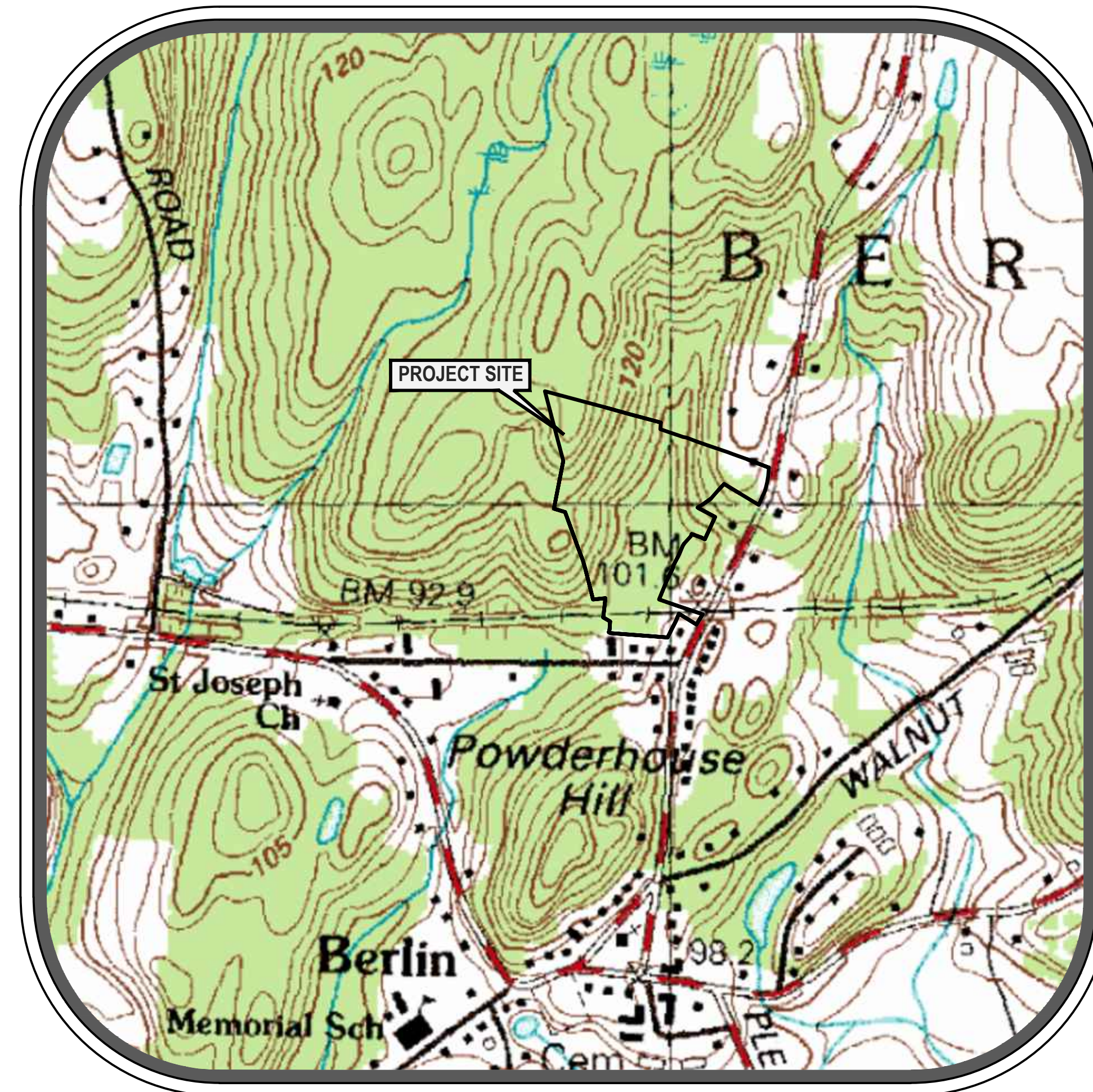


# SPECIAL PERMIT PLAN

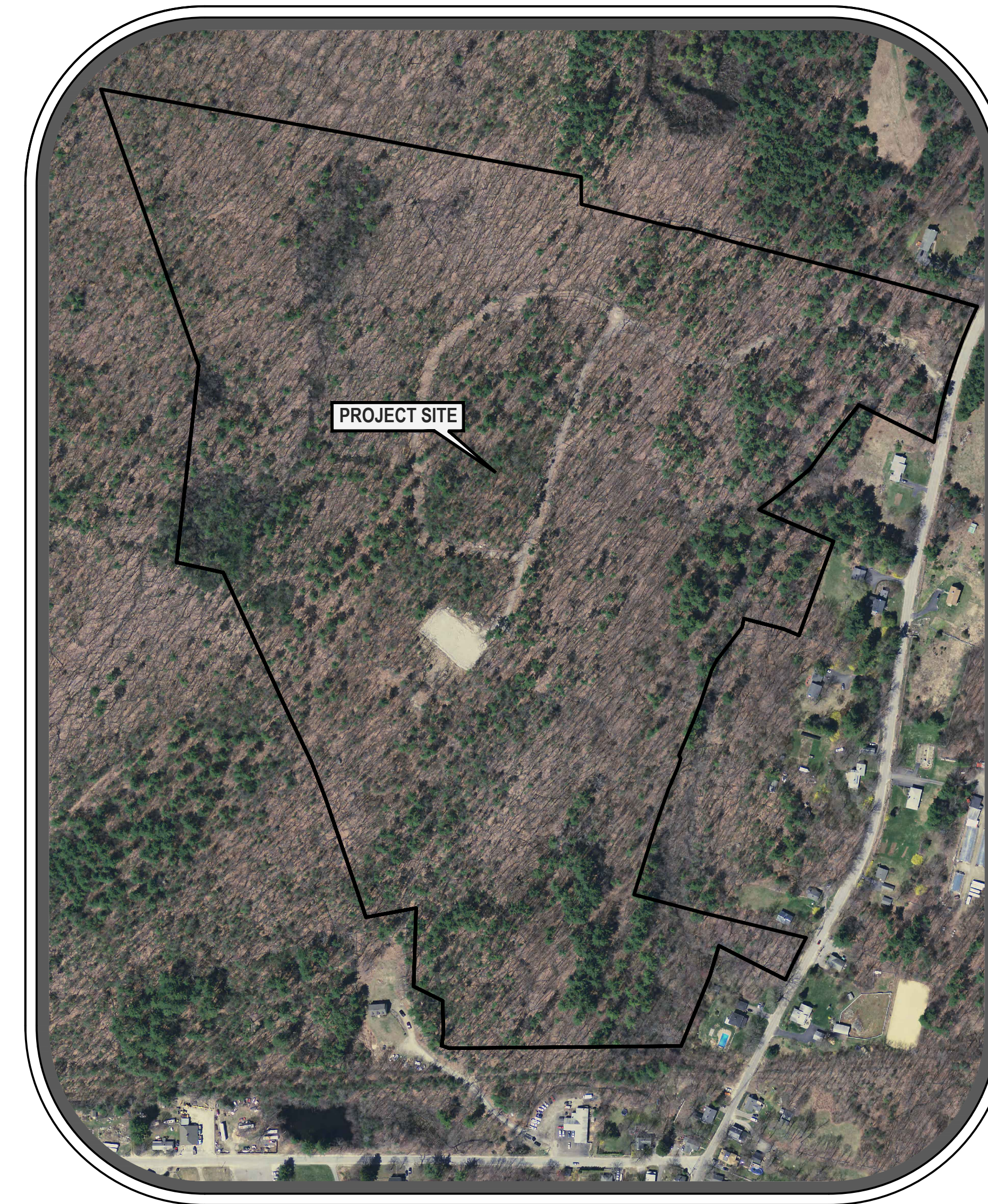
## BERLIN, MA

### HIGHLAND RIDGE SENIOR RESIDENTIAL DEVELOPMENT



LOCUS MAP

SCALE: 1"=1,100'±



AERIAL IMAGE

1"=±200'

#### RECORD INFORMATION

**RECORD OWNER:**

KEN-CHRIS REALTY TRUST  
62 SOUTH BOLTON ROAD  
BOLTON, MA 01740

**DEED REFERENCE:**

RECORDED AT WORCESTER REGISTRY OF DEEDS:  
BOOK 8861 PAGE 186 (PARCEL 27)

**PLAN REFERENCE:**

PLAN BOOK 231 PLAN 124  
PLAN BOOK 252 PLAN 65  
PLAN BOOK 284 PLAN 69  
PLAN BOOK 277 PLAN 93  
PLAN BOOK 393 PLAN 119  
PLAN BOOK 279 PLAN 11

**ASSESSORS REFERENCE:**

MAP:15 PARCEL:27 & 27.1

**ZONING DISTRICT:**

RESIDENCE & AGRICULTURAL

#### SHEET INDEX

SHEET NUMBER	SHEET TITLE	ISSUE DATE	REV. 1	REV. 2	REV. 3
SHEET C1.1	TITLE SHEET	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C1.2	GEN. NOTES, SYMBOLS & ABBREV.	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C1.3	KEY SHEET & CONCEPT PLAN	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C1.4	OVERALL LAND USE PLAN	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C1.5	EXISTING CONDITIONS PLAN 1	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C1.6	EXISTING CONDITIONS PLAN 2	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C1.7	EXISTING CONDITIONS PLAN 3	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C2.1	LAYOUT PLAN 1	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C2.2	LAYOUT PLAN 2	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C2.3	LAYOUT PLAN 3	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C2.4	LAYOUT DETAILS	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C3.1	UTILITY PLAN 1	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C3.2	UTILITY PLAN 2	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C3.3	UTILITY PLAN 3	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C3.4	UTILITY DETAILS	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C3.5	FIRE CISTERN DETAILS	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C4.1	PLAN/PROFILE SHEET 1	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C4.2	PLAN/PROFILE SHEET 2	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C4.3	PLAN/PROFILE SHEET 3	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C4.4	PLAN/PROFILE SHEET 4	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C5.1	GRADING PLAN 1	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C5.2	GRADING PLAN 2	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C5.3	GRADING PLAN 3	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C5.4	GRADING DETAILS	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C5.5	GRADING DETAILS 2	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C5.6	GRADING DETAILS 3	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C6.1	EROSION CONTROL PLAN	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C6.2	EROSION CONTROL DETAILS/NOTES	7/12/18	11/28/18	6/7/19	8/21/19
SHEET C7.1	WATER DISTRIBUTION PLAN	-	-	6/7/19	8/21/19
SHEET C7.2	WELL CONNECTION PIPING	-	-	6/7/19	8/21/19
SHEET C7.3	WATER BOOSTER STATION	-	-	6/7/19	8/21/19
SHEET C7.4	WELL SERVICE CONNECTION PROFILE	-	-	6/7/19	8/21/19
SHEET C7.5	WATER SYSTEM DETAILS	-	-	6/7/19	8/21/19

