

SITE DEVELOPMENT PLANS

FOR 160 HIGH STREET BELLINGHAM, MA

NOVEMBER 11, 2015

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APPLICANT:

CAMPANELLI BELLINGHAM LLC
10 CAMPANELLI DRIVE
BRAINTREE, MA 02184

OWNER:

HCRI MA PROPERTIES TRUST II
4500 DORR AVENUE
TOLEDO, OH 43615

CIVIL ENGINEERS:

KELLY ENGINEERING GROUP, INC.
0 CAMPANELLI DRIVE
BRAINTREE, MA 02184

TRAFFIC CONSULTANT:

VANASSE & ASSOCIATES, INC.
33 NEW ENGLAND BUSINESS CENTER DRIVE
ANDOVER, MA 01810

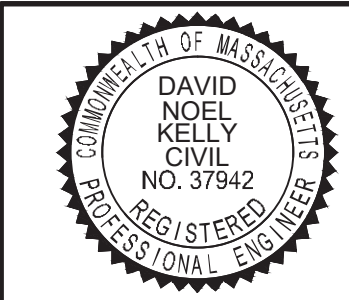


LOCATION MAP

SCALE= 1"= 2,000'

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Digitally signed by David Noel Kelly P.E.
DN: cn=David Noel Kelly P.E., o=Kelly Engineering Group, Inc., ou, email=dkelly@kellyeng.com, c=US
Date: 2017.06.27 15:03:33 -0400



SCALE	DISK REF. NO.
NA	F:\P\2015-061
DATE	DRAWN BY
11/11/15	C.L.
SHEET	CHKD BY
1 OF 23	DAM
PLAN NO.	APPD BY
2015-061-TS07	DNK

160 HIGH STREET BELLINGHAM, MA	
KELLY ENGINEERING GROUP, INC. CIVIL ENGINEERING CONSULTANTS	
0 CAMPANELLI DRIVE • BRAINTREE, MA • 02184 PHONE: 781 843 4333 FAX: 781 843 0028	

SHEET NO.
1

OBSERVATION HOLES PERFORMED BY BRANDON LI OF KELLY ENGINEERING GROUP, INC. AND WITNESSED BY MICHAEL CATALANO OF THE TOWN OF BELLINGHAM BOARD OF HEALTH.

TEST PIT LOG TP# 1		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-12"	A	SANDY LOAM
12"-36"	B	SANDY LOAM
36"-72"	C1	LOAMY SAND
72"-132"	C2	SANDY LOAM

SURFACE ELEVATION @ 211.2
MOTTLING OBSERVED @ 60"
WEEDING OBSERVED @ 108"

TEST PIT LOG TP# 2		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-8"	A	SANDY LOAM
8"-42"	B	SANDY LOAM
42"-60"	C1	SANDY LOAM
60"-120"	C2	SANDY LOAM

SURFACE ELEVATION @ 217.8
MOTTLING OBSERVED @ 41"
WEEDING OBSERVED @ 84"

TEST PIT LOG TP# 3		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-30"	FILL	NA
30"-36"	A	SANDY LOAM
36"-56"	B	SANDY LOAM
56"-144"	C	SANDY LOAM

SURFACE ELEVATION @ 220.8
MOTTLING OBSERVED @ 58"
WEEDING OBSERVED @ 78"

TEST PIT LOG TP# 4		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-8"	A	SANDY LOAM
8"-36"	B	SANDY LOAM
36"-60"	C1	LOAMY SAND
60"-132"	C2	SANDY LOAM

SURFACE ELEVATION @ 226.7
NO MOTTLING OBSERVED
STANDING WATER @ 108"

TEST PIT LOG TP# 5		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-8"	A	SANDY LOAM
8"-30"	B	SANDY LOAM
30"-156"	C	SANDY LOAM

SURFACE ELEVATION @ 230.6
NO MOTTLING OBSERVED
STANDING WATER @ 156"

TEST PIT LOG TP# 6		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-8"	A	SANDY LOAM
8"-27"	B	SANDY LOAM
27"-40"	C1	LOAMY SAND
40"-96"	C2	SANDY LOAM

SURFACE ELEVATION @ 213.1
MOTTLING OBSERVED @ 30"
NO WEEDING OBSERVED

TEST PIT LOG TP# 7		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-15"	A	SANDY LOAM
15"-36"	B	SANDY LOAM
36"-72"	C1	LOAMY SAND
72"-86"	C2	SANDY LOAM

SURFACE ELEVATION @ 210.3
MOTTLING OBSERVED @ 60"
WEEDING OBSERVED @ 90"

TEST PIT LOG TP# 8		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-8"	A	SANDY LOAM
8"-28"	B	SANDY LOAM
28"-57"	C1	SANDY LOAM
57"-144"	C2	LOAMY SAND

SURFACE ELEVATION @ 217.2
MOTTLING OBSERVED @ 66"
WEEDING OBSERVED @ 100"

TEST PIT LOG TP# 9		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-15"	A	LOAMY SAND
15"-40"	B	LOAMY SAND
40"-64"	C1	GRAVELLY SAND
64"-120"	C2	FINE SAND

SURFACE ELEVATION @ 216.8
NO MOTTLING OBSERVED
WEEDING OBSERVED @ 48"
STANDING WATER @ 104"
REFUSAL @ 120"

TEST PIT LOG TP# 10		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-12"	A	SANDY LOAM
12"-36"	B	SANDY LOAM
36"-56"	C1	LOAMY SAND
56"-120"	C2	SANDY LOAM

SURFACE ELEVATION @ 208.7
MOTTLING OBSERVED @ 48"
WEEDING OBSERVED @ 54"

TEST PIT LOG TP# 11		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-12"	A	SANDY LOAM
12"-30"	B	SANDY LOAM
30"-120"	C	SANDY LOAM

SURFACE ELEVATION @ 208.8
MOTTLING OBSERVED @ 36"
WEEDING OBSERVED @ 60"

TEST PIT LOG TP# 12		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-16"	A	SANDY LOAM
16"-36"	B	SANDY LOAM
36"-72"	C1	SANDY LOAM
72"-132"	C2	LOAMY SAND

SURFACE ELEVATION @ 228.0
MOTTLING OBSERVED @ 144"
NO WEEDING OBSERVED

TEST PIT LOG TP# 13		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-18"	A	SANDY LOAM
18"-42"	B	LOAMY SAND
42"-84"	C1	SANDY LOAM
84"-144"	C2	SAND

SURFACE ELEVATION @ 220.0
MOTTLING OBSERVED @ 144"
NO WEEDING OBSERVED

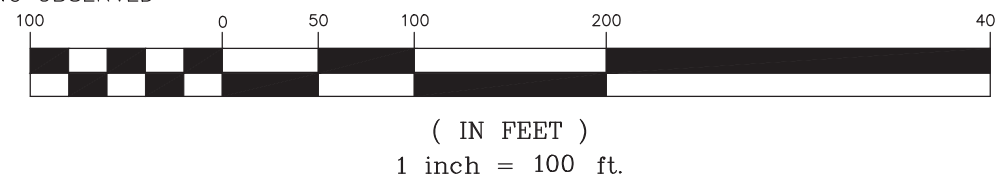
TEST PIT LOG TP# 14		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-14"	A	LOAMY SAND
14"-36"	B	LOAMY SAND
36"-120"	C1	SANDY LOAM
120"-156"	C2	SANDY LOAM

SURFACE ELEVATION @ 217.0
MOTTLING OBSERVED @ 118"
WEEDING OBSERVED @ 120"
STANDING WATER @ 132"

TEST PIT LOG TP# 15		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-12"	A	LOAMY SAND
12"-36"	B	LOAMY SAND
36"-84"	C1	SAND
84"-144"	C2	SANDY LOAM

SURFACE ELEVATION @ 222.0
MOTTLING OBSERVED @ 118"
WEEDING OBSERVED @ 120"
STANDING WATER @ 132"

GRAPHIC SCALE



(IN FEET)
1 inch = 100 ft.

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TEST PIT LOG TP# 16		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-12"	A	LOAMY SAND
12"-38"	B	LOAMY SAND
38"-100"	C1	LOAMY SAND
100"-124"	C2	LOAMY SAND

SURFACE ELEVATION @ 215.0
MOTTLING OBSERVED @ 102"
NO WEEDING OBSERVED

TEST PIT LOG TP# 17		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-14"	A	LOAMY SAND
14"-33"	B	LOAMY SAND
33"-78"	C1	LOAMY SAND
78"-126"	C2	SANDY LOAM

SURFACE ELEVATION @ 220.0
MOTTLING OBSERVED @ 90"
NO WEEDING OBSERVED

TEST PIT LOG TP# 18		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-12"	A	SANDY LOAM
12"-40"	B	SANDY LOAM
40"-102"	C1	LOAMY SAND
102"-132"	C2	SANDY LOAM

SURFACE ELEVATION @ 222.0
MOTTLING OBSERVED @ 96"
NO WEEDING OBSERVED

TEST PIT LOG TP# 19		
Depth From Surface (in)	Soil Horizon	Soil Texture (USDA)
0-15"	A	LOAMY SAND
15"-45"	B	LOAMY SAND
45"-132"	C	SANDY LOAM

SURFACE ELEVATION @ 219.5
MOTTLING OBSERVED @ 100"
NO WEEDING OBSERVED

SEE SHEET 4 FOR NOTES
AND LEGEND

7	06/27/17	UPDATE ARCHAEOLOGICAL LAB AREA	
6	02/07/17	NO CHANGE	
5	01/18/17	NO CHANGE	
4	11/14/16	NO CHANGE	
3	10/21/16	ADD TEST PITS	
2	02/29/16	PER TOWN & PEER REVIEW COMMENTS	
1	11/20/15	PER CONSERVATION COMMISSION FILING	
REV	DATE	REVISION	BY
PLAN NO. 2015-061-SU00			
DISK REF NO. F:\P\2015-061			
DRAWN BY JPM			
CHKD BY SMH			
APPD BY SMH			
CAMPANELLI BELLINGHAM LLC 160 HIGH STREET BELLINGHAM, MA OVERALL EXISTING CONDITIONS PLAN			
KELLY ENGINEERING GROUP, INC. CIVIL ENGINEERING CONSULTANTS 0 CAMPANELLI DRIVE · BRAINTREE, MA · 02184 PHONE: 781 843 4333 · FAX: 781 843 0028			

STEVEN M. HORSFALL
2017.06.27
14:02:13
04007
STEVEN M. HORSFALL
No. 41608
PROFESSIONAL
LAND SURVEYOR
SHEET NO. 2

ZONING LEGEND				
ZONING DISTRICT: INDUSTRIAL				
	REQUIRED	PROVIDED LOT 1	PROVIDED LOT 2	COMPLIANCE
MIN. AREA	60,000 S.F. (1.38± AC.)	22.0± AC.	64.6± AC.	YES
MIN. FRONTAGE	200'	1,017'±	1,196'± (NOTE 5)	YES
MIN. YARD -FRONT	20' (NOTE 1)	364'±	284'±	YES
-SIDE	10' (NOTE 2)	216'±	257'±	YES
-REAR	20' (NOTE 1)	80'±	450'±	YES
MAX. STORIES	N/A	1	1	N/A
MAX. HEIGHT	45'	<45'	<45'	YES
LOT COVERAGE	N/A	13.3%	10.7%	N/A
PARKING TOTAL	(NOTE 3)	95	243 (52 RESERVE)	BY SPECIAL PERMIT
-SIZE	9' x 18'	9' x 18'	9' x 18'	YES
-HANDICAP	(NOTE 4)	4	8	YES
-LOADING	AS NECESSARY	25	54	YES
BICYCLE PARKING	1 / 20 SPACES	6	16	YES
PARKING SETBACK				
-FRONT	20'	368'±	257'±	YES
-SIDE	N/A	308'±	284'±	N/A
-REAR	N/A	83'±	378'±	N/A
-BUILDING	N/A	15'±	15'±	N/A
aisle width	N/A	24'	24'	N/A
INTERIOR LANDSCAPING	5%	>5%	>5%	YES

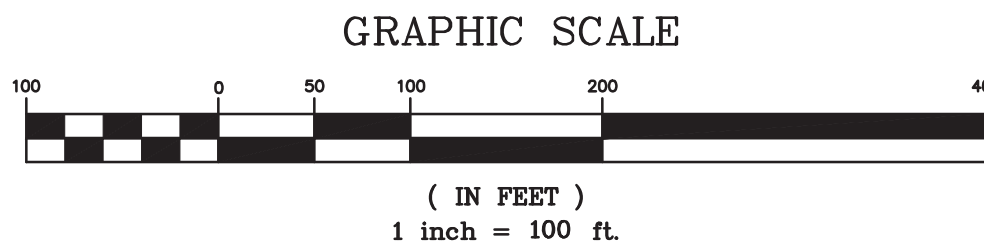
- NOTES:
- INCREASE TO 100' WHEN ADJOINING A RESIDENTIAL, SUBURBAN, OR AGRICULTURAL DISTRICT.
 - INCREASE TO 30' WHEN ADJOINING A RESIDENTIAL, SUBURBAN, OR AGRICULTURAL DISTRICT.
 - REQUIRED PARKING: INDUSTRIAL = 2 SPACES / 1,000 S.F.
LOT 1 = 255 SPACES, LOT 2 = 600 SPACES,
 - REQUIRED HANDICAP PARKING:
LOT 1 = 4 SPACES, LOT 2 = 7 SPACES,
 - FRONTAGE ON MAPLE STREET ONLY LISTED

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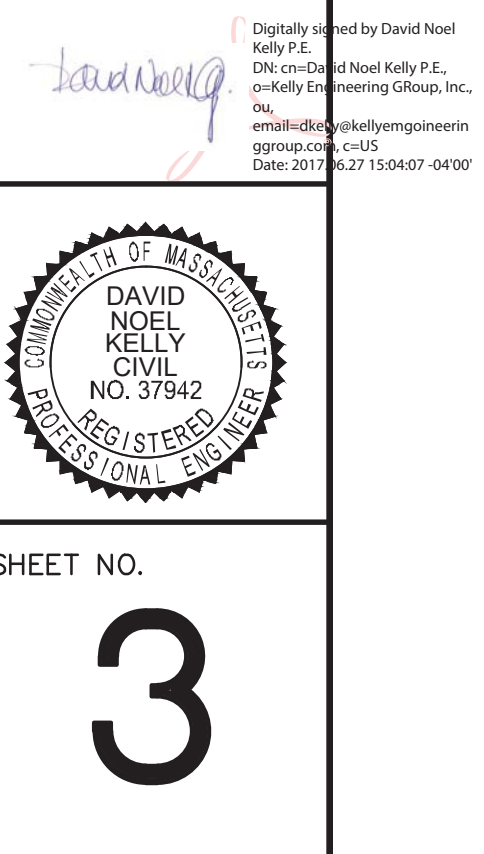
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EXISTING LEGEND	
	STONE WALL
	EDGE OF WETLANDS
	FLOODPLAIN

PROPOSED LEGEND	
CCB	CAPE COD BERM
VCC	VERTICAL GRANITE CURB
CC	CONCRETE CURB
H	HANDICAP SPACE
V	VAN HANDICAP SPACE
→	HANDICAP RAMP
⊞	CURB STOP
	STANDARD PAVEMENT
	GRAVEL EMERGENCY ACCESS DRIVE
	REPLICATED WETLANDS
	REPLICATED WETLANDS SYMBOL
	PROPERTY LINE
	BUFFER ENHANCEMENT
	LIGHT FIXTURES

7	06/27/17	REQUEST FOR DETERMINATION OF INSUBSTANTIAL ALTERATION	
6	02/07/17	NO CHANGE	
5	01/18/17	REVISED SITE LAYOUT PER TOWN COMMENTS	
4	11/14/16	PER TOWN & PEER REVIEW COMMENTS	
3	10/21/16	REVISED SITE LAYOUT	
2	02/29/16	PER TOWN & PEER REVIEW COMMENTS	
1	11/20/15	PER CONSERVATION COMMISSION FILING	
REV	DATE	REVISION	BY
SHEET 3 OF 23			
PLAN NO. 2015-061-LA07			
DISK REF NO. F:\P\2015-061			
DRAWN BY C.J.L.			
CHKD BY DAM			
APPD BY D.N.K.			
CAMPANELLI BELLINGHAM LLC 160 HIGH STREET BELLINGHAM, MA OVERALL LAYOUT PLAN			
KELLY ENGINEERING GROUP, INC. CIVIL ENGINEERING CONSULTANTS 0 CAMPANELLI DRIVE • BRAintree, MA • 02184 PHONE: 781 843 4333 FAX: 781 843 0028			
SHEET NO.			3

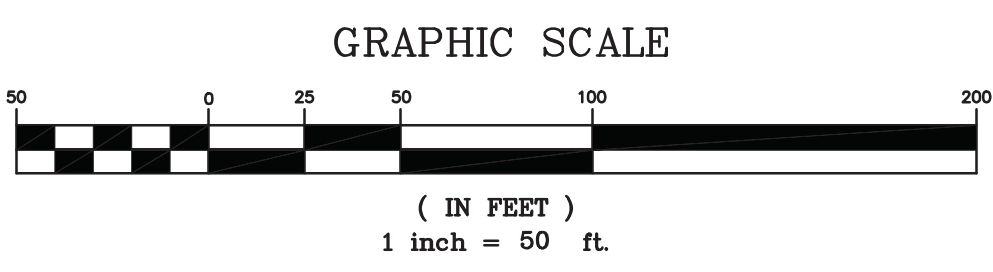




- NOTES:**
- 1.) Topographical information shown hereon is based on record information supplemented with on the ground survey data.
 - 2.) Elevations shown hereon are based on NAVD 1988 datum.
 - 3.) Utilities shown hereon are approximate only and should be field verified prior to any work being performed on the site.
 - 4.) Contour lines and site features shown hereon have been digitized from plan reference #2. Field survey has been performed to confirm the conditions shown hereon.
 - 5.) Wetlands shown hereon were flagged by Ecotec, Inc. and field located by Kelly Engineering Group, Inc.

LEGEND	
	CATCH BASIN
	DRAIN MANHOLE
	DRAIN LINE
	SEWER MANHOLE
	SEWER LINE
	WATER LINE
	WATER VALVE
	HYDRANT
	UTILITY POLE
	CAPE COD BERM
	BOUND
	WETLAND LINE
	WETLAND
	WETLAND FLAG
	FLOOD PLAIN LINE
	CONTOUR MAJOR
	CONTOUR MINOR
	TREE LINE
	STONE WALL

- PLAN REFERENCES:**
- 1.) LAND COURT PLAN 7594-43
 - 2.) PLAN ENTITLED, "TOPOGRAPHIC PLAN - PROJECT: BCL PREMIER SPORTS ATHLETIC COMPLEX - PREPARED FOR LIG DEVELOPMENT COMPANY, LLC - PREPARED BY BEALS AND THOMAS, INC., 144 TURNPIKE RD. (RT. 9), SOUTHBOROUGH, MASS., DATED DEC. 5, 2007.
 - 3.) LAND COURT PLAN 7594-A



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5	01/18/17	NO CHANGE	
4	11/14/16	NO CHANGE	
3	10/21/16	NO CHANGE	
2	02/29/16	PER TOWN & PEER REVIEW COMMENTS	
1	11/20/15	PER CONSERVATION COMMISSION FILING	
REV	DATE	REVISION	BY

SHEET 4 OF 23

PLAN NO. 2015-061-SU00

DISK REF NO. F:\P\2015-061

DRAWN BY JPM

CHKD BY SMH

APPD BY SMH

CAMPANELLI BELLINGHAM LLC
160 HIGH STREET
BELLINGHAM, MA

EXISTING CONDITIONS PLAN (PART A)

KELLY ENGINEERING GROUP, INC.
CIVIL ENGINEERING CONSULTANTS
0 CAMPANELLI DRIVE · BRAINTREE MA · 02184
PHONE: 781 843 4333 FAX: 781 843 0028

Steven M. Horsfall
2017.01.20
1415:03
-05'00"

STEVEN M. HORSFALL
No. 41608
PROFESSIONAL LAND SURVEYOR

SHEET NO. **4**



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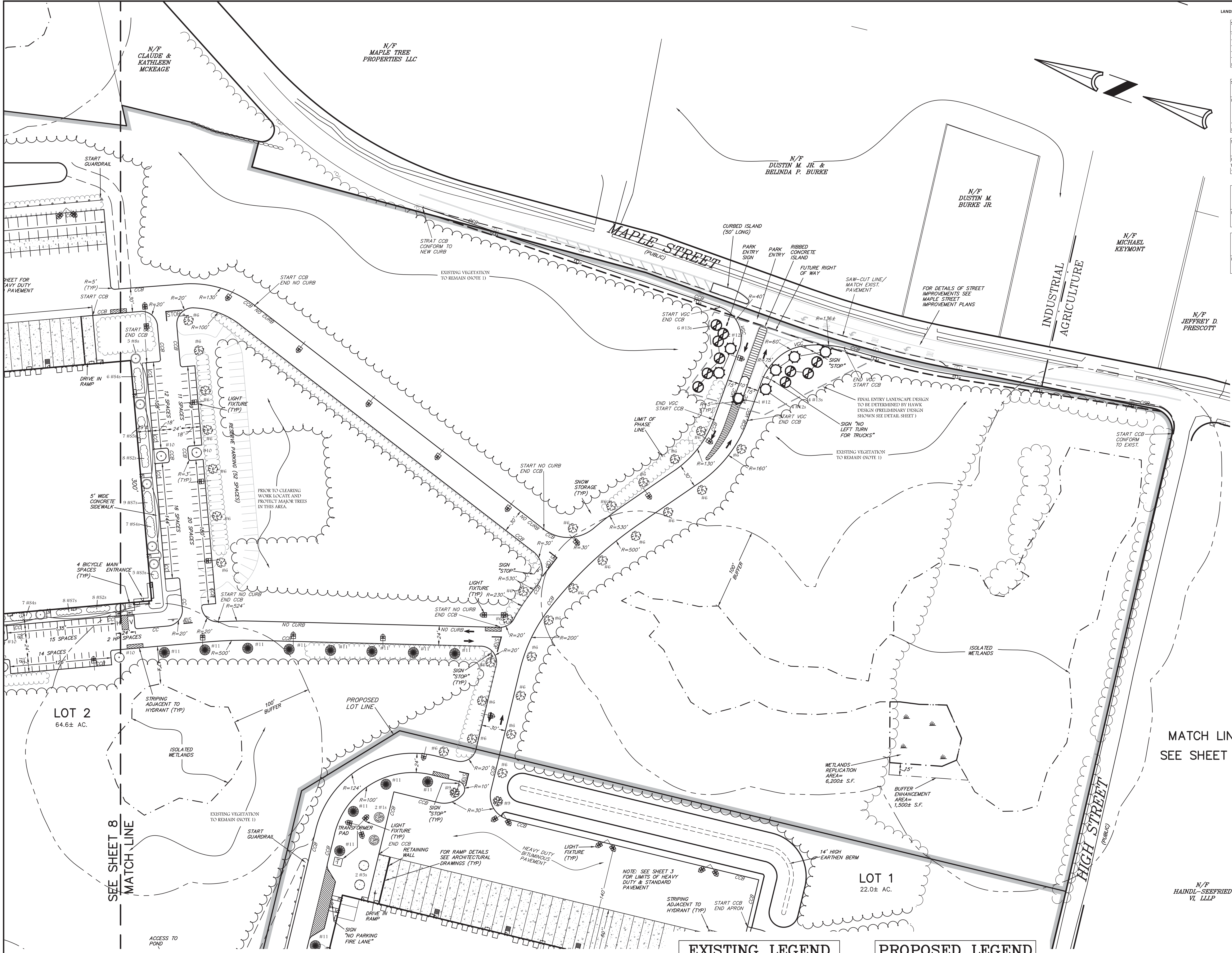
SEE SHEET 4 FOR NOTES AND LEGEND

7	06/27/17	UPDATE ARCHAEOLOGICAL LAB AREA	
6	02/07/17	NO CHANGE	
5	01/18/17	NO CHANGE	
4	11/14/16	NO CHANGE	
3	10/21/16	ADD TEST PITS	
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1	11/20/15	PER CONSERVATION COMMISSION FILING	
REV	DATE	REVISION	BY
SHEET 5 OF 23			
PLAN NO. 2015-061-SU00			
DISK REF NO. F:\P\2015-061			
DRAWN BY JPM			
CHKD BY SMH			
APPD BY SMH			
CAMPANELLI BELLINGHAM LLC 160 HIGH STREET BELLINGHAM, MA			
EXISTING CONDITIONS PLAN (PART B)			
KELLY ENGINEERING GROUP, INC. CIVIL ENGINEERING CONSULTANTS 0 CAMPANELLI DRIVE • BRAINTREE, MA • 02184 PHONE: 781 843 4333 FAX: 781 843 0028			

Steven M. Horsfall
2017.06.27
14:02:59
04'00"

STEVEN M. HORSFALL
No. 41608
PROFESSIONAL ENGINEER
STATE OF MASSACHUSETTS

SHEET NO.
5



LANDSCAPING REQUIREMENTS CHAPTER 240 ARTICLE XI

SCENIC ROAD TREES	TREES REMOVED NUMBER	REPLACEMENT REQUIRED RATE	REPLACEMENT REQUIRED NUMBER
TREES < 12"	1	1 PER TREE	1
TREES > 12" TO 24"	0	3 PER TREE	0
TREES > 24"	1	4 PER TREE	4
TOTAL REPLACEMENT TREES REQUIRED			5
TOTAL REPLACEMENT TREES PROVIDED			22

NOTE: SEE CONCEPTUAL ENTRANCE SKETCH BY HAWK DESIGN, INC.

