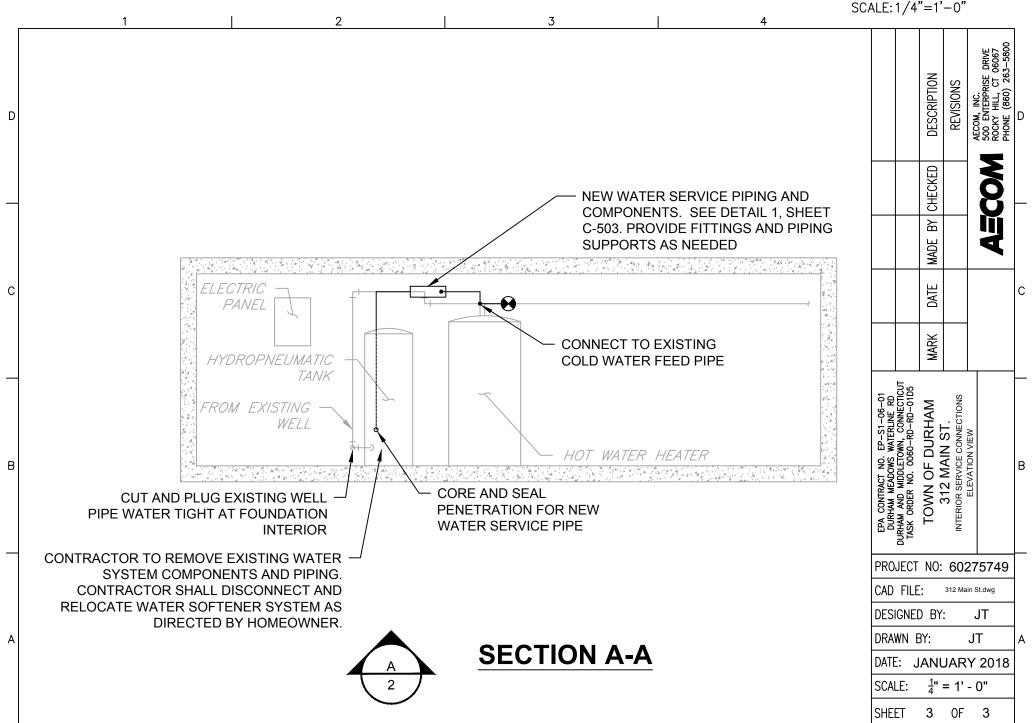
EXISTING WELL TO BE -

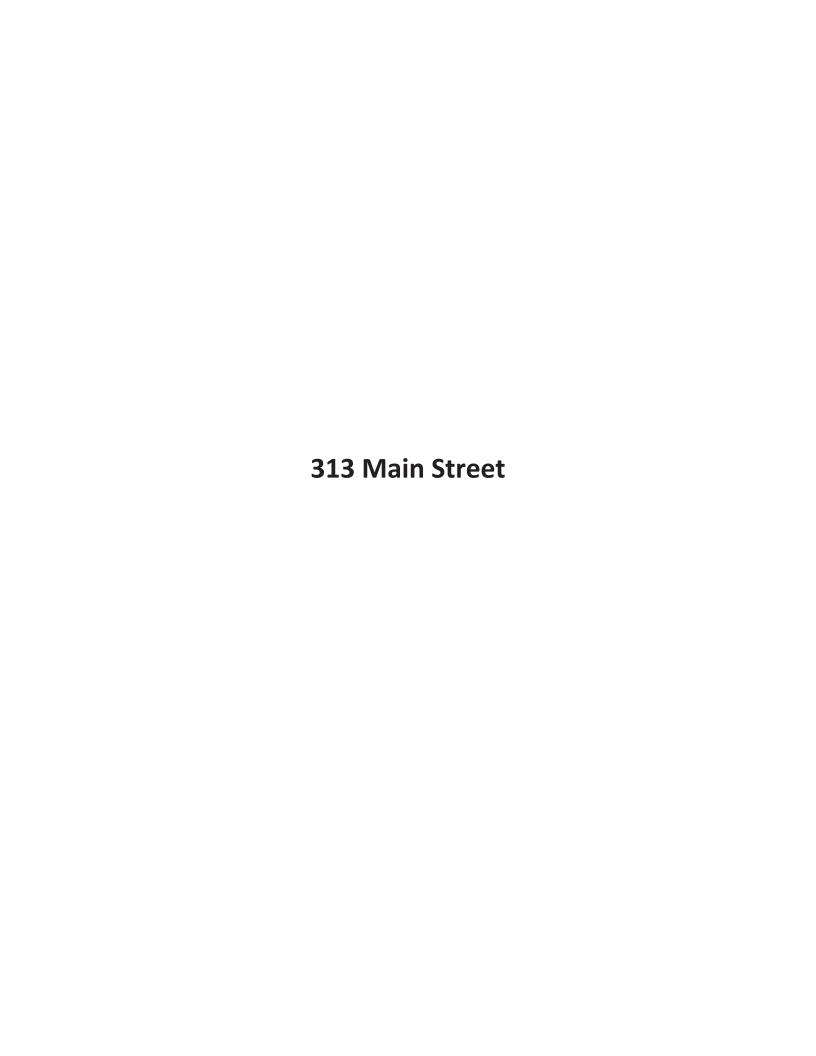
AND IN USE

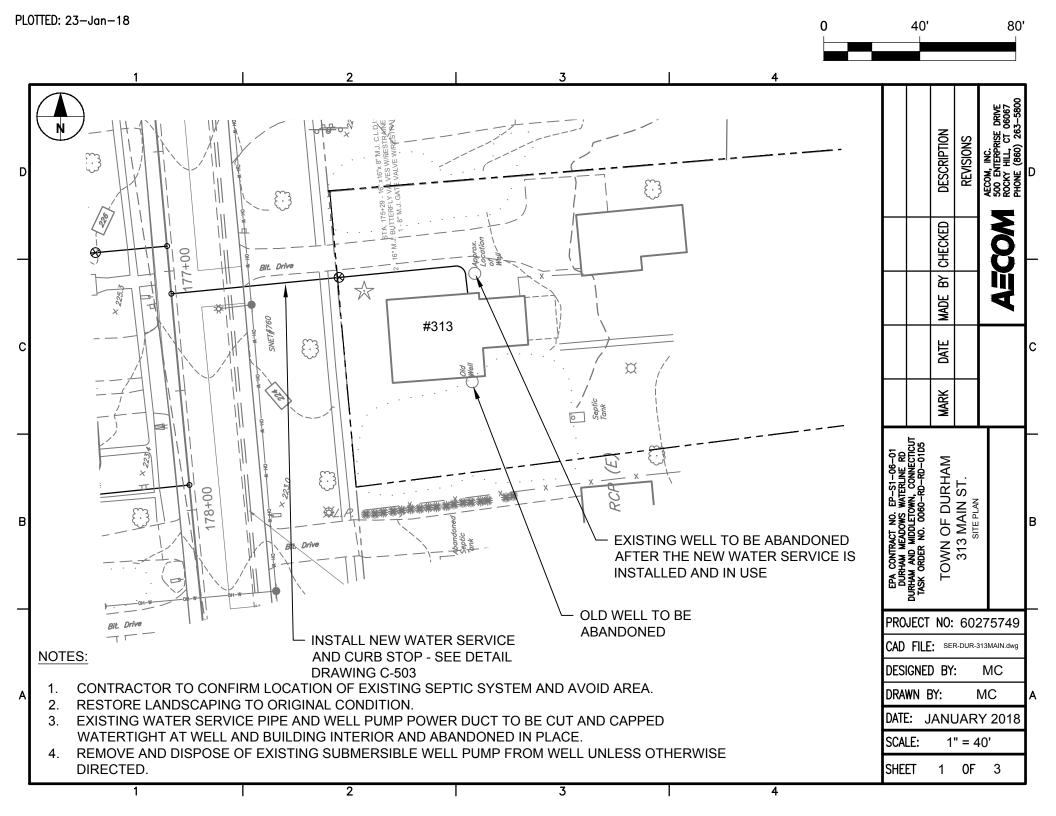
ABANDONED AFTER THE NEW WATER SERVICE IS INSTALLED

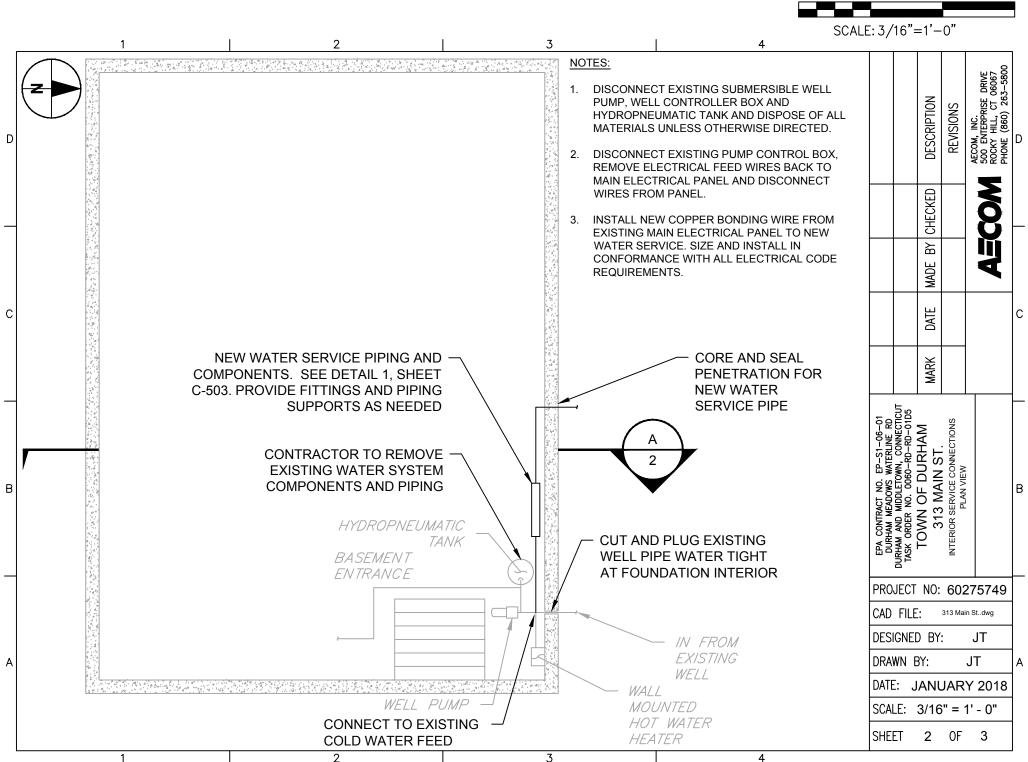
NOTES: 1. DISCONNECT EXISTING SUBMERSIBLE WELL PUMP. WELL CONTROLLER BOX AND HYDROPNEUMATIC TANK AND DISPOSE OF ALL MATERIALS UNLESS OTHERWISE DIRECTED. DESCRIPTION REVISIONS DISCONNECT EXISTING PUMP CONTROL BOX, REMOVE ELECTRICAL FEED WIRES BACK TO MAIN ELECTRICAL PANEL AND DISCONNECT WIRES FROM PANEL. INSTALL NEW COPPER BONDING WIRE FROM EXISTING MAIN ELECTRICAL PANEL TO NEW WATER SERVICE, SIZE AND INSTALL IN CONFORMANCE WITH ALL ELECTRICAL CODE REQUIREMENTS. CHECKED CORE AND SEAL -NEW WATER SERVICE PIPING AND ሕ PENETRATION FOR NEW COMPONENTS. SEE DETAIL 1, SHEET MADE WATER SERVICE PIPE C-503. PROVIDE FITTINGS AND PIPING SUPPORTS AS NEEDED **CUT AND PLUG EXISTING -**WELL PIPE WATER TIGHT AT **CONNECT TO EXISTING** DATE FOUNDATION INTERIOR **COLD WATER FEED PIPE** MARK **OWN OF DURHAM** HOT WATER HYDROPNEUMATIC **HFATFR** TANK В BASEMENT ENTRANCE CONTRACTOR TO REMOVE **EXISTING WATER SYSTEM** ELECTRIC PANFI COMPONENTS AND PIPING. PROJECT NO: 60275749 CONTRACTOR SHALL DISCONNECT CAD FILE: 312 Main St.dwg AND RELOCATE WATER SOFTENER SYSTEM AS DIRECTED BY DESIGNED BY: JT HOMEOWNER. DRAWN BY: JT DATE: JANUARY 2018  $\frac{1}{4}$ " = 1' - 0" SCALE: SHFFT 2 OF 3