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**DUCHARME & DILLIS**  
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PHONE: (978) 779-6091 FAX: (978) 779-0260  
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OWNER:

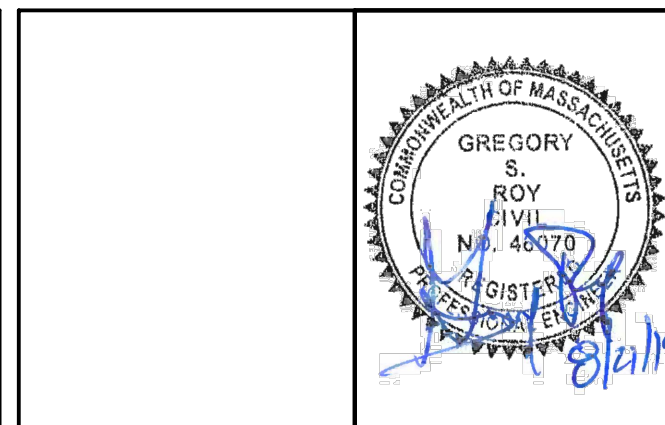
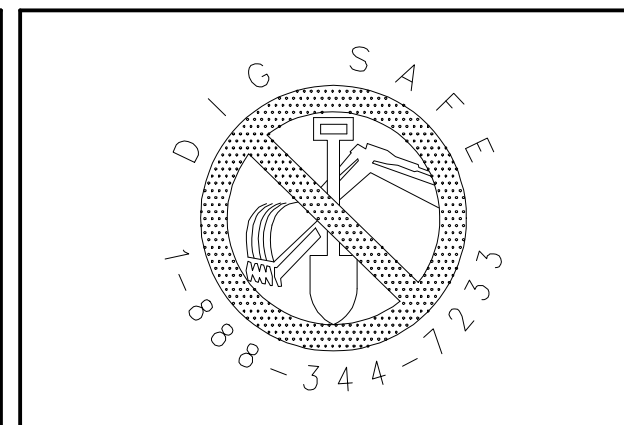
KEN-CHRIS REALTY  
62 SOUTH BOLTON ROAD  
BOLTON, MA

APPLICANT:

KEN-CHRIS REALTY  
62 SOUTH BOLTON ROAD  
BOLTON, MA

SCALE:

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DATE:	7/12/18	<b>TITLE SHEET</b> HIGHLAND RIDGE BERLIN, MASSACHUSETTS	JOB NO.	5676
DESIGN BY:	GSR		DRAWING NO.	5676-TITLE
DRAWN BY:	GSR		SHEET NO.	<b>C1.1</b>
CHECKED BY:	GSR			

NO.	DATE	DESCRIPTION	BY
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV
02.	6/7/19	ADDED WATER DISTRIBUTION DESIGN/SHEETS	GSR
03.	8/21/19	NOT REVISED	



**LEGEND**

PROP. FEATURE	DESCRIPTION	PROP. SYM.	DESCRIPTION
	REPLICATED WETLANDS		PROPOSED LIGHT POLE
	PROPERTY LINE		PROPOSED TELEPHONE POLE
	EASEMENT LINE		PROPOSED HYDRANT
	HAYBALES		PROPOSED SANITARY MANHOLE
	WIRE FENCE		PROPOSED STORM WATER MANHOLE
	WOOD FENCE		PROPOSED TELEPHONE MANHOLE
	GUARD RAIL		PROPOSED ELECTRICAL MANHOLE
	CHAIN LINK FENCE		PROPOSED WATER SHUTOFF
	RET. WALL (CONC.)		PROPOSED POST
	RET. WALL (BLOCK)		PROPOSED CATCH BASIN
	RET. WALL (STONE)		PROPOSED DOUBLE CATCH BASIN
	PROPOSED WATER LINE		PROPOSED WATER GATE VALVE
	PROPOSED GAS LINE		PROPOSED ELECTRICAL TRANSFORMER
	PROPOSED ELECTRICAL LINE		PROPOSED ELECTRICAL JUNCTION BOX
	PROPOSED SANITARY SEWER		PROPOSED GAS METER
	PROPOSED STORM DRAIN		PROPOSED TRAFFIC SIGNAL SWITCH
	PROPOSED ROOF DRAIN		PROPOSED SIGN
	PROPOSED UNDER DRAIN		BORING
	PROPOSED TELEPHONE LINE		HANDICAPPED SPACE
	PROPOSED CABLE LINE		PROPOSED FLARED END SECTION
	PROPOSED BACK CAPE CURB BERM		PROPOSED RIPRAP
	PROPOSED EDGE OF PAVEMENT		PROPOSED STONE BOUND
	PROPOSED UNPAVED ROAD		STANDARD TREE
	PROPOSED CONTOUR (INDEX)		PINE TREE
	PROPOSED CONTOUR (INTERMEDIATE)		SHRUB
	PROPOSED SPOT ELEVATION		
	PROPOSED BUILDING/HOUSE		
	TREE LINE		

**LEGEND**

EXIST. FEATURE	DESCRIPTION	EXIST. SYM.	DESCRIPTION
	STREAMS/RIVERS		LIGHT POLE
	WETLANDS		TELEPHONE POLE
	LIMIT OF BUFFER ZONE		GUY WIRE
	LEDGE		HYDRANT
	WELL RADIUS		SEWER MANHOLE
	PROPERTY LINE		STORM WATER MANHOLE
	EASEMENT LINE		WELL
	WIRE FENCE		MISCELLANEOUS MANHOLE
	WOOD FENCE		CATCH BASIN
	GUARD RAIL		WATER GATE VALVE
	CHAIN LINK FENCE		GAS GATE VALVE
	CONCRETE RETAINING WALL		ELECTRICAL METER
	STONE RETAINING WALL		GAS METER
	STONE WALL		TRAFFIC SIGNAL SWITCH
	WATER LINE		SIGN
	GAS LINE		PERC TEST
	ELECTRICAL LINE		TEST PIT
	SANITARY SEWER		ELECTRICAL TRANSFORMER
	STORM DRAIN		TELEPHONE BOX
	TELEPHONE LINE		CABLE BOX
	CABLE LINE		FLAG POLE
	EXISTING OVER-HEAD WIRES		WATER SHUT OFF
	EXISTING CONTOUR (INDEX)		SHRUB
	EXISTING CONTOUR (INTERMEDIATE)		CLEANOUT
	EXISTING SPOT ELEVATION		FIRE ALARM
	EXISTING BUILDING/HOUSE		VENT PIPE
	TREE LINE		

**ABBREVIATIONS**

ABB.	DESCRIPTION
ATM	ATMOSPHERIC TANK
UD	UNDERDRAIN
FD	FOUNDATION DRAIN
F.S.	FIRE SERVICE
DOM.	DOMESTIC WATER SERVICE
B.O.	WATER BLOW OFF
DMH	DRAIN MANHOLE
SMH	SEWER MANHOLE
ST	SEPTIC TANK
PC	PUMP CHAMBER
DP1	DRAIN PIPE ID
SP1	SEWER PIPE ID
DB	DISTRIBUTION BOX
SC	STORAGE/RECEPTOR CATCH BASIN
GAL	GALLON
TOP	TOP OF FOUNDATION
EL.	ELEVATION
INVT	INVERT
WSO	WATER SHUTOFF
BCCB	BITUMINOUS CAPE CURB BERM
RET	RETAINING WALL
C.O.	CLEAN OUT
INSP. P.	INSPECTION PORT
VCC	VERTICAL CONCRETE CURB
BCCB	BITUMINOUS CAPE CURB BERM

**NOTES/REFERENCES:**

**A. GENERAL NOTES:**

1. BASE MAPPING WAS PERFORMED BY FORESITE ENGINEERING IN 2017.
2. WETLANDS DEPICTED ON THIS PLAN WERE DELINEATED BY OTHERS.
3. THE PROPERTY FALLS WITH THE SENIOR RESIDENTIAL DEVELOPMENT OVERLAY DISTRICT.
4. THE SITE IS NOT LOCATED IN ESTIMATED OR PRIORITY HABITAT AREAS
5. THE SITE IS NOT LOCATED WITHIN ANY FLOOD ZONES.
6. EXISTING UTILITIES SHOWN ON THIS PLAN WERE COMPILED FROM FIELD MEASUREMENT AND RECORD PLANS. THE UTILITIES SHOWN ON THIS PLAN ARE FOR REFERENCE ONLY AND SHOULD NOT BE ASSUMED TO BE CORRECT NOR SHOULD IT BE ASSUMED THAT THE UTILITIES SHOWN ARE THE ONLY UTILITIES LOCATED ON OR NEAR THE SITE. THE CONTRACTOR SHALL CALL DIG SAFE 1-888-DIG-SAFE PRIOR TO CONSTRUCTION IN ACCORDANCE WITH STATE LAWS.
7. THIS PLAN SHALL NOT BE USED FOR CONSTRUCTION UNLESS IT HAS BEEN ISSUED FOR CONSTRUCTION.