STREET PLANTING AREA	TREES REQUIRED 1 TREE PER 30 LF (NUMBER)	TREES PROVIDED (NUMBER)	SHRUBS REQUIRED 1 SHRUB PER 1 LF (NUMBER)	SHRUBS PROVIDED (NUMBER)
FRONTAGE				
TOTAL: 3,000 +/- LINEAR FEET	100	>100*	1,000	* (DEVELOPMENT PLAN APPROVAL)

*EXISTING VEGETATION ALONG RIGHT OF WAY EXCEED NUMBER REQUIRED
NOTE: LOCATION OF STREET FRONT PLANTINGS IS BEYOND 15 FEET FROM PROPERTY LINE TO MAINTAIN EXISTING MATURE VEGETATION ALONG STREET

SIDELINE PLANTING AREA (NORTH SIDE)	TREES REQUIRED 1 TREE PER 30 LF (NUMBER)	TREES PROVIDED (NUMBER)	SHRUBS REQUIRED 1 SHRUB PER 1 LF (NUMBER)	SHRUBS PROVIDED (NUMBER)
FRONTLINE TO BUILDING SETBACK				
TOTAL 1,708 FT (SEE ZONING LEGEND)	59	>59*	590	>590*

*EXISTING VEGETATION ALONG SIDELINE EXCEED NUMBER REQUIRED

PARKING AREA PLANTING AREA (LOT 1 PARKING AREA)	TREES REQUIRED 1 TREE PER 1,500 S.F. (NUMBER)	TREES PROVIDED (NUMBER)	SHRUBS REQUIRED 4 SHRUBS PER 1,500 S.F. (NUMBER)	SHRUBS PROVIDED (NUMBER)	REQUIRED INTERIOR LANDSCAPED AREA (PERCENTAGE)	PROVIDED INTERIOR LANDSCAPED AREA (PERCENTAGE)
PAVED PARKING AREA						
27,738 S.F.	19	20	74	78 (DEVELOPMENT PLAN APPROVAL)	5%	7.00%

PARKING AREA PLANTING AREA (LOT 2 PARKING AREA)	TREES REQUIRED 1 TREE PER 1,500 S.F. (NUMBER)	TREES PROVIDED (NUMBER)	SHRUBS REQUIRED 4 SHRUBS PER 1,500 S.F. (NUMBER)	SHRUBS PROVIDED (NUMBER)	REQUIRED INTERIOR LANDSCAPED AREA (PERCENTAGE)	PROVIDED INTERIOR LANDSCAPED AREA (PERCENTAGE)
PAVED PARKING AREA						
73,016 S.F.	48	40 (DEVELOPMENT PLAN APPROVAL)	192	178 (DEVELOPMENT PLAN APPROVAL)	5%	6.00%

PLANTING LEGEND

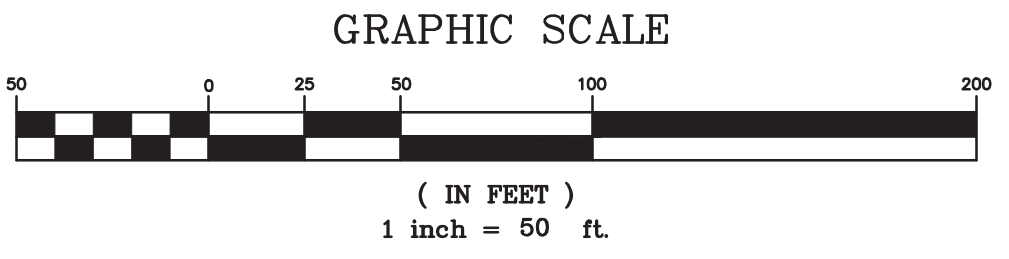
TREES	KEY	QUANTITY	COMMON NAME	BOTANICAL NAME	SIZE	SPEC
1	2	NOT Labeled	COLORADO BLUE SPRUCE	PICEA PUNGENS	6" - 7"	B & B
3	5	NOT Labeled	SERBIAN SPRUCE	PICEA OMORICA	8"	B & B
5	7	NOT Labeled	DOUGLAS FIR	PSEUDOTSUGA MENZIESII	8"	B & B
6	29	NOT Labeled	OCTOBER GLORY RED MAPLE	ACER RUFUM VAR 'OCTOBER GLORY'	5" CALIPER	B & B
8	33	NOT Labeled	BRADFORD CALERY	PYRUS CALLERYANA 'BRADFORD'	2 1/2" - 3"	B & B
9	2	NOT Labeled	RED OAK	QUERCUS RUBRA	2 1/2" - 3" CALIPER	B & B
10	21	NOT Labeled	ZELEKOVA 'VILLAGE GREEN'	ZELEKOVA SERRATA 'VILLAGE GREEN'	2 1/2" - 3" CALIPER	B & B
11	16	NOT Labeled	LONDON PLANE TREE	PLATANUS X ACERIFOLIA VAR.	2 1/2" - 3" CALIPER	B & B
12	7	NOT Labeled	SHADE TREE	SHADE TREE	2 1/2" - 3" CALIPER	B & B
13	10	NOT Labeled	EVERGREEN TREE	EVERGREEN TREE	2 1/2" - 3" CALIPER	B & B
TOTAL = 132						

SHRUBS	KEY	QUANTITY	COMMON NAME	BOTANICAL NAME	SIZE	SPEC
61	NOT Labeled	NOT Labeled	AZALEA BERRY	BERRY AZALEA	24"	B & B
63	NOT Labeled	NOT Labeled	MOUNTAIN LAUREL	KALMIA LATIFOLIA	3" - 4"	B & B
65	NOT Labeled	NOT Labeled	INK BERRY	ILEX GLABRA	2" - 3"	B & B
66	NOT Labeled	NOT Labeled	CARLE VIBURNUM	VIBURNUM CARLE	#7 POT	B & B
TOTAL = 256						

- NOTE 1. VEGETATION TO REMAIN SHALL BE PROTECTED DURING CONSTRUCTION. THESE AREAS SHALL BE PRUNED AS NECESSARY TO PROVIDE A HEALTHY BUFFER.
2. PLANT SHRUBS & TREES 5' FROM CURB IF POSSIBLE
3. FINAL TREE SPECIES AT THE ENTRANCE TO BE FINALIZED BY HAWK DESIGN.