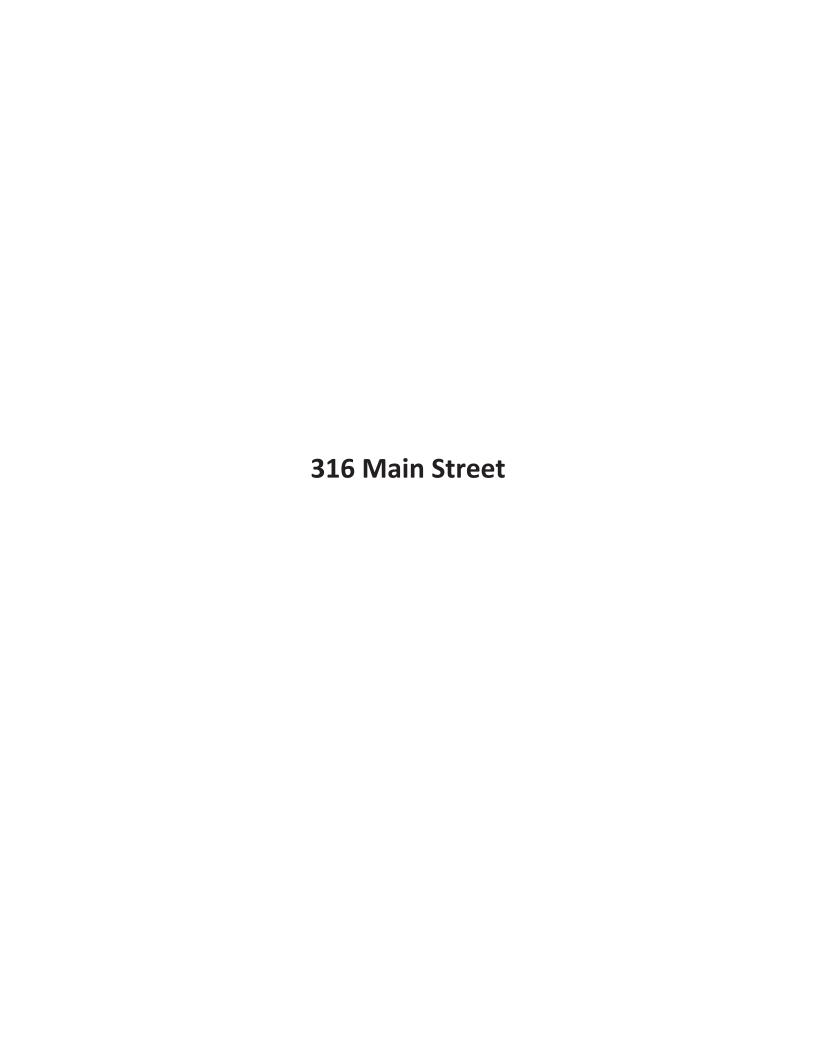


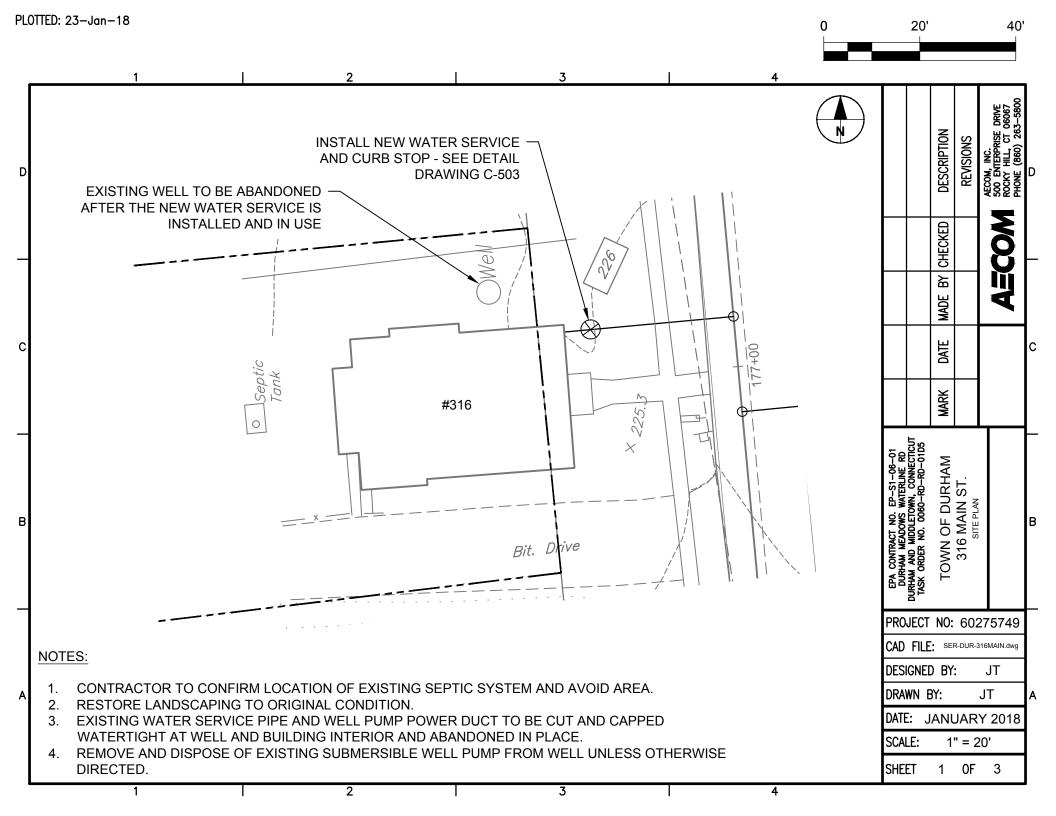


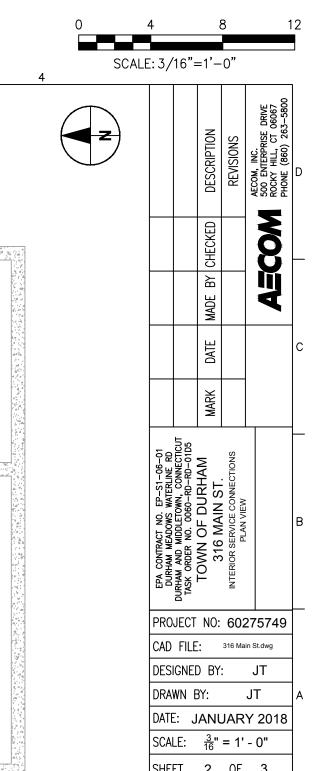


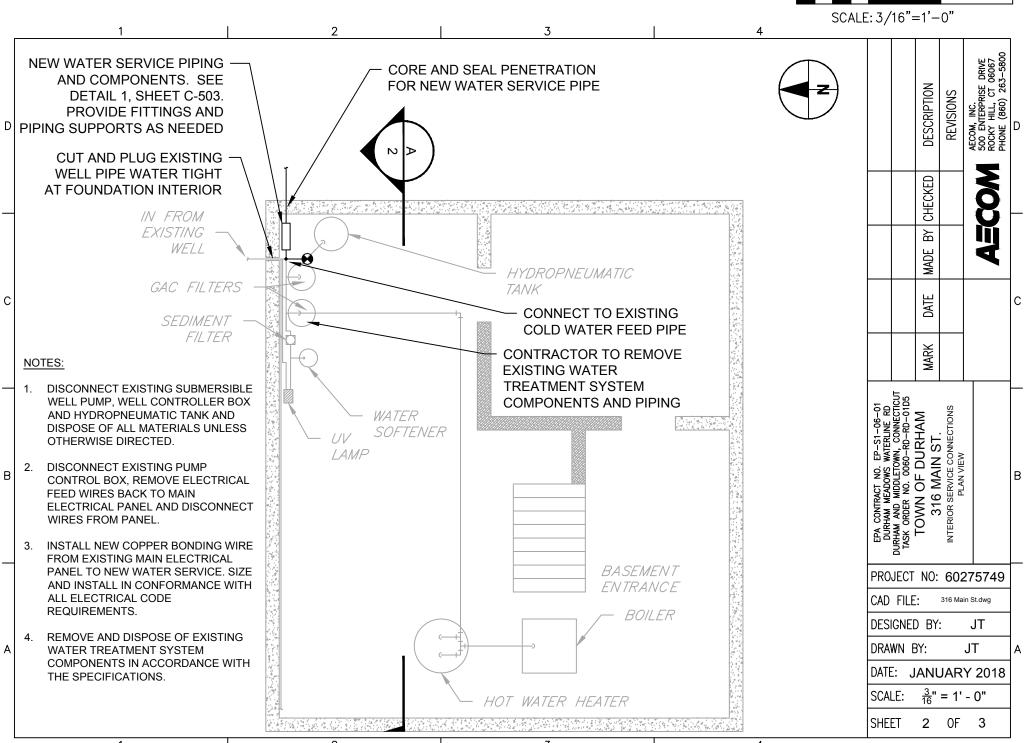


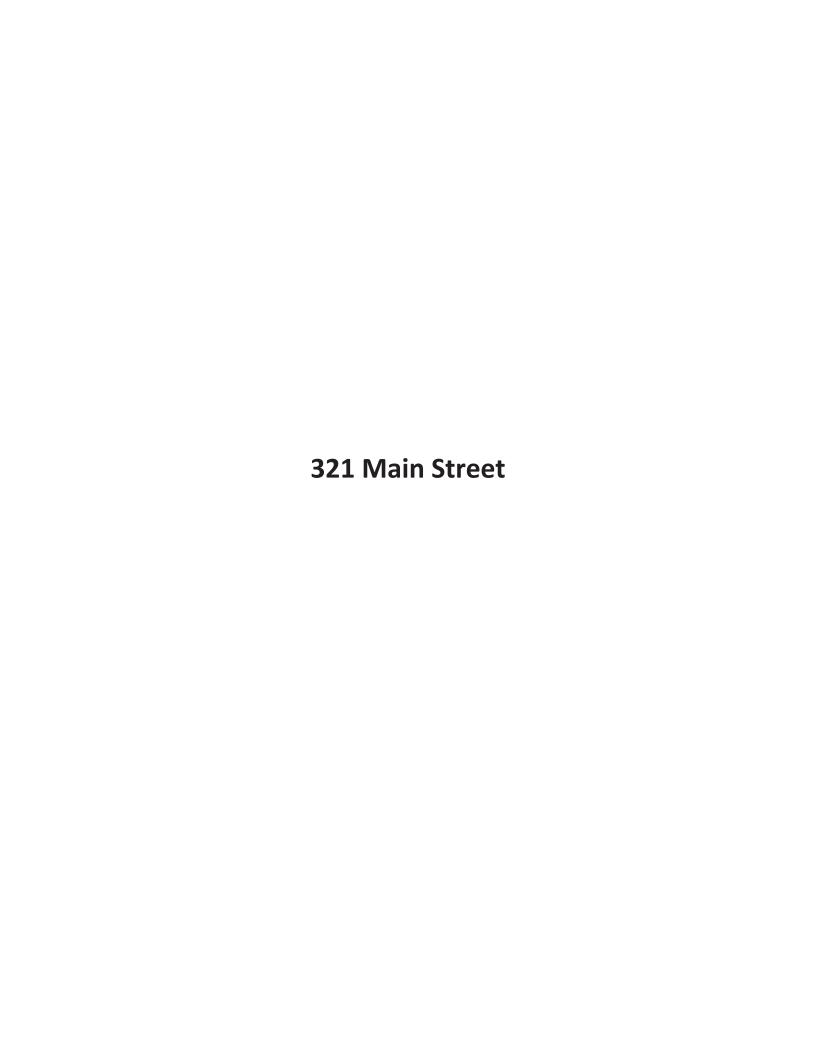


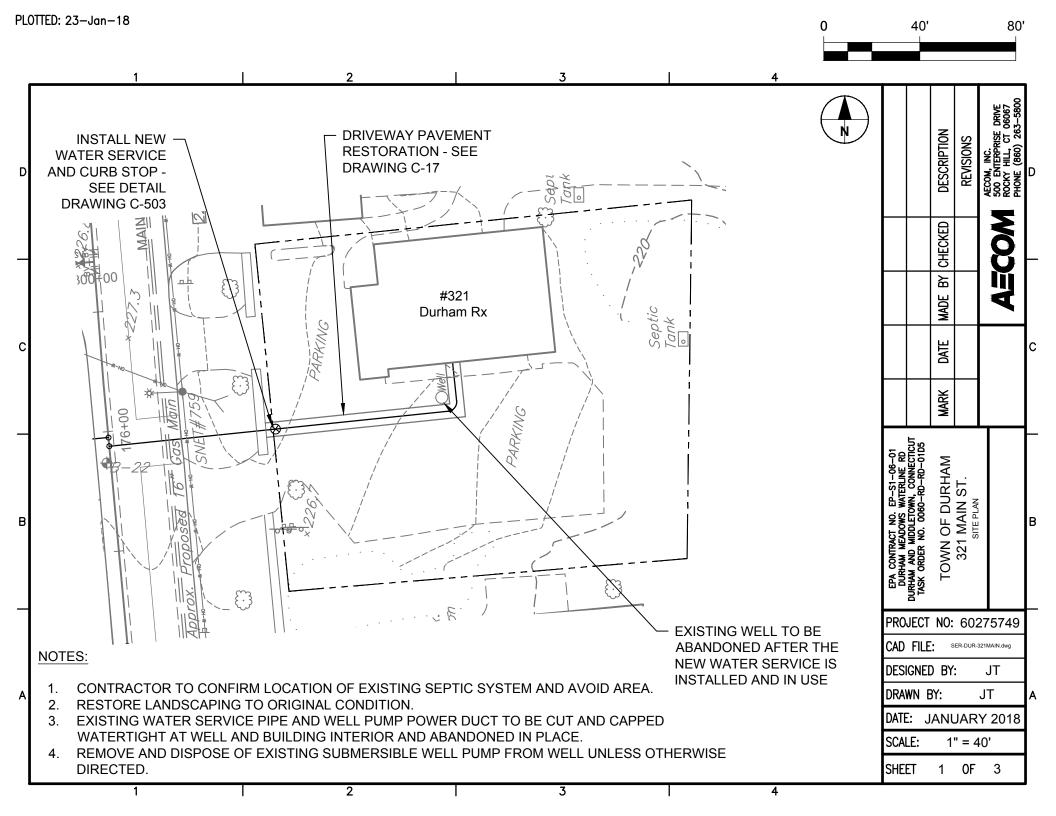


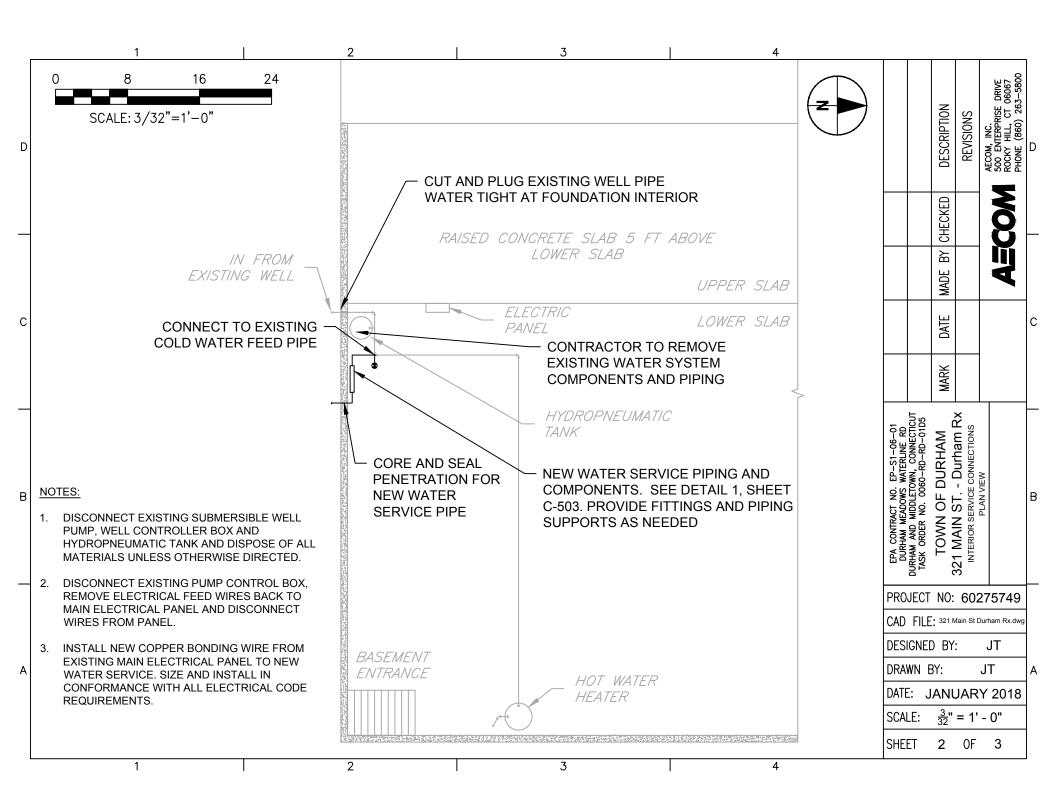


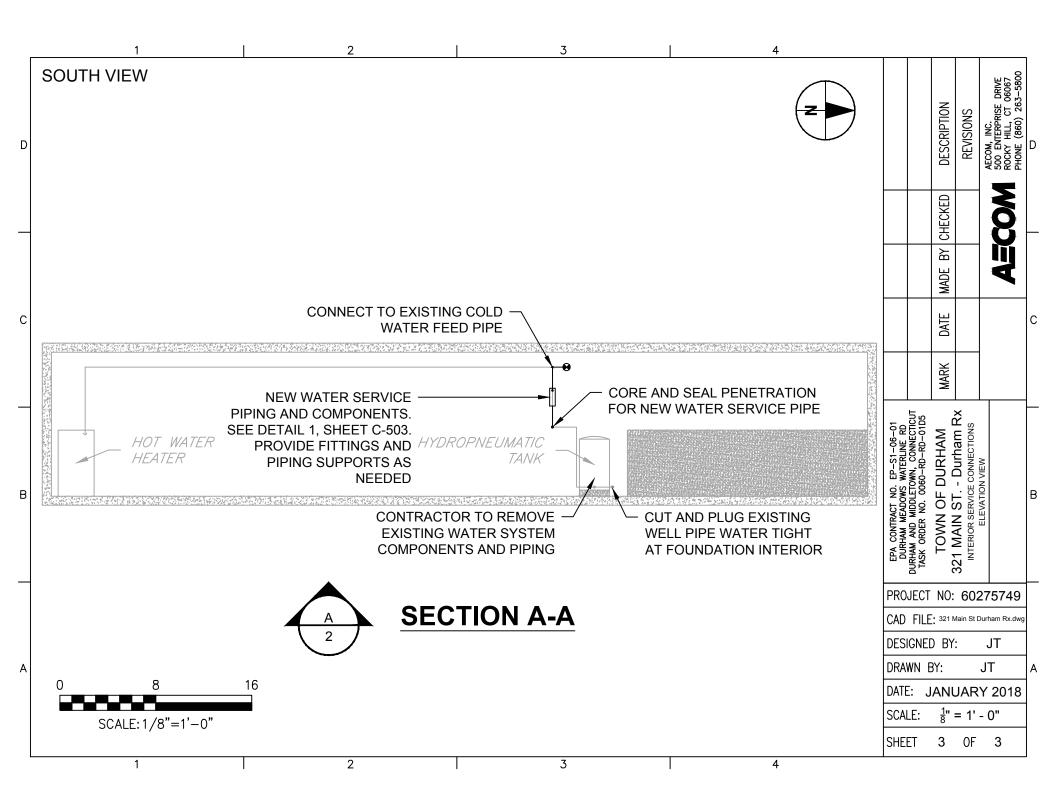


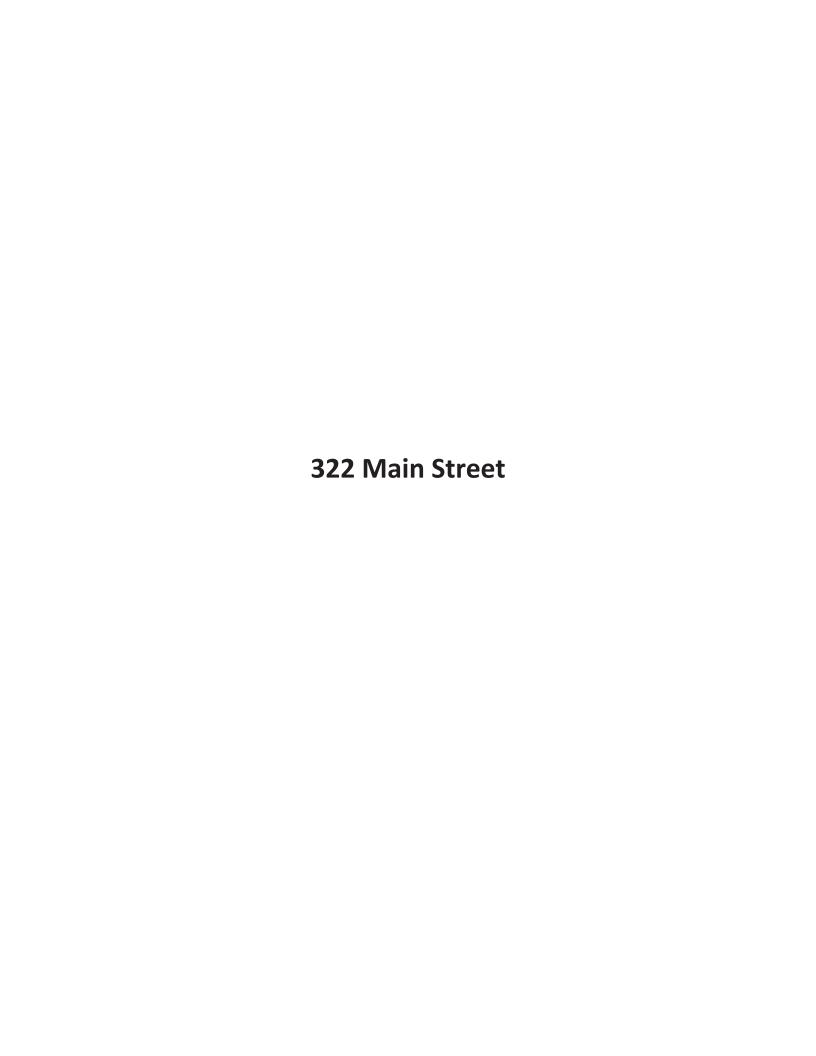


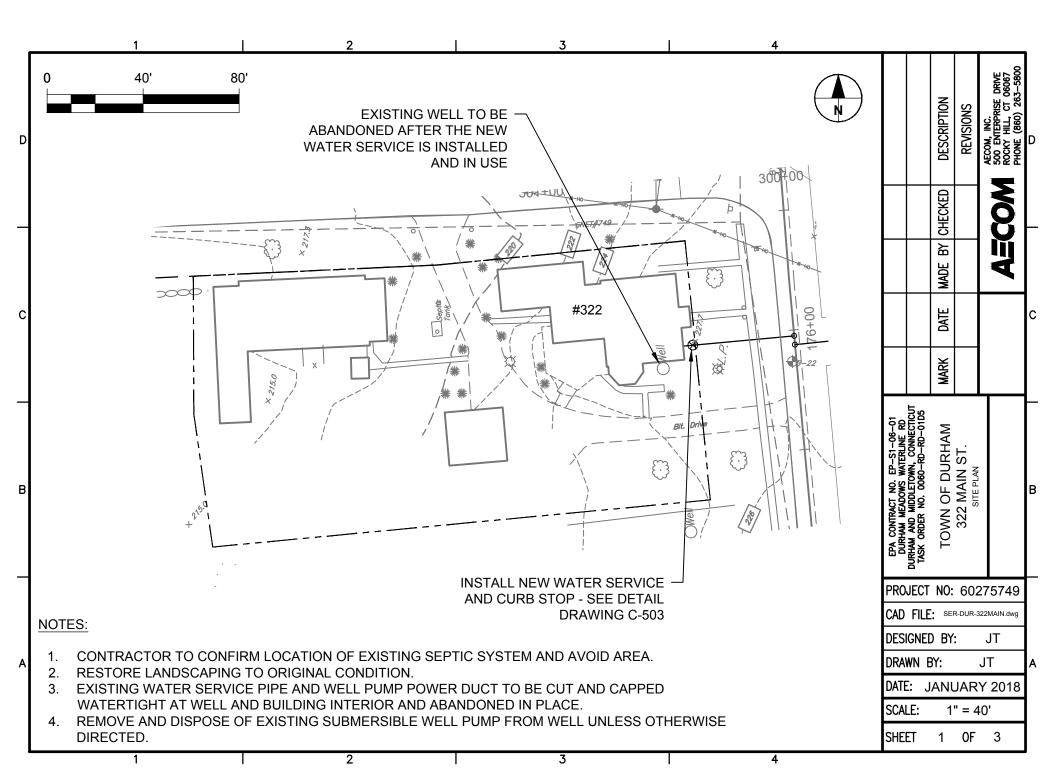


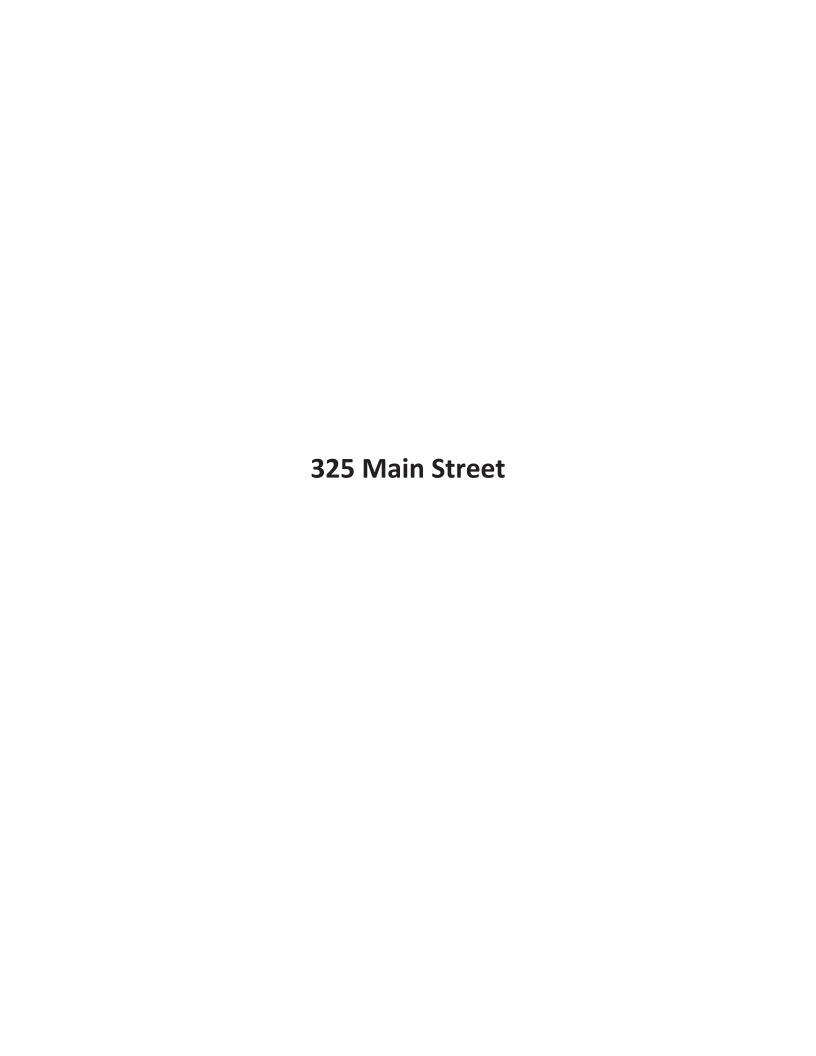


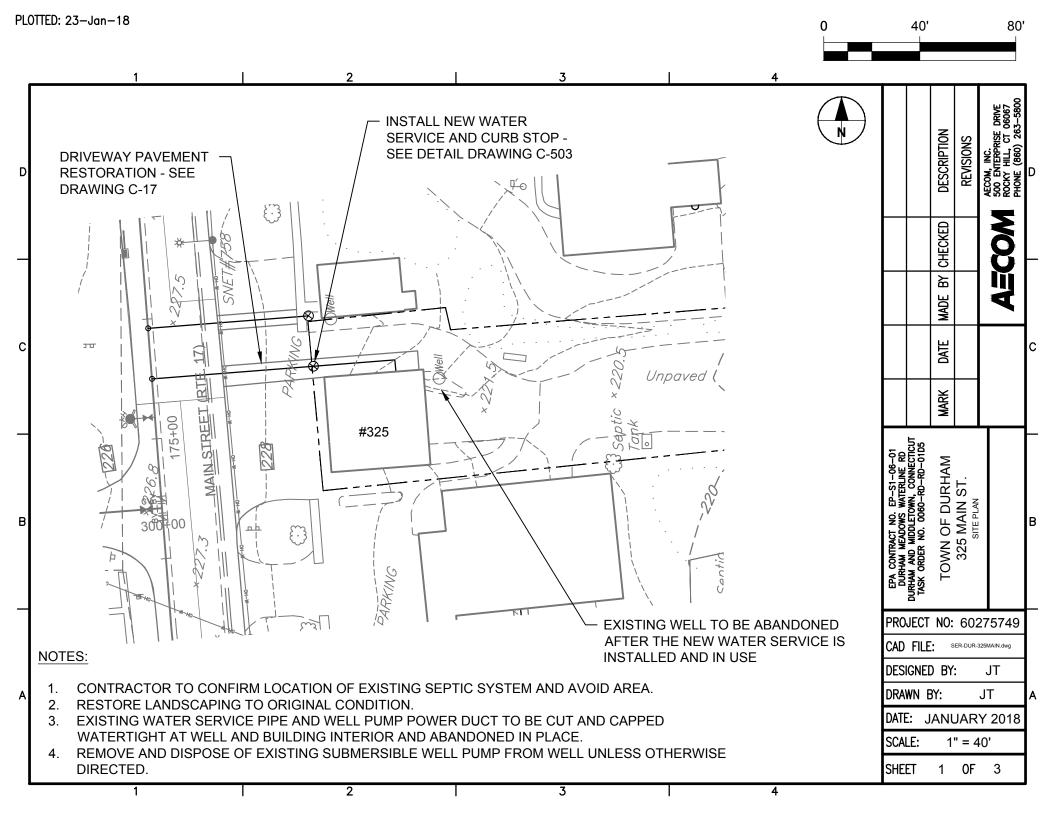


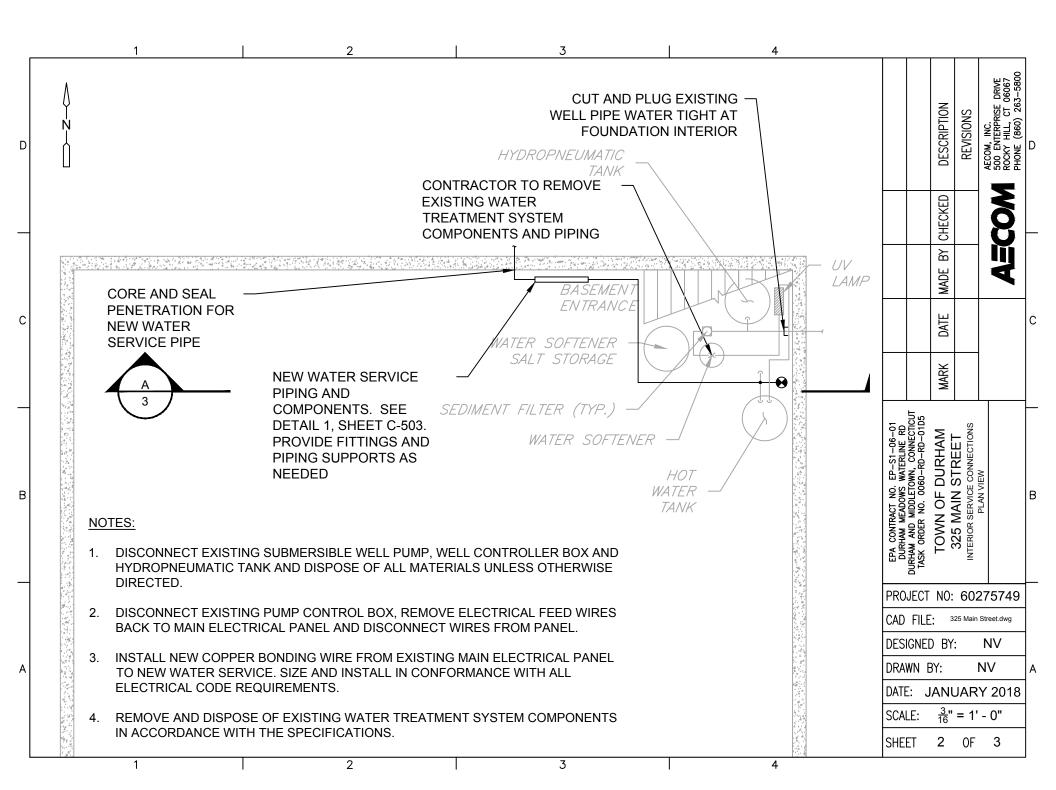


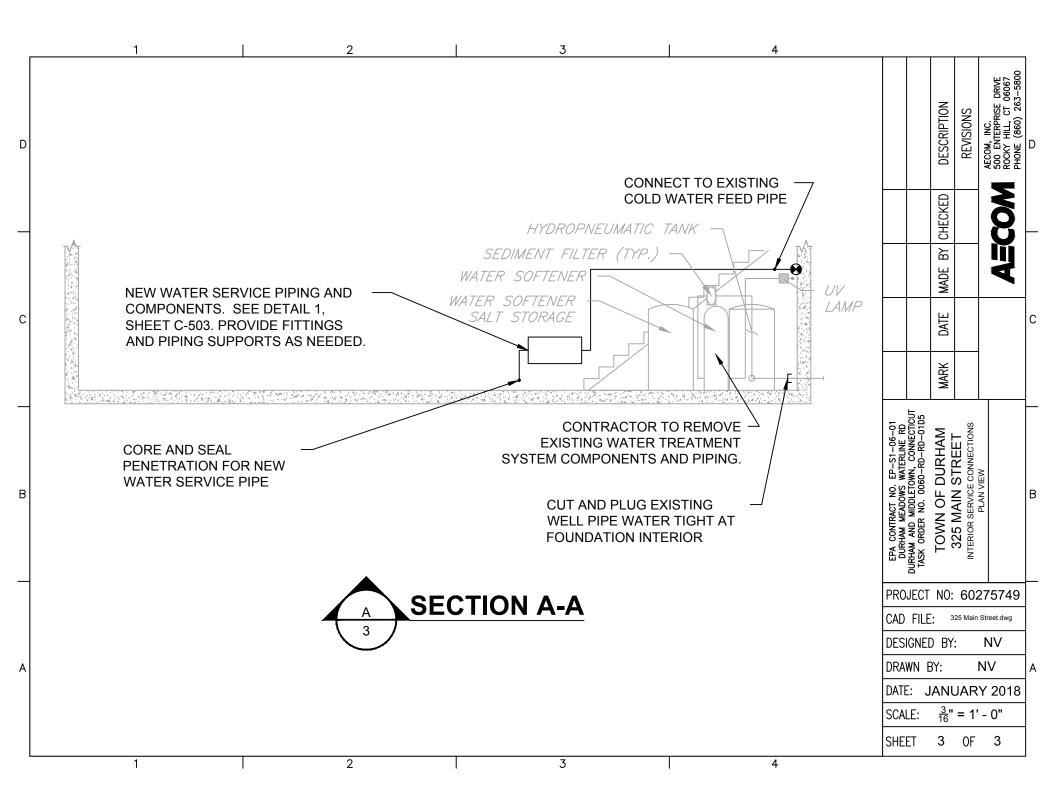




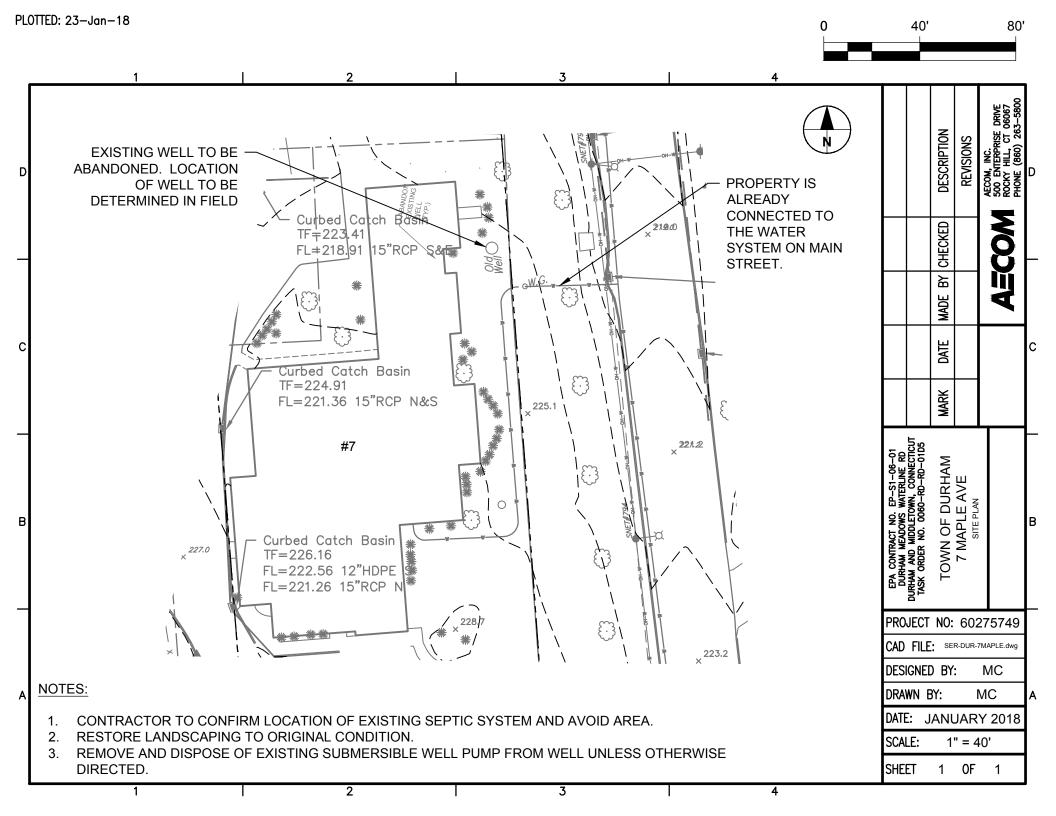


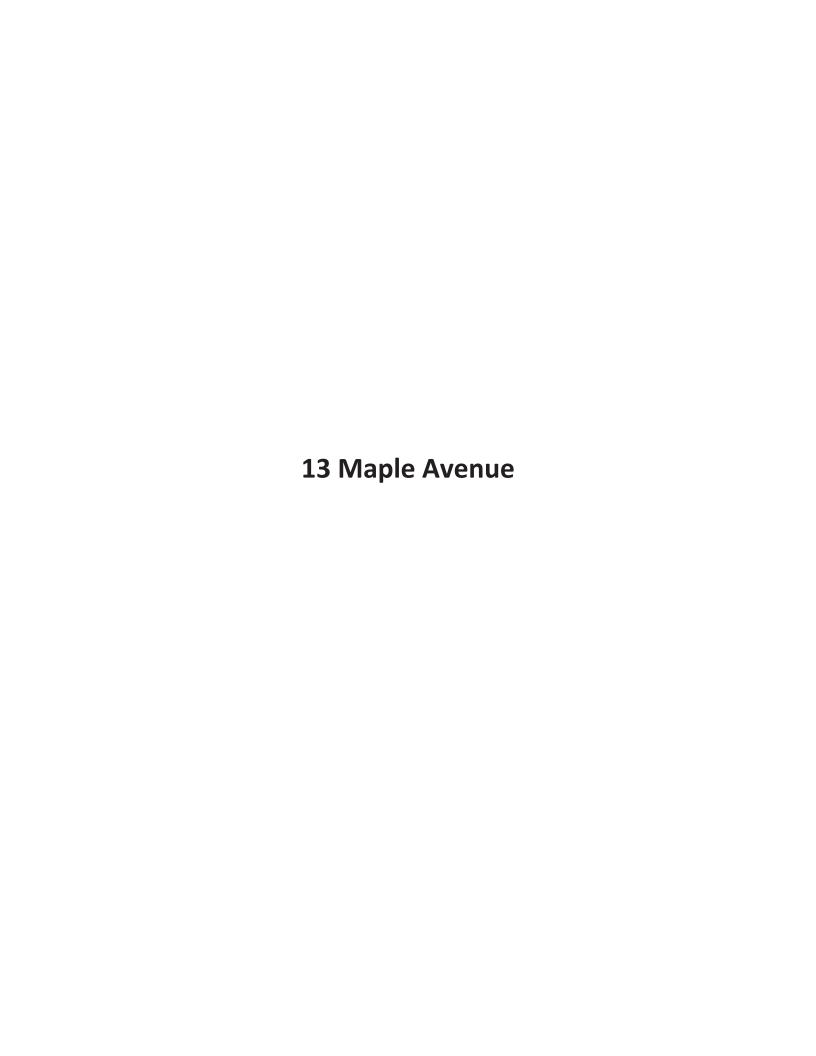


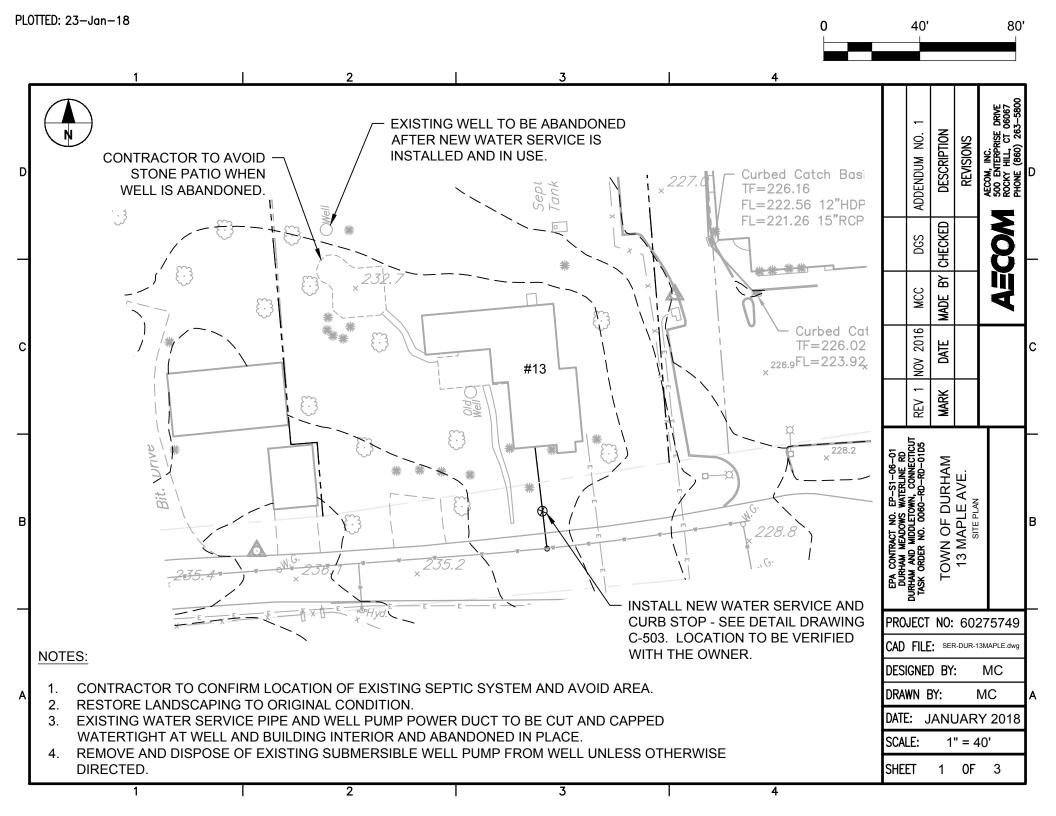


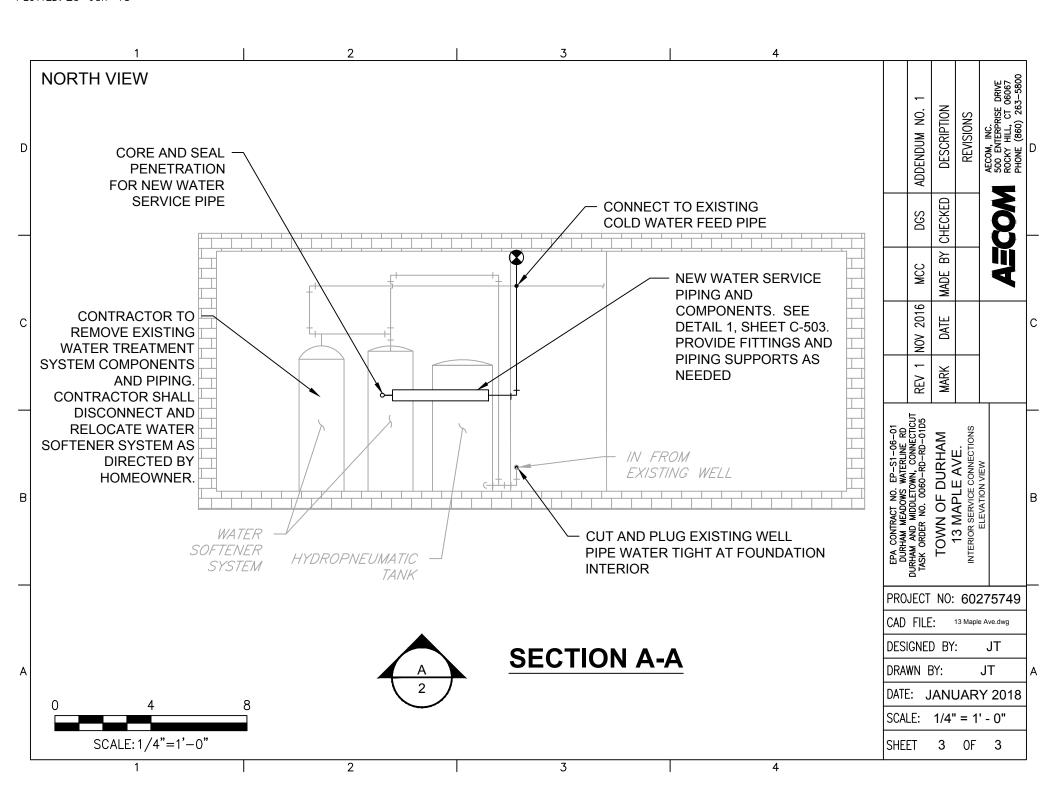


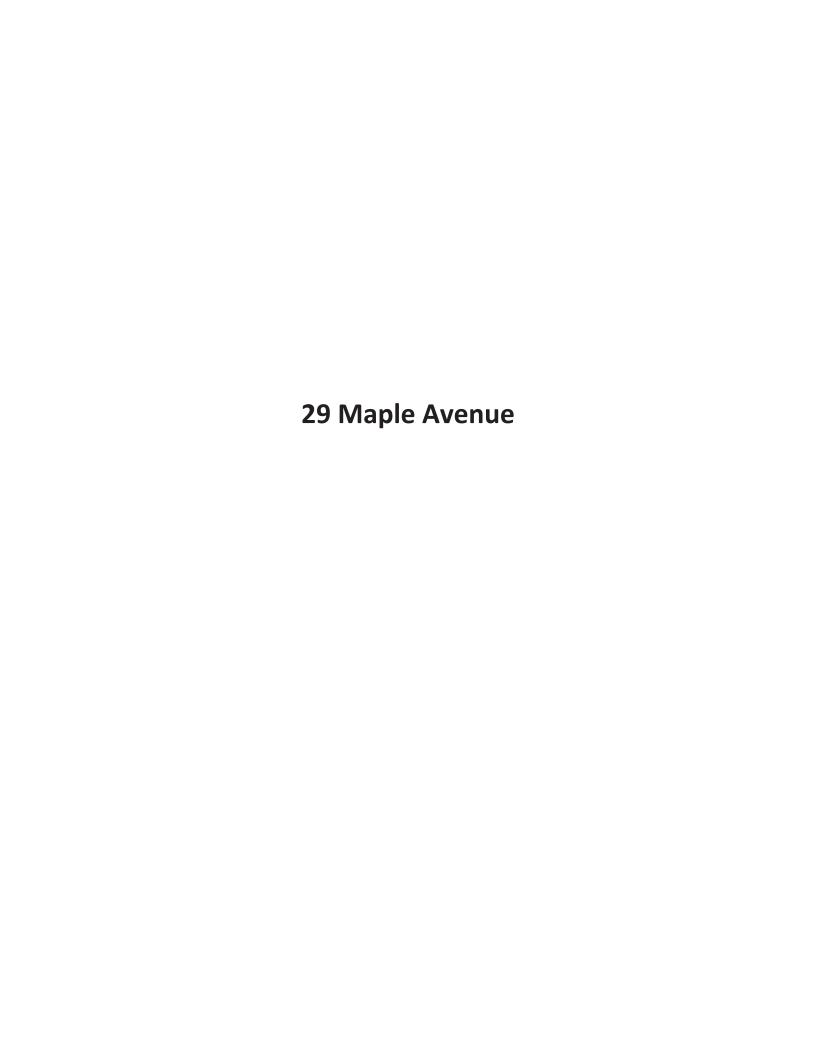


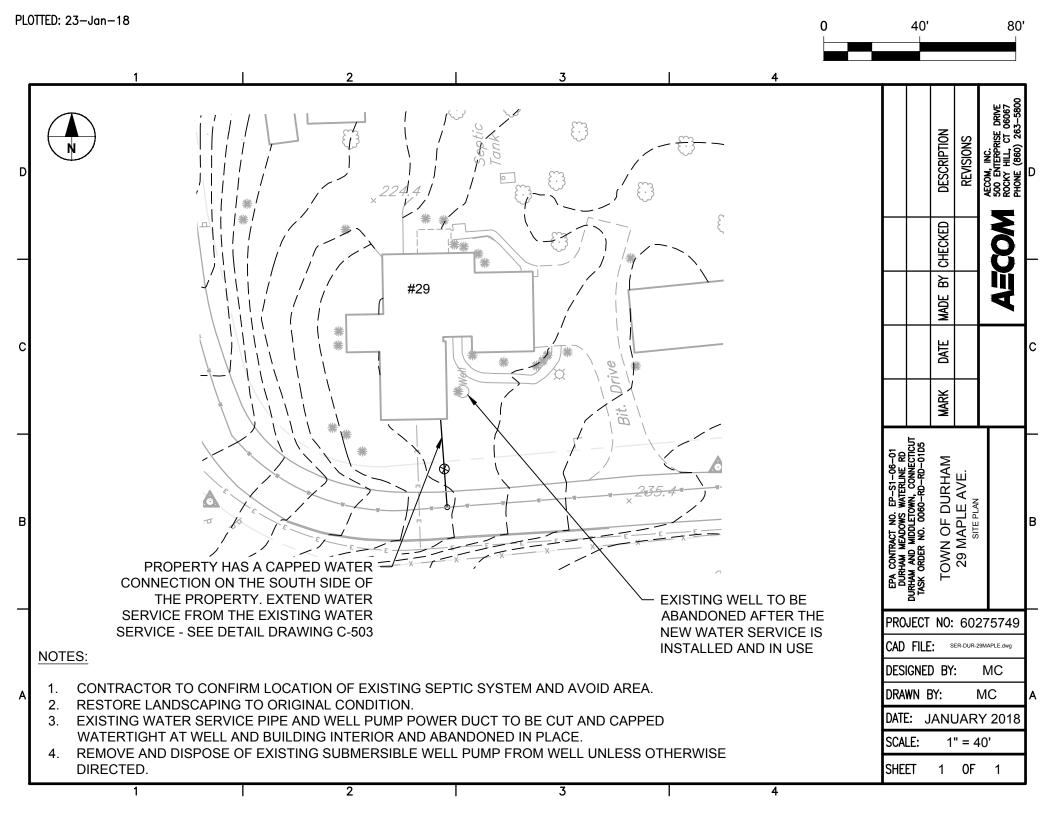


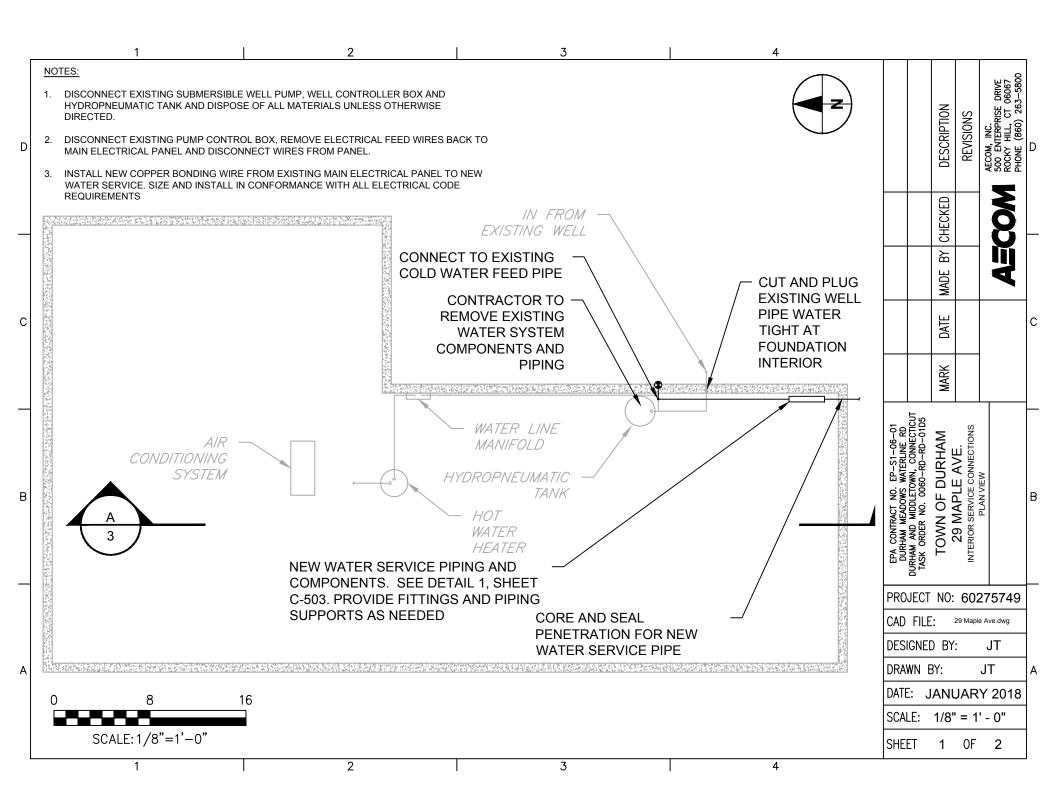


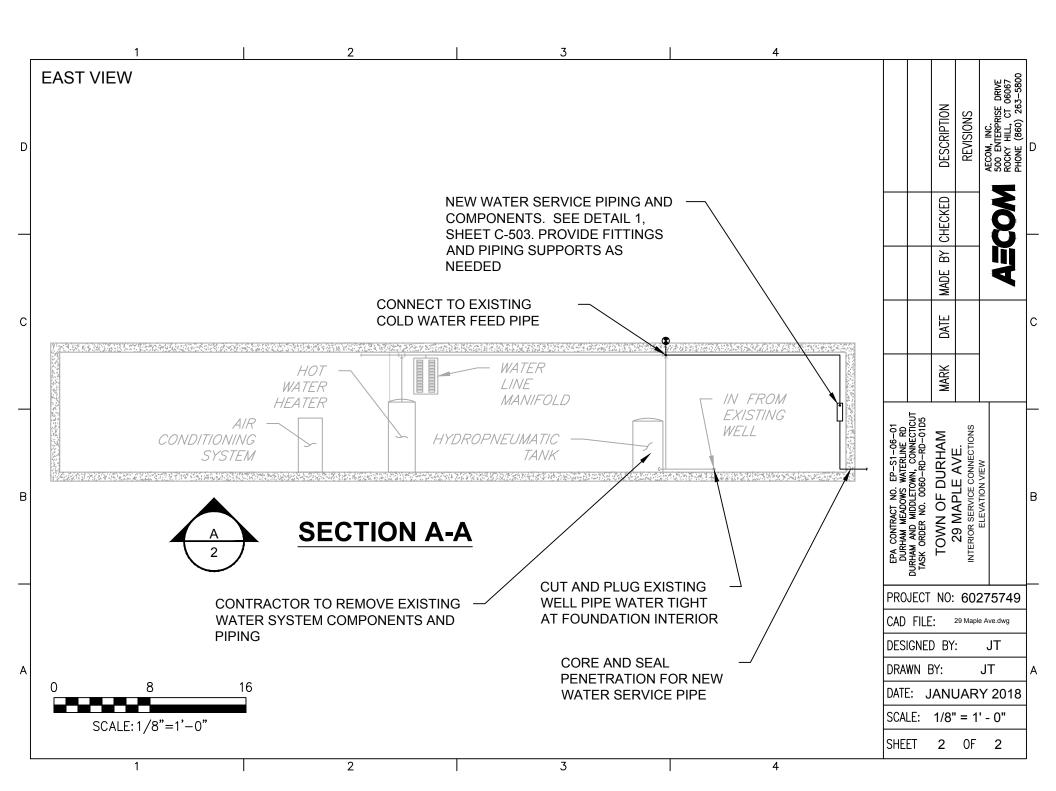


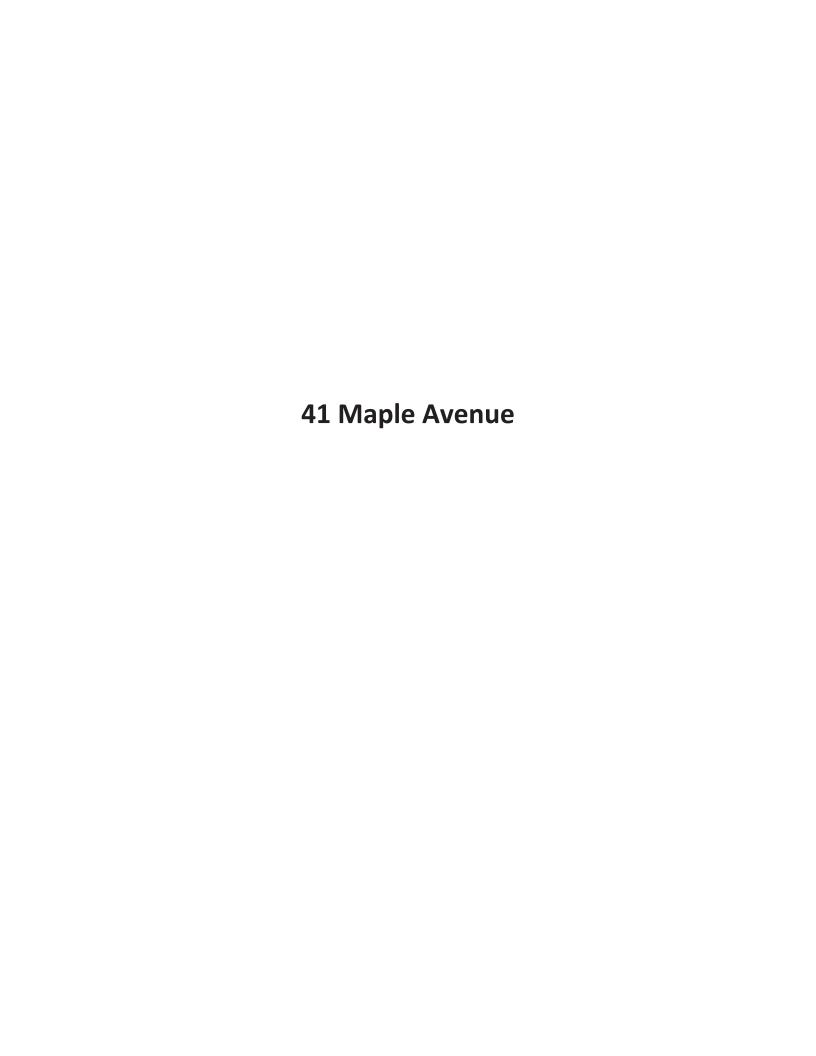


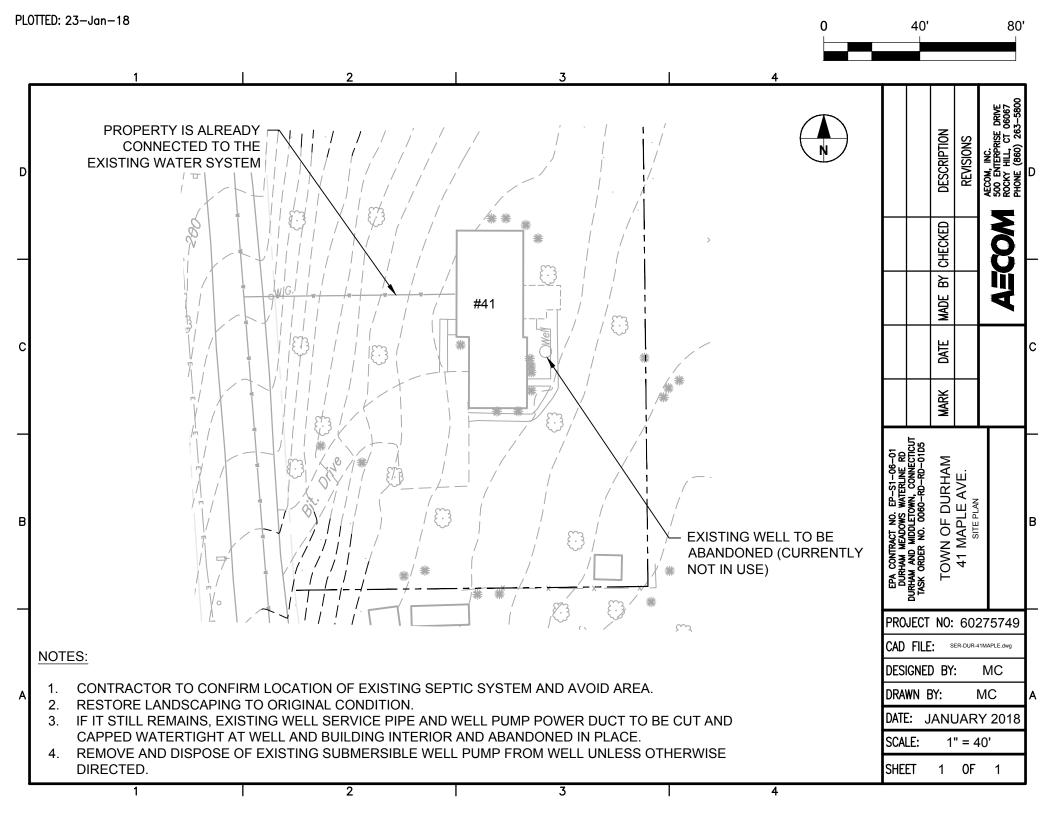




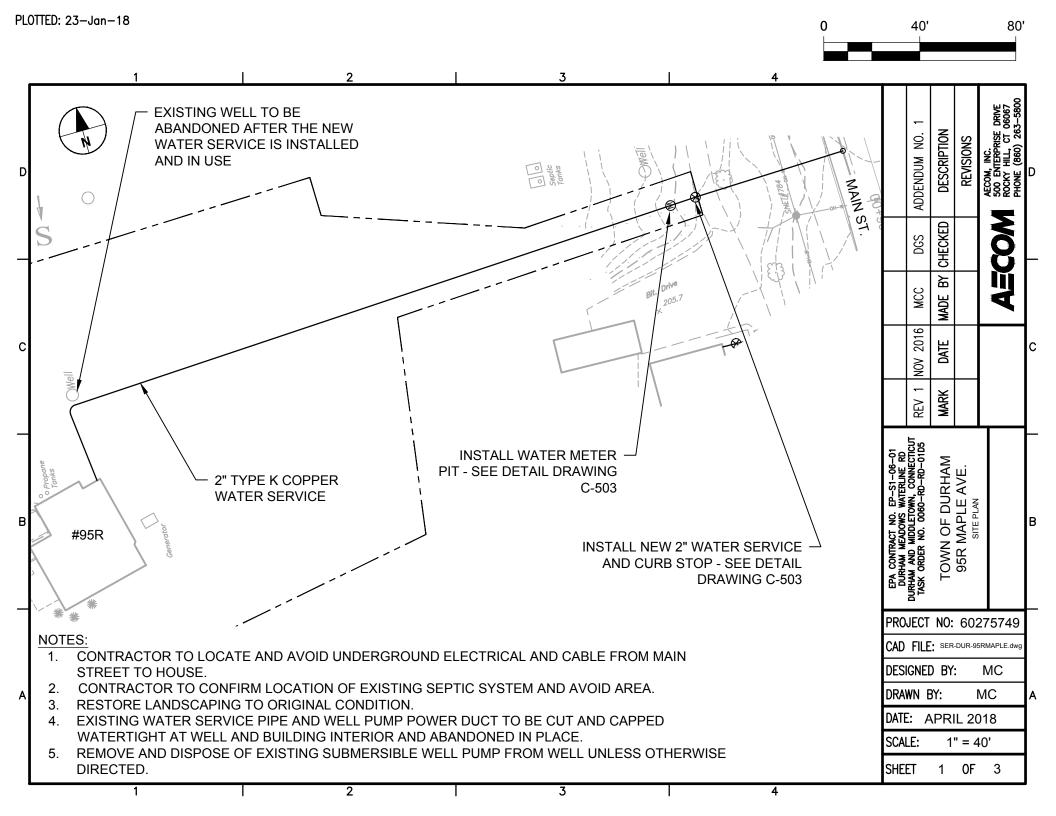




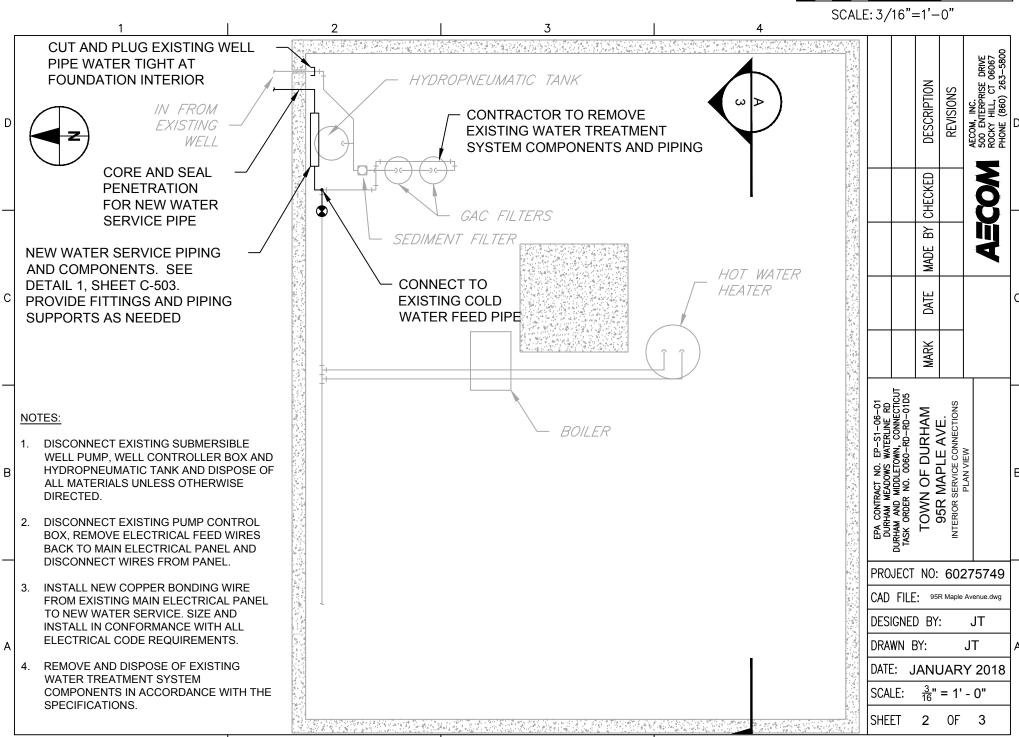


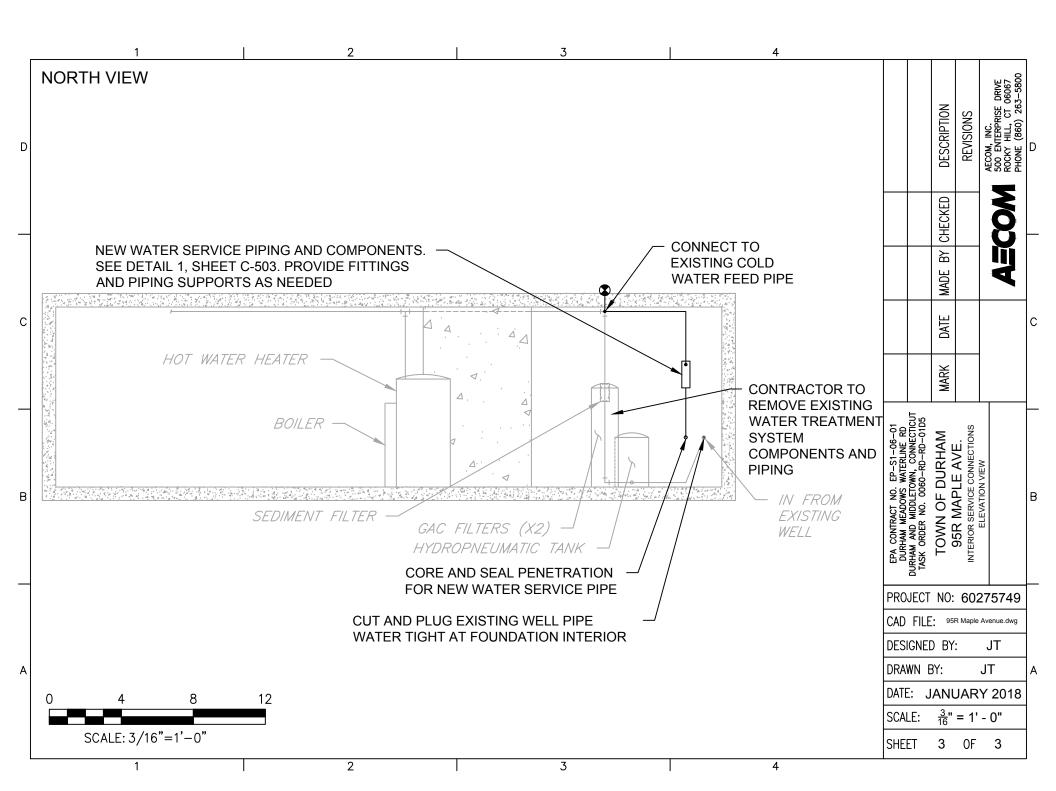


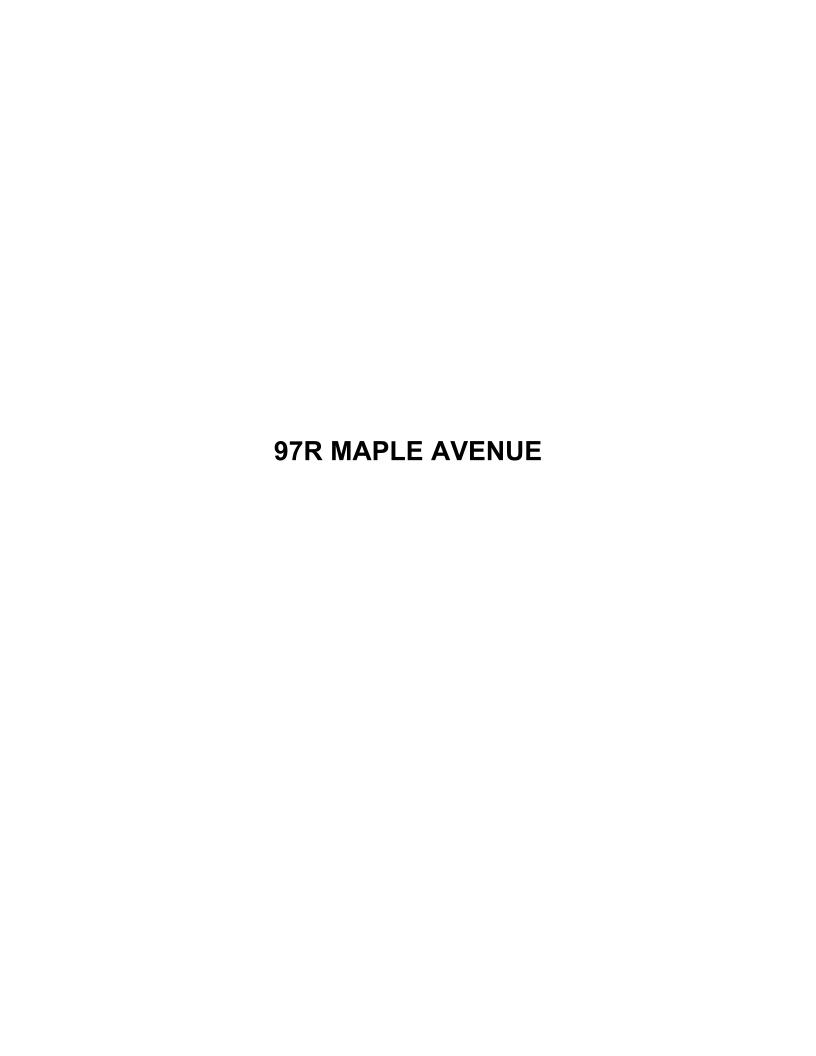


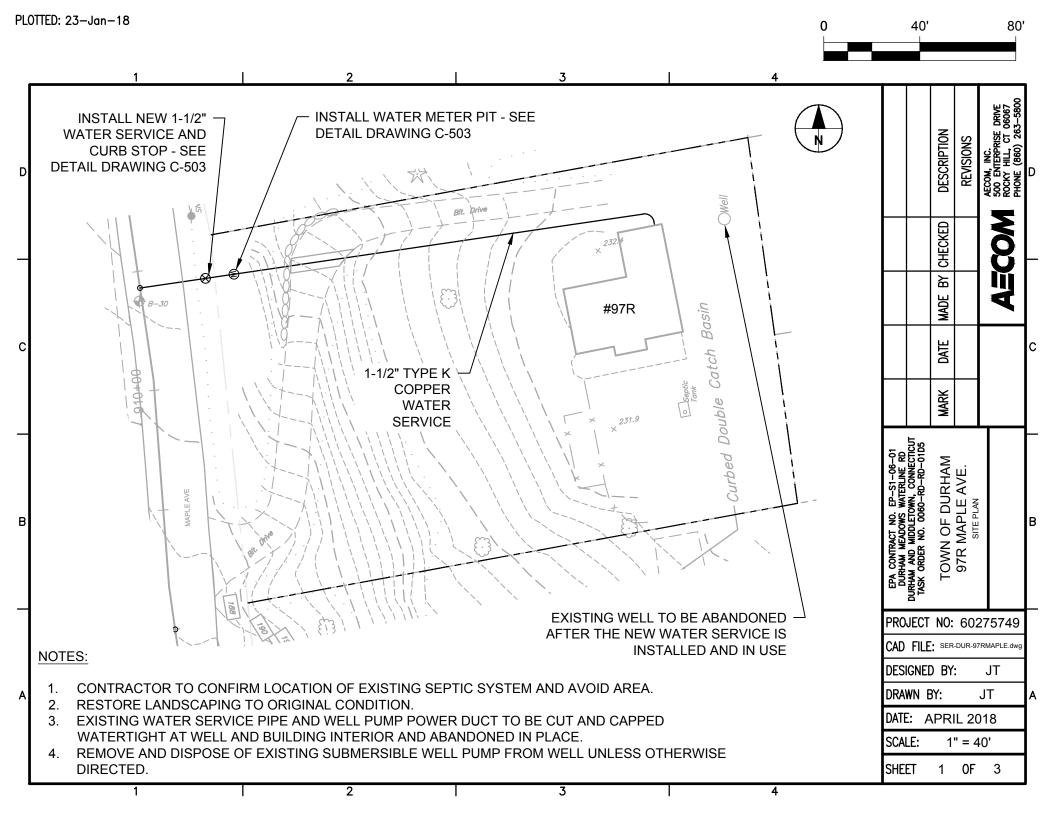


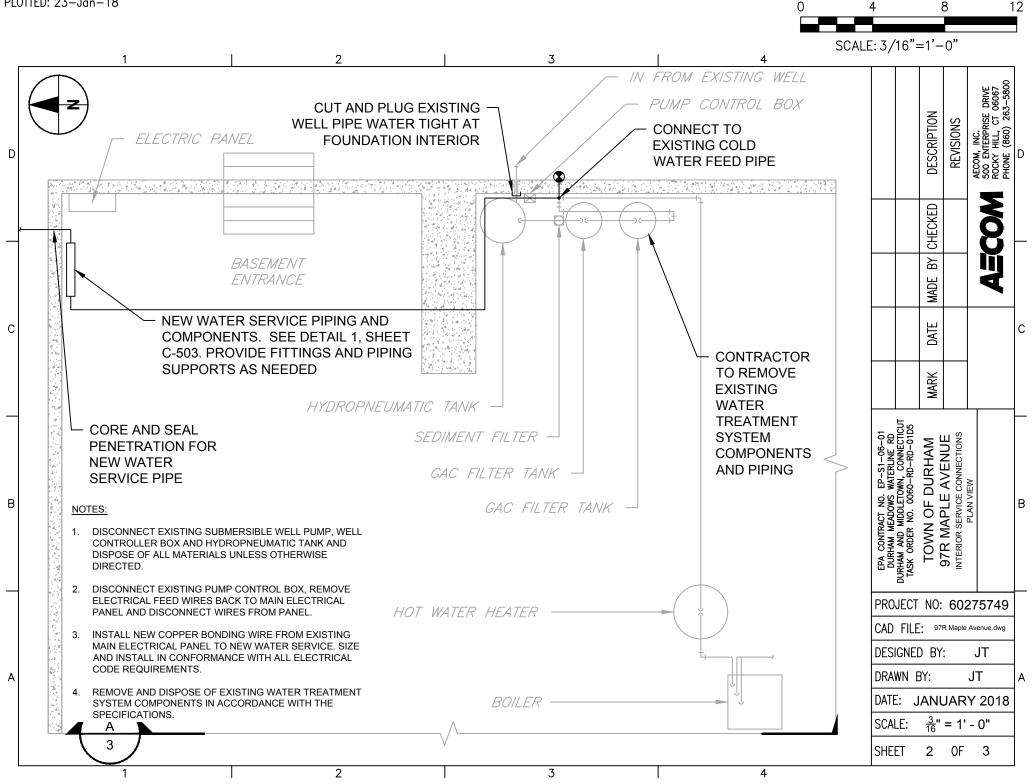
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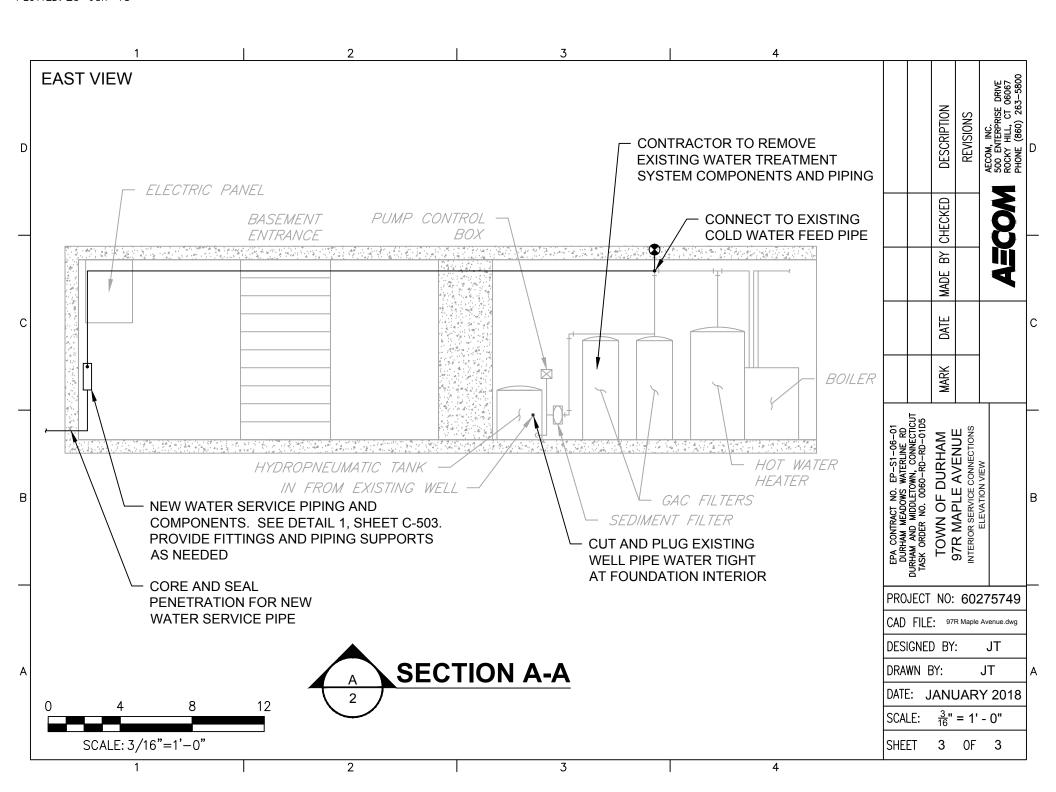