**SOIL TEST DATA**

NAME OF SOIL EVALUATOR(S):  
DAVID E. ROSS ASSOCIATES  
ROB OLIVA  
DUCHARME & DILLIS  
BRANDON DUCHARME

DEPT. TEST PIT: 1217-1	DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER	DEPT. TEST PIT: 1118-1	DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER
DATE OF TEST: 12/1/17	0-3"	A	FSL	10R/ 3/3	NONE	NONE	FRABLE	DATE OF TEST: 11/28/18	0-3"	A	FSL	10R/ 3/3	NONE	NONE	FRABLE
REFUSAL AT: 54"	3-28"	Bw	FSL	10R/ 5/6	NONE	NONE	MASSIVE	REFUSAL AT: POSSIBLE BOULDER @ 36"	3-28"	B	FSL	7.5R/ 4/6	NONE	NONE	MASSIVE
(SURFACE ELEV. = 407.5 )	28-54"	C	SL	2.5R/ 4/4	@ 35"	NONE	MASSIVE, DENSE	(SURFACE ELEV. = 407.0 )	28-36"	C	SL/AS	2.5R/ 4/2	NONE	NONE	MASSIVE, DENSE
ESTIMATED SEASONAL HIGH GROUND WATER AT 35" (ELEVATION = 404.64)								ESTIMATED SEASONAL HIGH GROUND WATER NONE OBSERVED							
DEPT. TEST PIT: 1217-2	DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER	DEPT. TEST PIT: 1118-2	DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER
DATE OF TEST: 12/1/17	0-4"	A	FSL	10R/ 3/3	NONE	NONE	FRABLE	DATE OF TEST: 11/28/18	0-4"	A	FSL	10R/ 3/3	NONE	NONE	FRABLE
REFUSAL AT: 62"	4-34"	Bw	FSL	10R/ 5/6	NONE	NONE	MASSIVE	REFUSAL AT: NONE	3-31"	B	FSL	7.5R/ 4/6	NONE	NONE	MASSIVE
(SURFACE ELEV. = 408.0 )	34-62"	C	SL	2.5R/ 4/4	@ 39"	NONE	MASSIVE, DENSE	(SURFACE ELEV. = 405.0 )	31-62"	C	SL/AS	2.5R/ 4/2	NONE	NONE	MASSIVE, DENSE
ESTIMATED SEASONAL HIGH GROUND WATER AT 39" (ELEVATION = 404.84)								ESTIMATED SEASONAL HIGH GROUND WATER NONE OBSERVED							
DEPT. TEST PIT: 1217-3	DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER	DEPT. TEST PIT: 1217-4	DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER
DATE OF TEST: 12/1/17	0-4"	A	FSL	10R/ 3/3	NONE	NONE	FRABLE	DATE OF TEST: 12/1/17	0-4"	A	FSL	10R/ 3/3	NONE	NONE	FRABLE, BOULDERS
REFUSAL AT: POSSIBLE @ 66"	4-28"	Bw	FSL	10R/ 5/6	NONE	NONE	MASSIVE	REFUSAL AT: POSSIBLE @ 50"	4-30"	Bw	FSL	10R/ 5/6	NONE	NONE	MASSIVE, BOULDERS
(SURFACE ELEV. = 400.0 )	28-66"	C	SL	2.5R/ 4/4	@ 35"	NONE	MASSIVE, DENSE, BOULDERS	(SURFACE ELEV. = 404.0 )	31-50"	C	SL	2.5R/ 4/4	@ 34"	NONE	MASSIVE, DENSE, BOULDERS
ESTIMATED SEASONAL HIGH GROUND WATER AT 35" (ELEVATION = 397.34)								ESTIMATED SEASONAL HIGH GROUND WATER AT 30" (ELEVATION = 401.54)							
DEPT. TEST PIT: 1217-5	DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER	DEPT. TEST PIT: 1217-6	DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER
DATE OF TEST: 12/1/17	0-3"	A	FSL	10R/ 3/3	NONE	NONE	FRABLE	DATE OF TEST: 12/1/17	0-3"	A	FSL	10R/ 3/3	NONE	NONE	FRABLE
REFUSAL AT: NONE	3-28"	Bw	FSL	10R/ 5/6	NONE	NONE	MASSIVE	REFUSAL AT: POSSIBLE @ 58"	3-32"	Bw	FSL	10R/ 5/6	NONE	NONE	MASSIVE
(SURFACE ELEV. = 404.0 )	28-50"	C	SL	2.5R/ 4/4	@ 42"	NONE	MASSIVE, DENSE, TIGHT STONES	(SURFACE ELEV. = 426.0 )	32-58"	C	OS	2.5R/ 4/2	@ 43"	NONE	MASSIVE, DENSE
ESTIMATED SEASONAL HIGH GROUND WATER AT 42" (ELEVATION = 401.54)								ESTIMATED SEASONAL HIGH GROUND WATER AT 43" (ELEVATION = 422.44)							
DEPT. TEST PIT: 1217-7	DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER	DEPT. TEST PIT: 1217-8	DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER
DATE OF TEST: 12/1/17	0-3"	A	FSL	10R/ 3/3	NONE	NONE	FRABLE	DATE OF TEST: 12/1/17	0-3"	A	FSL	10R/ 3/3	NONE	NONE	FRABLE
REFUSAL AT: POSSIBLE @ 72"	3-28"	B	FSL	7.5R/ 4/6	NONE	NONE	MASSIVE	REFUSAL AT: POSSIBLE @ 72"	3-28"	B	FSL	7.5R/ 4/6	NONE	NONE	MASSIVE
(SURFACE ELEV. = 423.0 )	28-72"	C	SL/AS	2.5R/ 4/2	@ 32"	NONE	MASSIVE, DENSE	(SURFACE ELEV. = 423.0 )	28-72"	C	SL/AS	2.5R/ 4/2	@ 32"	NONE	MASSIVE, DENSE
ESTIMATED SEASONAL HIGH GROUND WATER AT 32" (ELEVATION = 420.34)								ESTIMATED SEASONAL HIGH GROUND WATER AT 32" (ELEVATION = 420.34)							

ISSUED FOR PERMIT- NOT FOR CONSTRUCTION

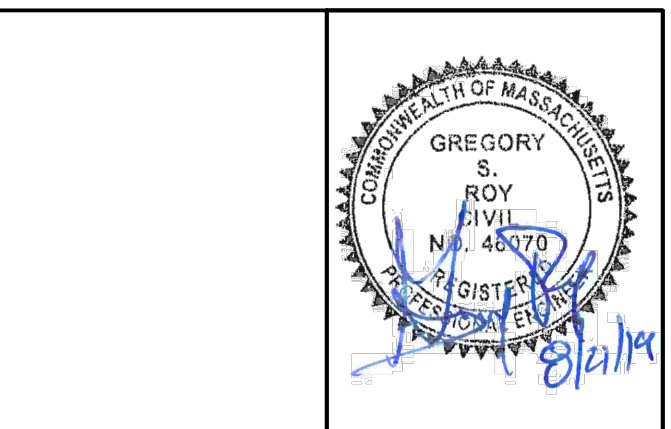
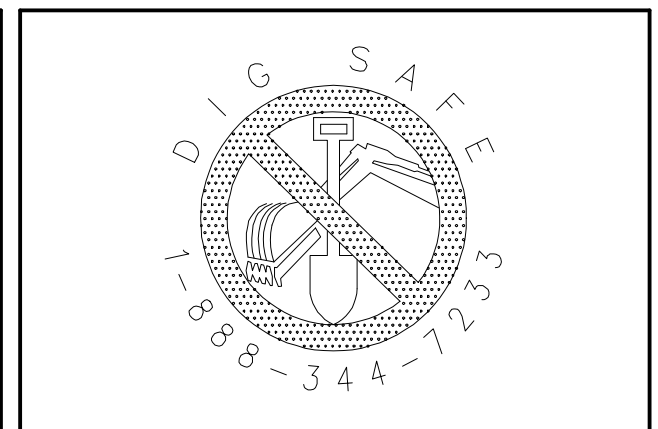
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62 SOUTH BOLTON ROAD  
BOLTON, MA

APPLICANT:  
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BOLTON, MA

SCALE:

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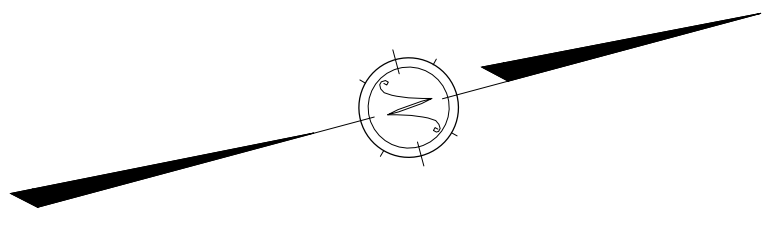


DATE:	7/12/18
DESIGN BY:	GSR
DRAWN BY:	GSR
CHECKED BY:	GSR

GEN. NOTES, SYMBOLS & ABBREV HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV
02.	6/7/19	ADDED WATER DISTRIBUTION DESIGN/SHEETS	GSR
03.	8/21/19	NOT REVISED	

JOB NO.	5676
DRAWING NO.	5676-NOTES
SHEET NO.	<b>C1.2</b>





**NOTES**

1. REFER TO SHEET C1.2 FOR SOIL TESTING INFORMATION



LAYOUT PLAN 1 - SHEET C2.2  
 UTILITY PLAN 1 - SHEET C3.2  
 GRADING PLAN 1 - SHEET C5.2

LAYOUT PLAN 1 - SHEET C2.3  
 UTILITY PLAN 1 - SHEET C3.3  
 GRADING PLAN 1 - SHEET C5.3

LAYOUT PLAN 1 - SHEET C2.1  
 UTILITY PLAN 1 - SHEET C3.1  
 GRADING PLAN 1 - SHEET C5.1

ISSUED FOR PERMIT- NOT FOR CONSTRUCTION

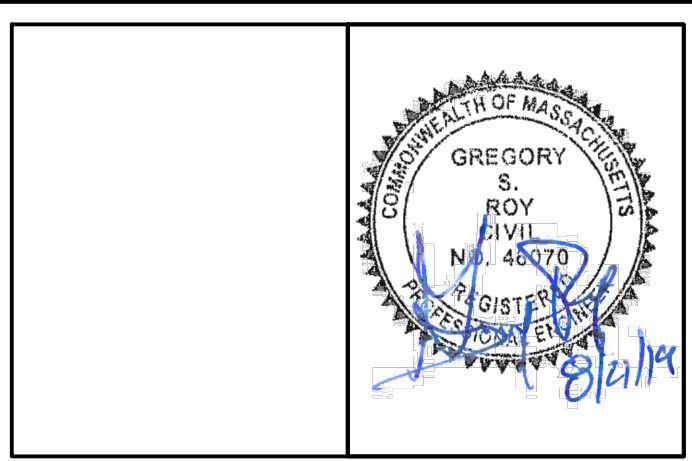
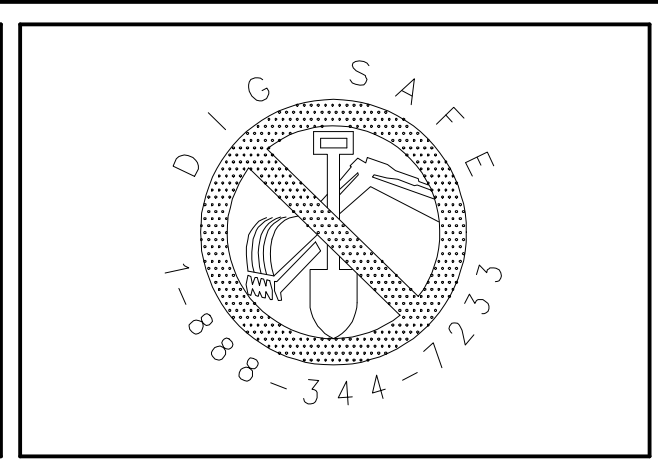
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 BOLTON, MA

SCALE:  
  
 1 in. = 100 ft.

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DATE: 7/12/18  
 DESIGN BY: GSR  
 DRAWN BY: GSR  
 CHECKED BY: GSR

KEY SHEET & CONCEPT PLAN HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV
02.	6/7/19	ADDED WATER DISTRIBUTION DESIGN/SHEETS	GSR
03.	8/21/19	NOT REVISED	

JOB NO. 5676  
 DRAWING NO. 5676-KEY  
 SHEET NO. **C1.3**





**GENERAL NOTES:**

1. THIS PLAN HAS BEEN PREPARED PURSUANT TO THE SENIOR RESIDENTIAL DEVELOPMENT PROVISIONS OF THE ZONING BYLAW.
2. THE SITE FALLS WITHIN THE RESIDENTIAL AGRICULTURE DISTRICT AND THE SENIOR RESIDENTIAL DEVELOPMENT OVERLAY DISTRICT.
3. THE SEPTIC SYSTEM DEPICTED ON THE PLAN HAS BEEN DESIGNED BY OTHERS.