EXISTING LEGEND	
-----	STONE WALL
- - - - -	EDGE OF WETLANDS
~~~~~	FLOODPLAIN
~~~~~	TREE LINE

PROPOSED LEGEND	
CCB	CAPE COD BERM
VCC	VERTICAL GRANITE CURB
CC	CONCRETE CURB
H	HANDICAP SPACE
V	VAN HANDICAP SPACE
→	HANDICAP RAMP
==	CURB STOP
~~~~~	REPLICATED WETLANDS
~~~~~	REPLICATED WETLANDS SYMBOL
-----	PROPERTY LINE
~~~~~	BUFFER ENHANCEMENT
~~~~~	SNOW STORAGE
~~~~~	WOOD POST GUARDRAIL
~~~~~	TREE LINE
~~~~~	LIGHT FIXTURES



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7	06/27/17	REQUEST FOR DETERMINATION OF INSUBSTANTIAL ALTERATION	
6	02/07/17	PER PEER REVIEW COMMENTS	
5	01/18/17	REVISED SITE LAYOUT PER TOWN COMMENTS	
4	11/14/16	PER TOWN & PEER REVIEW COMMENTS	
3	10/21/16	REVISED SITE LAYOUT	
2	02/29/16	PER TOWN & PEER REVIEW COMMENTS	
1	11/20/15	PER CONSERVATION COMMISSION FILING	
REV	DATE	REVISION	BY

SCALE: 1" = 50'

DATE: 11/11/15

SHEET: 7 OF 23

PLAN NO.: 2015-061-LA07

DISK REF NO.: F:\P\2015-061

DRAWN BY: C.J.L.

CHKD BY: DAM

APPD BY: DNK

**CAMPANELLI BELLINGHAM LLC**  
160 HIGH STREET  
BELLINGHAM, MA

**LAYOUT & LANDSCAPING PLAN (PART A)**

**KELLY ENGINEERING GROUP, INC.**  
CIVIL ENGINEERING CONSULTANTS  
0 CAMPANELLI DRIVE • BRAintree MA • 02184  
PHONE: 781 843 4333 FAX: 781 843 0028

SHEET NO. **7**

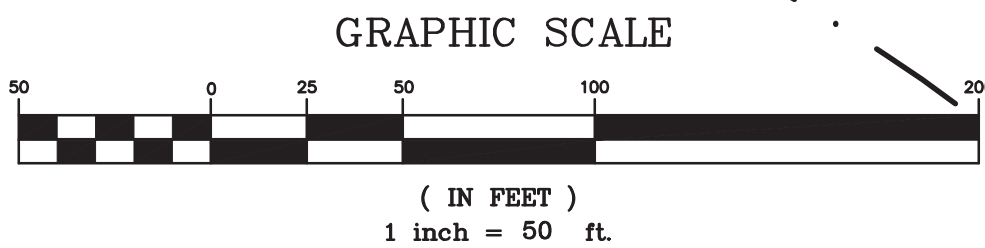
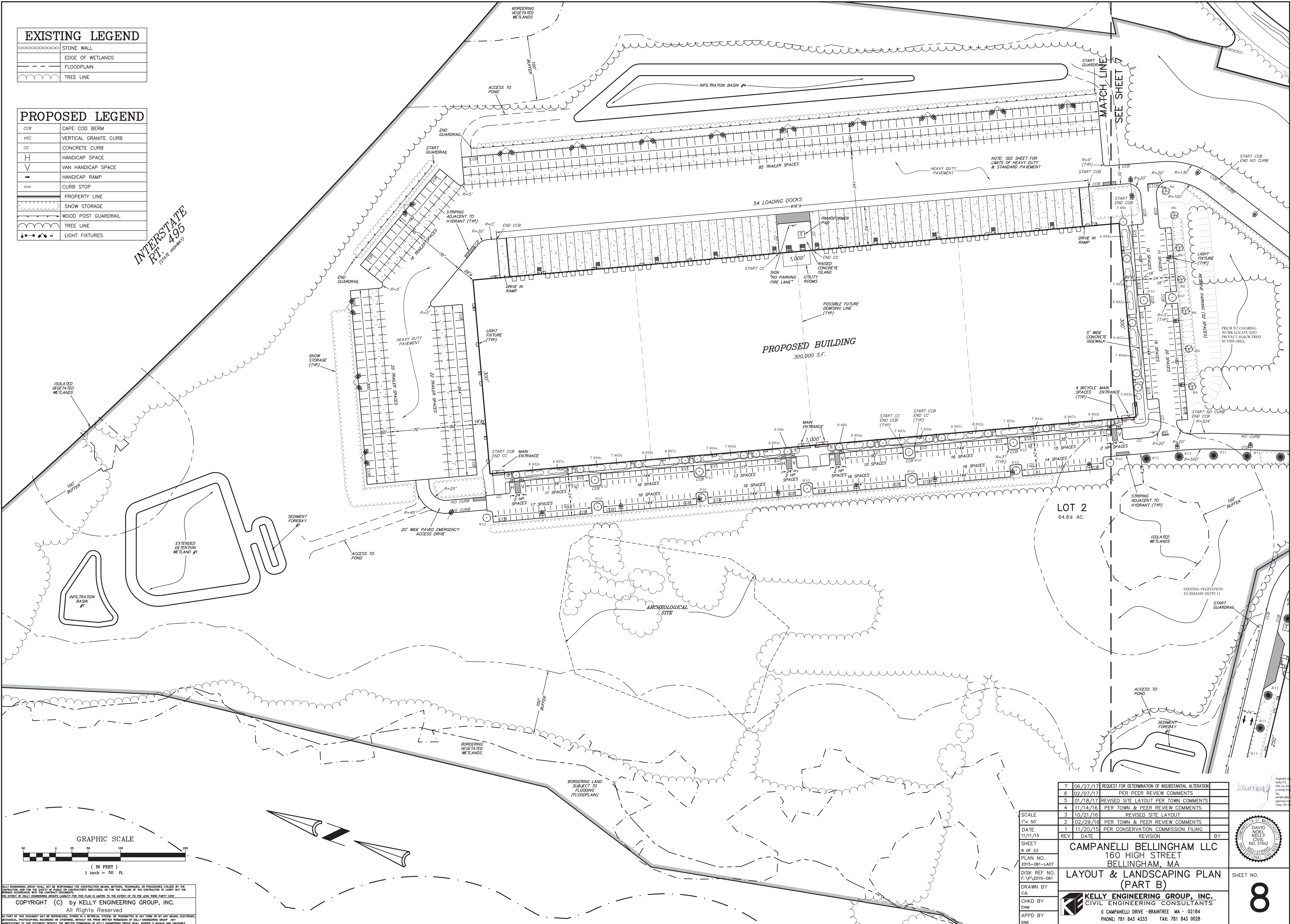
Digitally signed by David Noel Kelly, Jr.  
DN: cn=David Noel Kelly, o=Kelly Engineering Group, ou=Kelly Engineering Group, email=dkelly@kellyeng.com, c=US  
Date: 2017.06.27 15:45:15 -0400

DAVID NOEL KELLY  
NO. 37942  
REGISTERED PROFESSIONAL ENGINEER

EXISTING LEGEND	
	STONE WALL
	EDGE OF WETLANDS
	FLOODPLAIN
	TREE LINE

PROPOSED LEGEND	
CCB	CAPE COD BERM
VGC	VERTICAL GRANITE CURB
CC	CONCRETE CURB
H	HANDICAP SPACE
V	VAN HANDICAP SPACE
	HANDICAP RAMP
	CURB STOP
	PROPERTY LINE
	SNOW STORAGE
	WOOD POST GUARDRAIL
	TREE LINE
	LIGHT FIXTURES

INTERSTATE  
RT. 495  
(STATE HIGHWAY)



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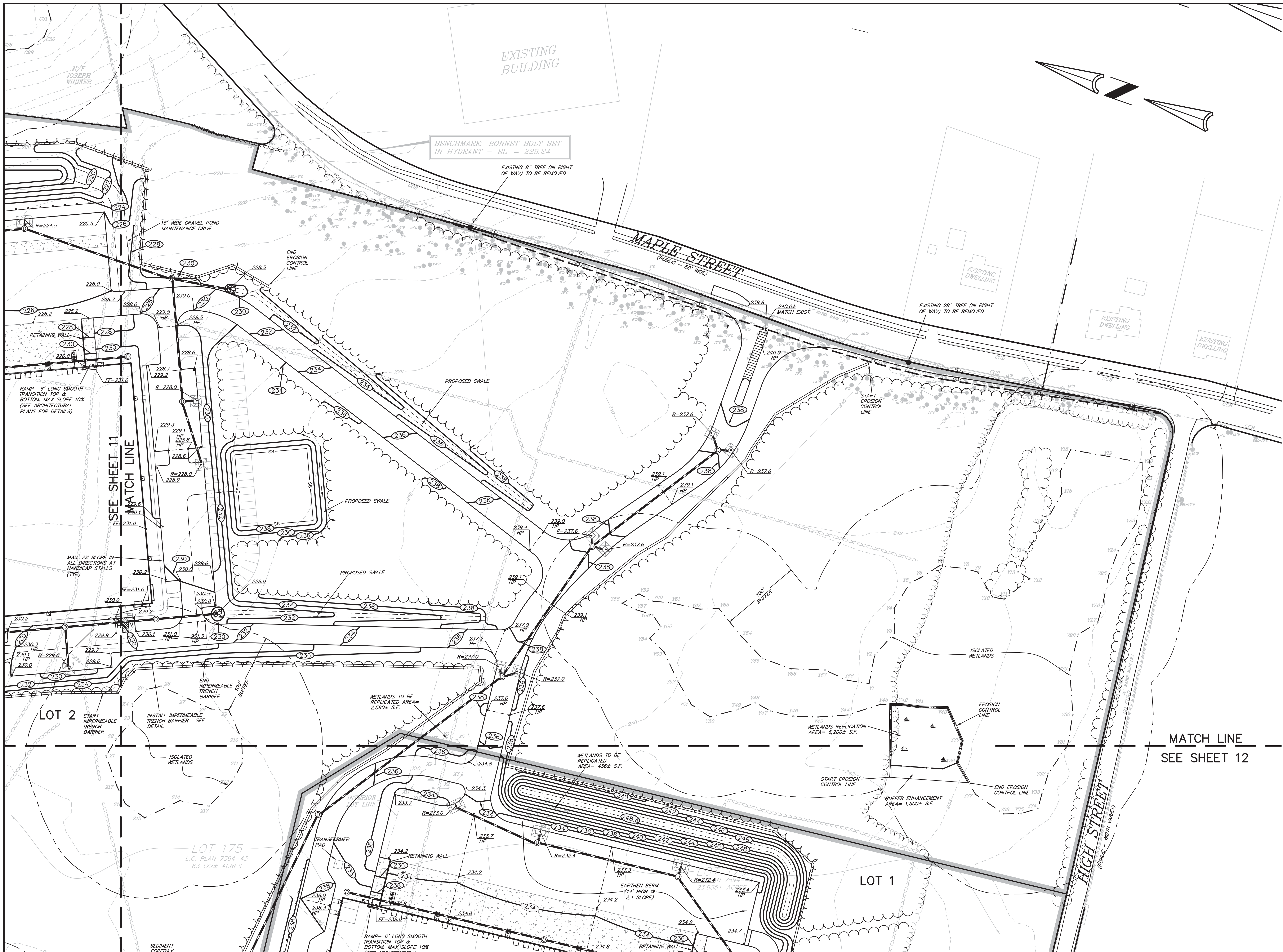
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6	02/07/17	PER PEER REVIEW COMMENTS	
5	01/18/17	REVISED SITE LAYOUT PER TOWN COMMENTS	
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2	02/29/16	PER TOWN & PEER REVIEW COMMENTS	
1	11/20/15	PER CONSERVATION COMMISSION FILING	
REV	DATE	REVISION	BY
SHEET 8 OF 23			
PLAN NO. 2015-061-LA07			
DISK REF NO. F:\P\2015-061			
DRAWN BY C.J.L.			
CHKD BY DAM			
APPD BY DNK			
<b>CAMPANELLI BELLINGHAM LLC</b> 160 HIGH STREET BELLINGHAM, MA <b>LAYOUT &amp; LANDSCAPING PLAN (PART B)</b>			
<b>KELLY ENGINEERING GROUP, INC.</b> CIVIL ENGINEERING CONSULTANTS 0 CAMPANELLI DRIVE • BRAINTREE MA • 02184 PHONE: 781 843 4333 FAX: 781 843 0028			

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SHEET NO.

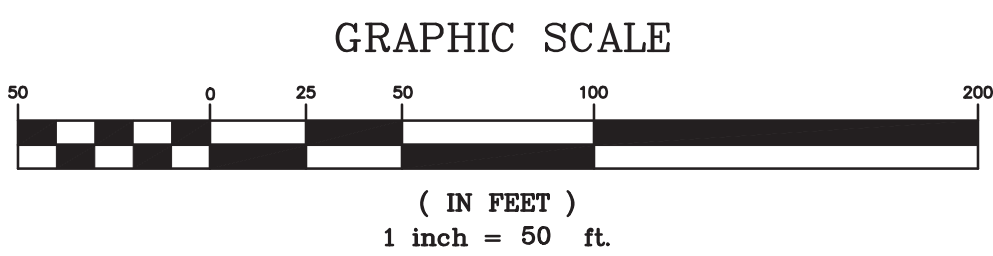
8





EXISTING LEGEND	
	CATCH BASIN
	DRAIN MANHOLE
	DRAIN LINE
	SEWER MANHOLE
	SEWER LINE
	WATER LINE
	WATER VALVE
	HYDRANT
	UTILITY POLE
	CAPE COD BERM
	BOUND
	WETLAND LINE
	WETLAND FLAG
	CONTOUR MAJOR
	CONTOUR MINOR
	TREE LINE
	STONE WALL

PROPOSED LEGEND	
	RIP RAP
	FLARED END SECTION
	CATCH BASIN
	DOUBLE CATCH BASIN
	DRAIN MANHOLE
	DRAIN LINE
	PUMP CHAMBER
	SEWER LINE
	SEWER FORCE MAIN
	SPOT GRADE
	CONTOUR LINE
	EROSION CONTROL LINE
	SILT SACK
	PROPERTY LINE
	PROPOSED TREE LINE
	EXISTING TREE LINE TO REMAIN
	EXISTING STONE WALL TO REMAIN
	GUARDRAIL
	EXISTING TREE IN SCENIC ROAD TO BE REMOVED



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3	10/21/16	REVISED SITE LAYOUT	
2	02/29/16	PER TOWN & PEER REVIEW COMMENTS	
1	11/20/15	PER CONSERVATION COMMISSION FILING	
REV	DATE	REVISION	BY
SHEET 10 OF 23			
PLAN NO. 2015-061-G007			
DISK REF NO. F:\P\2015-061			
DRAWN BY C.L.			
CHKD BY DAM			
APPD BY DNK			
CAMPANELLI BELLINGHAM LLC 160 HIGH STREET BELLINGHAM, MA GRADING PLAN (PART A)			
KELLY ENGINEERING GROUP, INC. CIVIL ENGINEERING CONSULTANTS 0 CAMPANELLI DRIVE • BRAINTREE MA • 02184 PHONE: 781 843 4333 FAX: 781 843 0028			

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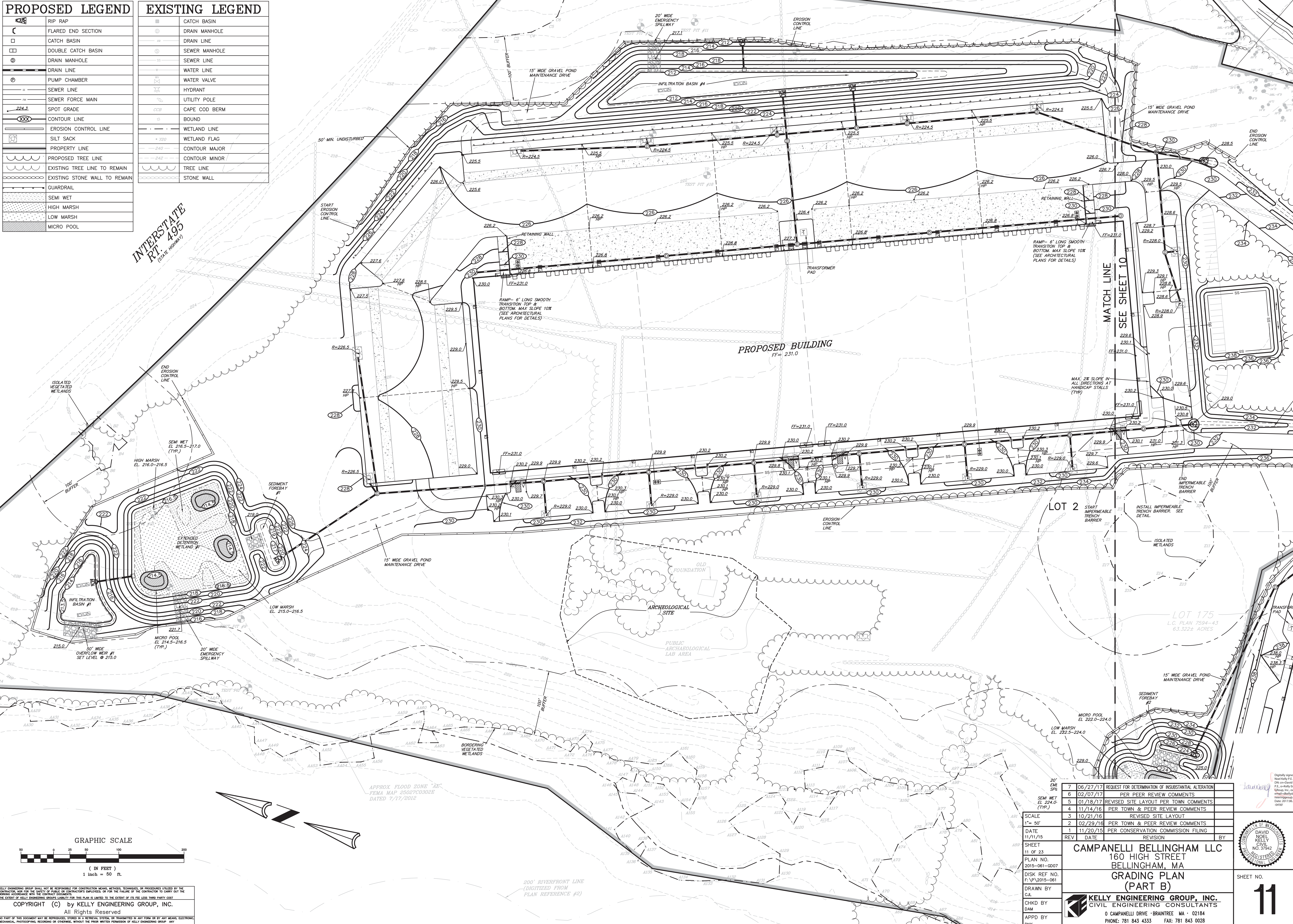