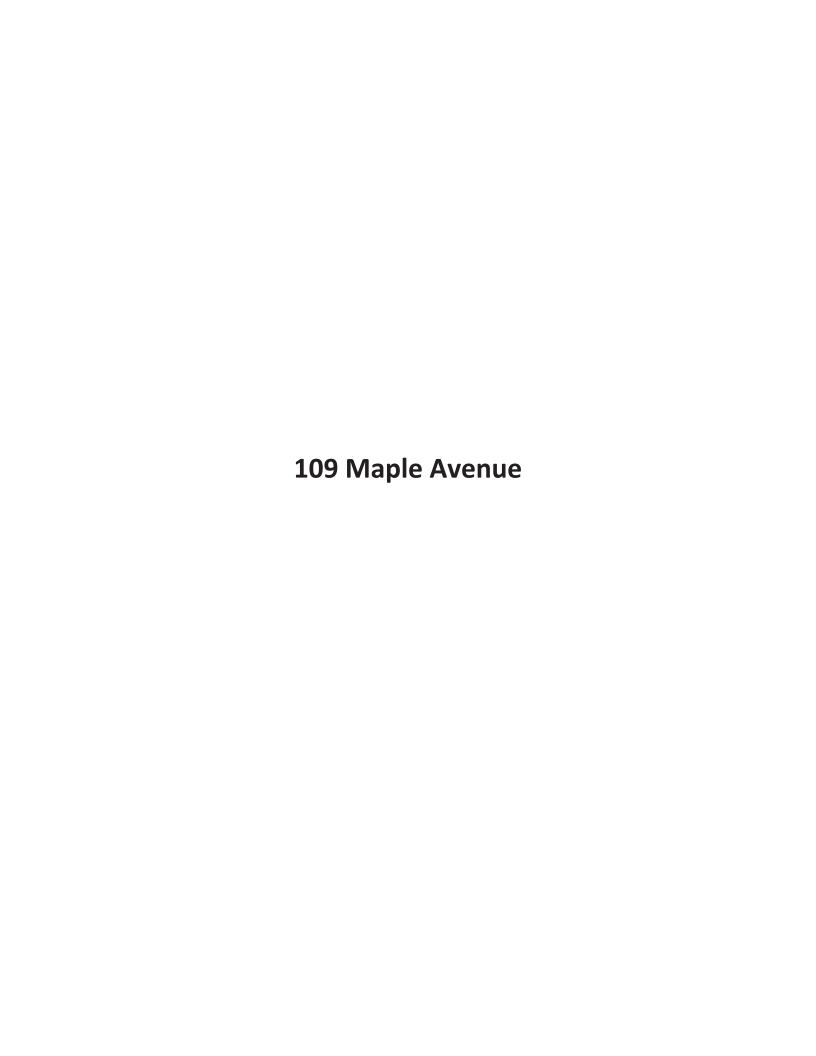


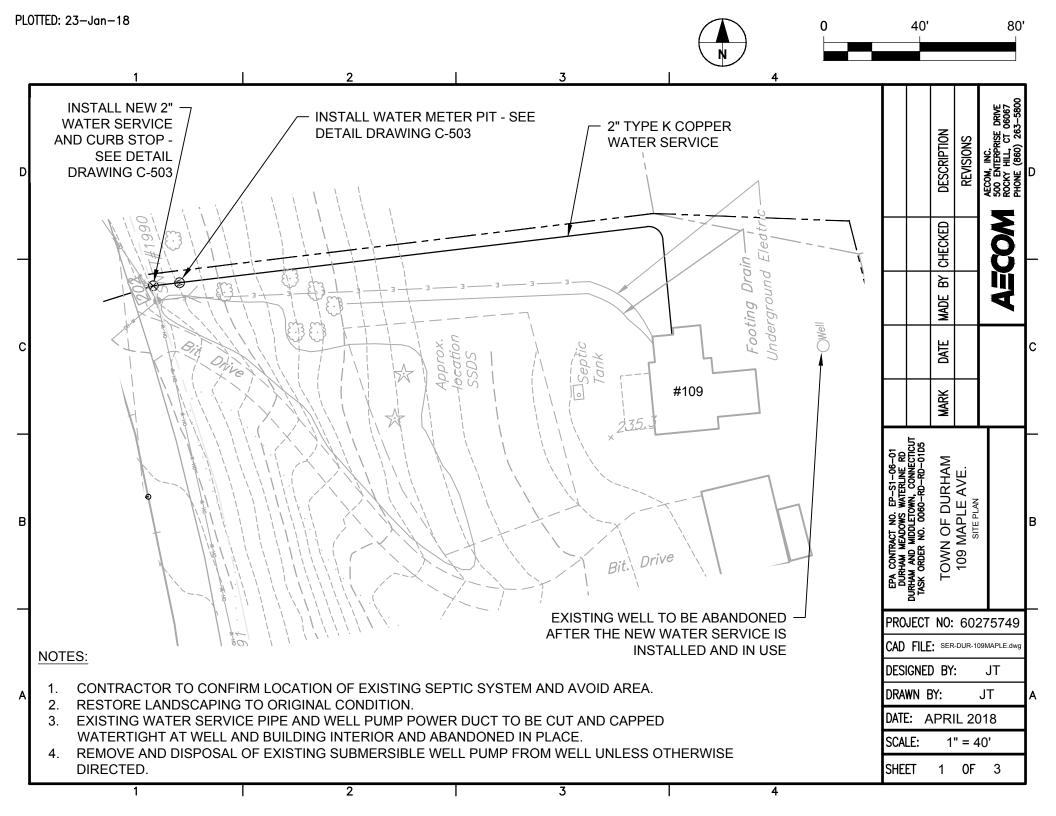


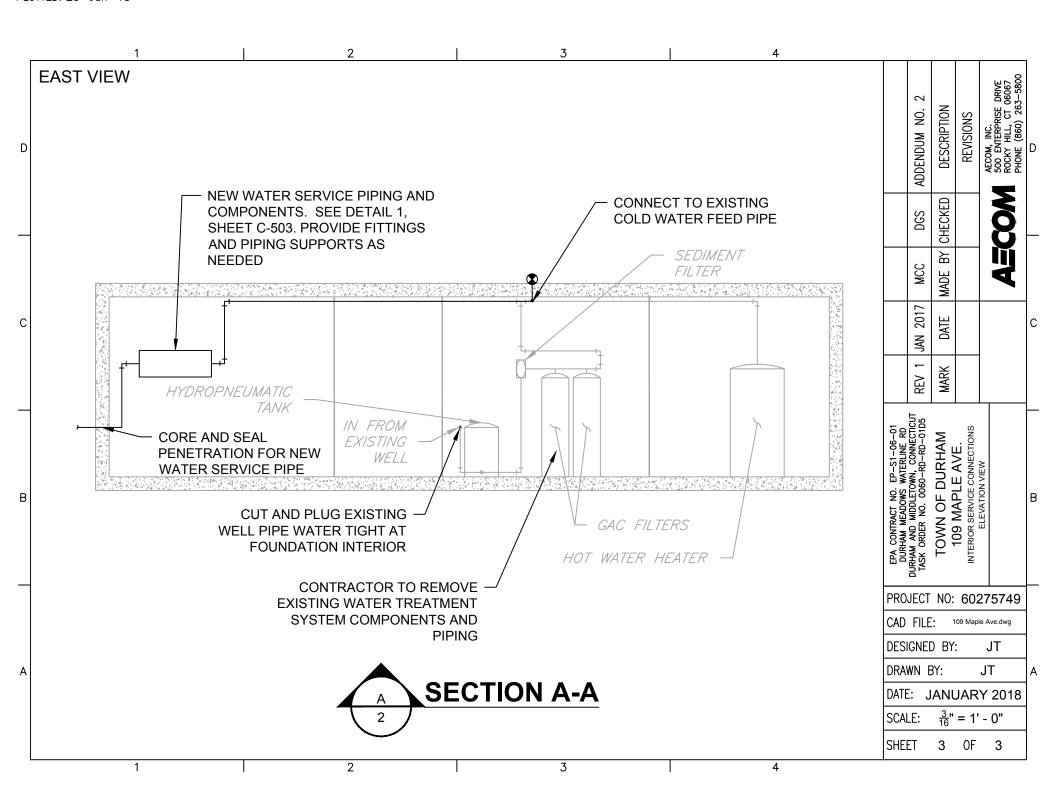


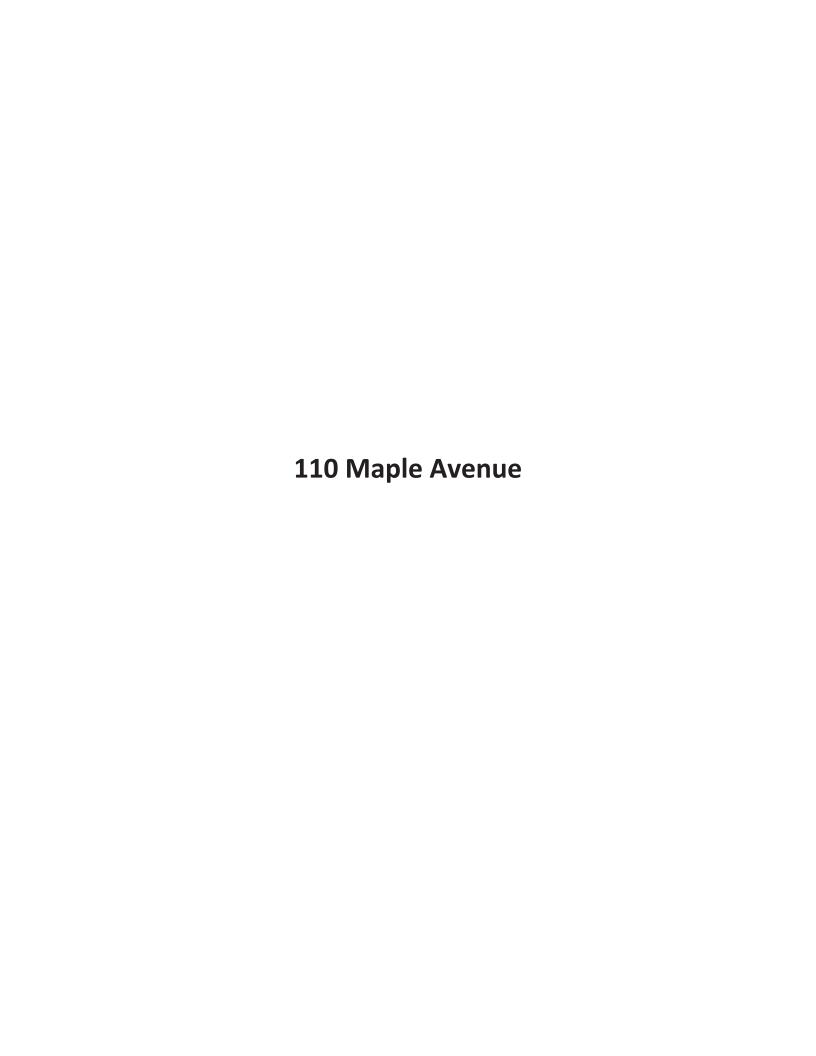


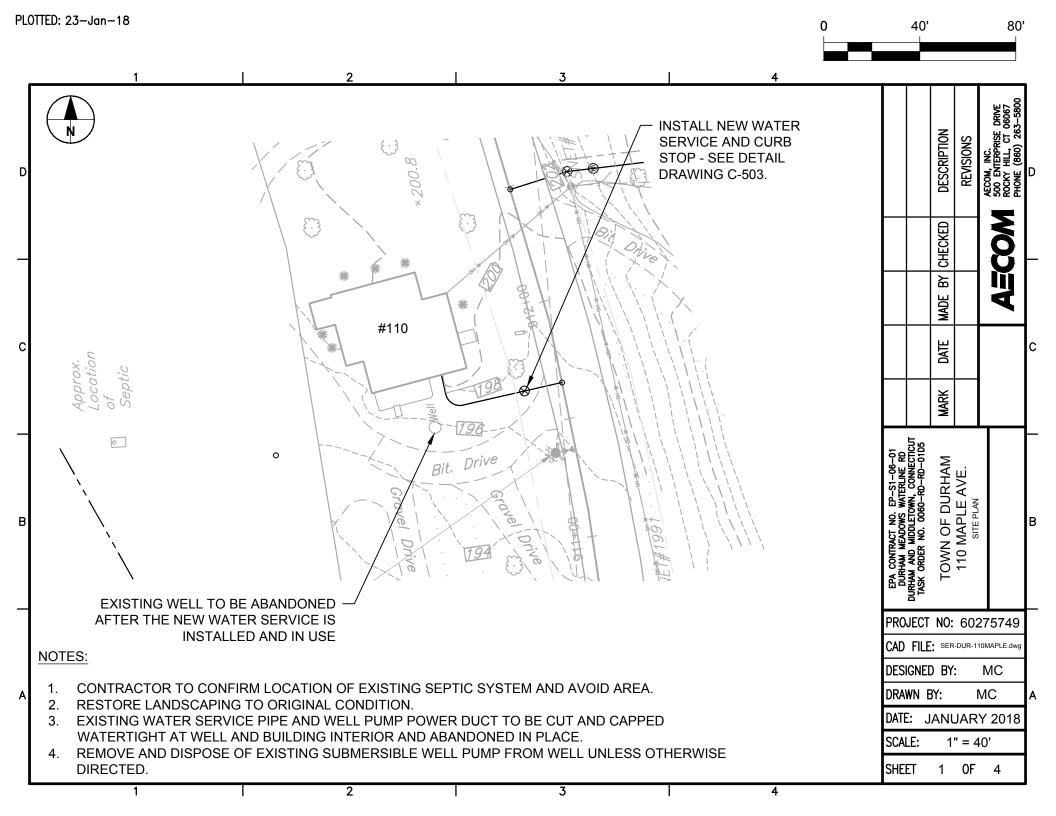


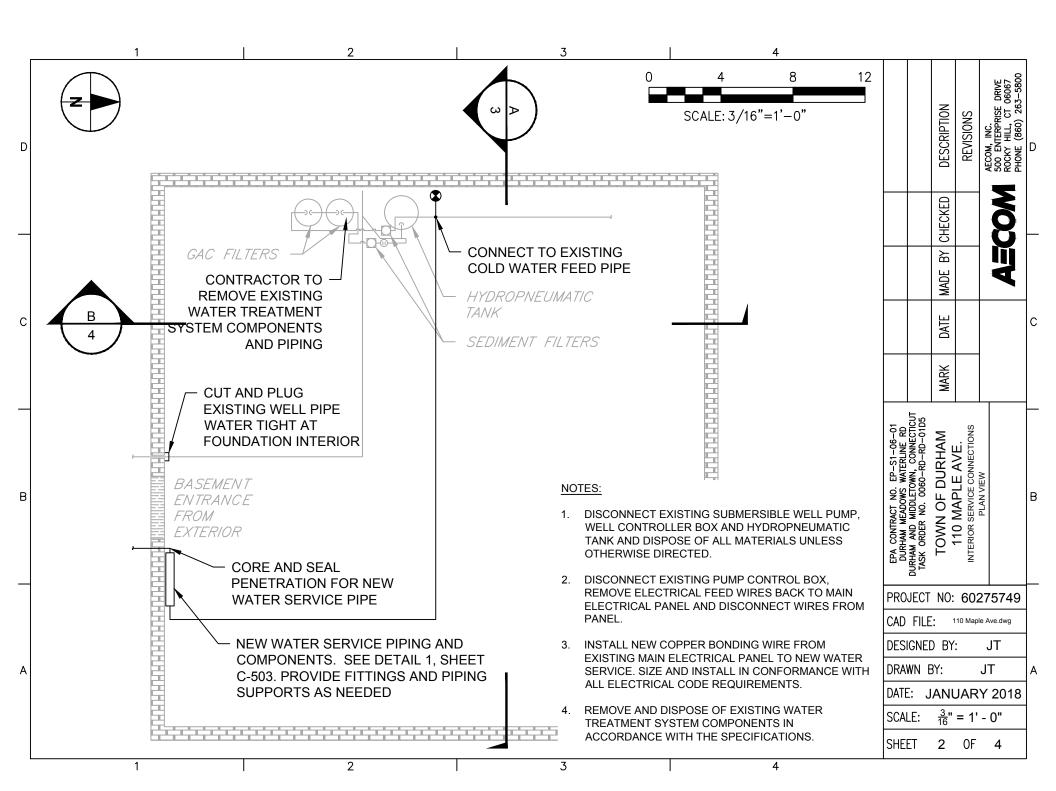


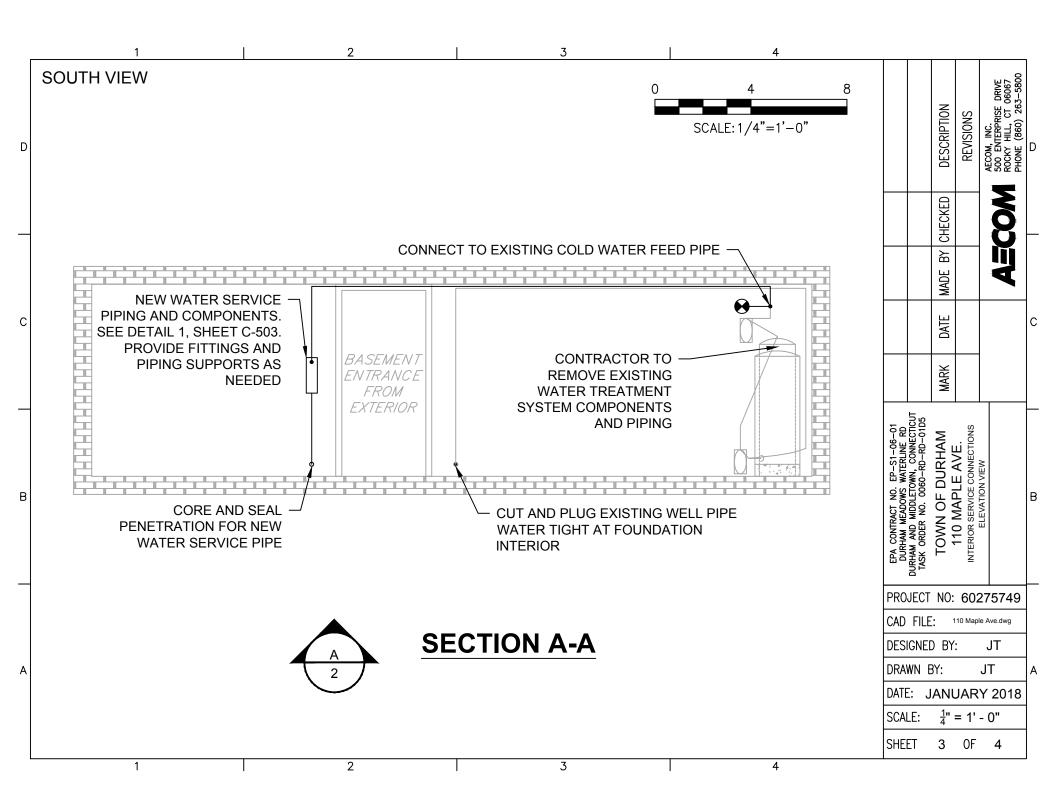


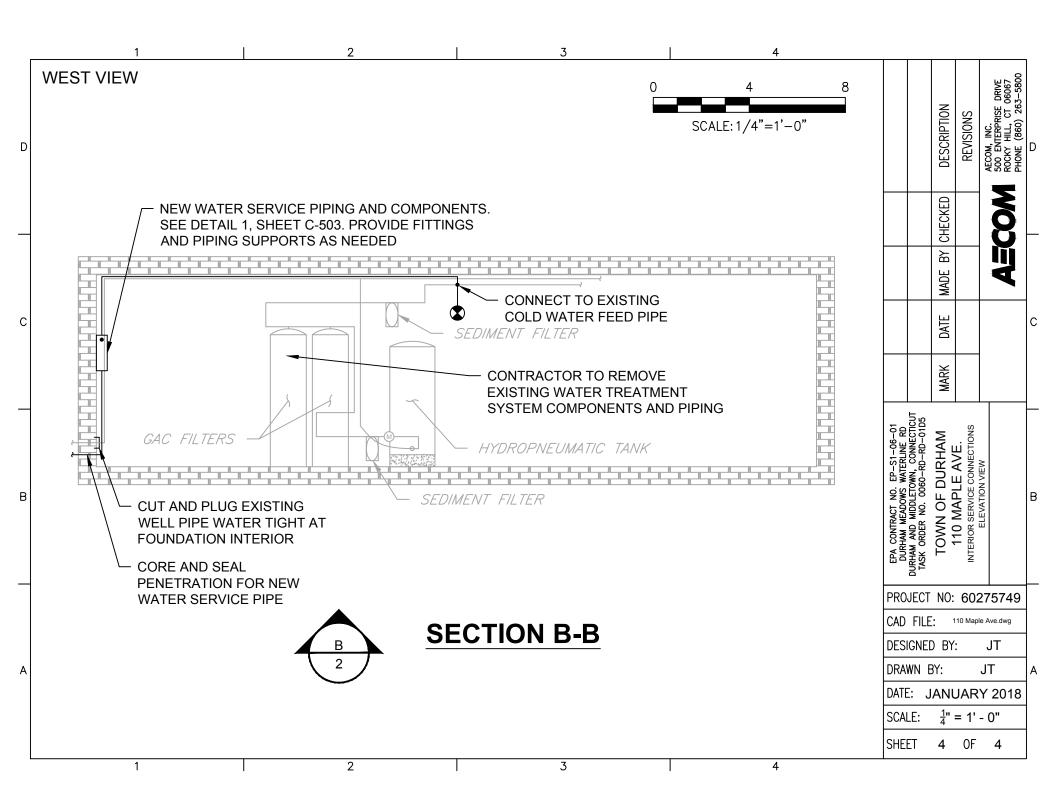


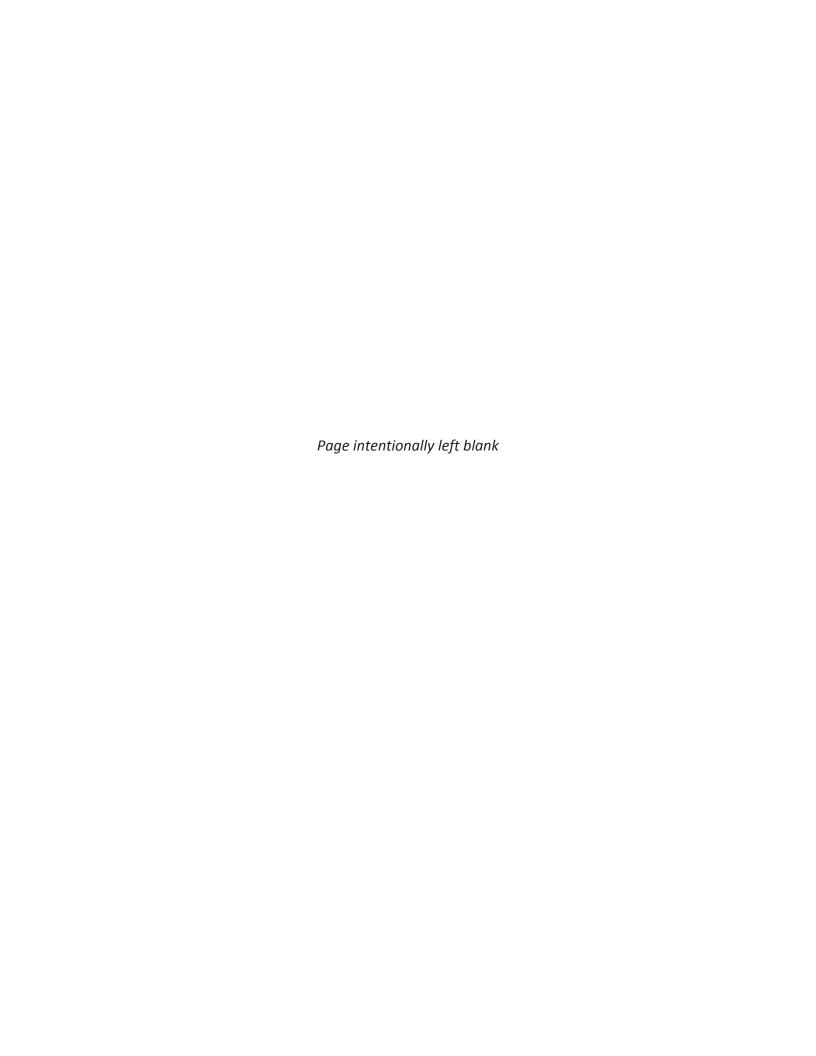


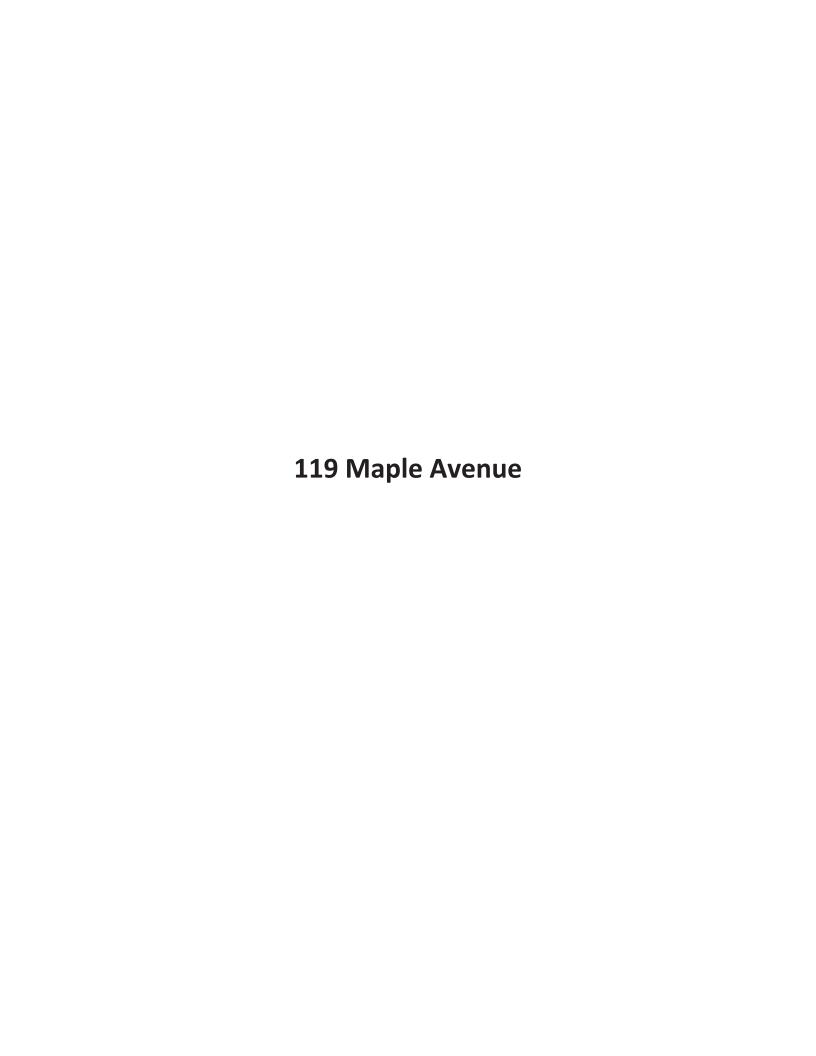


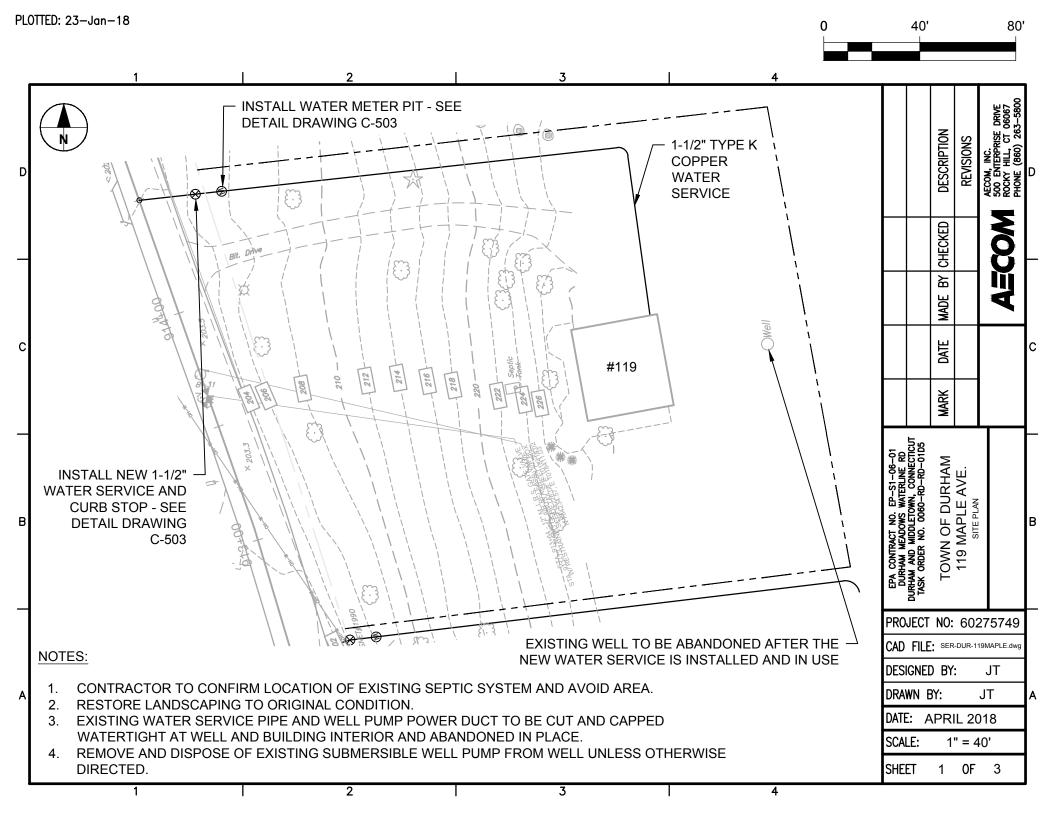


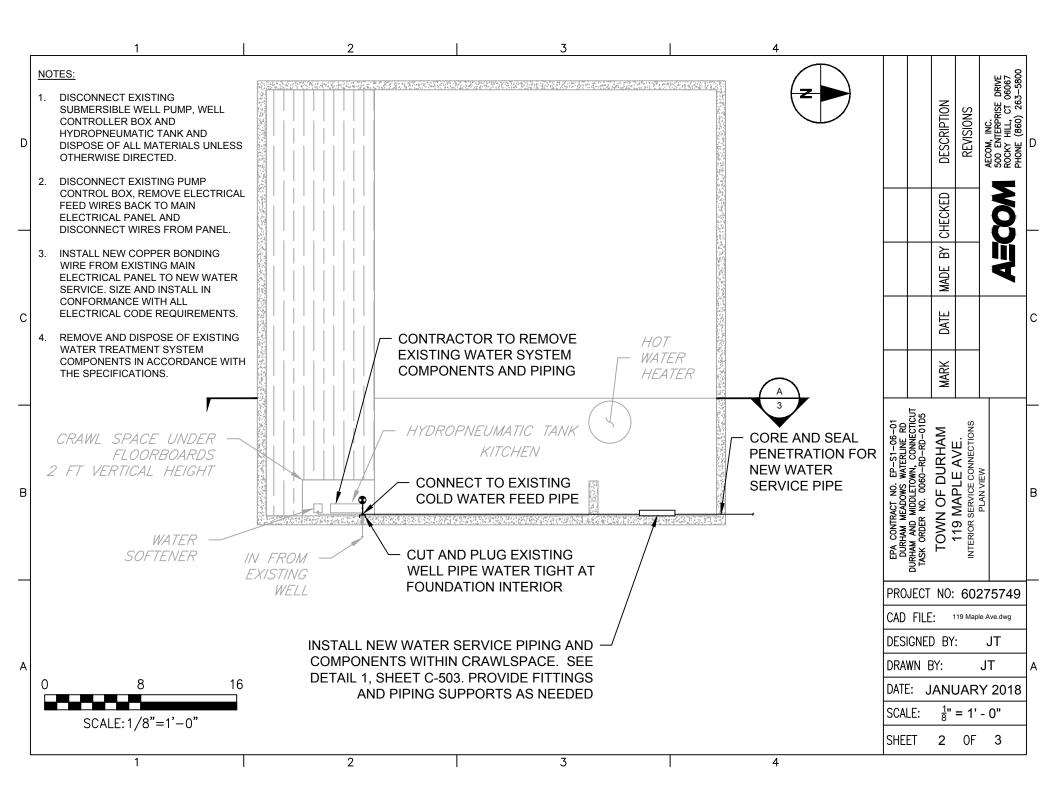


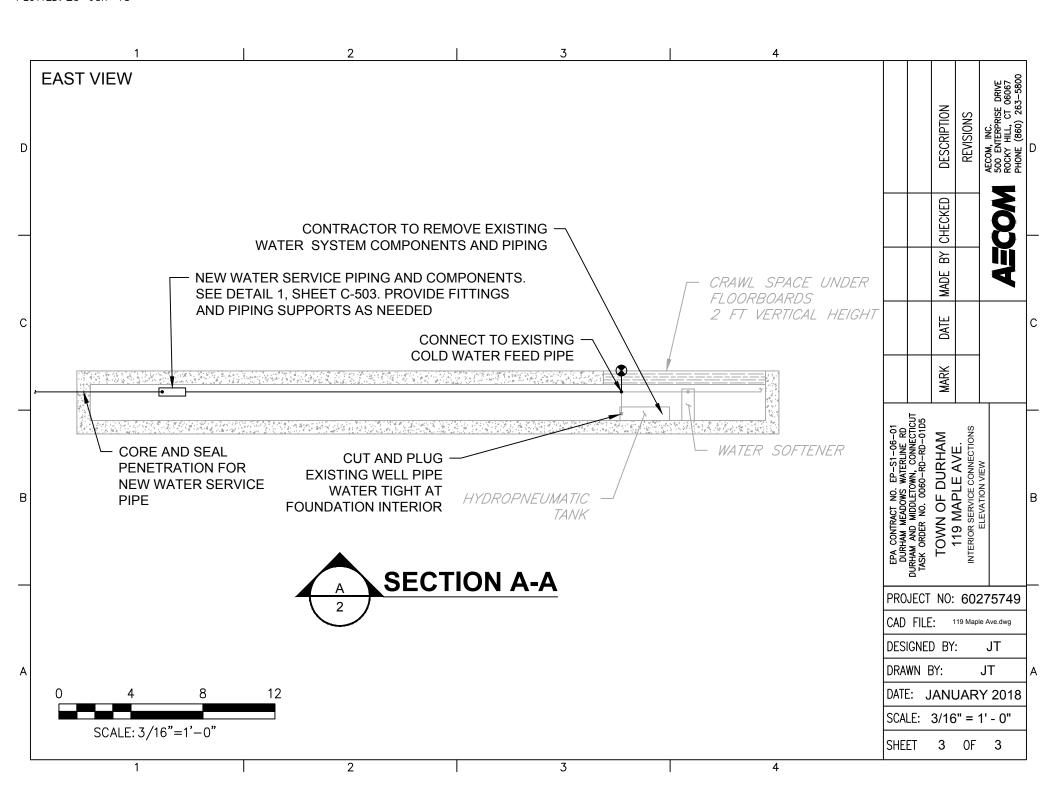


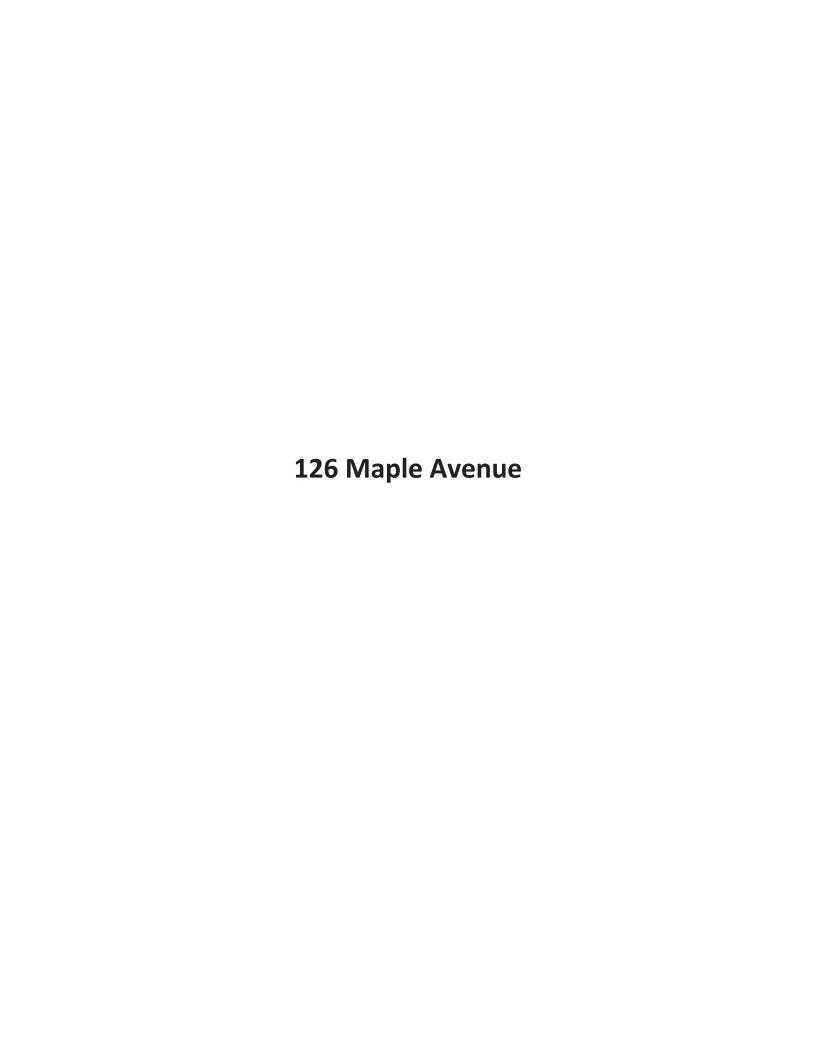


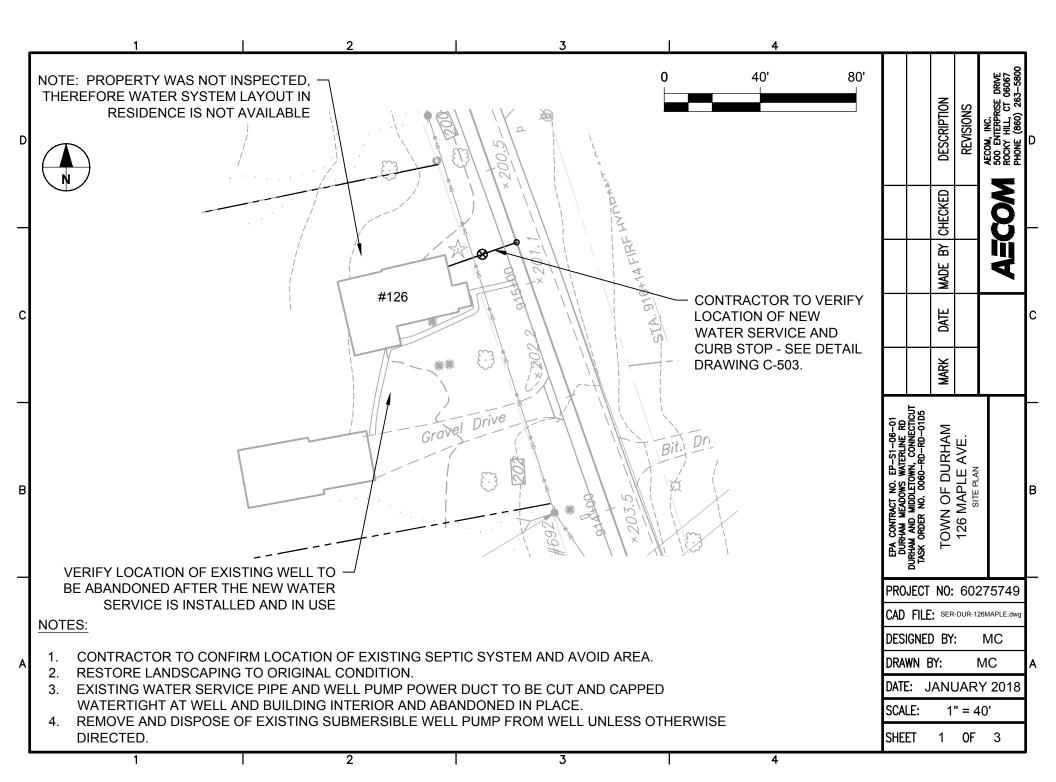


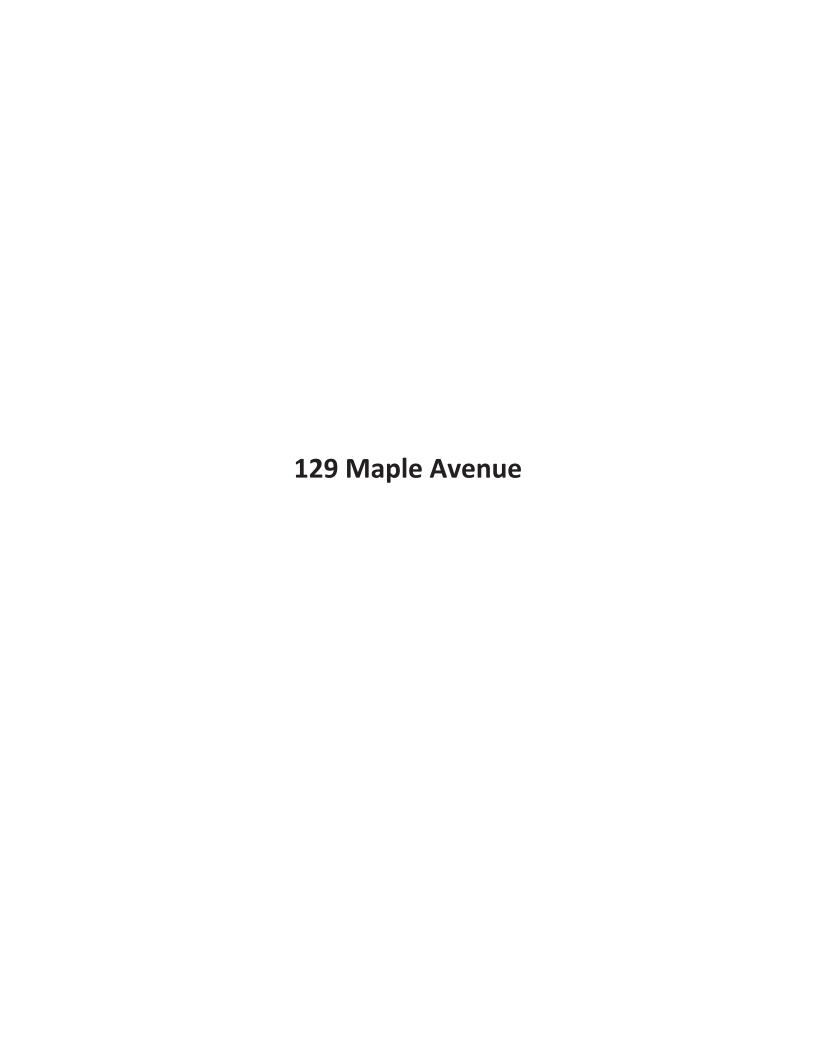


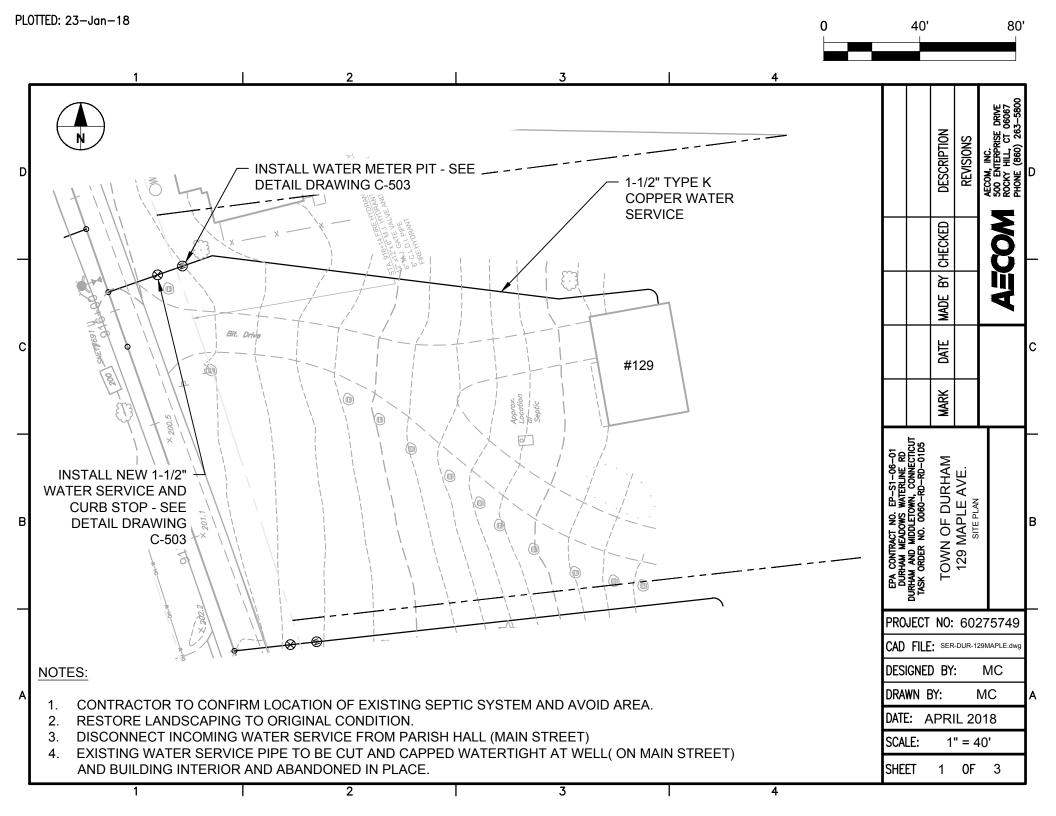


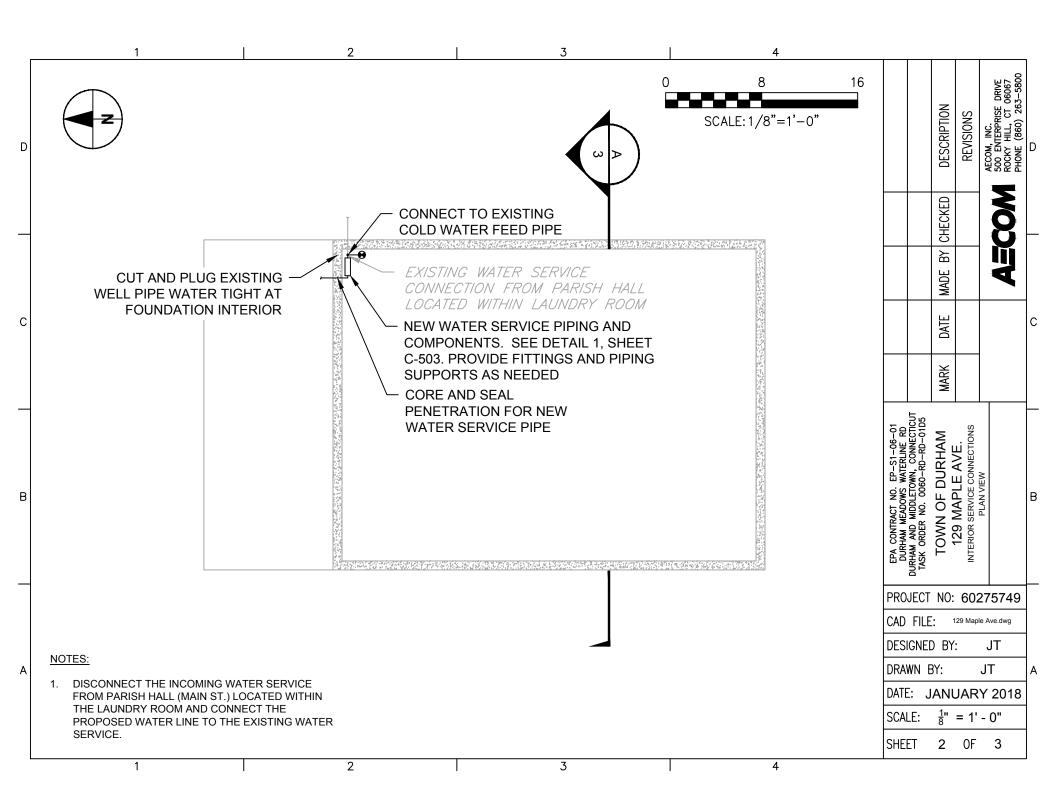


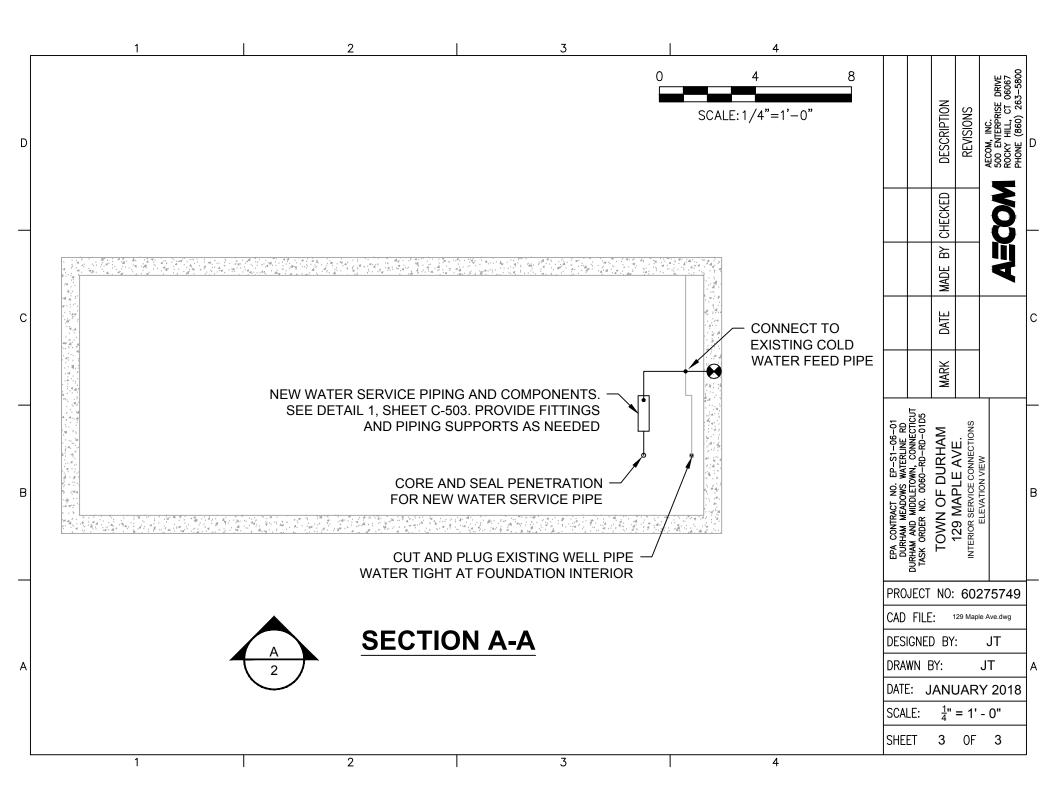


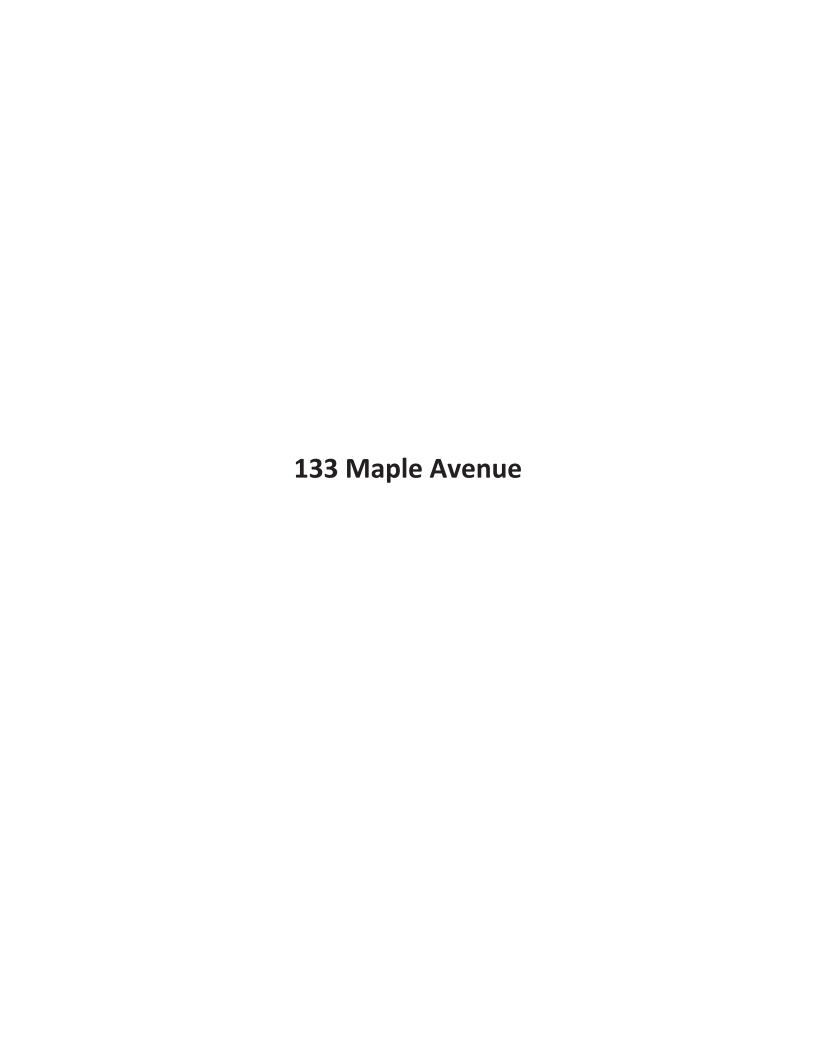


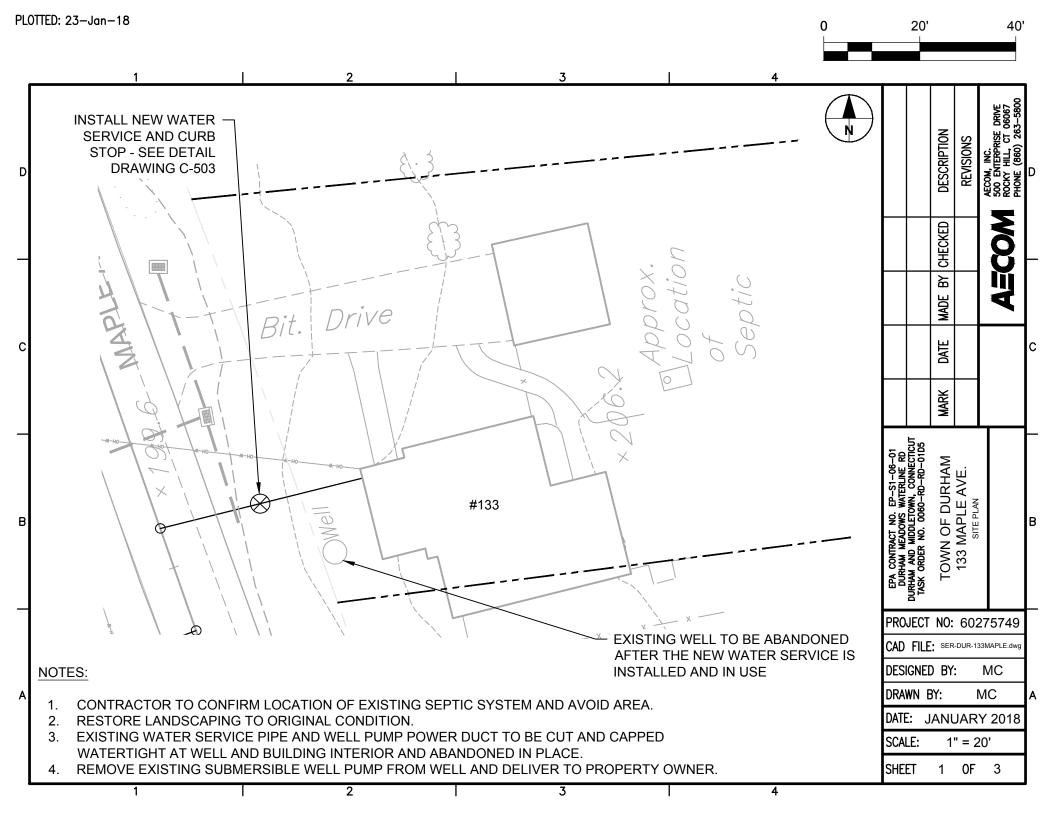


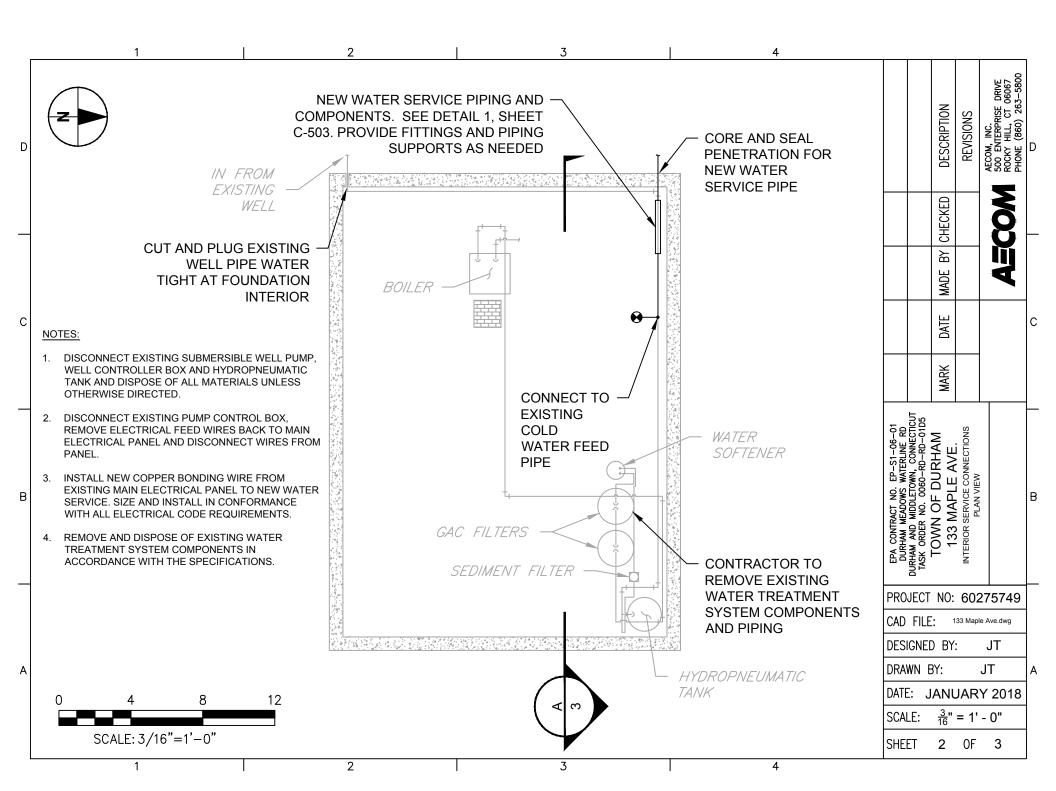


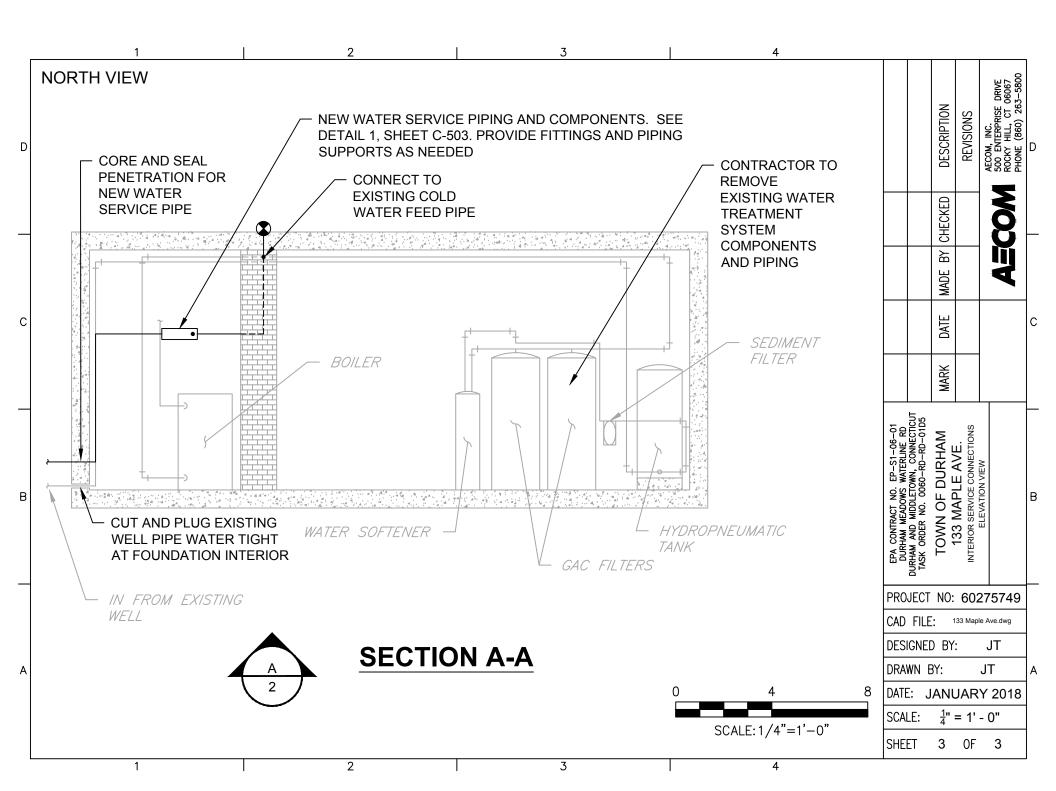


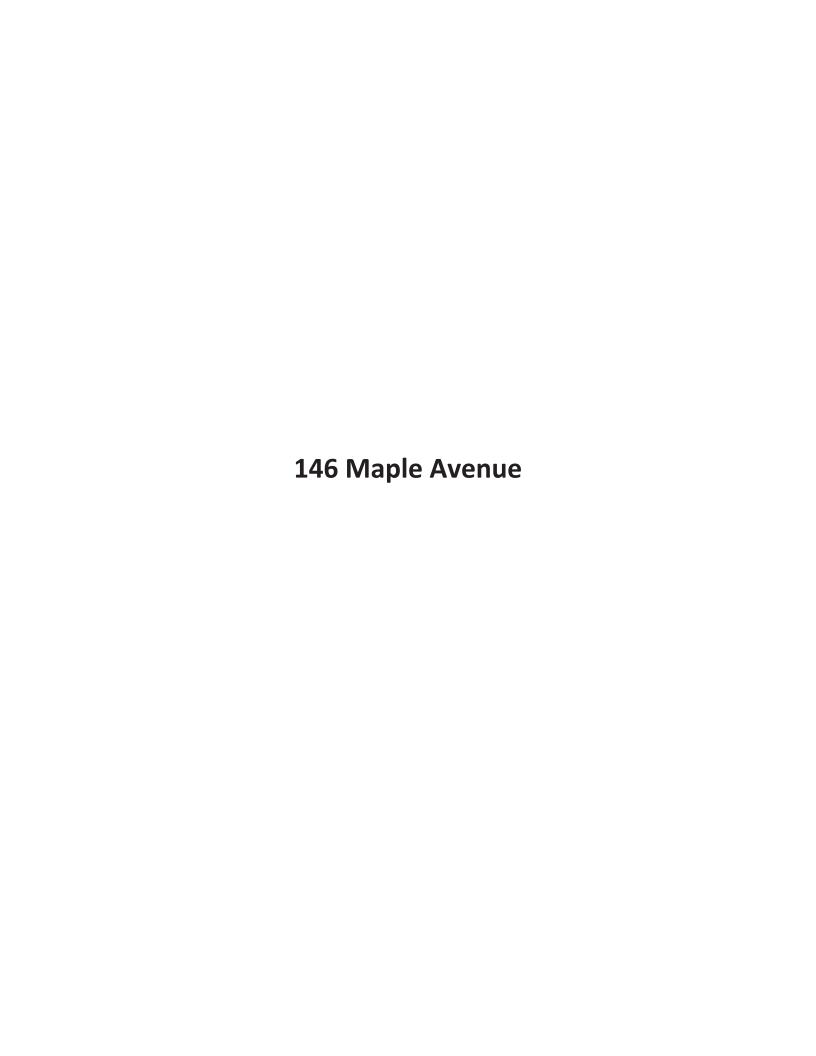


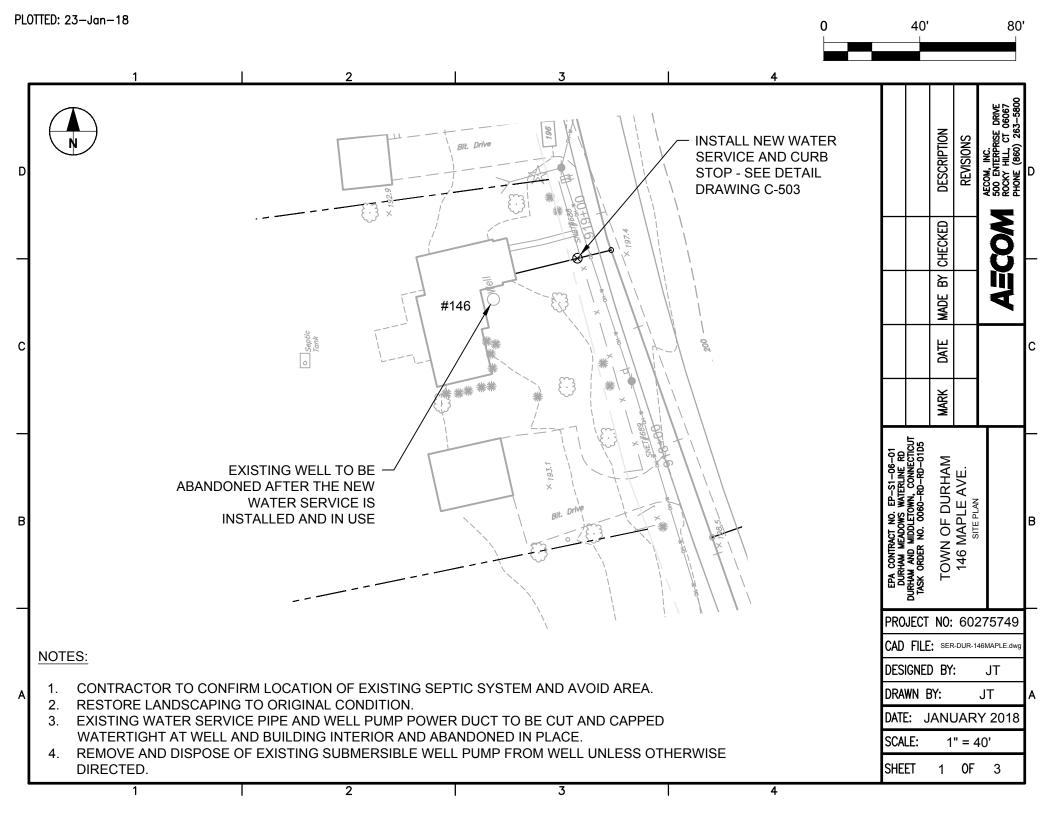


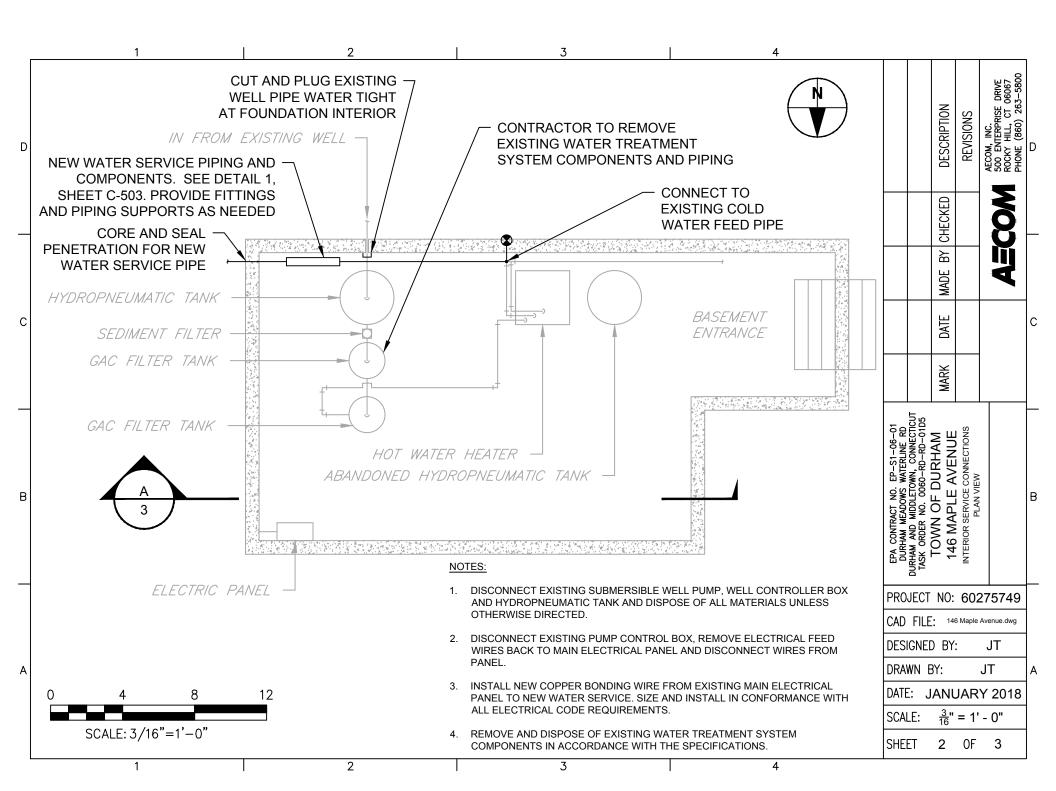


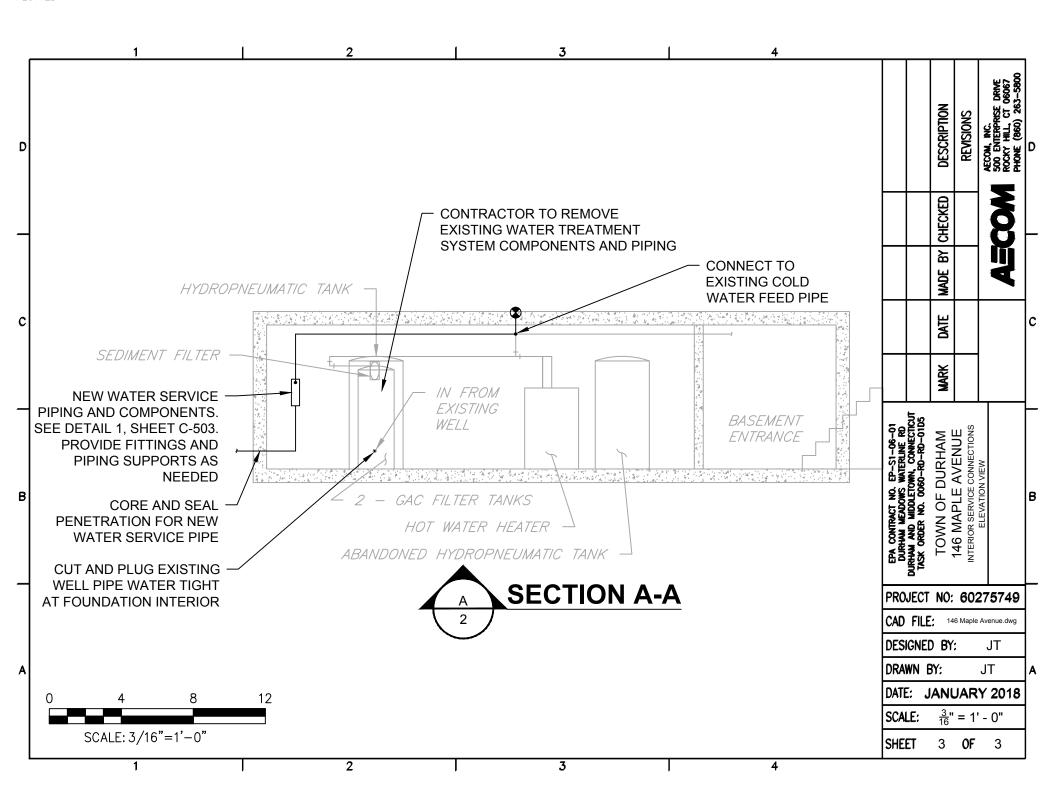


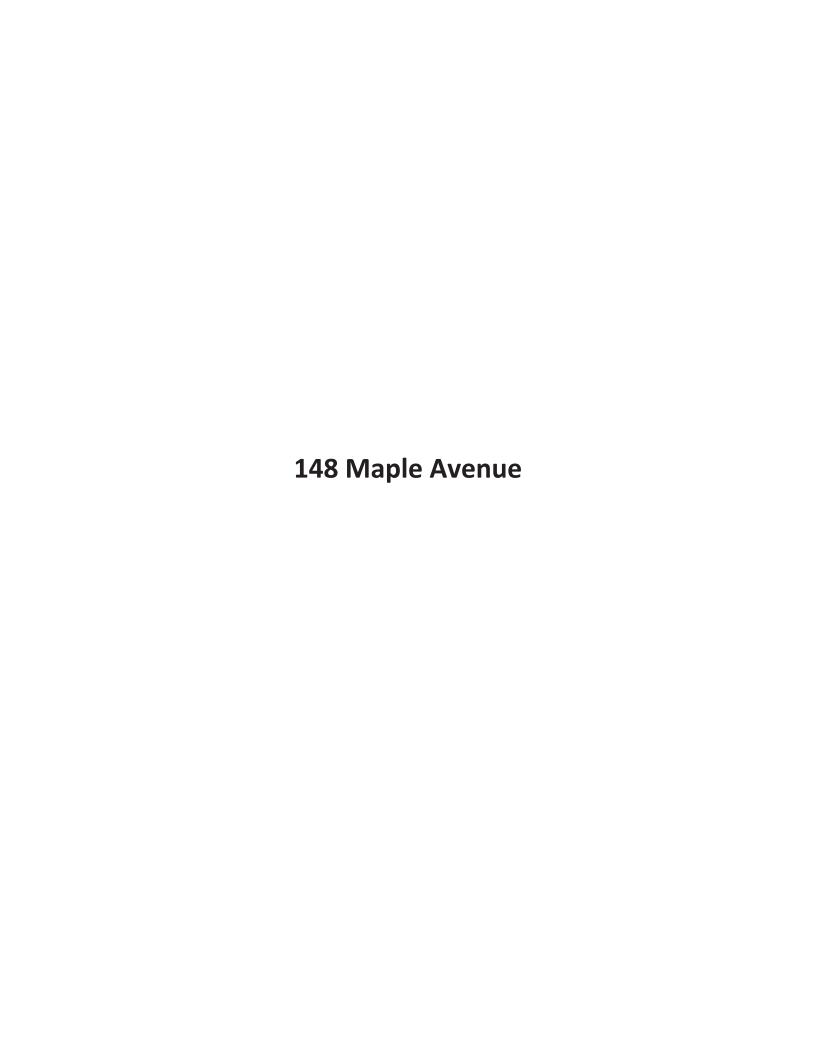


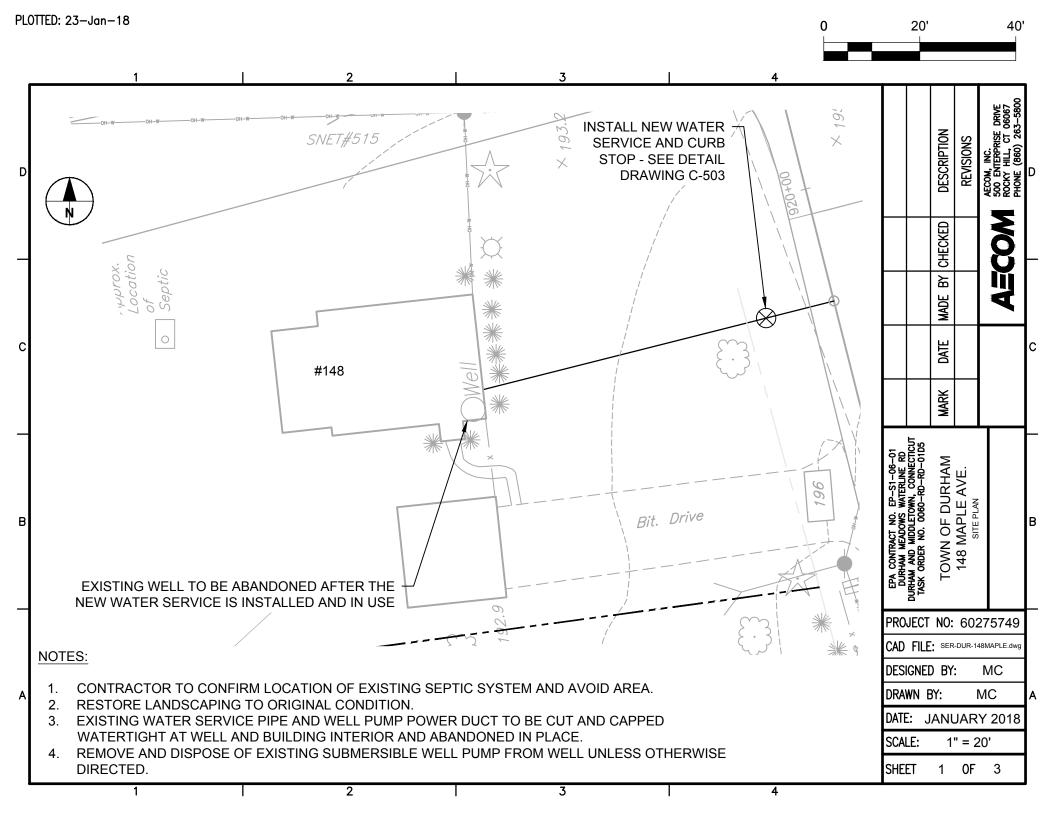


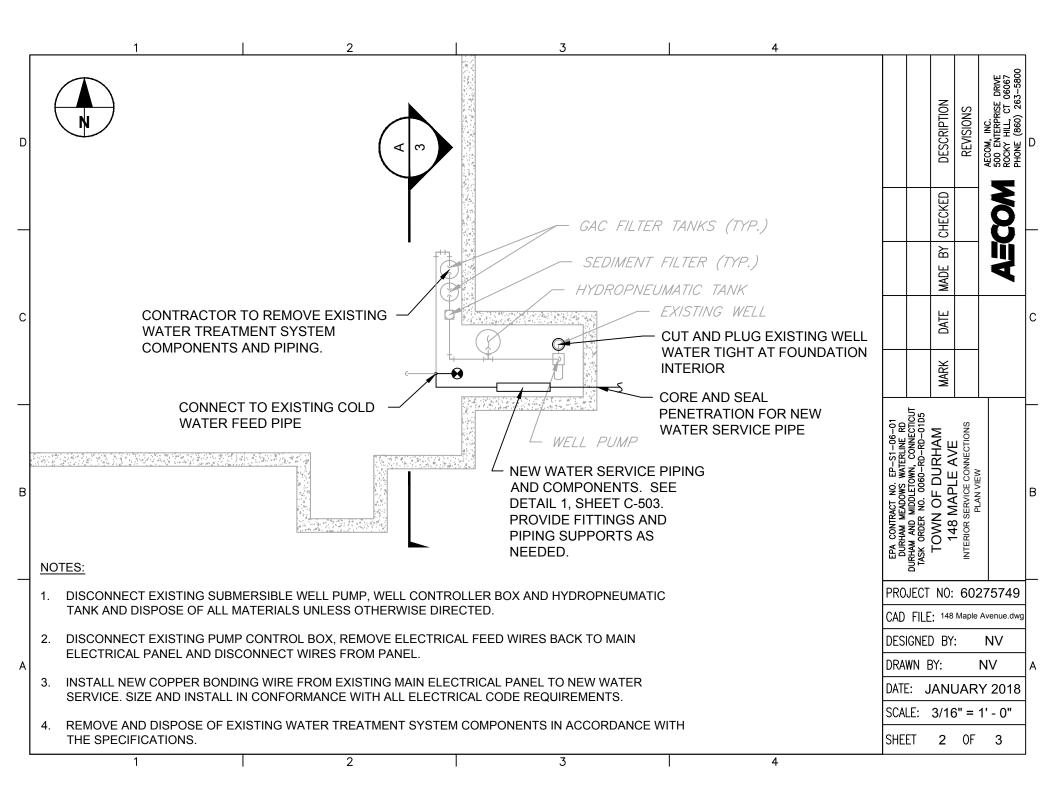


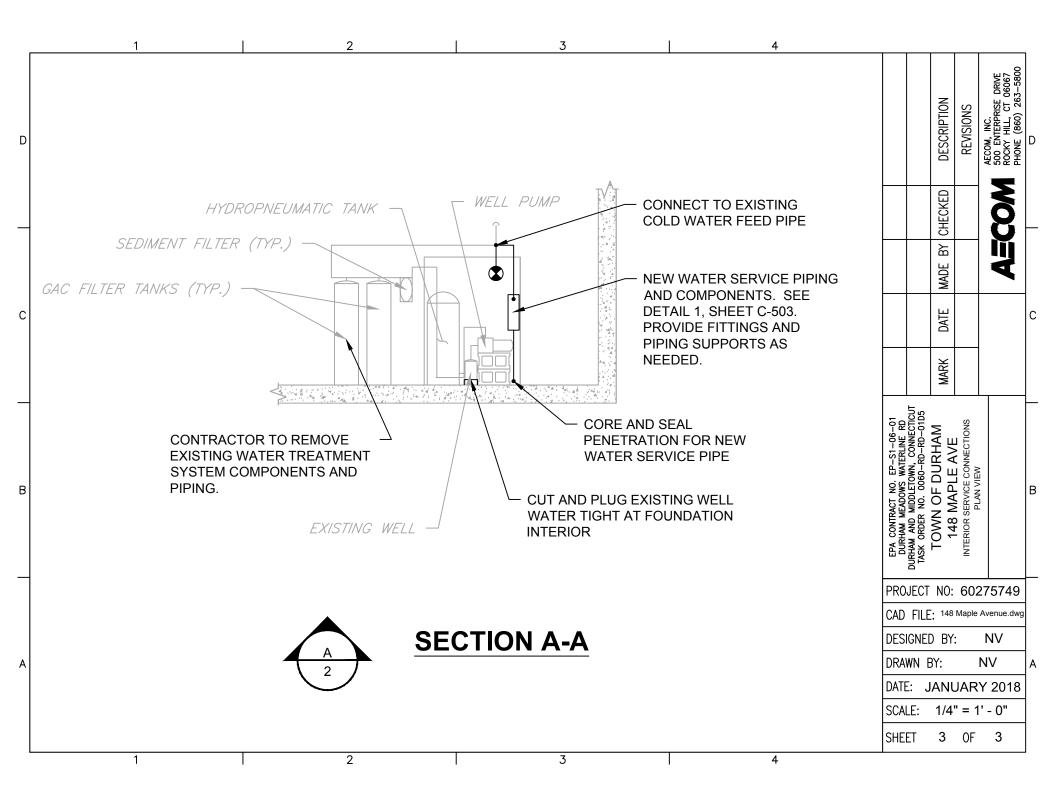


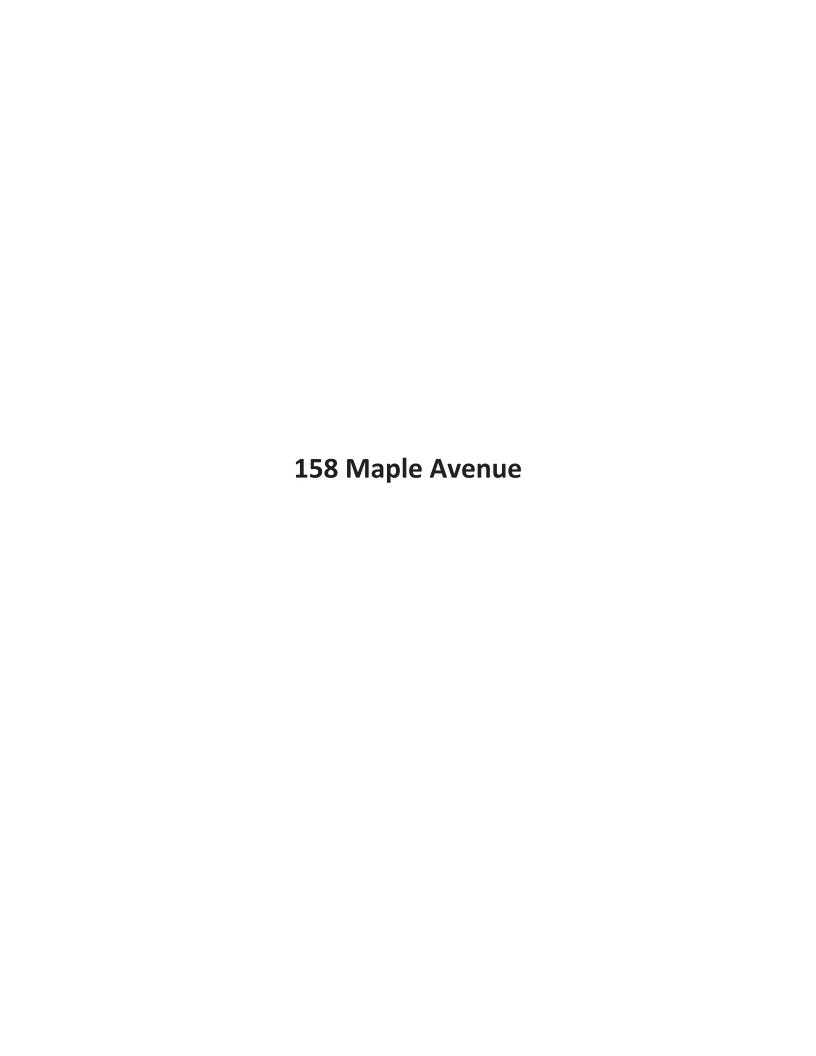


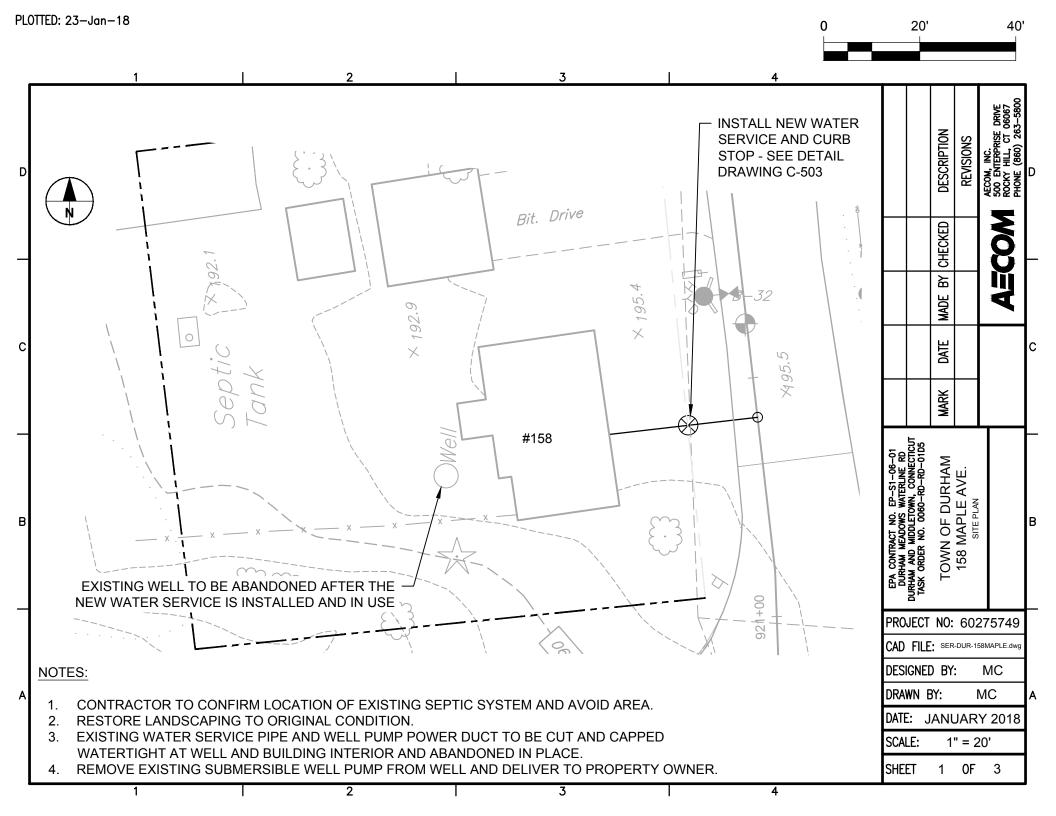


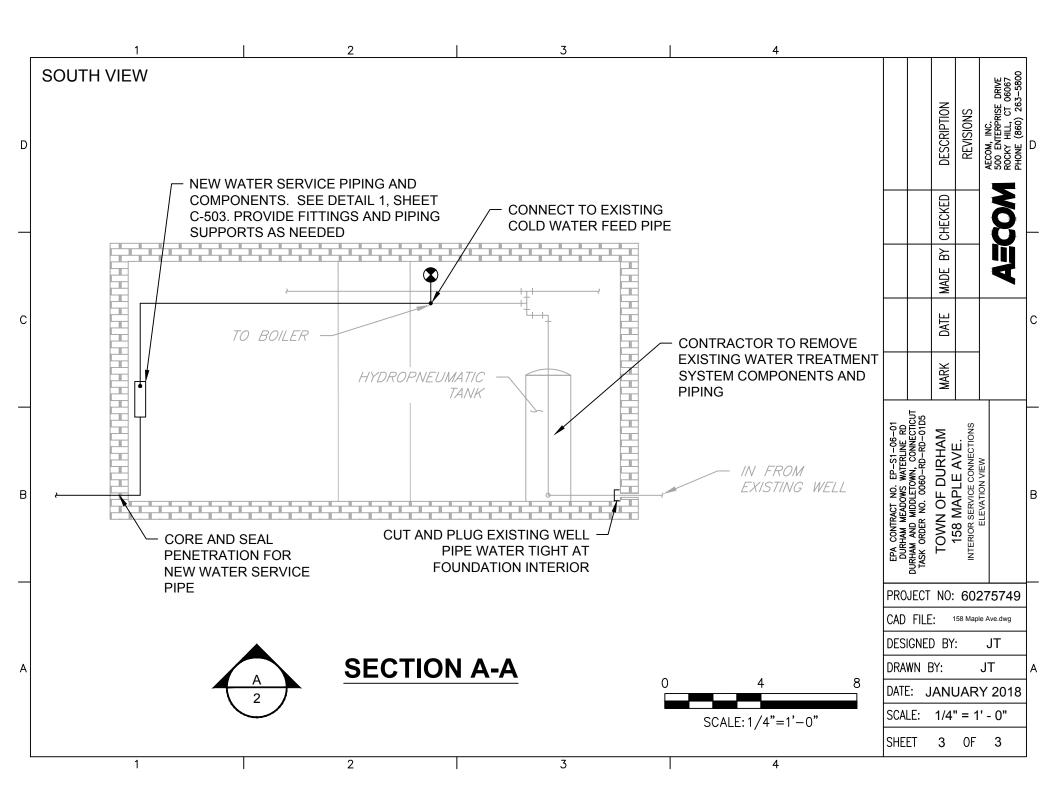


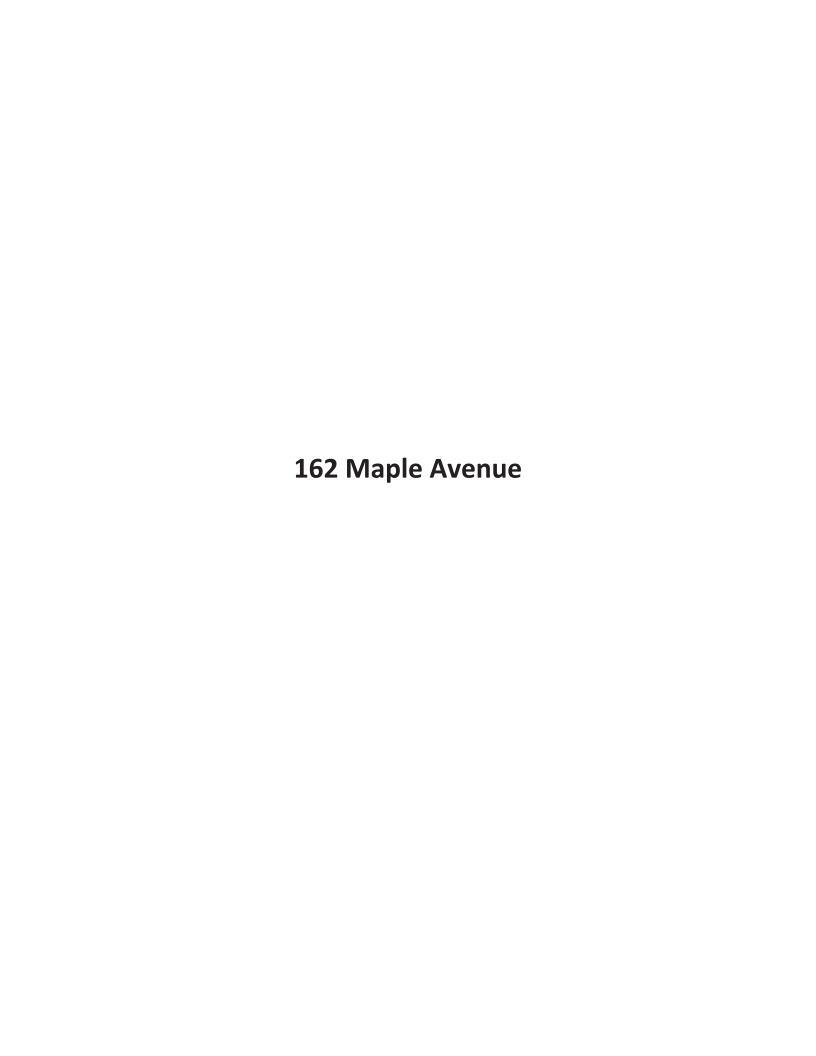


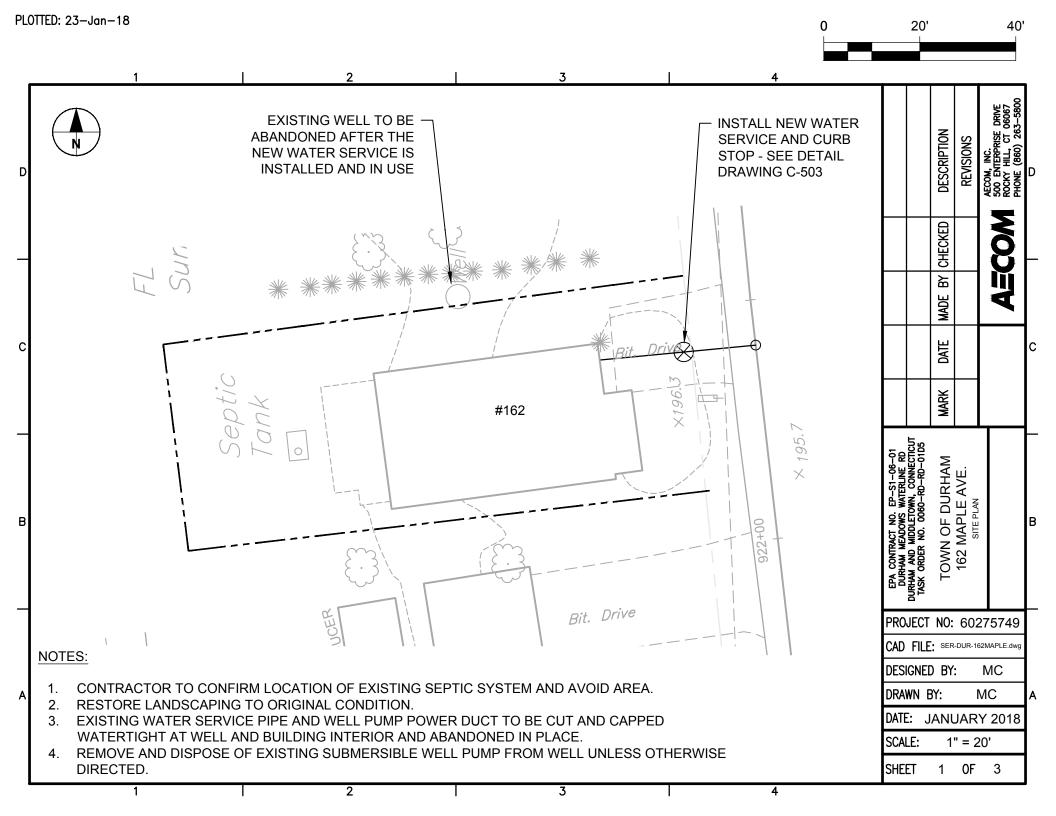


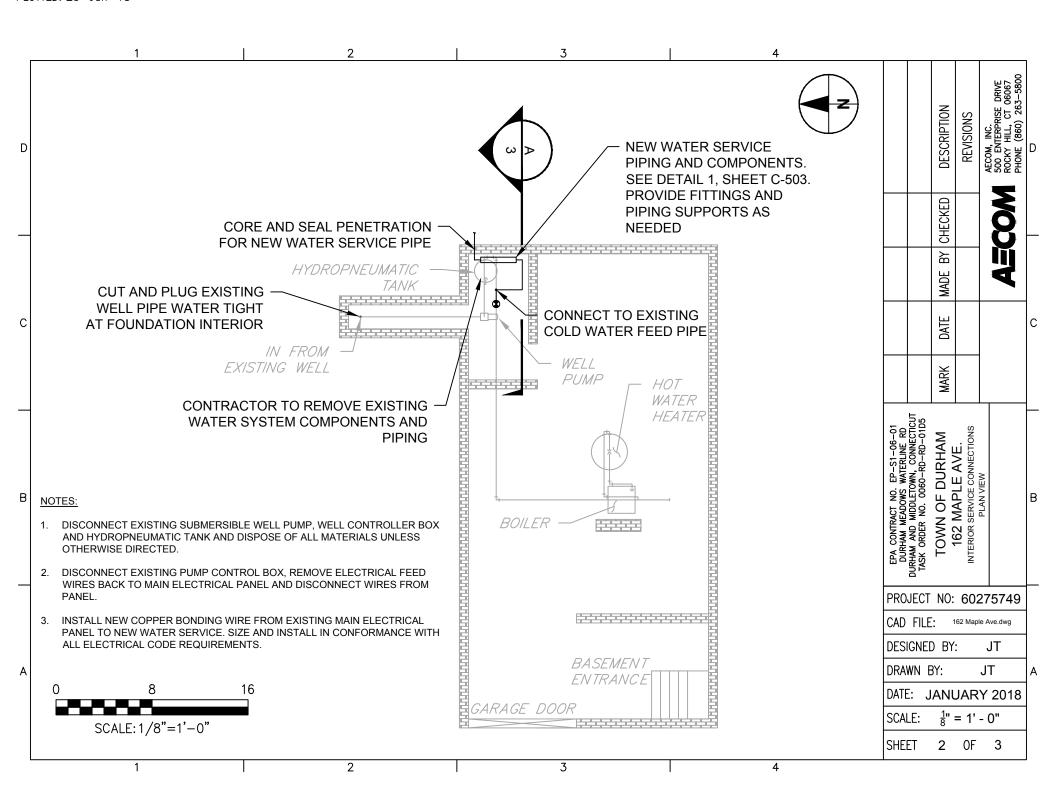


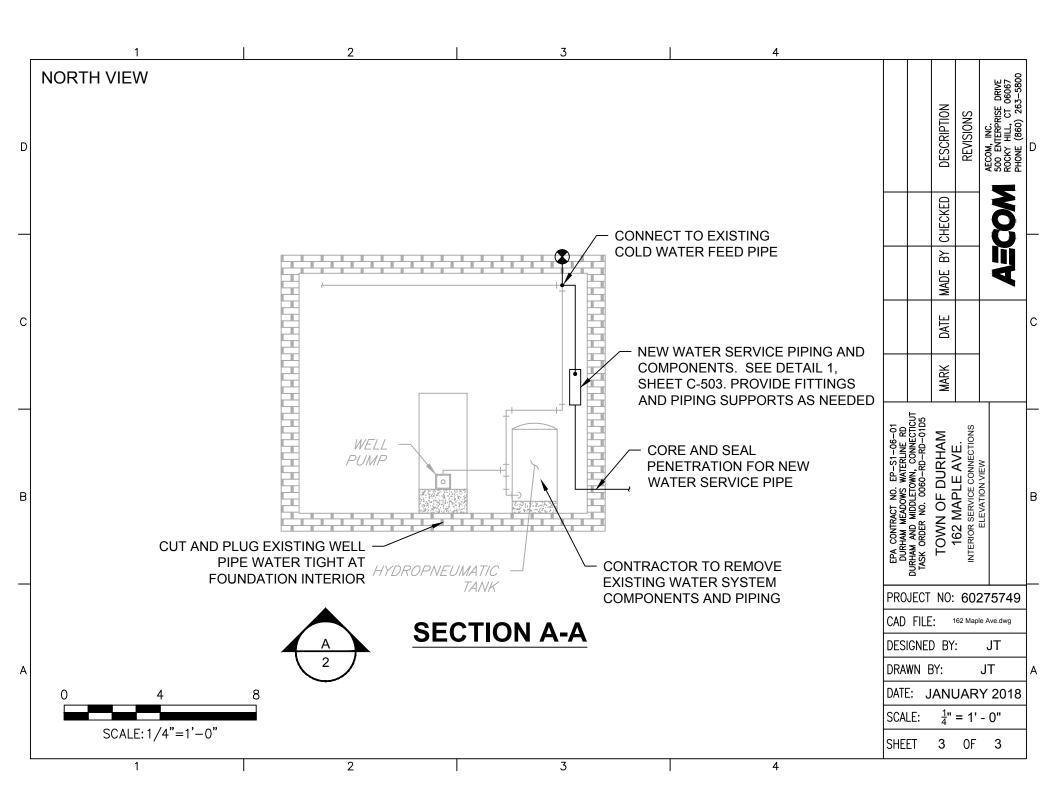


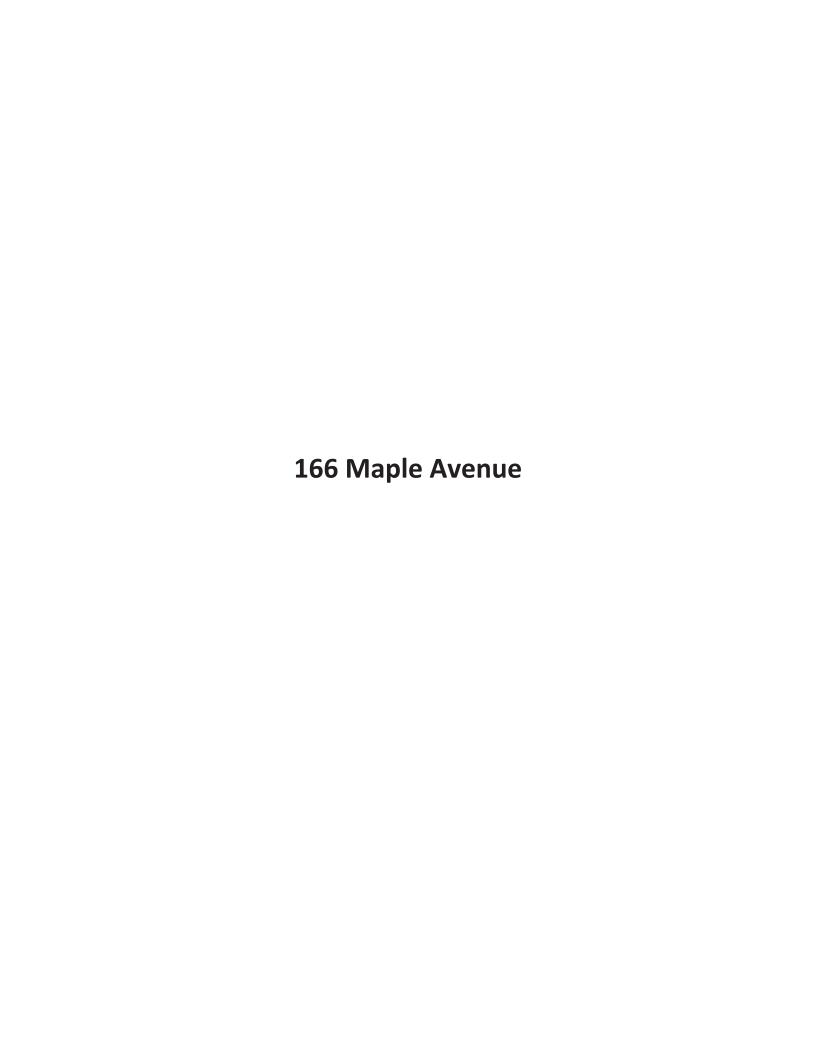