**WASTEWATER FLOW:**

NUMBER OF UNITS = 66  
 DESIGN FLOW = 9,900 GPD (150 GPD/UNIT x 66 UNITS)

4. EXISTING UTILITIES SHOWN ON THIS PLAN WERE COMPILED FROM FIELD MEASUREMENT AND RECORD PLANS. THE UTILITIES SHOWN ON THIS PLAN ARE FOR REFERENCE ONLY AND SHOULD NOT BE ASSUMED TO BE CORRECT NOR SHOULD IT BE ASSUMED THAT THE UTILITIES SHOWN ARE THE ONLY UTILITIES LOCATED ON OR NEAR THE SITE. THE CONTRACTOR SHALL CALL DIG SAFE 1-888-DIG-SAFE PRIOR TO CONSTRUCTION IN ACCORDANCE WITH STATE LAWS.

**OPEN SPACE CALCULATIONS:**

TOTAL LAND AREA = 78.52 AC (±) (RESIDENTIAL AGRICULTURE)  
 TOTAL PROPOSED OPEN SPACE = 49.10 AC (±) (62.6% OF TOTAL AREA)

**TOTAL OPEN SPACE PROVIDED:**

PARCEL	TOTAL
A	0.20 AC
B	26.44 AC
C	22.55 AC

TOTAL 49.19 AC  
 STORMWATER MANAGEMENT AREA IN OS= 1.08 AC  
 OS PROVIDED WITHOUT STORMWATER MANAGEMENT AREA= 48.11 AC (61.3%)

**ZONING TABLE:**

ZONING DISTRICT: RESIDENTIAL AGRICULTURE  
 ZONING OVERLAY DISTRICTS: SENIOR RESIDENTIAL DEVELOPMENT  
 TOTAL AREA: 78.52 ACRES  
 WETLAND / FLOODPLAIN AREA: 11.54 ACRES  
 PROPOSED DEVELOPABLE AREA: 66.98 ACRES  
 PROPOSED NUMBER OF DWELLINGS: 66 UNITS  
 MAXIMUM RESIDENTIAL DENSITY:  
 66 UNITS / 66.98 ACRES = 0.98 UNITS PER ACRE OF DEVELOPABLE AREA  
 2 BEDROOMS PER UNIT = 1.96 BEDROOMS PER ACRE OF DEVELOPABLE AREA

**RIVERFRONT AREA:**

TOTAL RIVERFRONT AREA: 423,598 SF (9.72 ACRES)  
 MAXIMUM RIVERFRONT ALTERATION (10%): 42,360 SF (0.97 ACRES)  
 RIVERFRONT ALTERATION EXCLUDING STORMWATER MANAGEMENT AREA'S (3.8%): 16,126 SF (0.37 ACRES)  
 [PROPOSED RIVERFRONT ALTERATION (9.6%): 40,754 SF (0.93 ACRES)  
 \*UNDER SECTION 10.58 OF 310 CMR 10 (4-3) GENERAL PERFORMANCE STANDARDS; EVALUATION OF ALTERNATIVES - THE CALCULATION OF SQUARE FOOTAGE OF ALTERATION SHALL EXCLUDE AREAS USED FOR STRUCTURAL STORMWATER MANAGEMENT MEASURES.

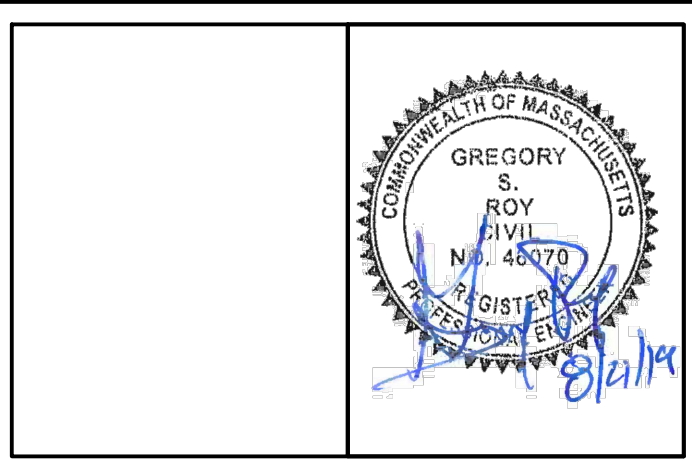
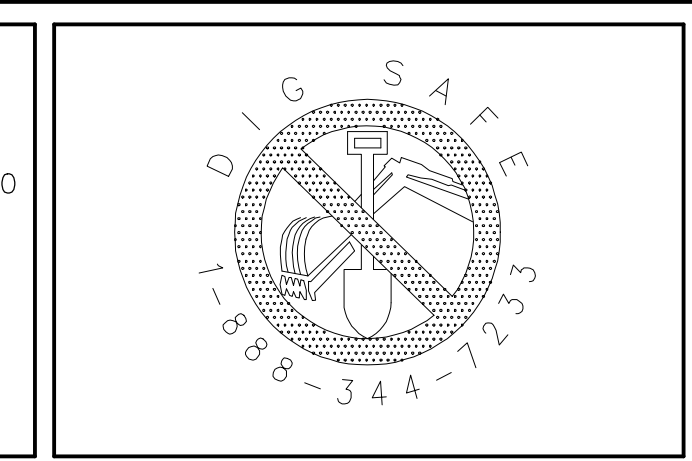
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 BOLTON, MA

APPLICANT:  
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SCALE:  
  
 1 in. = 120 ft.  
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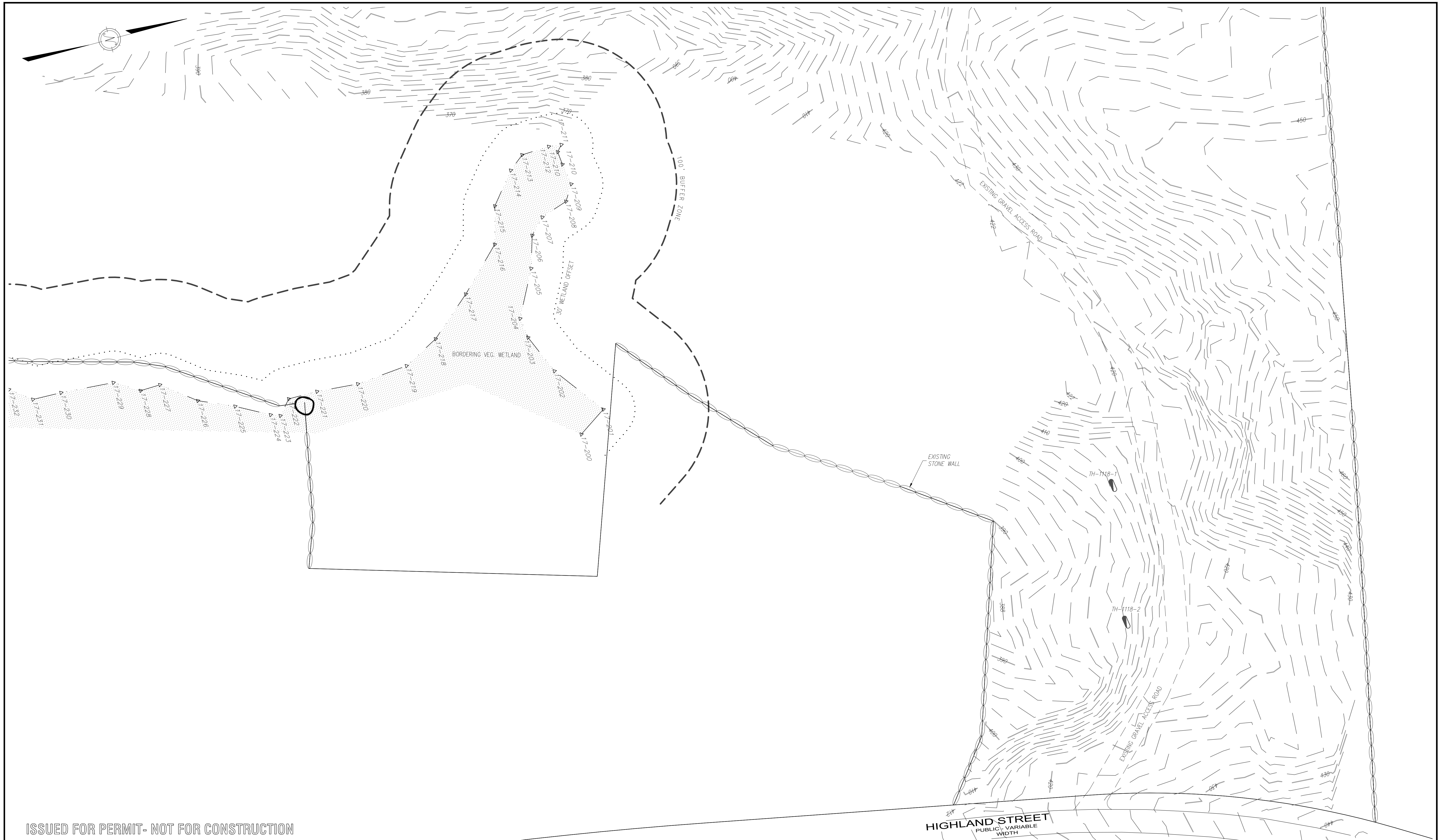


DATE:	7/12/18
DESIGN BY:	GSR
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CHECKED BY:	GSR

OVERALL LAND USE PLAN HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV
02.	6/7/19	ADDED WATER DISTRIBUTION DESIGN/SHEETS	GSR
03.	8/21/19	NOT REVISED	