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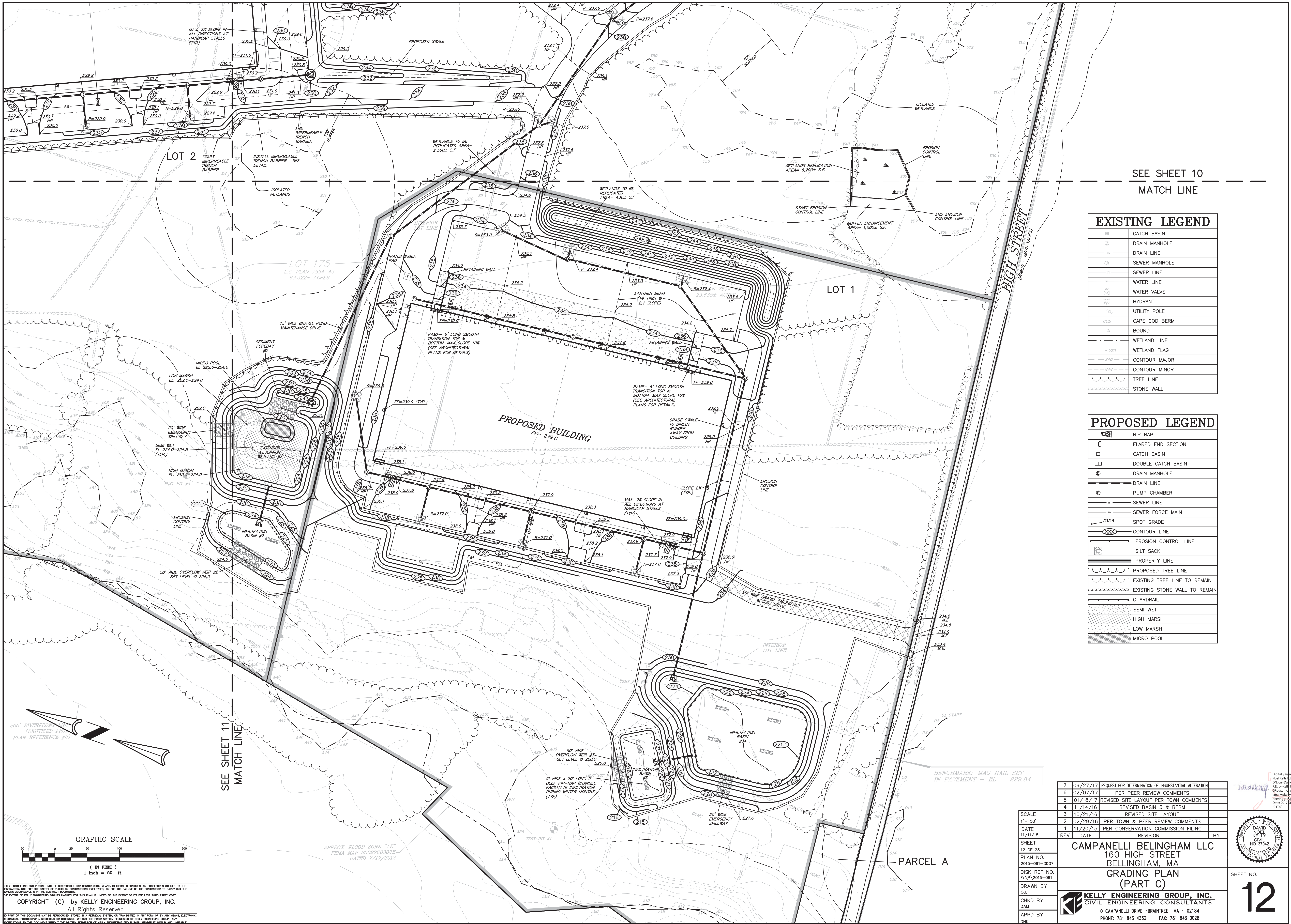
# PROPOSED LEGEND

	RIP RAP
	FLARED END SECTION
	CATCH BASIN
	DOUBLE CATCH BASIN
	DRAIN MANHOLE
	DRAIN LINE
	PUMP CHAMBER
	SEWER LINE
	SEWER FORCE MAIN
	SPOT GRADE
	CONTOUR LINE
	EROSION CONTROL LINE
	SILT SACK
	PROPERTY LINE
	PROPOSED TREE LINE
	EXISTING TREE LINE TO REMAIN
	EXISTING STONE WALL TO REMAIN
	GUARDRAIL
	SEMI WET
	HIGH MARSH
	LOW MARSH
	MICRO POOL

# EXISTING LEGEND

	CATCH BASIN
	DRAIN MANHOLE
	DRAIN LINE
	SEWER MANHOLE
	SEWER LINE
	WATER LINE
	WATER VALVE
	HYDRANT
	UTILITY POLE
	CAPE COD BERM
	BOUND
	WETLAND LINE
	WETLAND FLAG
	CONTOUR MAJOR
	CONTOUR MINOR
	TREE LINE
	STONE WALL

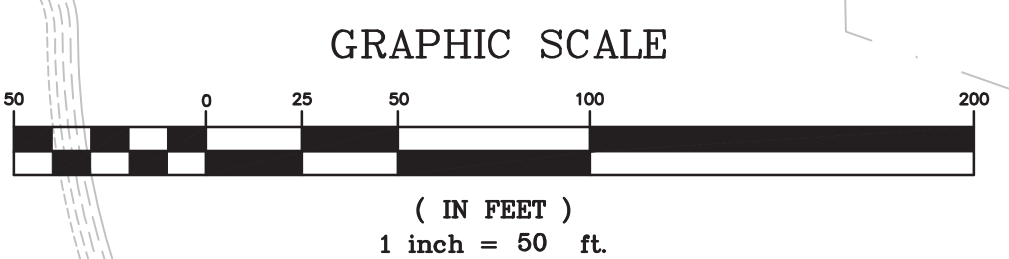
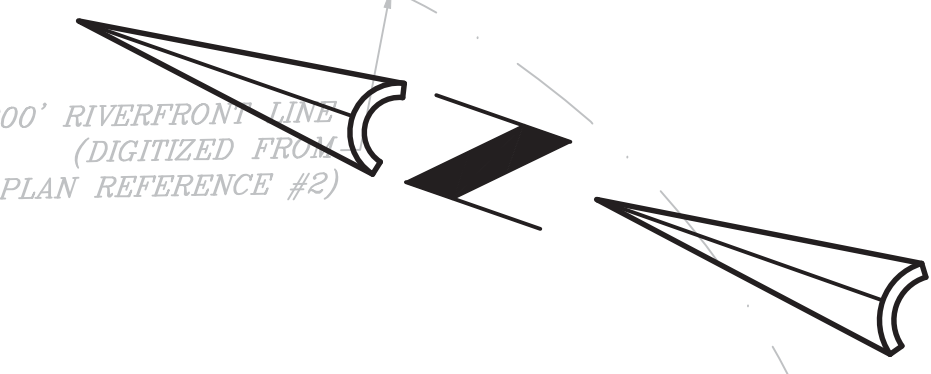




SEE SHEET 10  
MATCH LINE

EXISTING LEGEND	
	CATCH BASIN
	DRAIN MANHOLE
	DRAIN LINE
	SEWER MANHOLE
	SEWER LINE
	WATER LINE
	WATER VALVE
	HYDRANT
	UTILITY POLE
	CAPE COD BERM
	BOUND
	WETLAND LINE
	WETLAND FLAG
	CONTOUR MAJOR
	CONTOUR MINOR
	TREE LINE
	STONE WALL

PROPOSED LEGEND	
	RIP RAP
	FLARED END SECTION
	CATCH BASIN
	DOUBLE CATCH BASIN
	DRAIN MANHOLE
	DRAIN LINE
	PUMP CHAMBER
	SEWER LINE
	SEWER FORCE MAIN
	SPOT GRADE
	CONTOUR LINE
	EROSION CONTROL LINE
	PROPERTY LINE
	PROPOSED TREE LINE
	EXISTING TREE LINE TO REMAIN
	EXISTING STONE WALL TO REMAIN
	GUARDRAIL
	SEMI WET
	HIGH MARSH
	LOW MARSH
	MICRO POOL



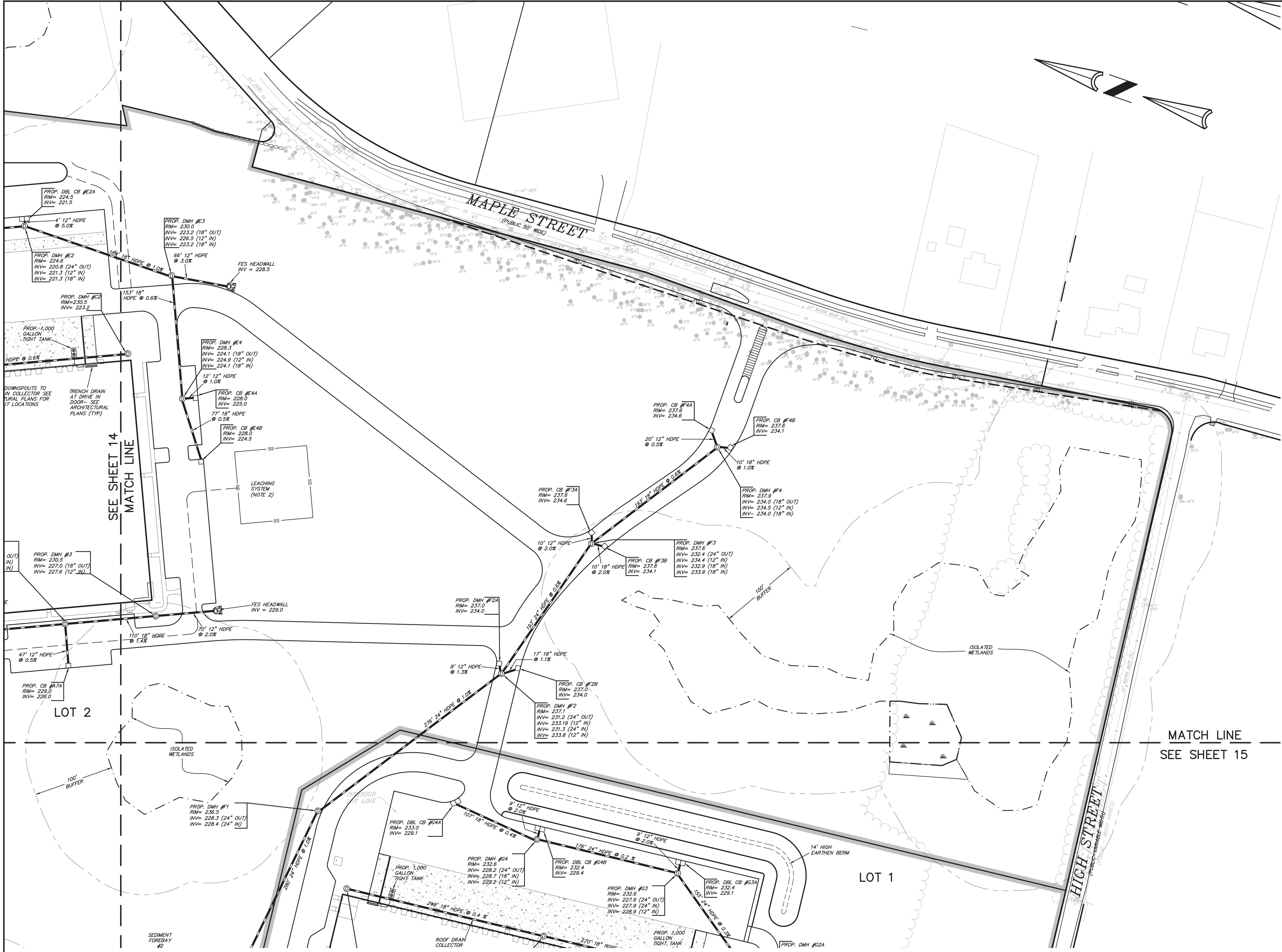
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SCALE	1" = 50'
DATE	11/11/15
SHEET	12 OF 23
PLAN NO.	2015-061-G007
DISK REF NO.	F:\P\2015-061
DRAWN BY	C.L.
CHKD BY	DAM
APPD BY	DNK

7	06/27/17	REQUEST FOR DETERMINATION OF INSUBSTANTIAL ALTERATION	
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3	10/21/16	REVISED SITE LAYOUT	
2	02/29/16	PER TOWN & PEER REVIEW COMMENTS	
1	11/20/15	PER CONSERVATION COMMISSION FILING	
REV	DATE	REVISION	BY
CAMPANELLI BELINGHAM LLC 160 HIGH STREET BELLINGHAM, MA GRADING PLAN (PART C)			
KELLY ENGINEERING GROUP, INC. CIVIL ENGINEERING CONSULTANTS 0 CAMPANELLI DRIVE • BRAINTREE MA • 02184 PHONE: 781 843 4333 FAX: 781 843 0028			

Digitally signed by David Noel Kelly  
DN: cn=David Noel Kelly, o=Kelly Engineering Group, Inc., email=dnk@kellyeng.com, c=US  
Date: 2017.06.27 15:06:42 -0400

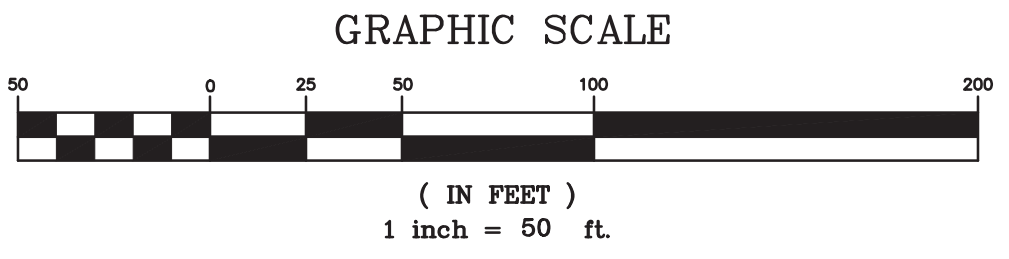
SHEET NO.  
**12**



EXISTING LEGEND	
	CATCH BASIN
	DRAIN MANHOLE
	DRAIN LINE
	SEWER MANHOLE
	SEWER LINE
	WATER LINE
	WATER VALVE
	HYDRANT
	UTILITY POLE
	CAPE COD BERM
	BOUND
	WETLAND LINE
	WETLAND
	WETLAND FLAG
	CONTOUR MAJOR
	CONTOUR MINOR
	TREE LINE
	STONE WALL

PROPOSED LEGEND	
	RIP RAP
	FLARED END SECTION
	CATCH BASIN
	DOUBLE CATCH BASIN
	DRAIN MANHOLE
	DRAIN LINE
	SEWER MANHOLE
	PUMP CHAMBER
	SEWER LINE
	SEWER FORCE MAIN

NOTES:  
1. ALL STRUCTURE INVERTS ARE LISTED WITH OUTLET FIRST THEN CLOCKWISE AROUND STRUCTURE.  
2. FINAL DESIGN & SIZE OF SEWAGE DISPOSAL SYSTEM TO BE PER PERMIT FROM BELLINGHAM BOARD OF HEALTH.



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1	11/20/15	PER CONSERVATION COMMISSION FILING	
REV	DATE	REVISION	BY

SHEET 10 OF 23  
PLAN NO. 2015-061-SD07  
DISK REF NO. F:\P\2015-061  
DRAWN BY C.L.  
CHKD BY DAM  
APPD BY DNK

**CAMPANELLI BELLINGHAM LLC**  
160 HIGH STREET  
BELLINGHAM, MA  
**SEWER & DRAINAGE PLAN (PART A)**  
**KELLY ENGINEERING GROUP, INC.**  
CIVIL ENGINEERING CONSULTANTS  
0 CAMPANELLI DRIVE • BRAINTREE MA • 02184  
PHONE: 781 843 4333 FAX: 781 843 0028

SHEET NO. **13**

DAVID KELLY  
REGISTERED PROFESSIONAL ENGINEER  
NO. 37942  
MASSACHUSETTS

Digitally signed by David Noel Kelly P.E.  
DN: cn=David Noel Kelly P.E., o=Kelly Engineering Group, Inc., ou=, email=dkelly@kellyengr.com, c=US  
Date: 2017.08.27 15:07:10 -0400

EXISTING LEGEND

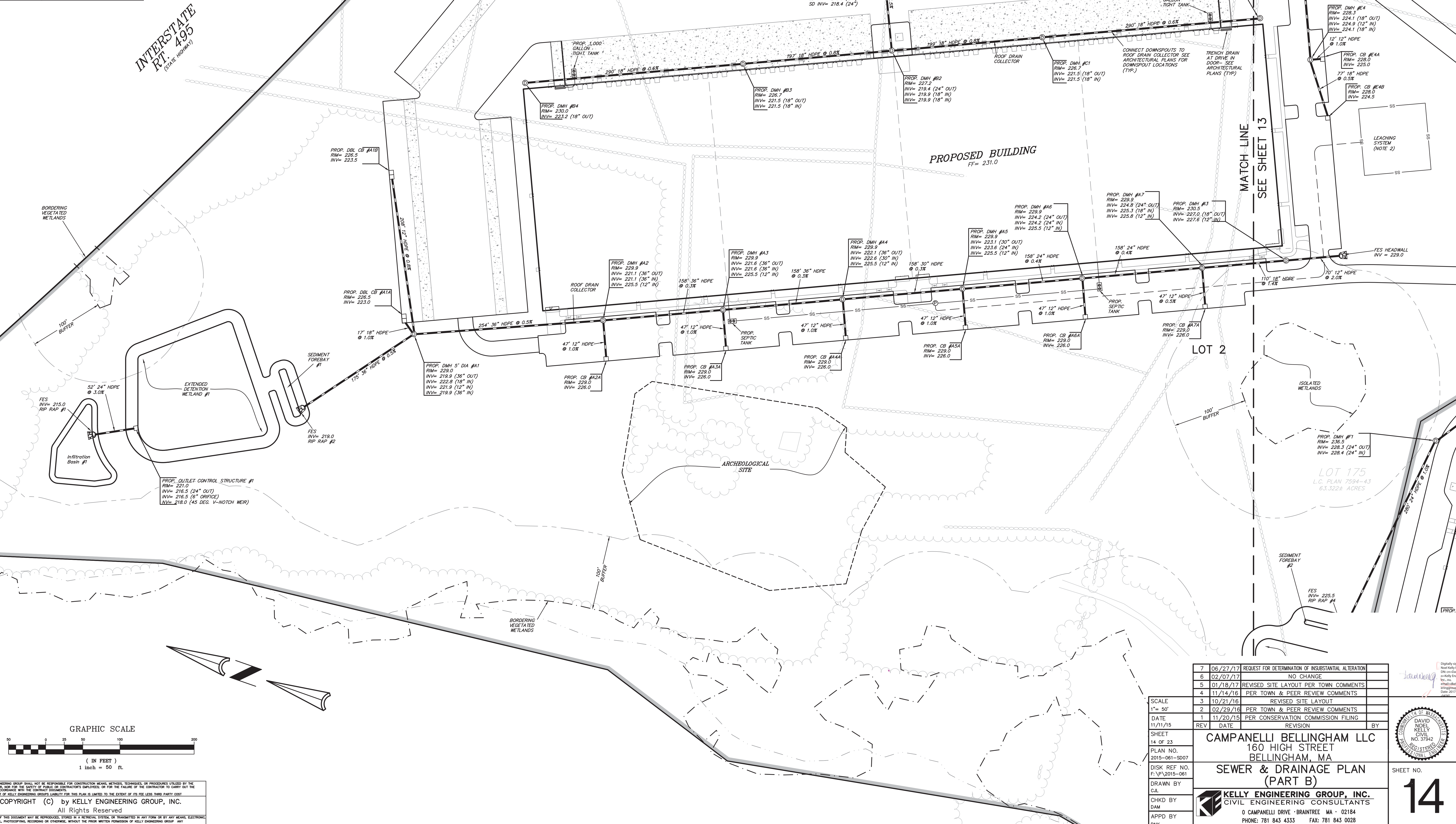
■	CATCH BASIN
⊙	DRAIN MANHOLE
—	DRAIN LINE
⊙	SEWER MANHOLE
—	SEWER LINE
—	WATER LINE
—	WATER VALVE
—	HYDRANT
—	UTILITY POLE
CCB	CAPE COD BERM
—	BOUND
—	WETLAND LINE
—	WETLAND
—	WETLAND FLAG
—	CONTOUR MAJOR