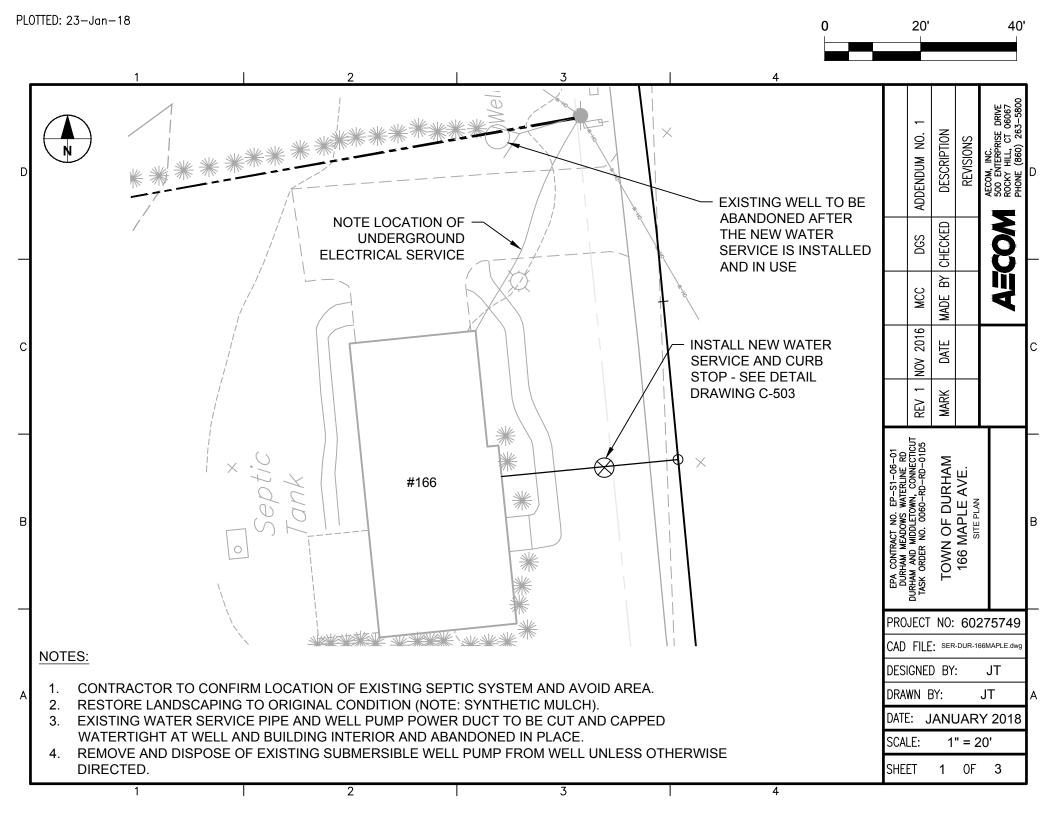


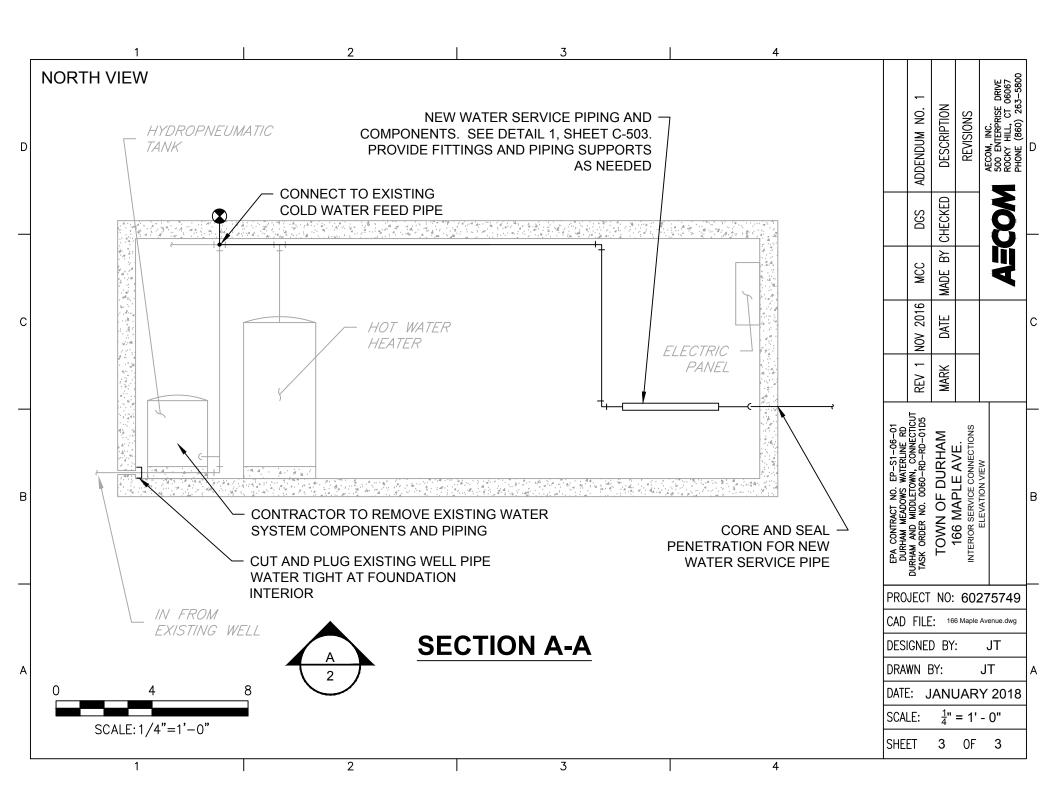


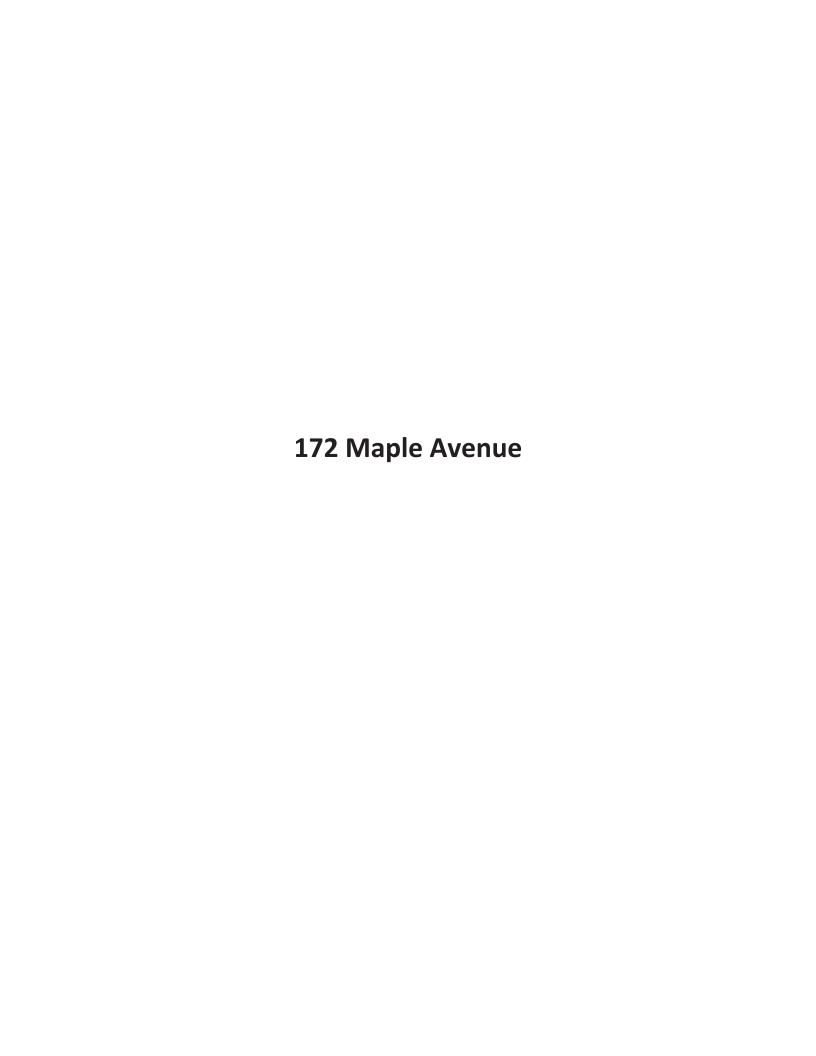


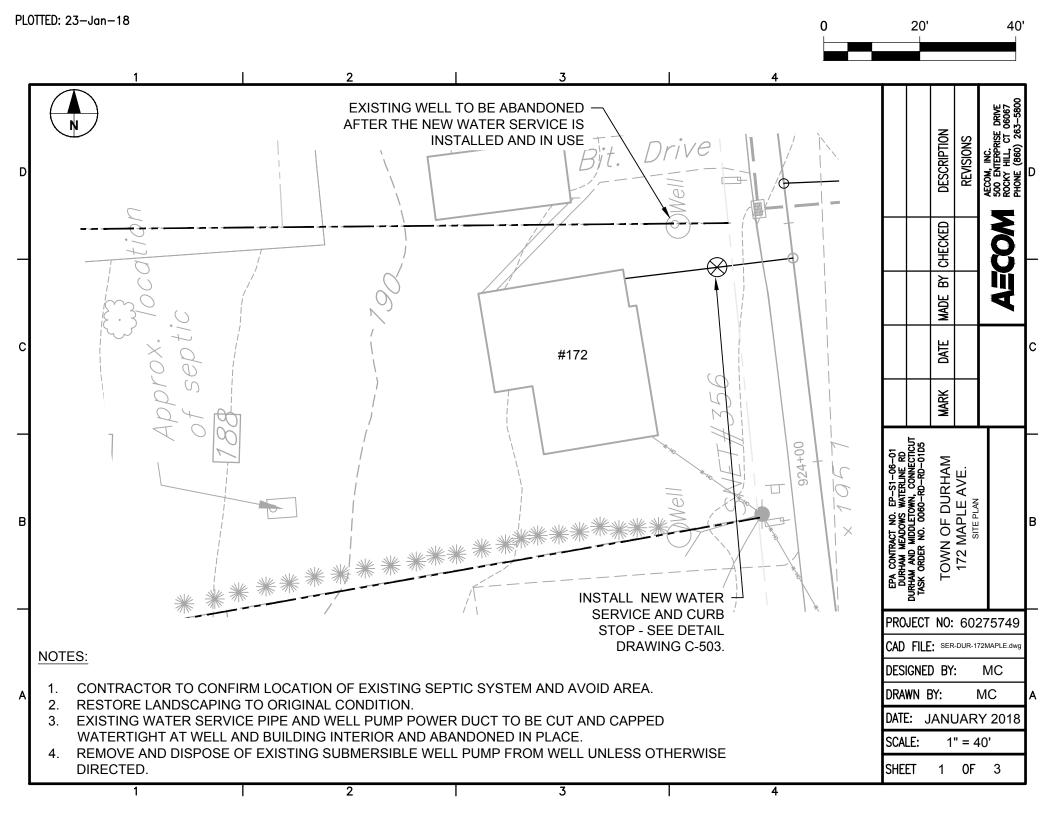


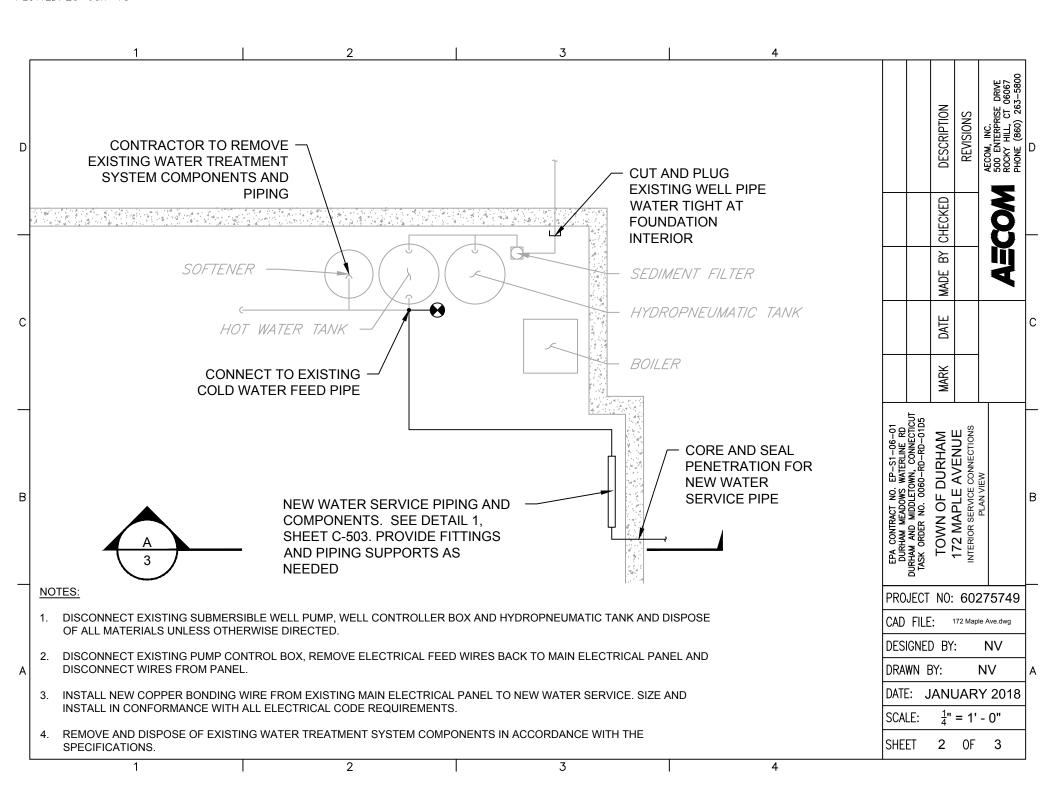


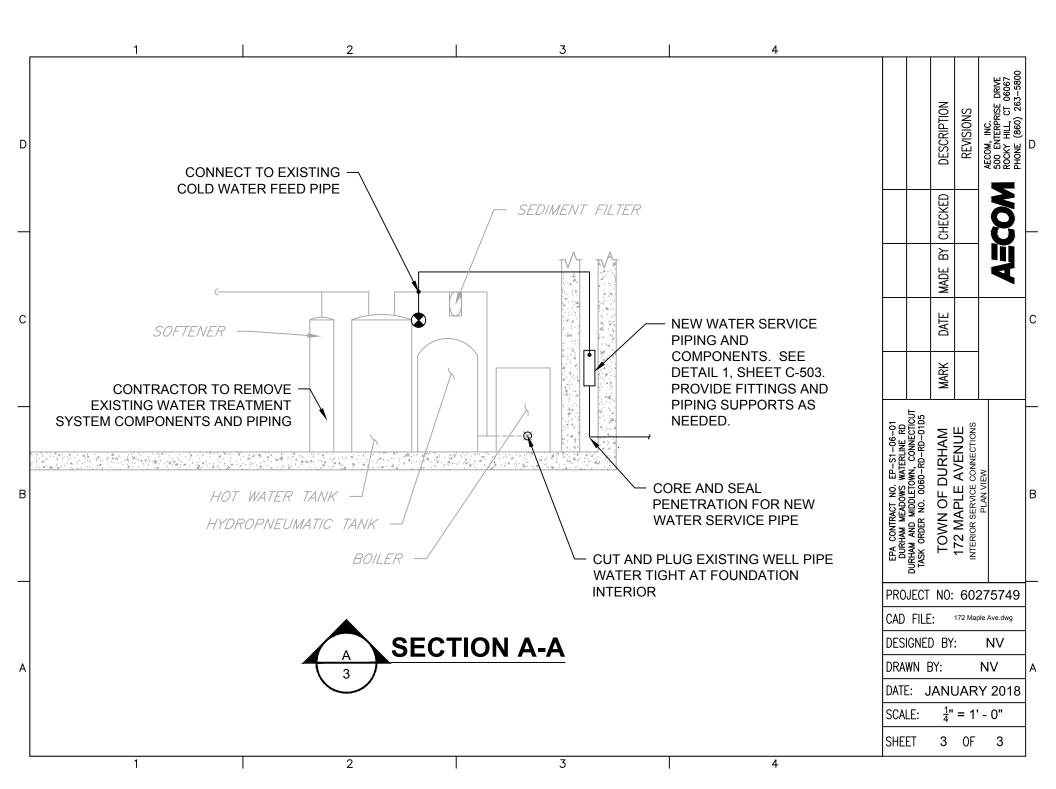


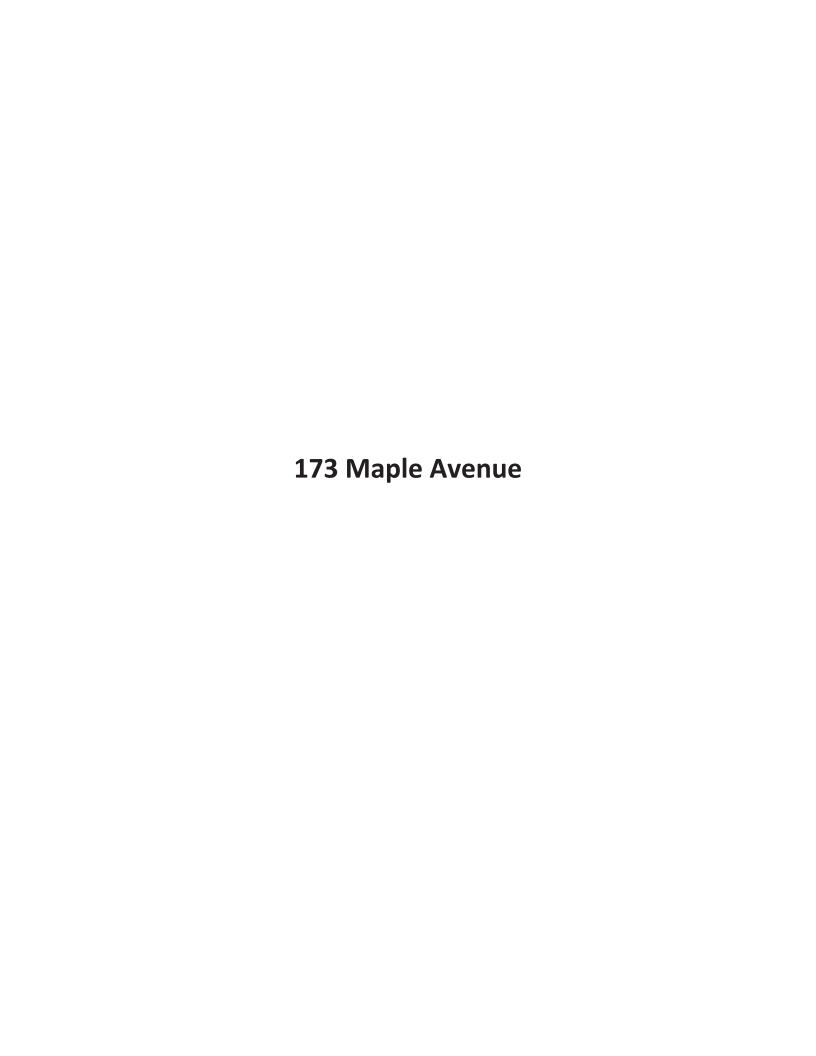


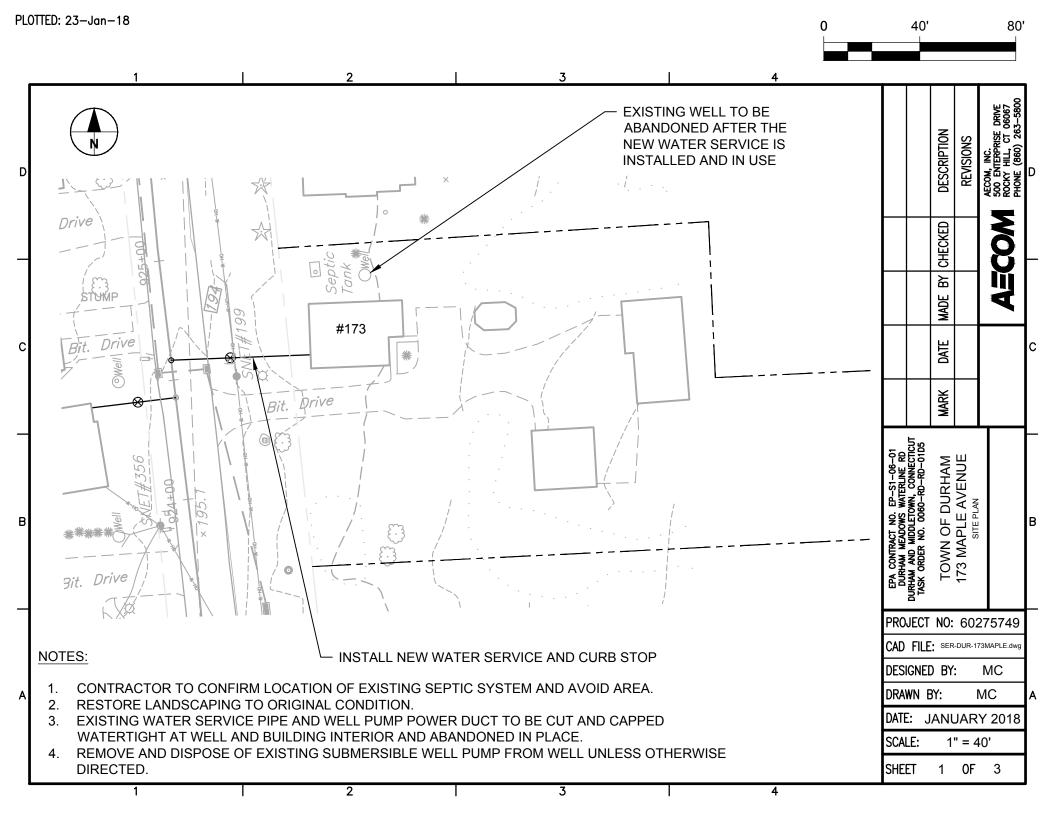


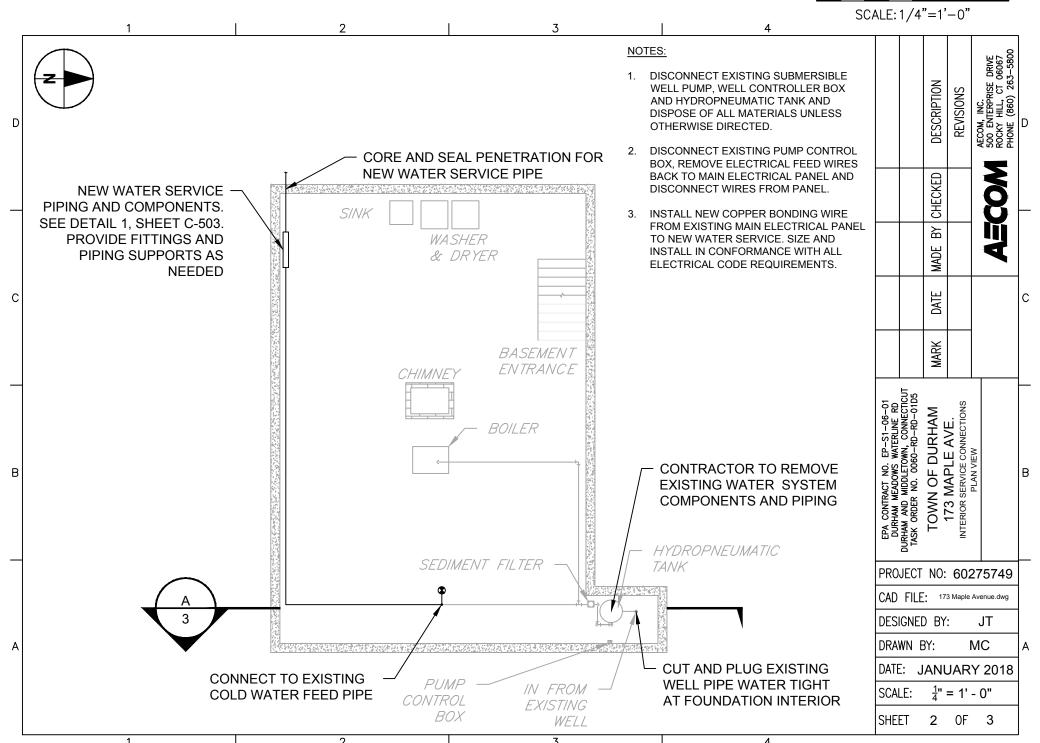


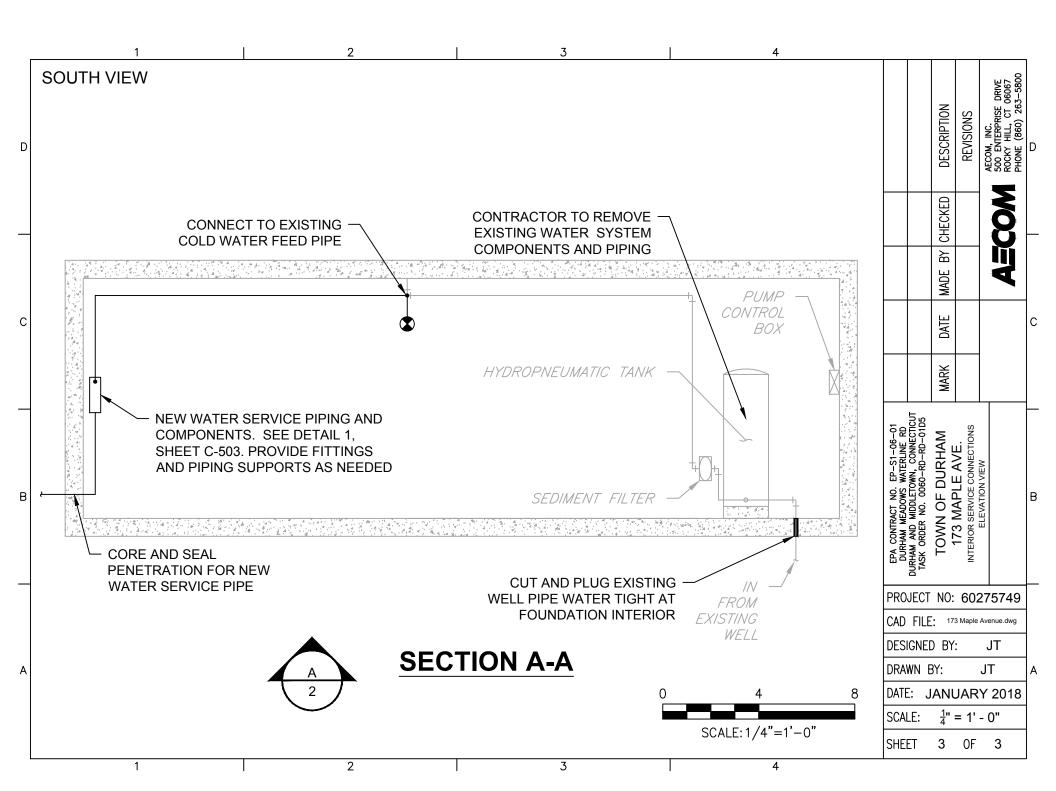


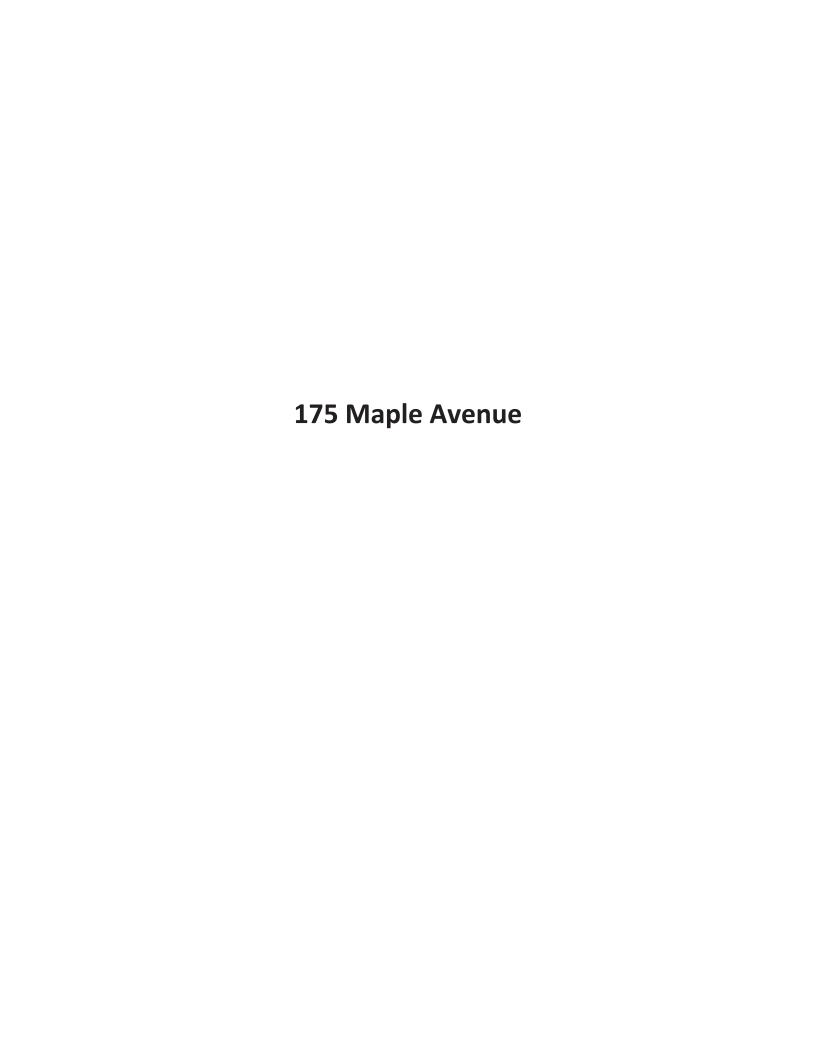


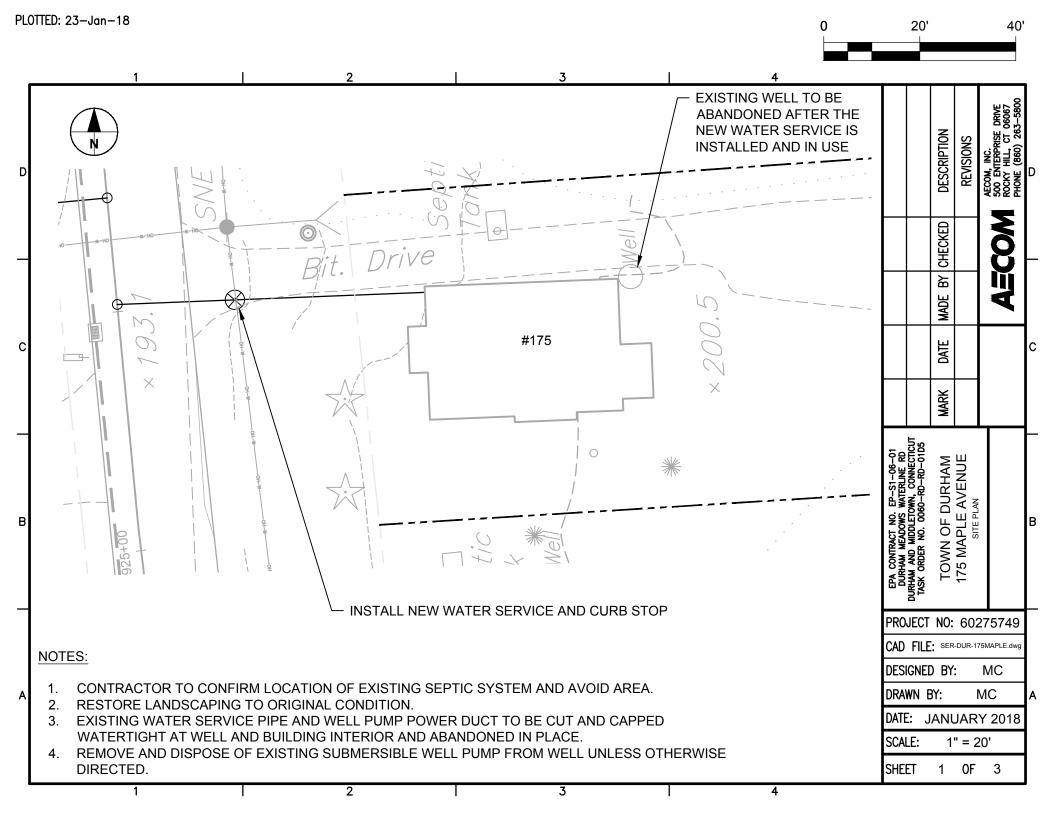


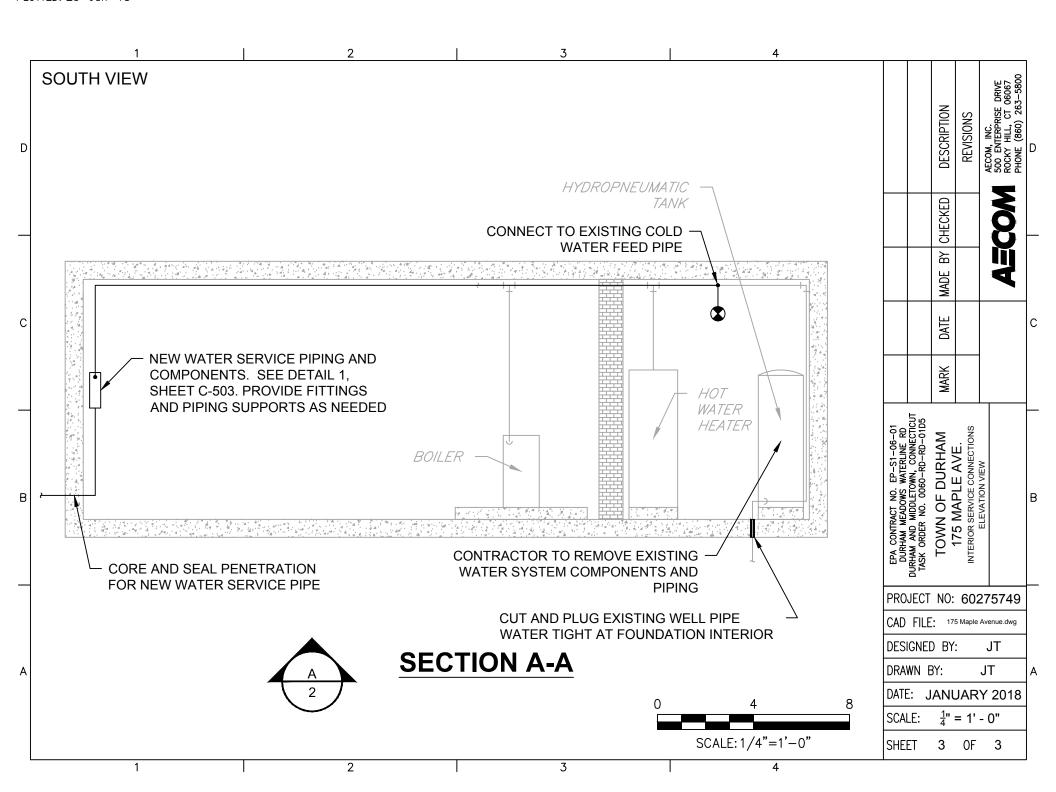


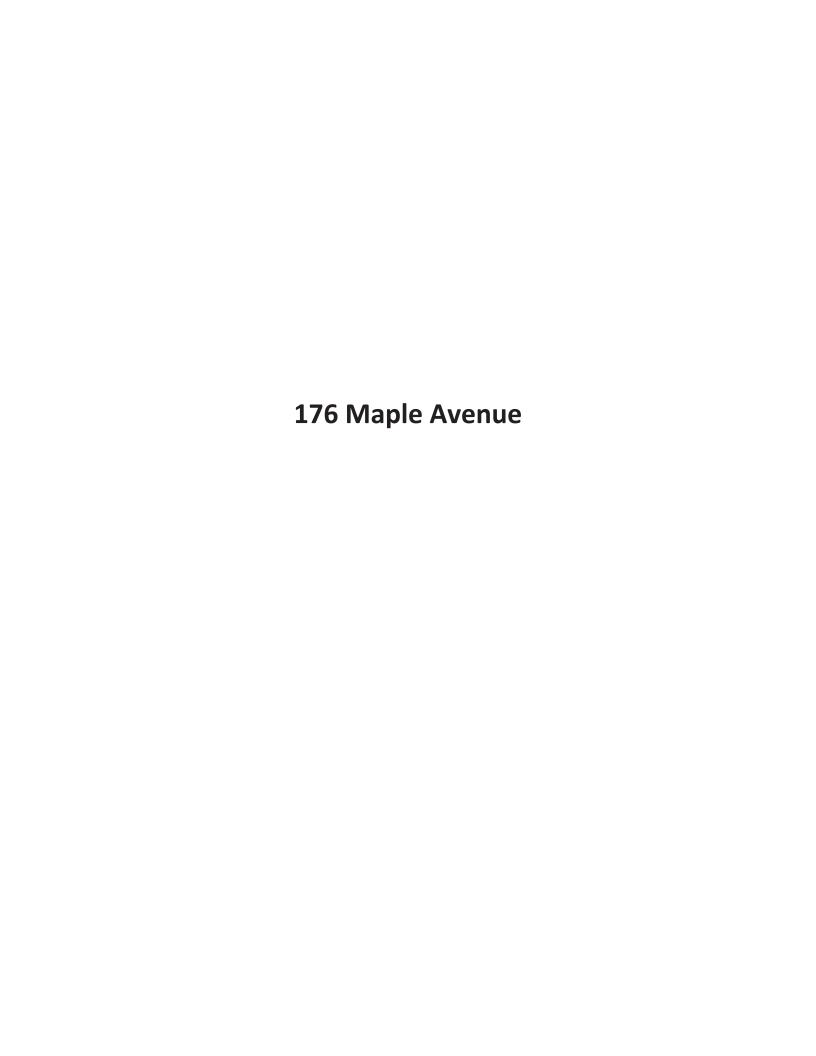


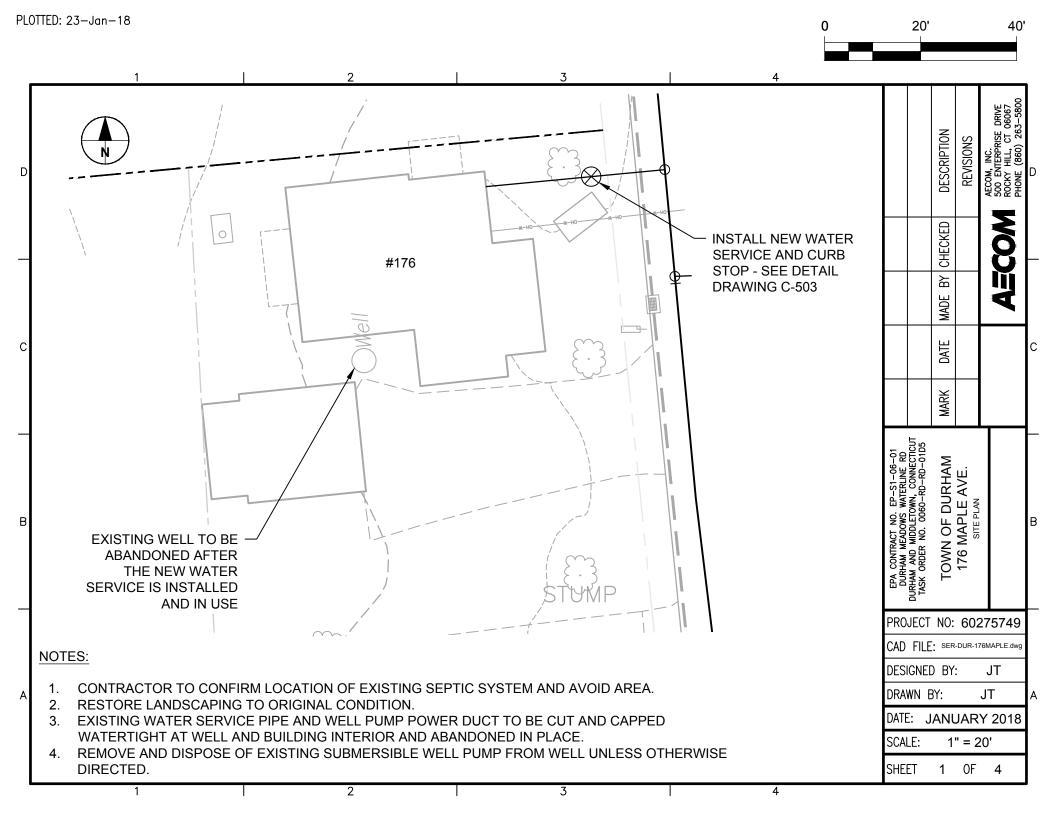


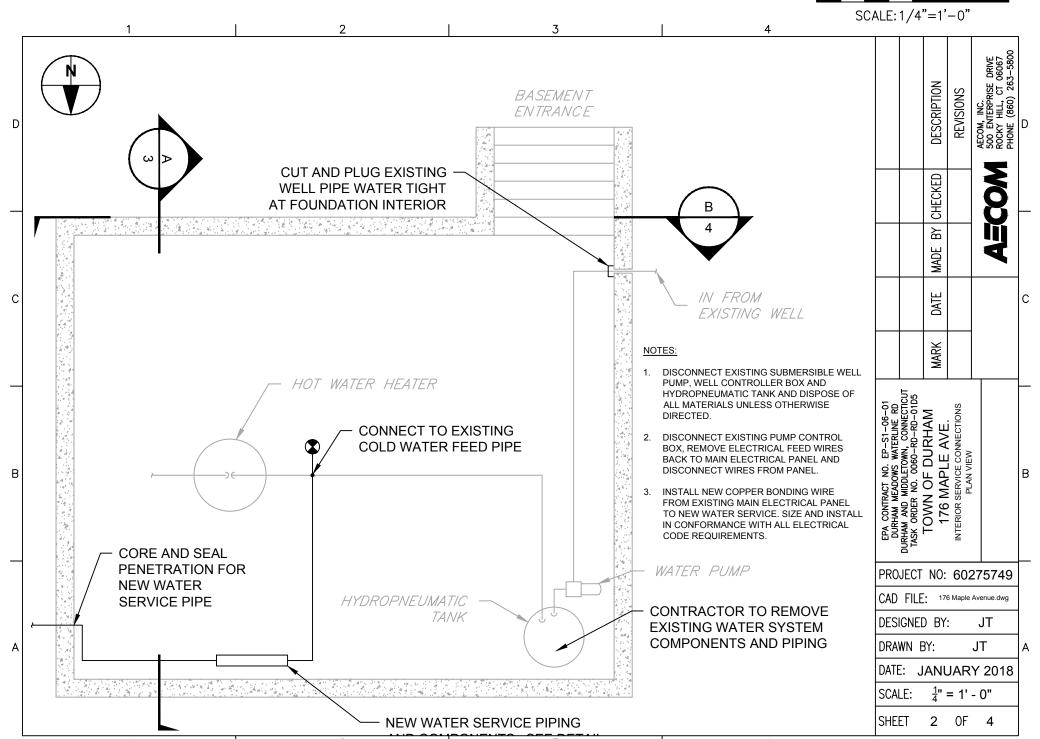


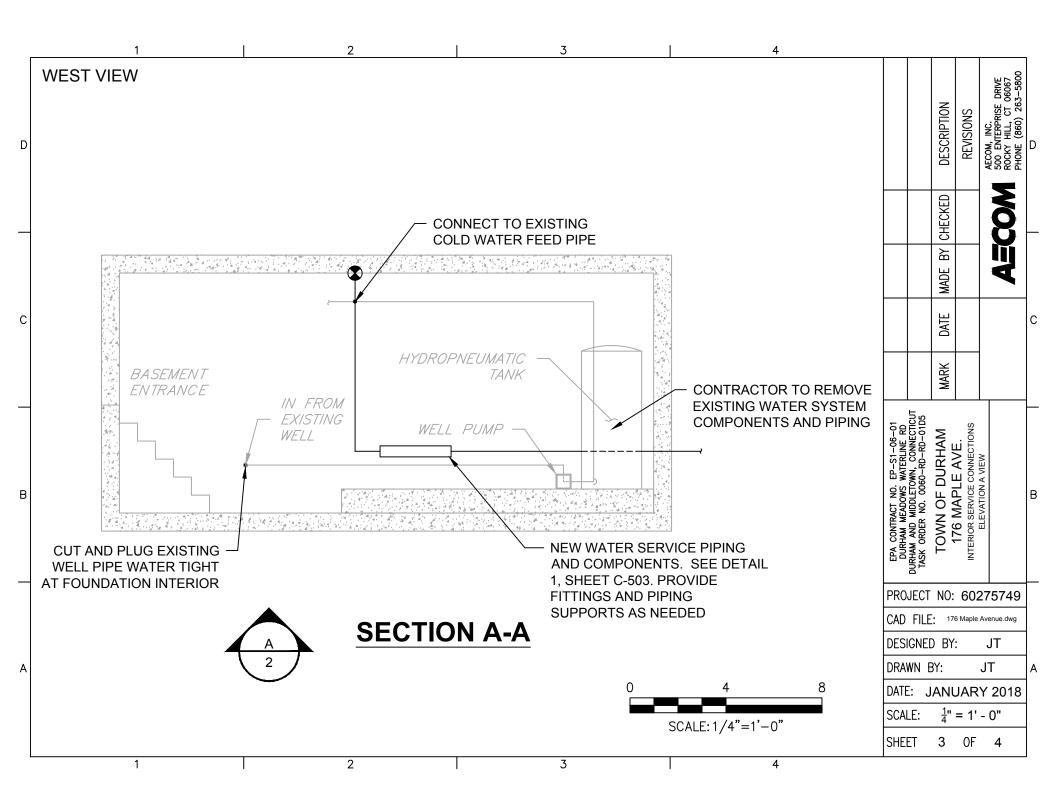


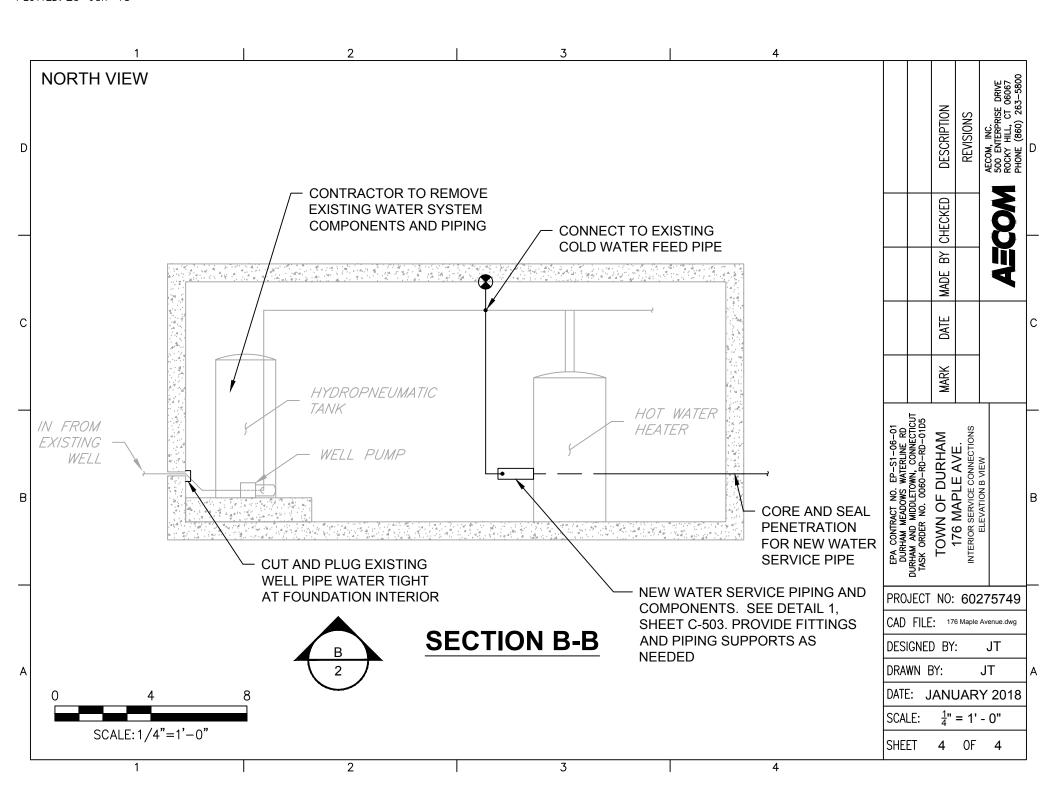


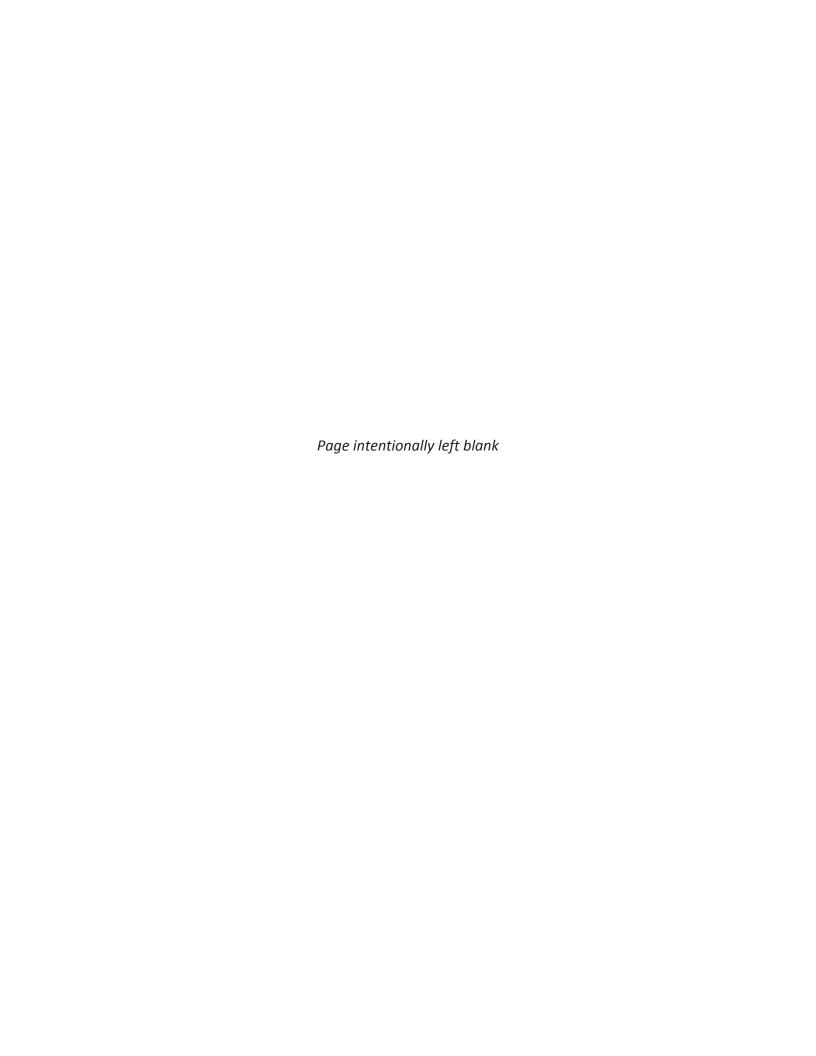


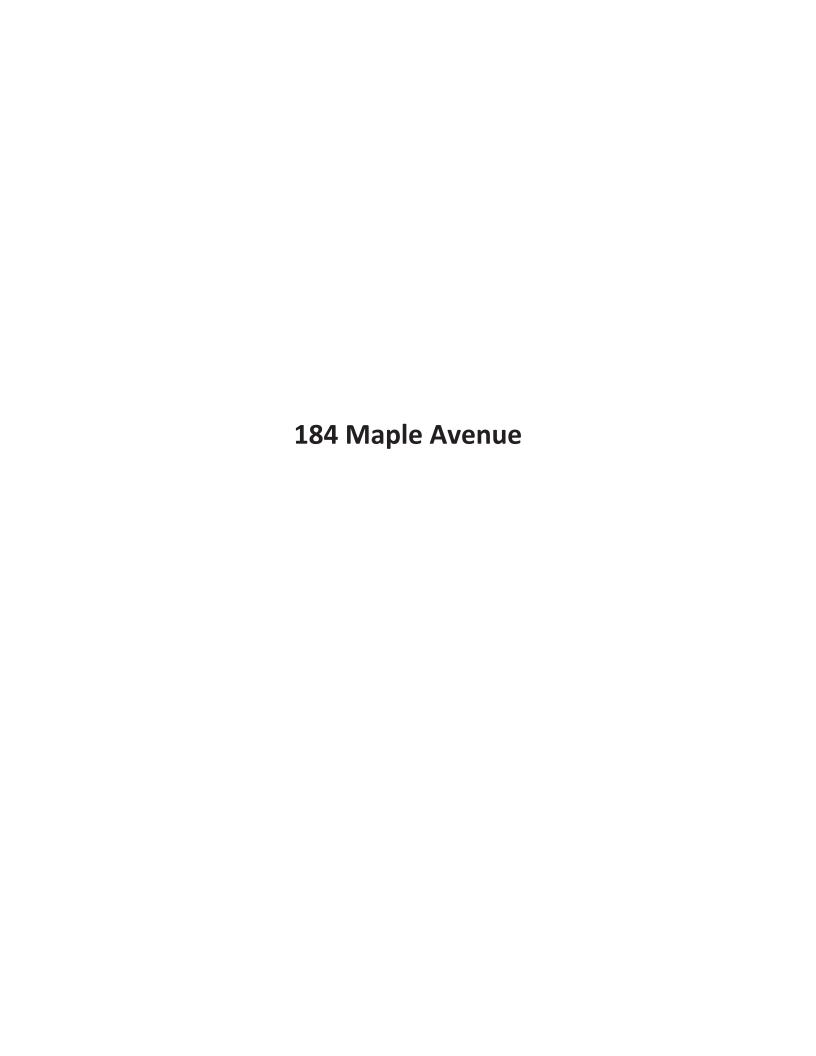


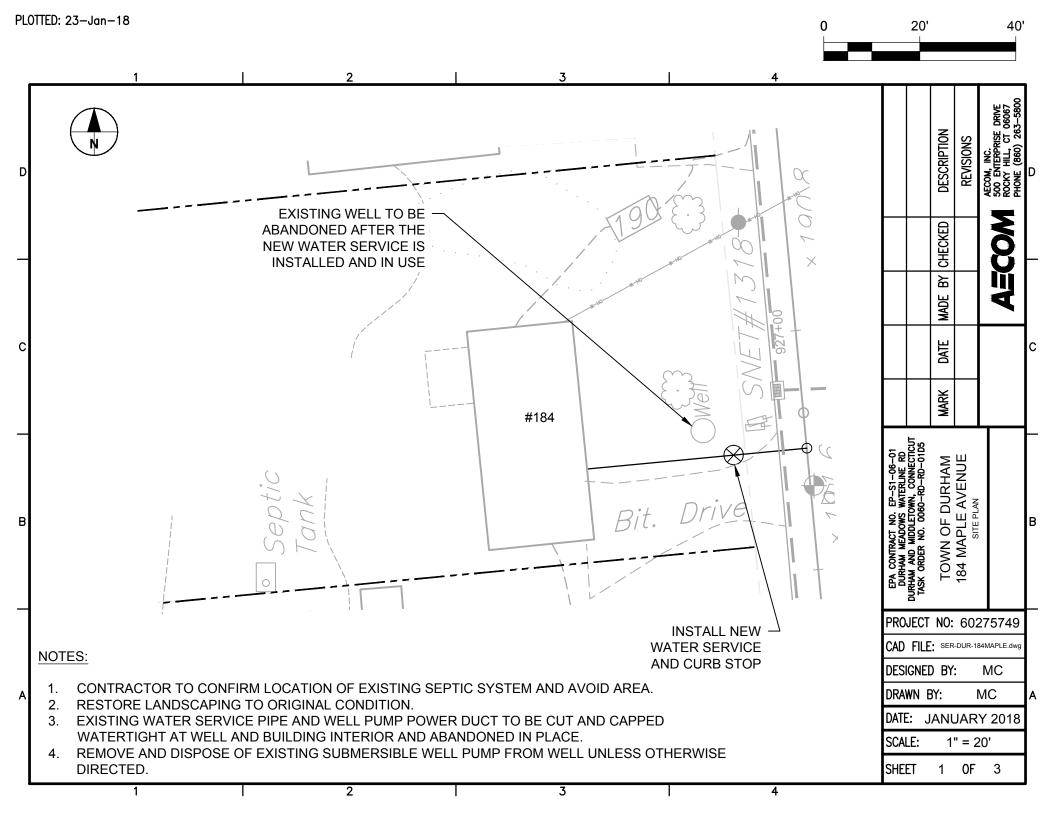


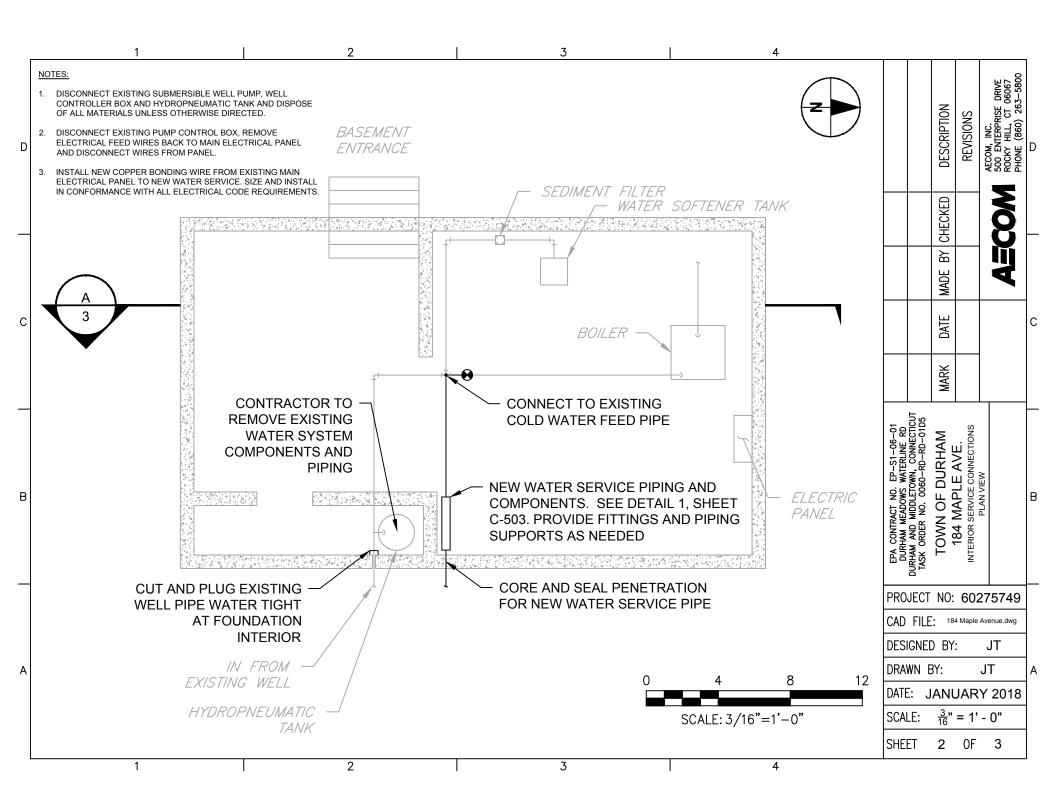


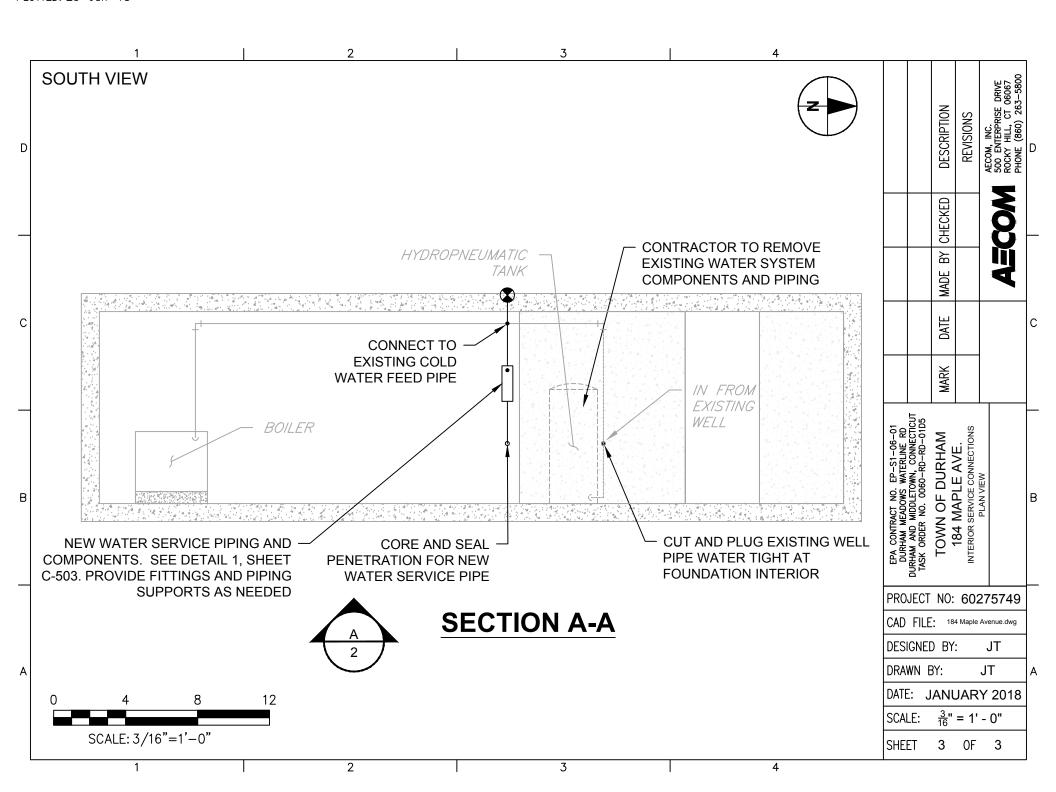




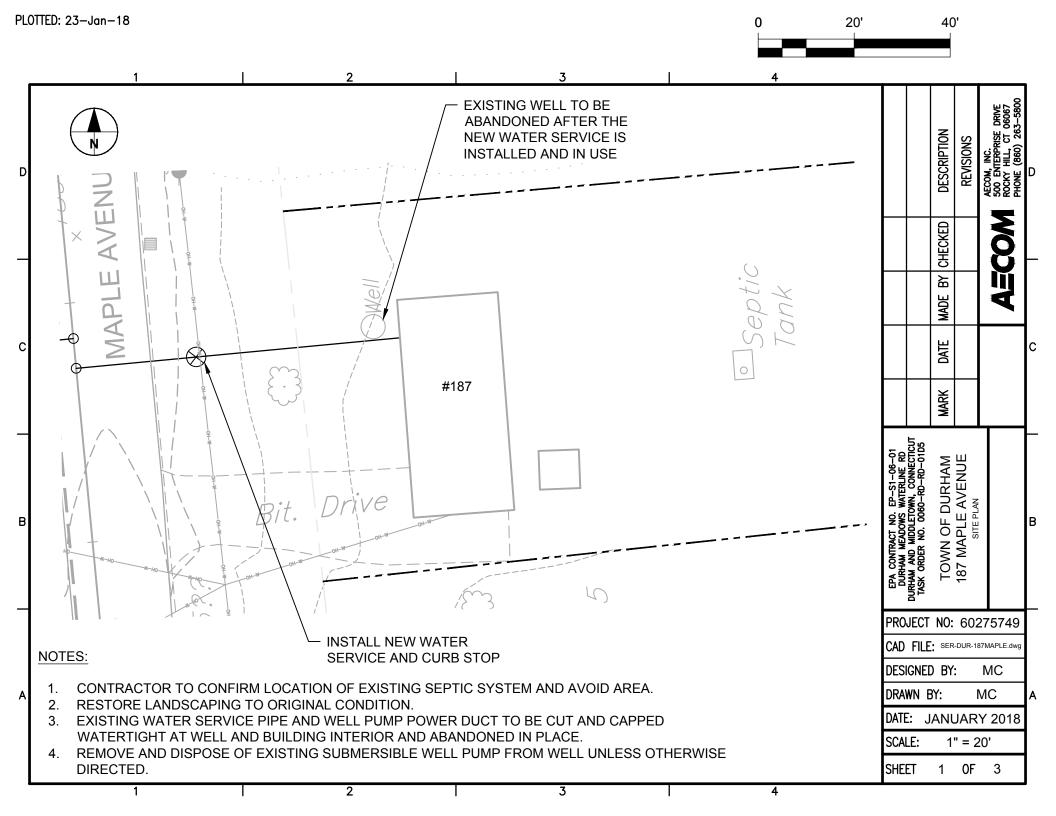


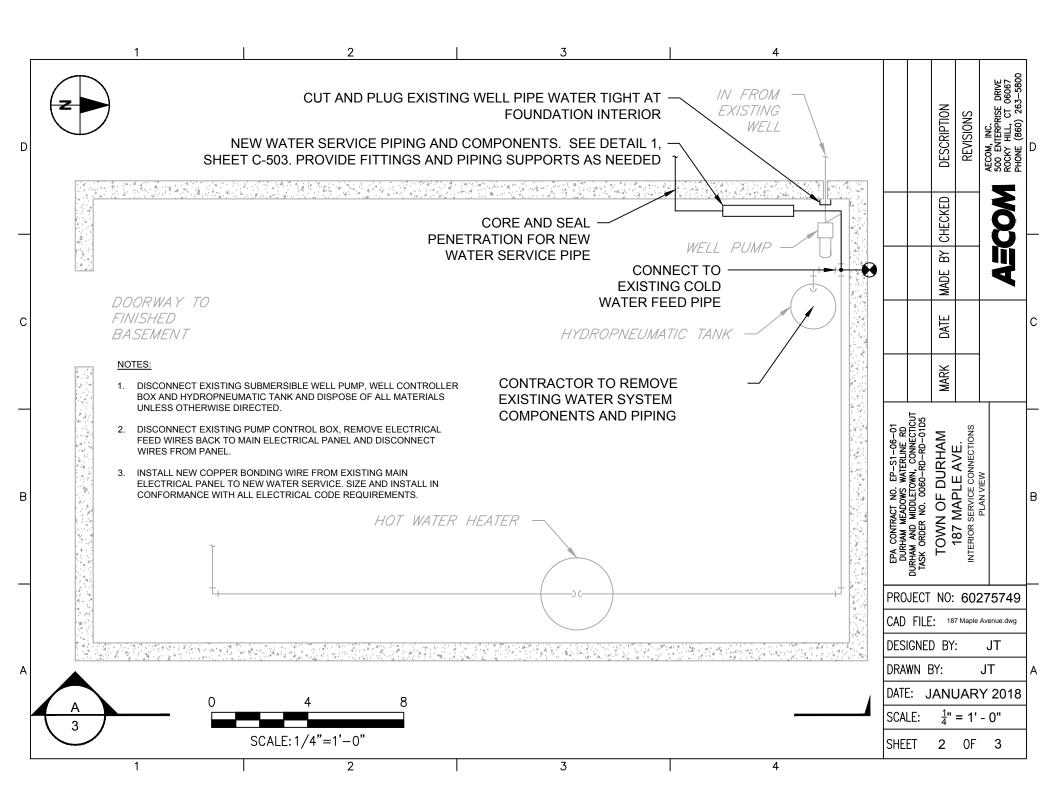


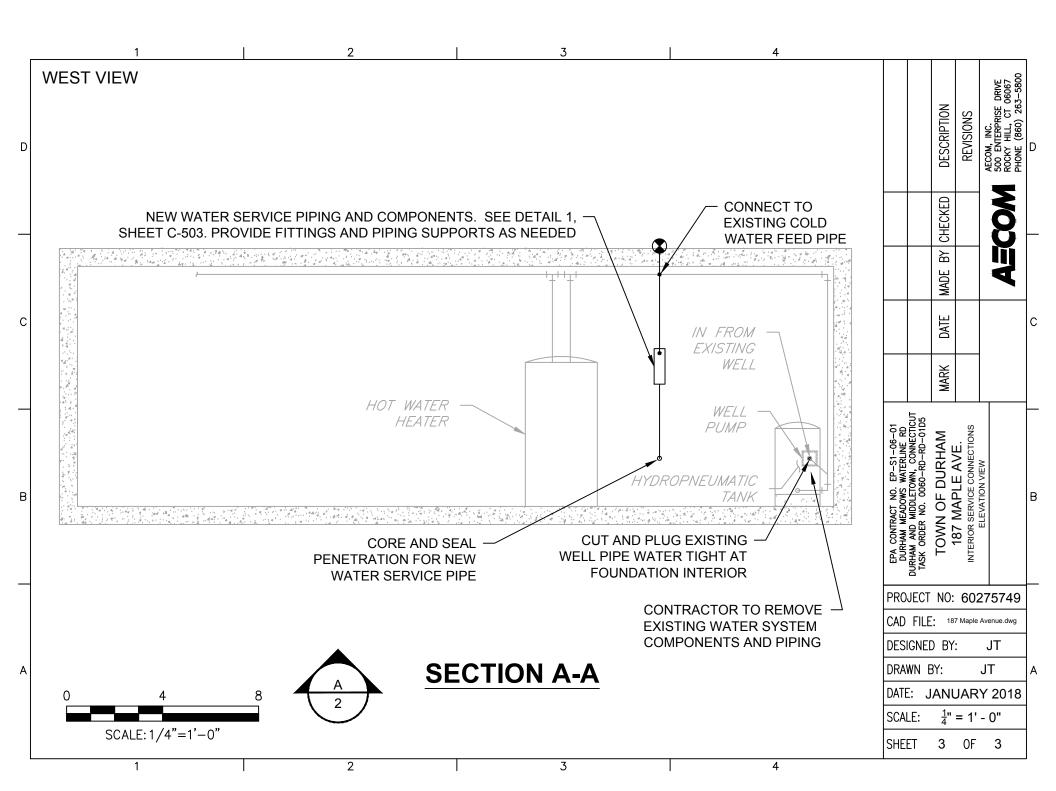


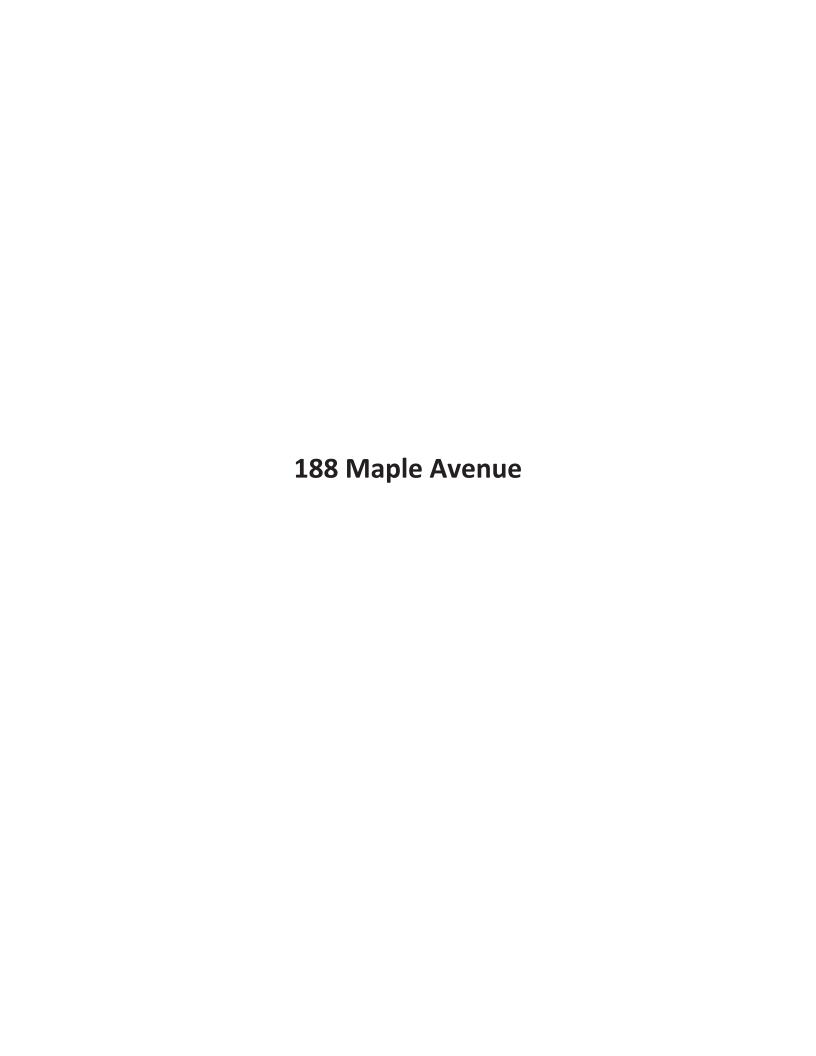


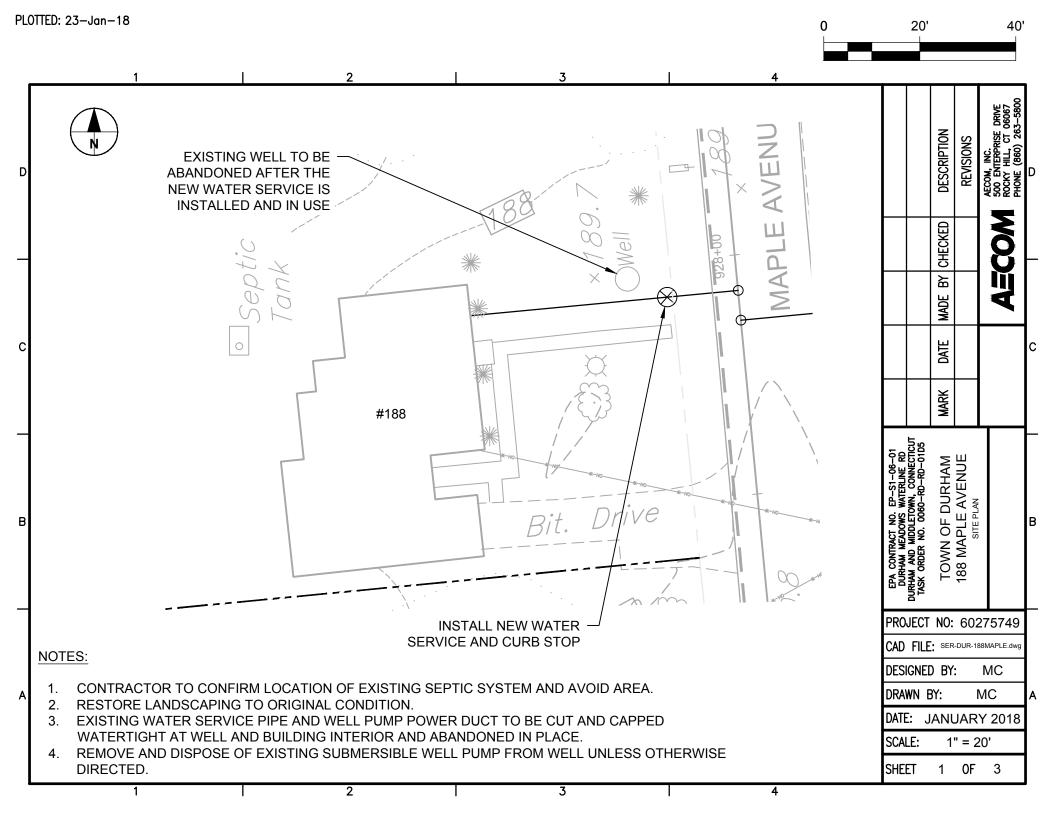


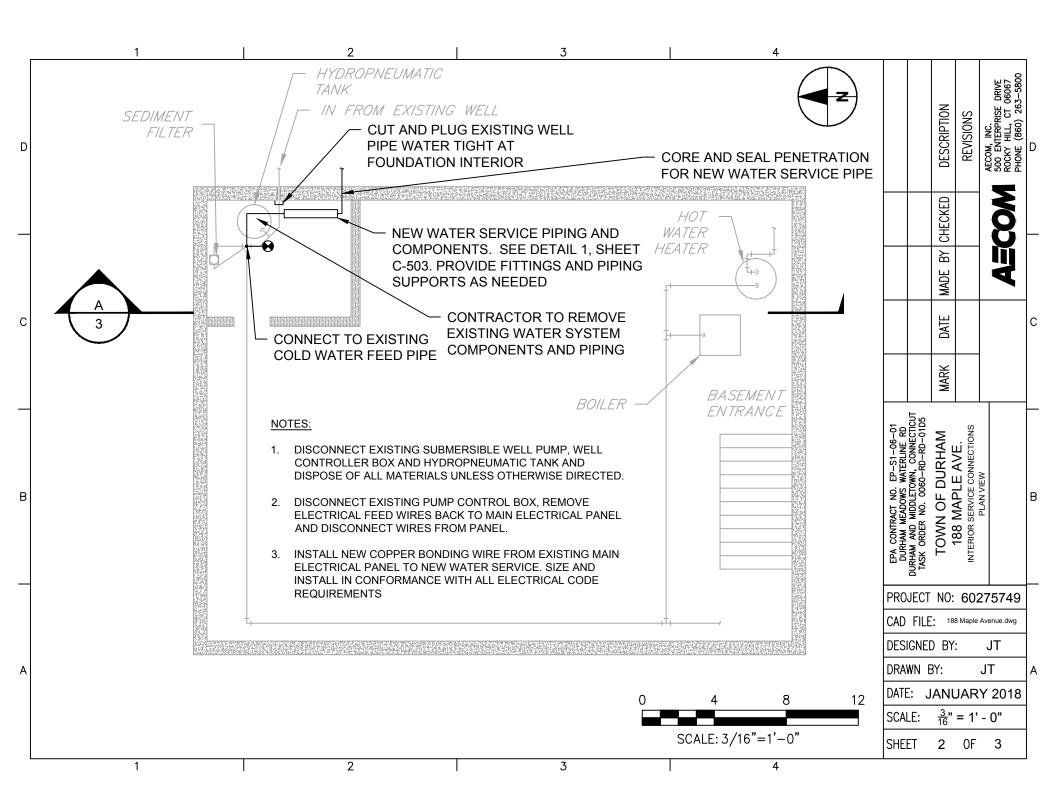


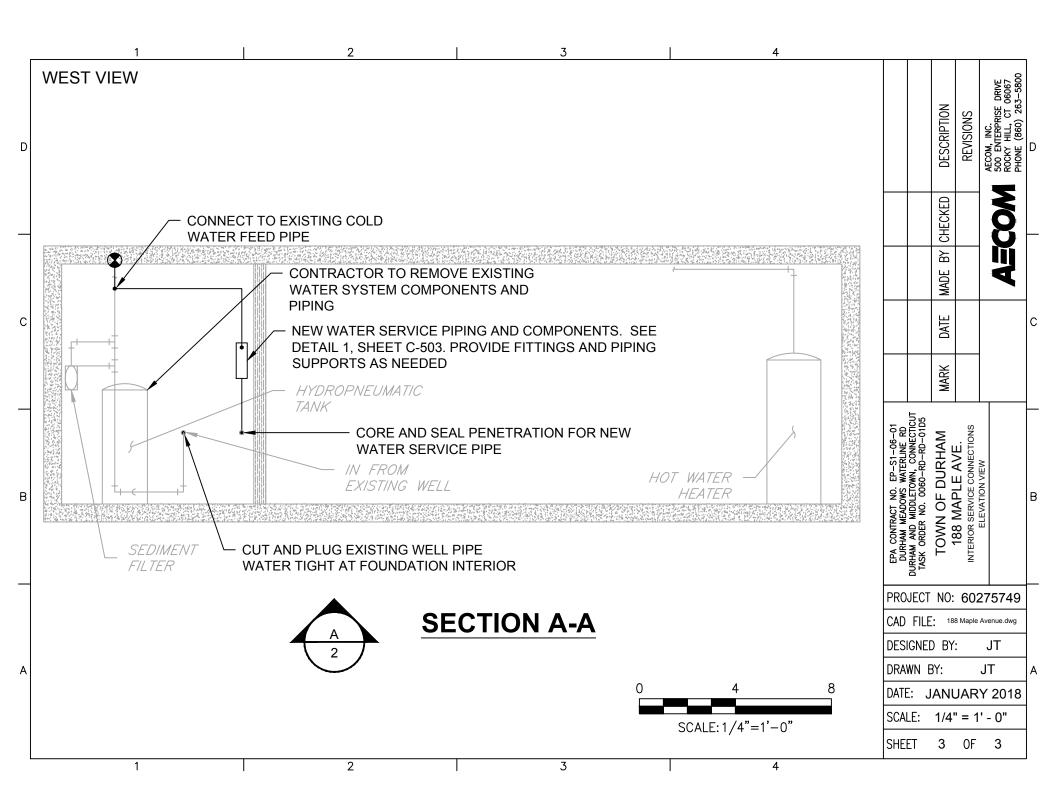


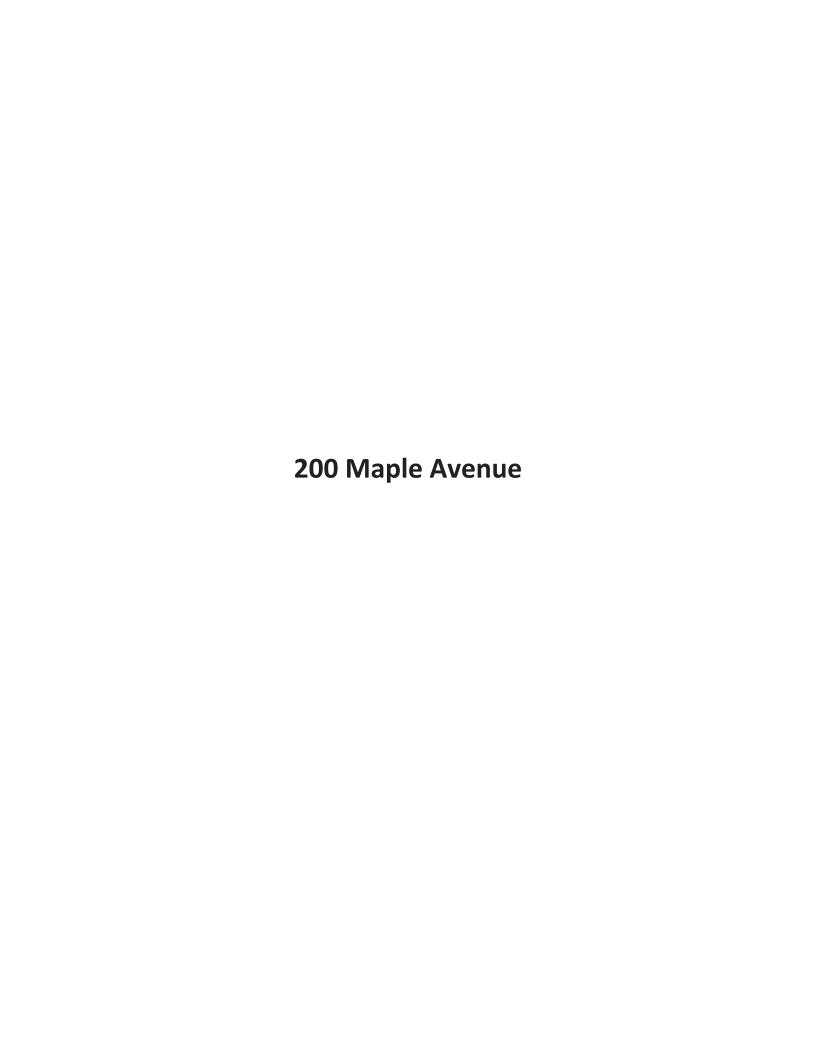


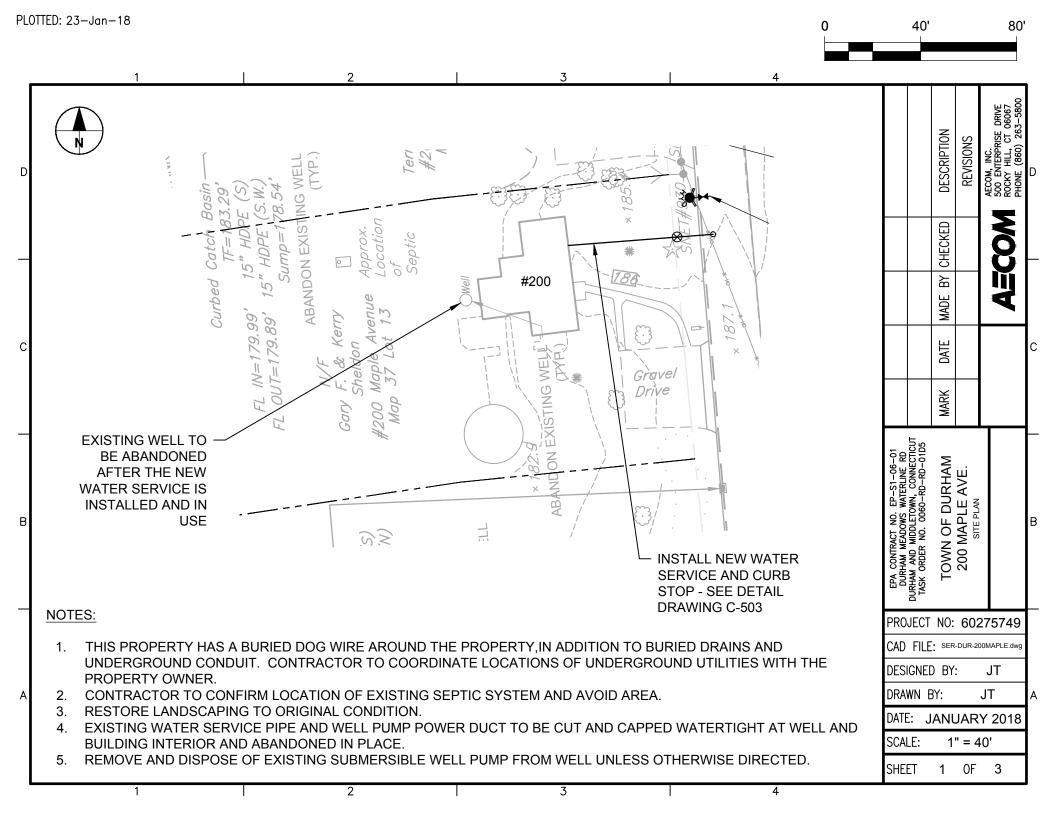




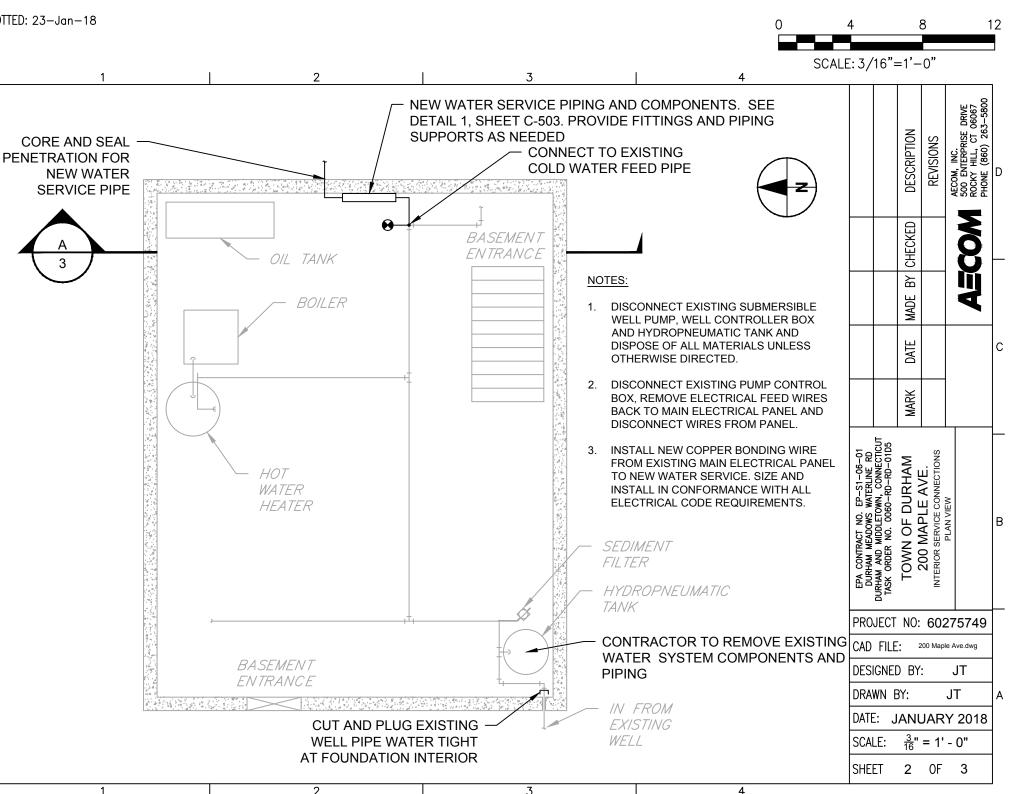


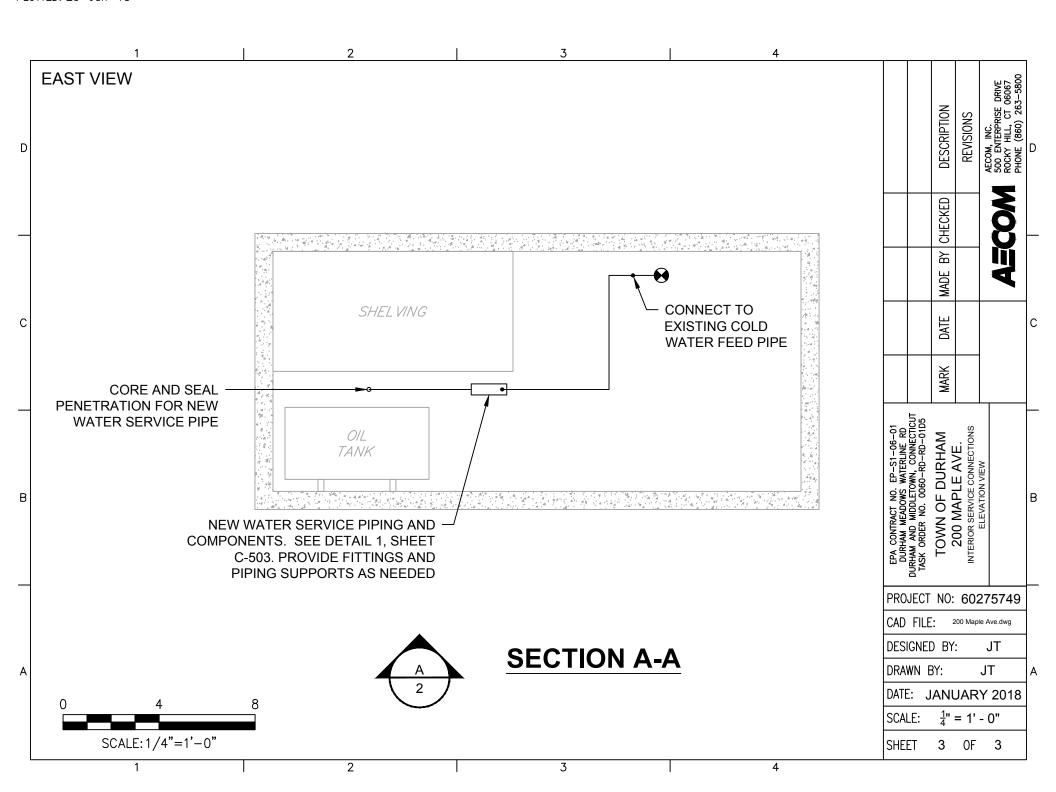


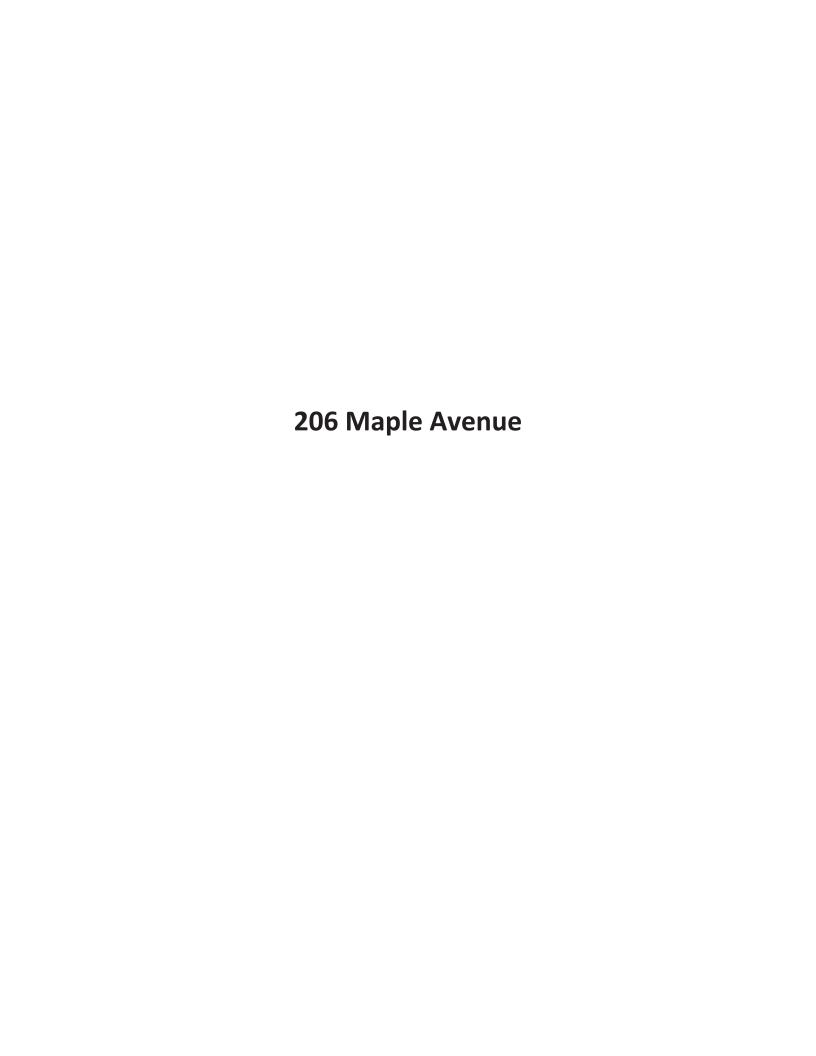


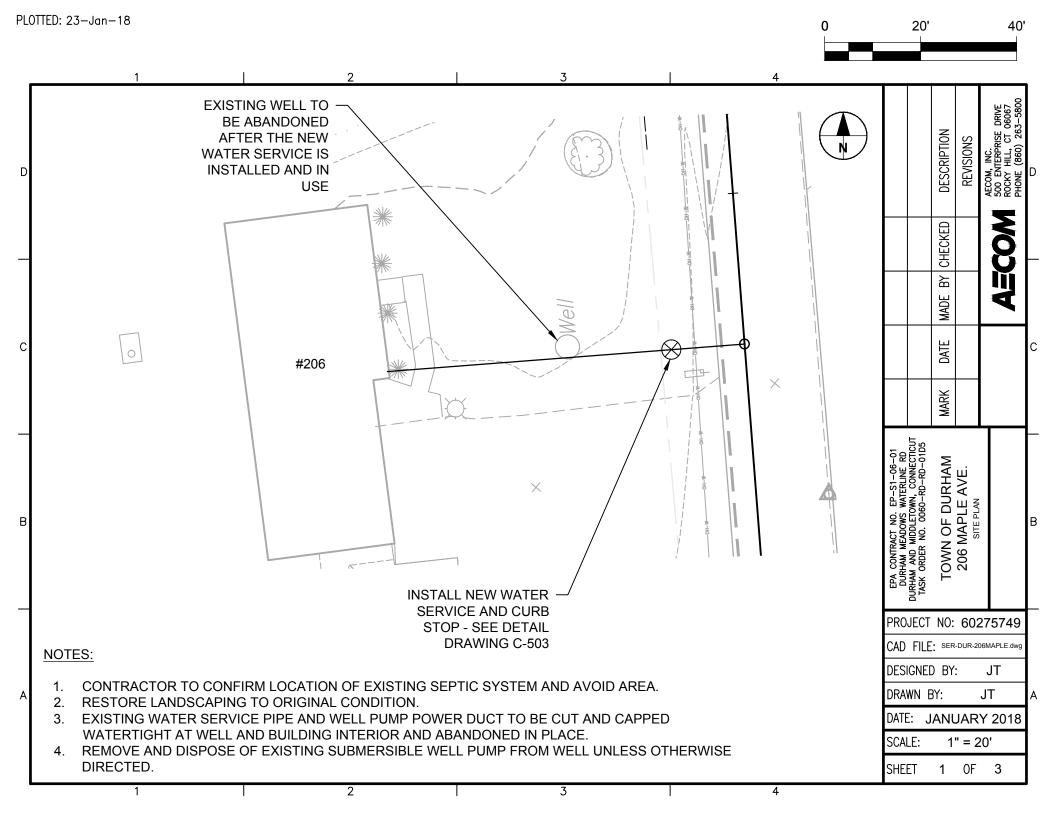


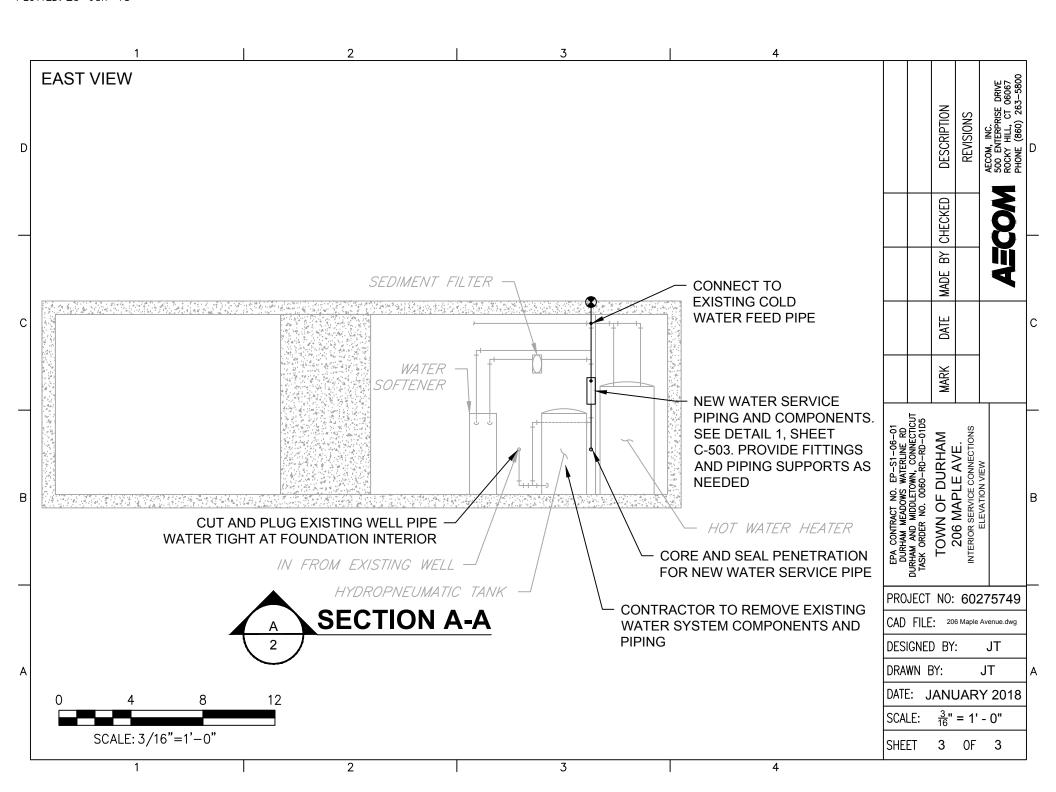
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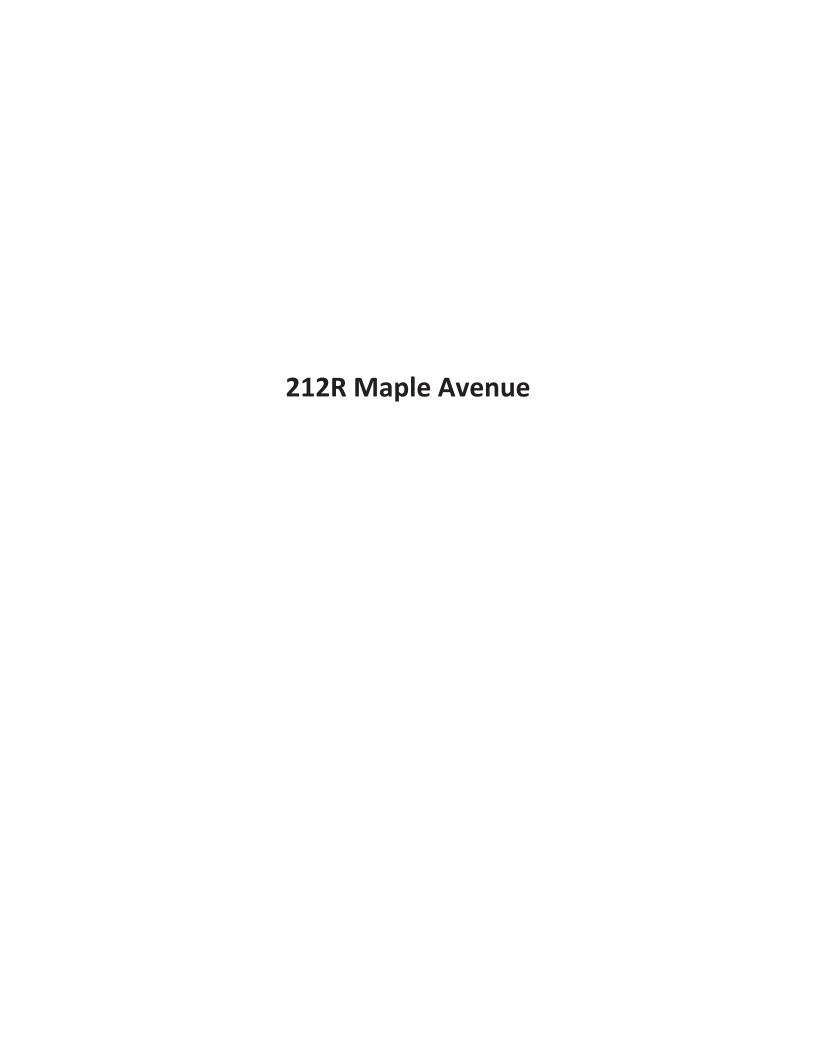