JOB NO. 5676  
 DRAWING NO. 5676-USE  
 SHEET NO. **C1.4**





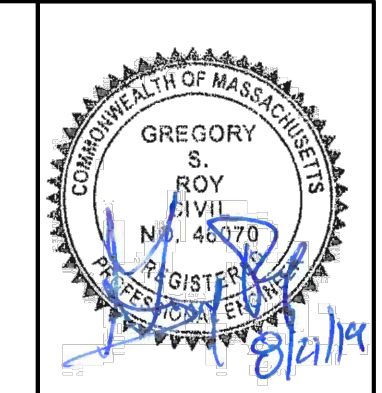
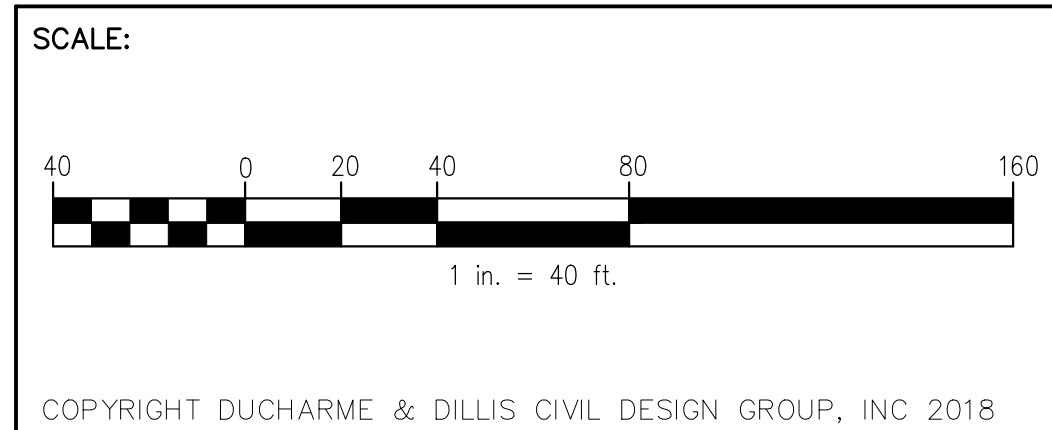
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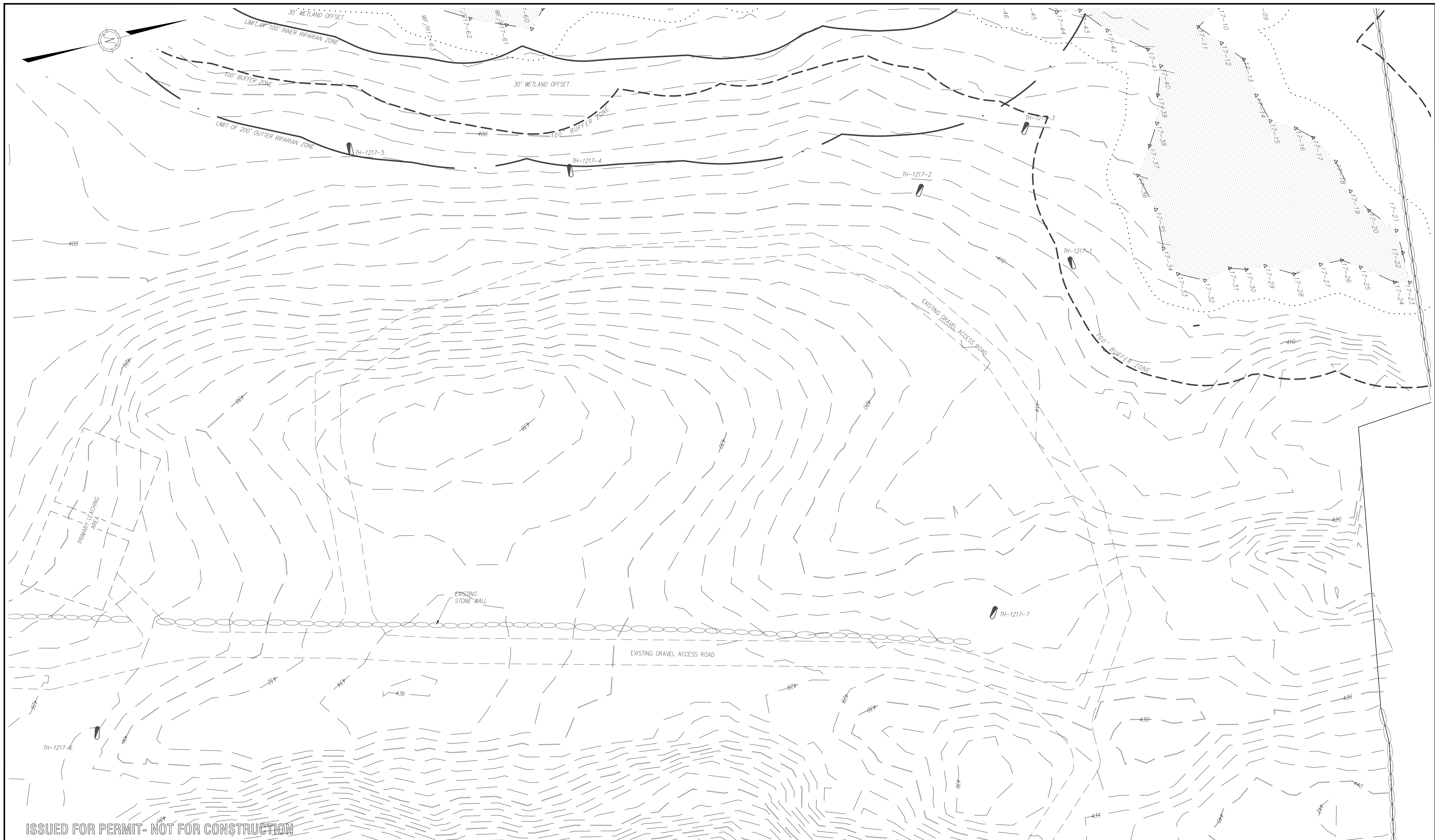


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EXISTING CONDITIONS PLAN 1 HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV
02.	6/7/19	ADDED WATER DISTRIBUTION DESIGN/SHEETS	GSR
03.	8/21/19	NOT REVISED	

JOB NO. 5676  
 DRAWING NO. 5676-EXIST  
 SHEET NO. **C1.5**





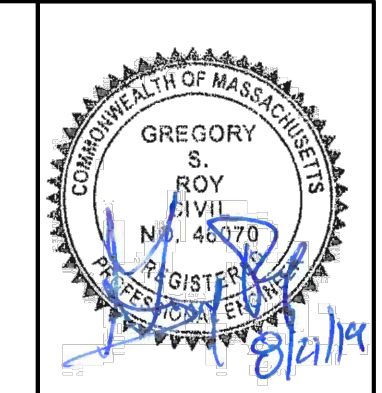
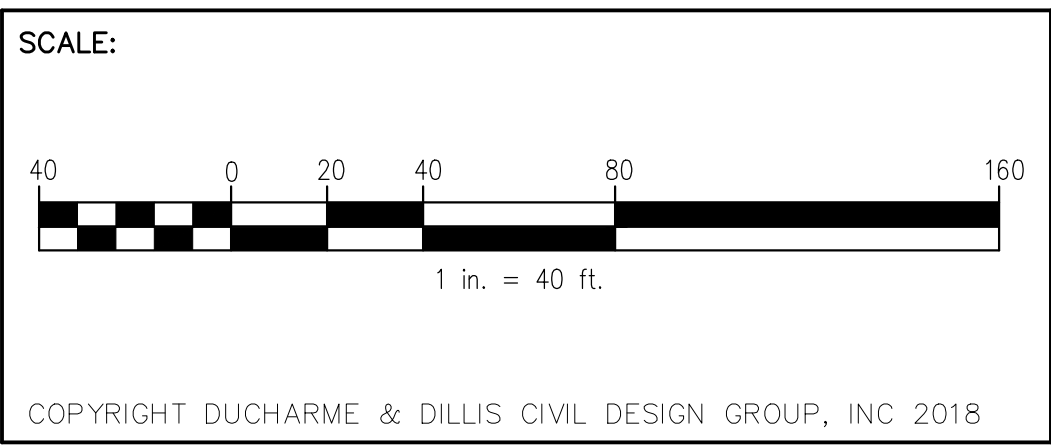
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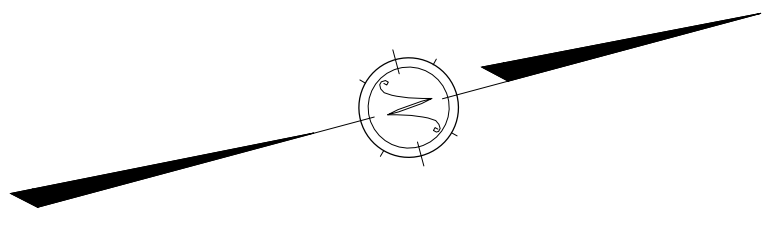


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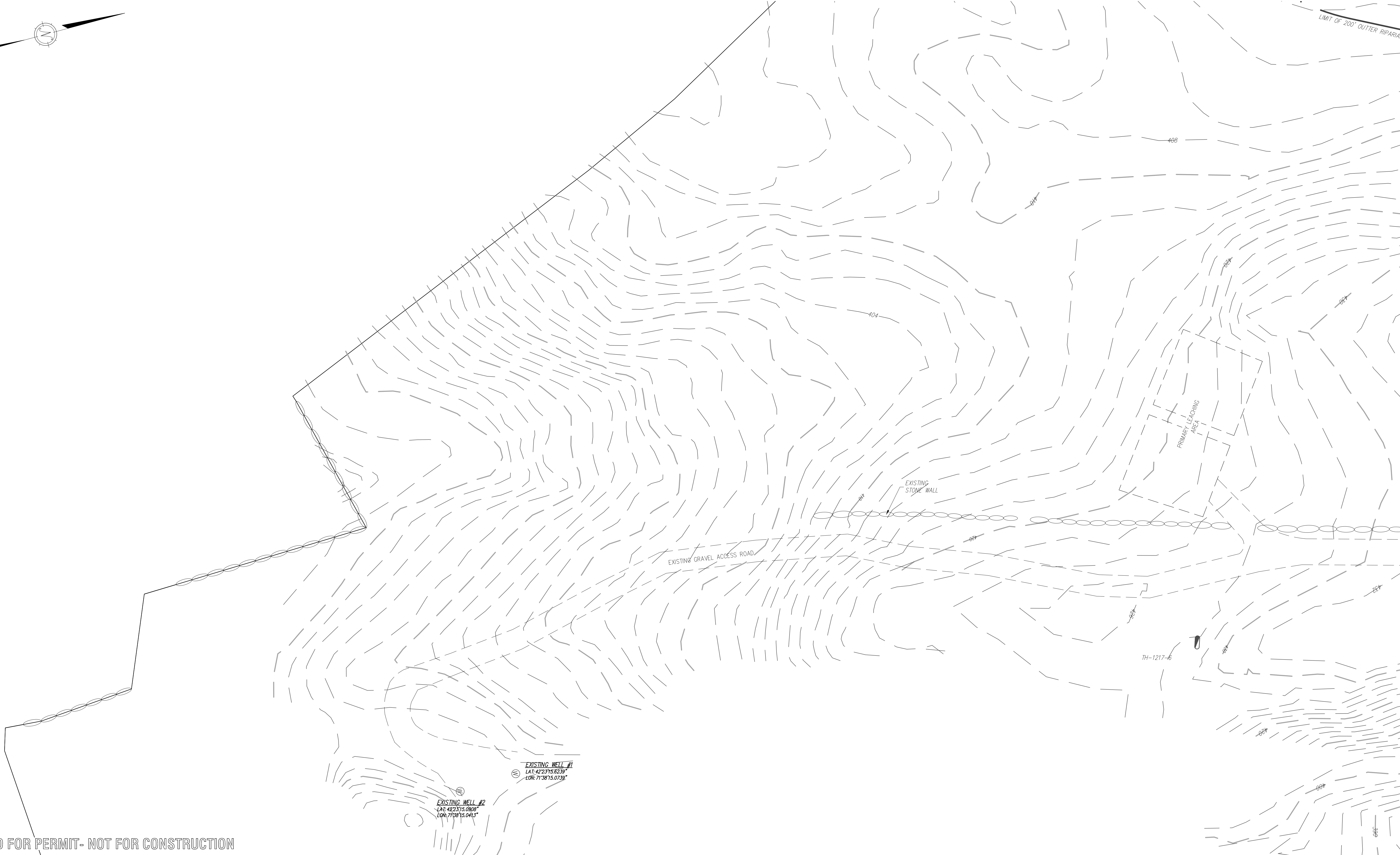
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NO.	DATE	DESCRIPTION	BY
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV
02.	6/7/19	ADDED WATER DISTRIBUTION DESIGN/SHEETS	GSR
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LIMIT OF 200' OUTER RIPARIAN