—	CONTOUR MINOR
—	TREE LINE
—	STONE WALL

PROPOSED LEGEND

—	RIP RAP
—	FLARED END SECTION
□	CATCH BASIN
□	DOUBLE CATCH BASIN
⊙	DRAIN MANHOLE
—	DRAIN LINE
⊙	SEWER MANHOLE
⊙	PUMP CHAMBER
—	SEWER LINE
—	SEWER FORCE MAIN

NOTES:  
1. ALL STRUCTURE INVERTS ARE LISTED WITH OUTLET FIRST THEN CLOCKWISE AROUND STRUCTURE.  
2. FINAL DESIGN & SIZE OF SEWAGE DISPOSAL SYSTEM TO BE PER PERMIT FROM BELLINGHAM BOARD OF HEALTH

INTERSTATE  
RT 495  
(STATE HIGHWAY)

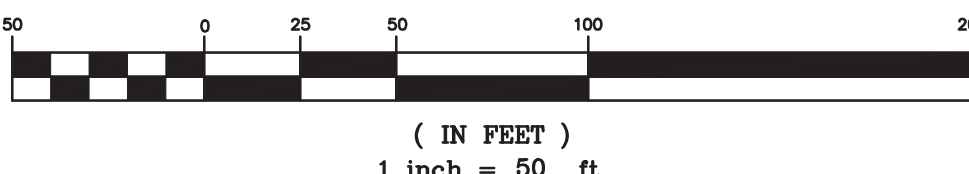


MATCH LINE  
SEE SHEET 13

LOT 2

LOT 175  
L.C. PLAN 7594-43  
63.322± ACRES

GRAPHIC SCALE

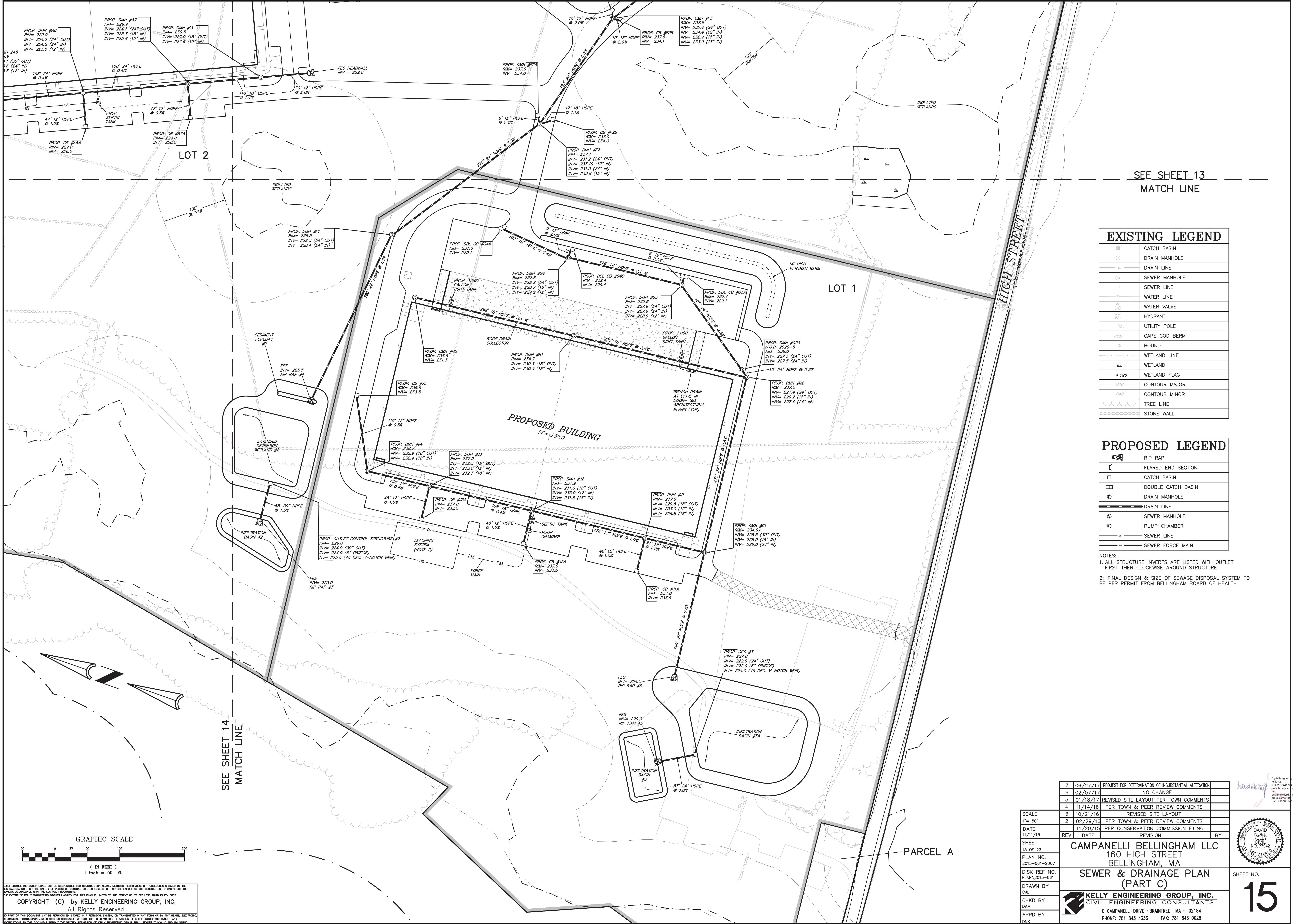


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7	06/27/17	REQUEST FOR DETERMINATION OF INSUBSTANTIAL ALTERATION	
6	02/07/17	NO CHANGE	
5	01/18/17	REVISED SITE LAYOUT PER TOWN COMMENTS	
4	11/14/16	PER TOWN & PEER REVIEW COMMENTS	
3	10/21/16	REVISED SITE LAYOUT	
2	02/29/16	PER TOWN & PEER REVIEW COMMENTS	
1	11/20/15	PER CONSERVATION COMMISSION FILING	
REV	DATE	REVISION	BY
SHEET	14 OF 23		
PLAN NO.	2015-061-SD07		
DISK REF NO.	F:\P\2015-061		
DRAWN BY	C.L.		
CHKD BY	DAM		
APPD BY	DNK		
CAMPANELLI BELLINGHAM LLC 160 HIGH STREET BELLINGHAM, MA SEWER & DRAINAGE PLAN (PART B)			
KELLY ENGINEERING GROUP, INC. CIVIL ENGINEERING CONSULTANTS O CAMPANELLI DRIVE - BRAINTREE MA • 02184 PHONE: 781 843 4333 FAX: 781 843 0028			
SHEET NO. 14			

Digitally signed by David Noel Kelly P.E., DN: cn=David Noel Kelly P.E., o=Kelly Engineering Group, Inc., ou=Engineering Group, email=dnk@kellyeng.com, c=US, Date: 2017.07.27 15:09:59

DAVID NOEL KELLY  
CIVIL  
NO. 37942  
MASSACHUSETTS



EXISTING LEGEND	
	CATCH BASIN
	DRAIN MANHOLE
	DRAIN LINE
	SEWER MANHOLE
	SEWER LINE
	WATER LINE
	WATER VALVE
	HYDRANT
	UTILITY POLE
	CAPE COD BERM
	BOUND
	WETLAND LINE
	WETLAND
	WETLAND FLAG
	CONTOUR MAJOR
	CONTOUR MINOR
	TREE LINE
	STONE WALL

PROPOSED LEGEND	
	RIP RAP
	FLARED END SECTION
	CATCH BASIN
	DOUBLE CATCH BASIN
	DRAIN MANHOLE
	DRAIN LINE
	SEWER MANHOLE
	PUMP CHAMBER
	SEWER LINE
	SEWER FORCE MAIN

- NOTES:
1. ALL STRUCTURE INVERTS ARE LISTED WITH OUTLET FIRST THEN CLOCKWISE AROUND STRUCTURE.
2. FINAL DESIGN & SIZE OF SEWAGE DISPOSAL SYSTEM TO BE PER PERMIT FROM BELLINGHAM BOARD OF HEALTH

7	06/27/17	REQUEST FOR DETERMINATION OF INSUBSTANTIAL ALTERATION	
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REV	DATE	REVISION	BY
CAMPANELLI BELLINGHAM LLC 160 HIGH STREET BELLINGHAM, MA			
SEWER & DRAINAGE PLAN (PART C)			
KELLY ENGINEERING GROUP, INC. CIVIL ENGINEERING CONSULTANTS			
0 CAMPANELLI DRIVE - BRAINTREE MA - 02184 PHONE: 781 843 4333 FAX: 781 843 0028			

DAVID NOEL  
KELLY P.E.  
DAVID NOEL ENGINEERING GROUP, INC.  
160 HIGH STREET  
BELLINGHAM, MA 02801  
TEL: 781.843.4333  
WWW.DNEGROUP.COM

DAVID NOEL  
KELLY P.E.  
NO. 37942  
REGISTERED PROFESSIONAL ENGINEER  
MASSACHUSETTS

SHEET NO.  
**15**

GRAPHIC SCALE  
1 inch = 50 ft.

( IN FEET )  
0 25 50 100 150 200

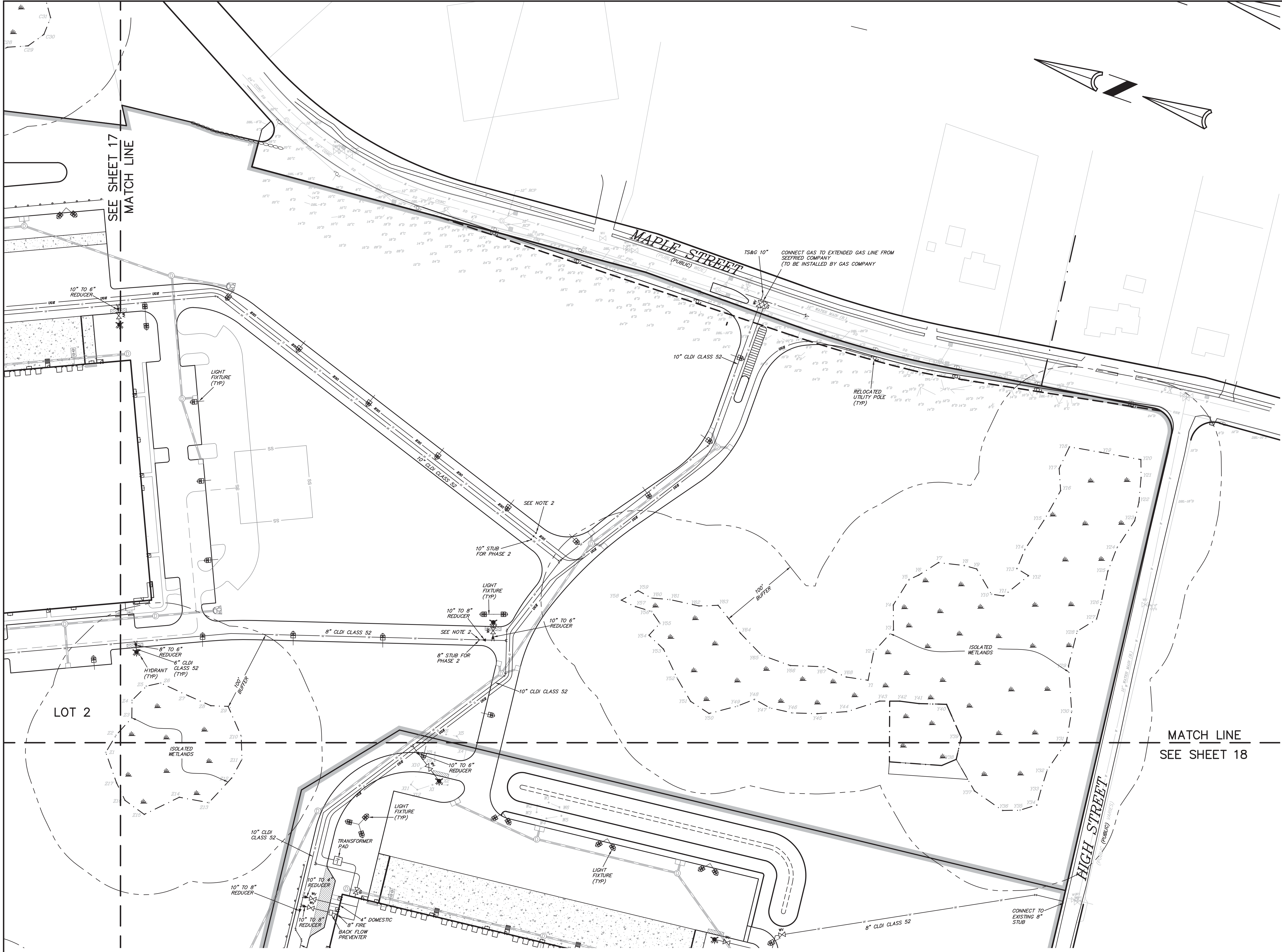
1 inch = 50 ft.

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THE EXTENT OF KELLY ENGINEERING GROUPS LIABILITY FOR THIS PLAN IS LIMITED TO THE EXTENT OF ITS FEE LESS THIRD PARTY COST.

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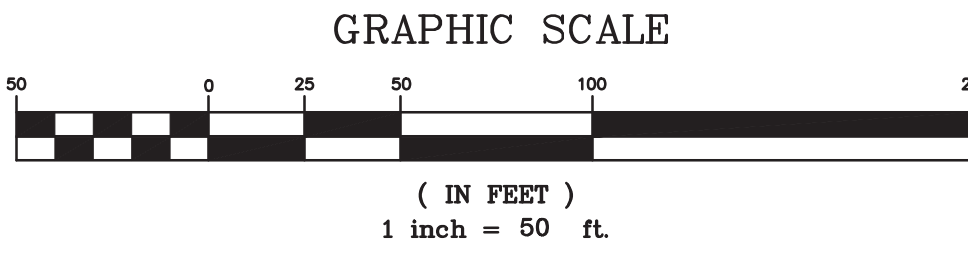
EXISTING LEGEND

	CATCH BASIN
	DRAIN MANHOLE
	DRAIN LINE
	SEWER MANHOLE
	SEWER LINE
	WATER LINE
	WATER VALVE
	HYDRANT
	UTILITY POLE
	CAPE COD BERM
	BOUND
	WETLAND LINE
	WETLAND
	WETLAND FLAG
	CONTOUR MAJOR
	CONTOUR MINOR
	TREE LINE
	STONE WALL

PROPOSED LEGEND

	RIP RAP
	FLARED END SECTION
	CATCH BASIN
	DOUBLE CATCH BASIN
	DRAIN MANHOLE
	DRAIN LINE
	GAS VALVE
	GAS LINE
	HYDRANT
	WATER VALVE
	WATER LINE
	UTILITY POLE
	TRANSFORMER
	UNDERGROUND ELECTRIC LINE
	LIGHT FIXTURES

NOTES:  
1. FINAL WATER MAIN SIZES TO BE DETERMINED BY FLOW TEST, FIRE NEEDS & COORDINATION WITH FIRE AND WATER DEPARTMENTS.  
2. STUB UTILITIES BEYOND PHASE LINE & MARK



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1	11/20/15	PER CONSERVATION COMMISSION FILING	