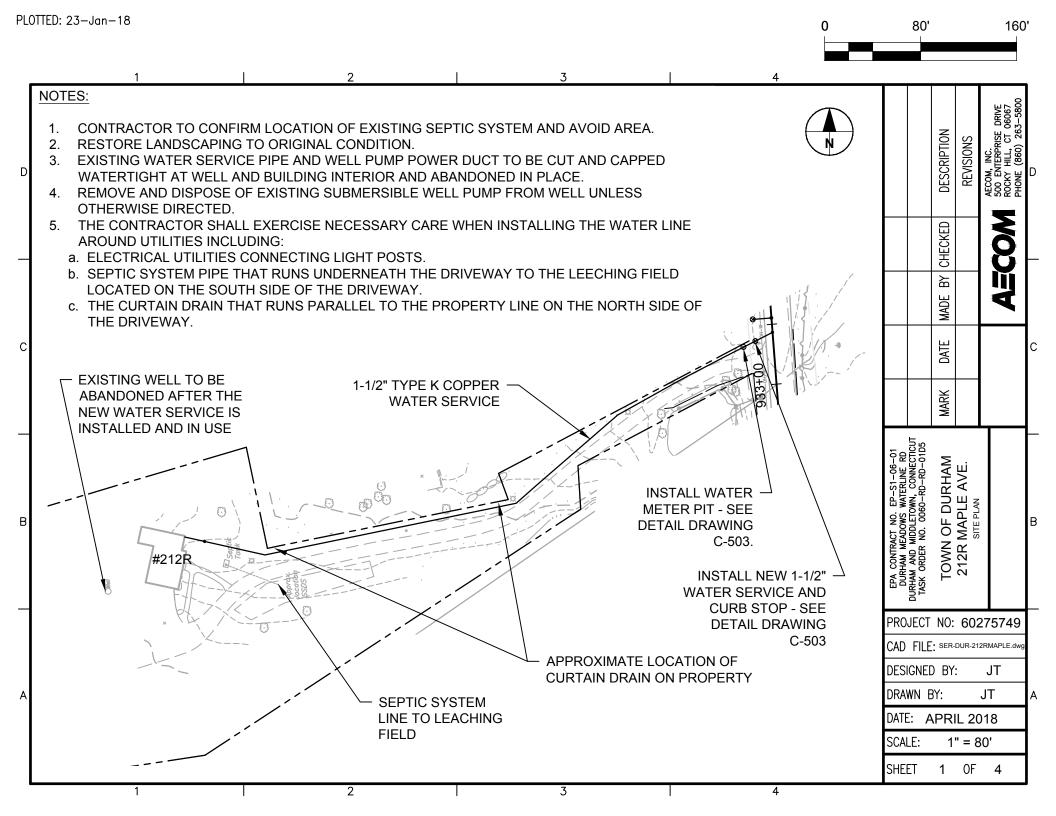


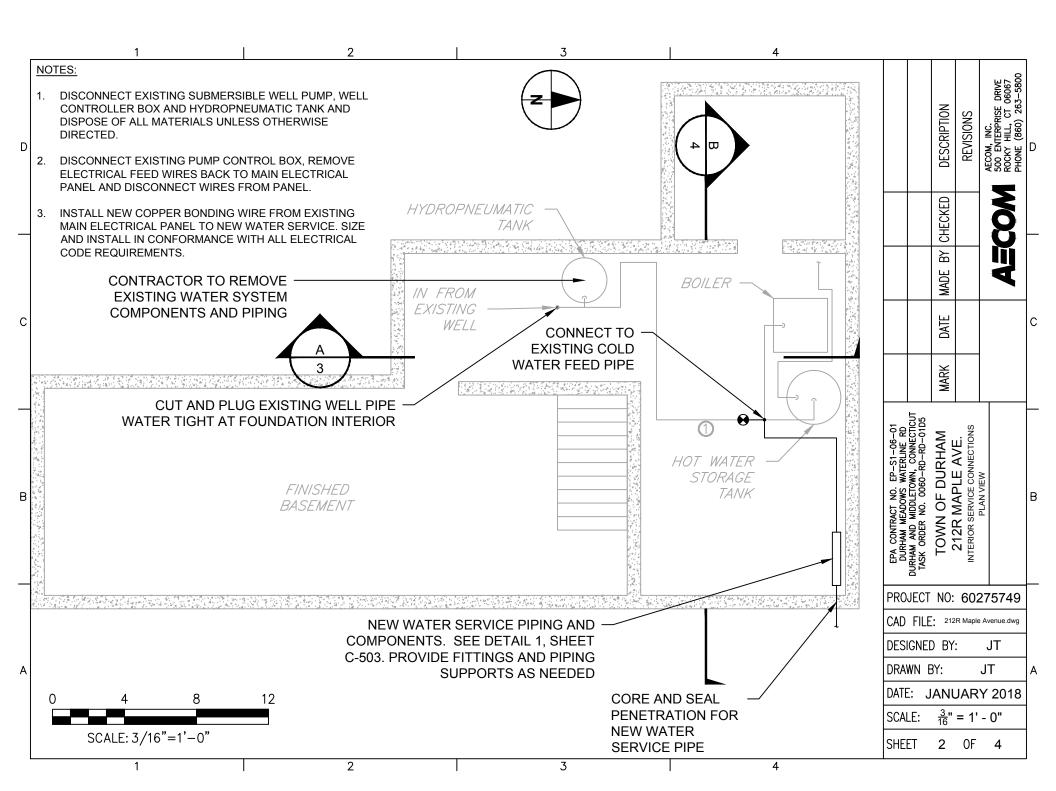


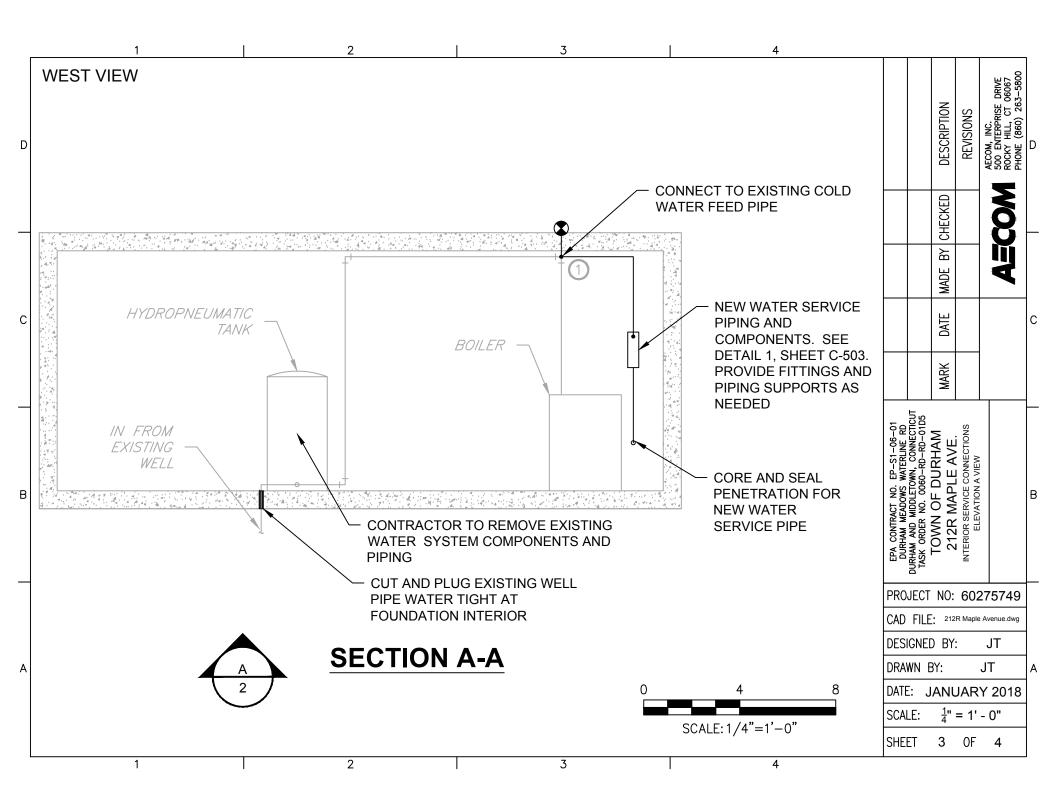


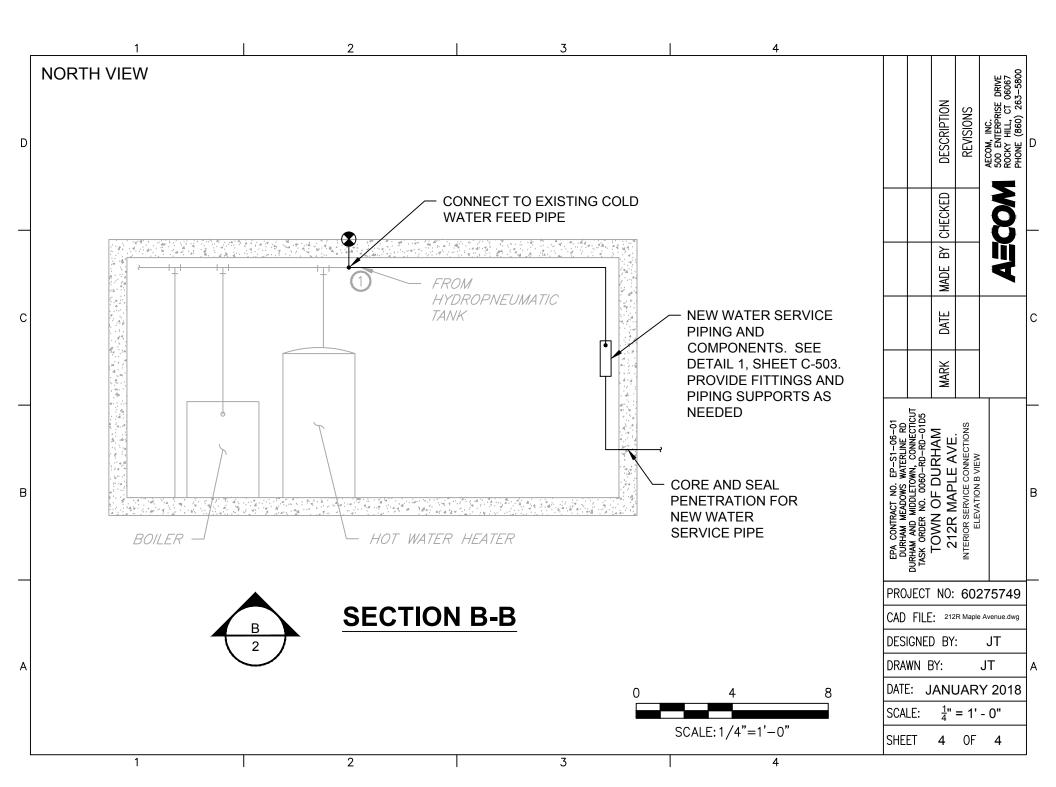


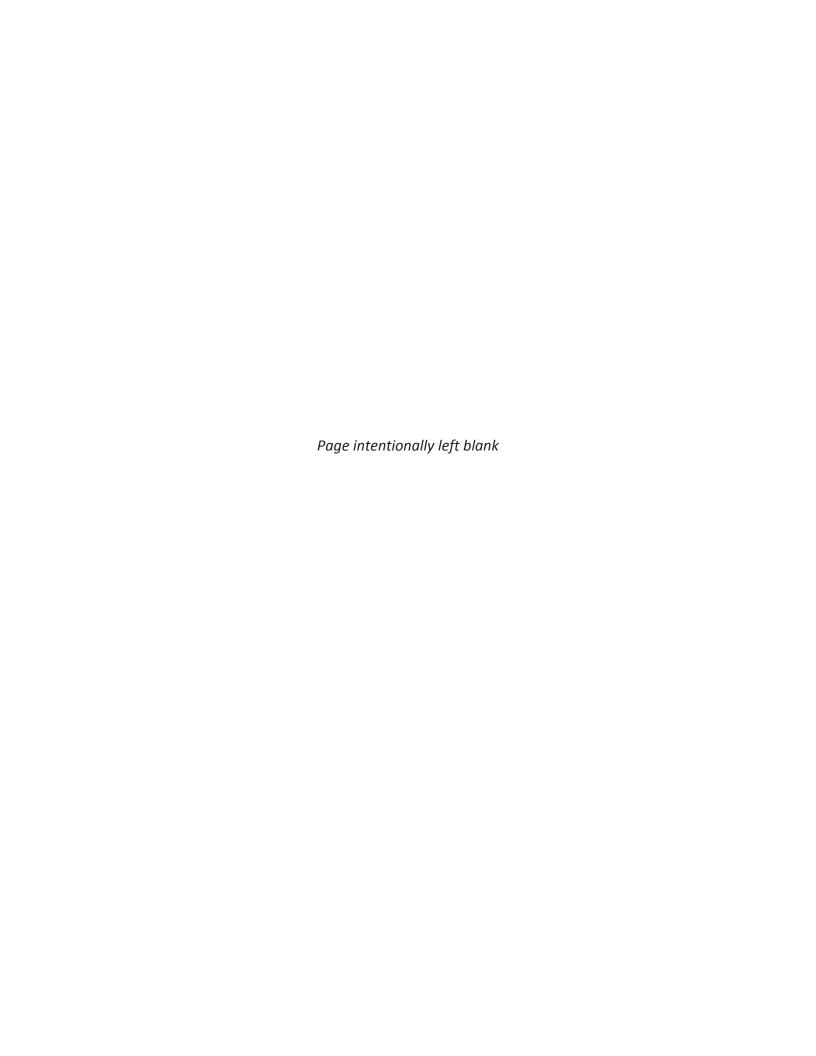


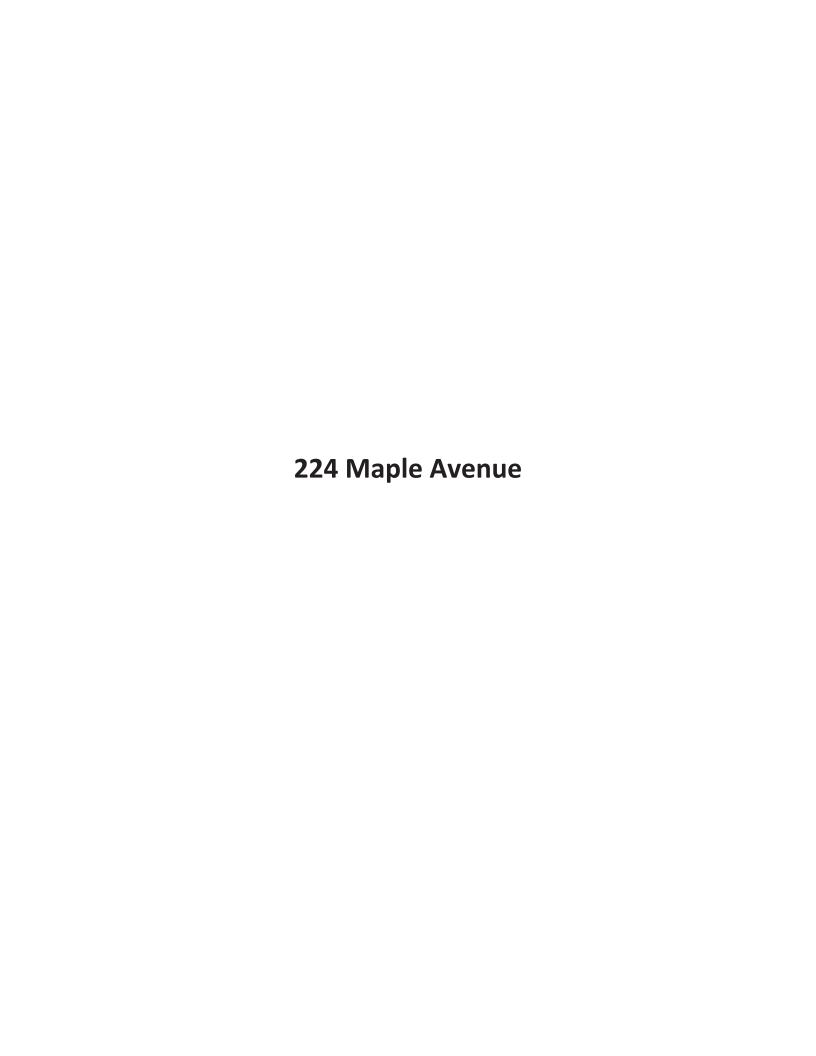


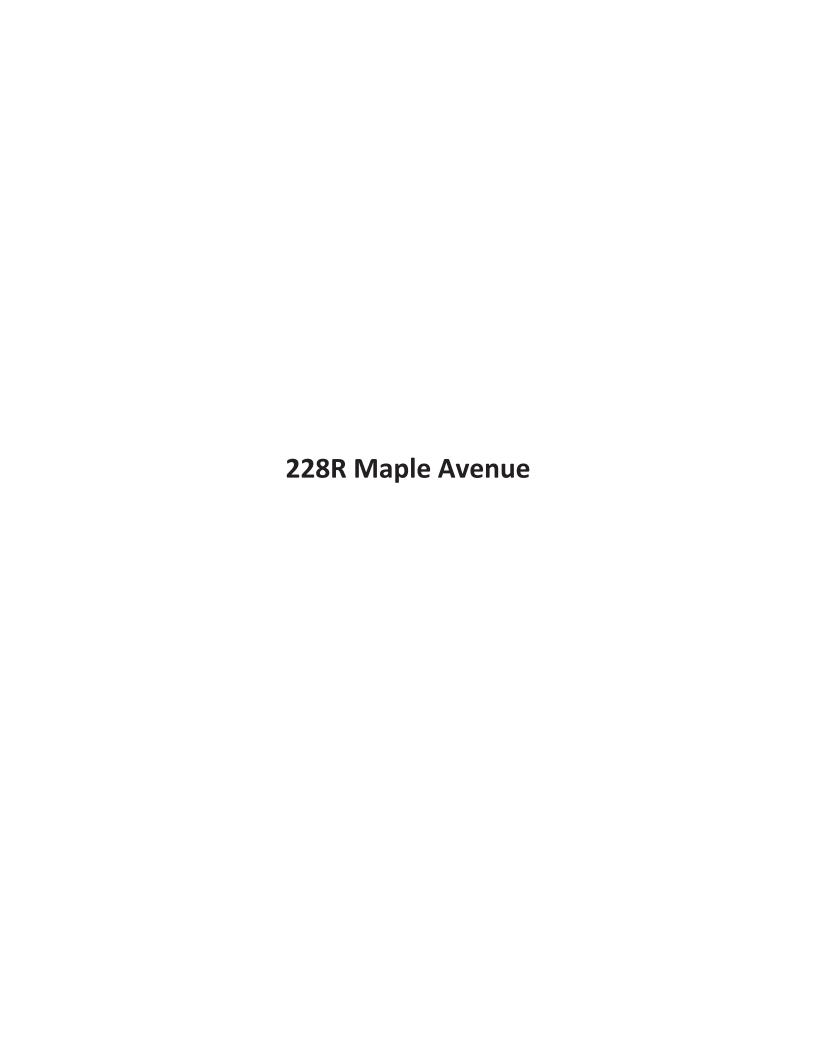


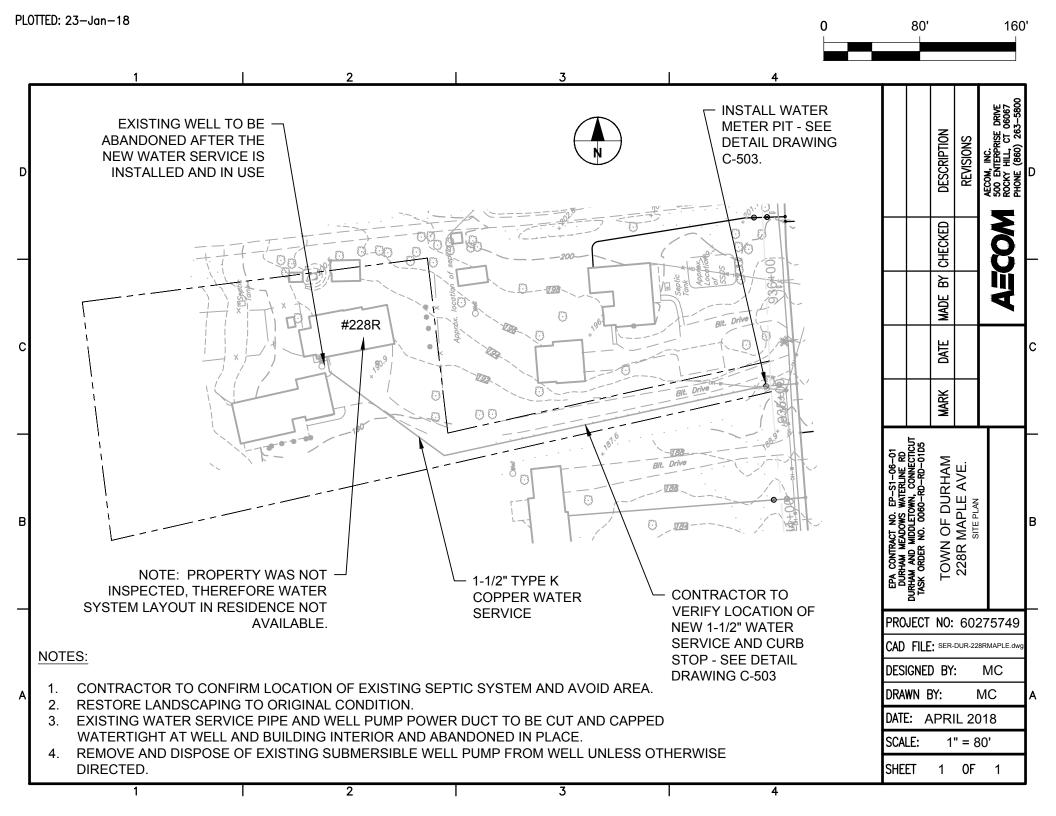


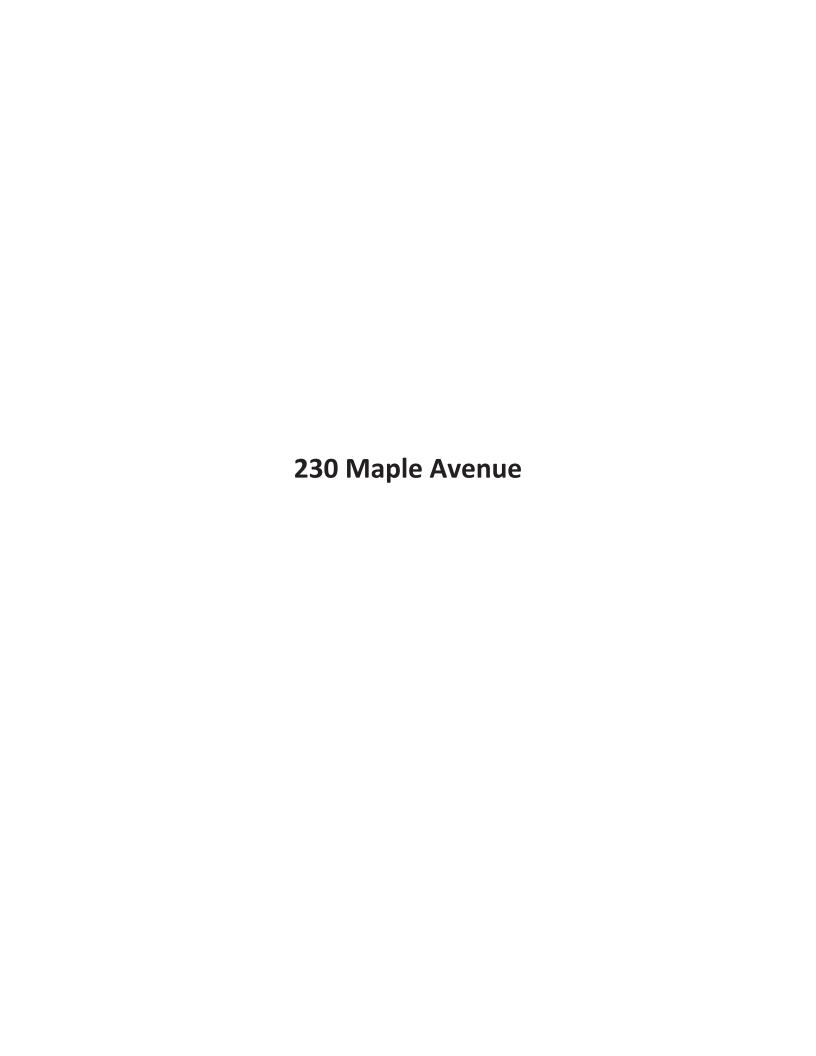


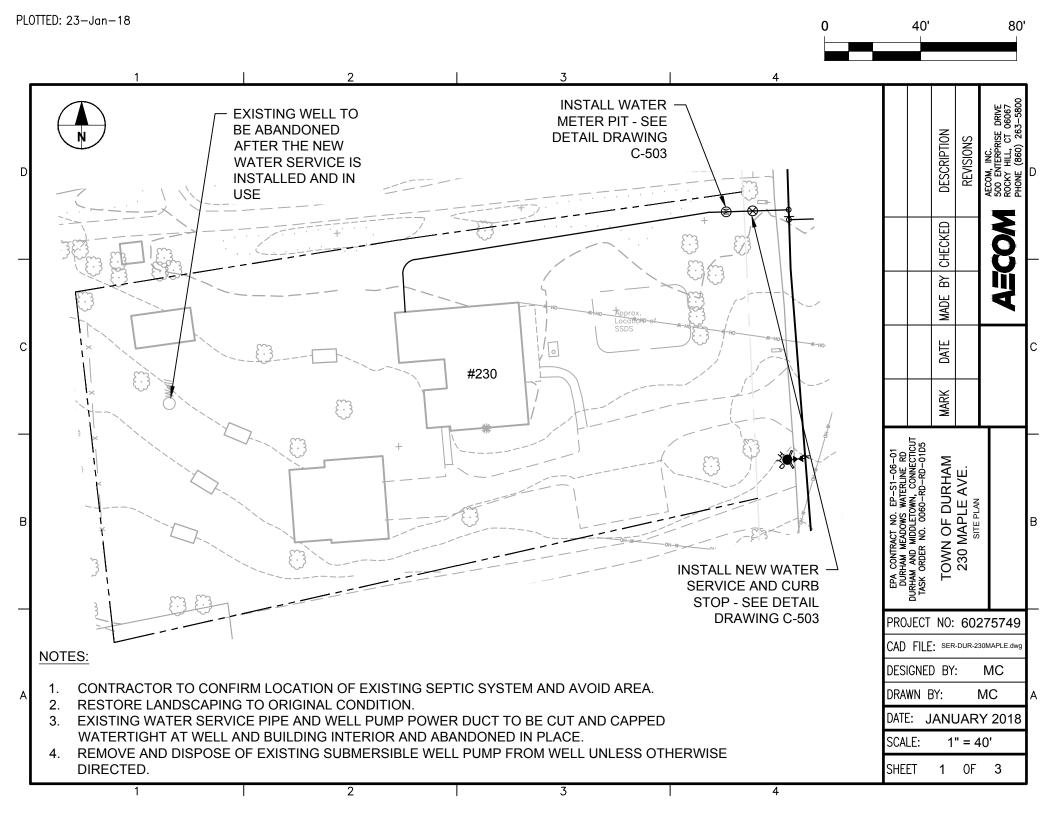


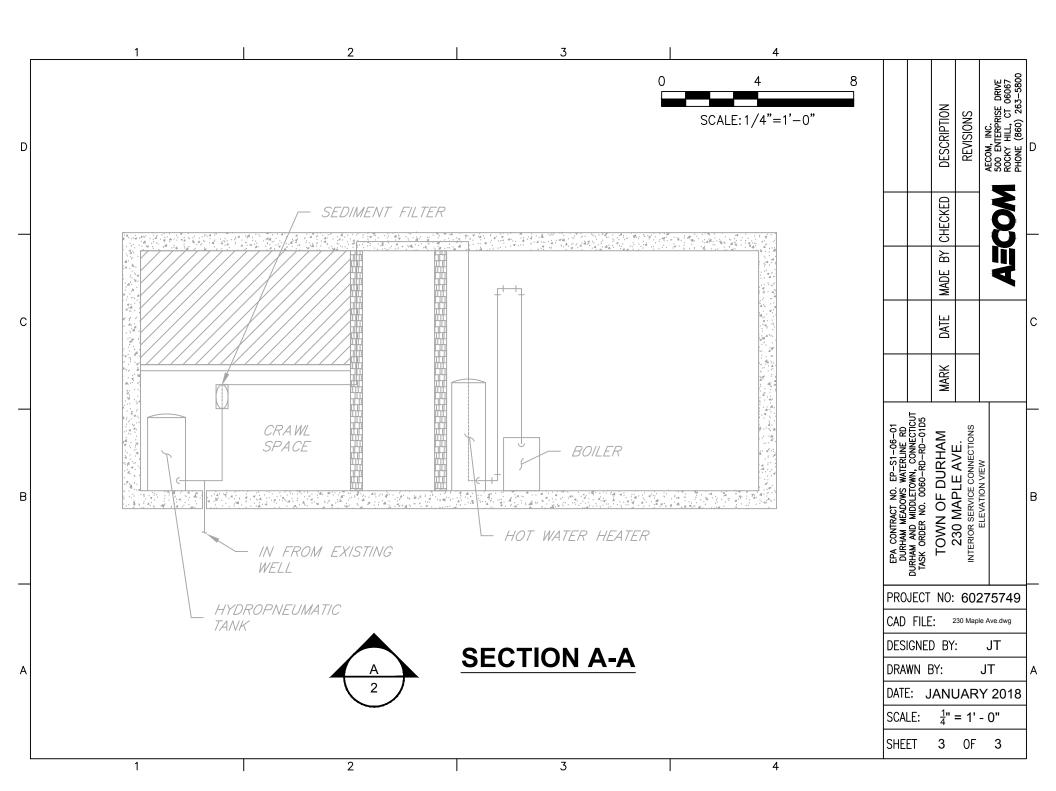


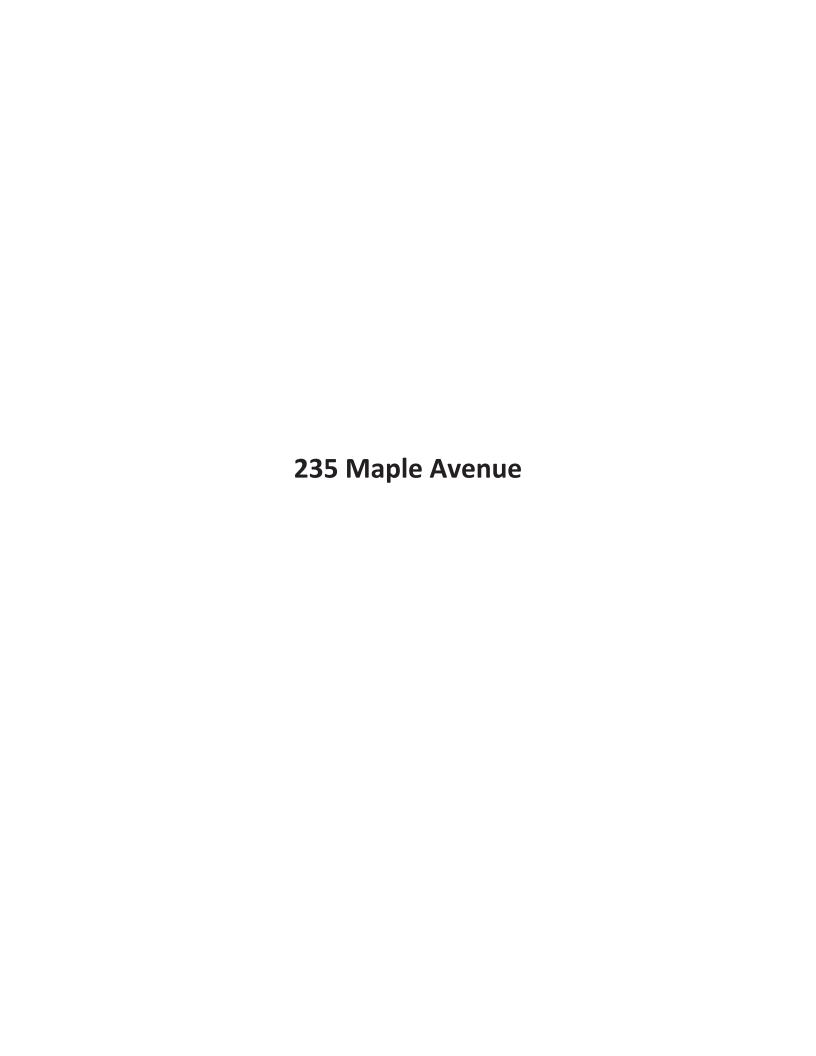


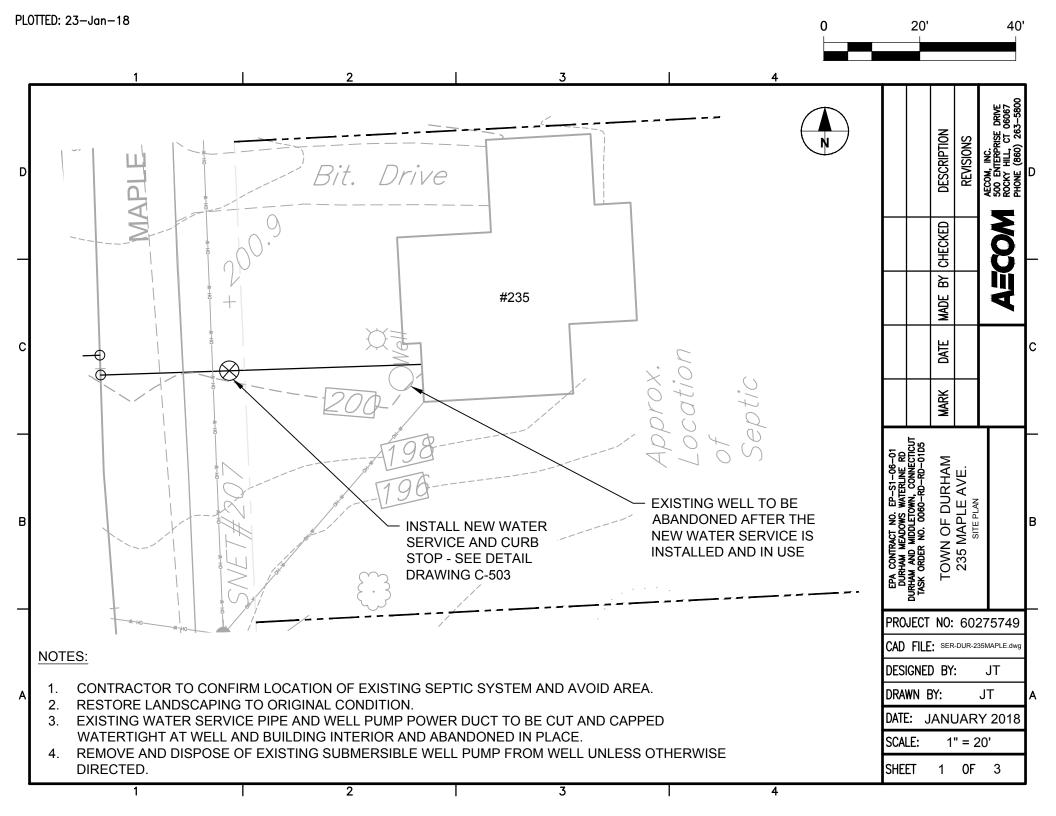




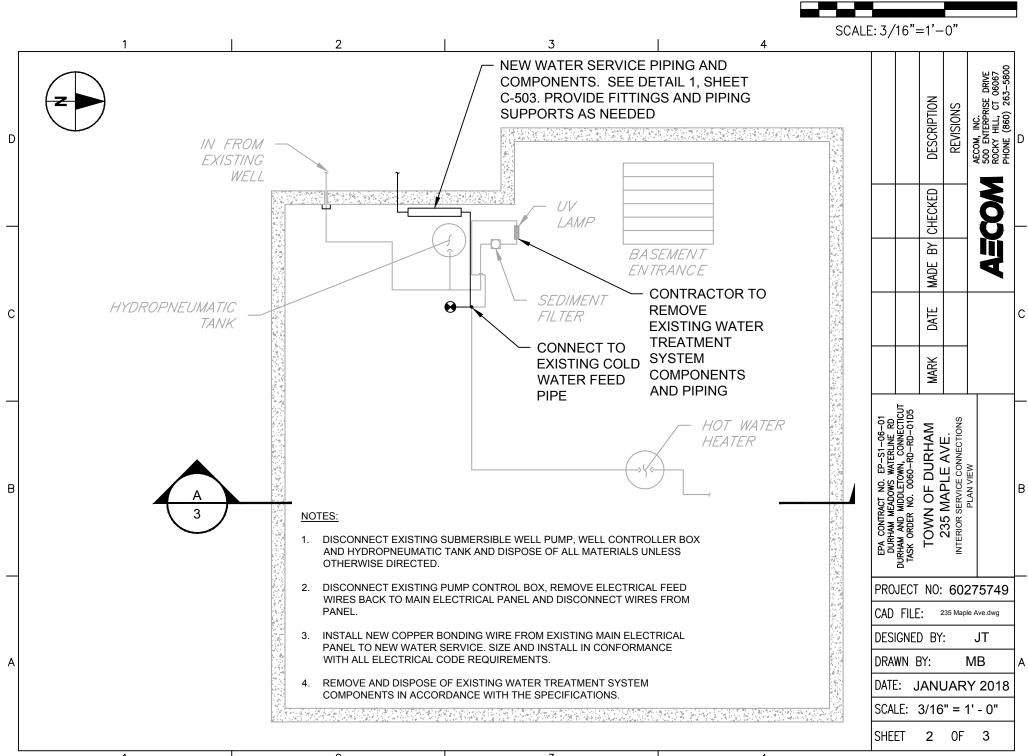








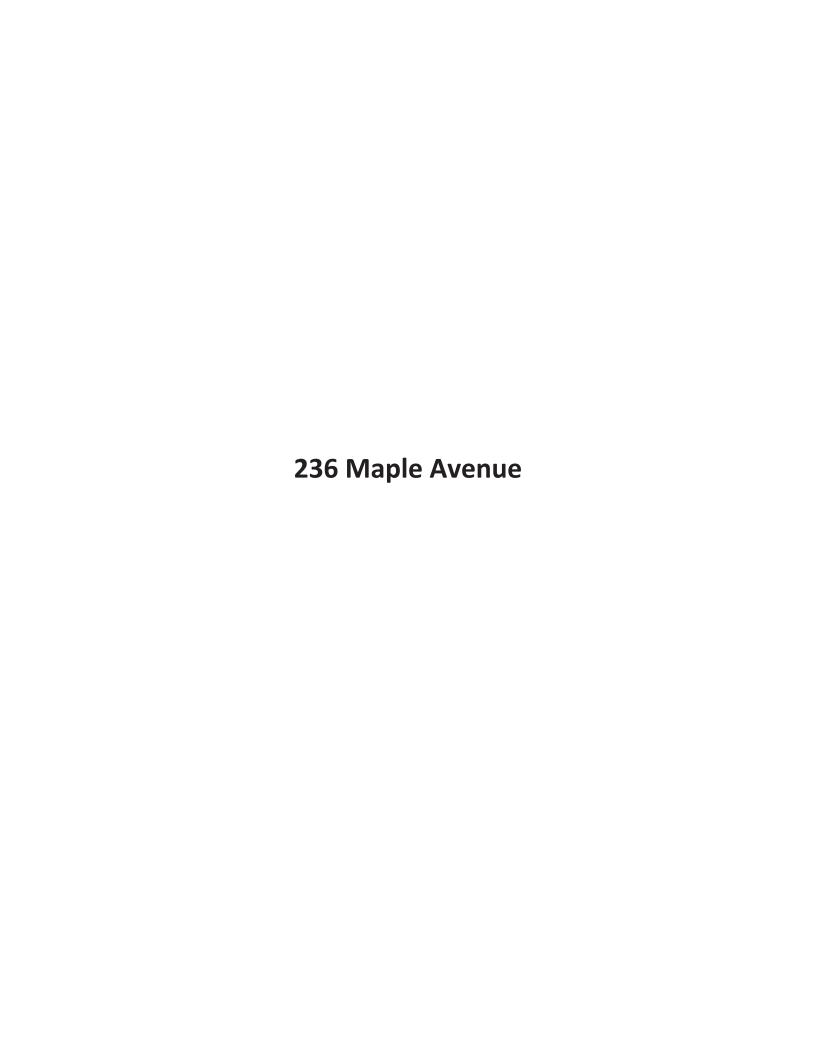
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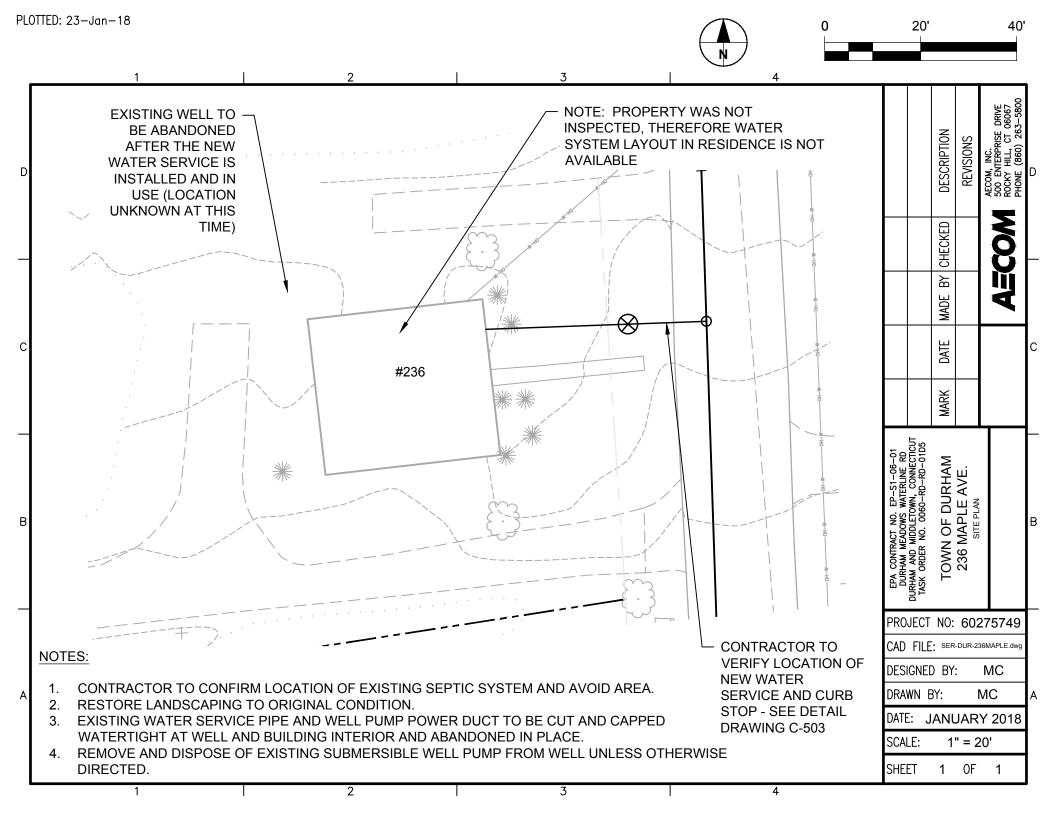


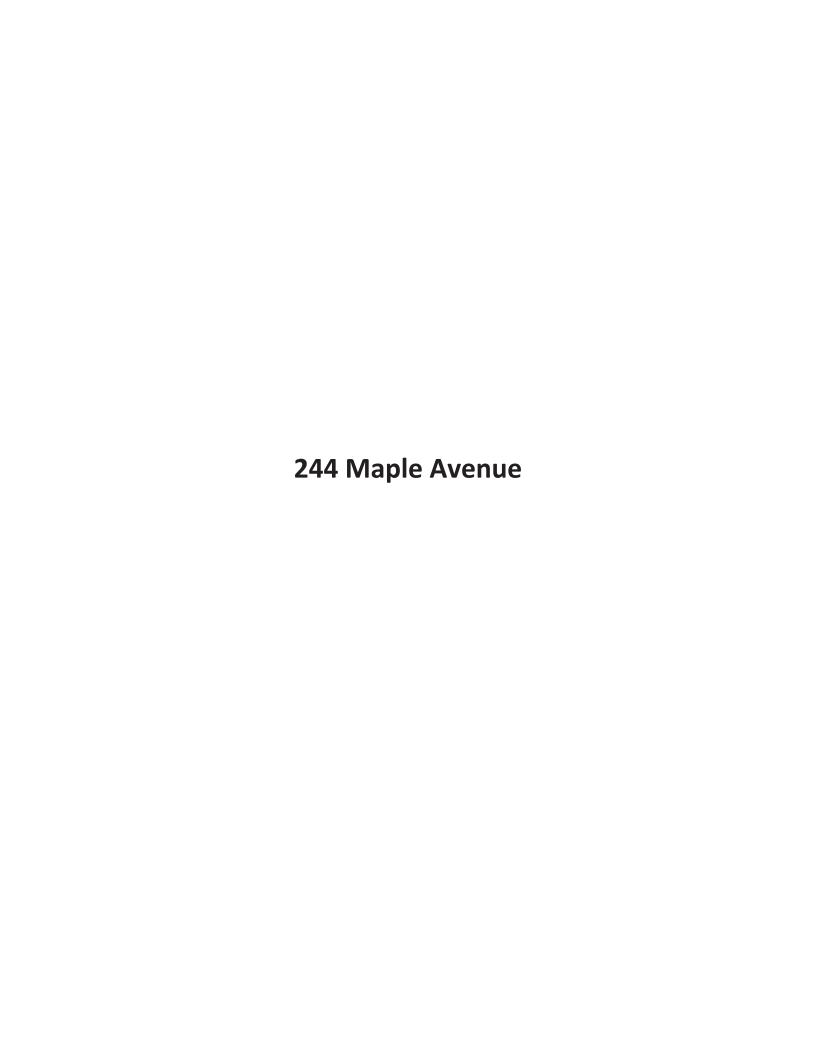
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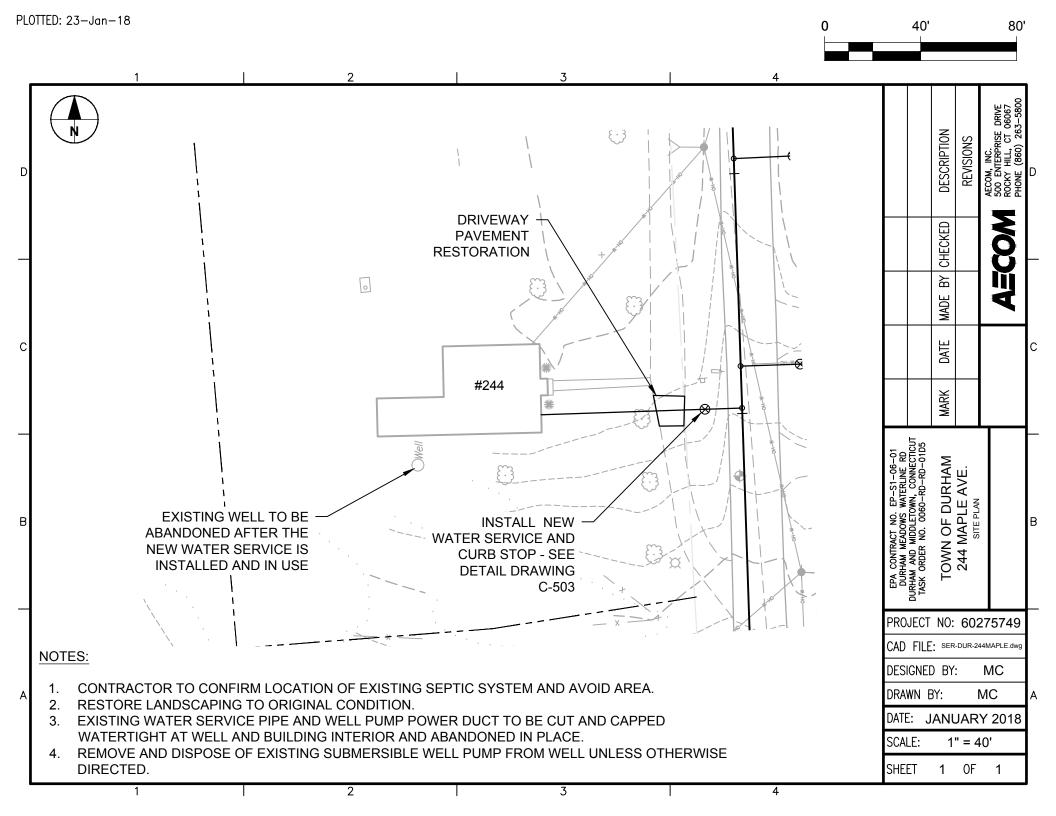
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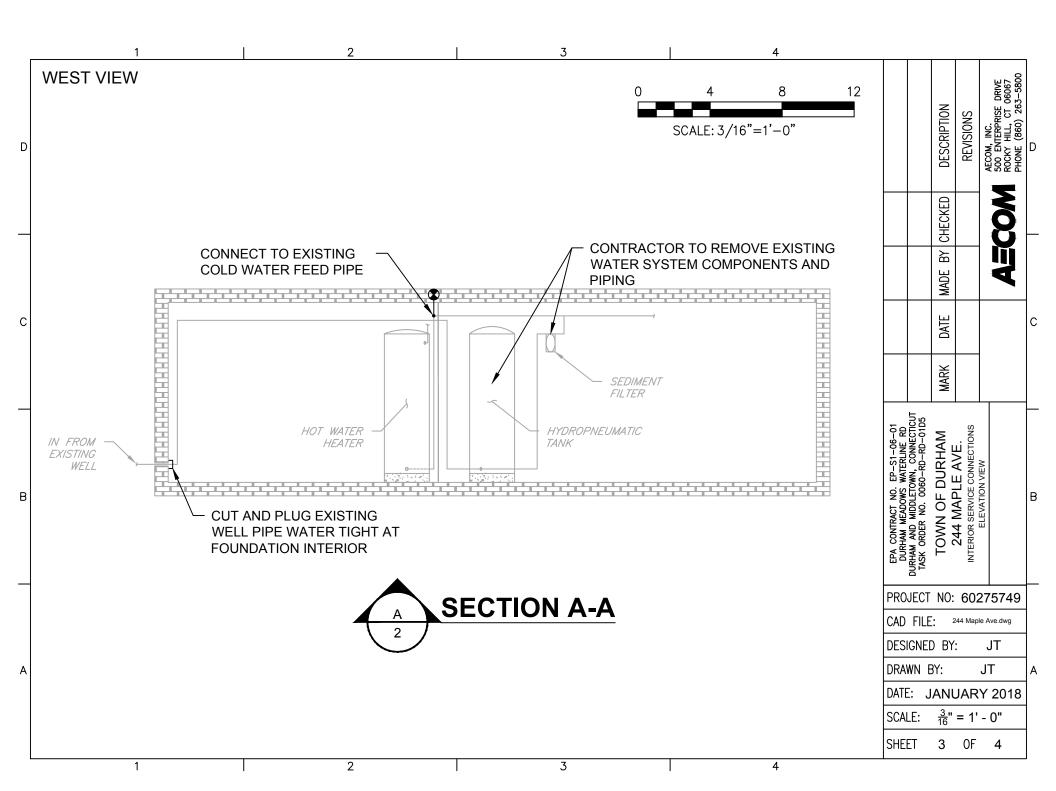
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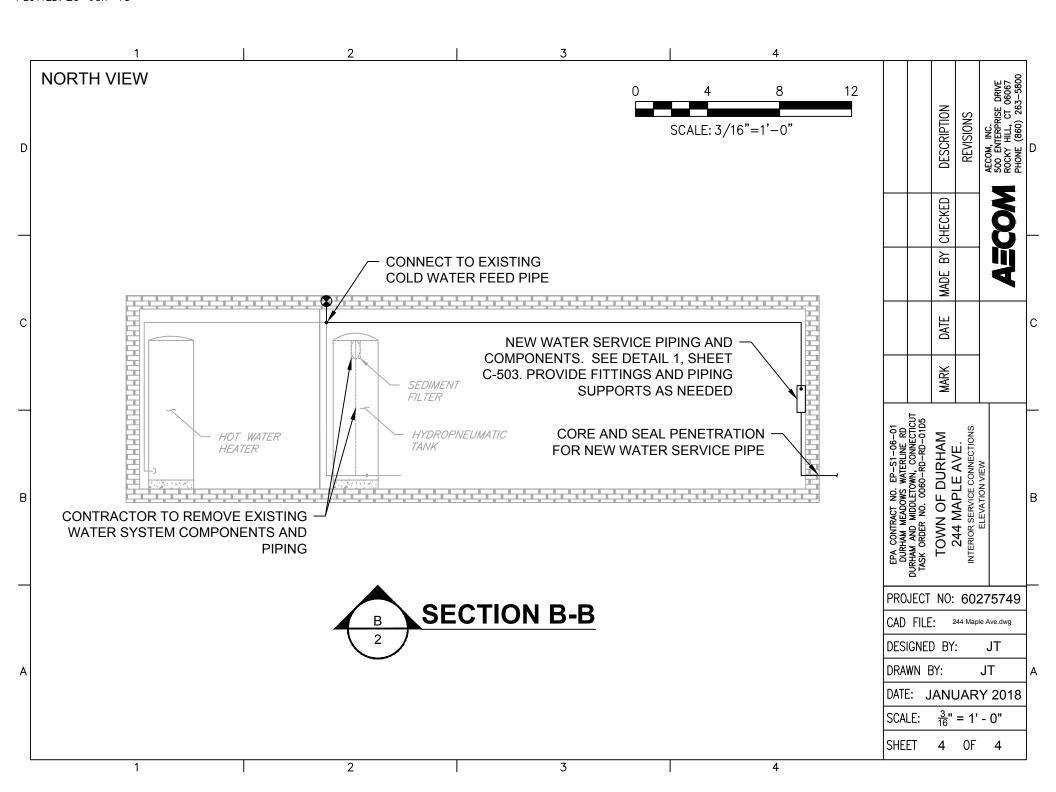


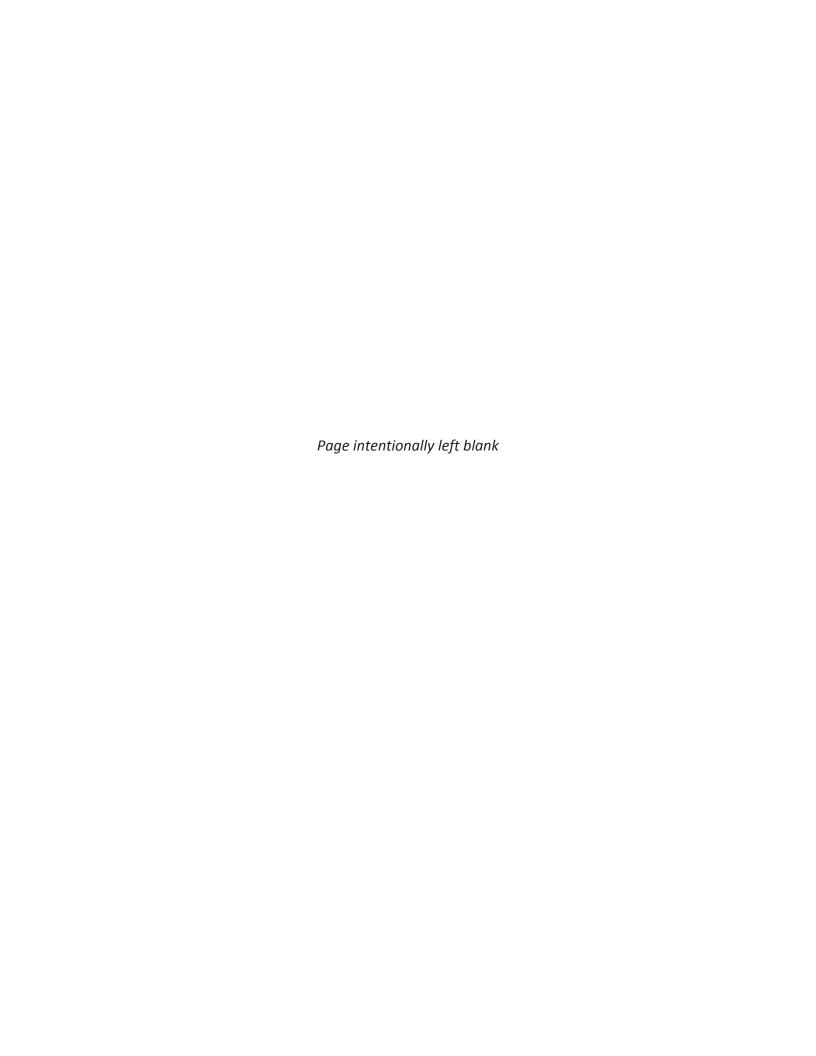


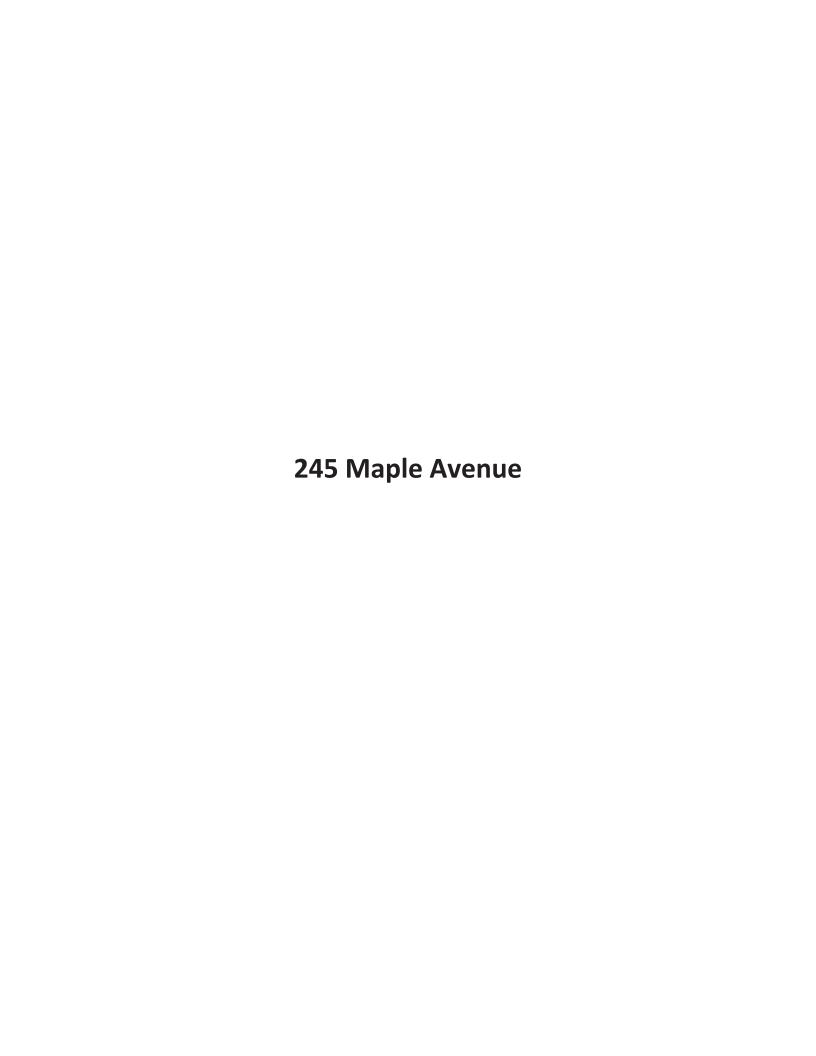


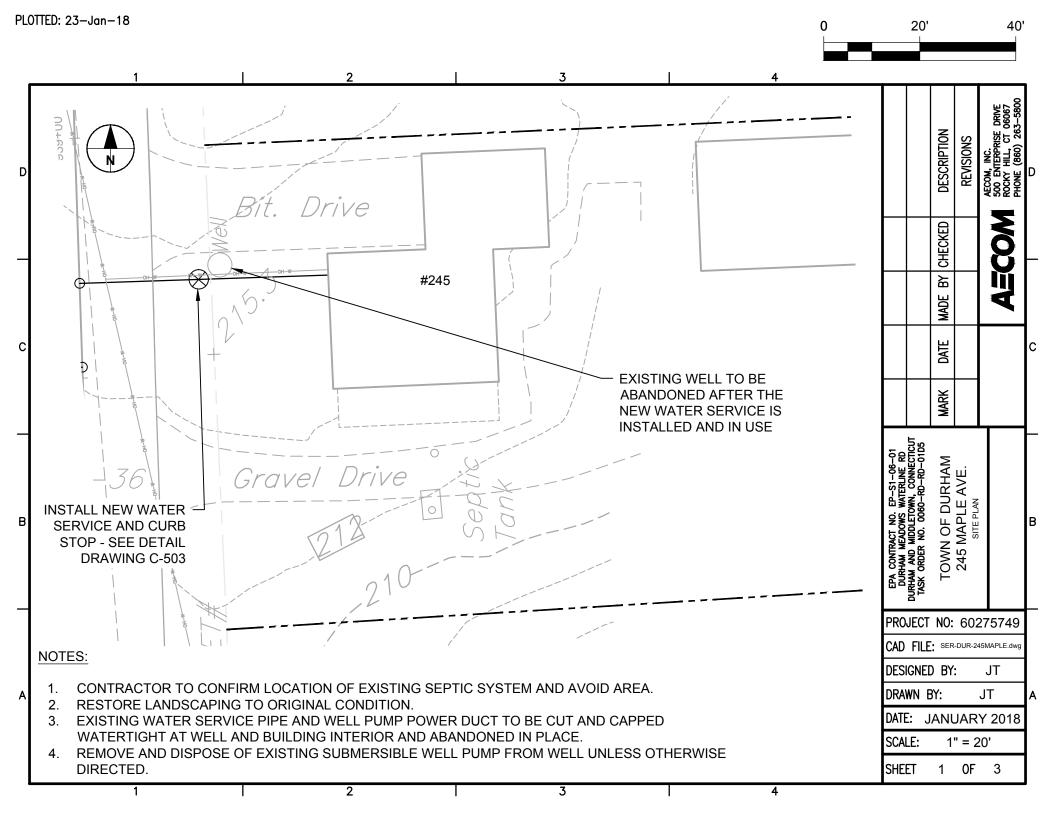


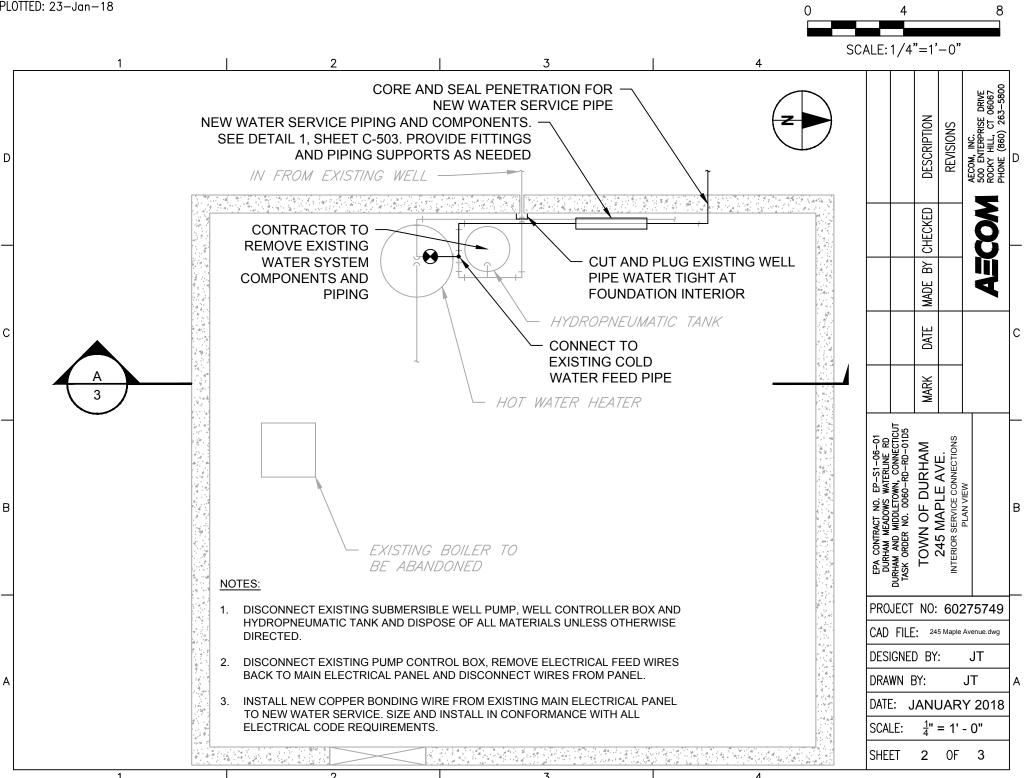








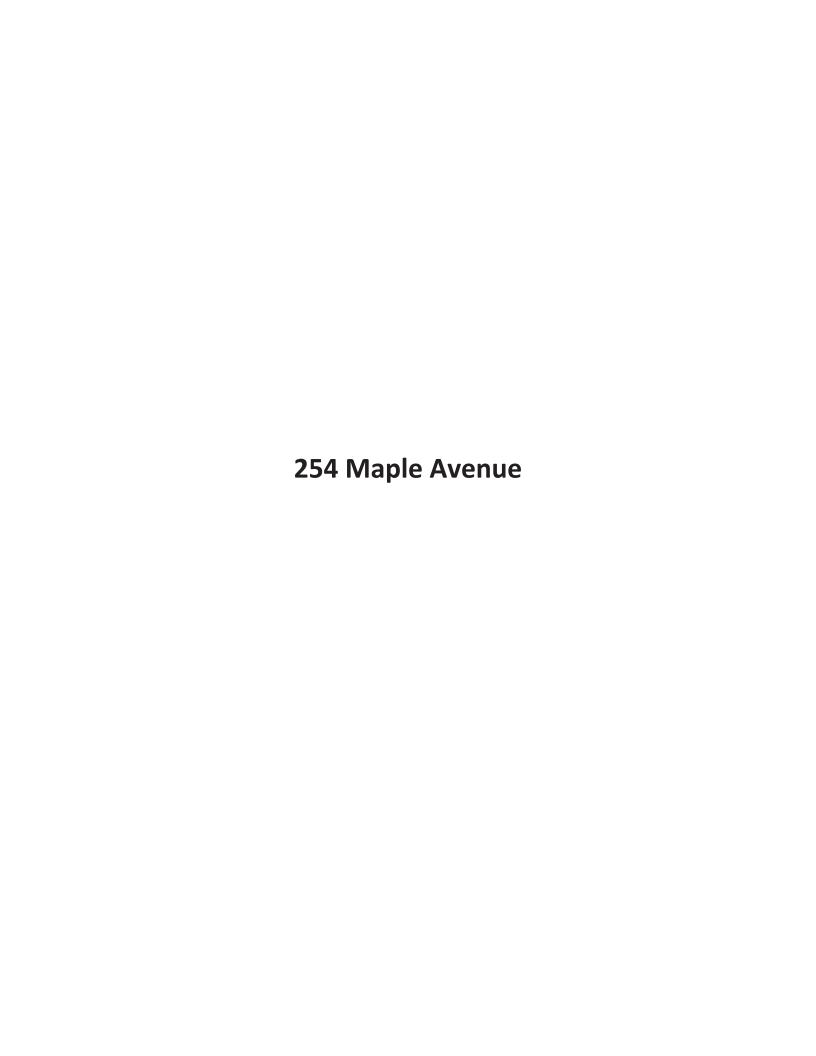


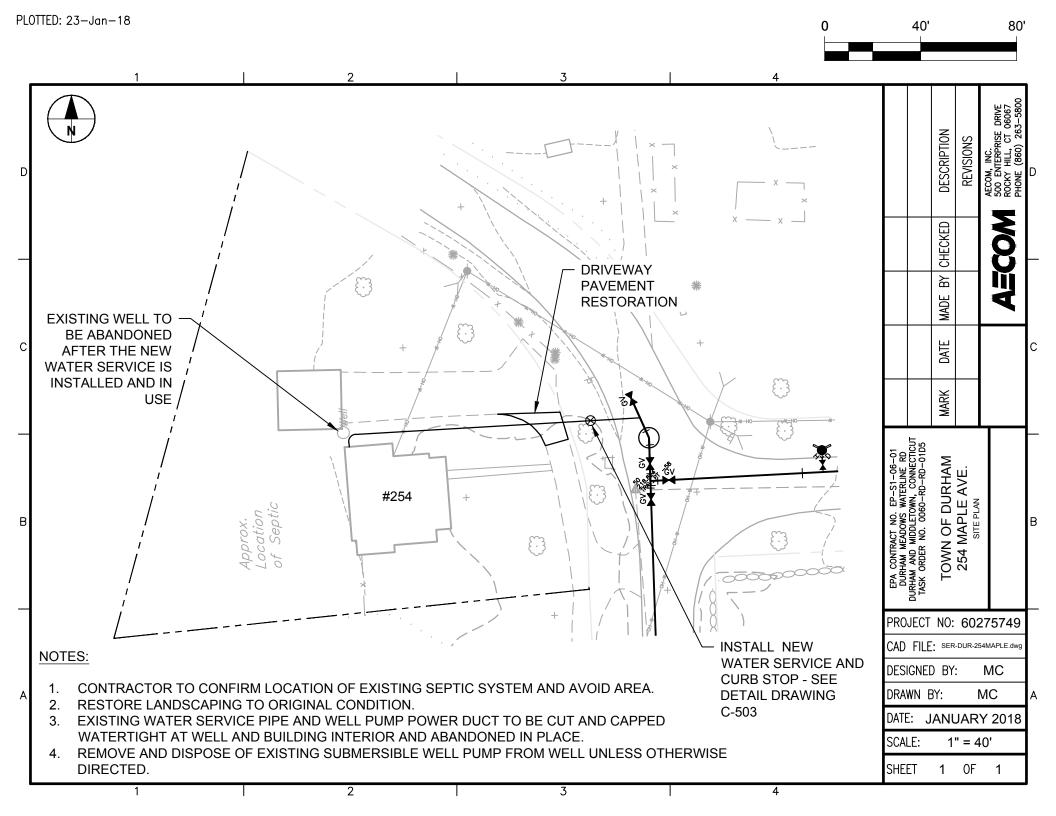


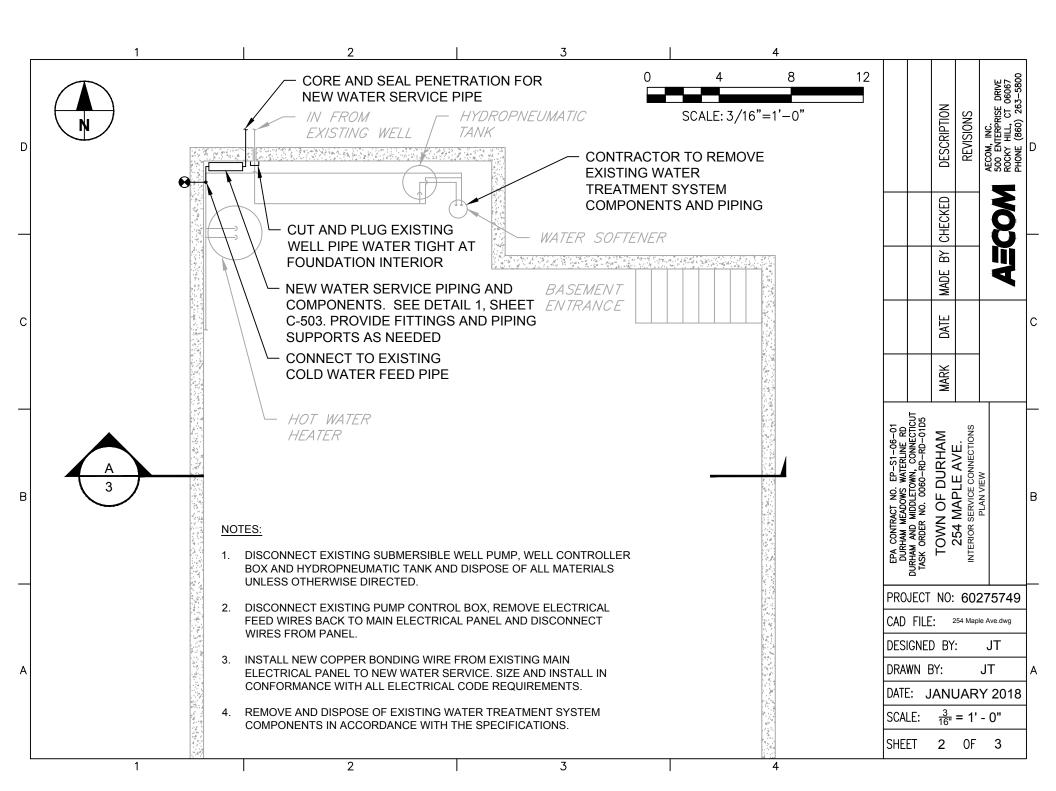
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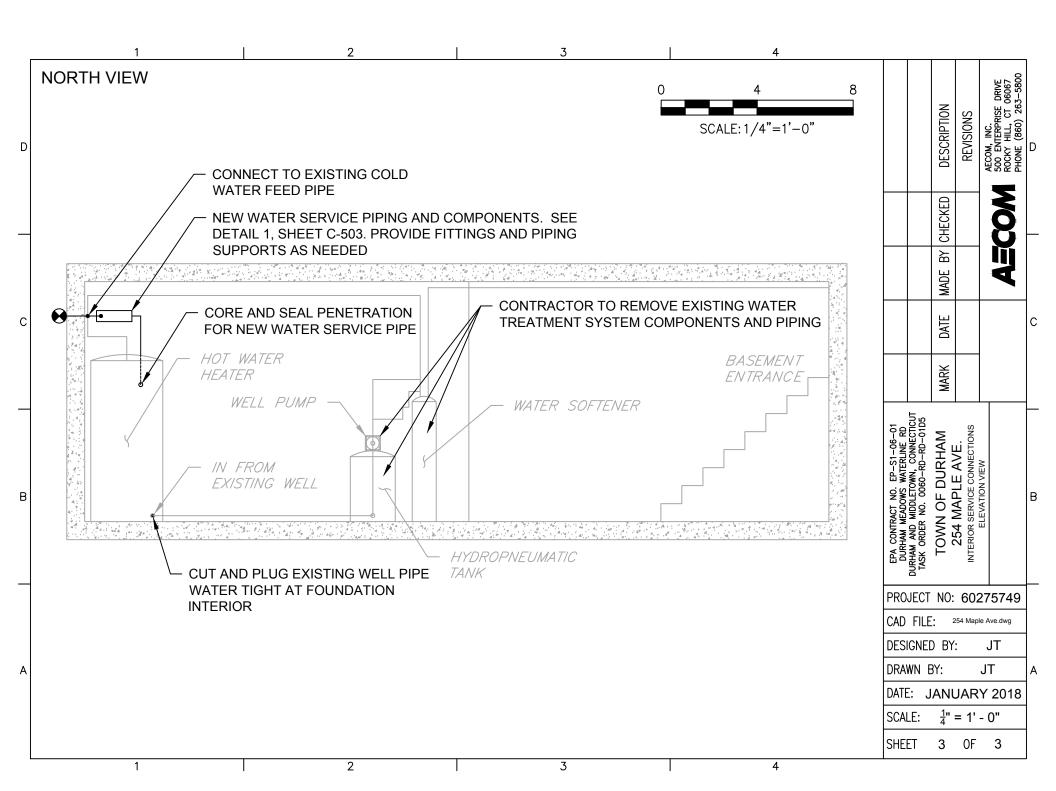
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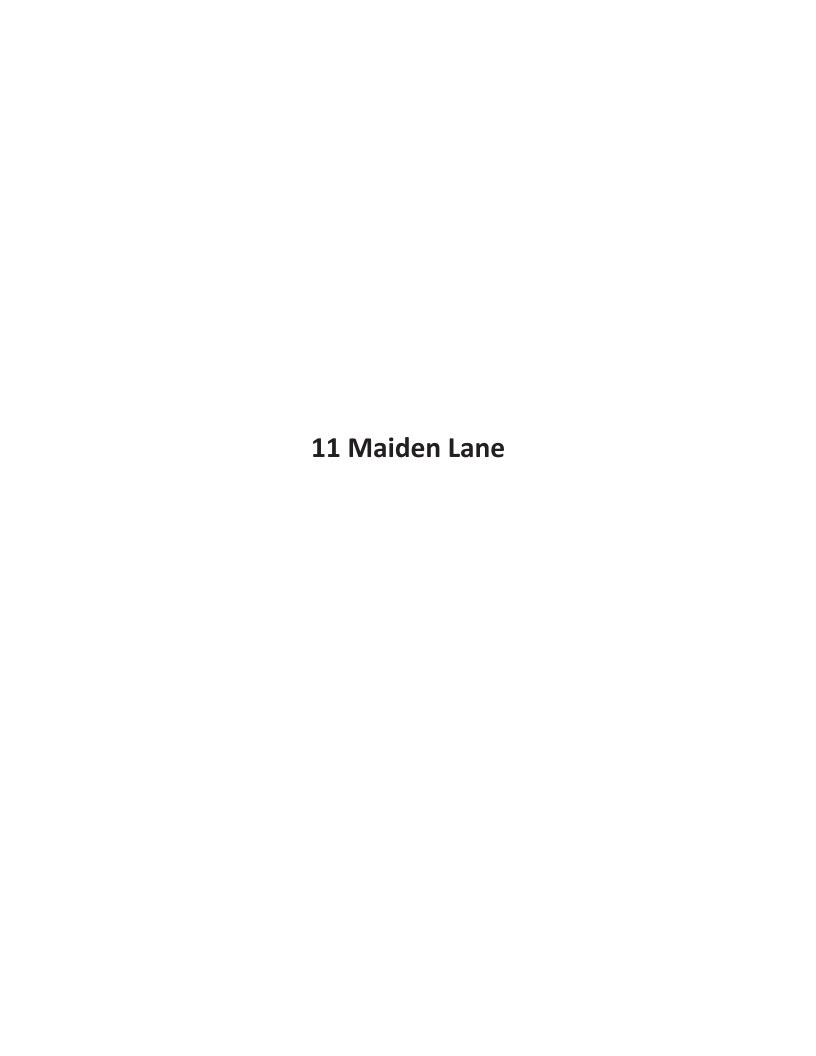
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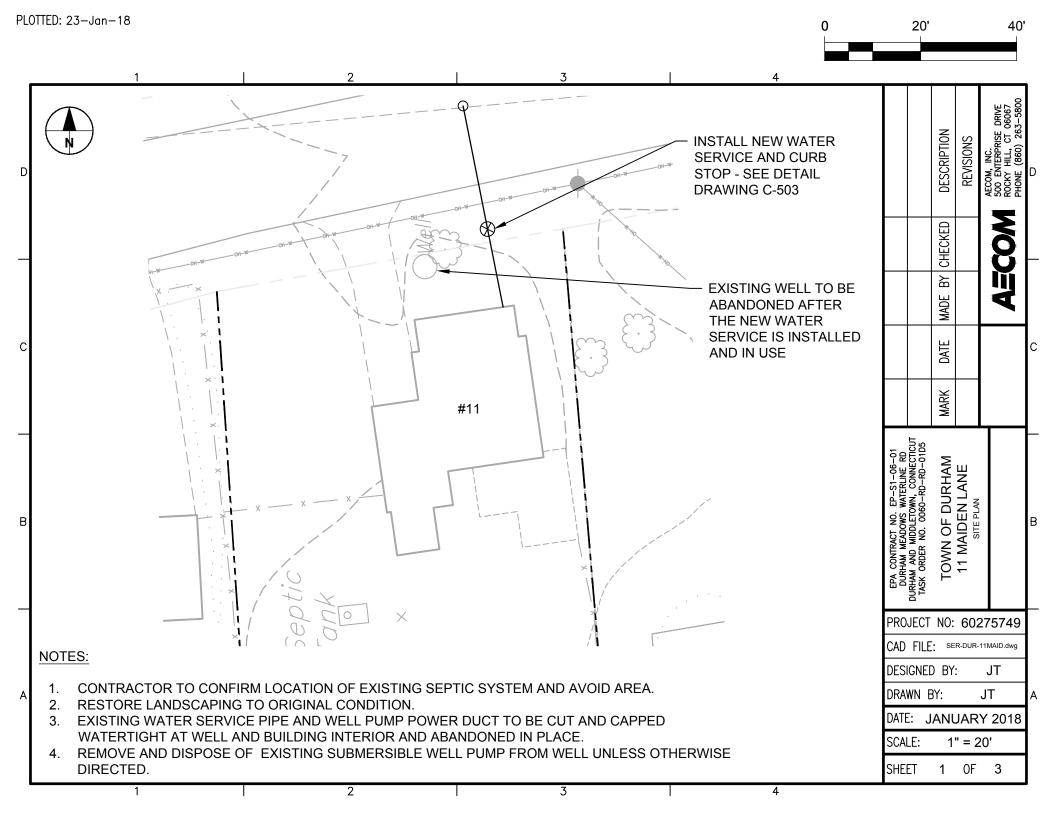