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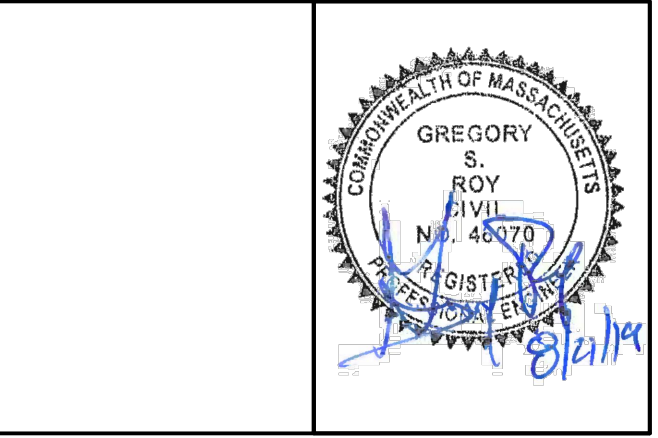
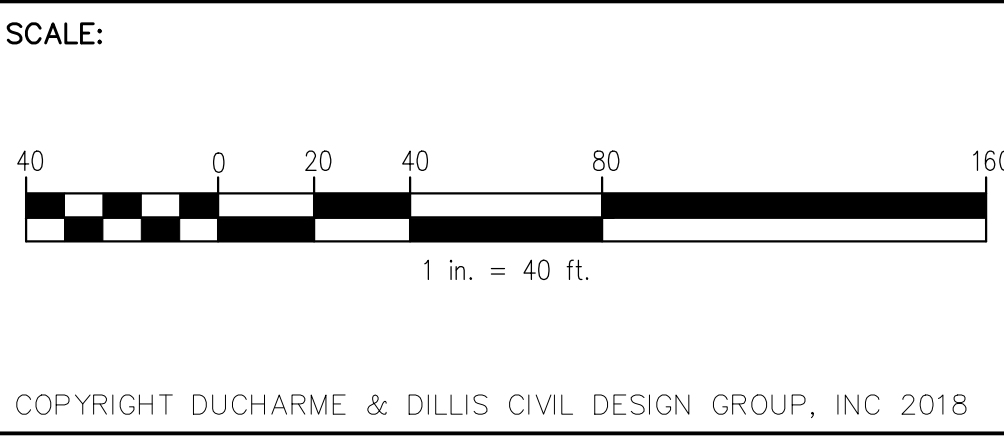


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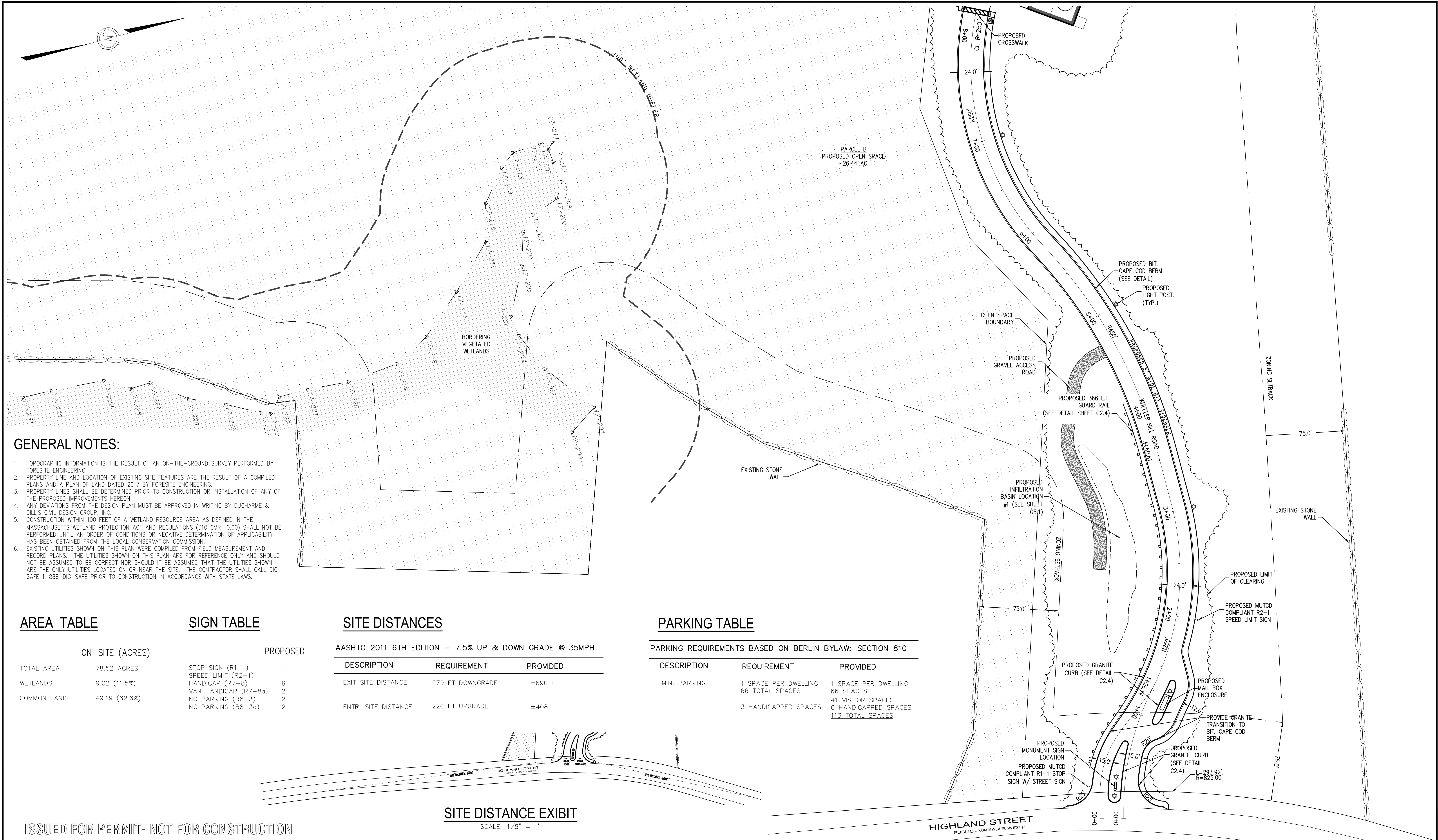
EXISTING CONDITIONS PLAN 3 HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV
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03.	8/21/19	NOT REVISED	

JOB NO. 5676

DRAWING NO. 5676-EXIST

SHEET NO. **C1.7**





**GENERAL NOTES:**

1. TOPOGRAPHIC INFORMATION IS THE RESULT OF AN ON-THE-GROUND SURVEY PERFORMED BY FORESITE ENGINEERING.
2. PROPERTY LINE AND LOCATION OF EXISTING SITE FEATURES ARE THE RESULT OF A COMPILED PLANS AND A PLAN OF LAND DATED 2017 BY FORESITE ENGINEERING.
3. PROPERTY LINES SHALL BE DETERMINED PRIOR TO CONSTRUCTION OR INSTALLATION OF ANY OF THE PROPOSED IMPROVEMENTS HEREON.
4. ANY DEVIATIONS FROM THE DESIGN PLAN MUST BE APPROVED IN WRITING BY DUCHARME & DILLIS CIVIL DESIGN GROUP, INC.
5. CONSTRUCTION WITHIN 100 FEET OF A WETLAND RESOURCE AREA AS DEFINED IN THE MASSACHUSETTS WETLAND PROTECTION ACT AND REGULATIONS (310 CMR 10.00) SHALL NOT BE PERFORMED UNTIL AN ORDER OF CONDITIONS OR NEGATIVE DETERMINATION OF APPLICABILITY HAS BEEN OBTAINED FROM THE LOCAL CONSERVATION COMMISSION.
6. EXISTING UTILITIES SHOWN ON THIS PLAN WERE COMPILED FROM FIELD MEASUREMENT AND RECORD PLANS. THE UTILITIES SHOWN ON THIS PLAN ARE FOR REFERENCE ONLY AND SHOULD NOT BE ASSUMED TO BE CORRECT NOR SHOULD IT BE ASSUMED THAT THE UTILITIES SHOWN ARE THE ONLY UTILITIES LOCATED ON OR NEAR THE SITE. THE CONTRACTOR SHALL CALL DIG SAFE 1-888-DIG-SAFE PRIOR TO CONSTRUCTION IN ACCORDANCE WITH STATE LAWS.