REV	DATE	REVISION	BY

SHEET 16 OF 23  
PLAN NO. 2015-061-UT07  
DISK REF NO. F:\P\2015-061  
DRAWN BY C.J.L.  
CHKD BY DAM  
APPD BY D.N.K.

**CAMPANELLI BELLINGHAM LLC**  
160 HIGH STREET  
BELLINGHAM, MA  
**UTILITY PLAN (PART A)**

**KELLY ENGINEERING GROUP, INC.**  
CIVIL ENGINEERING CONSULTANTS  
0 CAMPANELLI DRIVE • BRAintree MA • 02184  
PHONE: 781 843 4333 FAX: 781 843 0028

SHEET NO. **16**

Digitally signed by David Noel Kelly P.E., on 06/27/2017 15:08:50, email: dnoel@kellyeng.com, c: c:\program files\kelly\kelly\kelly.p12

DAVID NOEL KELLY CIVIL NO. 37942 REGD./STRECH EXPIRATION 06/27/2020

# EXISTING LEGEND

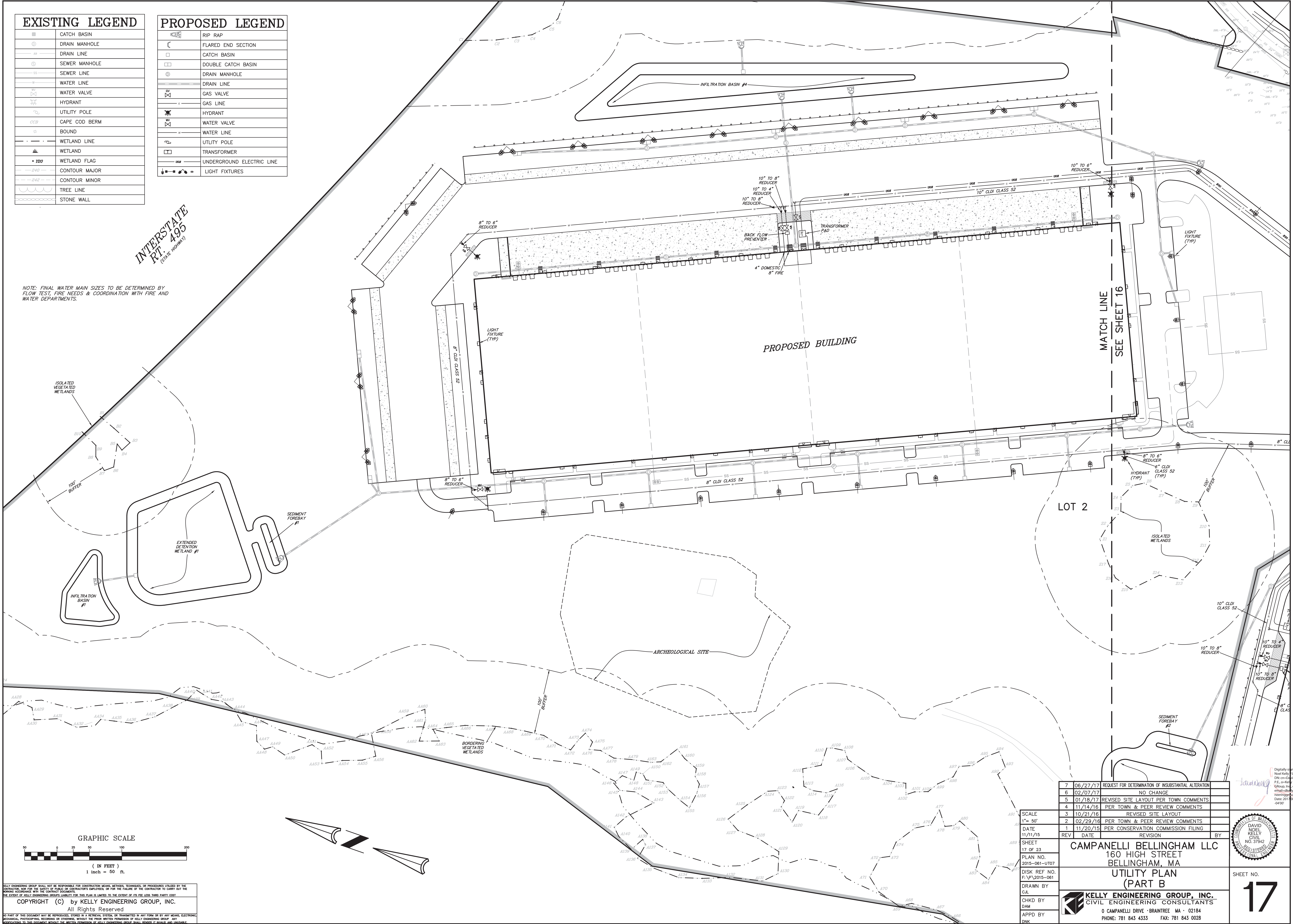
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	DRAIN MANHOLE
	DRAIN LINE
	SEWER MANHOLE
	SEWER LINE
	WATER LINE
	WATER VALVE
	HYDRANT
	UTILITY POLE
	CAPE COD BERM
	BOUND
	WETLAND LINE
	WETLAND
	WETLAND FLAG
	CONTOUR MAJOR
	CONTOUR MINOR
	TREE LINE
	STONE WALL

# PROPOSED LEGEND

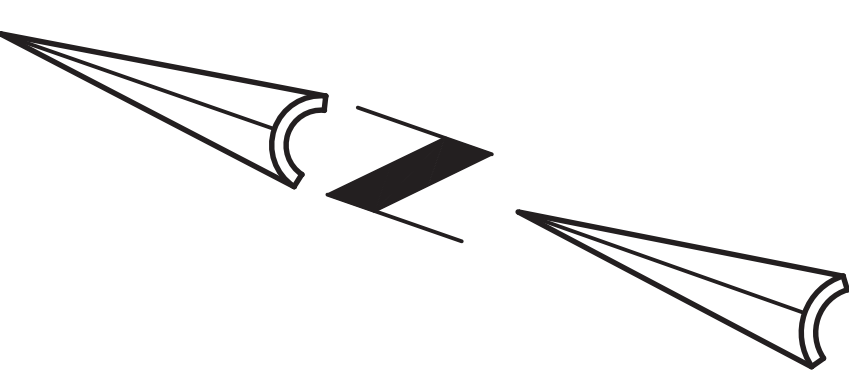
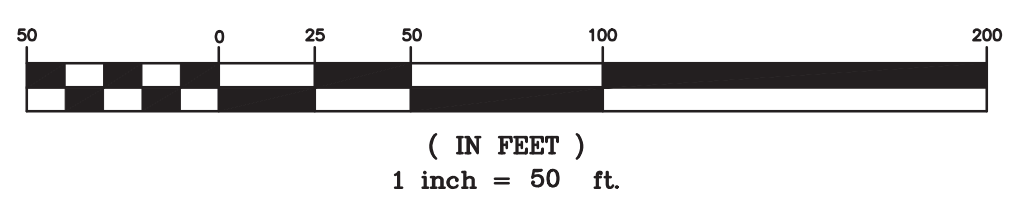
	RIP RAP
	FLARED END SECTION
	CATCH BASIN
	DOUBLE CATCH BASIN
	DRAIN MANHOLE
	DRAIN LINE
	GAS VALVE
	GAS LINE
	HYDRANT
	WATER VALVE
	WATER LINE
	UTILITY POLE
	TRANSFORMER
	UNDERGROUND ELECTRIC LINE
	LIGHT FIXTURES

INTERSTATE  
RT 495  
(STATE HIGHWAY)

NOTE: FINAL WATER MAIN SIZES TO BE DETERMINED BY  
FLOW TEST, FIRE NEEDS & COORDINATION WITH FIRE AND  
WATER DEPARTMENTS.



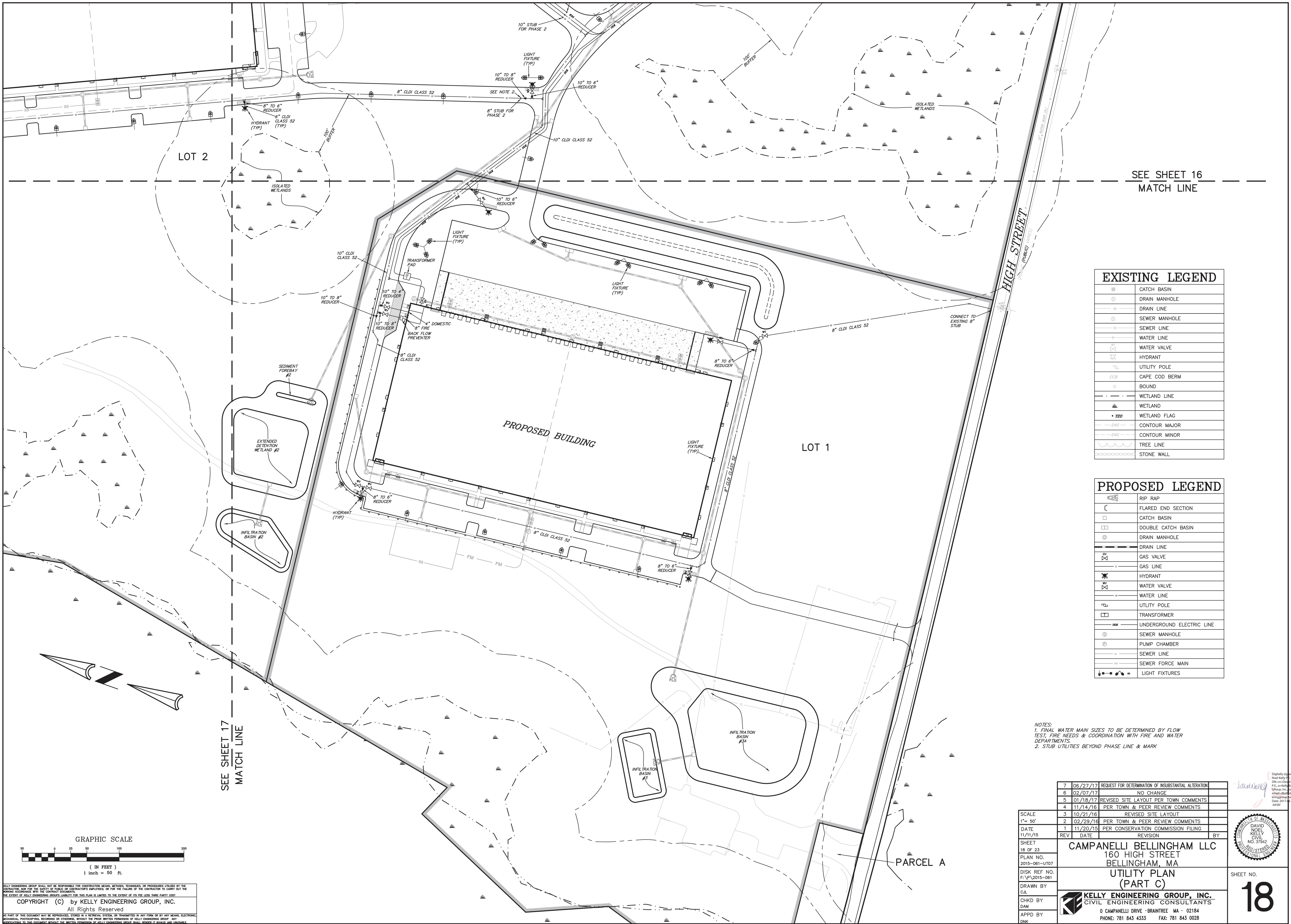
GRAPHIC SCALE



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REV	DATE	REVISION	BY
SHEET 17 OF 23			
PLAN NO. 2015-061-UT07			
DISK REF NO. F:\P\2015-061			
DRAWN BY C.J.L.			
CHKD BY DAM			
APPD BY D.N.K.			
CAMPANELLI BELLINGHAM LLC 160 HIGH STREET BELLINGHAM, MA UTILITY PLAN (PART B)			
KELLY ENGINEERING GROUP, INC. CIVIL ENGINEERING CONSULTANTS 0 CAMPANELLI DRIVE • BRAINTREE, MA • 02184 PHONE: 781 843 4333 FAX: 781 843 0028			
SHEET NO. 17			

Digitally signed by David Noel Kelly, EIT  
DN: cn=David Noel Kelly, EIT, o=Kelly Engineering Group, Inc., email=dkelly@kellyeng.com, c=US  
Date: 2016.06.27 15:00:05 -0400



SEE SHEET 16  
MATCH LINE

EXISTING LEGEND

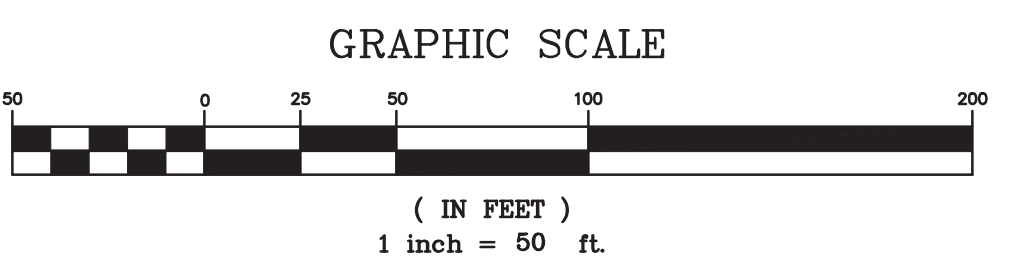
	CATCH BASIN
	DRAIN MANHOLE
	DRAIN LINE
	SEWER MANHOLE
	SEWER LINE
	WATER LINE
	WATER VALVE
	HYDRANT
	UTILITY POLE
	CAPE COD BERM
	BOUND
	WETLAND LINE
	WETLAND FLAG
	CONTOUR MAJOR
	CONTOUR MINOR
	TREE LINE
	STONE WALL

PROPOSED LEGEND

	RIP RAP
	FLARED END SECTION
	CATCH BASIN
	DOUBLE CATCH BASIN
	DRAIN MANHOLE
	DRAIN LINE
	GAS VALVE
	GAS LINE
	HYDRANT
	WATER VALVE
	WATER LINE
	UTILITY POLE
	TRANSFORMER
	UNDERGROUND ELECTRIC LINE
	SEWER MANHOLE
	PUMP CHAMBER
	SEWER LINE
	SEWER FORCE MAIN
	LIGHT FIXTURES

NOTES:  
1. FINAL WATER MAIN SIZES TO BE DETERMINED BY FLOW  
TEST, FIRE NEEDS & COORDINATION WITH FIRE AND WATER  
DEPARTMENTS.  
2. STUB UTILITIES BEYOND PHASE LINE & MARK

SEE SHEET 17  
MATCH LINE



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REV	DATE	REVISION	BY

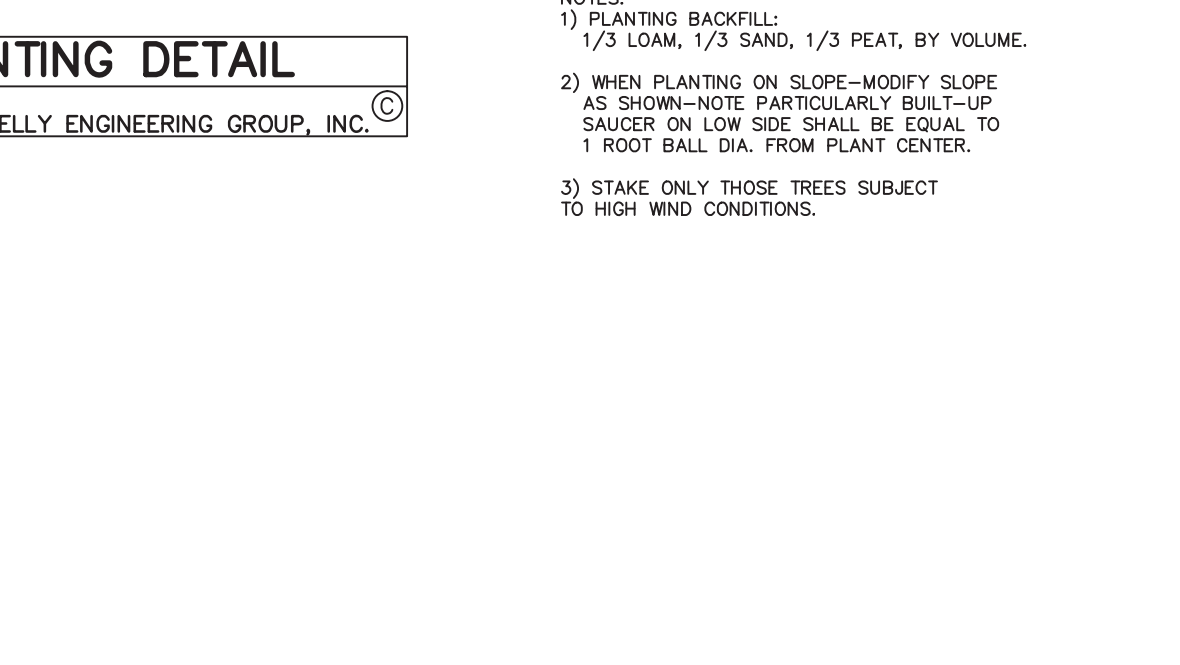
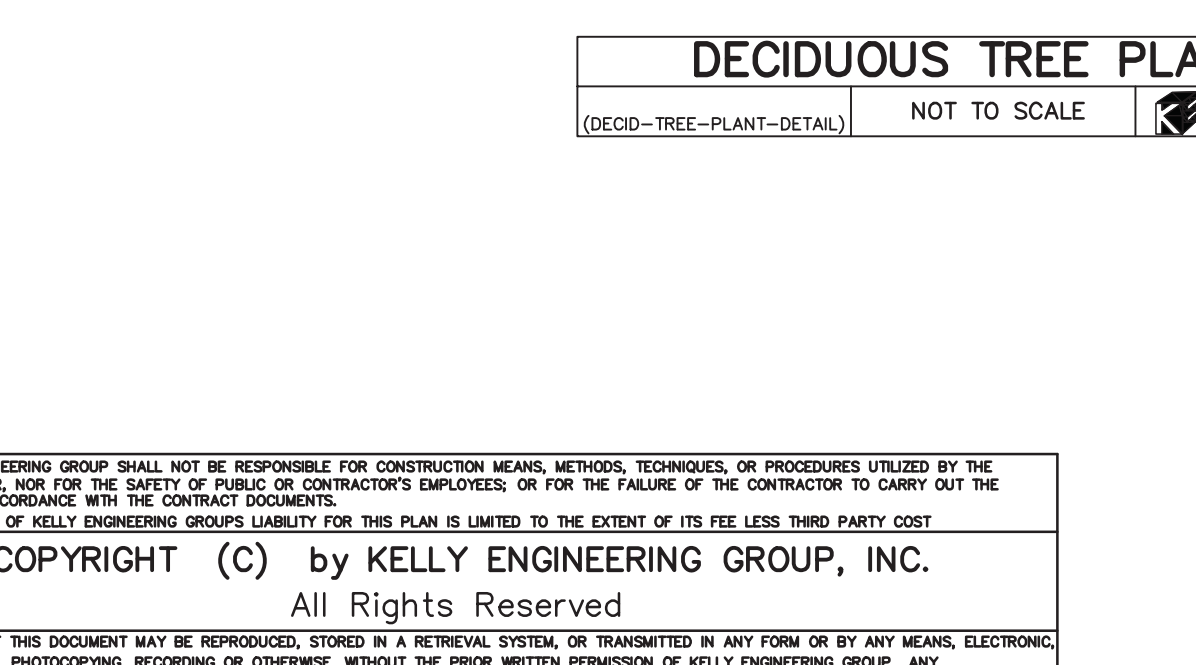
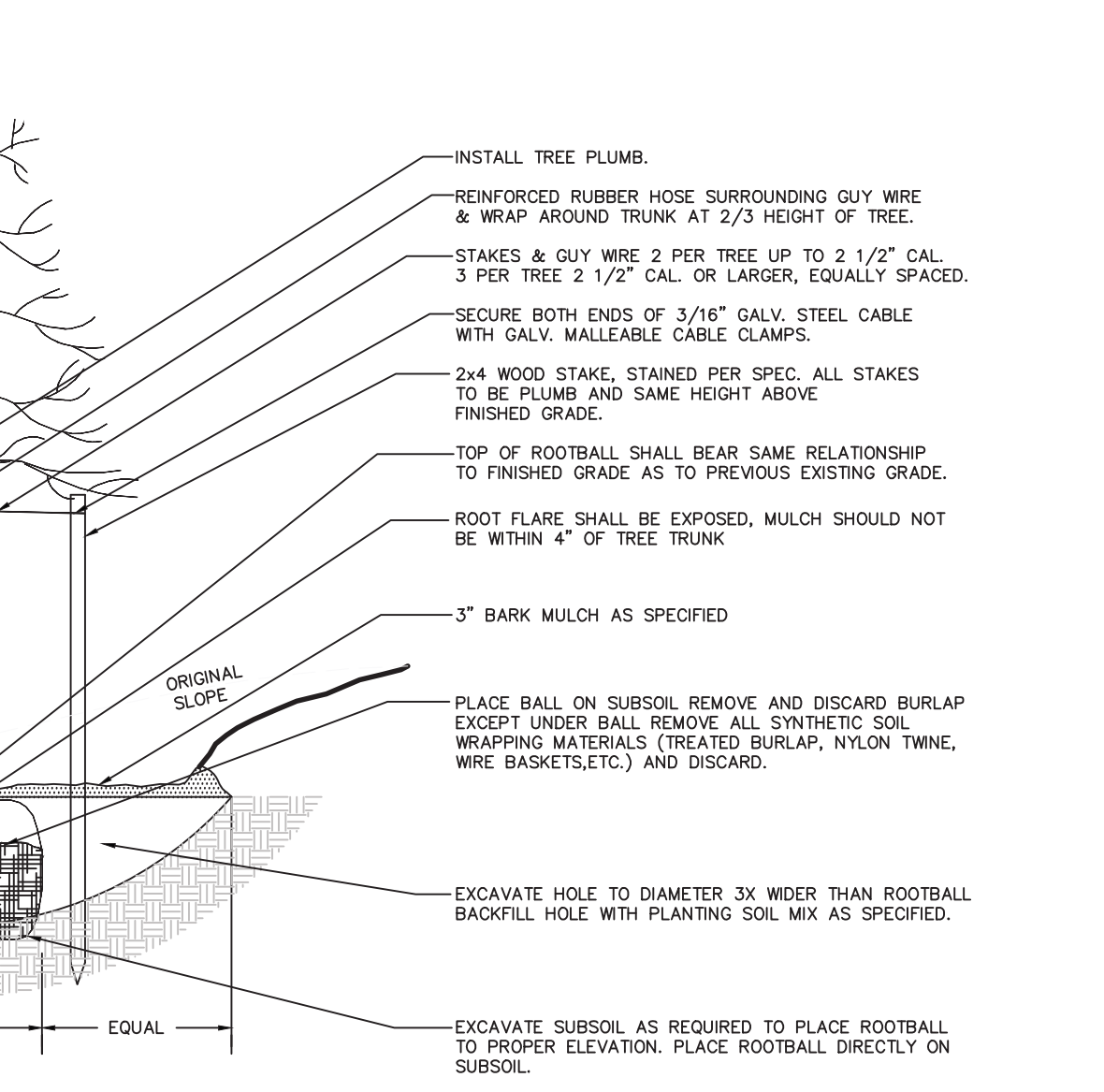
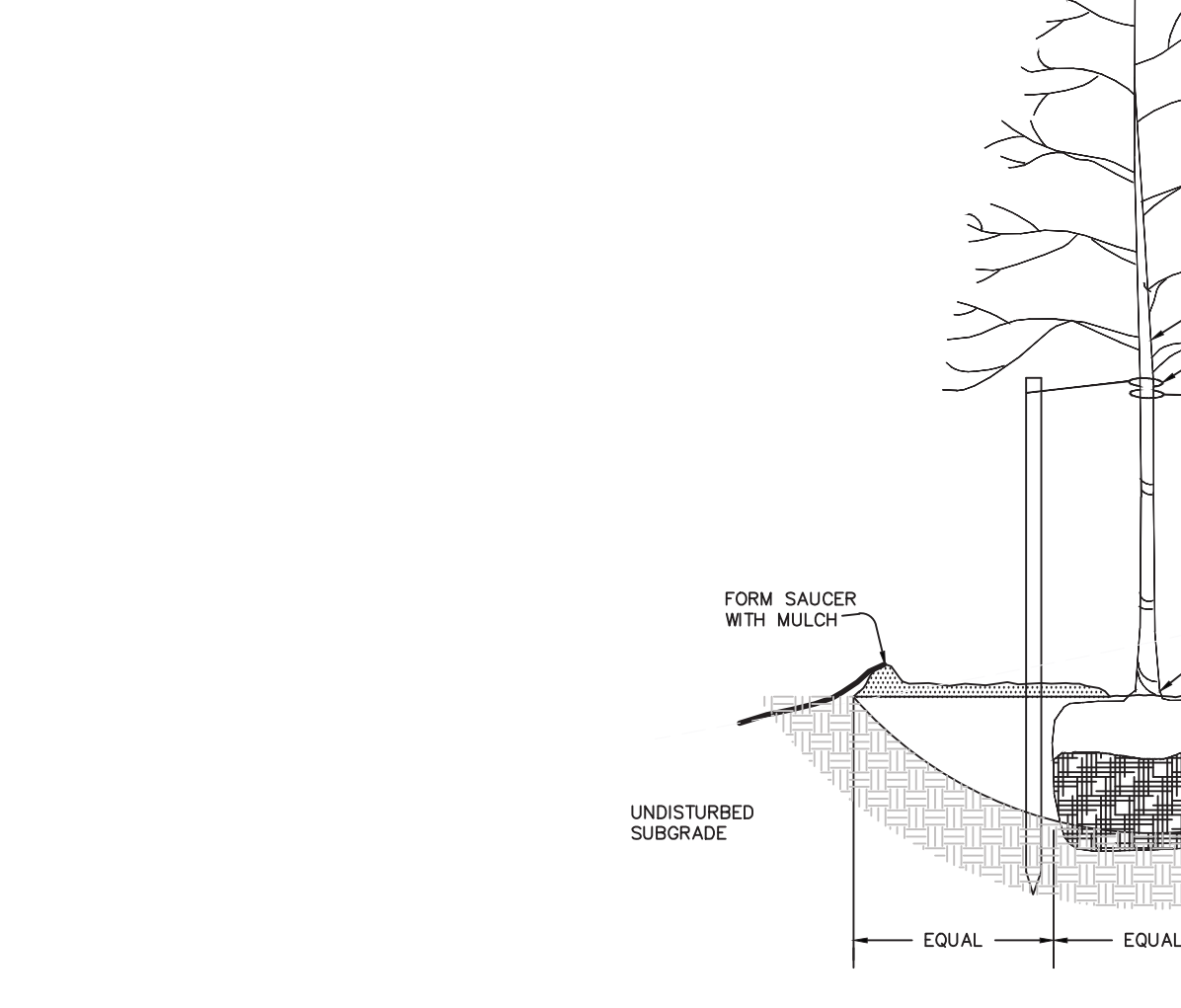
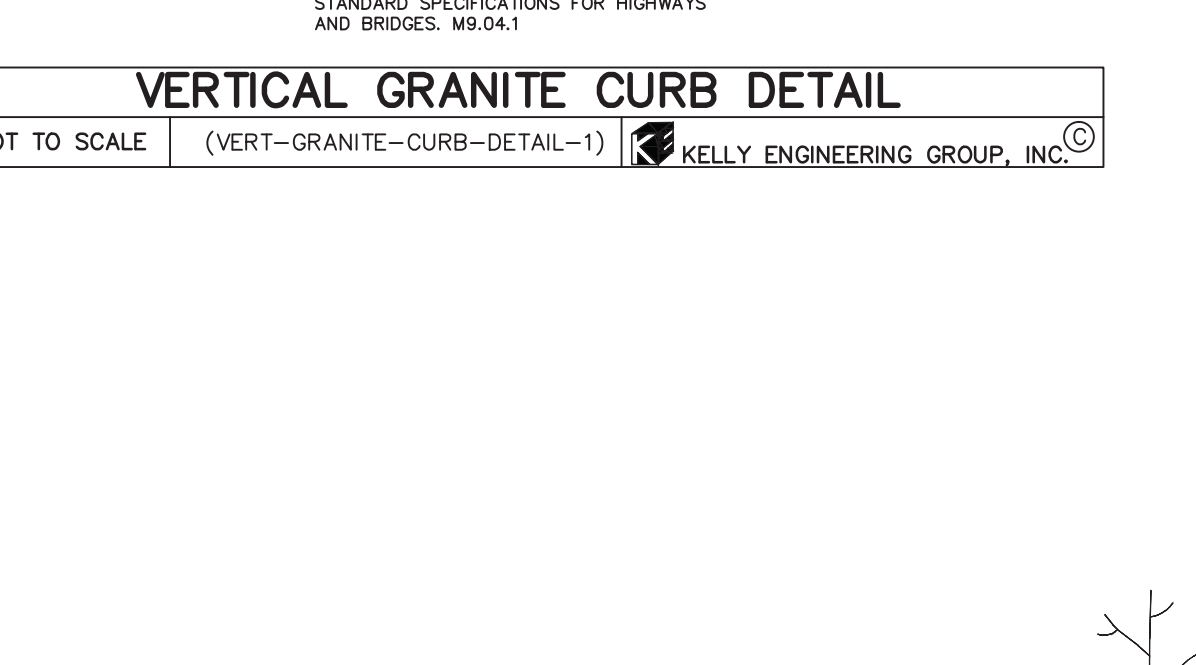
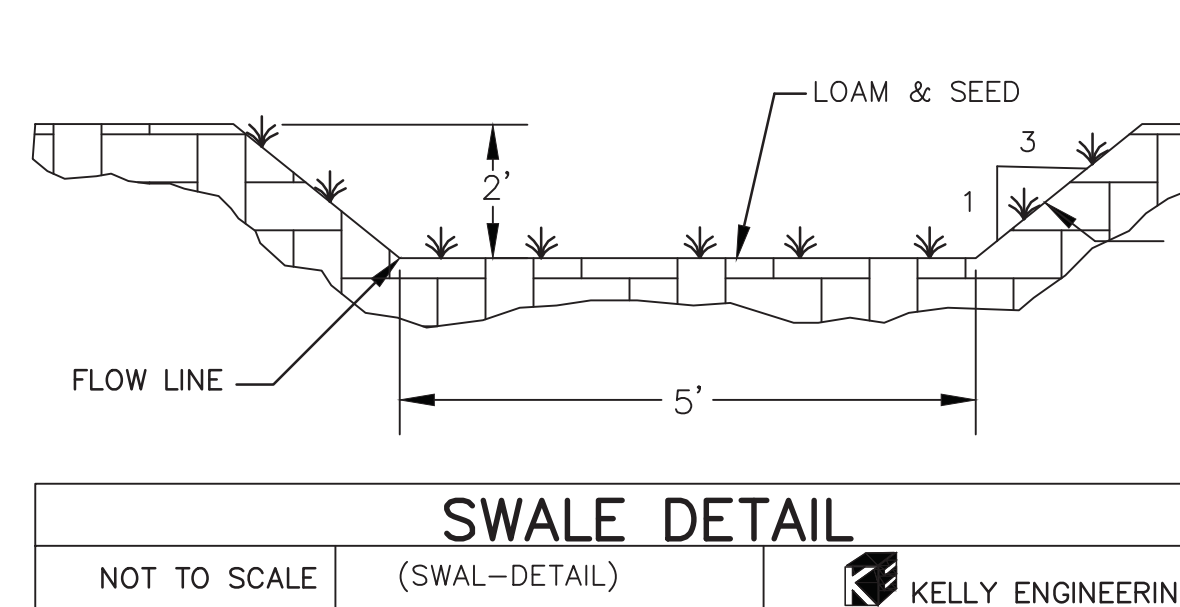
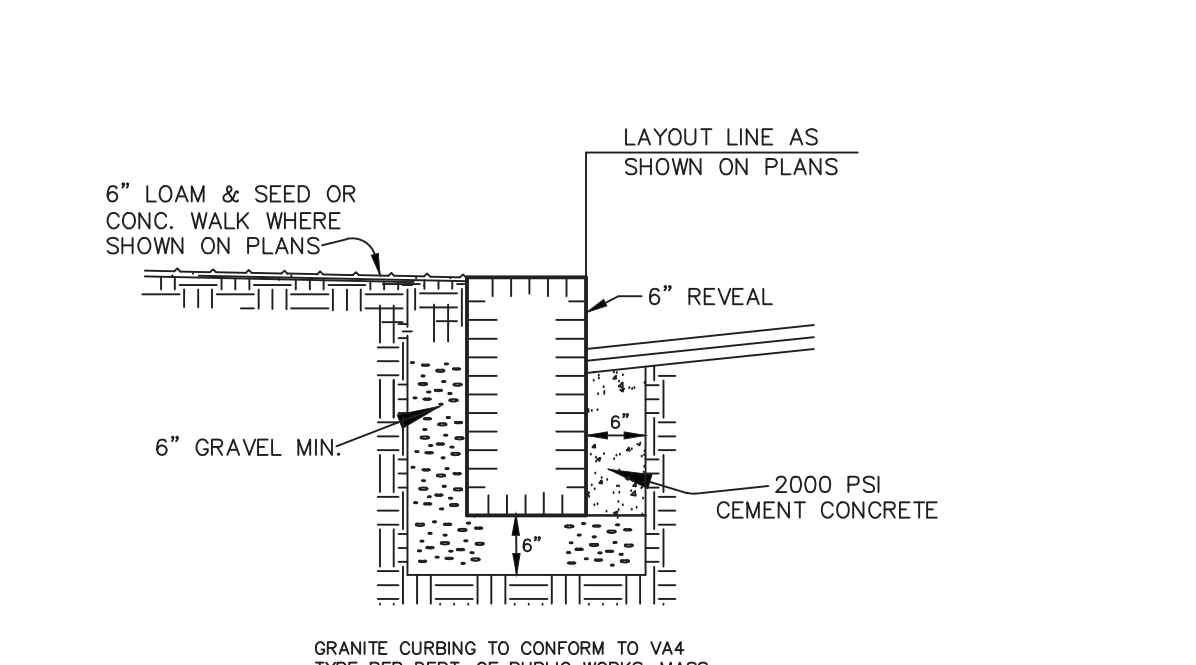
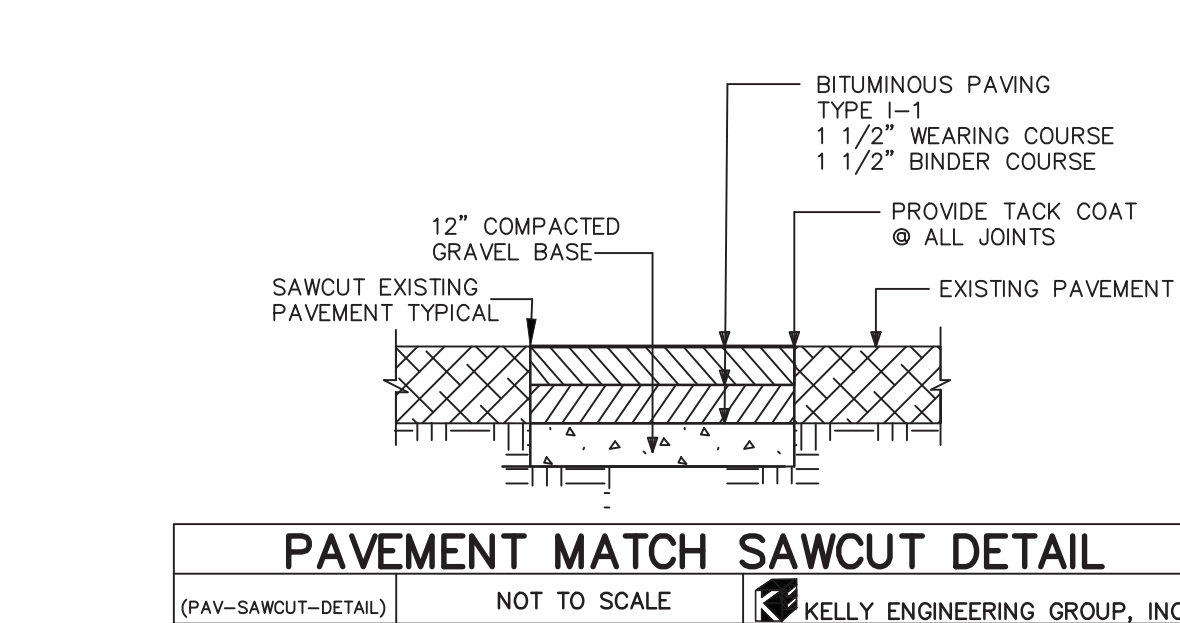
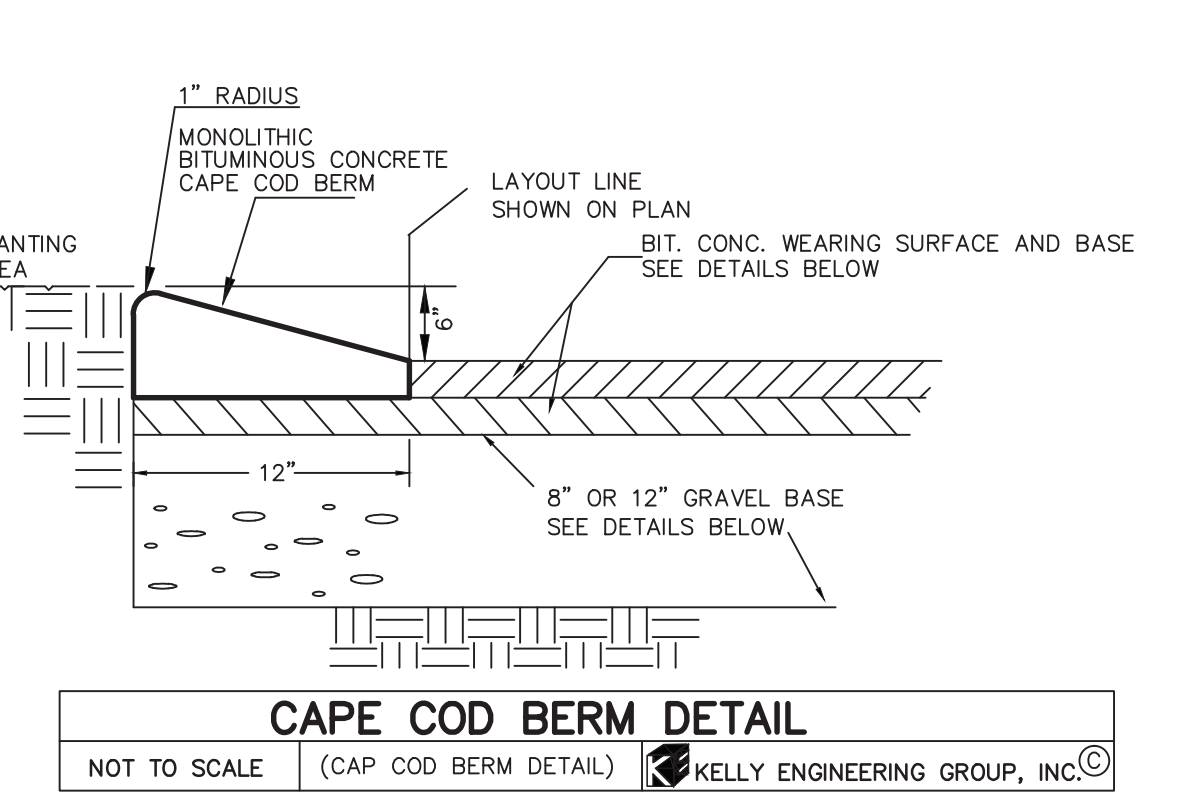
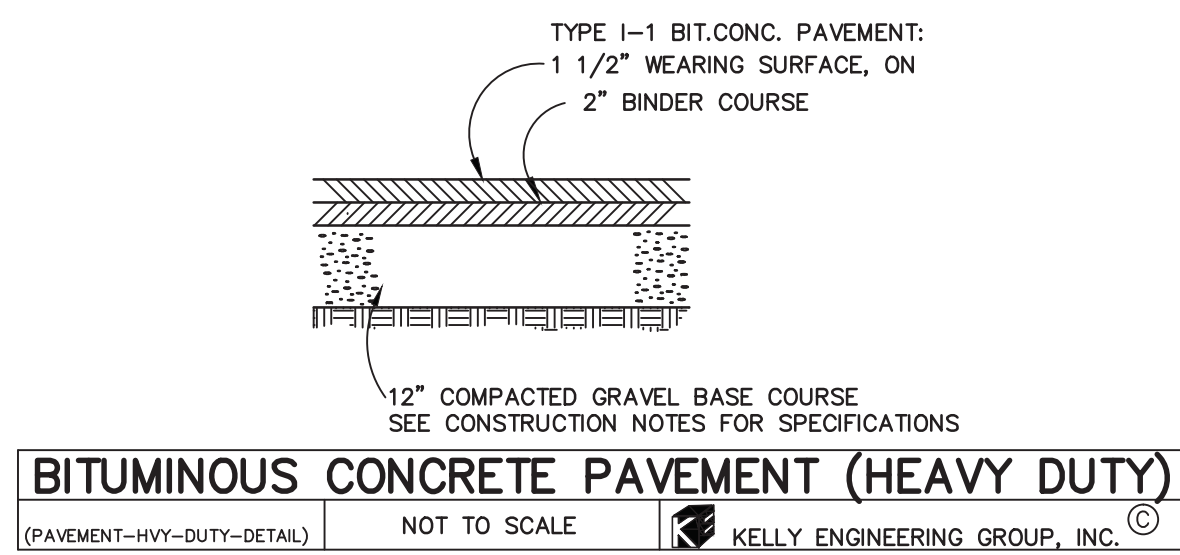
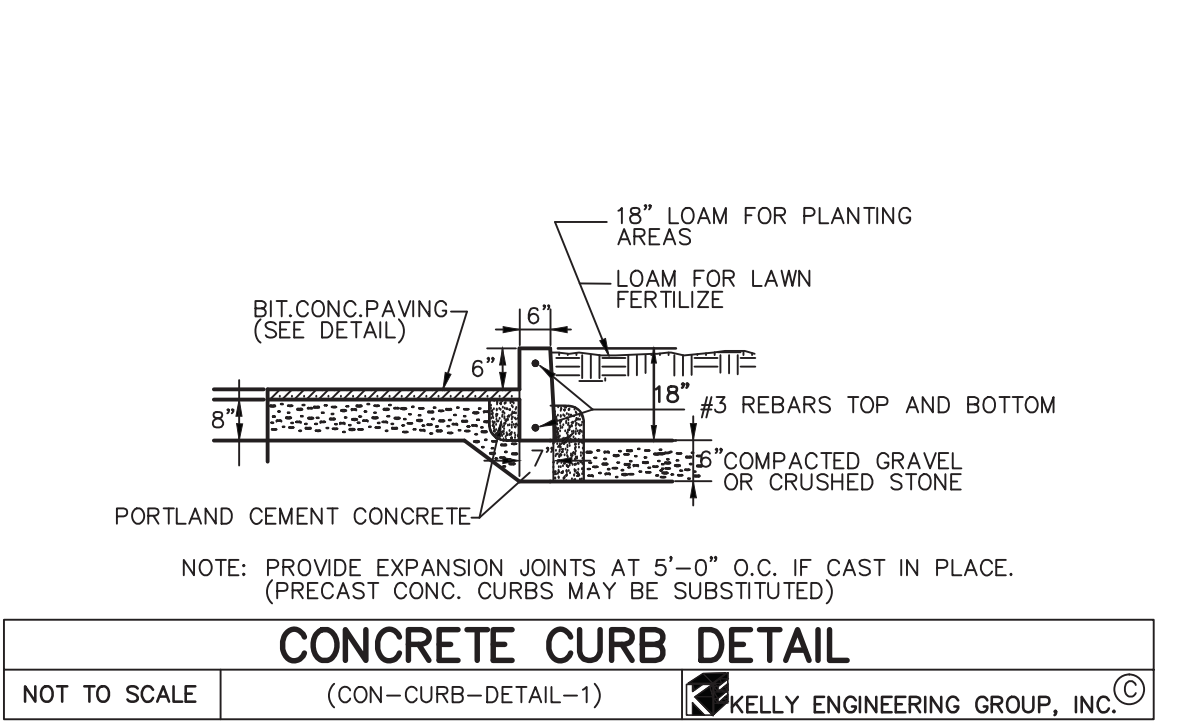
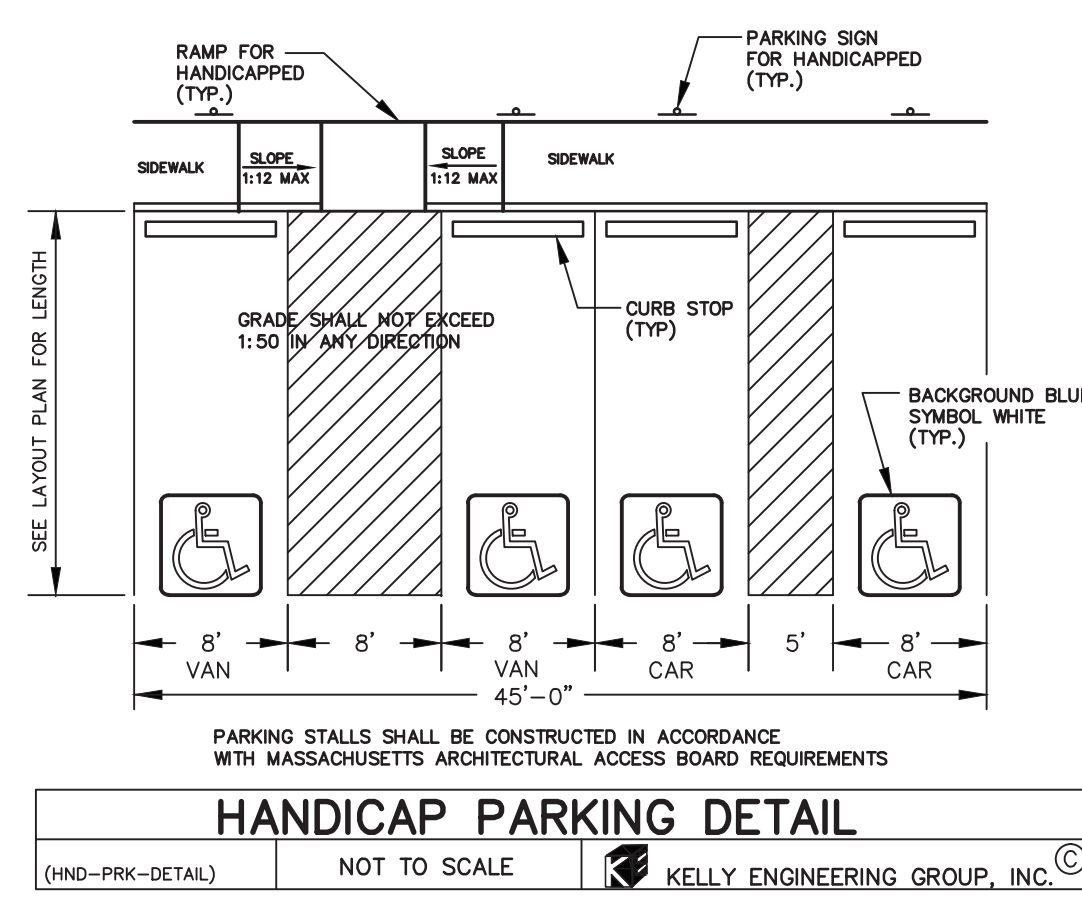
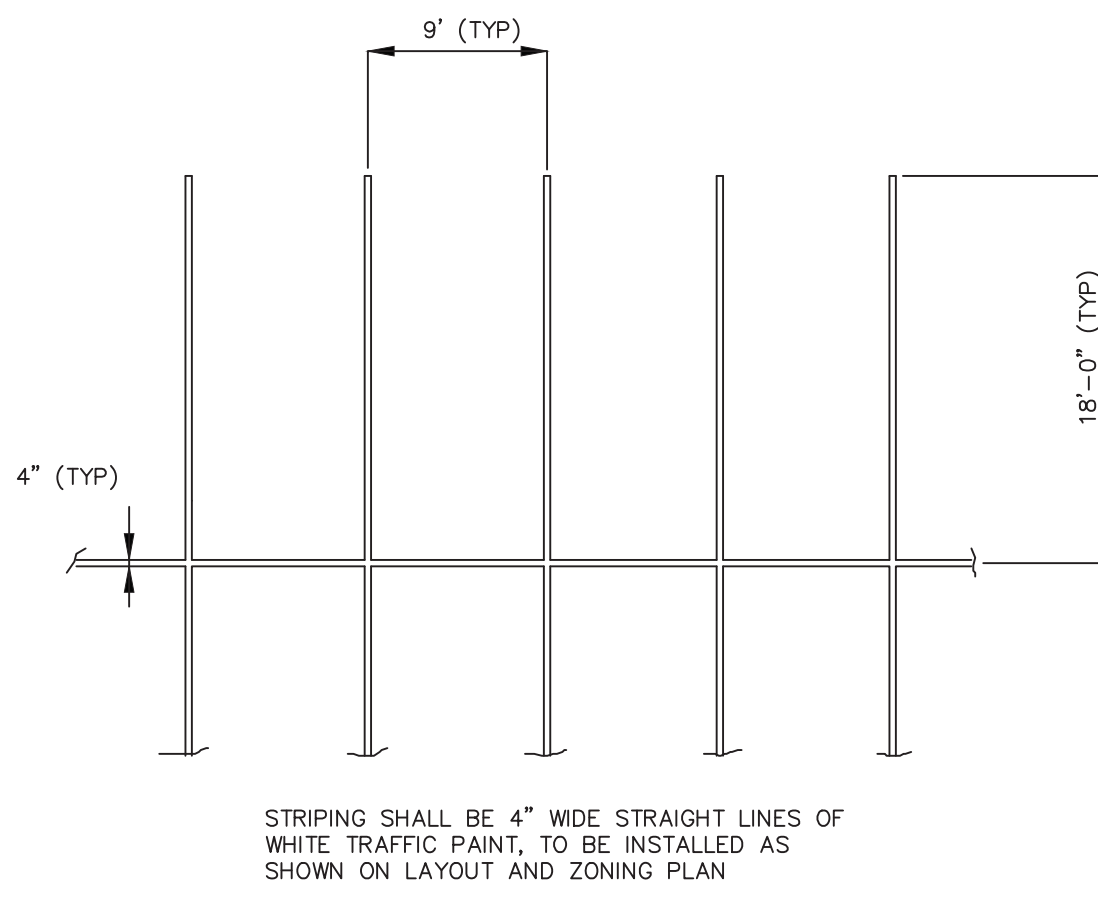
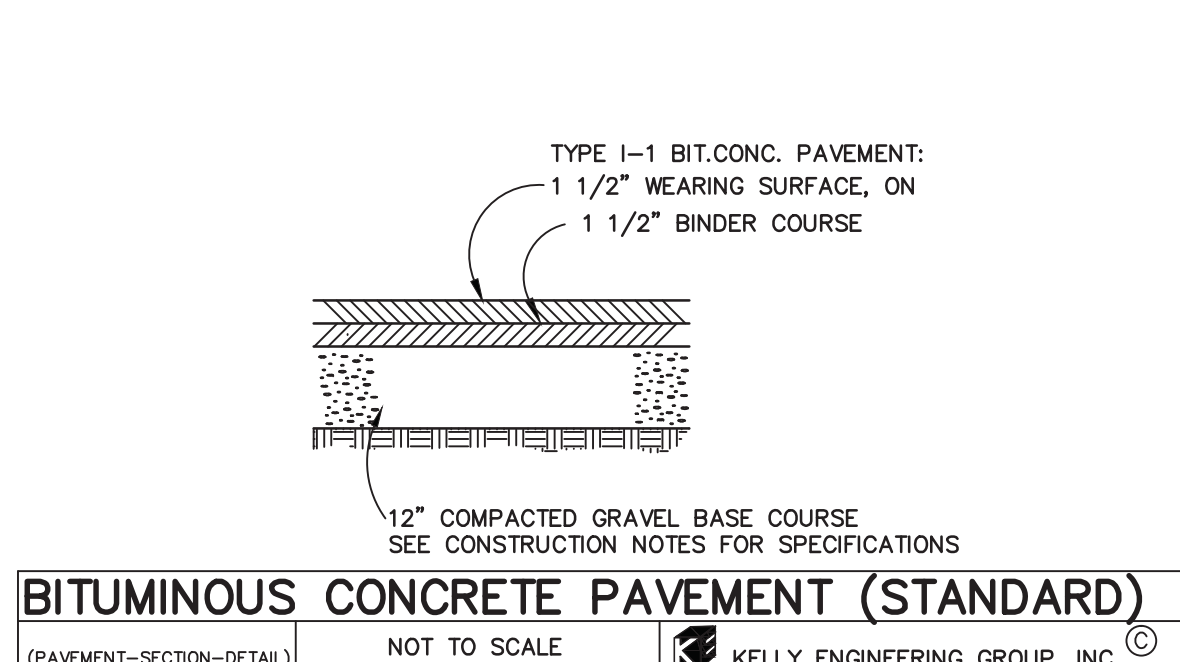
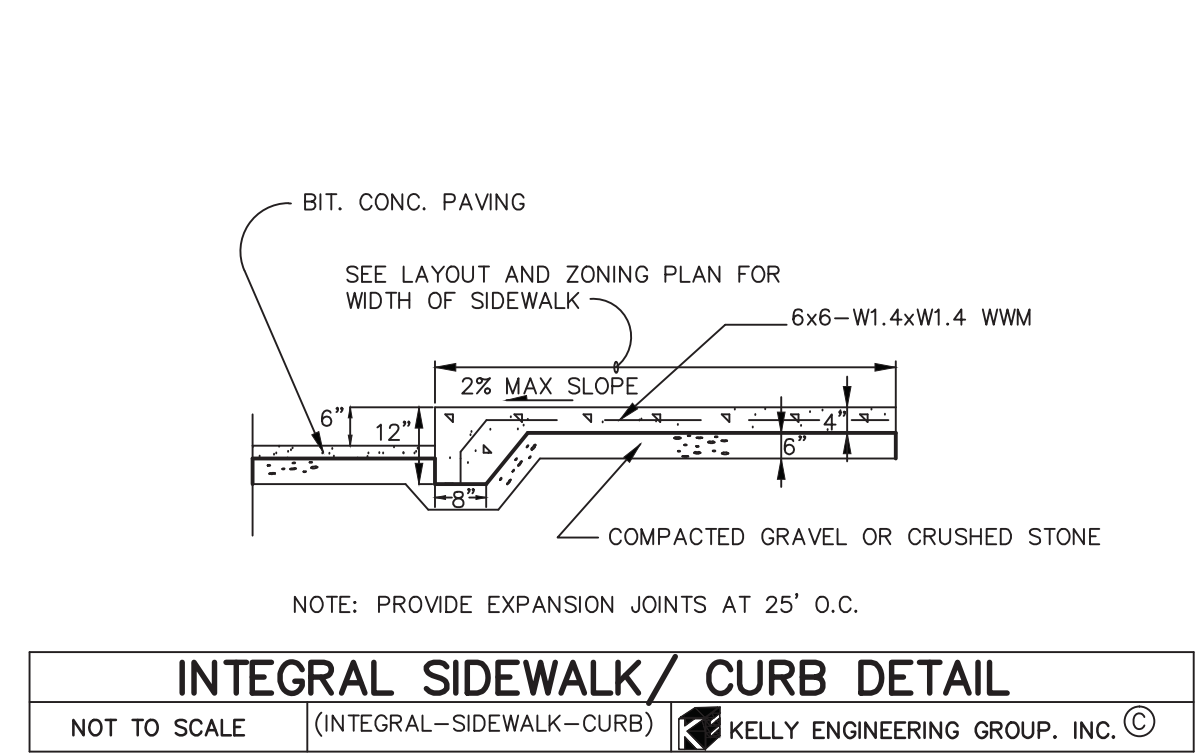
SHEET 18 OF 23  
PLAN NO. 2015-061-UT07  
DISK REF NO. F:\P\2015-061  
DRAWN BY C.J.L.  
CHKD BY DAM  
APPD BY D.N.K.

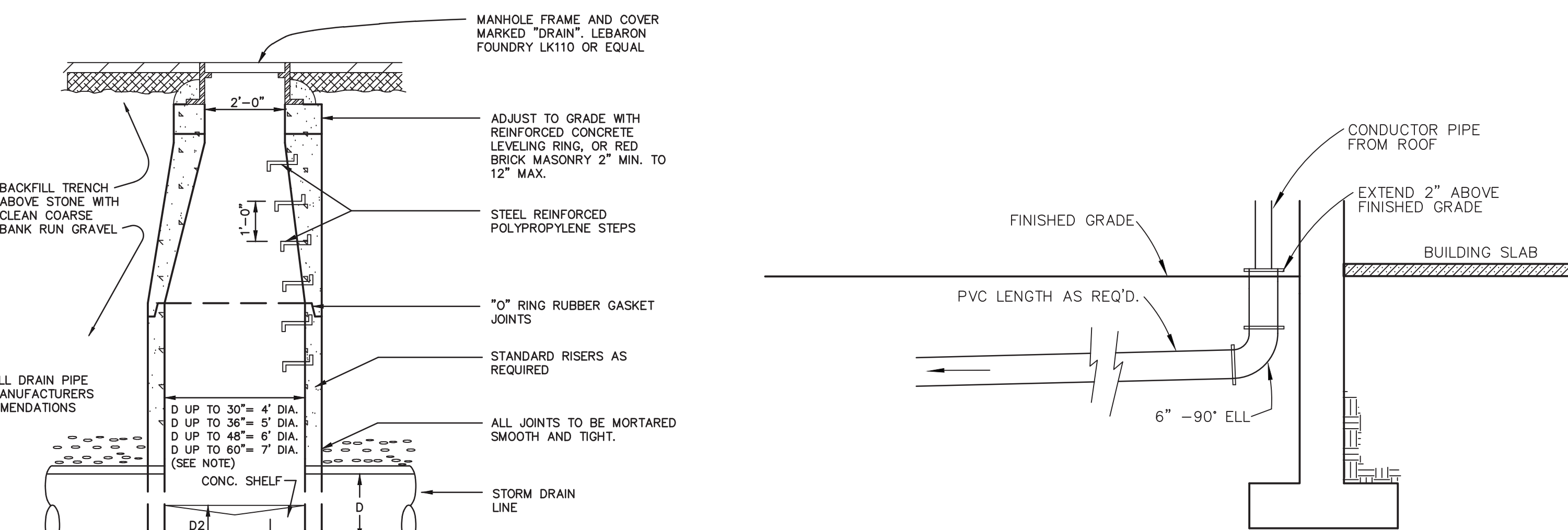
**CAMPANELLI BELLINGHAM LLC**  
160 HIGH STREET  
BELLINGHAM, MA  
**UTILITY PLAN (PART C)**

**KELLY ENGINEERING GROUP, INC.**  
CIVIL ENGINEERING CONSULTANTS  
0 CAMPANELLI DRIVE · BRAintree MA · 02184  
PHONE: 781 843 4333 FAX: 781 843 0028

Digitally signed by David Noel Kelly  