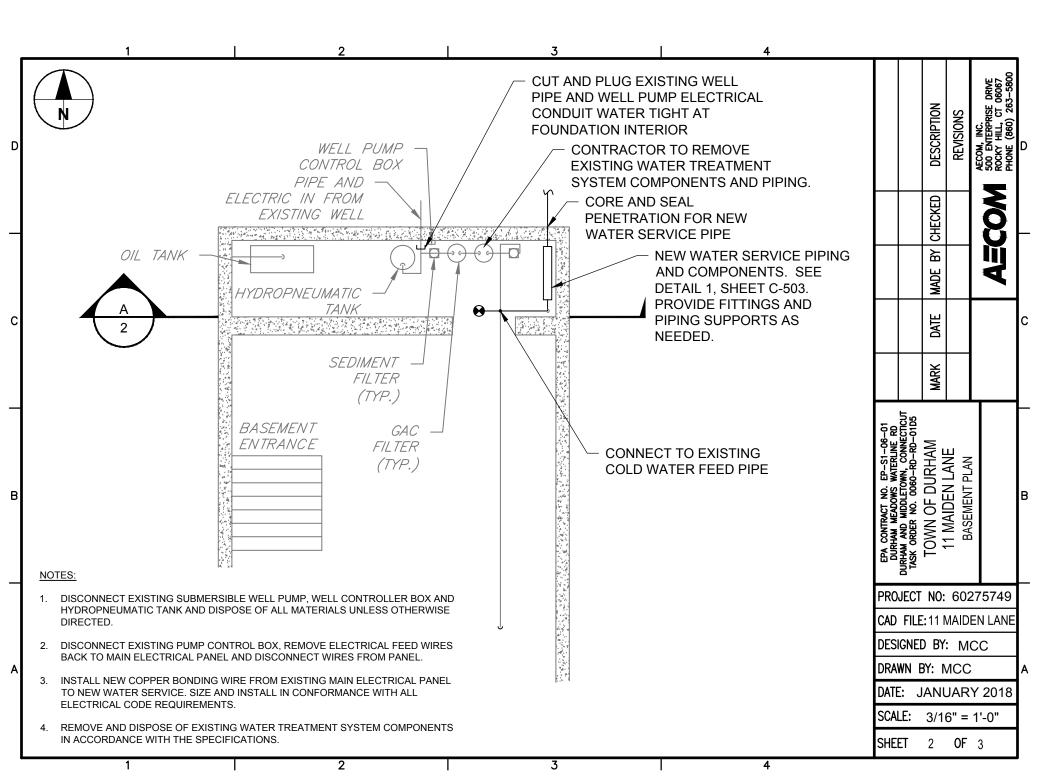




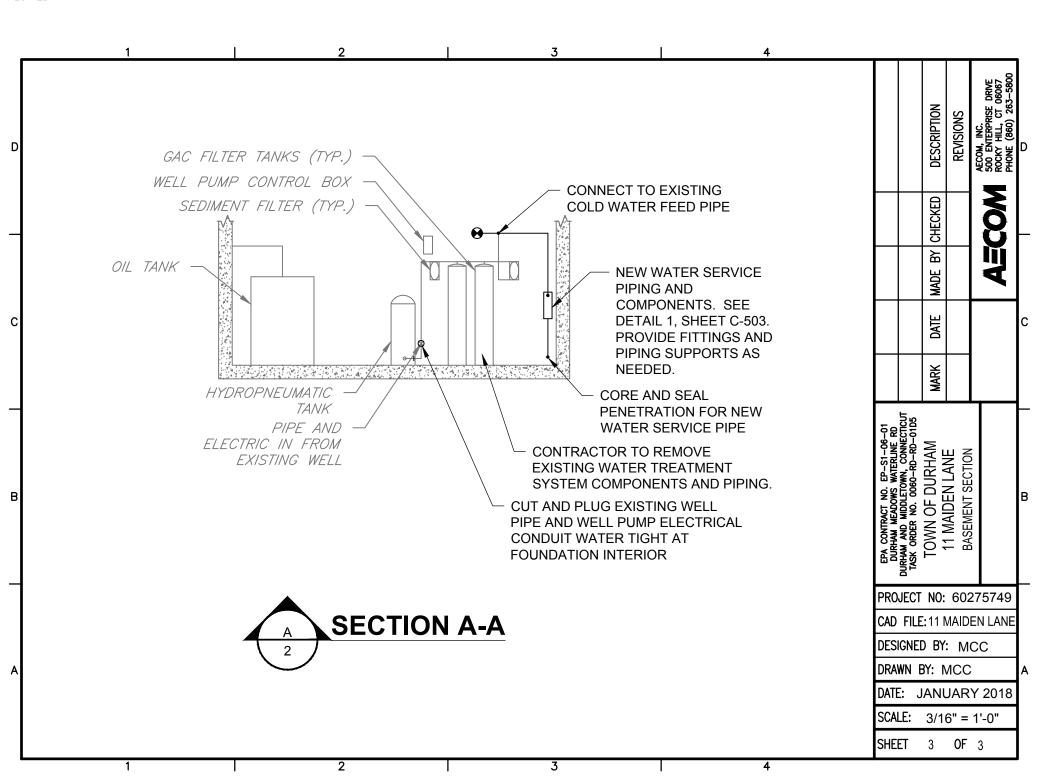


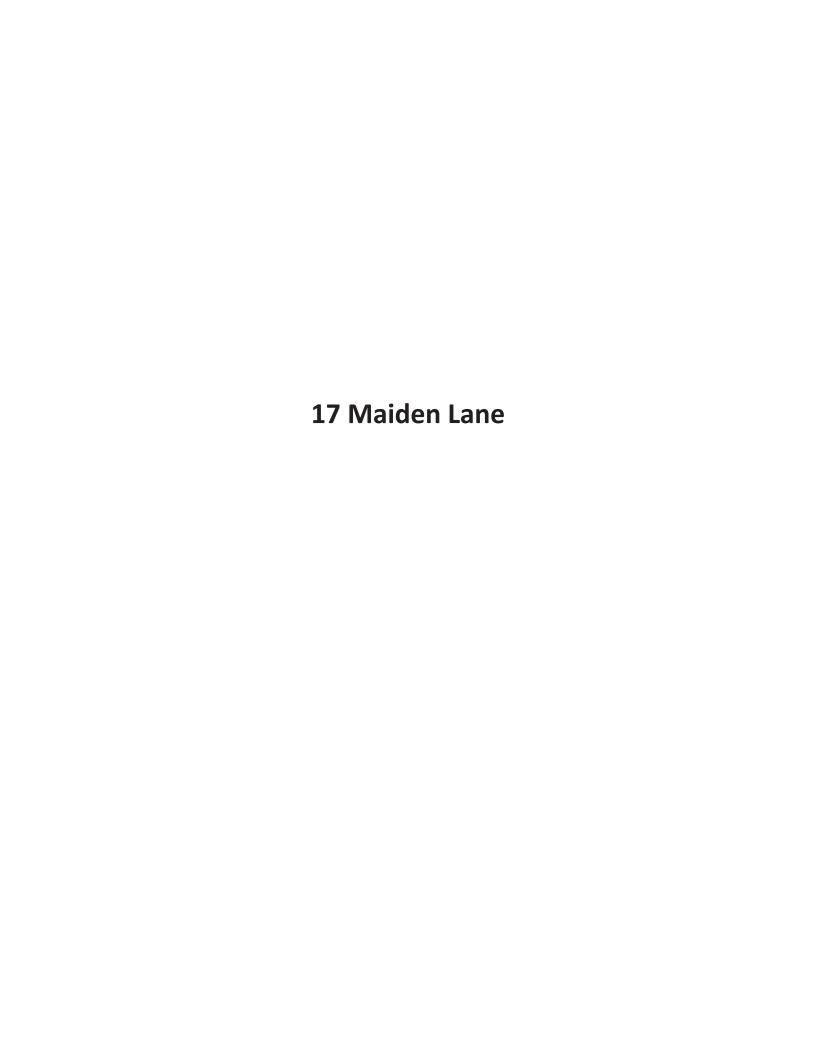


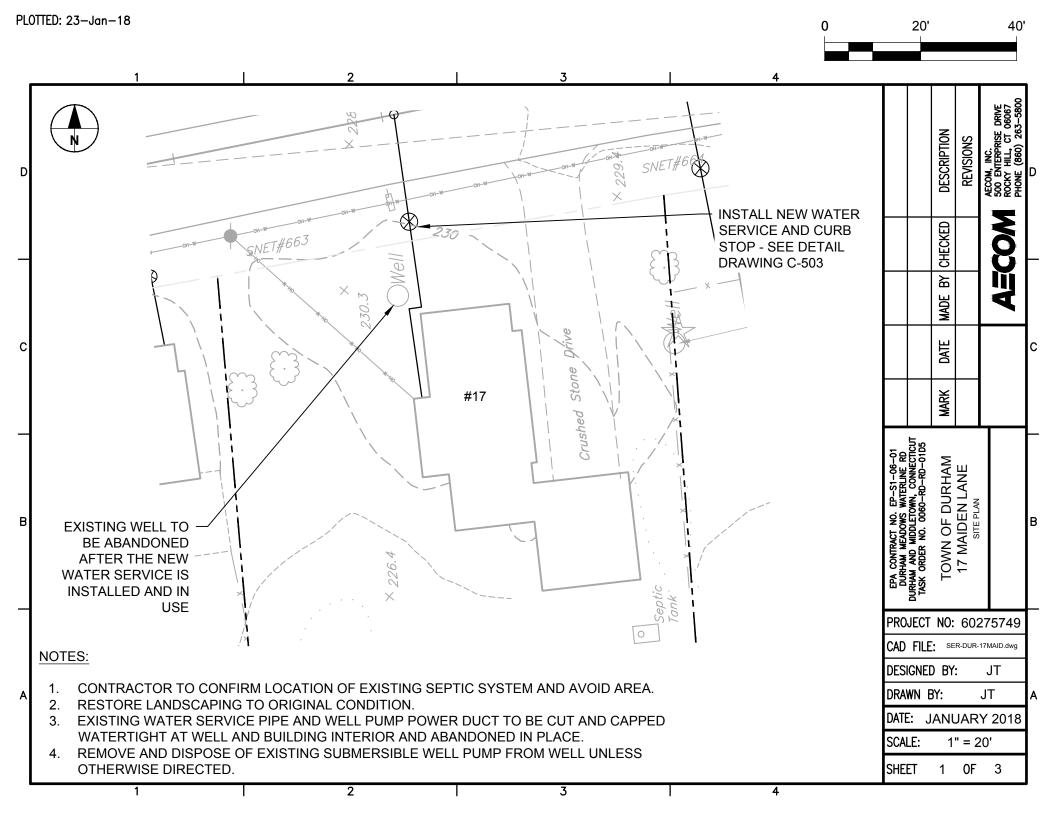


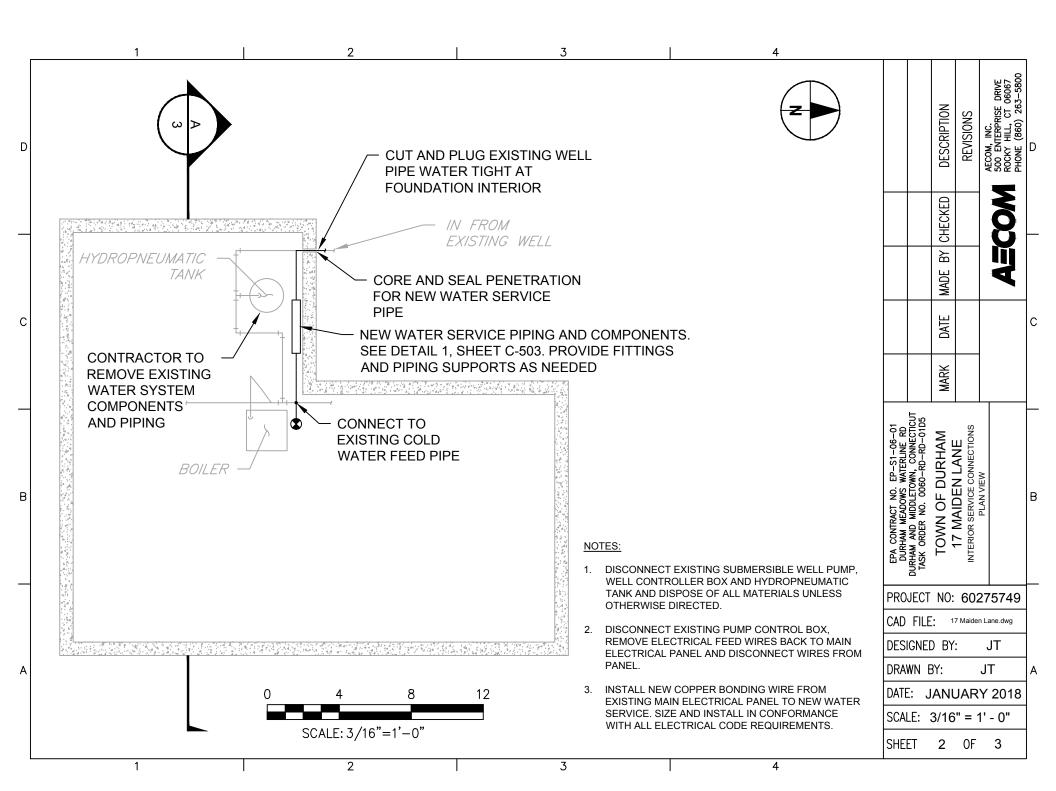


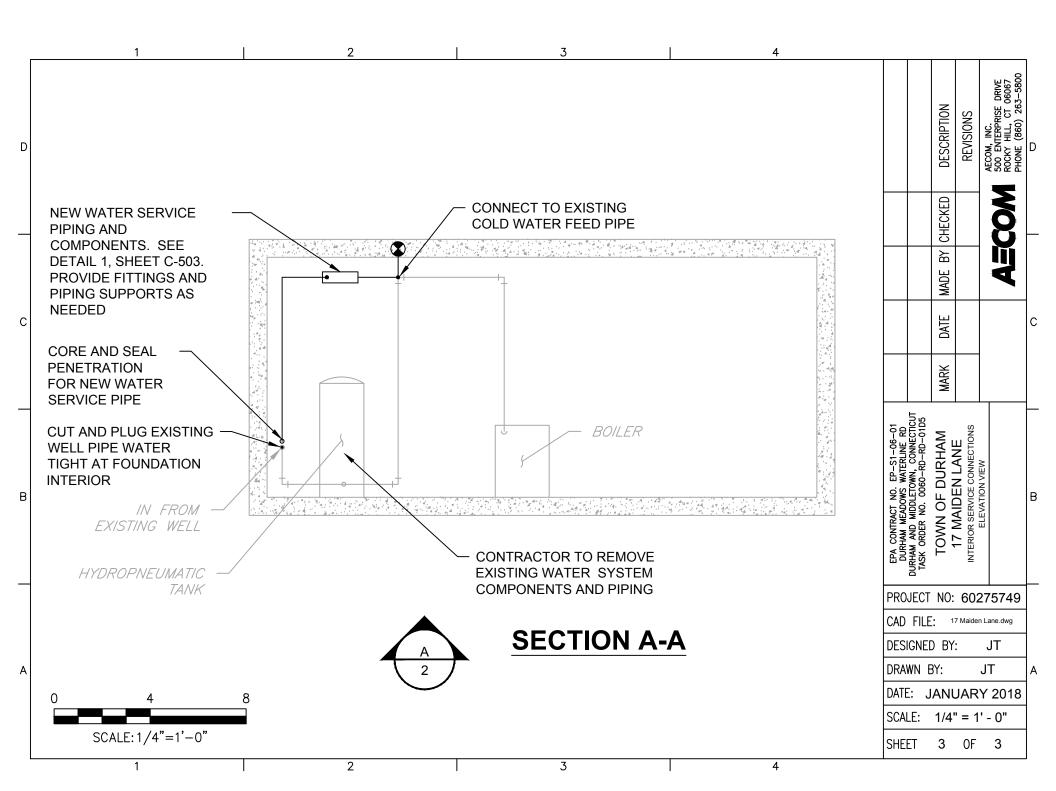
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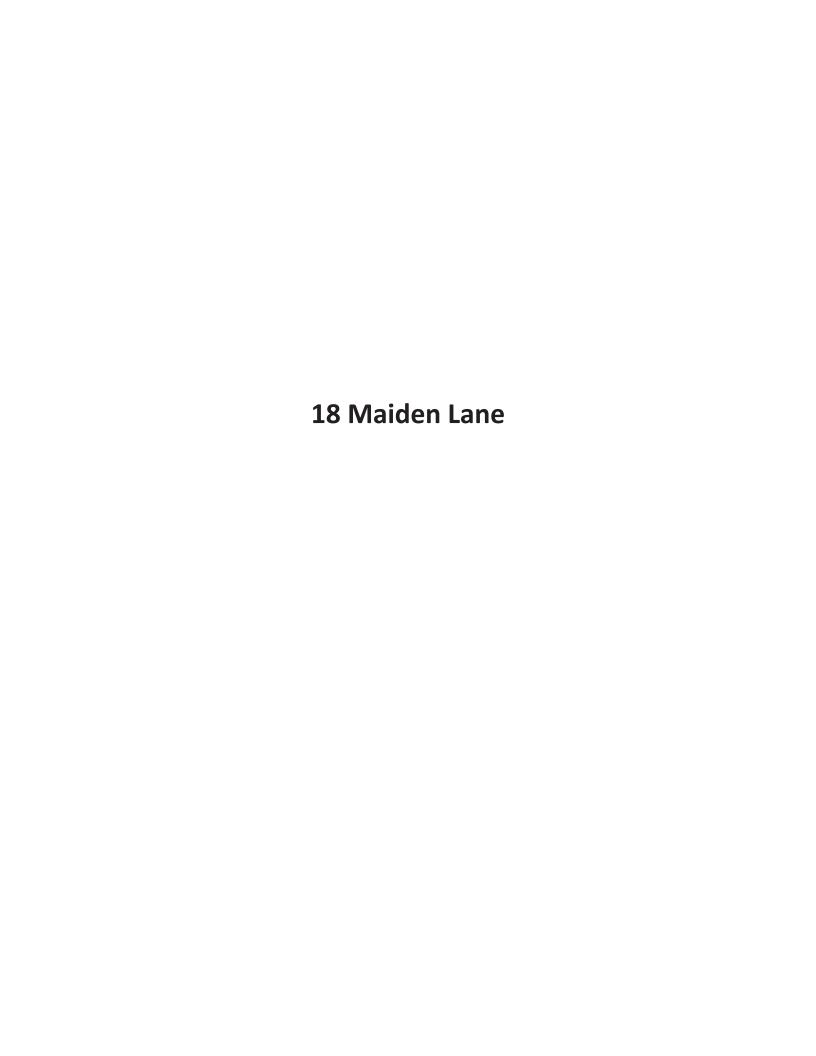