**AREA TABLE**

	ON-SITE (ACRES)
TOTAL AREA	78.52 ACRES
WETLANDS	9.02 (11.5%)
COMMON LAND	49.19 (62.6%)

**SIGN TABLE**

	PROPOSED
STOP SIGN (R1-1)	1
SPEED LIMIT (R2-1)	1
HANDICAP (R7-8)	6
VAN HANDICAP (R7-8a)	2
NO PARKING (R8-3)	2
NO PARKING (R8-3a)	2

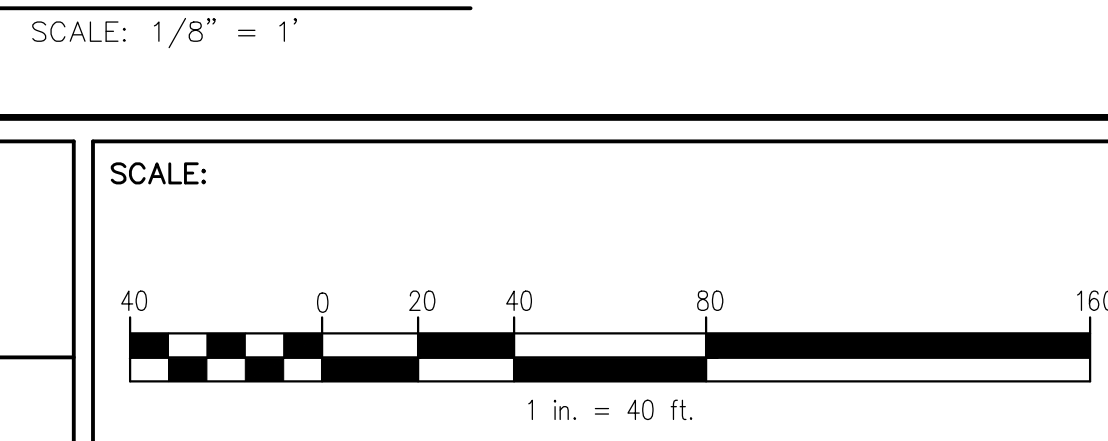
**SITE DISTANCES**

AASHTO 2011 6TH EDITION - 7.5% UP & DOWN GRADE @ 35MPH		
DESCRIPTION	REQUIREMENT	PROVIDED
EXIT SITE DISTANCE	279 FT DOWNGRADE	±690 FT
ENTR. SITE DISTANCE	226 FT UPGRADE	±408

**PARKING TABLE**

PARKING REQUIREMENTS BASED ON BERLIN BYLAW: SECTION 810		
DESCRIPTION	REQUIREMENT	PROVIDED
MIN. PARKING	1 SPACE PER DWELLING 66 TOTAL SPACES	1 SPACE PER DWELLING 66 SPACES
	3 HANDICAPPED SPACES	41 VISITOR SPACES 6 HANDICAPPED SPACES 113 TOTAL SPACES

**SITE DISTANCE EXHIBIT**



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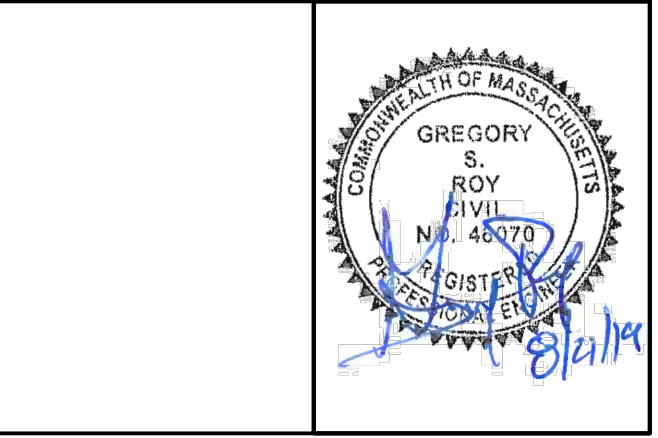
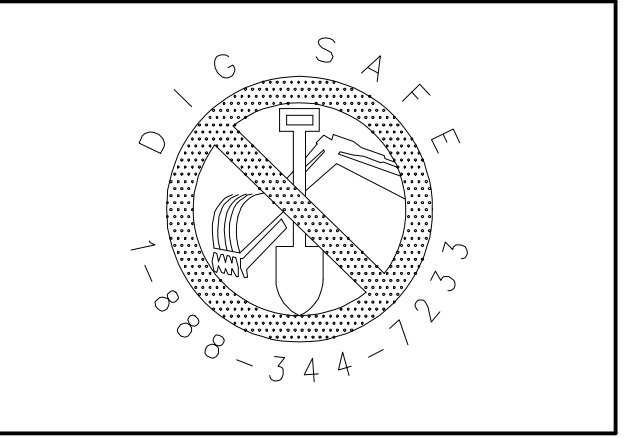
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SCALE:  

 1 in. = 40 ft.

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LAYOUT PLAN 1 HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
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03.	8/21/19	NOT REVISED	

JOB NO. 5676  
 DRAWING NO. 5676-LLP  
 SHEET NO. **C2.1**





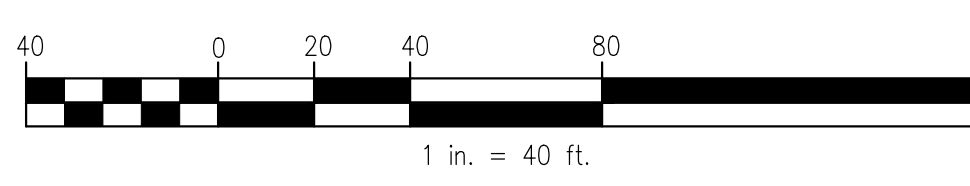
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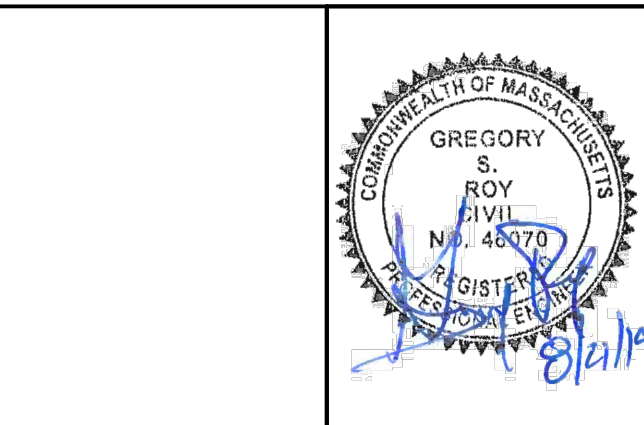
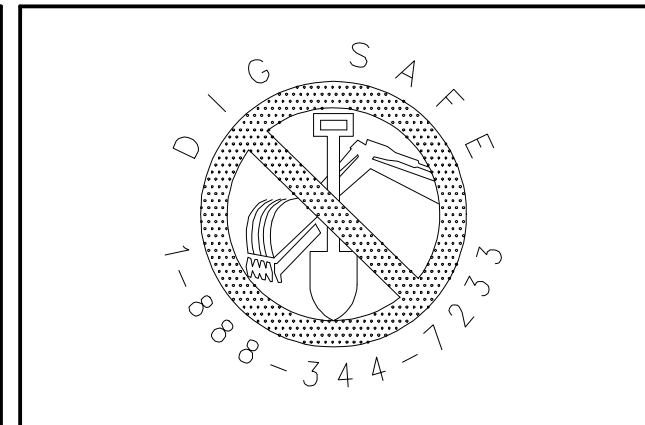
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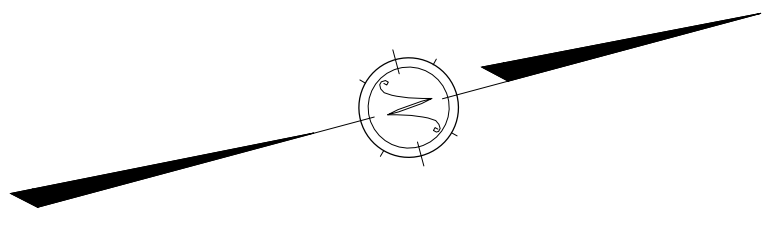


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LAYOUT PLAN 2 HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
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03.	8/21/19	NOT REVISED	

JOB NO. 5676  
 DRAWING NO. 5676-LLP  
 SHEET NO. **C2.2**





**LAYOUT / MATERIAL NOTES:**

1. REFER TO SHEETS C5.0 FOR EROSION CONTROL LAYOUT AND PROCEDURE.
2. ALL PAVEMENT DIMENSION AND RADII REFER TO FRONT FACE OF BERMS AND CURBS.
3. BITUMINOUS BERM IS TO BE LAID OUT AS DEPICTED ON SHEET C2.0. REFER TO DETAILS FOR TYPE.
4. THE WEARING SURFACES OF ROADWAYS SHALL BE CLASS I, BITUMINOUS CONCRETE, BASE COURSE, TYPE I-1.
5. PAVEMENT SHALL BE PLANT MIXED AND LAID HOT TO A FINISHED DEPTH OF THREE INCHES IN TWO COURSES OF ONE AND ONE HALF INCHES EACH. EACH COURSE SHALL BE COMPACTED WITH NO LESS THAN A TEN TON ROLLER.
6. BITUMINOUS CAPE COD BERM - CURBING ALONG PAVEMENT AREAS WHICH IS NOT ADJACENT TO SIDEWALKS SHALL BE BITUMINOUS CAPE COD BERM. REFER TO C2.1 FOR ADDITIONAL DETAILS.
- 6.1 WHERE BITUMINOUS CAPE COD BERM MEETS EXISTING CURB, PROPOSED GRANITE CURBS, CONCRETE PADS, ETC. - PROVIDE SMOOTH TRANSITION IN ASPHALT CAPE COD BERM TO MATCH PROFILE OF ADJOINING STRUCTURE.
7. PARKING LOT STRIPING - PAVEMENT SHALL BE PAINTED AS DEPICTED ON THE PLAN. HANDICAPPED SPACES SHALL BE PAINTED WITH HANDICAPPED SYMBOL. PARKING STRIPING AND CROSSWALKS SHALL BE PAINTED AS SHOWN.
8. GUARDRAIL SHALL BE INSTALLED IN THE LOCATIONS SHOWN ON THE PLAN. REFER TO SHEET C2.4 FOR ADDITIONAL INFORMATION.



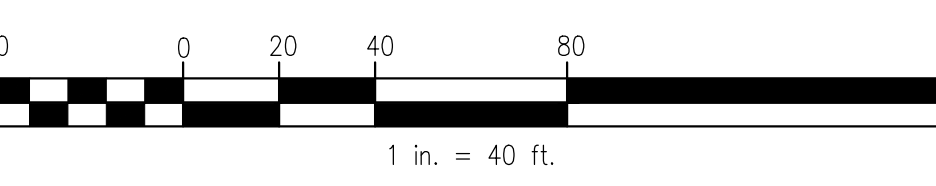
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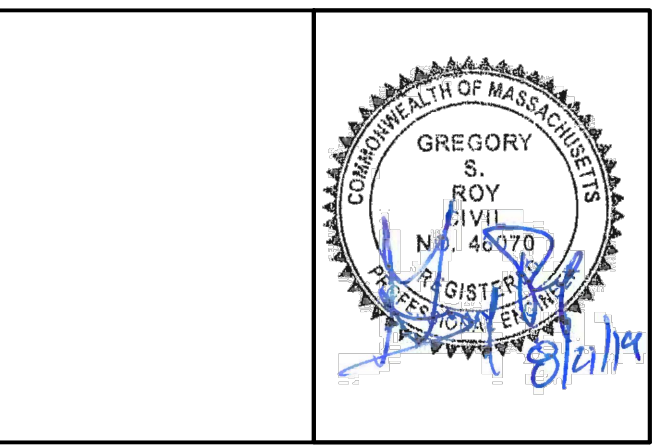
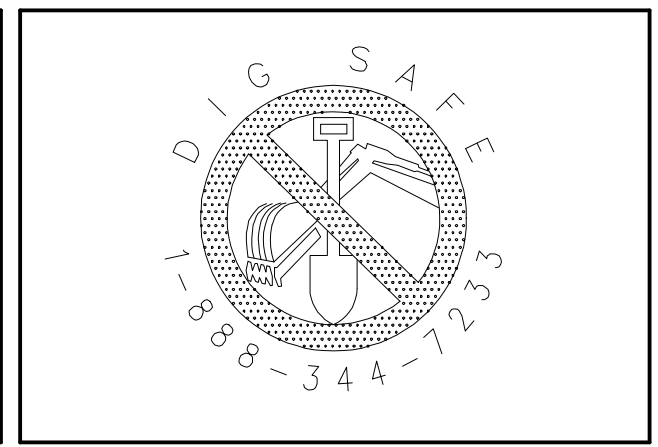
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SCALE:  
  