DN: cn=David Noel Kelly, o=Kelly Engineering Group, Inc., email=dnk@kellyengr.com, c=US  
Date: 2017.06.27 15:10:53 -0400

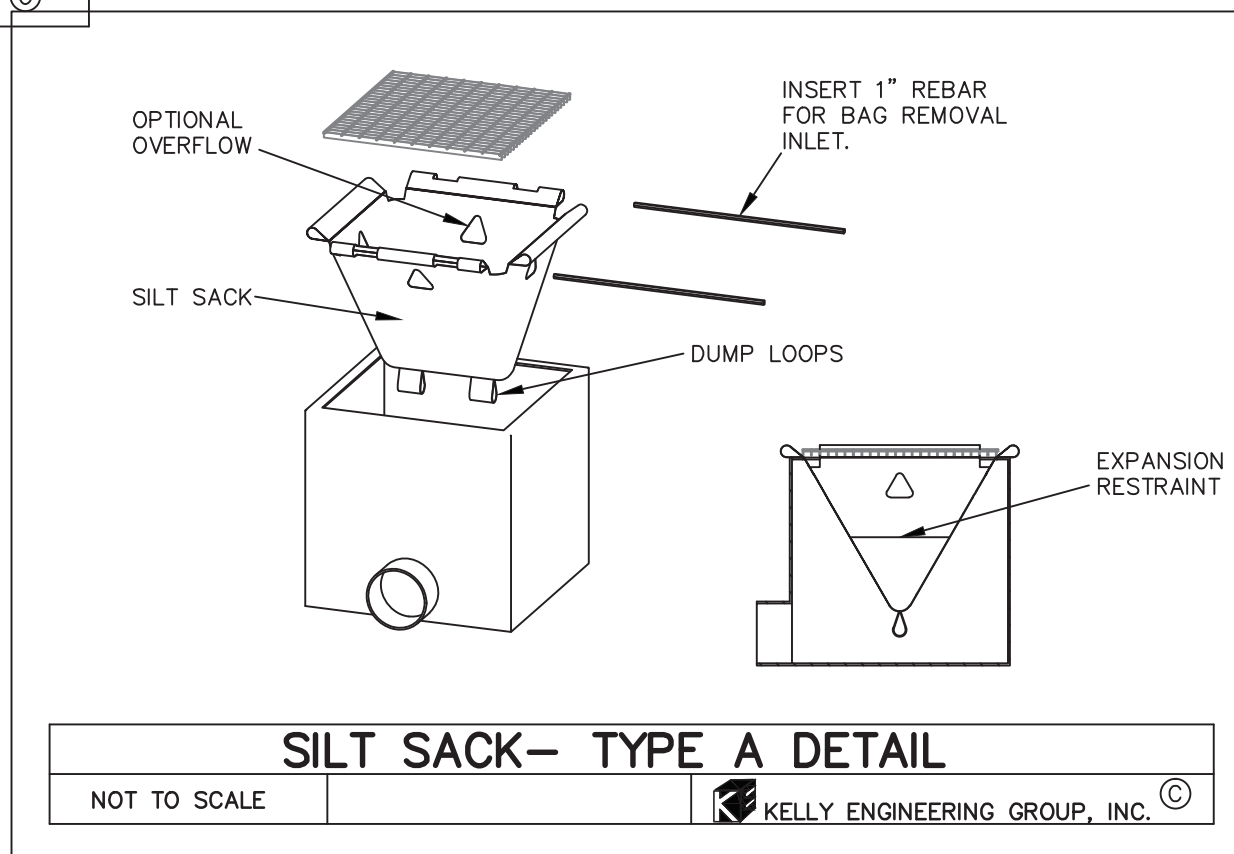
SHEET NO. **18**



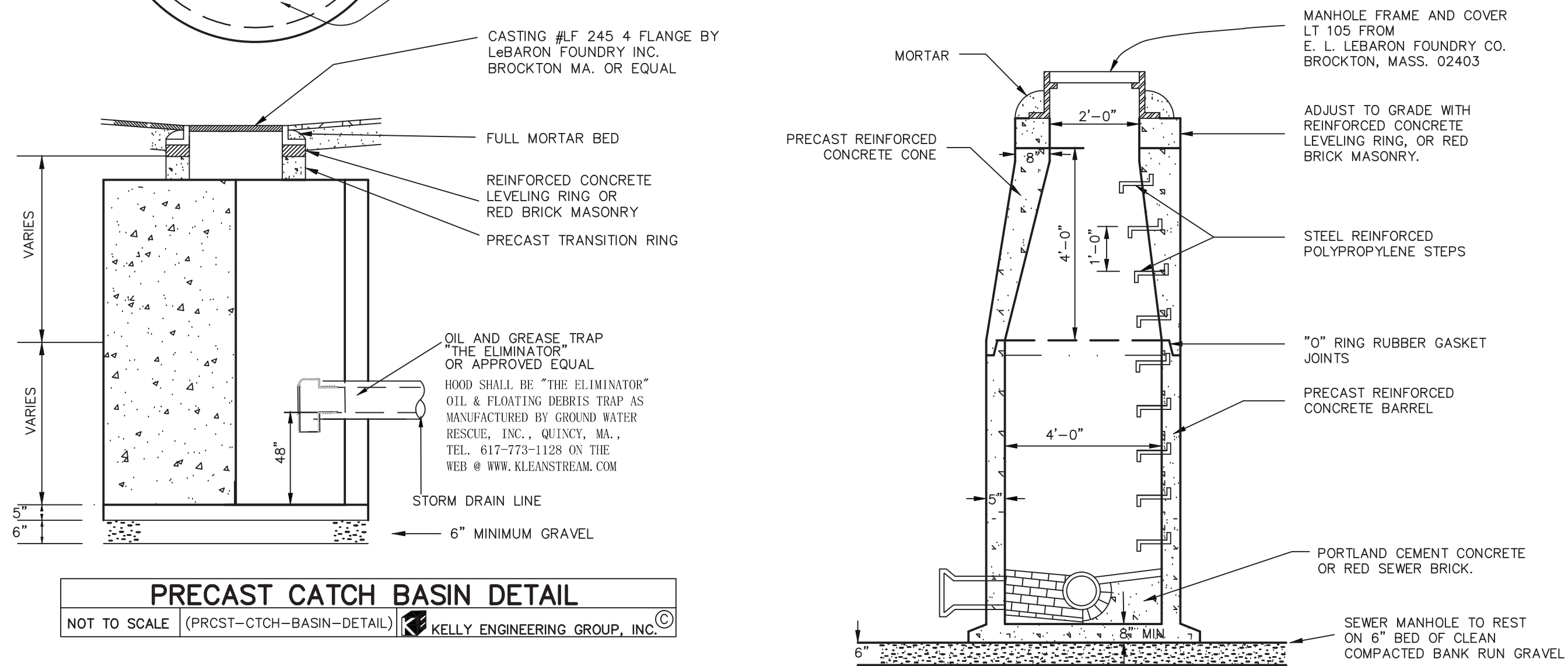


**ROOF DRAIN CONNECTION DETAIL**  
NOT TO SCALE (ROOF-RAIN-CONNECTION) KELLY ENGINEERING GROUP, INC.

**PRECAST DRAIN MANHOLE DETAIL**  
NOT TO SCALE (PRECAST-RAIN-MANHOLE) KELLY ENGINEERING GROUP, INC.

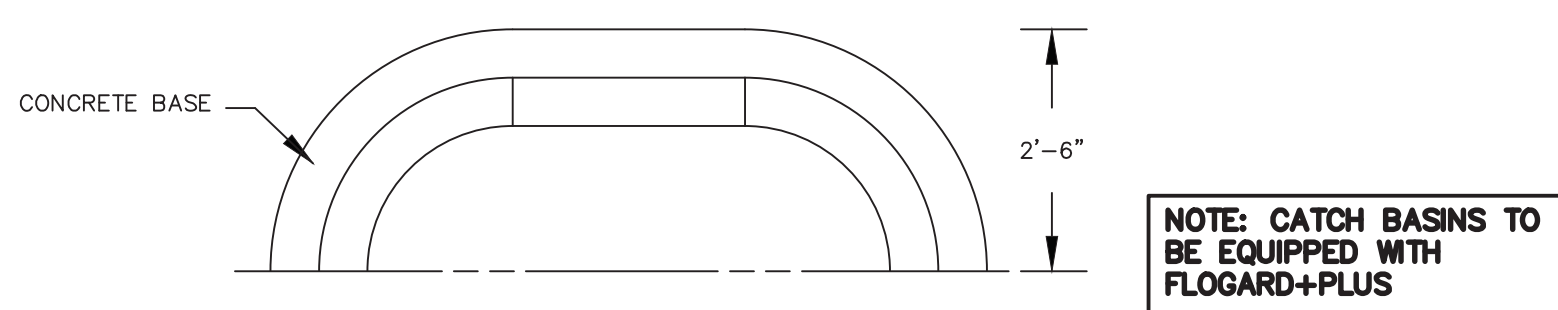


**SILT SACK- TYPE A DETAIL**  
NOT TO SCALE KELLY ENGINEERING GROUP, INC.

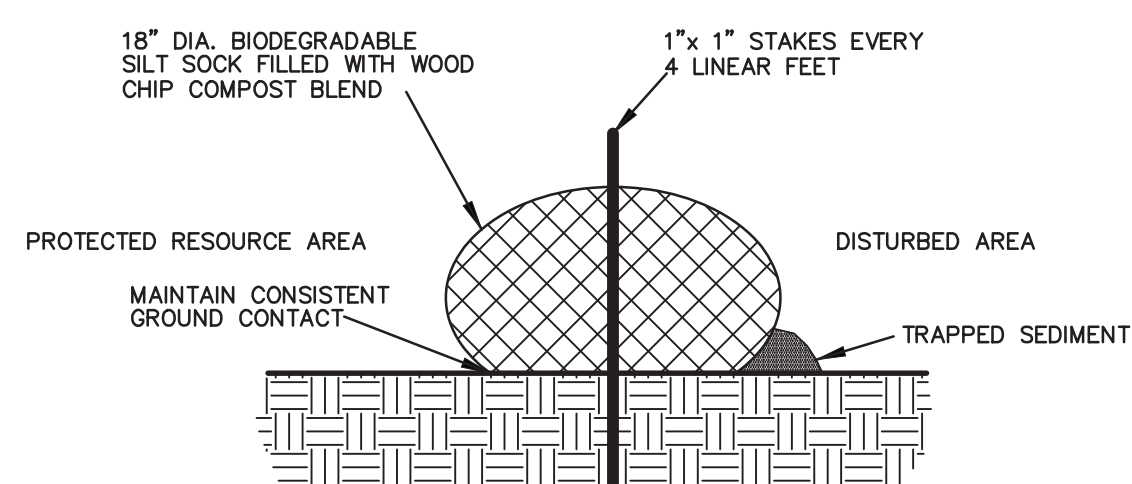


**PRECAST CATCH BASIN DETAIL**  
NOT TO SCALE (PRECAST-CATCH-BASIN-DETAIL) KELLY ENGINEERING GROUP, INC.

**SEWER MANHOLE DETAIL**  
NOT TO SCALE (SEWER-MANHOLE) KELLY ENGINEERING GROUP, INC.



**PRECAST DOUBLE CATCH BASIN**  
NOT TO SCALE (PRECAST-DBL-CATCH-BASIN) KELLY ENGINEERING GROUP, INC.



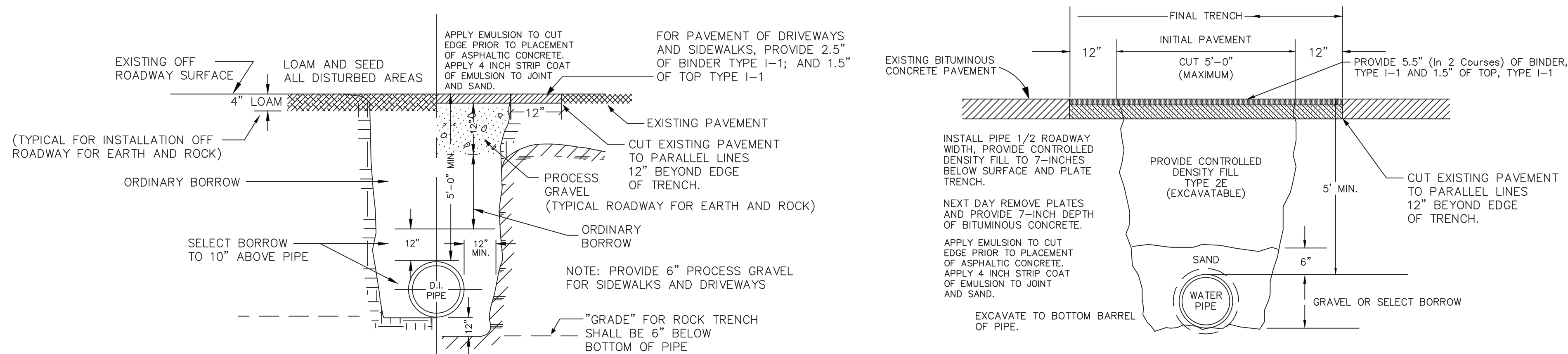
**SILT SOCK LINE DETAIL**  
NOT TO SCALE KELLY ENGINEERING GROUP, INC.

BELLINGHAM WATER DETAILS

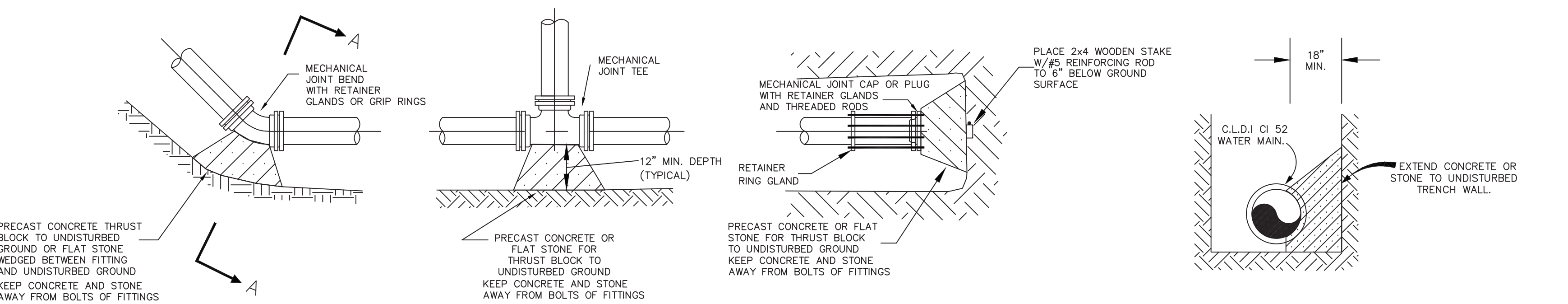
TEFLON TAPE SHALL BE ADDED TO ALL NEW WATER SERVICES

ALL NEW WATER MAINS SHALL BE PRESSURE CLASS 350 DUCTILE IRON EFFECTIVE MARCH 1, 2014

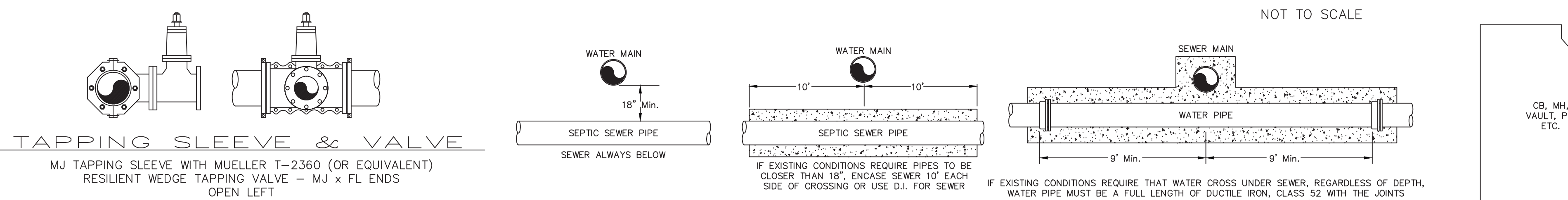
- NOTES
1. ALL NEW WATER MAINS FROM 6" THRU 12" DIAMETER SHALL BE DUCTILE IRON PRESSURE CLASS 350 PIPE.
  2. TEFLON TAPE SHALL BE REQUIRED FOR ALL DIRECT TAPS
  3. NO DIRECT TAPS GREATER THAN 1" SHALL BE ALLOWED ON 6" THRU 12" DIAM. PIPE
  4. ANY BRANCH OR SERVICES LARGER THAN 1" MUST BE ACCOMPLISHED BY INSTALLATION OF APPROPRIATE DUCTILE IRON FITTING



**TYPICAL TRENCH SECTION FOR DUCTILE IRON WATER MAINS**  
ALL PIPES INSTALLED UNDER BROOKS, CULVERTS OR WITHIN 6" OF ANY STRUCTURES (CB, MH, PITS, VAULTS) MUST BE DUCTILE IRON.



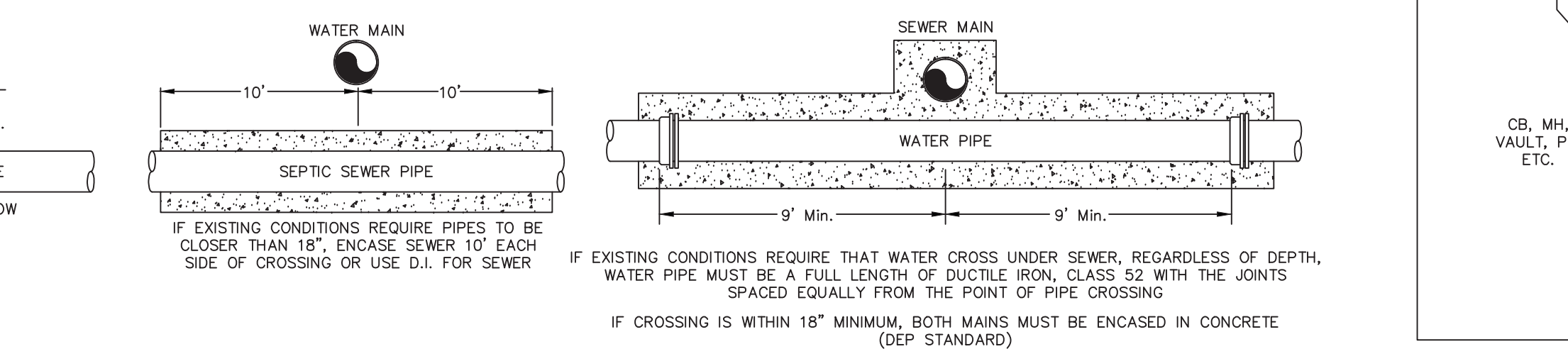
**TYPICAL THRUST BLOCK DETAILS**



**TAPPING SLEEVE & VALVE**  
MJ TAPPING SLEEVE WITH MUELLER T-2360 (OR EQUIVALENT) RESILIENT WEDGE TAPPING VALVE - MJ x FL ENDS OPEN LEFT

NOTE:  
ALL MAIN LINE VALVES - (OPEN LEFT, NON RISING STEM) SIZES 3" TO 12" - (GATE VALVES)  
SIZES GREATER THAN 12" - (BUTTERFLY VALVES)  
MUELLER - KENNEDY - DARLING - EPOXY COATED  
MUELLER RESILIENT SEAT EPOXY COATED, AWWA APPROVED

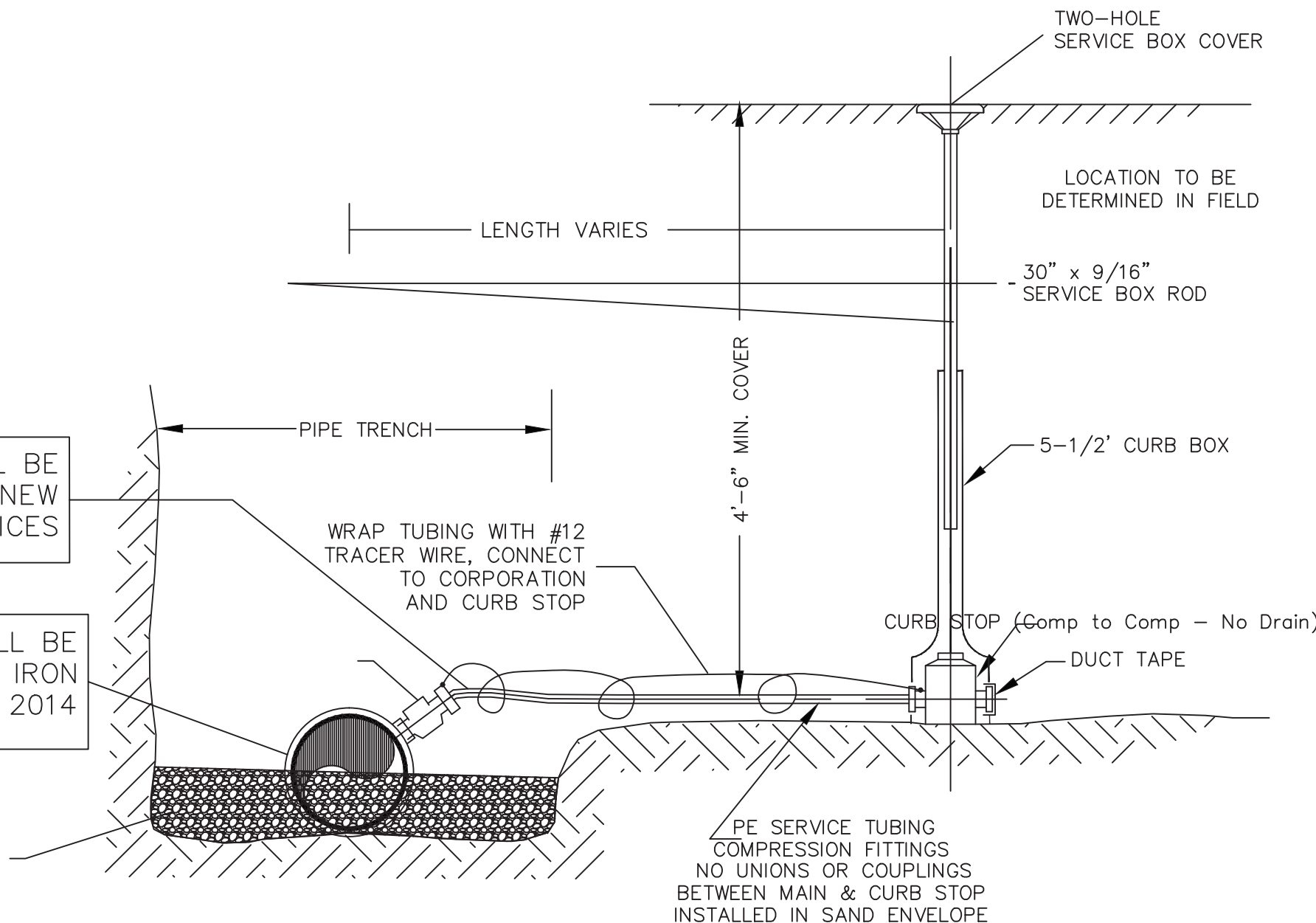
**WATER / SEWER CROSSINGS**



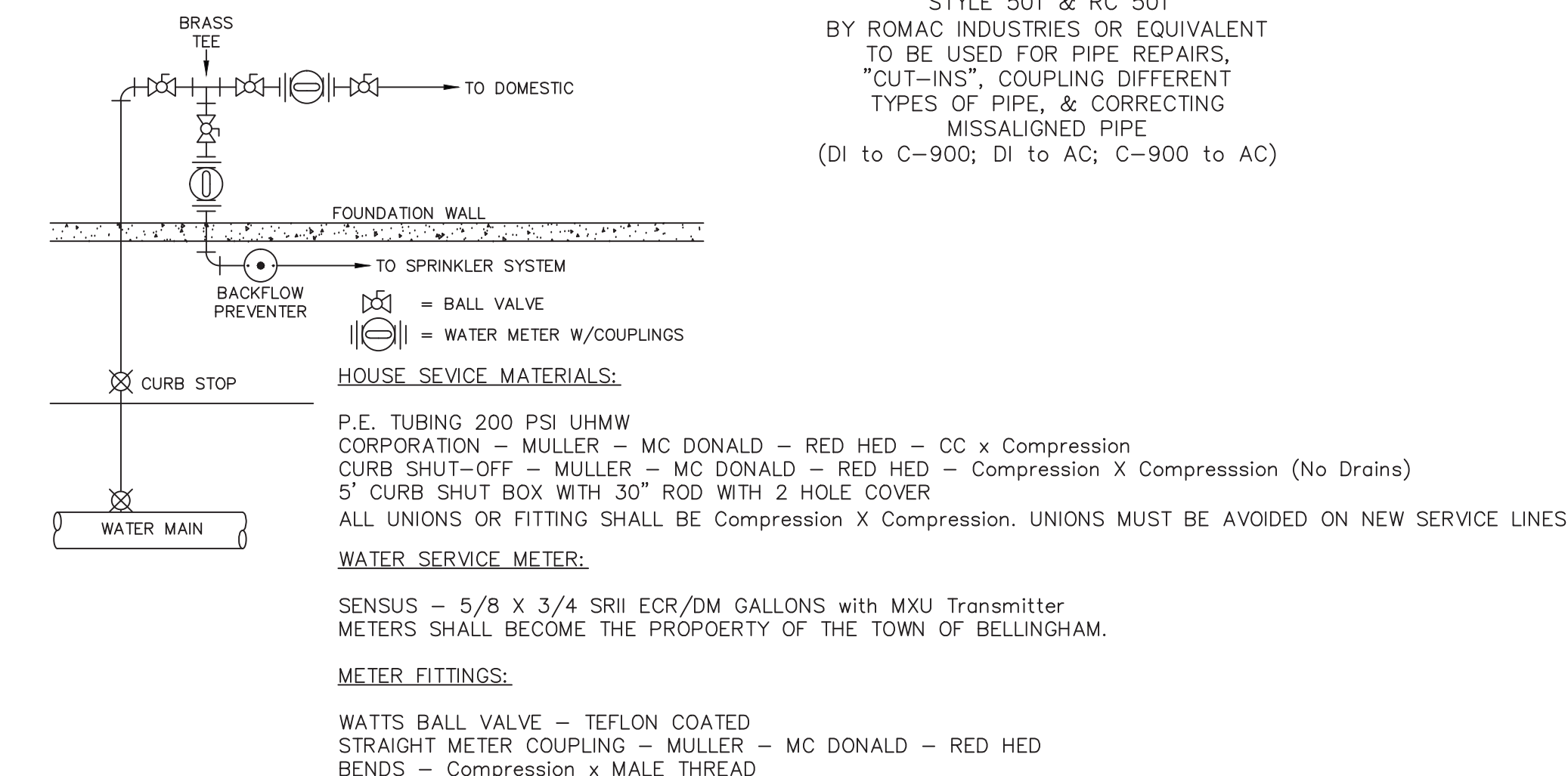
**WATER PIPE CLEARANCE TO STRUCTURES**

**DUCTILE IRON PIPE COUPLING**

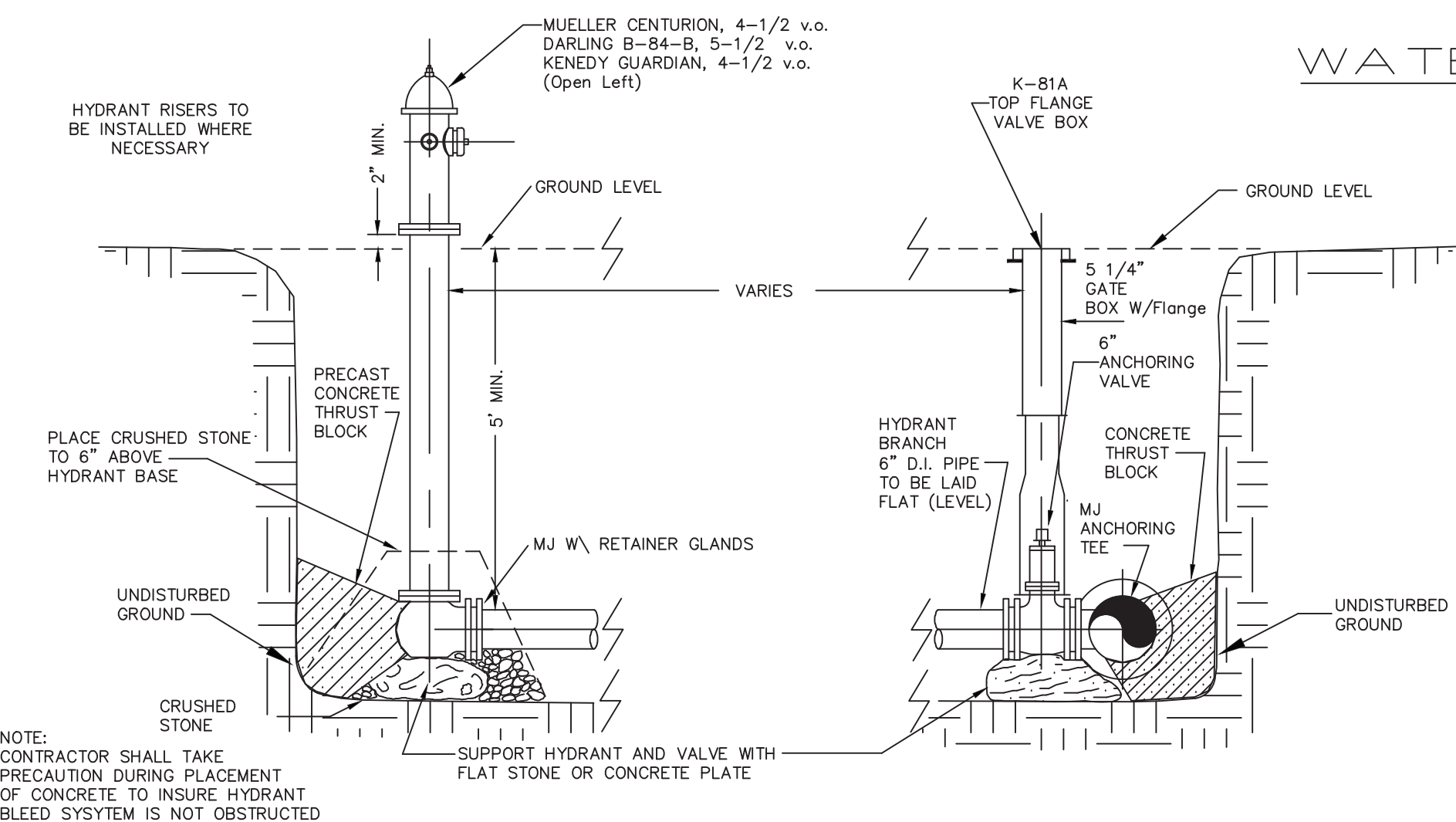
STYLE 501 & RC 501  
BY ROMAC INDUSTRIES OR EQUIVALENT  
TO BE USED FOR PIPE REPAIRS,  
"CUT-INS", COUPLING DIFFERENT  
TYPES OF PIPE, & CORRECTING  
MISALIGNED PIPE  
(DI to C-900; DI to AC; C-900 to AC)



**TYPICAL SERVICE CONNECTION**  
SEE SPEC. SHEET



**WATER SERVICE CONNECTION WITH SECOND METER (LAWN SPRINKLER SYSTEMS)**



**TYPICAL HYDRANT INSTALLATION**

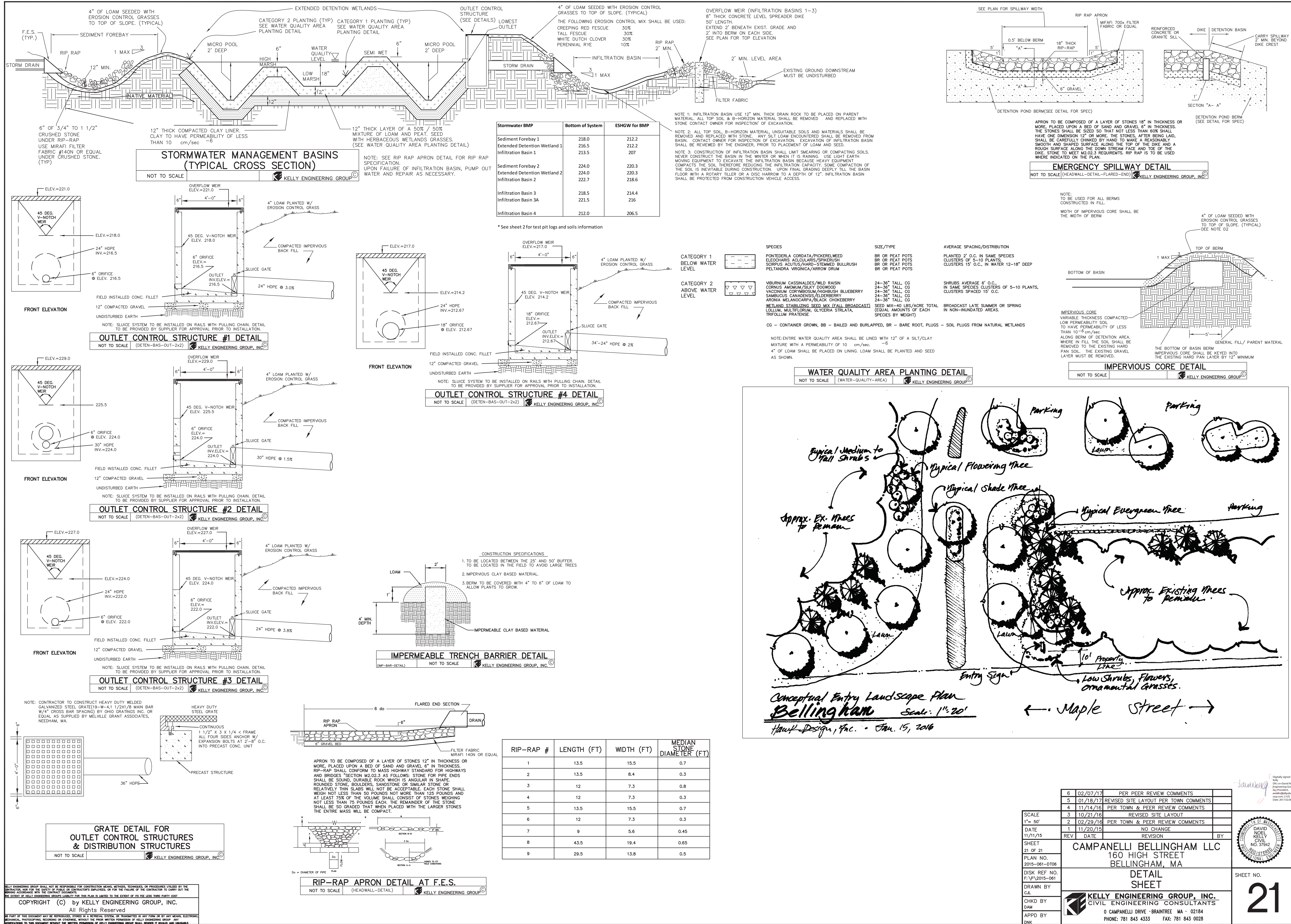
5	01/18/17	REVISED SITE LAYOUT PER TOWN COMMENTS		
4	11/14/16	PER TOWN & PEER REVIEW COMMENTS		
3	10/21/16	REVISED SITE LAYOUT		
2	02/29/16	PER TOWN & PEER REVIEW COMMENTS		
1	11/20/15	NO CHANGE		
DATE	11/11/15	REVISION		BY
SHEET	20 OF 21			
PLAN NO.	2015-061-DT05			
DISK REF. NO.	F:\P\2015-061			
DRAWN BY	C.L.			
CHKD BY	DAM			
APPD BY	DNK			
<b>CAMPANELLI BELLINGHAM LLC</b> 160 HIGH STREET BELLINGHAM, MA <b>DETAIL SHEET</b> <b>KELLY ENGINEERING GROUP, INC.</b> CIVIL ENGINEERING CONSULTANTS 0 CAMPANELLI DRIVE • BRAintree MA • 02184 PHONE: 781 843 4333 FAX: 781 843 0028				

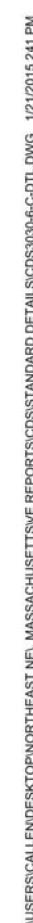
Digitally signed by David Noel Kelly, DN: cn=David Noel Kelly, o=Kelly Engineering Group, Inc., ou=Production, email=dnoel@kellyengr.com, c=US, Date: 2017.01.28 13:10:00-0500

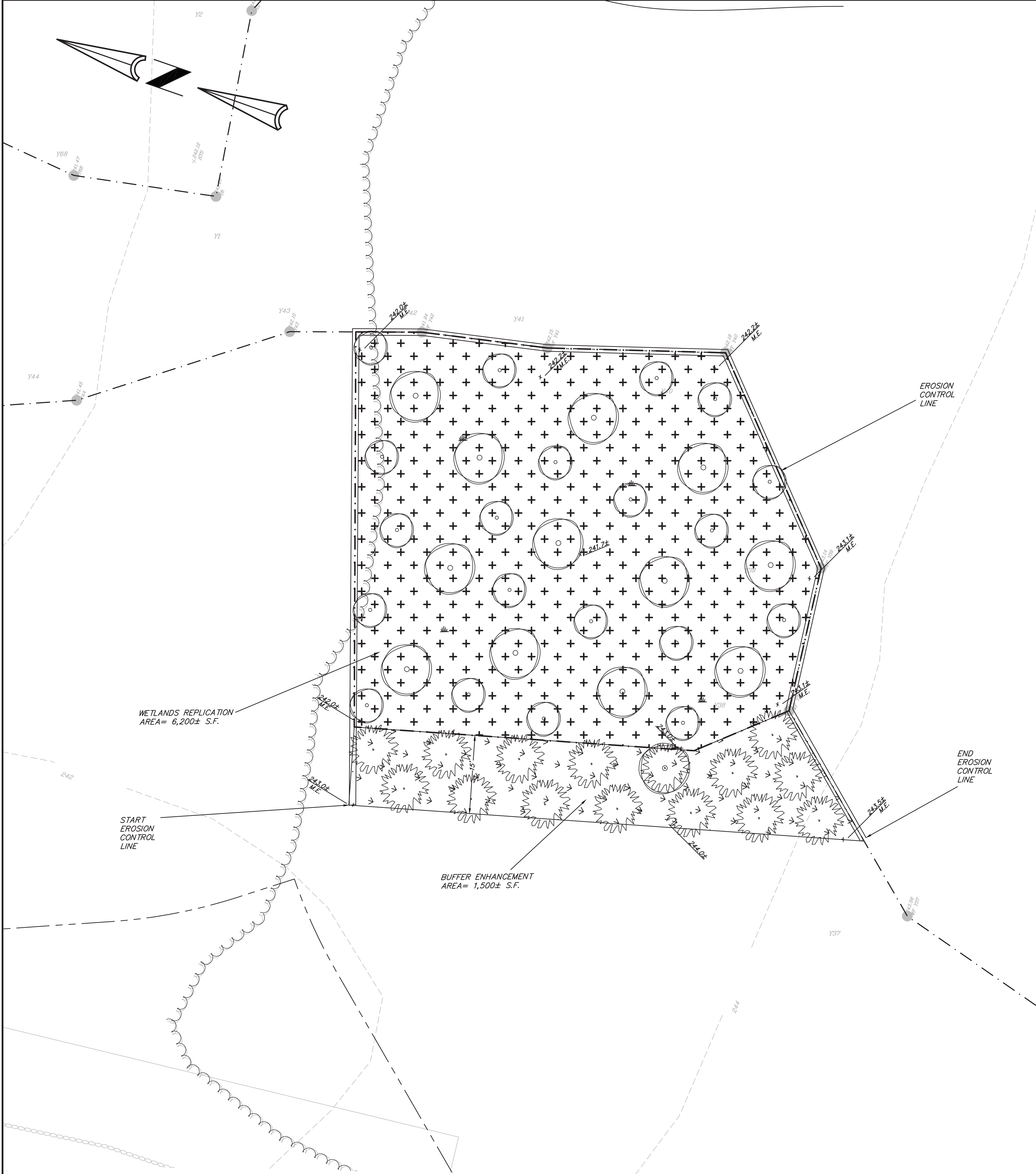
DAVID NOEL KELLY CIVIL ENGINEER REGISTERED PROFESSIONAL ENGINEER

SHEET NO. **20**

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### EXISTING LEGEND

---	WETLAND LINE
+ 120	WETLAND FLAG
--- 240 ---	CONTOUR MAJOR
--- 242 ---	CONTOUR MINOR
~~~~~	TREE LINE
-----	STONE WALL