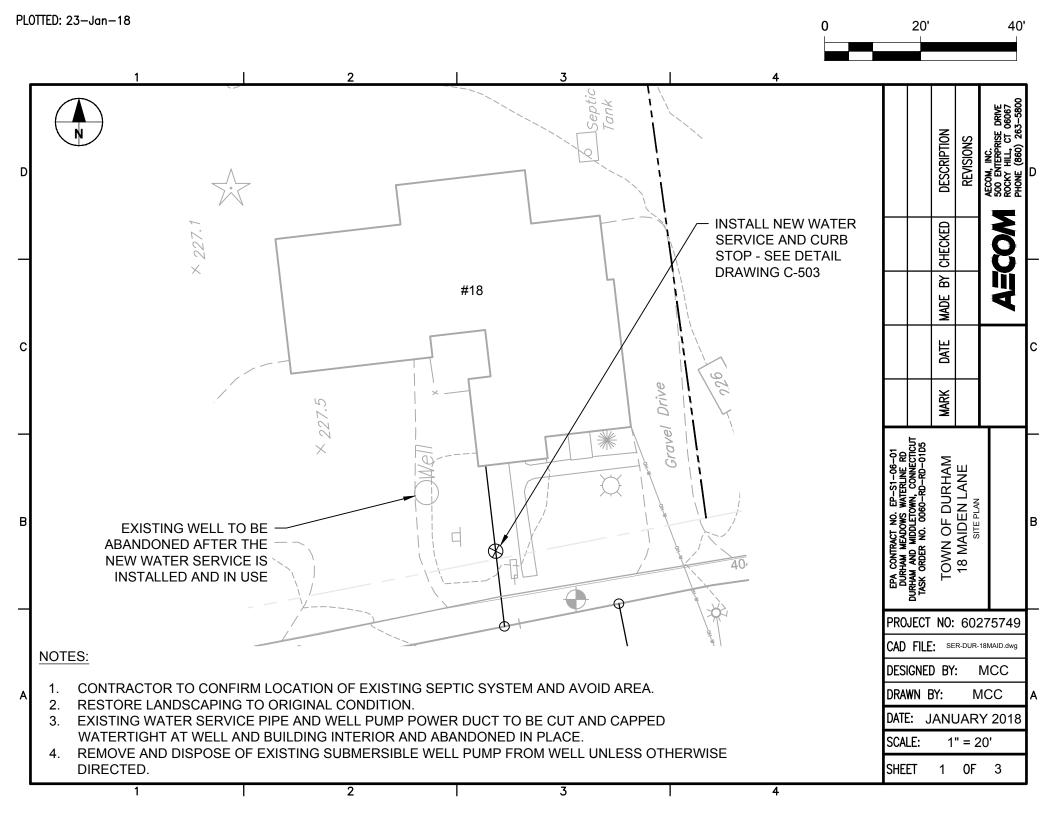


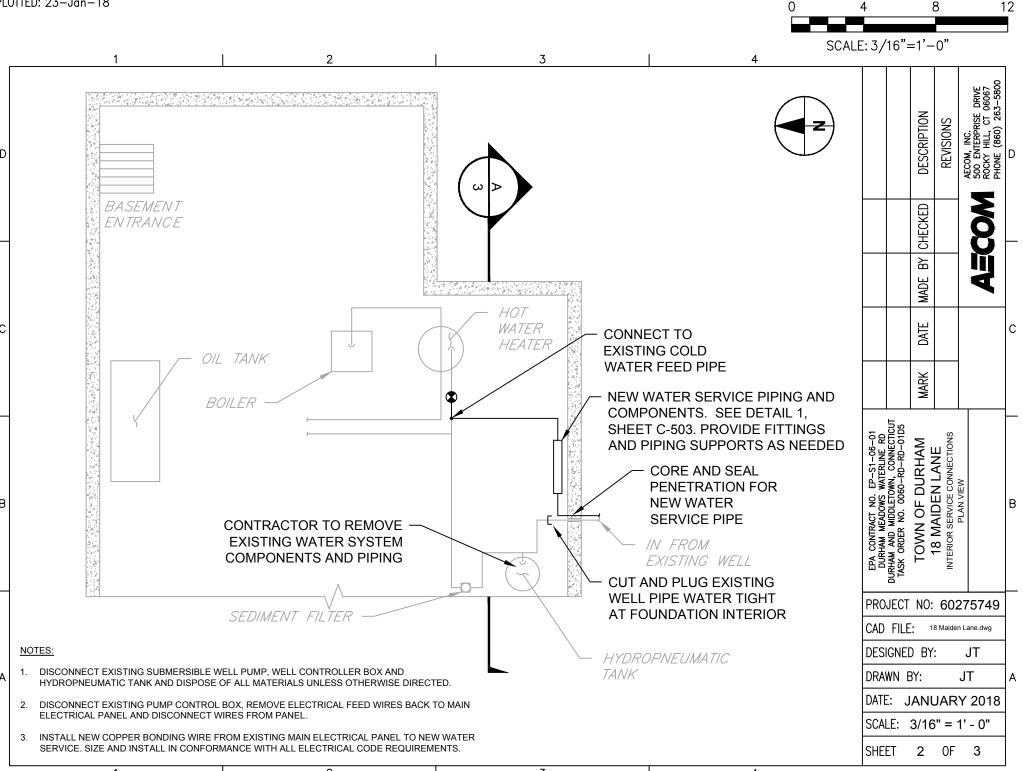


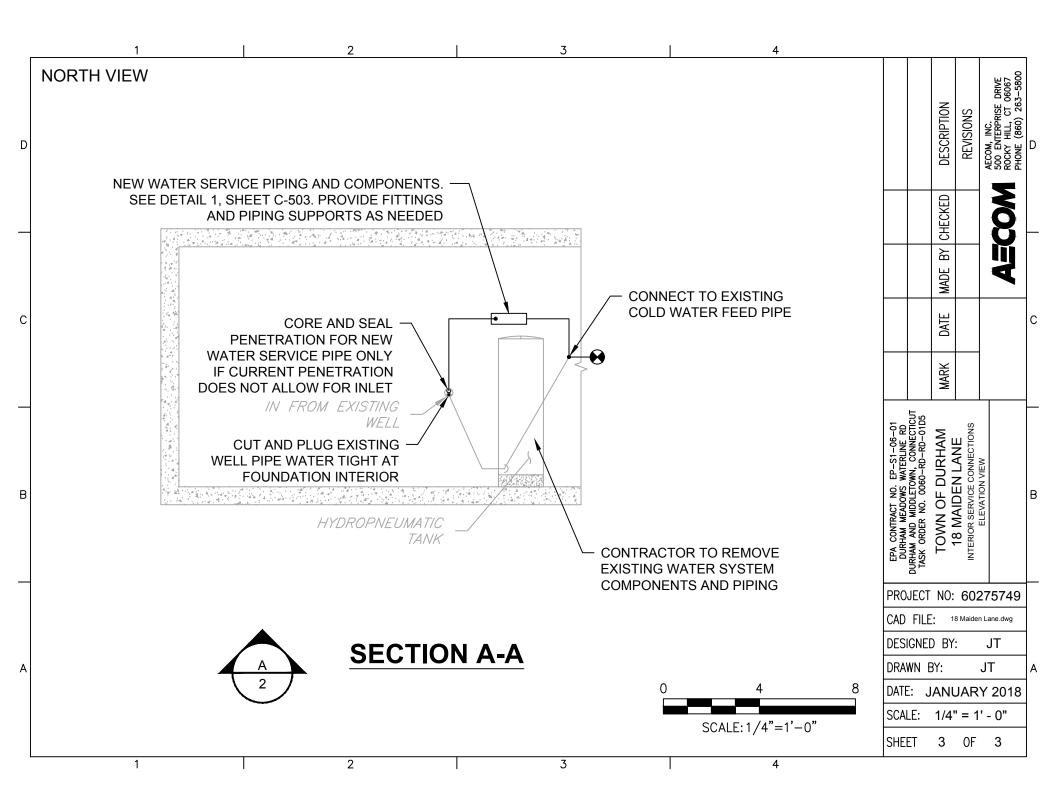


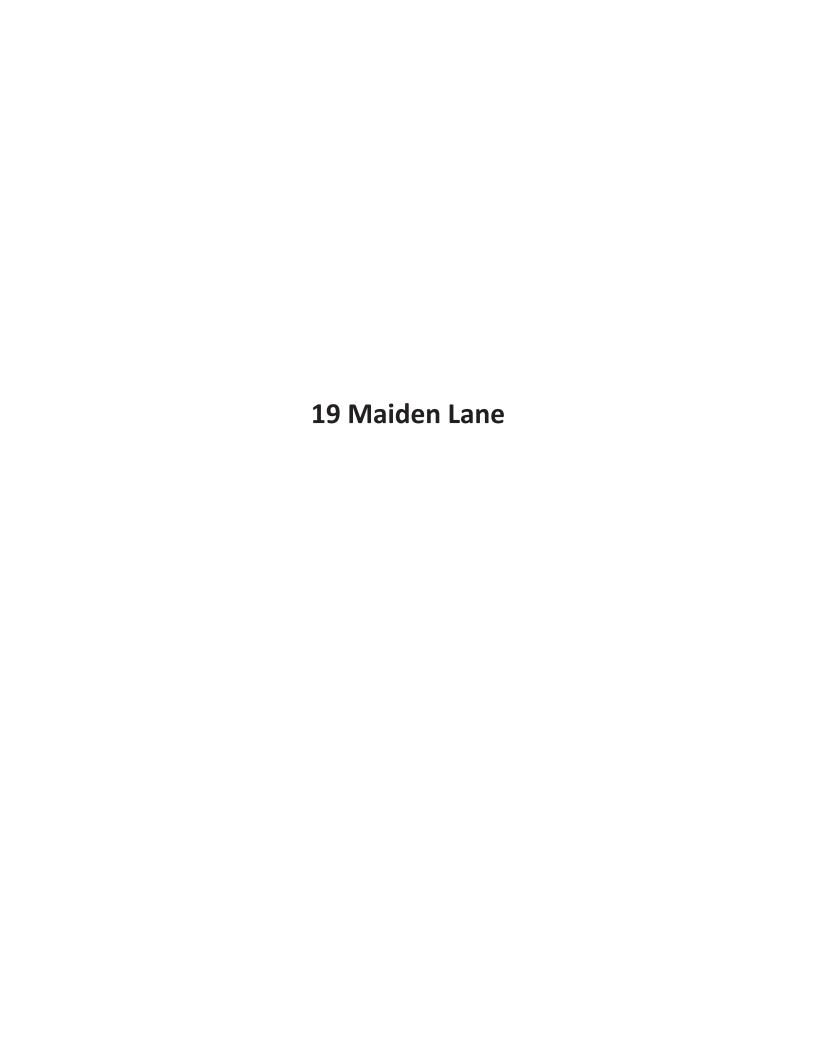


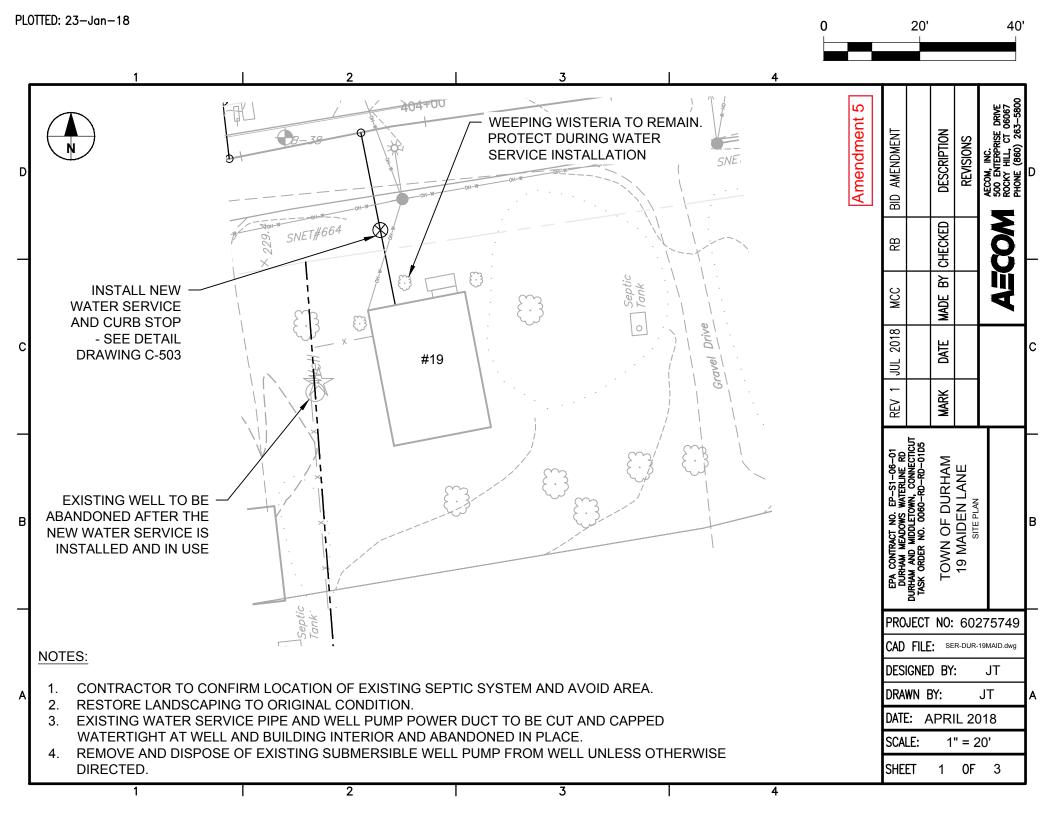


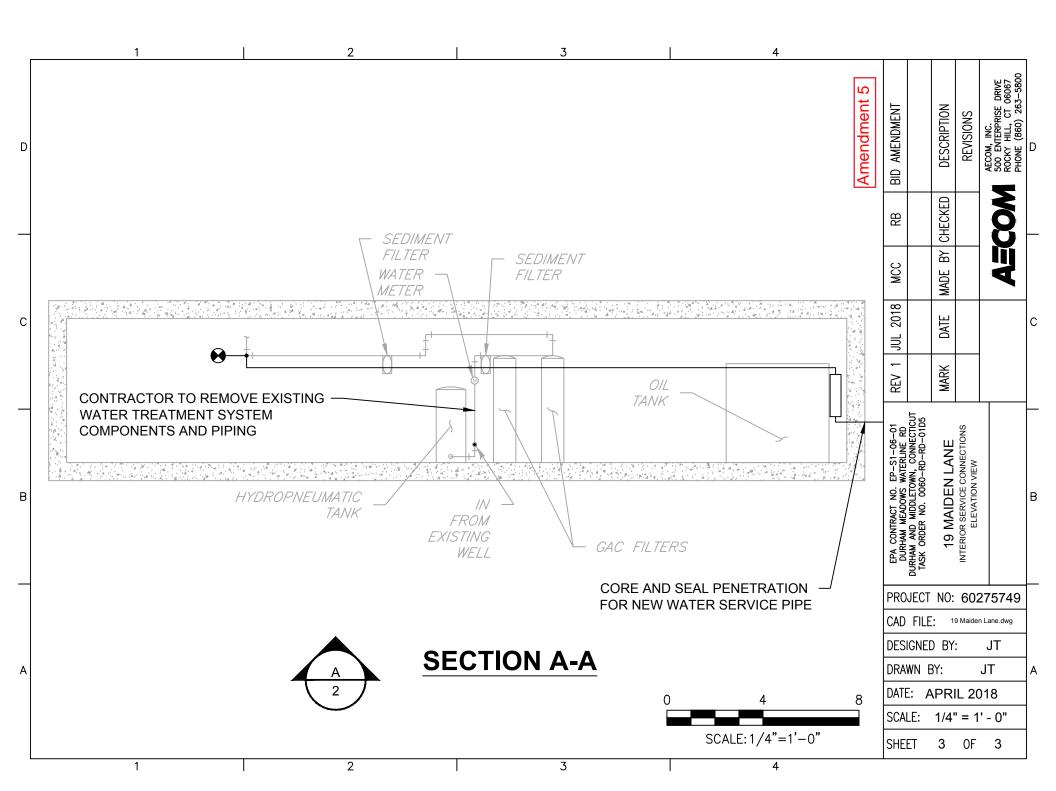


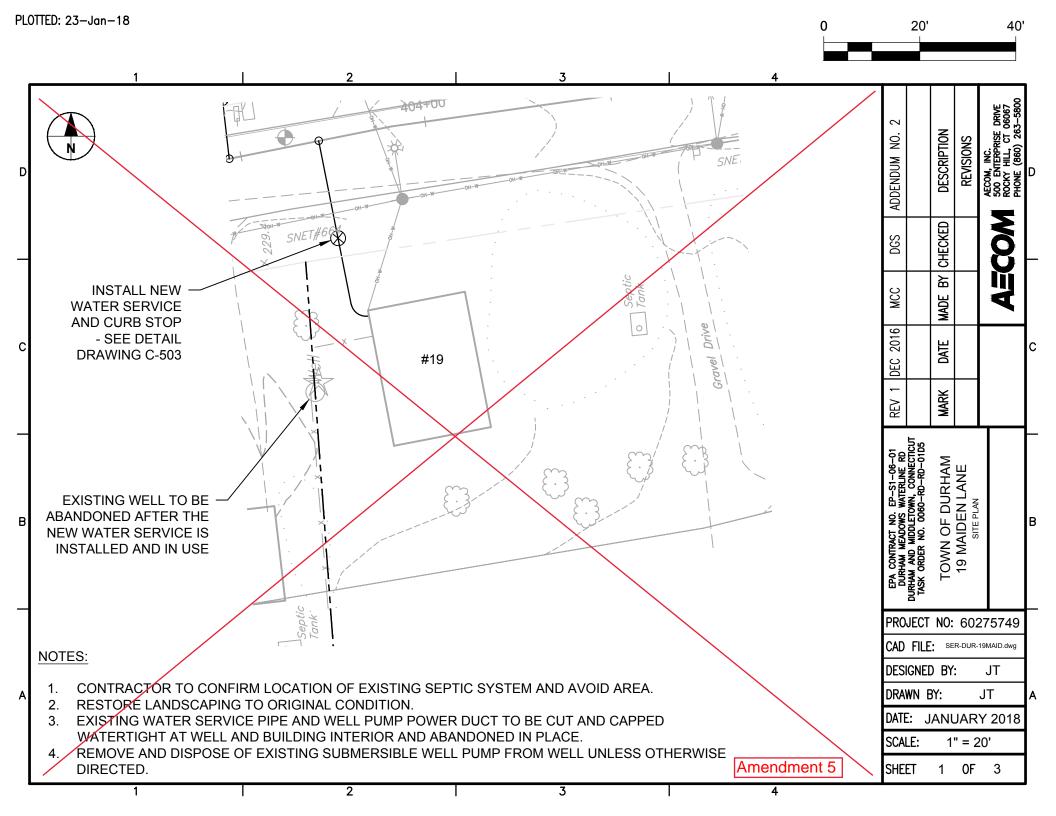


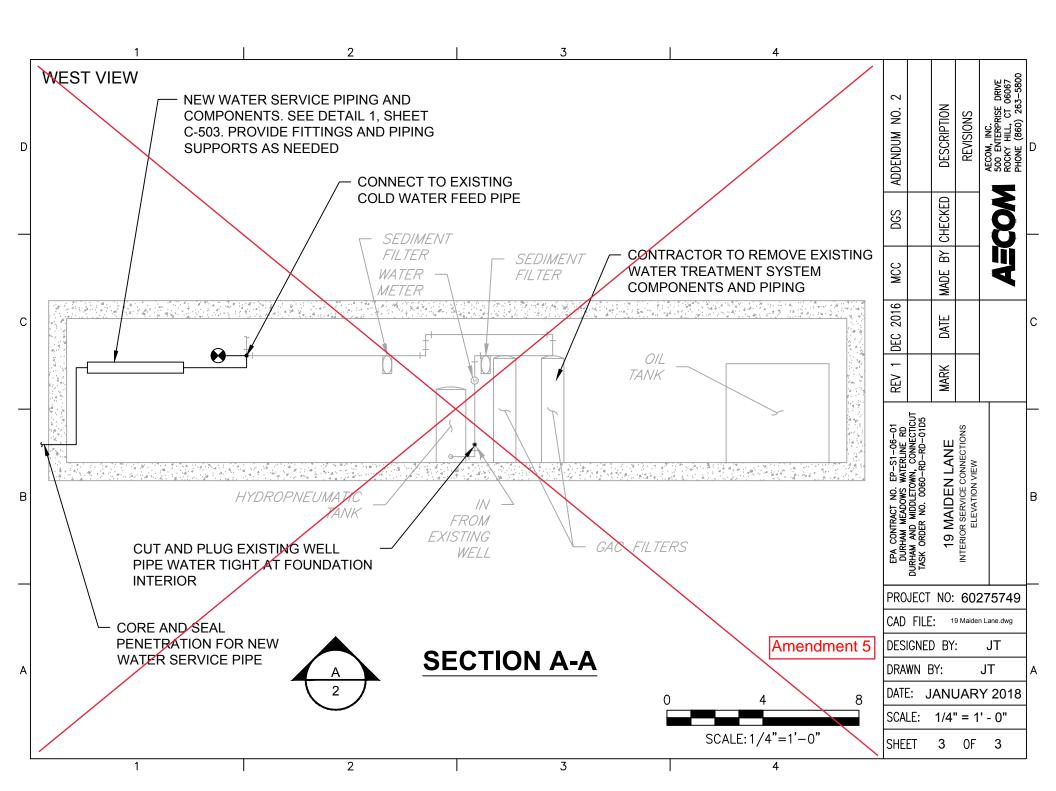


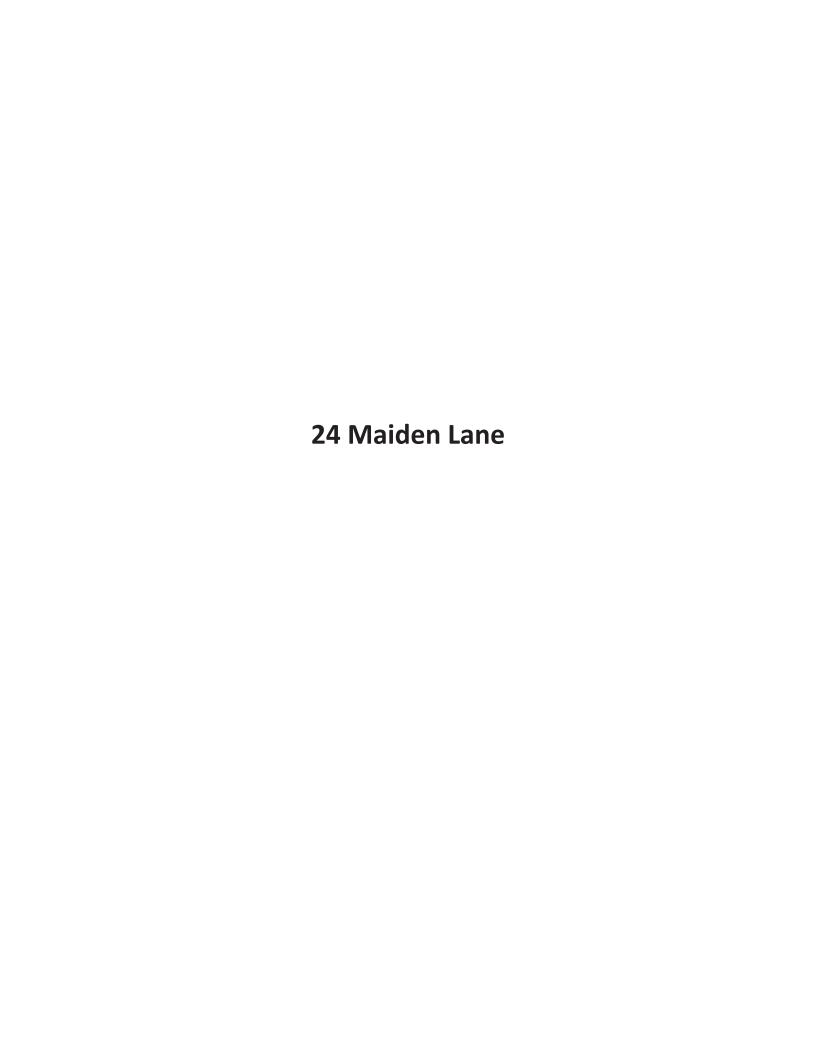


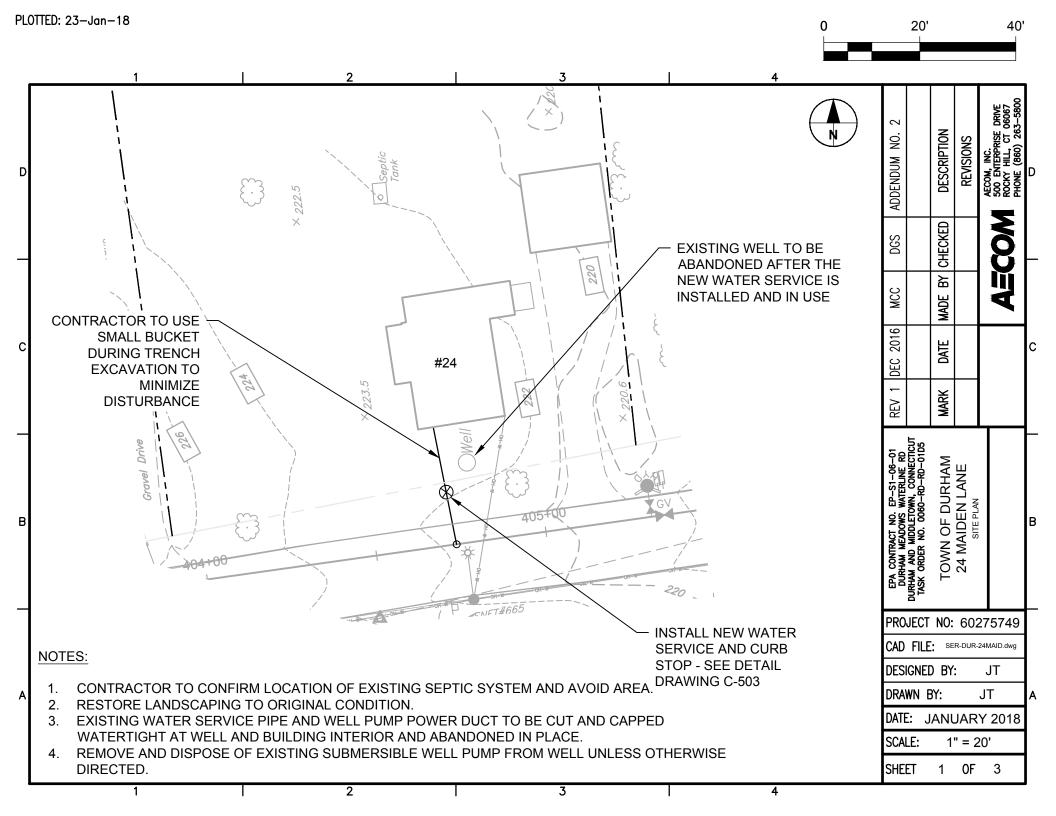


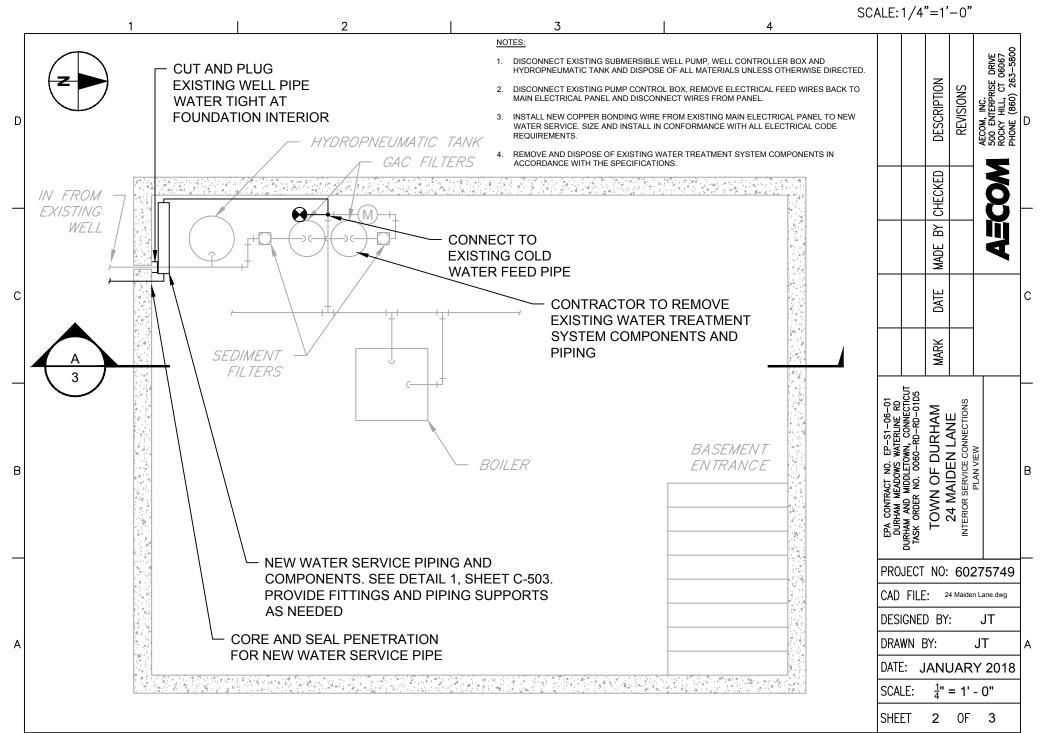


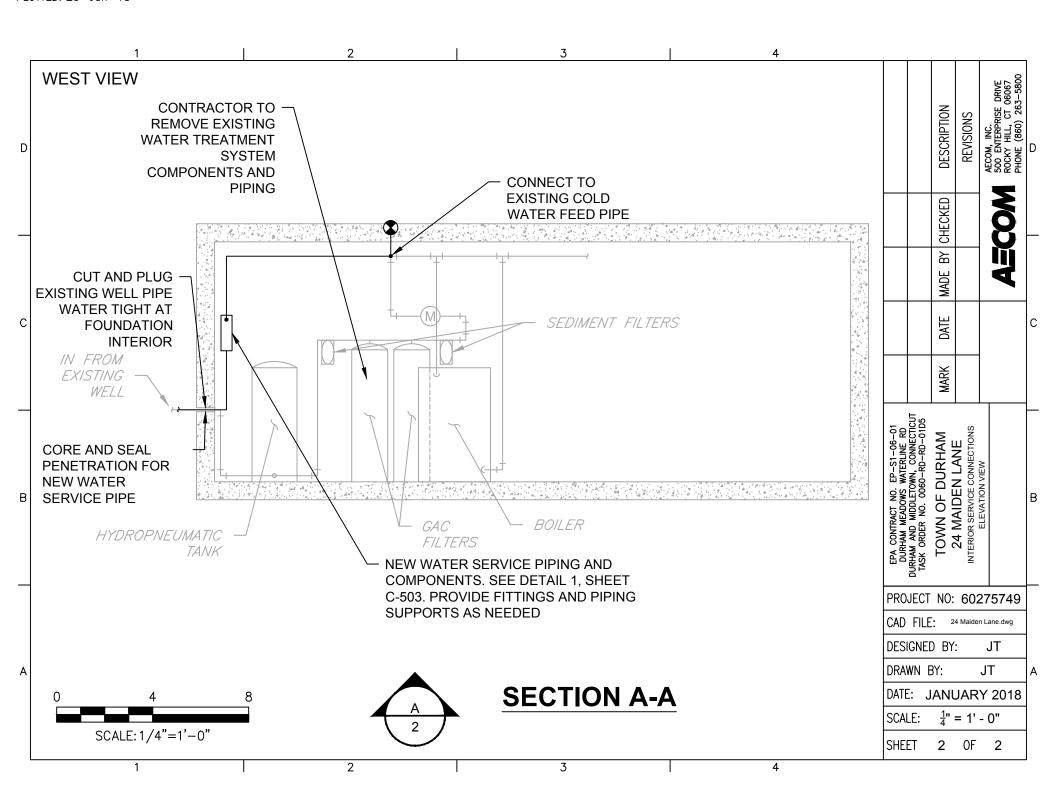


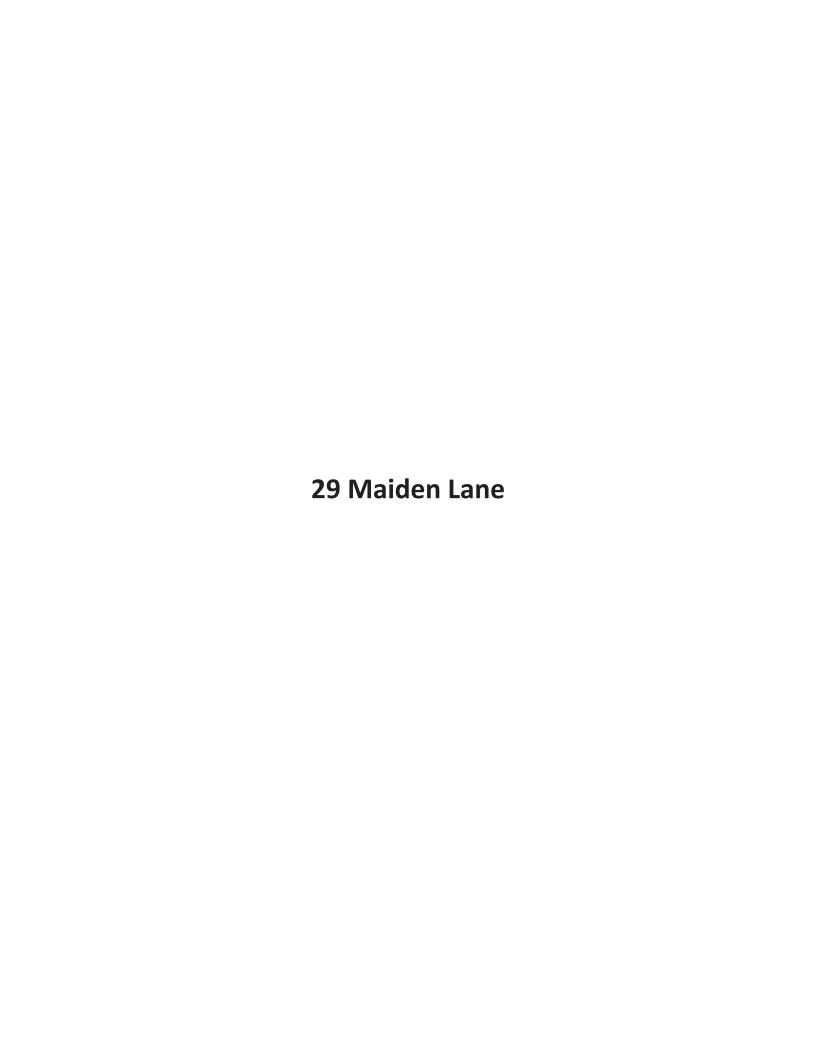


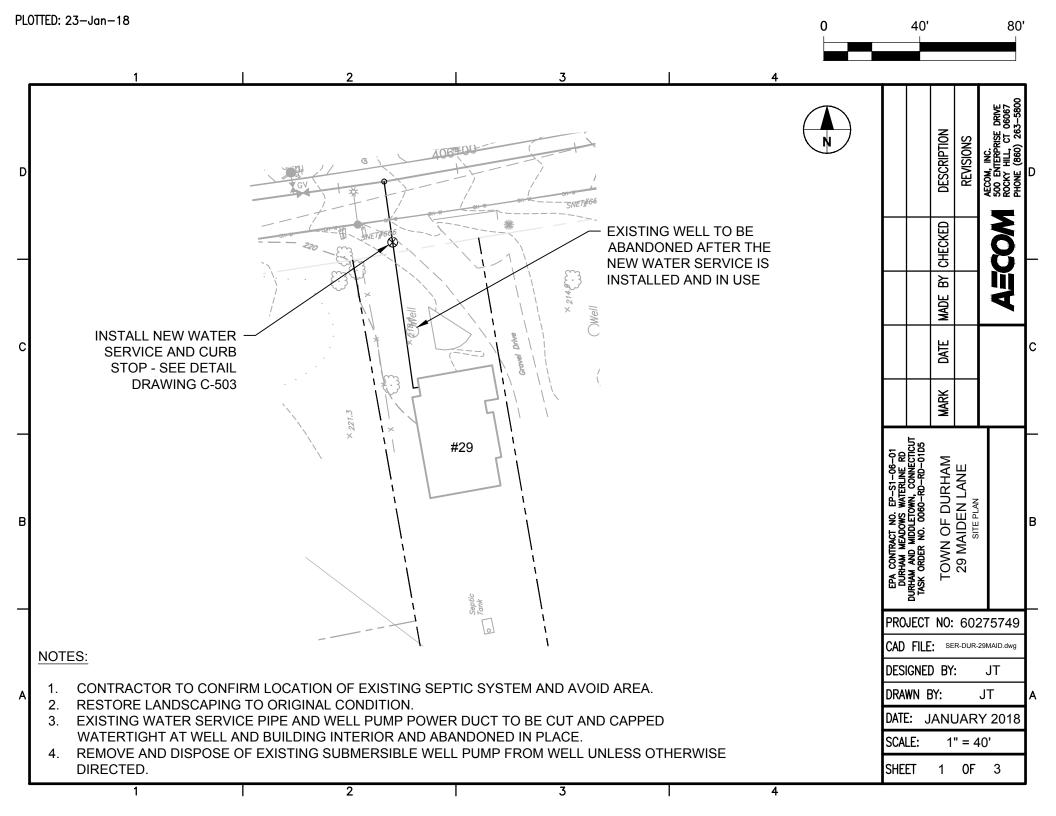


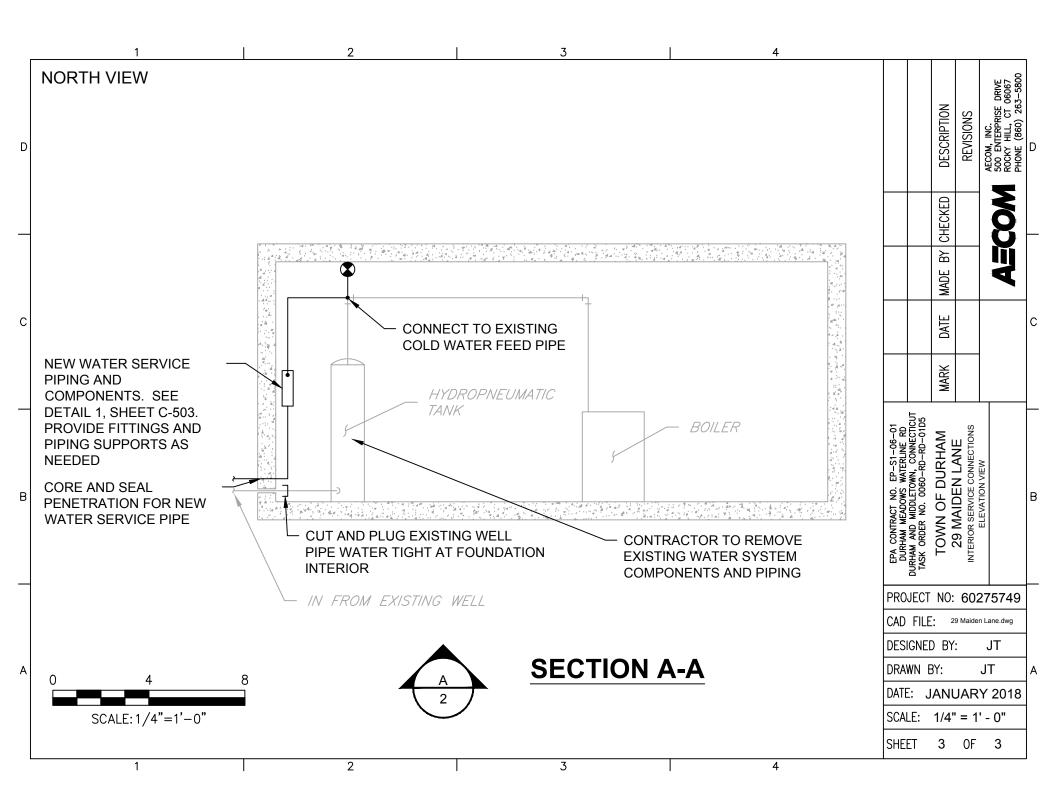


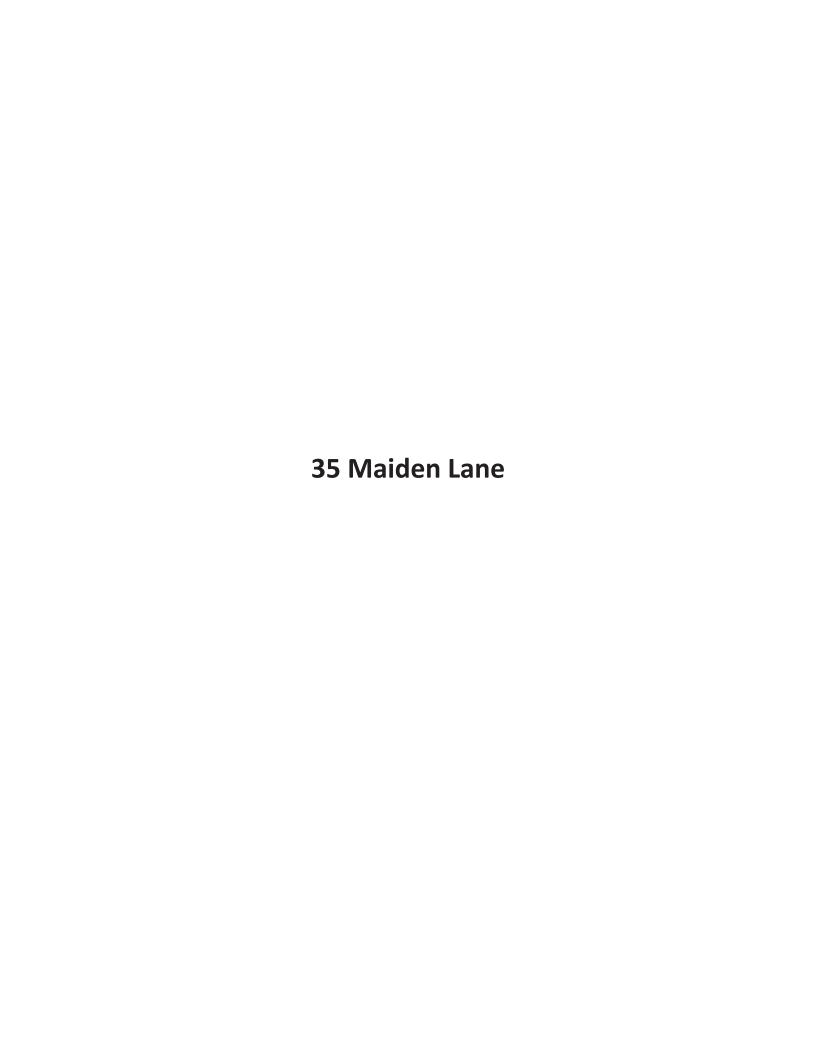


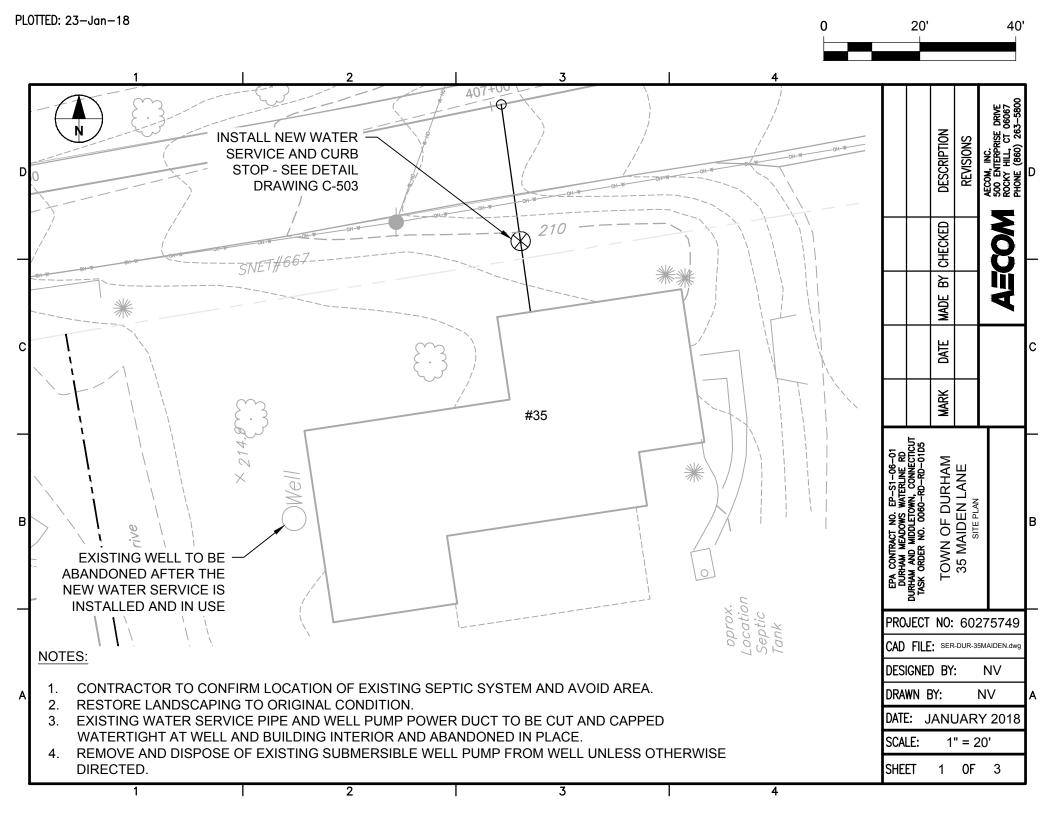


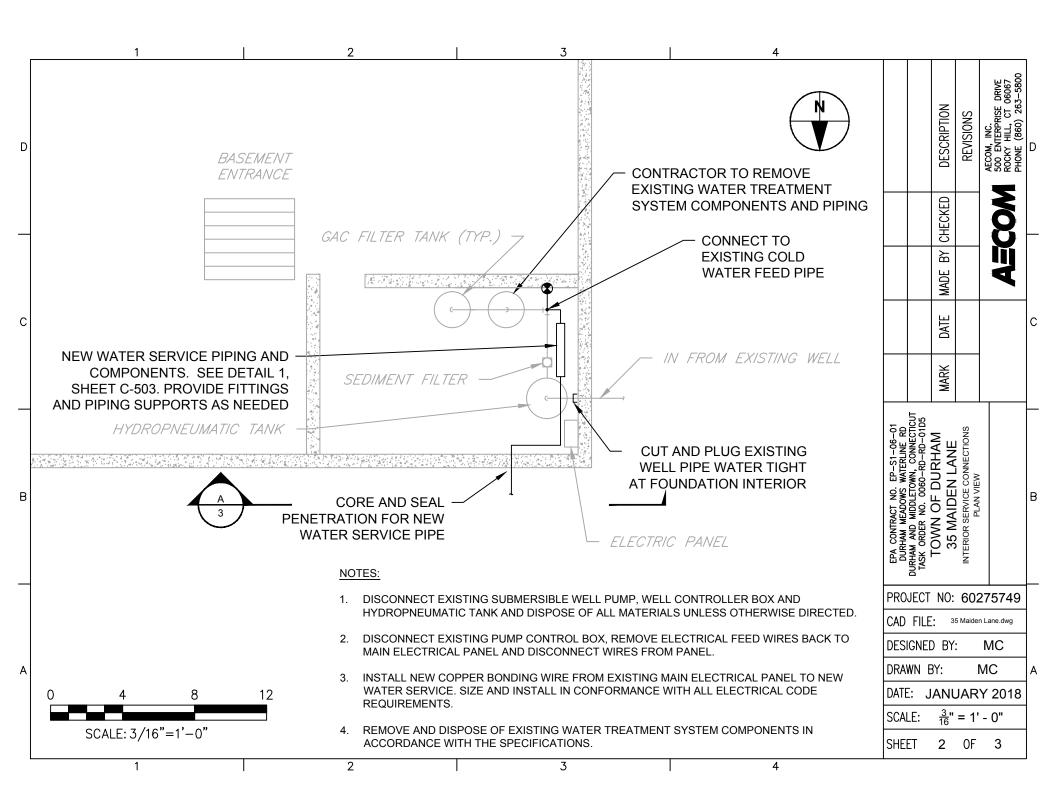


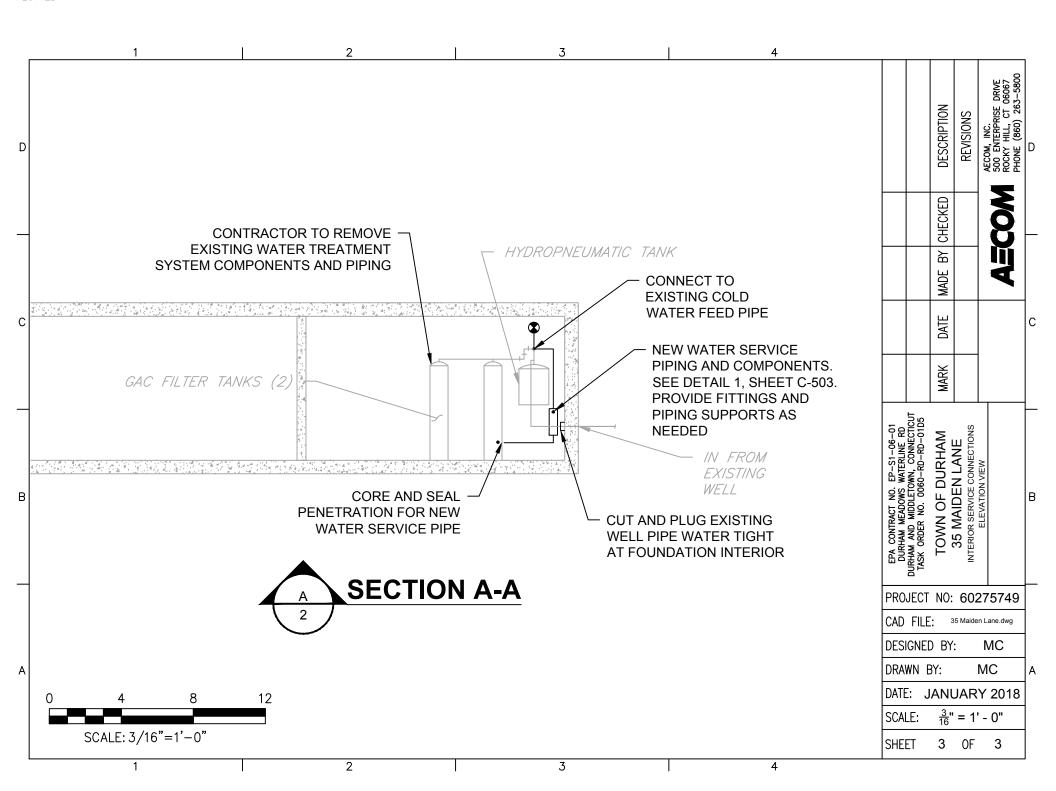


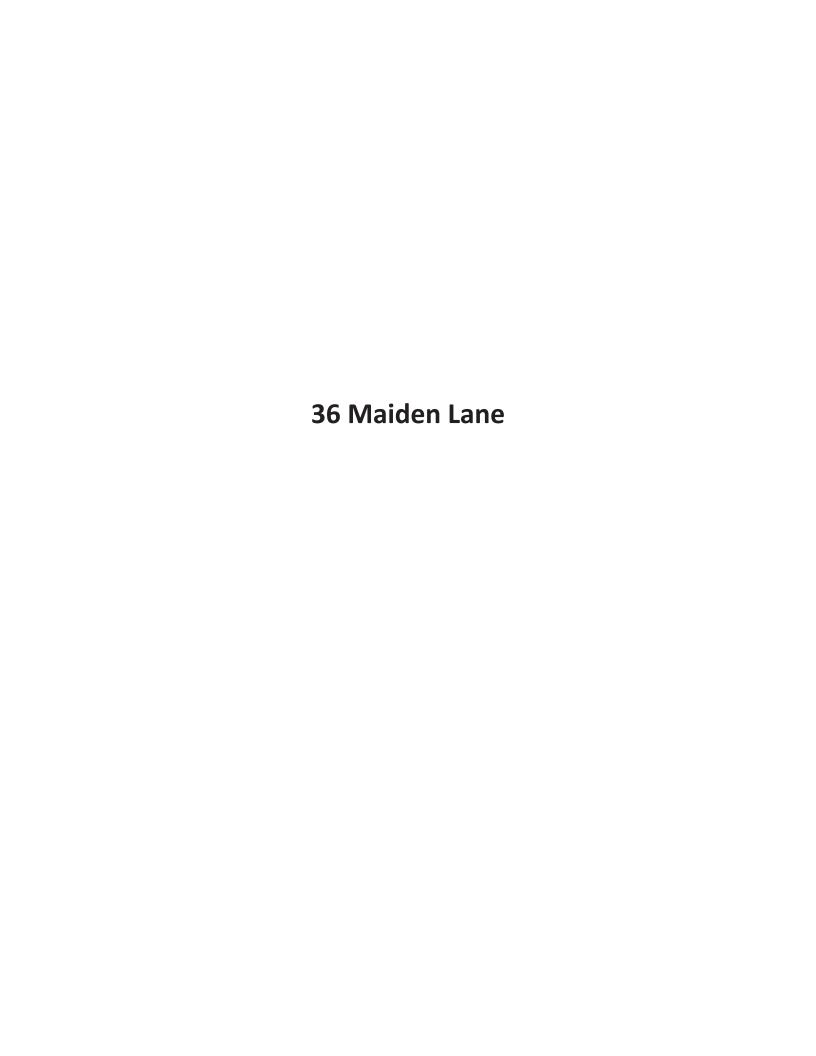


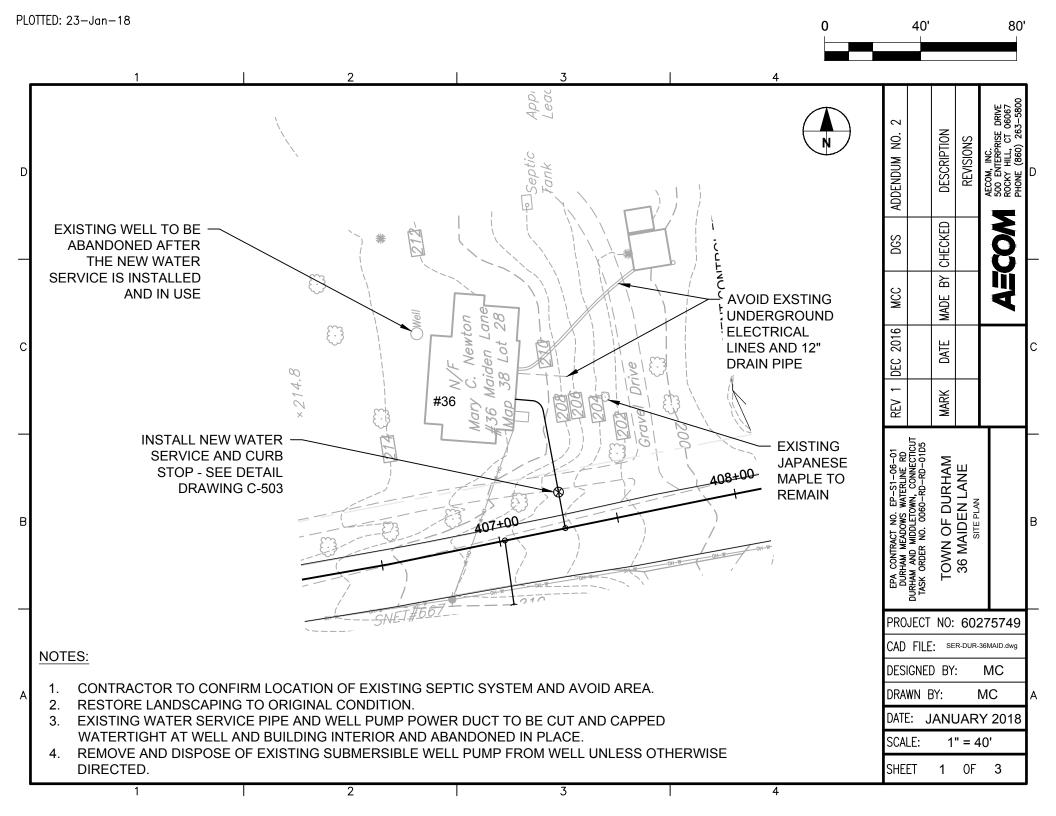




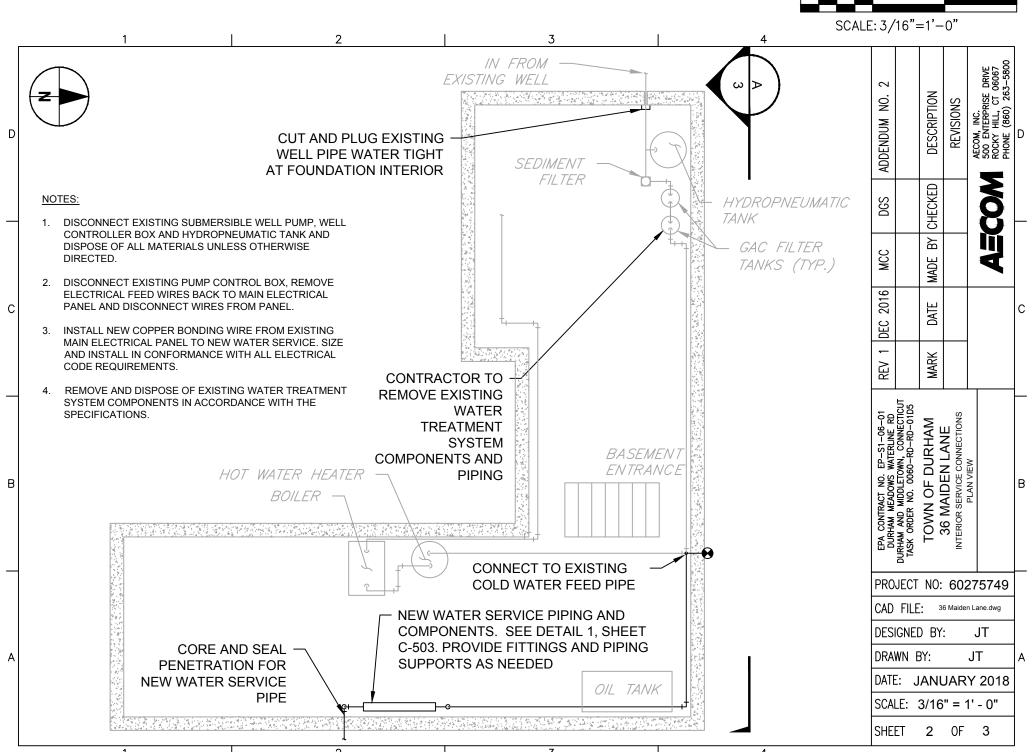


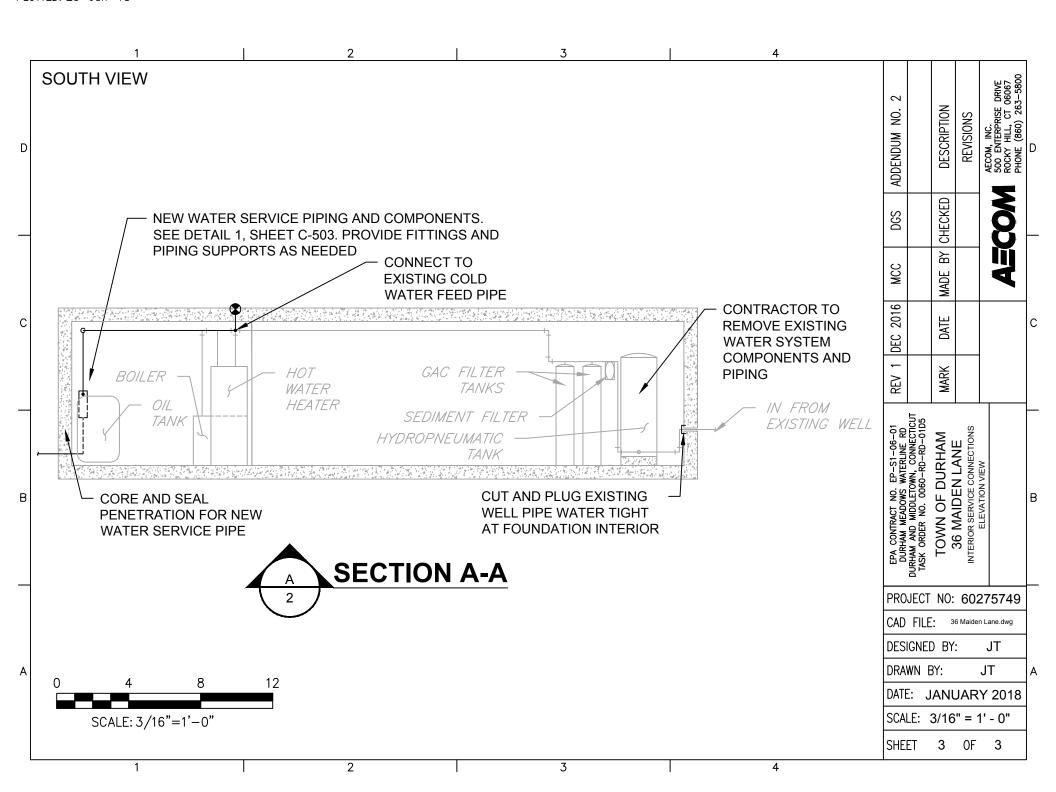


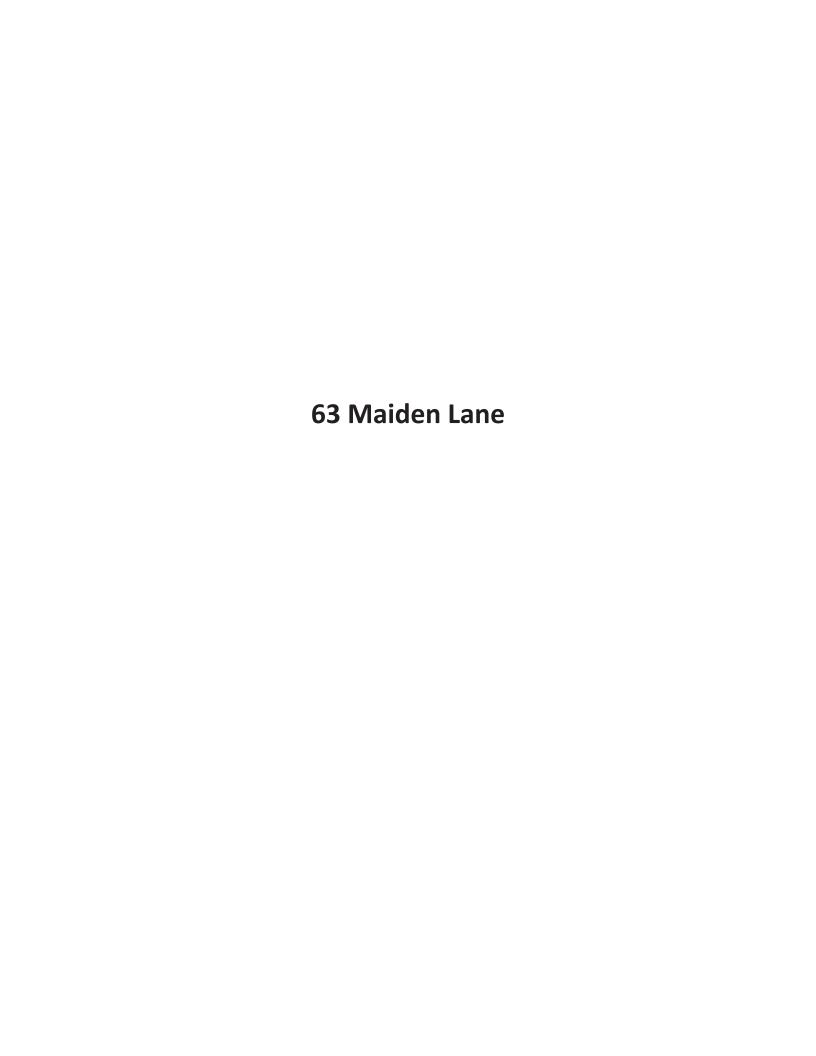


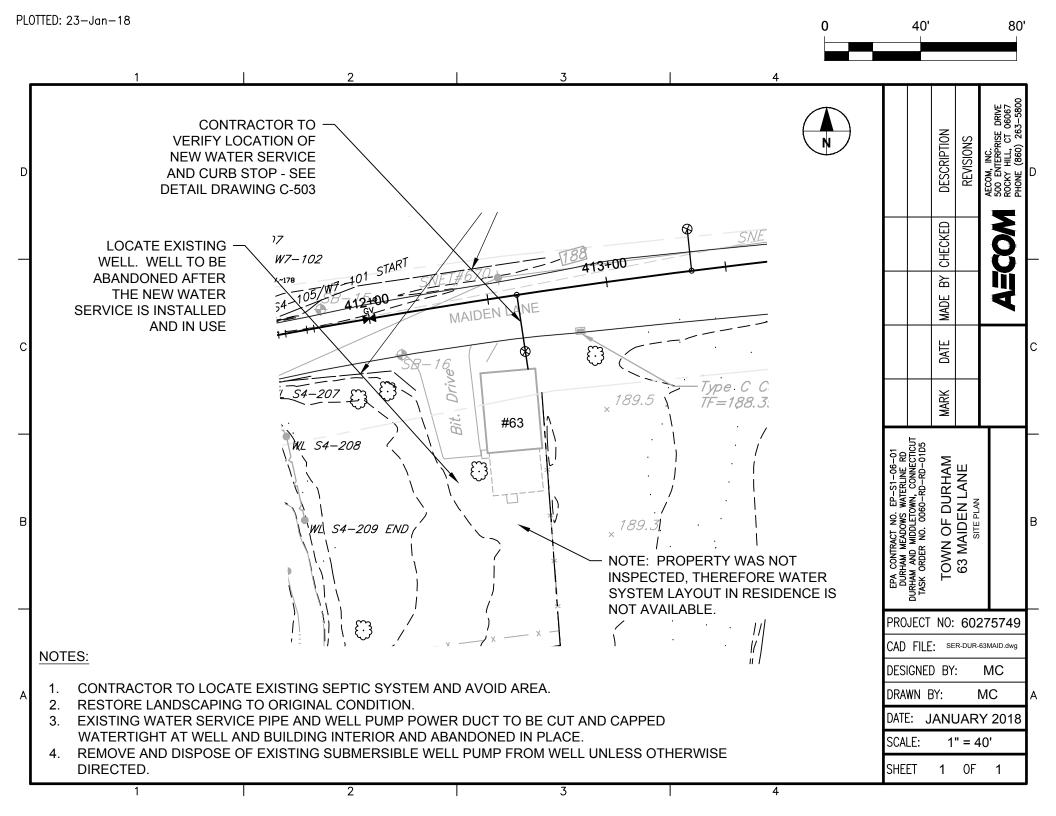


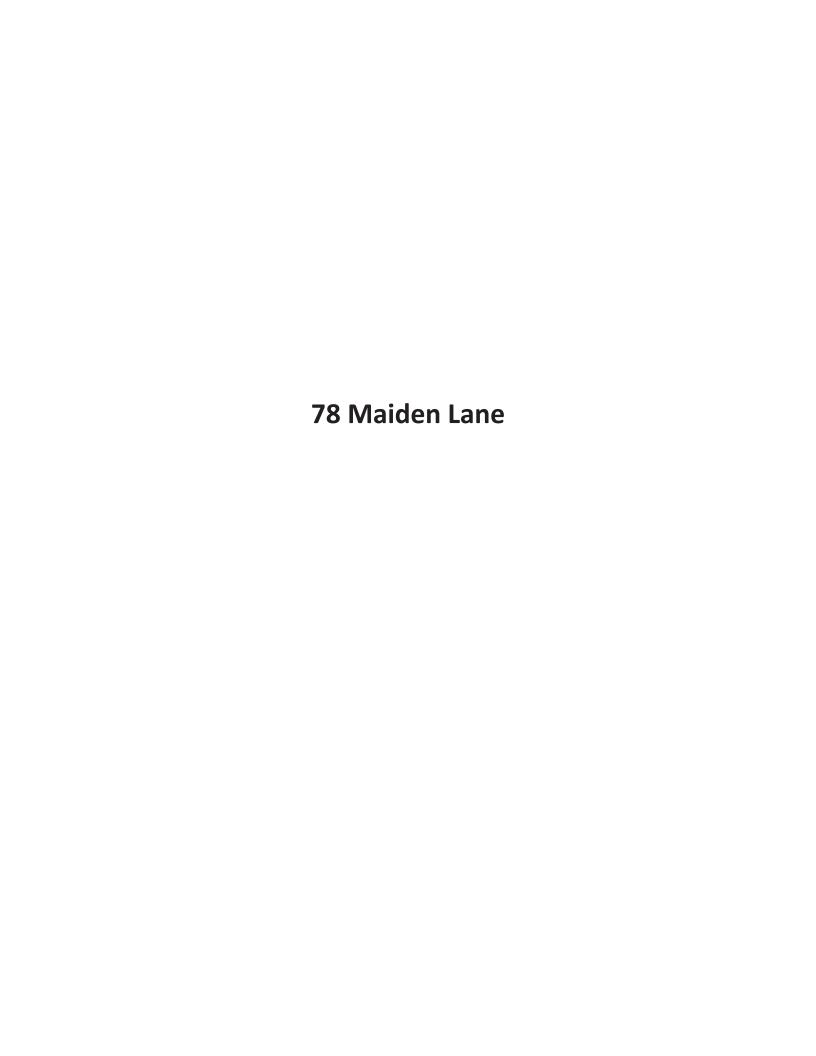
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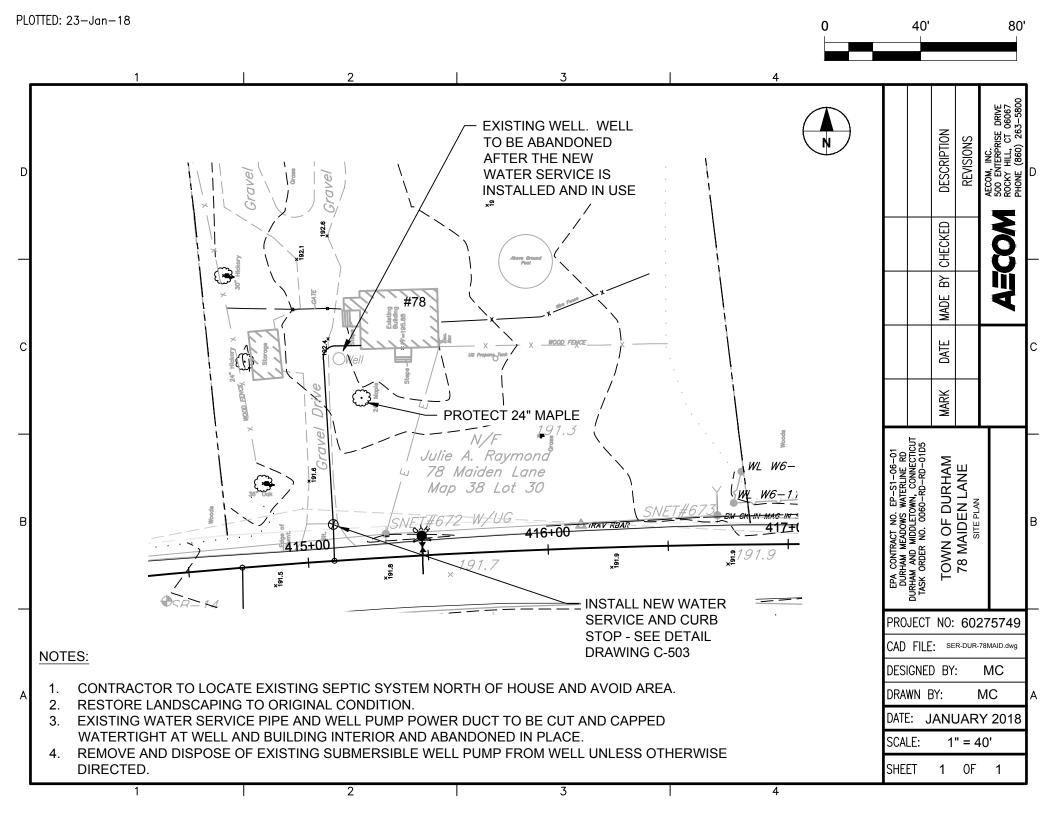


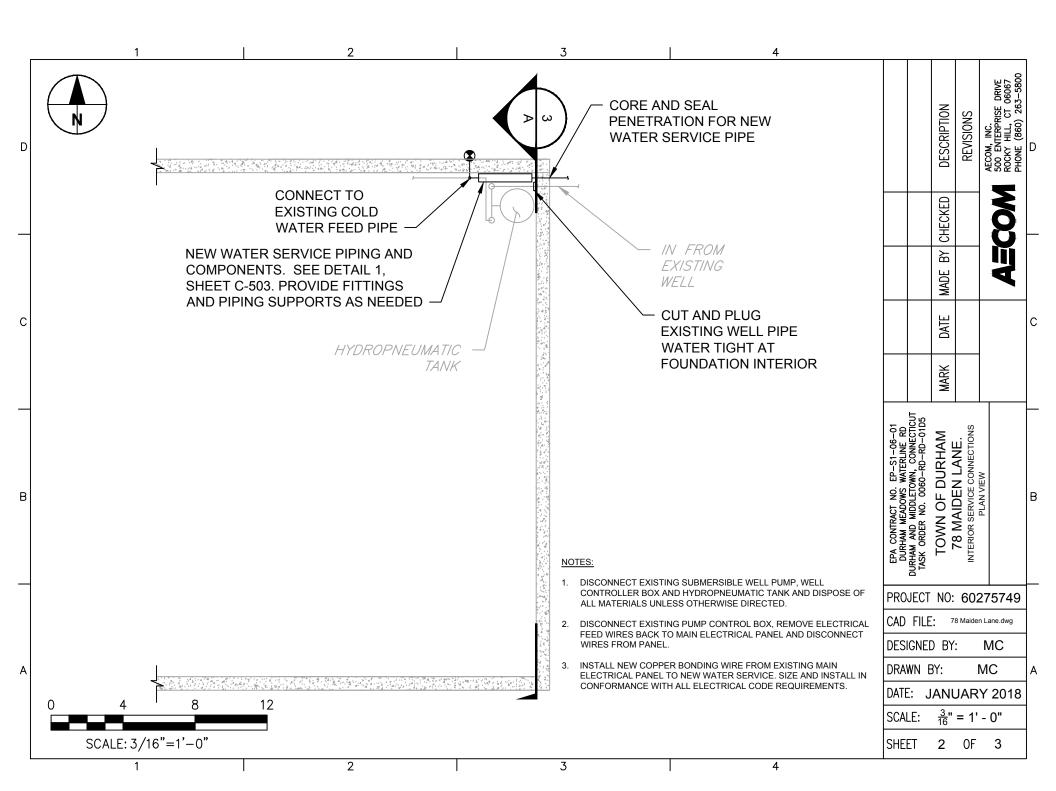


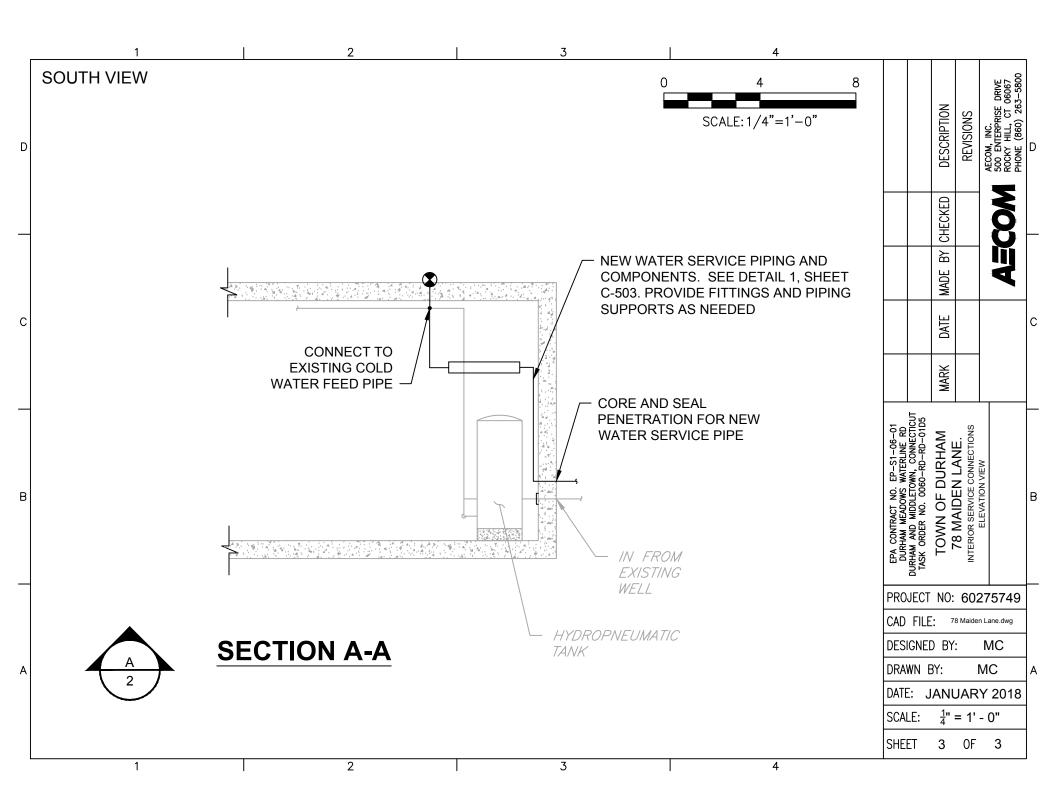


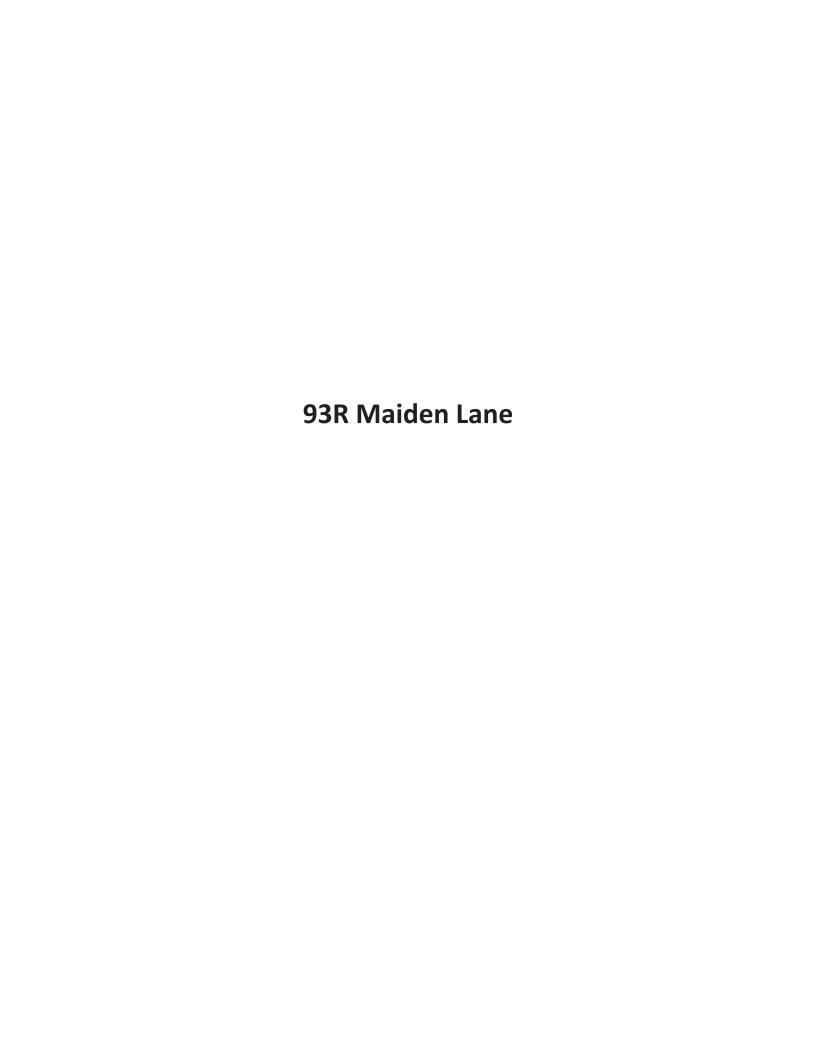


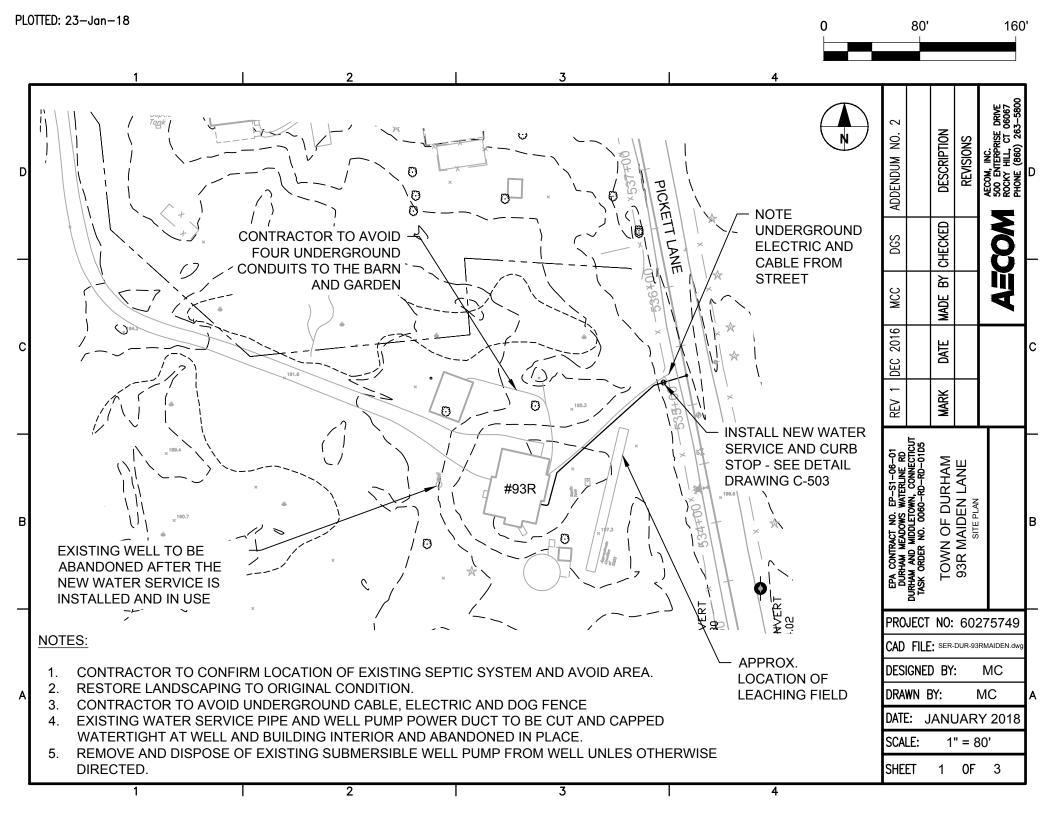


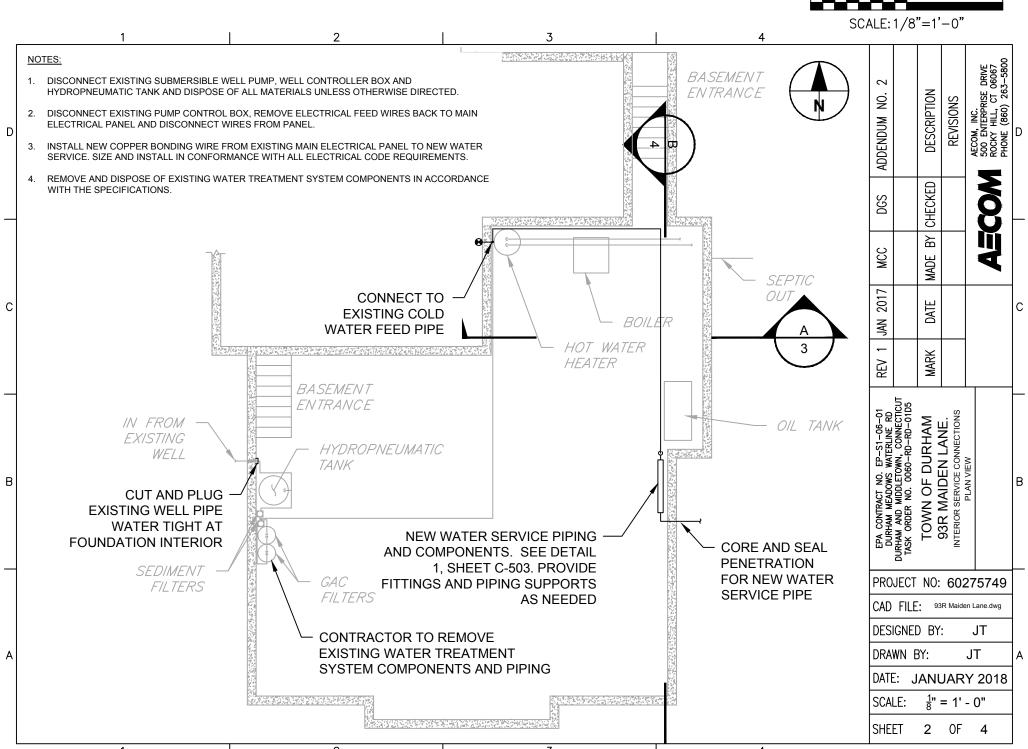


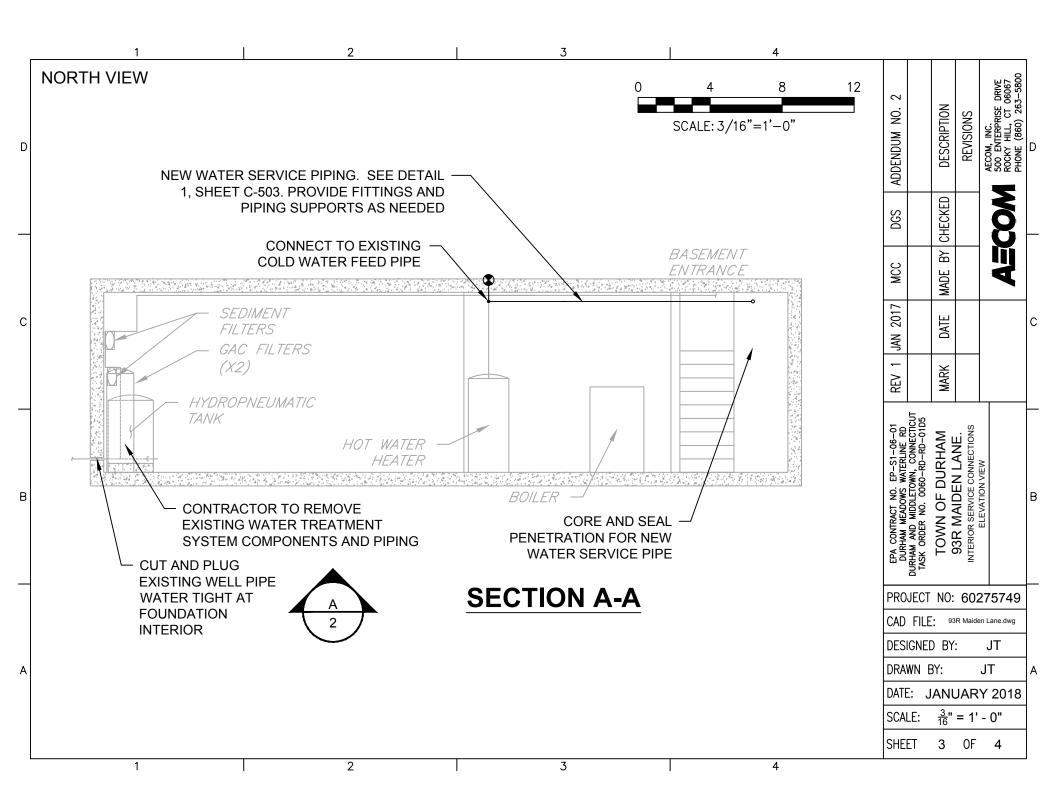


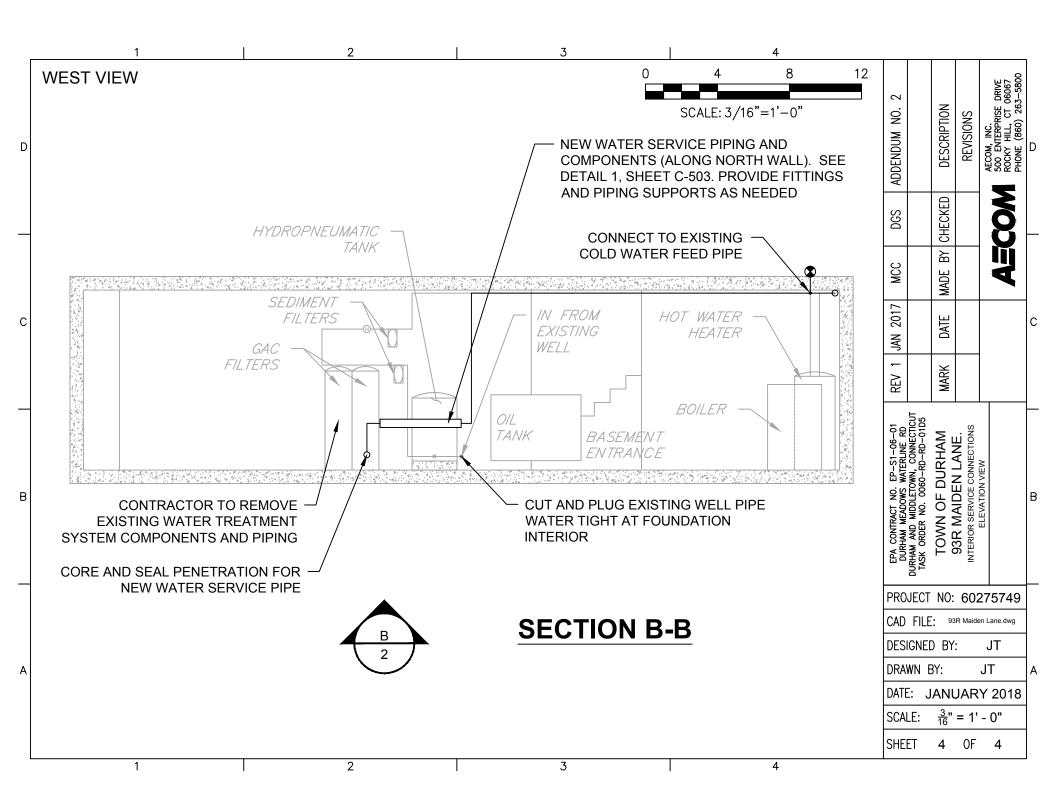


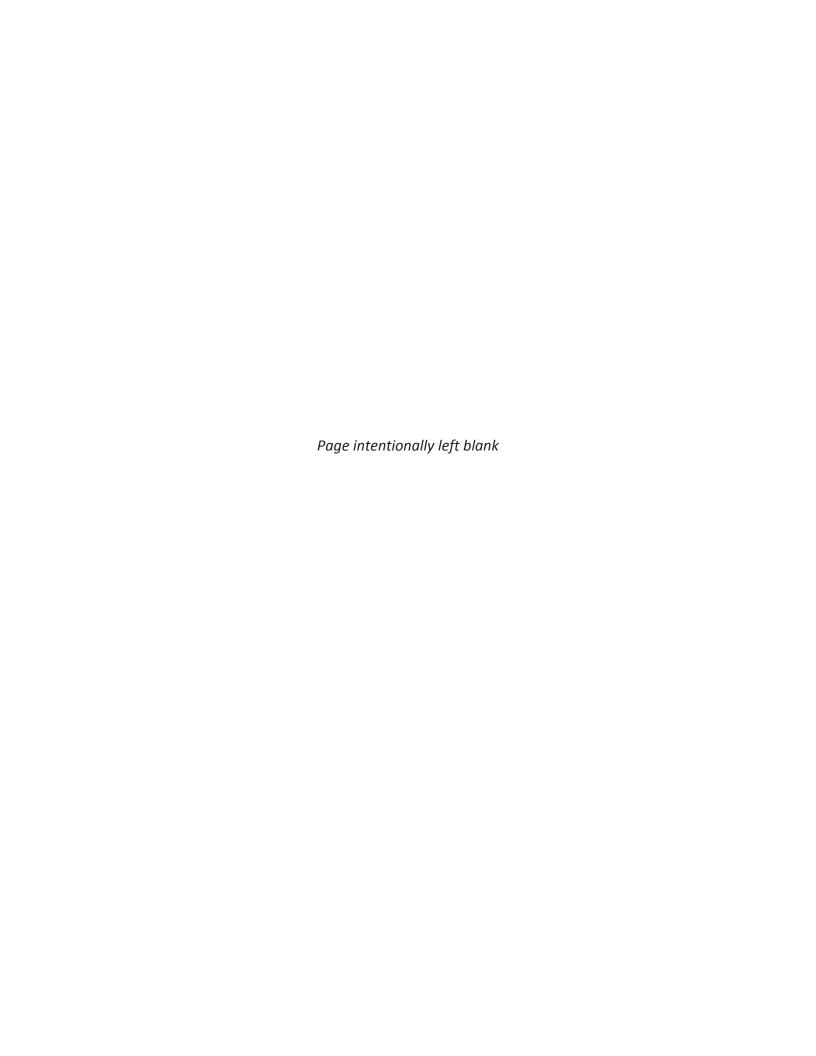


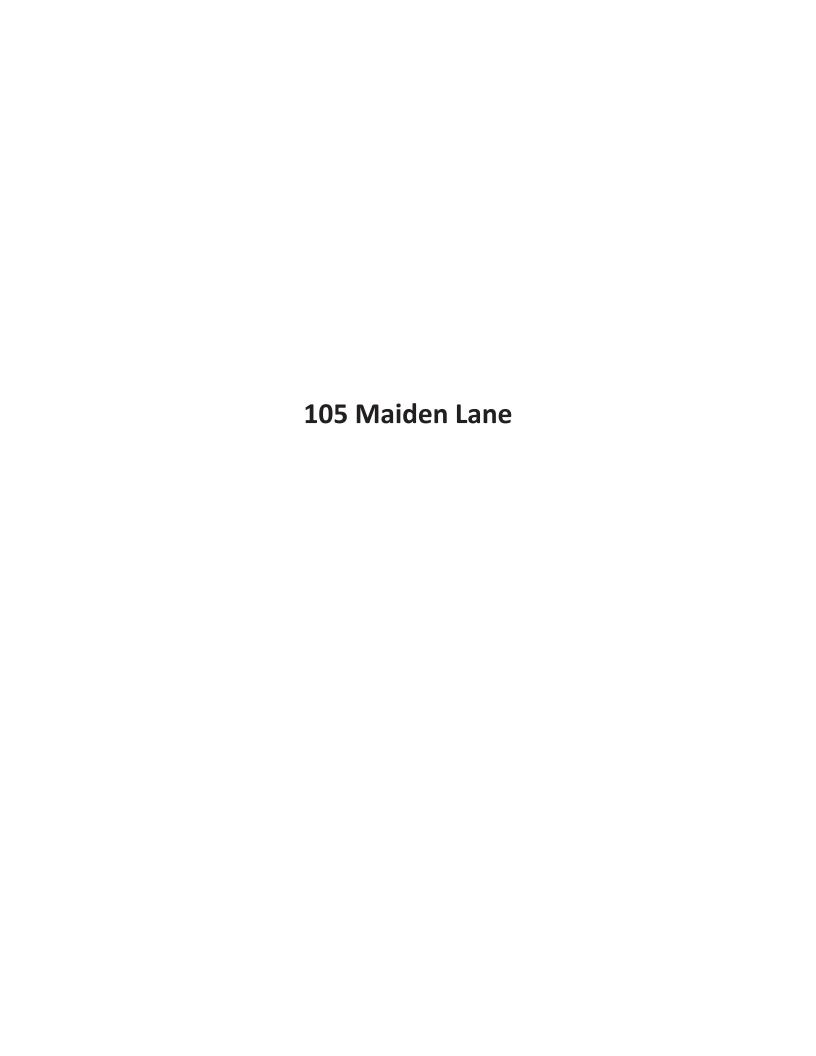


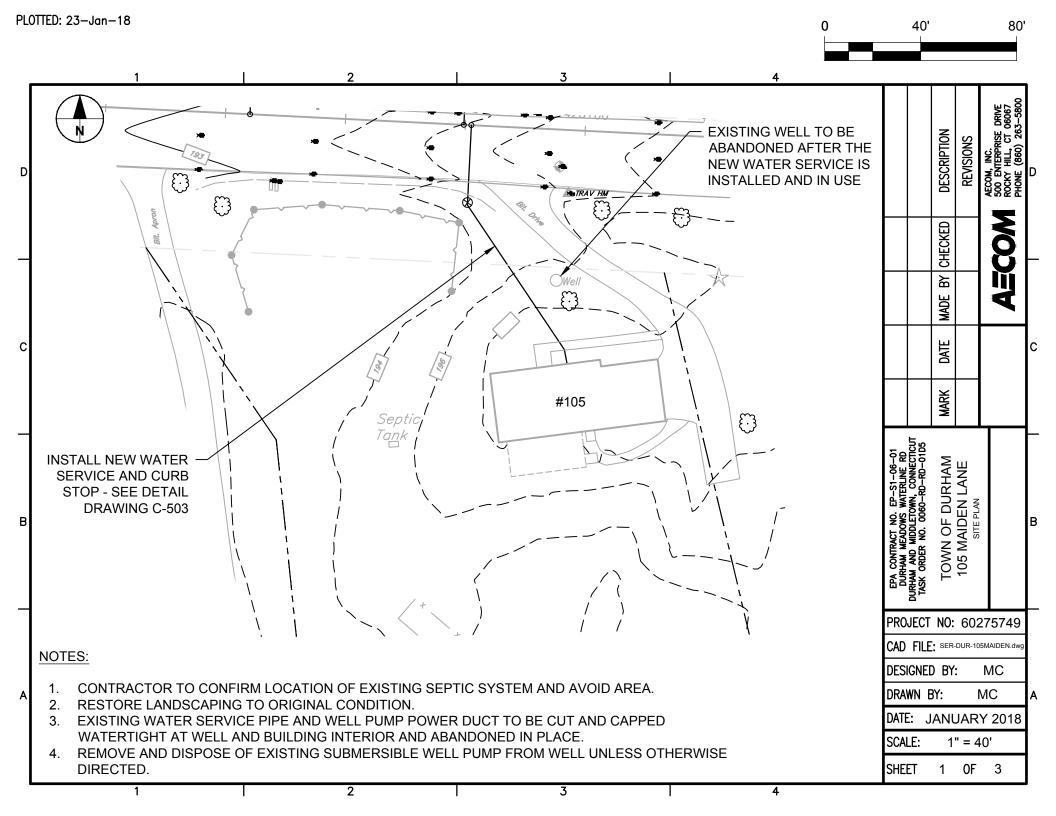


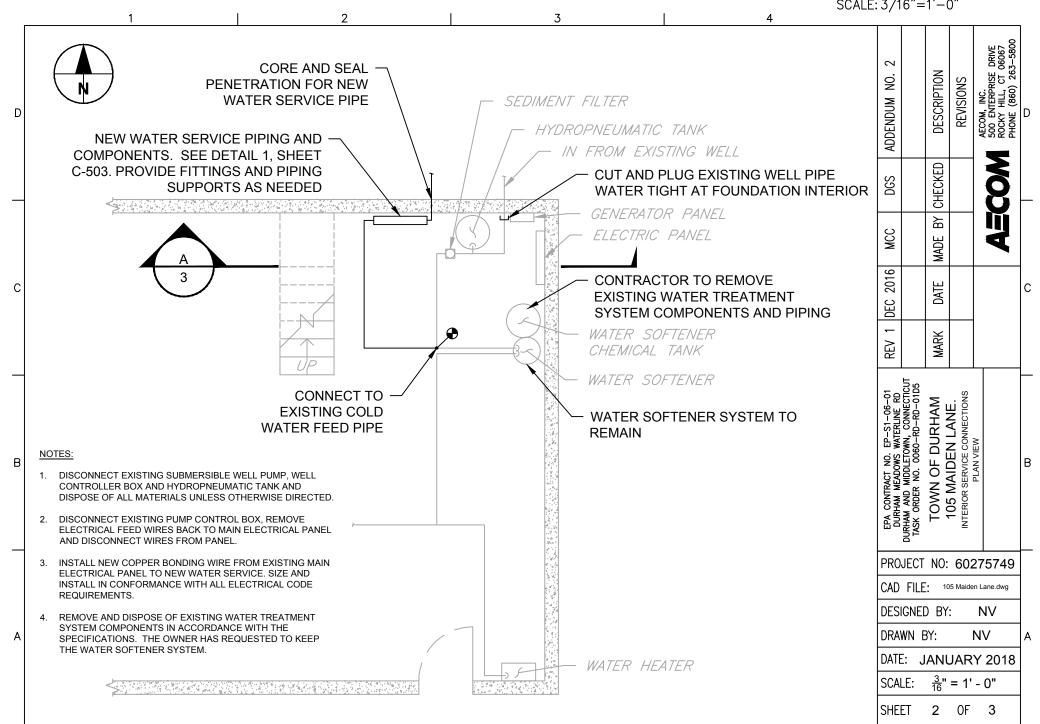


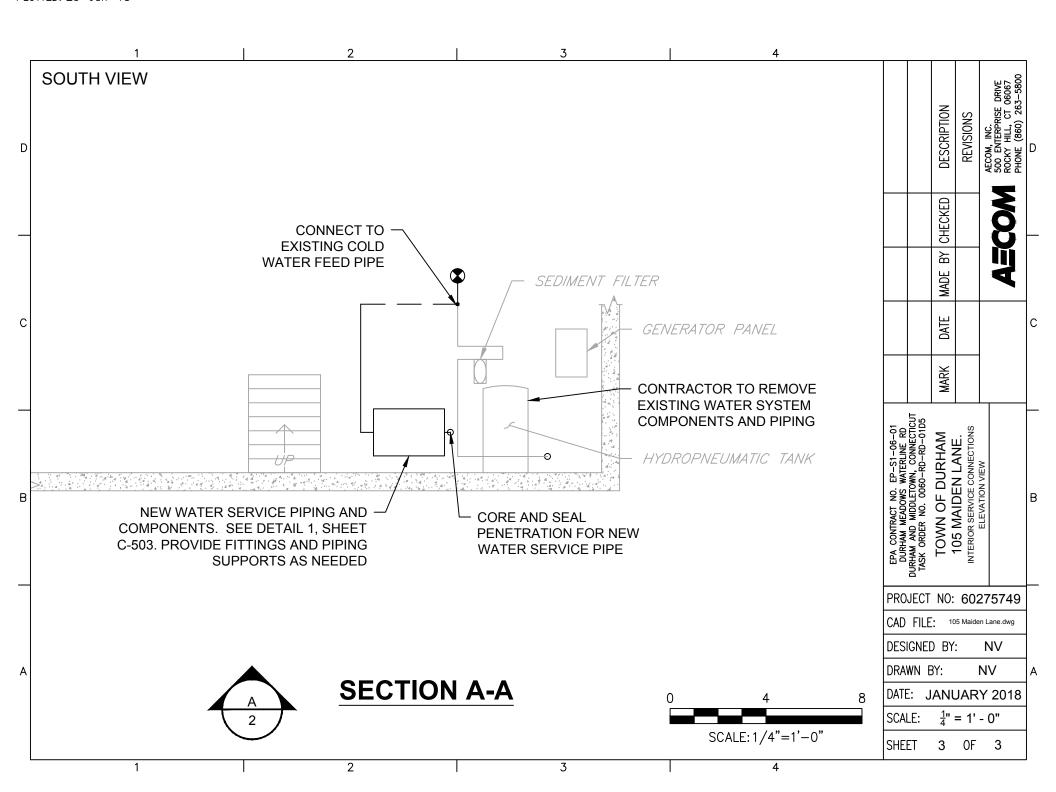


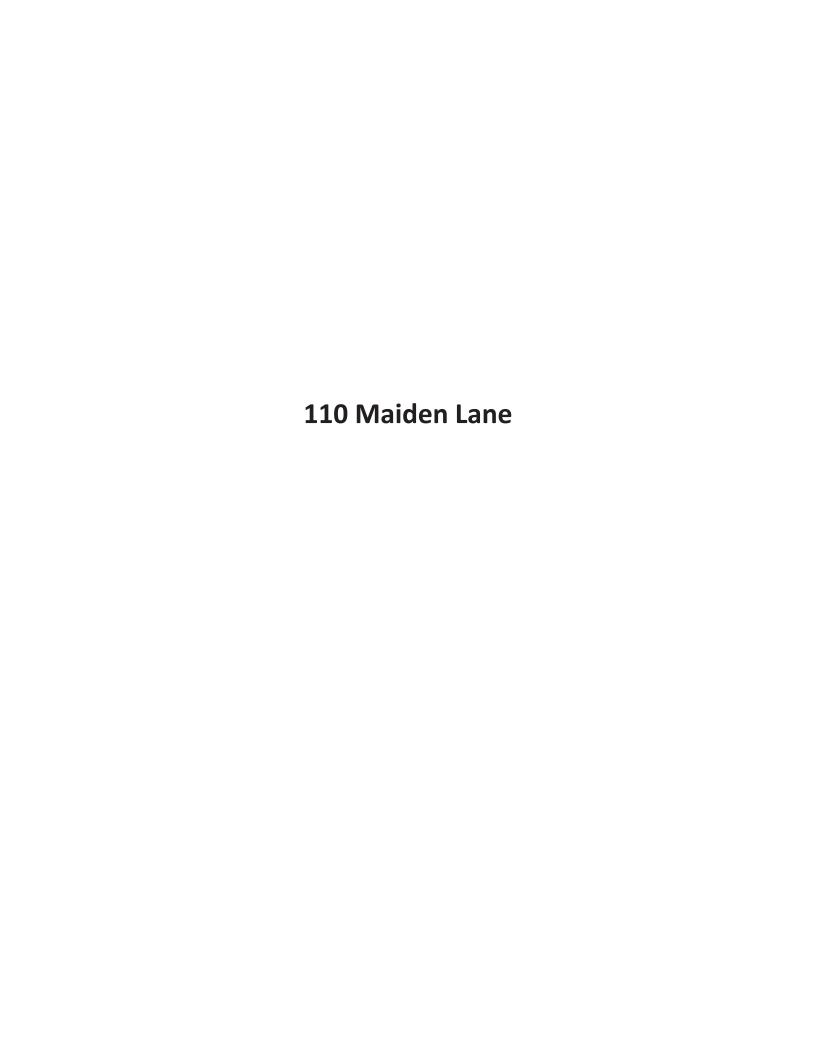


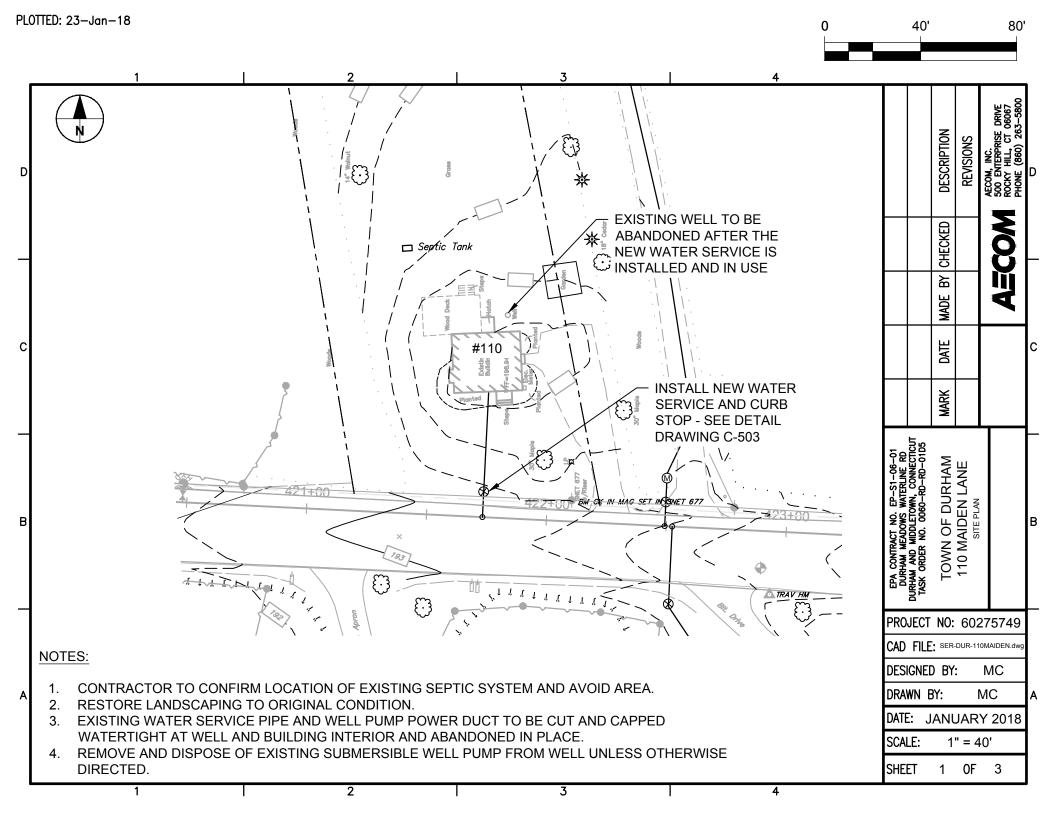












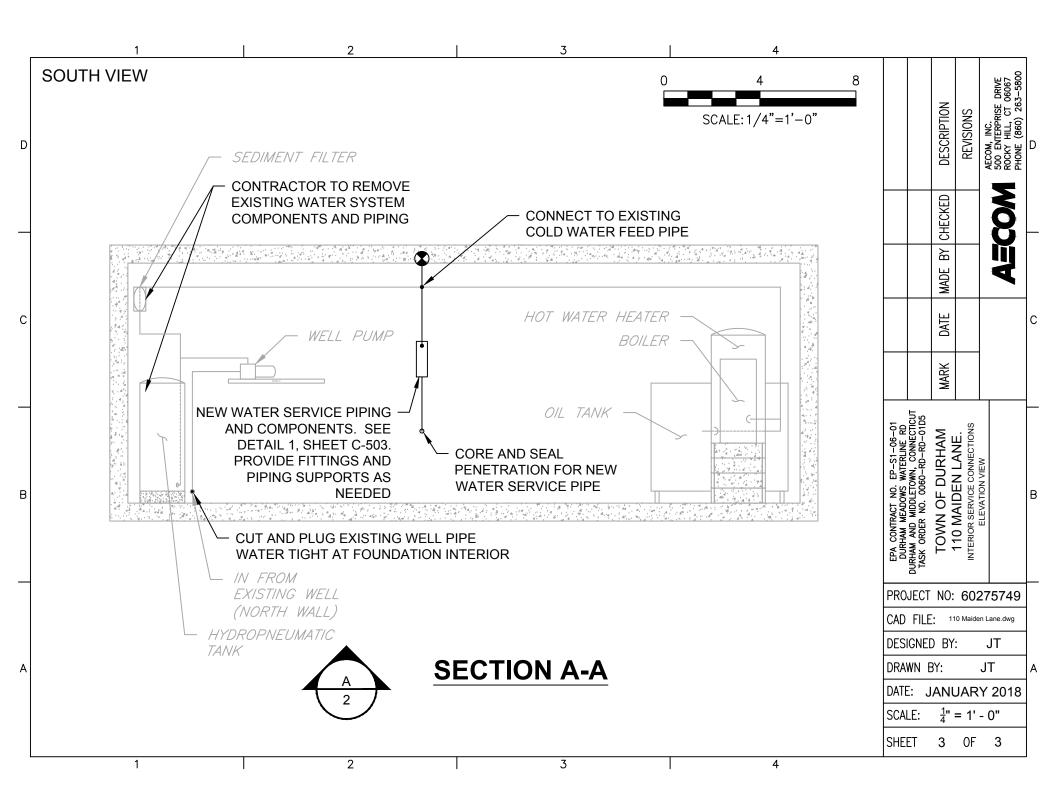
HOT WATER HEATER DATE: JANUARY 2018

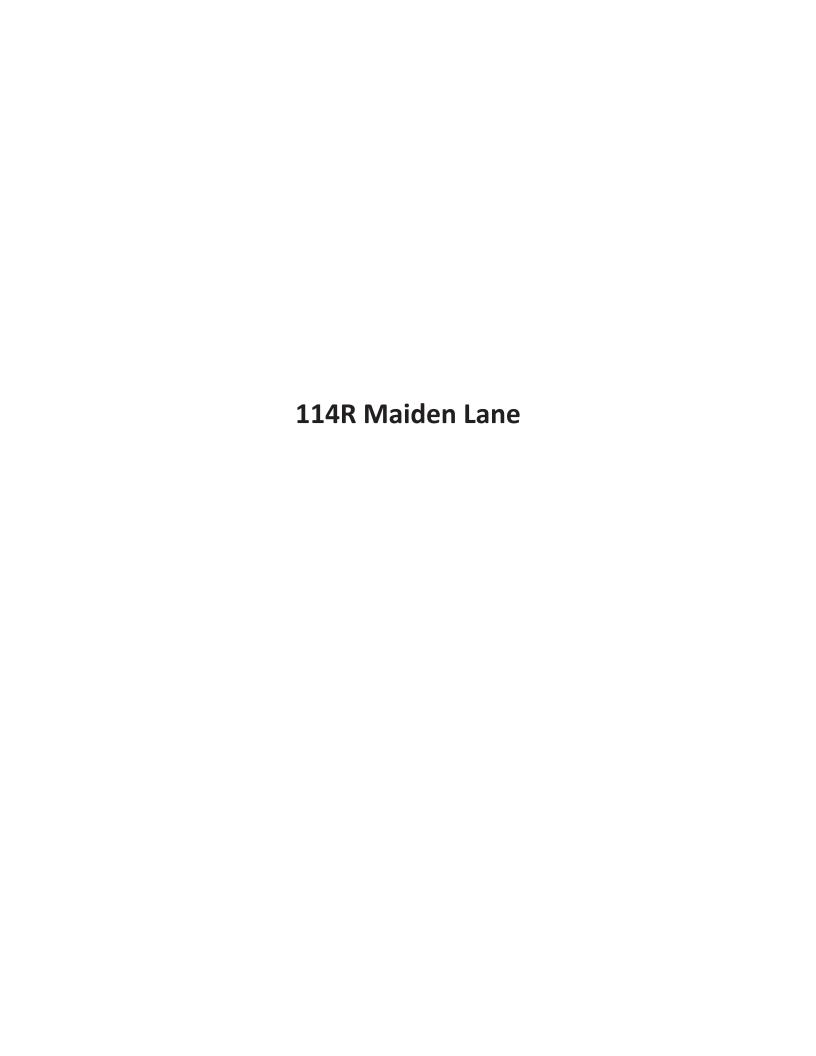
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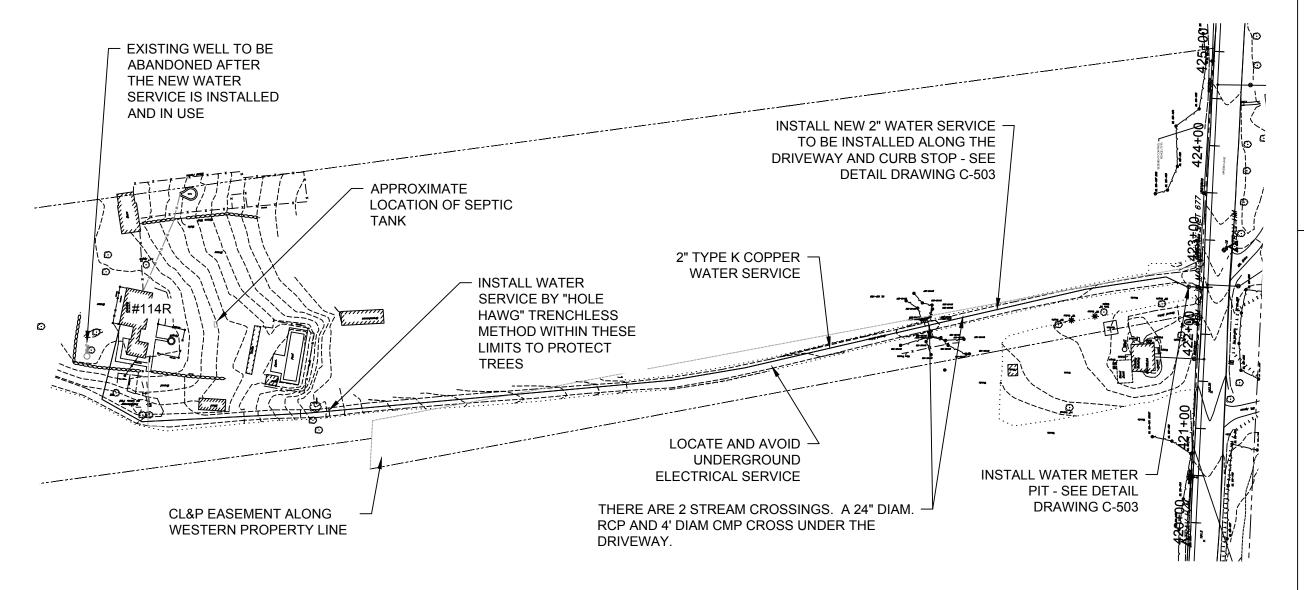
SHFFT

 $\frac{3}{16}$ " = 1' - 0"









## NOTES:

- 1. CONTRACTOR TO CONFIRM LOCATION OF EXISTING SEPTIC SYSTEM AND AVOID AREA.
- 2. RESTORE LANDSCAPING TO ORIGINAL CONDITION.
- 3. CONTRACTOR TO AVOID UNDERGROUND GAS LINE AND CURTAIN DRAINS AROUND HOUSE; EXISTING UNDERGROUND DOG FENCE IS NOT ACTIVE.
- 4. EXISTING WATER SERVICE PIPE AND WELL PUMP POWER DUCT TO BE CUT AND CAPPED WATERTIGHT AT WELL AND BUILDING INTERIOR AND ABANDONED IN PLACE.
- 5. REMOVE AND DISPOSE OF EXISTING SUBMERSIBLE WELL PUMP FROM WELL UNLESS OTHERWISE DIRECTED.

## EPA CONTRACT NO. EP—S1—06—01 DURHAM MEADOWS WATERLINE RD DURHAM AND MIDDLETOWN, CONNECTICUT TASK ORDER NO. 0060—RD—RD—0105

TOWN OF DURHAM 114R MAIDEN LANE SITE PLAN

PROJECT NO: 60275749

CAD DWG FILE: SER-DUR-114RAMDEN.DWG

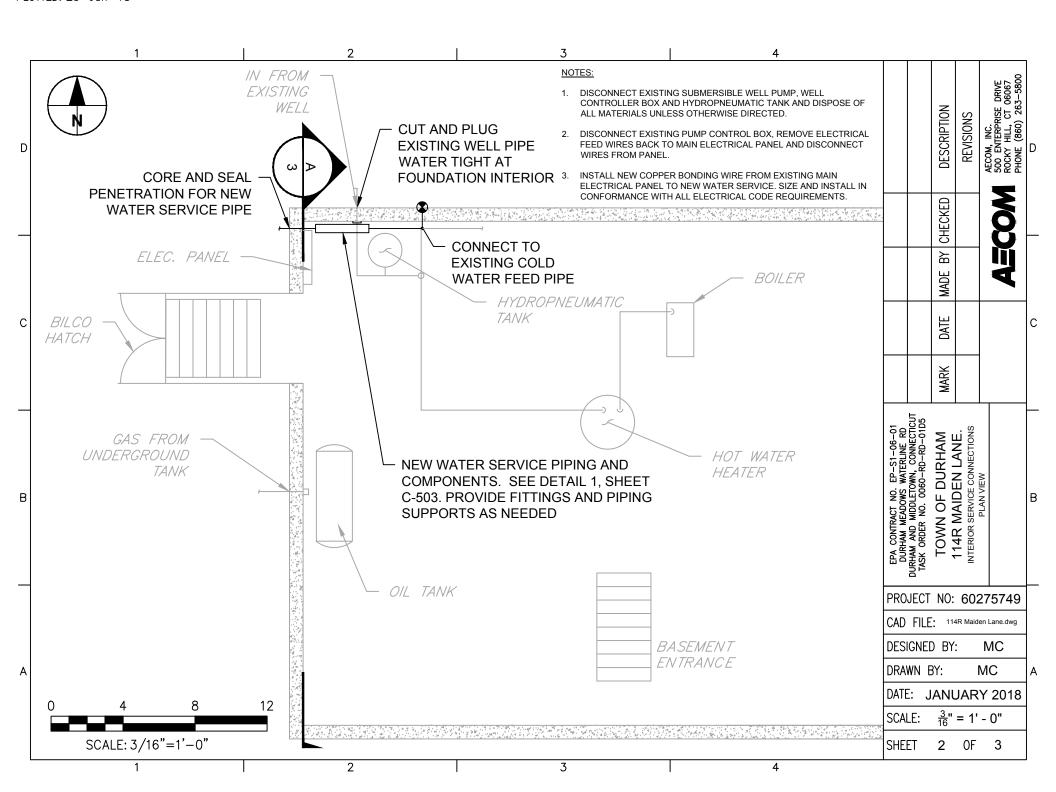
DESIGNED BY: MC

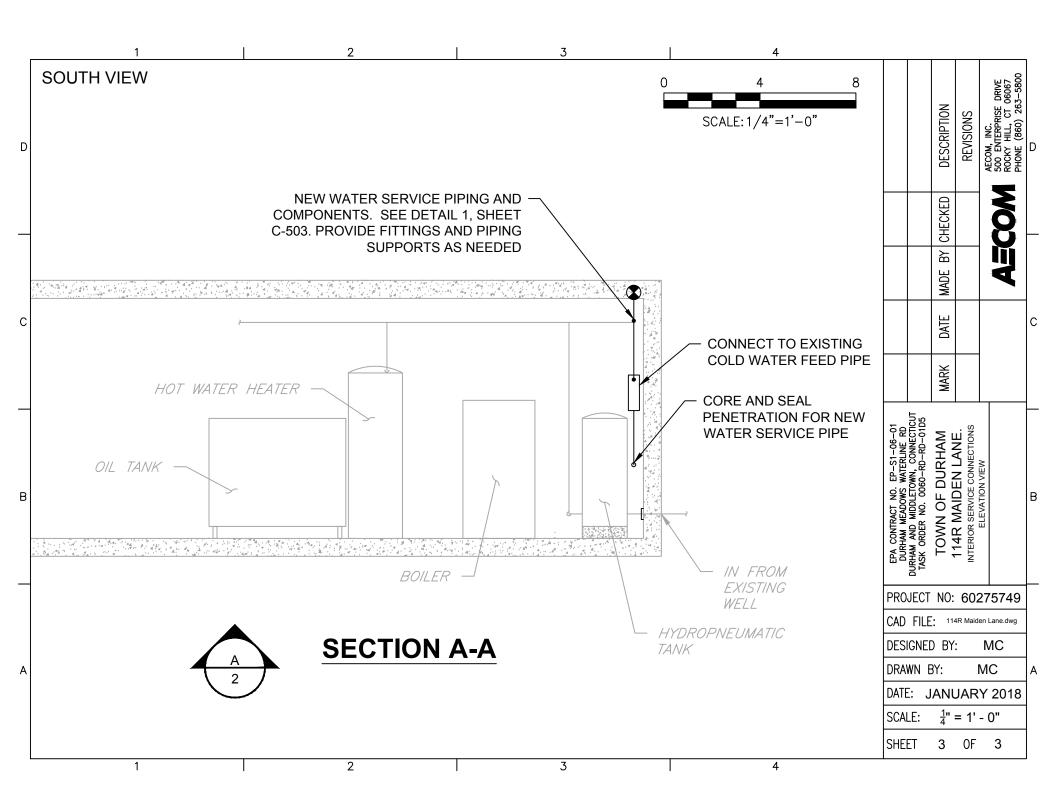
DRAWN BY: MC

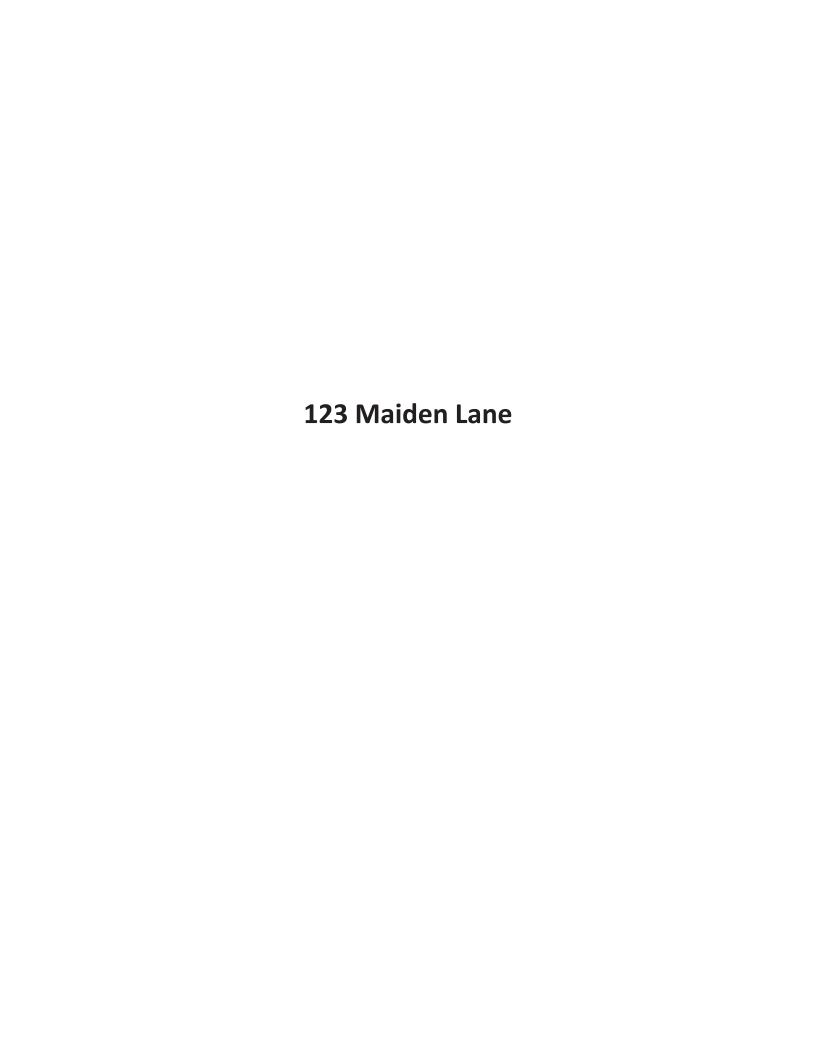
DATE: FEBRUARY, 2018

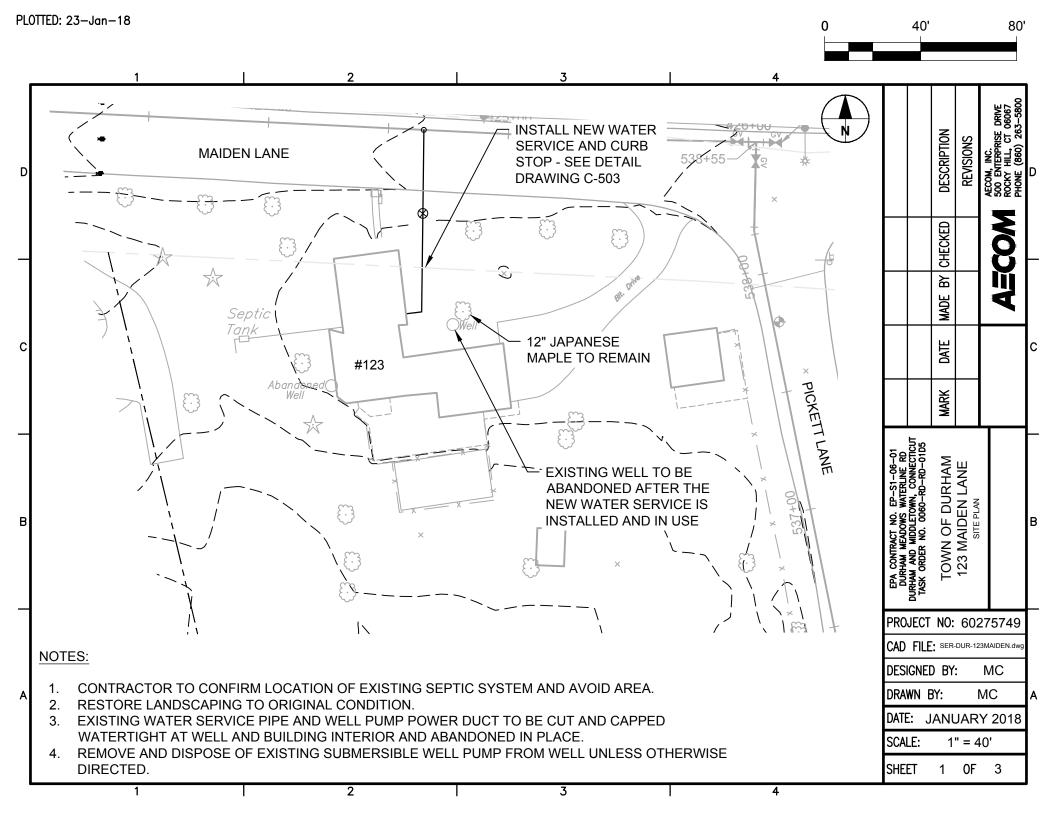
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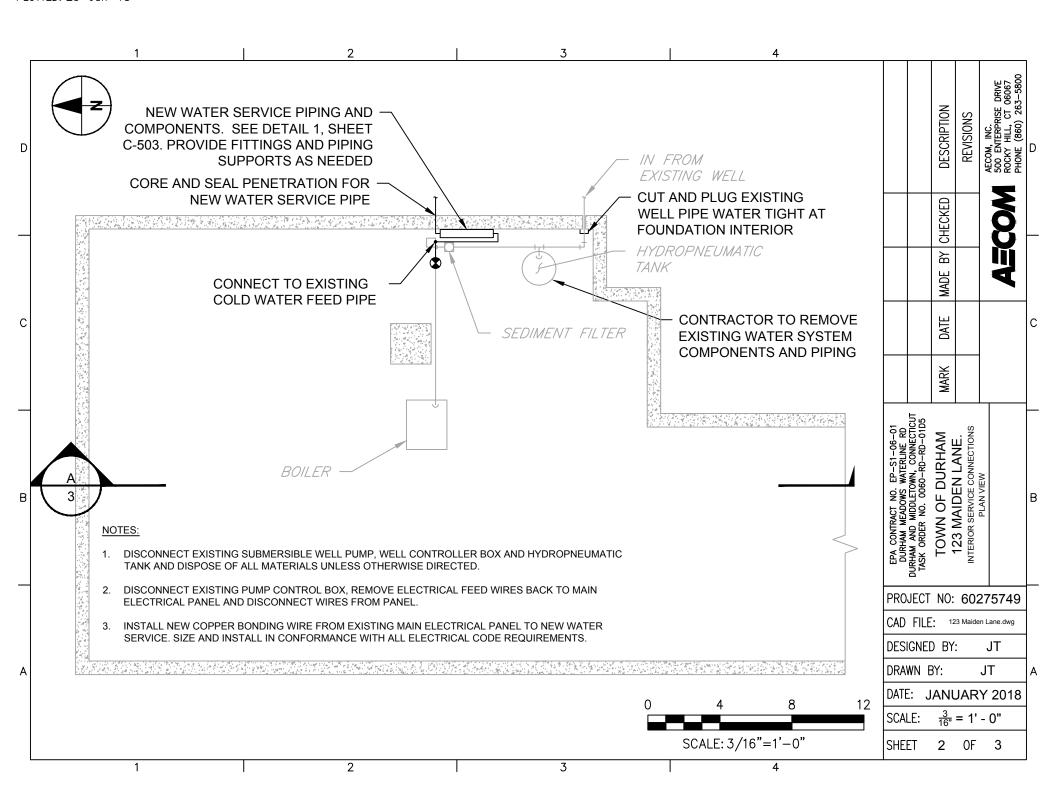
SHEET 1 OF 3