PROPOSED LEGEND

x x x x x	SPOT GRADE
=====	EROSION CONTROL LINE
~~~~~	EXISTING TREE LINE TO REMAIN
○	SAPLINGS 2" - 3" DIA.
○	SMALLER SAPLINGS 6" - 8" HIGH
○	SAPLINGS 8" - 10" HIGH
+	WETLAND REPLICATION AREA
+	BUFFER ENHANCEMENT AREA

### WETLAND REPLICATION AREA PROFILE

242.2±	EXISTING GRADE		
241.7±	PROPOSED GRADE	10" - 14"	16" - 18"
241.0±	241.4 ±		
240.7±	GROUND WATER		

EXCAVATE EXISTING SOIL AND REPLACE WITH WETLAND SUBSTRATE (1:1 MIXTURE OF HIGH QUALITY LOAMY TOPSOIL AND PROPERLY DECOMPOSED LEAF COMPOSITE)

### BUFFER ENHANCEMENT AREA PROFILE

243.5±	244.0 ±	PROPOSED GRADE	
242.2±	EXISTING GRADE	12" - 18"	
240.7±	GROUND WATER	16" - 18"	

PLACE HIGH QUALITY LOAM AND SOME COMPOSITE (4:1 LOAM TO COMPOSITE)

### NOTES:

The construction of the wetland replication area must be overseen by a qualified wetland scientist. The final grade and plant locations within the area are subject to field revision by the qualified wetland scientist based upon observed hydrologic conditions.

### Construction Protocol: Wetland Replication Area

The following protocol was prepared based on an evaluation of the proposed Wetland Impact Areas and the proposed Wetland Replication Area conducted by John P. Rockwood, Ph.D., PWS on November 16, 2015. Although the wetland areas to be impacted are isolated Vegetated Wetlands subject to jurisdiction under the Bylaw and are not Bordered Vegetated Wetlands subject to jurisdiction under the Act and Bylaw, the proposed Wetland Replication Area has been designed based upon the "Massachusetts Inland Wetland Replication Guidelines" (MassDEP, March 2002) and the General Performance Standards of the Regulations set forth at 310 CMR 10.55(4)(b) and 10.50(3), as generally applicable, and the requirements at Section 20.F. of the Bylaw Regulations. The design of the Wetland Replication Area has been carefully considered and a detailed plan to accomplish the proposed work, including the requirement for proper qualified supervision during construction, have been provided below.

The intent of this protocol is to create 6,200± square feet of forested swamp to mitigate for the loss of 2,997± square feet of forested swamp isolated Vegetated Wetland in two areas that are required to be filled for the project. The Wetland Replication Area has been sited in an upland meadow adjacent to isolated Vegetated Wetland Y in the south-central portion of the site. The Wetland Replication Area will be surrounded to the east and south by wet meadow and to the north by forested upland. This proposed mitigation plan will provide buffer enhancement by converting a 15-foot-wide band of upland meadow to the west of the Wetland Replication Area (1,500± square feet) which will be altered through the construction process to upland forest. As such, the proposed Wetland Replication Area will be bordered on two sides by wet meadow and on two sides by existing and proposed upland forest. Wetland replication is proposed at a slightly greater than 2:1 ratio.

The construction of the Wetland Replication Area must be conducted under the direct supervision of a qualified wetland scientist as required by the Bylaw Regulations. The protocol for construction of the Wetland Replication Area and Buffer Enhancement Area is provided below.

1. The wetland boundary at flags Y37 to Y43 will be located, as necessary, and marked in the field. The wetland boundary must be accurately depicted in the field.

2. Prior to the start of earth-moving activities, an erosion control barrier of properly installed 9" straw wattles will be installed exactly along the wetland boundary between the existing wetlands and the Wetland Replication Area between flags Y42± and Y37± with wooden stakes at 4' intervals along the wattles. This properly installed barrier will also run exactly along the northern boundary of the area at the existing tree line and along the southern and western edges of the proposed 15-foot-wide Buffer Enhancement Area. This latter area will be disturbed to allow for the construction of the Wetland Replication Area. To minimize the introduction of invasive species, hay bales should not be used anywhere near the Wetland Replication Area.

3. The Wetland Replication Area and Buffer Enhancement Area will be cleared and grubbed.

4. The Wetland Replication Area will be excavated 10 to 14 inches below the existing elevation at flag Y41 (i.e., below elevation 242.2±). As such, the approximate subgrade elevation in the Wetland Replication Area will be about elevation 241 to 241.4. The final subgrade elevation will be determined in the field during construction by the supervising wetland scientist. The Buffer Enhancement Area will be excavated, as necessary.

5. The Wetland Replication Area will be brought to the proposed final elevation by applying 10 to 14 inches of wetland substrate to a final elevation of about 242 to 243. The wetland substrate will consist of a 1:1 mixture of high quality loamy topsoil and properly decomposed leaf composite. The substrate from the Wetland Impact Areas will not be used in the Wetland Replication Area. The excavation work must be closely supervised by the supervising wetland scientist to ensure the proper elevation and a suitable hydrologic connection to the adjacent wetland. Minor modifications to the proposed grading may be made in the field by the supervising wetland scientist in response to observed subsurface hydrologic conditions. The area will grade smoothly into the adjacent wet meadow to the east and south. The area will be graded to have a slightly varied microtopography and include a small depressed area approximately 4 by 10' in size and 6 to 8" in depth to mimic the tree fall in Wetland X. The surface of the area should not be smooth; it should contain slight hummocks and hollows/depressions to provide a slightly varied hydrologic regime within the Wetland Replication Area. The Buffer Enhancement Area will be graded with high quality loam and some compost (4 to 1 loam to compost) to an elevation of 12 to 18 inches above the Wetland Replication Area (about elevation 243.5 to 244). The upgradient edge of the Buffer Enhancement Area will grade smoothly to the adjacent uplands.

6. Ten (10) sections of log (10' long and 4 to 6" in diameter) and twenty (20) sections of branches reserved from or collected from the portion of the site to be developed will be distributed throughout the Wetland Replication Area and Buffer Enhancement Area. Sixty (60) stones (6" to 12" in diameter) will also be distributed throughout the Wetland Replication Area and Buffer Enhancement Area. The stones will be placed in piles of 3 to 10 stones to create cavities like those found in the stone wall in Wetland X. The logs, branches, and stones will provide for additional wildlife habitat features within the area.

7. After the Wetland Replication Area and Buffer Enhancement Area have been graded and the logs, branches, and stones placed, an erosion control barrier of properly installed straw wattle will be installed between the Wetland Replication Area and Buffer Enhancement Area. Again, hay bales will not be used to avoid the introduction of invasive species.

8. The Wetland Replication Area and Buffer Enhancement Area will be planted with the saplings, shrubs, and/or herbaceous materials specified in the table below. In the Wetland Replication Area, the twelve (12) larger saplings required under the Bylaw Regulations will be planted throughout the area with an average spacing of 22' on-center; the smaller twenty (20) saplings will be planted throughout the area with an average spacing of 18' on-center resulting in an overall sapling spacing of 14' on-center within the Wetland Replication Area; the two-hundred and fifty (250) shrubs will be in clumps of three to six of the same species with an average spacing of 5' on-center; and the fifty (50) ferns will be planted in clumps of two or three near the bases of the planted saplings within suitable portions of the Wetland Replication Area. In the Buffer Enhancement Area, the fifteen (15) saplings will be planted throughout the area with an average spacing of 10' on-center; and the sixty (60) shrubs will be planted in clumps of three to six of the same species with an average spacing of 5' on-center. The woody vegetation should not be planted in rows. The woody and herbaceous materials that are proposed to be planted in the Wetland Replication Area and Buffer Enhancement Area are native species and are found elsewhere on the site.

### Planting Plan for Wetland Replication and Buffer Enhancement Area

WETLAND PORTION OF MITIGATION AREA (6,200± square feet)	NUMBER
<b>SPECIES, SIZE, SPACING</b>	
Saplings: 2 to 3" caliper (per Bylaw Regulations Section 23); 22' on-center	
Red Maple ( <i>Acer rubrum</i> )	12
Smaller Saplings: 6 to 8" in height: 18' on-center	
Red Maple ( <i>Acer rubrum</i> )	15
Swamp White Oak ( <i>Quercus bicolor</i> )	5
Shrubs: 4 to 6' in height; clumps of 3 to 6 with 5' on-center average spacing	
Sweet Pepper-bush ( <i>Clethra alnifolia</i> )	75
Arrow-wood ( <i>Viburnum dentatum</i> )	50
Highbush Blueberry ( <i>Vaccinium corymbosum</i> )	50
Silky Dogwood ( <i>Cornus amomum</i> )	50
Common Winterberry ( <i>Ilex verticillata</i> )	25
Herbaceous: #1 Pots; clumps of two or three at base of saplings	
Royal Fern ( <i>Osmunda regalis</i> )	10
Cinnamon Fern ( <i>Osmunda cinnamomea</i> )	20
Sensitive Fern ( <i>Oncoclea sensibilis</i> )	20
<b>BUFFER ZONE PORTION OF MITIGATION AREA (1,500 square feet)</b>	
<b>SPECIES, SIZE, SPACING</b>	
Saplings: 8 to 10" in height; 10' on-center	
Eastern White Pine ( <i>Pinus strobus</i> )	10
Red Maple ( <i>Acer rubrum</i> )	5
Shrubs: 4 to 6' in height; clumps of 3 to 6 with 5' on-center spacing	
American Witch-hazel ( <i>Hamamelis virginiana</i> )	20
Gray-stem Dogwood ( <i>Cornus racemosa</i> )	20
Eastern Red Cedar ( <i>Juniperus virginiana</i> )	20

9. After planting, the plant materials will be watered in well and will be mulched with salt marsh hay. Leaf litter and fine woody debris collected from the portions of the site to be developed will be collected and spread throughout the Wetland Replication Area and Buffer Enhancement Area to provide habitat, discourage colonization by invasive species, and provide and some level of erosion control and moisture retention.

10. After the Wetland Replication Area and Buffer Enhancement Area have become vegetatively stabilized, and following approval of the issuing authority, the straw wattle and all wooden stakes will be removed and disposed of properly.

### Monitoring

For a three-year period following the construction of the Wetland Replication Area, vegetation and hydrology will be evaluated near the end of each growing season by a qualified wetland scientist. Annual reports that describe the status of the Wetland Replication Area will be provided to the Commission in a timely manner. Each report will include any measures deemed necessary to bring the Wetland Replication Area into compliance with the approved protocol and Order of Conditions. If at the end of a three-year period appropriate vegetation coverage in the Wetland Replication Area is not 75% or greater, additional measures will be recommended for review and approval by the Commission prior to implementation. The final monitoring report will be included as part of the request for a final certificate of Compliance.

### GRAPHIC SCALE



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5	01/18/17	NO CHANGE	
4	11/14/16	NO CHANGE	
3	10/21/16	NO CHANGE	
2	02/29/16	NO CHANGE	
1	11/20/15	NO CHANGE	
REV	DATE	REVISION	BY
SHEET	23 OF 23		
PLAN NO.			
MITIGATION PLAN NO.			
DISK REF NO.	F:\P\2015-061		
DRAWN BY	C.J.L.		
CHKD BY	DAM		
APPD BY	DNK		
CAMPANELLI BELINGHAM LLC 160 HIGH STREET BELLINGHAM, MA			
WETLAND REPLICATION AND BUFFER ENHANCEMENT PLAN			
KELLY ENGINEERING GROUP, INC. CIVIL ENGINEERING CONSULTANTS 0 CAMPANELLI DRIVE • BRAintree MA • 02184 PHONE: 781 843 4333 FAX: 781 843 0028			
SHEET NO. 23			

Digitally signed by David Noel Kelly  
DN: cn=David Noel Kelly, o=Kelly Engineering Group, ou=President, email=dkelly@kellyengr.com, c=US  
Date: 2017.02.20 16:06:00 -0500