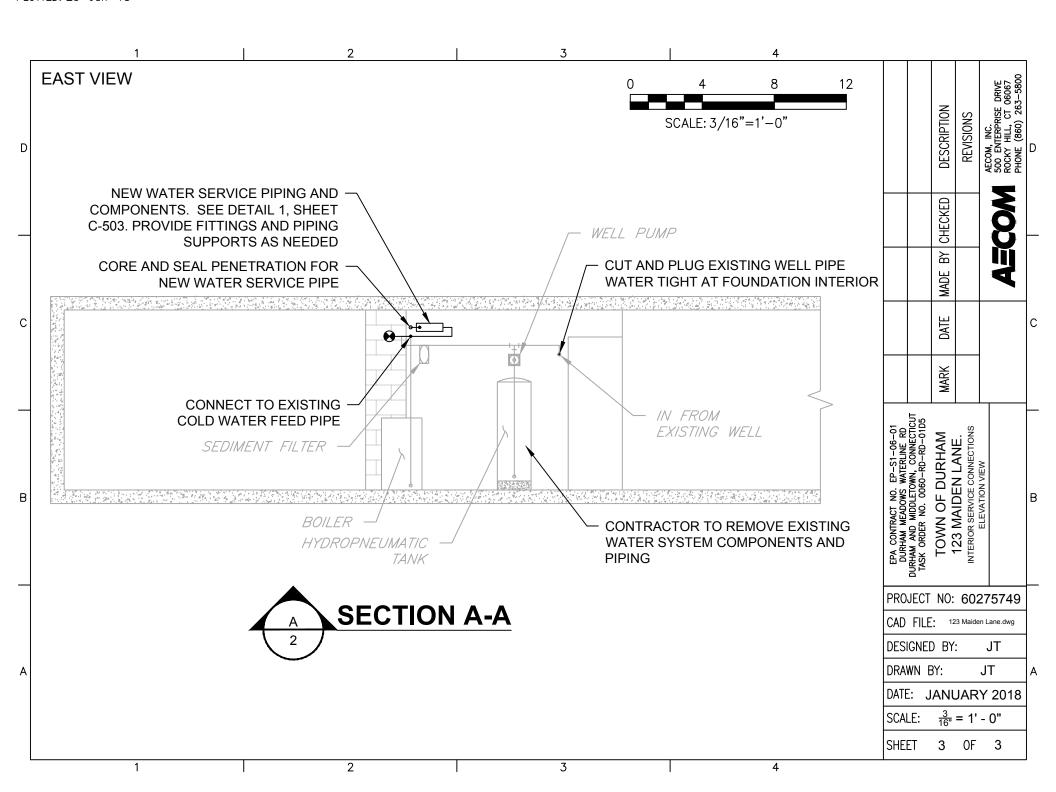


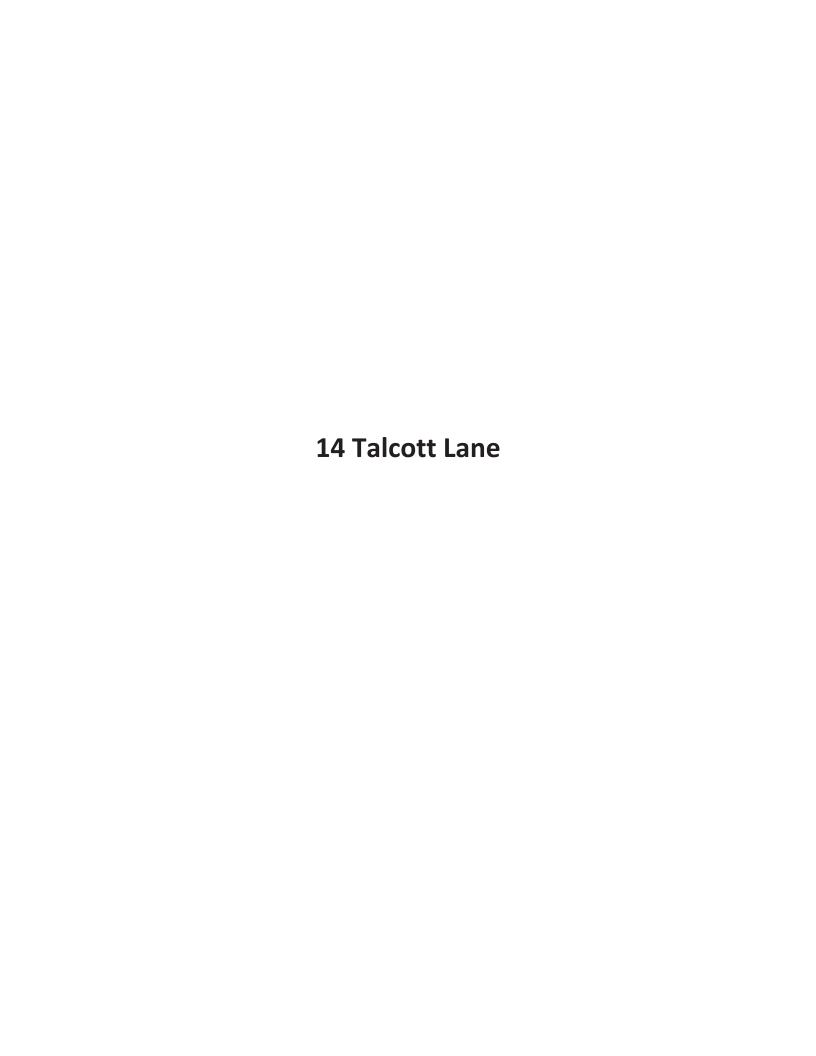


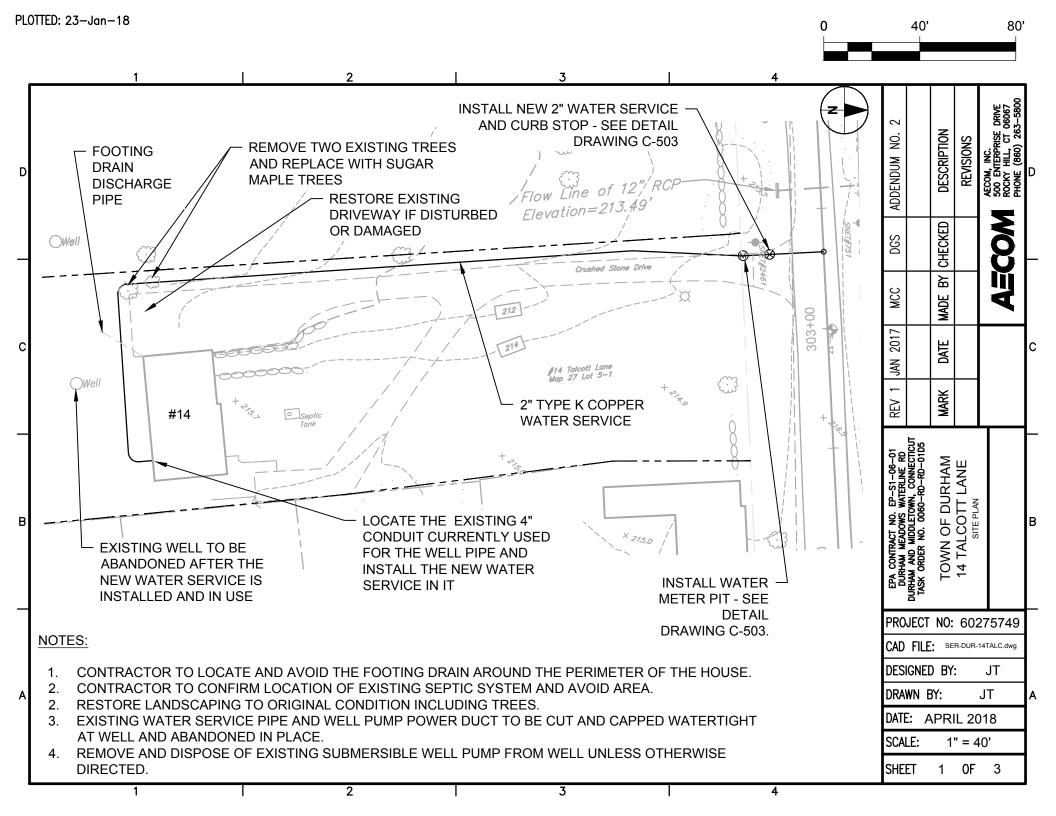


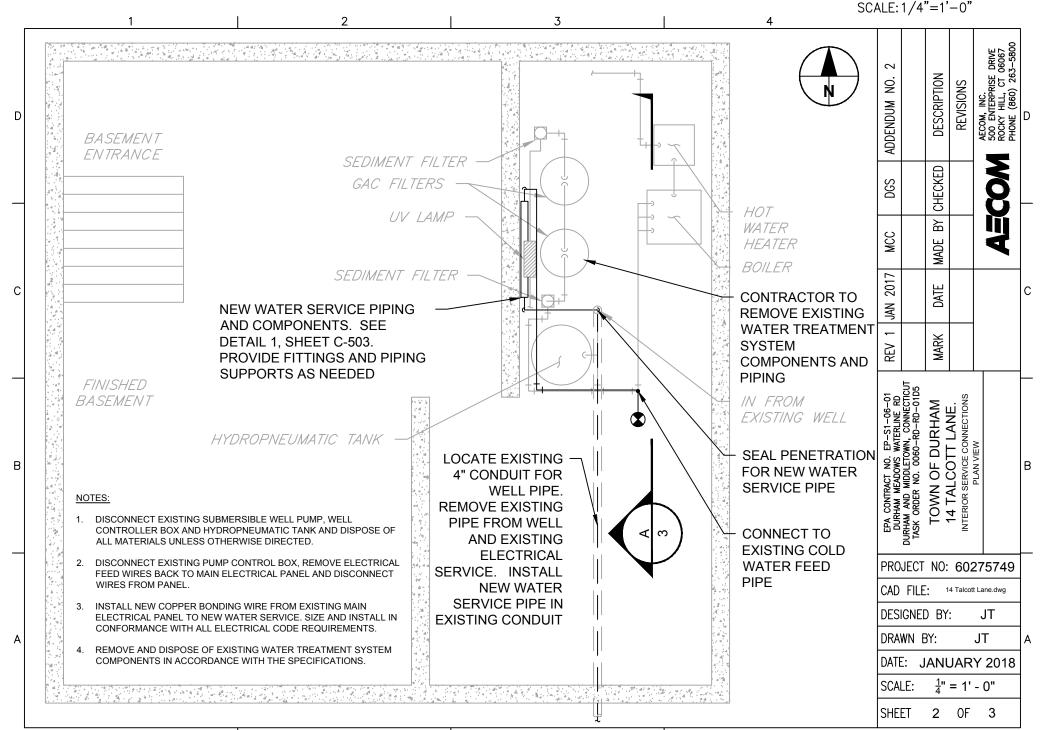


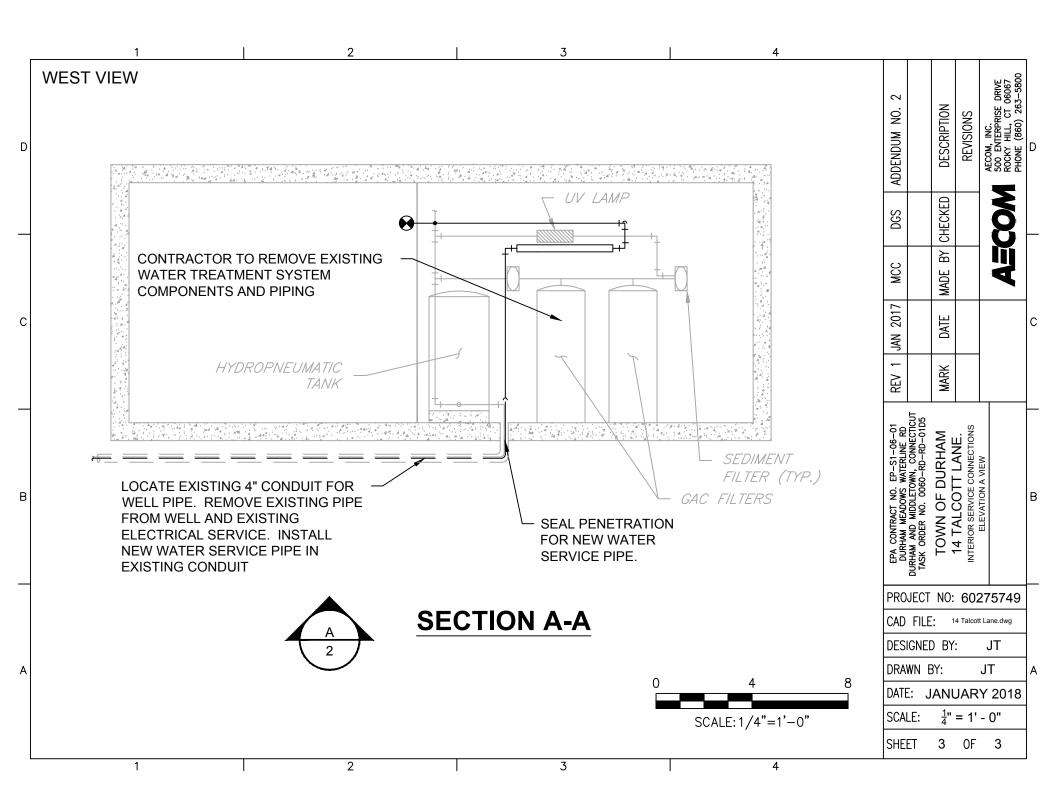


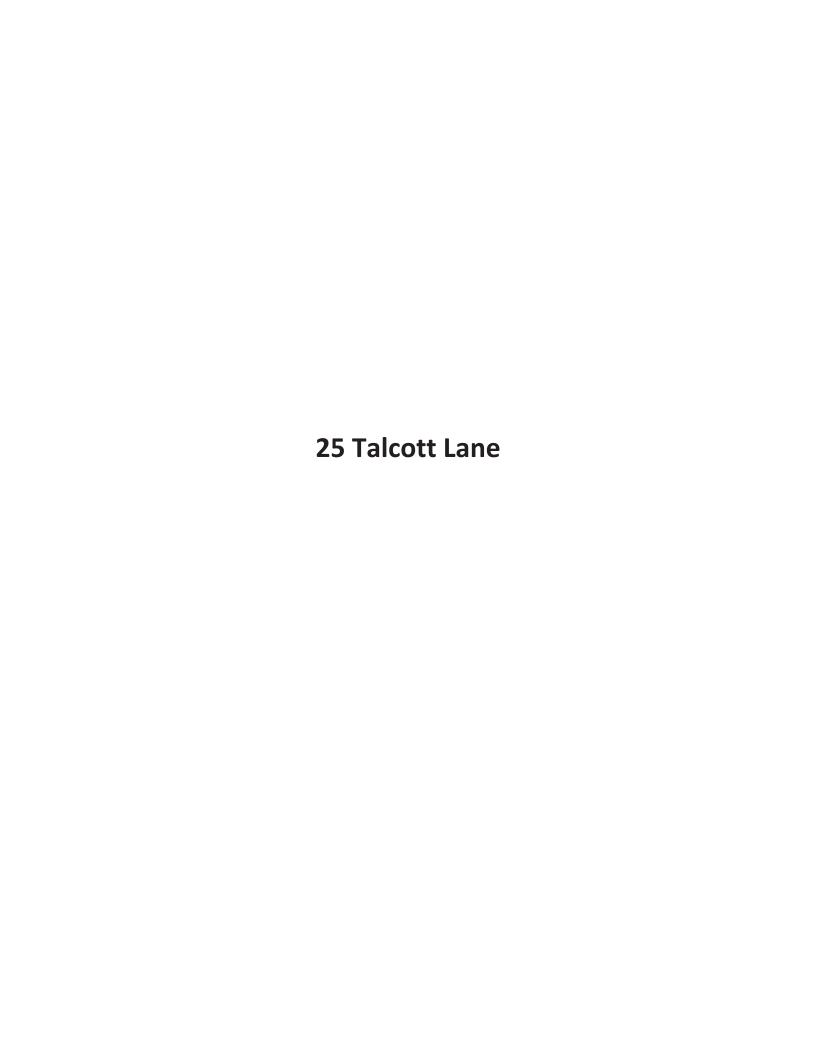


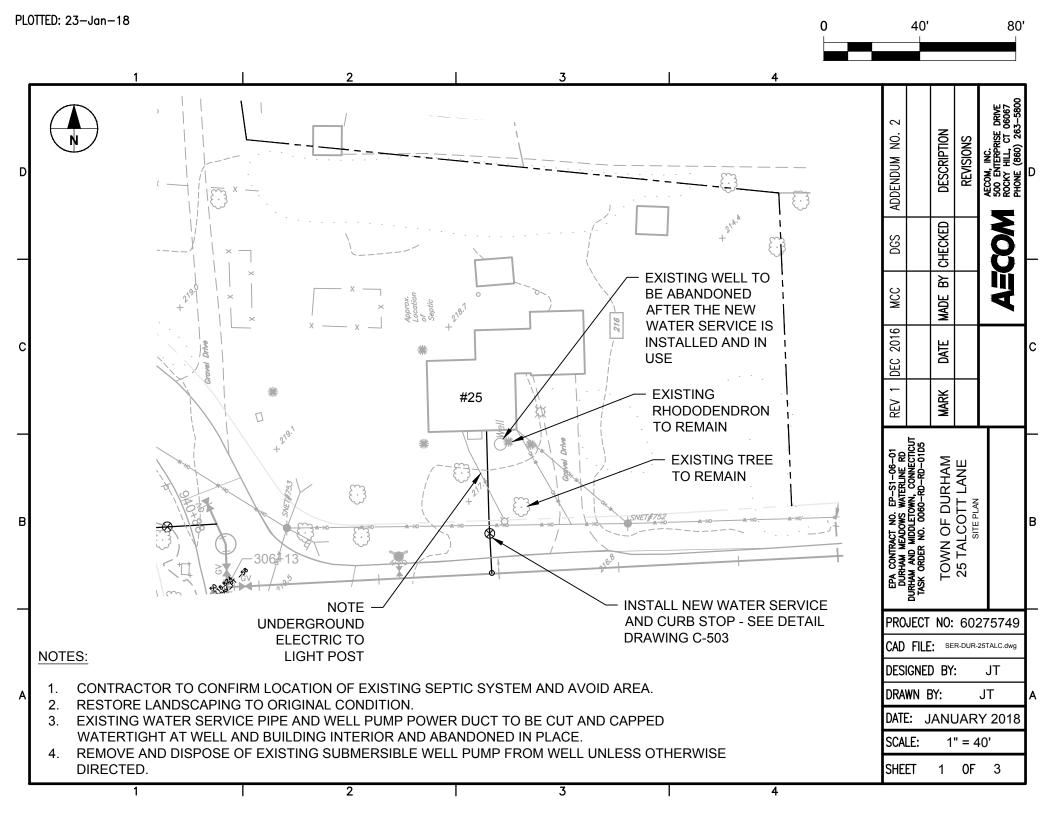


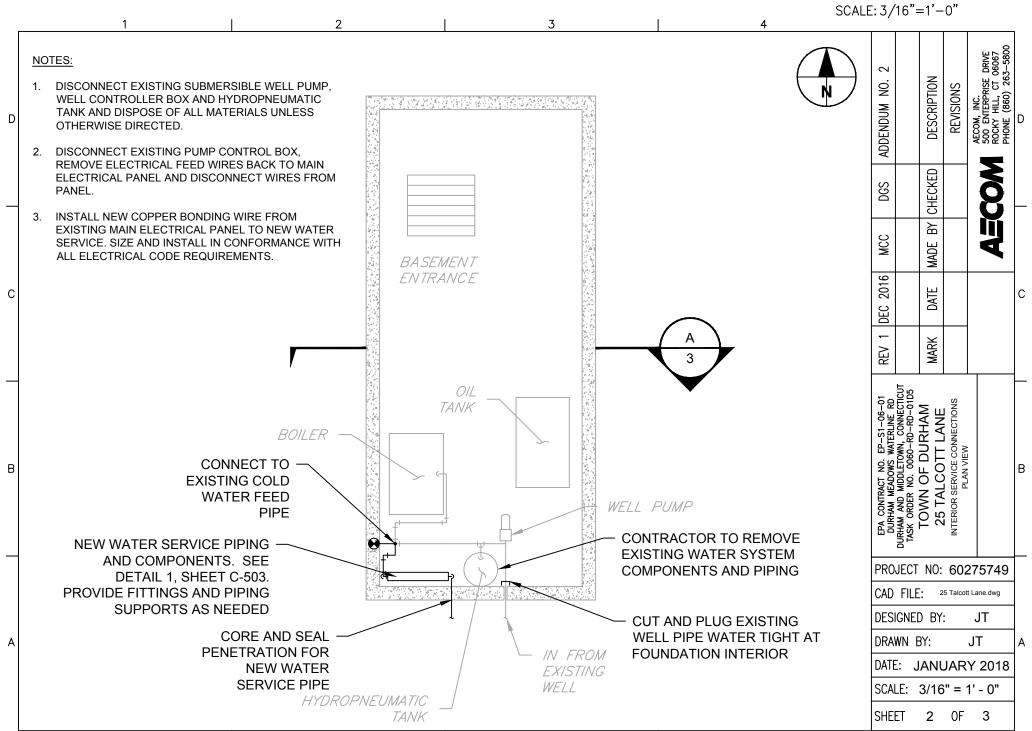


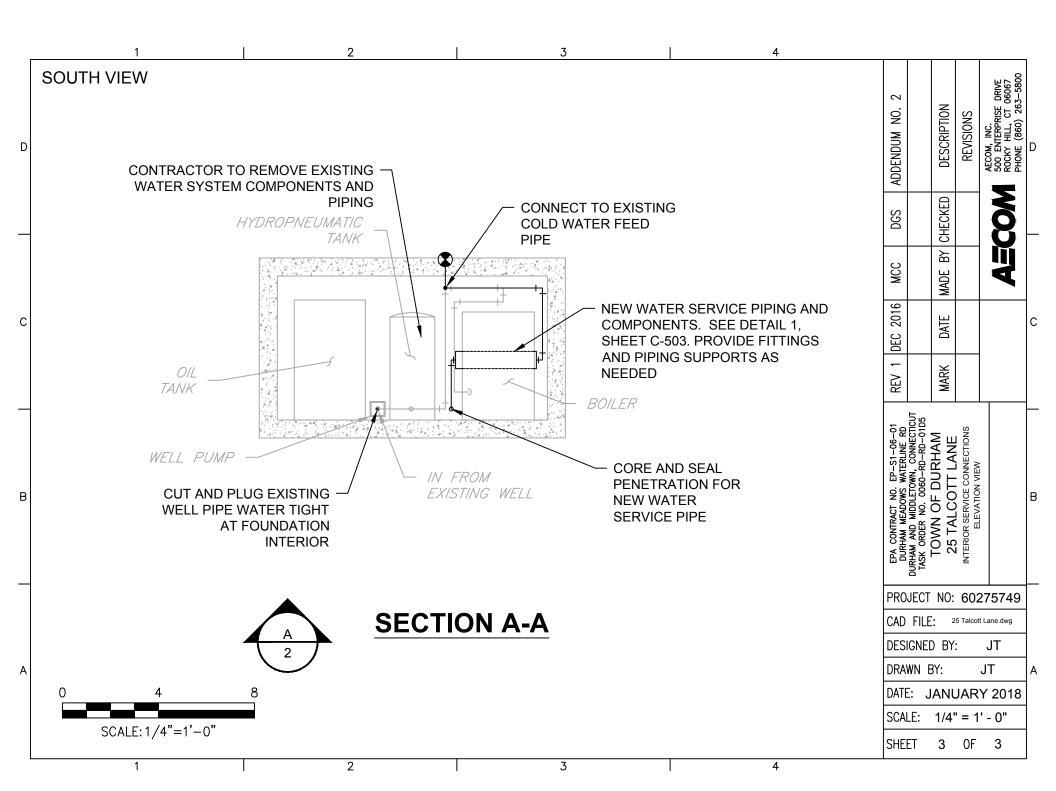


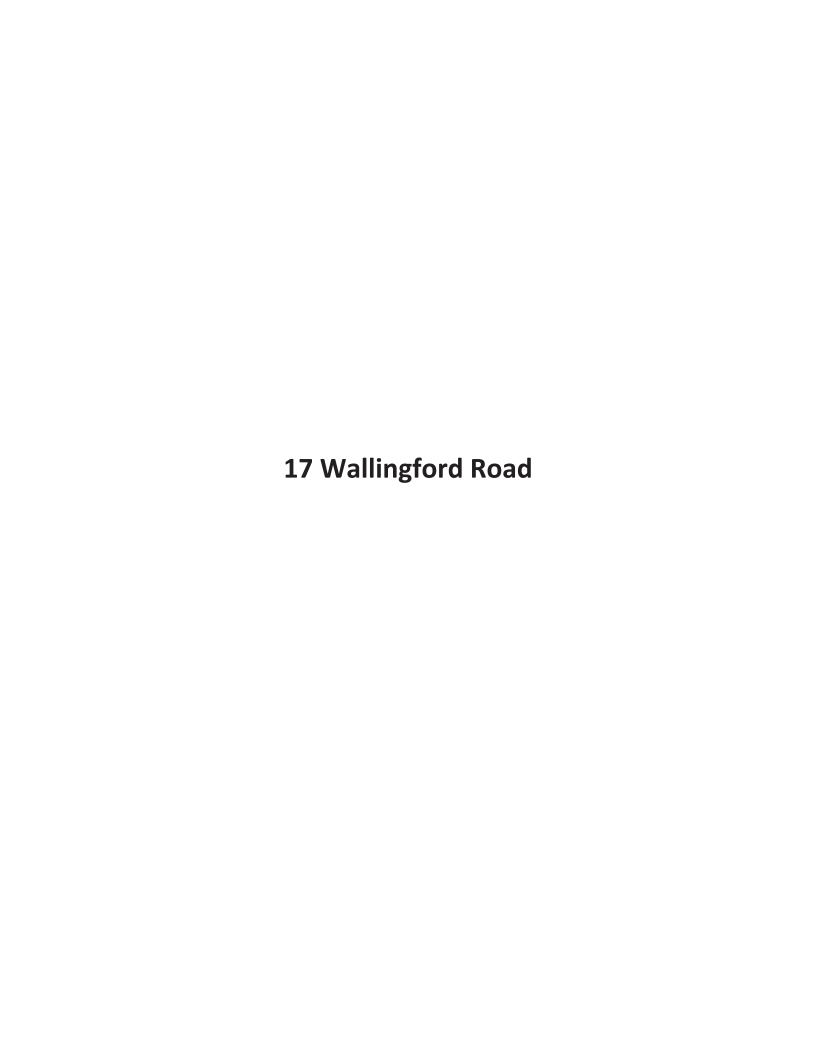


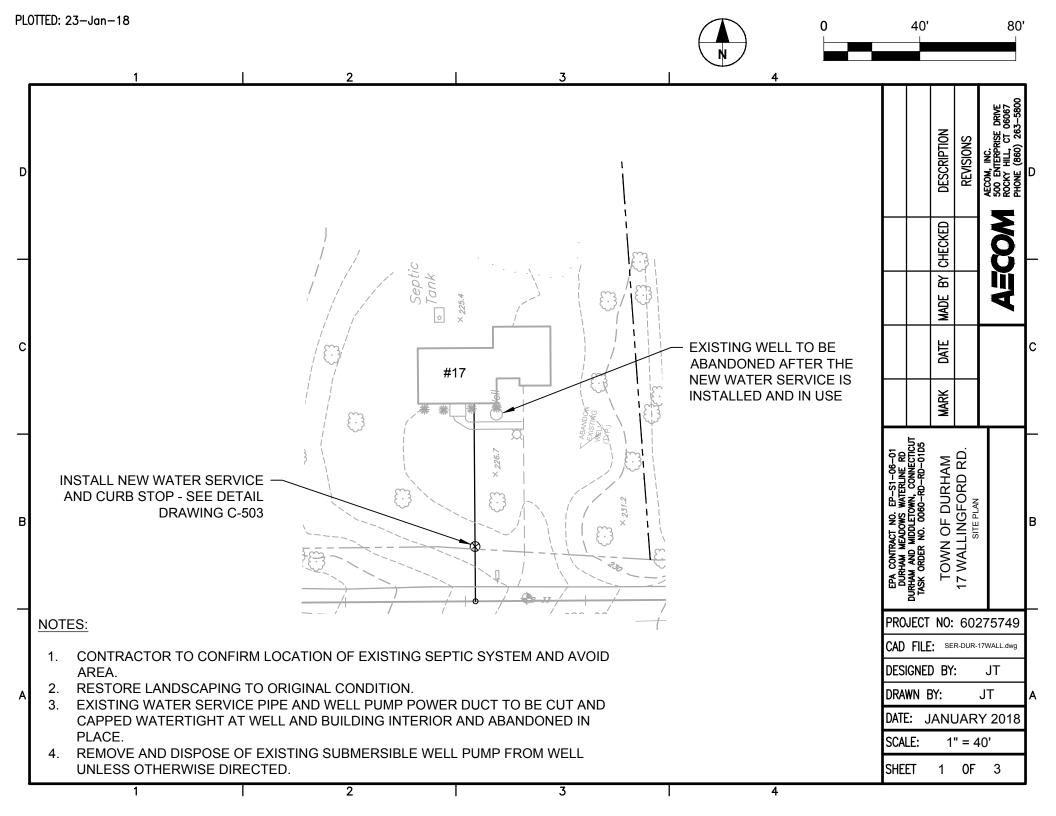


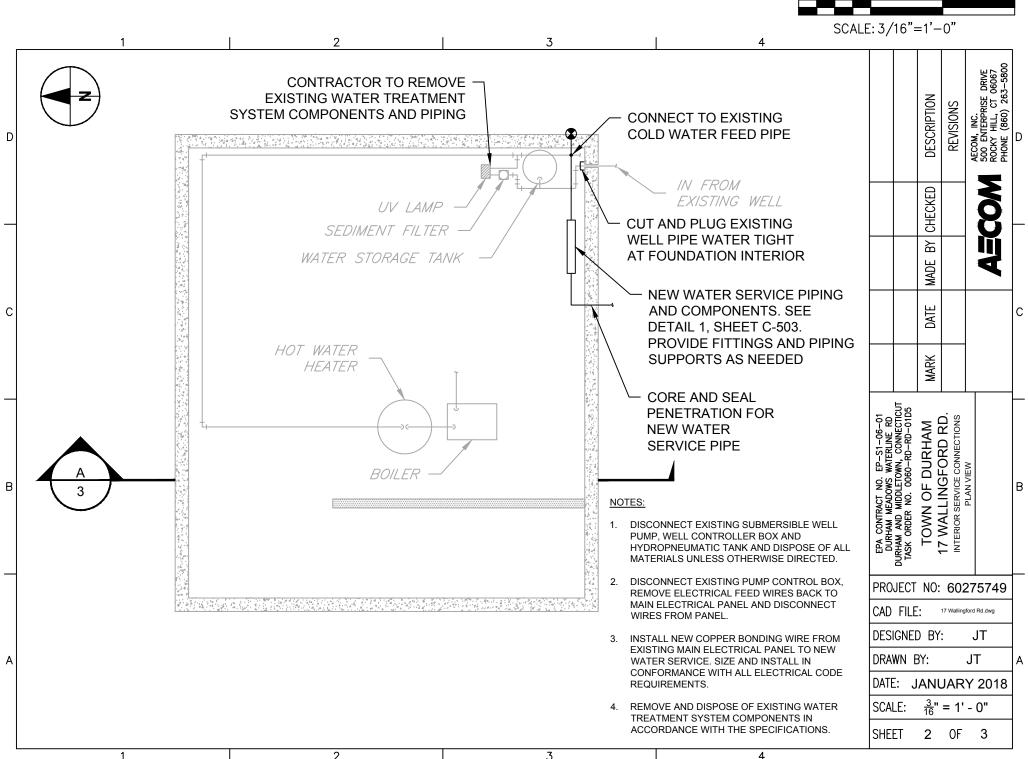


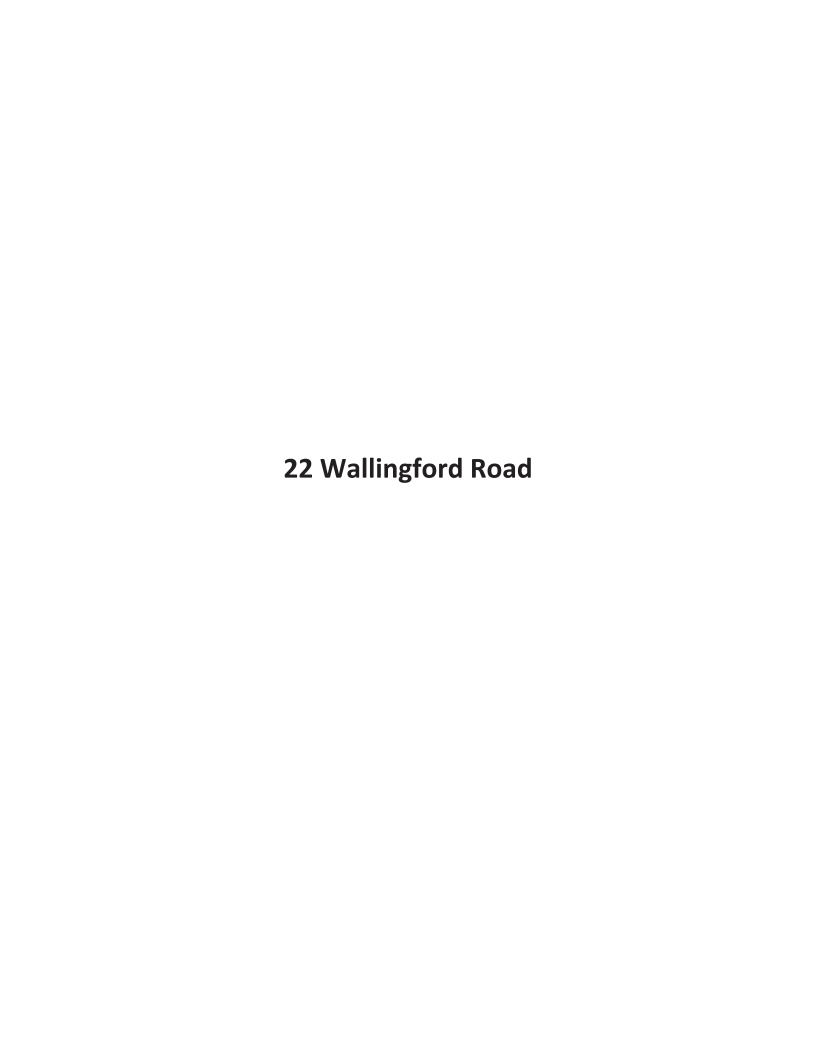


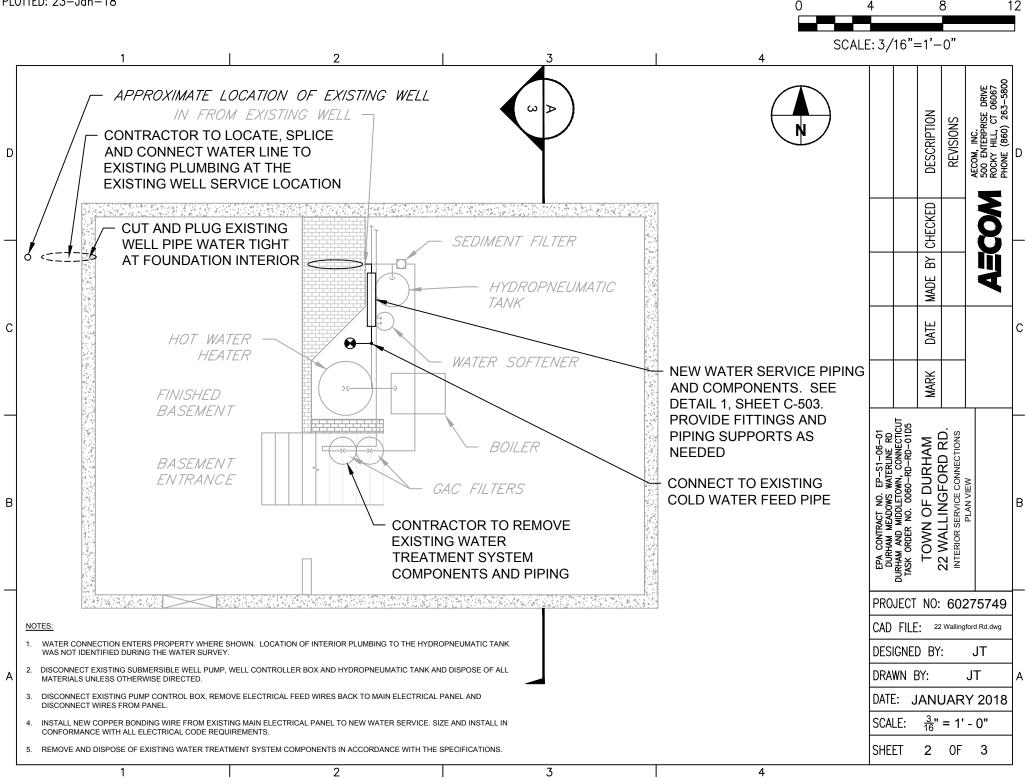


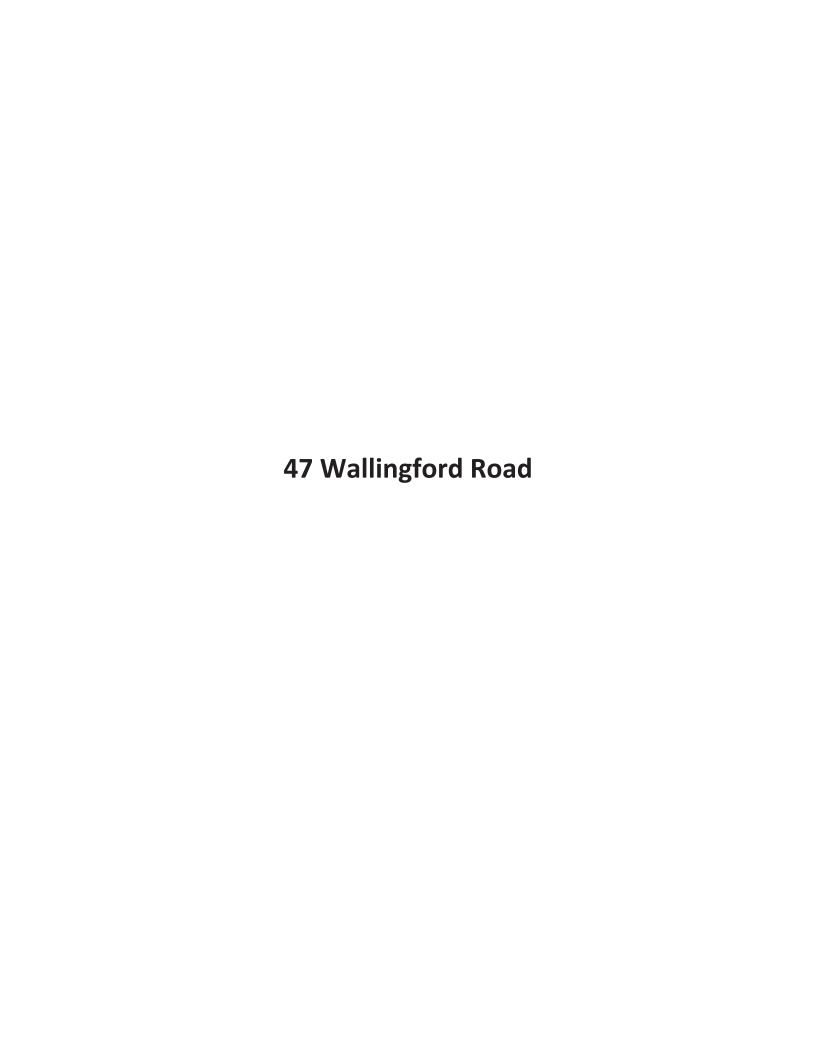


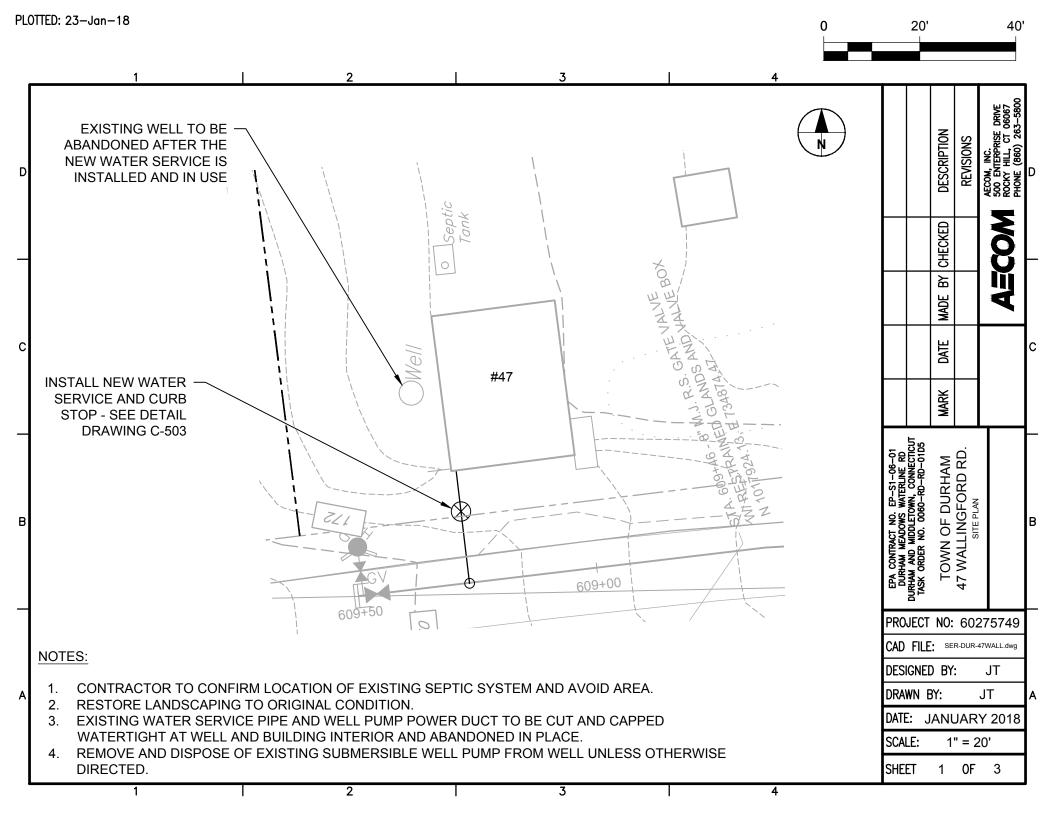


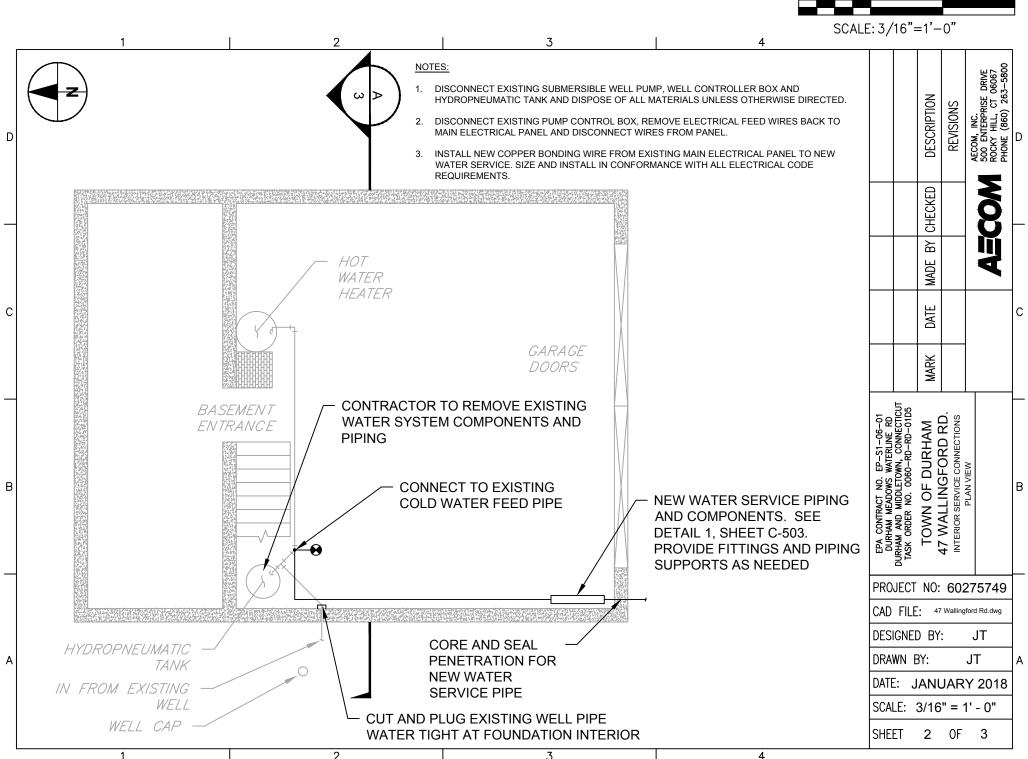


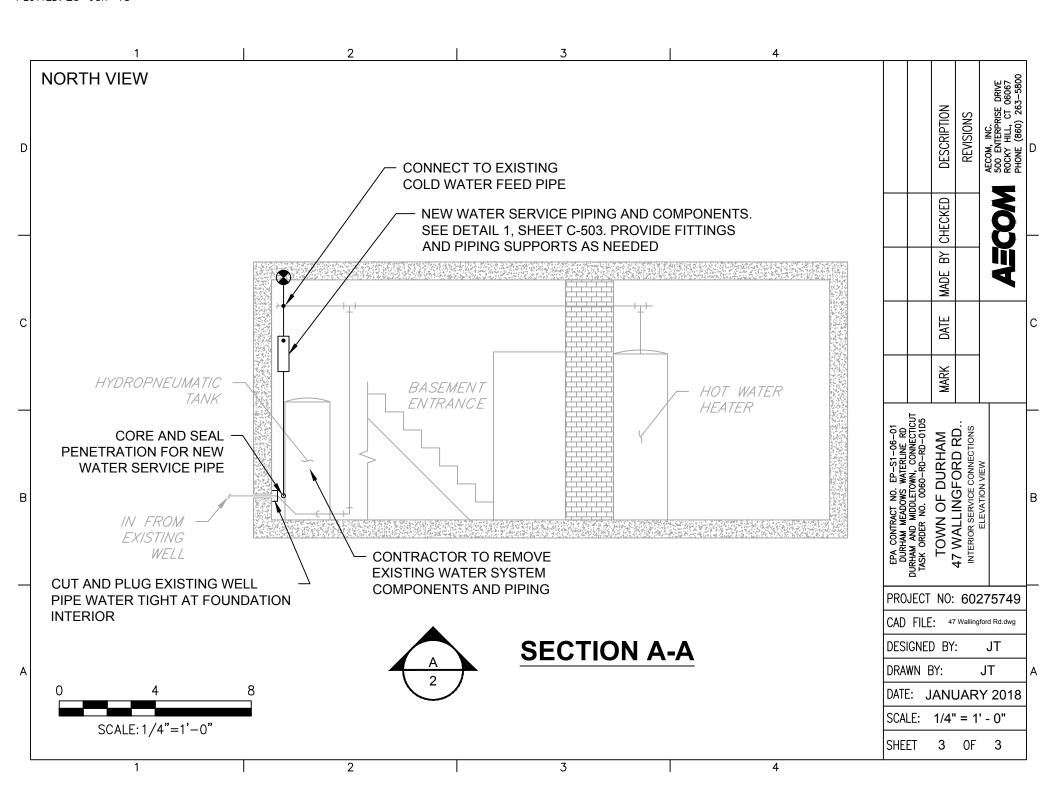












# APPENDIX C State Department of Labor Wage Rates (To be issued by Addendum)

## APPENDIX D

Historic Site Data

ANALYSIS	Site ID Sample ID Sample Date	R1C26 R1C26(1-2) 02/22/10	R1C26 R1C26(4-5) 02/22/10	R1C26A R1C26A (4-5) 04/03/13	R5C1 R5C1 (5-7) 02/11/08	R5C15 R5C15(4-5) 02/25/08	R5C30 R5C30(3-4) 03/06/08
, WAL I OIO	Units	02/22/10	02/22/10	ug/Kg	ug/Kg	ug/Kg	
Volatiles	1,1,1,2-Tetrachloroethane			1.1 U	9.4 U	5.1 UJ	
Volatiles	1,1,1-Trichloroethane			1.1 U	9.4 U	5.1 U	
Volatiles	1,1,2,2-Tetrachloroethane 1,1,2-Trichloro-1,2,2-			1.1 U	9.4 U	5.1 UJ	
Volatiles	trifluoroethane			1.1 U	9.4 U	5.1 U	
Volatiles	1,1,2-Trichloroethane			1.1 U	9.4 U	5.1 U	
Volatiles	1,1-Dichloroethane			1.1 U	9.4 U	5.1 U	
Volatiles Volatiles	1,1-Dichloroethene 1,1-Dichloropropene			1.1 U 1.1 U	9.4 U 47 U	5.1 U 25 U	
Volatiles	1,2,3-Trichlorobenzene			1.1 U	9.4 UJ	5.1 UJ	
Volatiles	1,2,3-Trichloropropane			1.1 U	9.4 U	5.1 UJ	
Volatiles	1,2,4-Trichlorobenzene			1.1 U	9.4 UJ	5.1 UJ	
Volatiles	1,2,4-Trimethylbenzene			1.1 U	9.4 U	5.1 UJ	
Volatiles	1,2-Dibromo-3-			1.1 U	19 UJ	10 UJ	
Volatiles	Chloropropane 1,2-Dibromoethane			1.1 U	9.4 U	5.1 U	
Volatiles	1,2-Dichlorobenzene			1.1 U	9.4 U	5.1 UJ	
Volatiles	1,2-Dichloroethane			1.1 U	9.4 U	5.1 U	
Volatiles	1,2-Dichloropropane			1.1 U	9.4 U	5.1 U	
Volatiles	1,3,5-Trimethylbenzene			1.1 U	9.4 U	5.1 UJ	
Volatiles	1,3-Dichlorobenzene			1.1 U	9.4 U	5.1 UJ	
Volatiles	1,3-Dichloropropane			1.1 U	9.4 U	5.1 U	
Volatiles Volatiles	1,4-Dichlorobenzene 1,4-Dioxane			1.1 U 54 UJ	9.4 U 750 UJ	5.1 UJ 400 UJ	
Volatiles	2,2-Dichloropropane			1.1 U	9.4 U	5.1 U	
Volatiles	2-Butanone (MEK)			11 UJ	19 UJ	10 UJ	
Volatiles	2-Chlorotoluene			1.1 U	9.4 U	5.1 UJ	
Volatiles	2-Hexanone			11 U	19 U	10 U	
Volatiles	4-Chlorotoluene			1.1 U	9.4 U	5.1 UJ	
Volatiles	4-Isopropyltoluene			1.1 U	9.4 U	5.1 UJ	
Volatiles	4-Methyl-2-pentanone (MIBK)			11 U	9.4 U	5.1 U	
Volatiles	Acetone			11 U	38 UJ	20 UJ	
Volatiles	Acetonitrile				94 U	51 U	
Volatiles	Acrolein				38 U	20 U	
Volatiles	Acrylonitrile			54 U	9.4 U	5.1 U	
Volatiles	Benzene			1.1 U	9.4 U	5.1 U	
Volatiles	Bromobenzene			1.1 U	9.4 U	5.1 UJ	
Volatiles Volatiles	Bromodichloromethane Bromoform			1.1 U 1.1 U	9.4 U 9.4 U	5.1 U 5.1 U	
Volatiles	Bromomethane			1.1 U	9.4 U	5.1 U	
Volatiles	Carbon disulfide			1.1 U	9.4 U	5.1 U	
Volatiles	Carbon tetrachloride			1.1 U	9.4 U	5.1 U	
Volatiles	Chlorobenzene			1.1 U	9.4 U	5.1 UJ	
Volatiles	Chloroethane			1.1 U	9.4 UJ	5.1 UJ	
Volatiles	Chloroform			1.1 U	9.4 U	5.1 U	
Volatiles	Chloromethane			1.1 U	9.4 U	5.1 U	
Volatiles	cis-1,2-Dichloroethene			1.1 U 1.1 U	9.4 U 9.4 U	5.1 U 5.1 U	
Volatiles Volatiles	cis-1,3-Dichloropropene Dibromochloromethane			1.1 U 1.1 U	9.4 U	5.1 UJ	
Volatiles	Dibromomethane			1.1 U	9.4 U	5.1 U	
Volatiles	Dichlorodifluoromethane			1.1 U	9.4 UJ	5.1 UJ	
Volatiles	Ethylbenzene			1.1 U	9.4 U	5.1 UJ	
Volatiles	Hexachlorobutadiene			1.1 U	9.4 U	5.1 UJ	
Volatiles	Isopropylbenzene			1.1 U	9.4 U	5.1 UJ	
Volatiles	m&p-Xylene			2.2 U	9.4 U	5.1 U	
Volatiles Volatiles	Methylene Chloride			1.1 U 1.1 U	9.4 U 38 U	5.1 U 20 U	
Volatiles Volatiles	Methylene Chloride Naphthalene			1.1 U 1.1 U	38 U 9.4 UJ	20 U 5.1 UJ	
Volatiles	n-Butylbenzene			1.1 U	9.4 U	5.1 UJ	
Volatiles	N-Propylbenzene			1.1 U	9.4 U	5.1 UJ	
Volatiles	o-Xylene			1.1 U	9.4 U	5.1 U	
Volatiles	sec-Butylbenzene			1.1 U	9.4 U	5.1 UJ	
Volatiles	Styrene			1.1 U	9.4 U	5.1 U	
Volatiles	tert-Butylbenzene			1.1 U	9.4 U	5.1 UJ	
Volatiles Volatiles	Tetrachloroethene Tetrahydrofuran			1.1 U 1.1 U	<b>9.5</b> 38 U	<b>8.4</b> J 20 U	
Volatiles	Toluene			1.1 U	9.4 U	5.1 UJ	
Volatiles	trans-1,2-Dichloroethene			1.1 U	9.4 U	5.1 U	
Volatiles	trans-1,3-Dichloropropene			1.1 U	9.4 U	5.1 U	
Volatiles	trans-1,4-Dichloro-2-butene			1.1 U	19 U	10 U	
Volatiles Volatiles	Trichloroethene Trichlorofluoromethane			1.1 U 1.1 U	<b>2.5</b> J 9.4 U	<b>4.1</b> J 5.1 U	
Volatiles	Vinyl chloride			1.1 U	9.4 U 9.4 U	5.1 U	
Volatiles	Xylenes, Total			3.2 U	9.4 U	5.1 U	
Volatiles	Total Chlorinated VOCs			0 C	12 C	12.5 C	
Volatiles	Total VOCs			0 C	<b>12</b> C	<b>12.5</b> C	

Sample ID   R1C26(1-2)   R1C26(4-5)   R1C26A (4-5)   R5C1 (5-4)	
Units ug/L ug/L l ug/L l uc	ug/L ug/L ug/L ug/L
<u> </u>	
SPLP Volatiles 1,1,1,2-Tetrachloroethane 5 U 5 U	5 U 5 U 5
SPLP Volatiles   1,1,1-Trichloroethane   5 U   5 U   SPLP Volatiles   1,1,2,2-Tetrachloroethane   5 U   5 U	5 U 5 U 5 5 U 5 U 5
1.1.2-Trichloro-1.2.2-	
SPLP Volatiles trifluoroethane 5 0 5 0	5 U 5 U 5
SPLP Volatiles 1,1,2-Trichloroethane 5 U 5 U	5 U 5 U 5
SPLP Volatiles 1,1-Dichloroethane 5 U 5 U	5 U 5 U 5
SPLP Volatiles 1,1-Dichloroethene 5 U 5 U	5 U 5 U 5
SPLP Volatiles 1,1-Dichloropropene 5 U 5 U	5 U 5 U 5
SPLP Volatiles 1,2,3-Trichlorobenzene 5 U 5 U	5 U 5 U 5 U
SPLP Volatiles         1,2,3-Trichloropropane         5 U         5 U           SPLP Volatiles         1,2,4-Trichlorobenzene         5 U         5 U	5 U 5 U 5 U 5 U
	.53 J 5 U 5
1.2 Dibromo 3	
SPLF volatiles Chloropropane 5 0 5 0	5 U 5 U 5
SPLP Volatiles 1,2-Dibromoethane 5 U 5 U	5 U 5 U 5
SPLP Volatiles 1,2-Dichlorobenzene 5 U 5 U	5 U 5 U 5
SPLP Volatiles 1,2-Dichloroethane 5 U 5 U	5 U 5 U 5
SPLP Volatiles 1,2-Dichloropropane 5 U 5 U	5 U 5 U 5
	.54 J 5 U 5
SPLP Volatiles   1,3-Dichlorobenzene   5 U   5 U   SPLP Volatiles   1,3-Dichloropropane   5 U   5 U	5 U 5 U 5 5 U 5 U 5
SPLP Volatiles   1,3-Dichloropropane   5 U   5 U   SPLP Volatiles   1,4-Dichlorobenzene   5 U   5 U	5 U 5 U 5
	50 UJ 50 UJ 50 U
SPLP Volatiles 2,2-Dichloropropane 5 U 5 U	5 U 5 U 5
	10 UJ 10 UJ 10 U
SPLP Volatiles 2-Chlorotoluene 5 U 5 U	5 U 5 U 5
SPLP Volatiles 2-Hexanone 10 U 10 U	10 U 10 U 10
SPLP Volatiles 4-Chlorotoluene 5 U 5 U	5 U 5 U 5
SPLP Volatiles 4-Isopropyltoluene 5 U 5 U	5 U 5 U 5
SPLP Volatiles 4-Methyl-2-pentanone 10 U 10 U (MIBK)	10 U 10 U 10 I
	10 UJ 10 UJ 10
	50 UJ 50 UJ 50 U
SPLP Volatiles Acrolein 25 UJ 25 UJ :	25 UJ 25 UJ 25 U
SPLP Volatiles Acrylonitrile 10 U 10 U	10 U 10 U 10 I
SPLP Volatiles Benzene 5 U 5 U	5 U 5 U 5
SPLP Volatiles Bromobenzene 5 U 5 U	5 U 5 U 5
SPLP Volatiles Bromodichloromethane 5 U 5 U	5 U 5 U 5
SPLP Volatiles Bromoform 5 U 5 U	5 U 5 U 5
SPLP Volatiles     Bromomethane     5 U     5 U       SPLP Volatiles     Carbon disulfide     5 U     5 U	5 U 5 UJ 5 U 5 U 5 U 5
SPLP Volatiles Carbon tetrachloride 5 U 5 U	5 U 5 U 5
SPLP Volatiles Chlorobenzene 5 U 5 U	5 U 5 U 5
SPLP Volatiles Chloroethane 5 UJ 5 UJ	5 UJ 5 UJ 5
SPLP Volatiles Chloroform 5 U 5 U	5 U 5 U 5
SPLP Volatiles Chloromethane 5 U 5 U	5 U 5 U 5
SPLP Volatiles cis-1,2-Dichloroethene 5 U 5 U	5 U 5 U 13
SPLP Volatiles cis-1,3-Dichloropropene 5 U 5 U	5 U 5 U 5
SPLP Volatiles Dibromochloromethane 5 U 5 U	5 U 5 U 5
SPLP Volatiles Dibromomethane 5 U 5 U	5 U 5 U 5
SPLP Volatiles Dichlorodifluoromethane 5 U 5 U	5 UJ 5 UJ 5
SPLP Volatiles Ethylbenzene 5 U 5 U	5 U 5 U 5
SPLP Volatiles     Hexachlorobutadiene     5 UJ     5 UJ       SPLP Volatiles     Isopropylbenzene     5 U     5 U	.62 J 5 UJ 5 U 5 U
SPLP Volatiles   m&p-Xylene   5 U   5 U	5 U 5 U 5
SPLP Volatiles   Methyl tert-butyl ether   5 U   5 U	5 U 5 U 5
SPLP Volatiles Methylene Chloride 5 U 5.8 F	5 UJ 5 UJ 5
SPLP Volatiles Naphthalene 5 U 5 U	5 UJ 5 UJ 5 U
SPLP Volatiles n-Butylbenzene 5 U 5 U	5 U 5 U 5
SPLP Volatiles N-Propylbenzene 5 U 5 U	5 U 5 U 5
SPLP Volatiles o-Xylene 5 U 5 U	5 U 5 U 5
SPLP Volatiles sec-Butylbenzene 5 U 5 U	5 U 5 U 5
SPLP Volatiles Styrene 5 U 5 U	5 U 5 U 5 U
SPLP Volatiles tert-Butylbenzene 5 U 5 U	5 U 5 U 5
	.64 J 6.1 12
SPLP Volatiles         Tetrahydrofuran         10 U         10 U         10 U           SPLP Volatiles         Toluene         5 U         5 U	10 U 10 U 10 5 U 5
SPLP Volatiles   Toluerie   5 U   5 U   SPLP Volatiles   trans-1,2-Dichloroethene   5 U   5 U	5 U 5 U 5.52
SPLP Volatiles trans-1,3-Dichloropropene 5 U 5 U	5 U 5 U 5
	10 U 10 U 10
SPLP Volatiles Trichloroethene 5 U 5 U	5 U 23 210
SPLP Volatiles Trichlorofluoromethane 5 U 5 U	5 UJ 5 UJ 5
SPLP Volatiles Vinyl chloride 5 U 5 U	5 U 5 U 5
SPLP Volatiles Xylenes, Total 5 U 5 U 5 U NOTES:	5 U 5 U 5

NOTES: value in parenthese is feet below ground surface of sample interval U - not detected

UJ - not detected, reported limit is estimated

J - estimated concentration
C - calculated result

	Site ID Sample ID	R5C30 R5C30 (4-5)	R10C30 R10C30(4-5)	R20C1 R20C1 (4-5)	R20C30 R20C30:4-5	NWC-11 NWC-11(0-2)	NWC-11 NWC-11(4-5)
ANALYSIS	Sample Date Units	02/11/08 ug/Kg	02/25/08 ug/Kg	02/11/08 ug/Kg	02/12/08 ug/Kg	08/03/11	08/03/11
Volatiles	1,1,1,2-Tetrachloroethane	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	1,1,1-Trichloroethane	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	1,1,2,2-Tetrachloroethane	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	1,1,2-Trichloro-1,2,2-	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	trifluoroethane 1,1,2-Trichloroethane	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	1,1-Dichloroethane	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	1,1-Dichloroethene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	1,1-Dichloropropene	290 U	23 U	26 U	27 U		
Volatiles	1,2,3-Trichlorobenzene	290 U	4.6 UJ	5.3 UJ	5.3 U		
Volatiles	1,2,3-Trichloropropane	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	1,2,4-Trichlorobenzene	290 U	4.6 UJ	5.3 UJ	5.3 U		
Volatiles	1,2,4-Trimethylbenzene 1,2-Dibromo-3-	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Chloropropane	290 U	9.3 UJ	11 UJ	11 U		
Volatiles	1,2-Dibromoethane	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	1,2-Dichlorobenzene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	1,2-Dichloroethane	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	1,2-Dichloropropane	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	1,3,5-Trimethylbenzene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	1,3-Dichlorobenzene 1,3-Dichloropropane	290 U 290 U	4.6 U 4.6 U	5.3 U 5.3 U	5.3 U 5.3 U		
Volatiles Volatiles	1,4-Dichlorobenzene	290 U 290 U	4.6 U 4.6 U	5.3 U 5.3 U	5.3 U 5.3 U		
Volatiles	1,4-Dioxane	15000 UJ	370 UJ	420 UJ	430 UJ		
Volatiles	2,2-Dichloropropane	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	2-Butanone (MEK)	290 UJ	<b>4.4</b> JTB	11 UJ	11 U		
Volatiles	2-Chlorotoluene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	2-Hexanone	290 U	9.3 U	11 U	11 U		
Volatiles	4-Chlorotoluene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	4-Isopropyltoluene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	4-Methyl-2-pentanone (MIBK)	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Acetone	730 UJ	19 UJ	21 UJ	21 UJ		
Volatiles	Acetonitrile	580 U	46 U	53 U	53 U		
Volatiles	Acrolein	580 U	19 U	21 U	21 U		
Volatiles	Acrylonitrile	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Benzene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Bromobenzene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Bromodichloromethane	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Bromoform Bromomethane	290 U 290 UJ	4.6 U 4.6 U	5.3 U 5.3 U	5.3 U 5.3 U		
Volatiles Volatiles	Carbon disulfide	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Carbon tetrachloride	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Chlorobenzene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Chloroethane	290 U	4.6 UJ	5.3 UJ	5.3 U		
Volatiles	Chloroform	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Chloromethane	290 UJ	4.6 U	5.3 U	5.3 U		
Volatiles	cis-1,2-Dichloroethene	<b>180</b> J	4.6 U	5.3 U	5.3 U		
Volatiles	cis-1,3-Dichloropropene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles Volatiles	Dibromochloromethane Dibromomethane	290 U 290 U	4.6 U 4.6 U	5.3 U 5.3 U	5.3 U 5.3 U		
Volatiles	Dichlorodifluoromethane	290 U	4.6 UJ	5.3 UJ	5.3 U		
Volatiles	Ethylbenzene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Hexachlorobutadiene	290 UJ	4.6 U	5.3 U	5.3 U		
Volatiles	Isopropylbenzene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	m&p-Xylene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Methyl tert-butyl ether	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Methylene Chloride	290 U	19 U	1.6 J	1.8 J		
Volatiles	Naphthalene	290 U	4.6 UJ	5.3 UJ	5.3 U		
Volatiles	n-Butylbenzene	290 U 290 U	4.6 U	5.3 U 5.3 U	5.3 U 5.3 U		
Volatiles Volatiles	N-Propylbenzene o-Xylene	290 U 290 U	4.6 U 4.6 U	5.3 U 5.3 U	5.3 U 5.3 U		
Volatiles	sec-Butylbenzene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Styrene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	tert-Butylbenzene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Tetrachloroethene	2300	. <b>75</b> J	16	<b>5.2</b> J		
Volatiles	Tetrahydrofuran	290 U	19 U	21 U	21 U		
Volatiles	Toluene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	trans-1,2-Dichloroethene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	trans-1,3-Dichloropropene	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	trans-1,4-Dichloro-2-butene	290 U	9.3 U	11 U	11 U		
Volatiles	Trichloroethene	2300	6.9	<b>3.8</b> J	16		
Volatiles	Trichlorofluoromethane	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Vinyl chloride	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Xylenes, Total	290 U	4.6 U	5.3 U	5.3 U		
Volatiles	Total Chlorinated VOCs	4780 C	7.65 C	21.4 C	23 C		
Volatiles	Total VOCs	<b>4780</b> C	<b>12.05</b> C	<b>21.4</b> C	<b>23</b> C		L

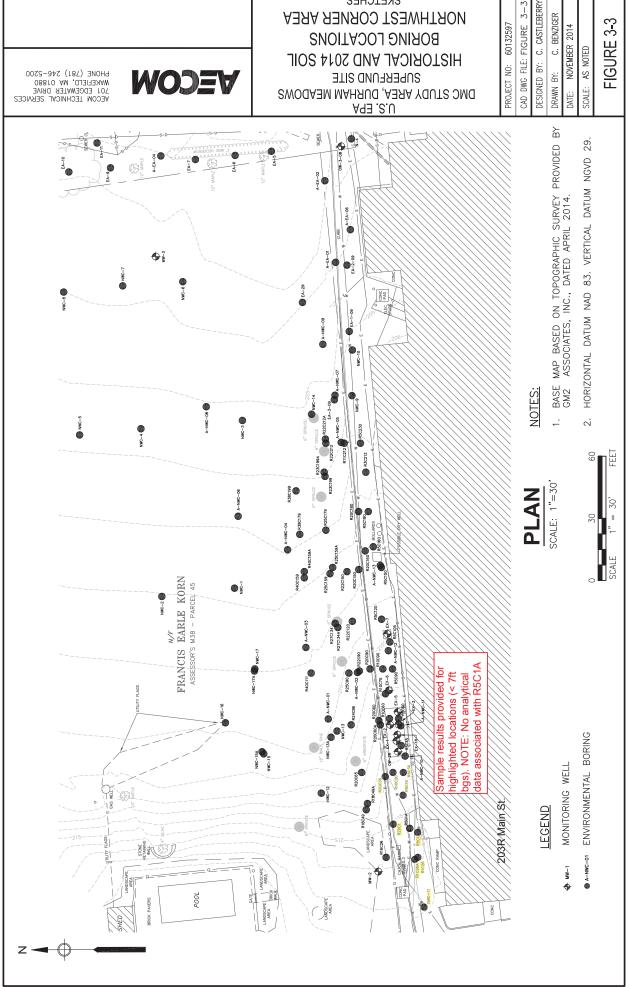
	Site ID	R5C30	R10C30	R20C1	R20C30	NWC-11	NWC-11
ANALYSIS	Sample ID Sample Date	R5C30 (4-5) 02/11/08	R10C30(4-5) 02/25/08	R20C1 (4-5) 02/11/08	R20C30:4-5 02/12/08	NWC-11(0-2) 08/03/11	NWC-11(4-5) 08/03/11
71147121010	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SPLP Volatiles	1,1,1,2-Tetrachloroethane	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	1,1,1-Trichloroethane	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	1,1,2,2-Tetrachloroethane	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	1,1,2-Trichloro-1,2,2- trifluoroethane	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	1,1,2-Trichloroethane	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	1,1-Dichloroethane	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	1,1-Dichloroethene	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles SPLP Volatiles	1,1-Dichloropropene 1,2,3-Trichlorobenzene	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	.5 U .5 UJ	.5 U .5 UJ
SPLP Volatiles	1,2,3-Trichloropropane	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U	.5 UJ	.5 UJ
SPLP Volatiles	1,2,4-Trimethylbenzene	5 U	5 U	5 U	. <b>49</b> J	.5 U	.5 U
SPLP Volatiles	1,2-Dibromo-3-	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	Chloropropane 1,2-Dibromoethane	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	1,2-Dichlorobenzene	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	1,2-Dichloroethane	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	1,2-Dichloropropane	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	1,3,5-Trimethylbenzene	5 U	5 U	5 U	.23 J	.5 U	.5 U
SPLP Volatiles	1,3-Dichlorobenzene	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles SPLP Volatiles	1,3-Dichloropropane 1,4-Dichlorobenzene	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	.5 U .5 U	.5 U .5 U
SPLP Volatiles	1,4-Dioxane	50 UJ	50 UJ	50 UJ	50 UJ	10 UJ	.5 U 10 UJ
SPLP Volatiles	2,2-Dichloropropane	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	2-Butanone (MEK)	10 UJ	10 UJ	10 UJ	10 U	2 U	2 U
SPLP Volatiles	2-Chlorotoluene	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	2-Hexanone	10 U	10 U	10 U	10 U	2 U	2 U
SPLP Volatiles SPLP Volatiles	4-Chlorotoluene 4-Isopropyltoluene	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	.5 U .5 U	.5 U .5 U
SPLP Volatiles	4-Methyl-2-pentanone						
	(MIBK)	10 U	10 U	10 U	10 U	2 U	2 U
SPLP Volatiles	Acetone	12 J	10 UJ	10 UJ	10 UJ	2.5 J	2 UJ
SPLP Volatiles SPLP Volatiles	Acetonitrile Acrolein	50 UJ 25 UJ	50 UJ 25 UJ	50 UJ 25 UJ	50 U 25 U	20 UJ 10 UJ	20 UJ 10 UJ
SPLP Volatiles	Acrylonitrile	10 U	10 U	10 U	10 U	2 U	2 U
SPLP Volatiles	Benzene	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	Bromobenzene	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	Bromodichloromethane	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles SPLP Volatiles	Bromoform	5 U 5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	Bromomethane Carbon disulfide	5 U 5 U	5 UJ 5 U	5 U 5 U	5 U 5 U	1 U .5 U	1 U .5 U
SPLP Volatiles	Carbon tetrachloride	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	Chlorobenzene	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	Chloroethane	5 UJ	5 UJ	5 UJ	5 UJ	1 U	1 U
SPLP Volatiles	Chloroform	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles SPLP Volatiles	Chloromethane cis-1,2-Dichloroethene	5 U <b>1.3</b> J	5 U 5 U	5 U 5 U	5 U 5 U	.5 U .5 U	.5 U .5 U
SPLP Volatiles	cis-1,3-Dichloropropene	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	Dibromochloromethane	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	Dibromomethane	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	Dichlorodifluoromethane	5 UJ	5 UJ	5 UJ	5 U	1 U	1 U
SPLP Volatiles	Ethylbenzene	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles SPLP Volatiles	Hexachlorobutadiene Isopropylbenzene	5 UJ 5 U	5 UJ 5 U	5 UJ 5 U	5 UJ 5 U	.5 UJ .5 U	.5 UJ .5 U
SPLP Volatiles	m&p-Xylene	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	Methyl tert-butyl ether	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	Methylene Chloride	5 UJ	5 UJ	5 UJ	5 U	2 UJ	2 UJ
SPLP Volatiles	Naphthalene	5 UJ	5 UJ	5 UJ	5 U	.5 UJ	<b>2.6</b> J
SPLP Volatiles	n-Butylbenzene	5 U	5 U	5 U	5 U	.5 UJ	.5 UJ
SPLP Volatiles SPLP Volatiles	N-Propylbenzene o-Xylene	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	.5 U .5 U	.5 U .5 U
SPLP Volatiles	sec-Butylbenzene	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	Styrene	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	tert-Butylbenzene	5 U	5 U	5 U	5 U	1 U	1 U
SPLP Volatiles	Tetrachloroethene	16	<b>.63</b> J	<b>1.1</b> J	. <b>77</b> J	.5 U	.5 U
SPLP Volatiles	Tetrahydrofuran	10 U	10 U	10 U	10 U	2 U	2 U
SPLP Volatiles	Toluene	5 U	5 U	5 U	. <b>9</b> J	.5 U	.5 U
SPLP Volatiles SPLP Volatiles	trans-1,2-Dichloroethene trans-1,3-Dichloropropene	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	.5 U .5 U	.5 U .5 U
SPLP Volatiles	trans-1,4-Dichloro-2-butene	10 U	10 U	10 U	10 U	.5 U 1 U	.5 U 1 U
SPLP Volatiles	Trichloroethene	20	5 U	5 U	1.8 J	.5 U	.5 U
SPLP Volatiles	Trichlorofluoromethane	5 UJ	5 UJ	5 UJ	5 U	.5 U	.5 U
SPLP Volatiles	Vinyl chloride	5 U	5 U	5 U	5 U	.5 U	.5 U
SPLP Volatiles	Xylenes, Total	5 U	5 U	5 U	5 U	1 U	1 U

NOTES:

value in parenthese is feet bel
U - not detected

UJ - not detected, reported lim J - estimated concentration

C - calculated result



SKETCHES

NORTHWEST CORNER AREA