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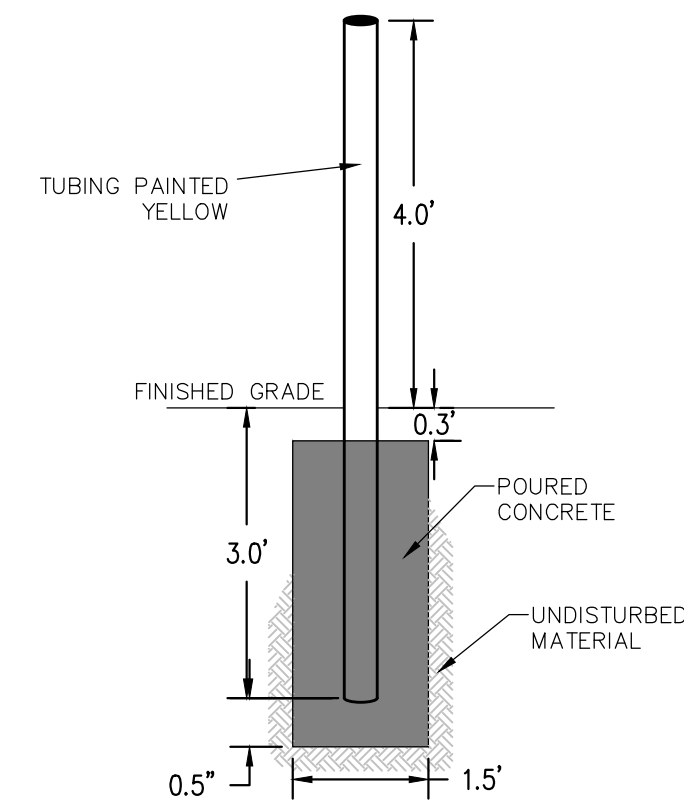


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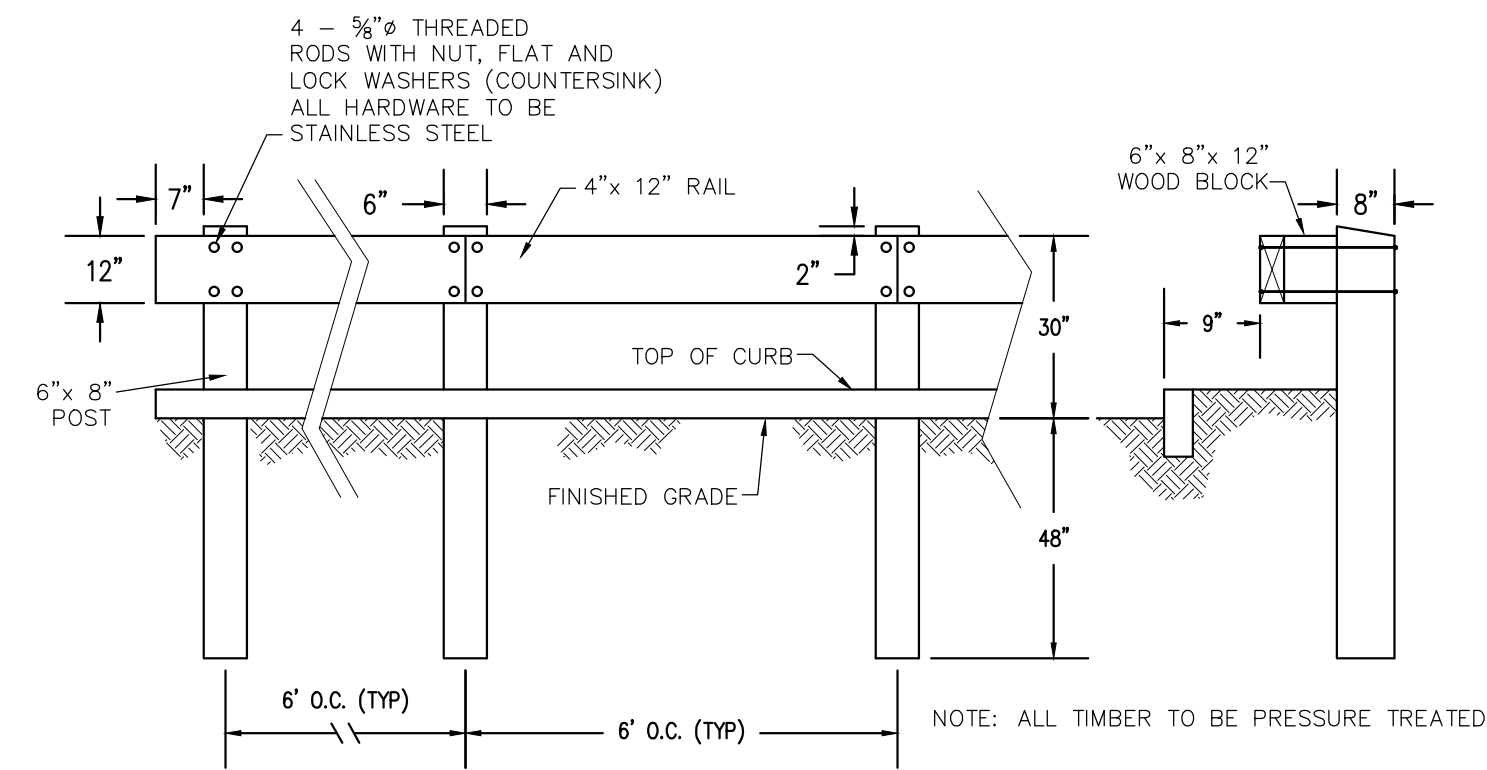
LAYOUT PLAN 3 HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV
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JOB NO. 5676  
 DRAWING NO. 5676-LLP  
 SHEET NO. **C2.3**

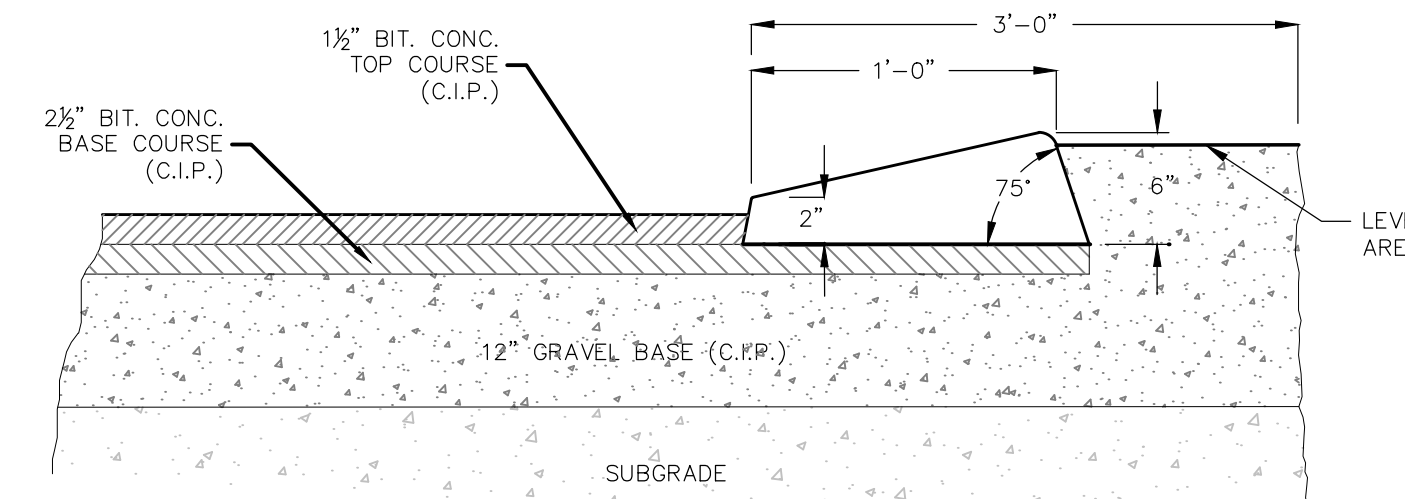




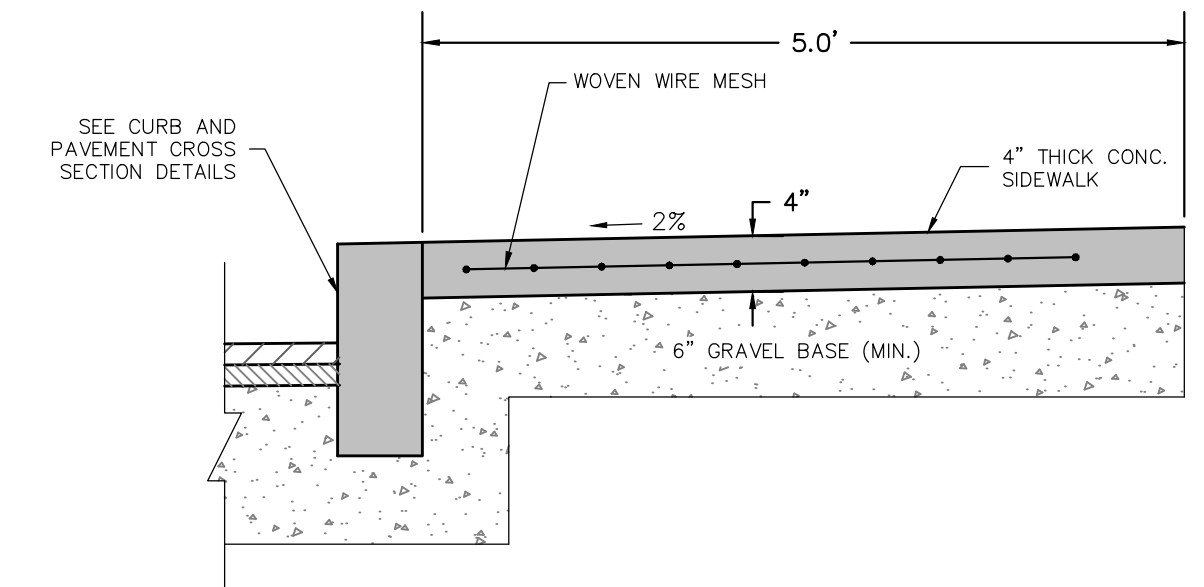
**BOLLARD DETAIL**  
NOT TO SCALE



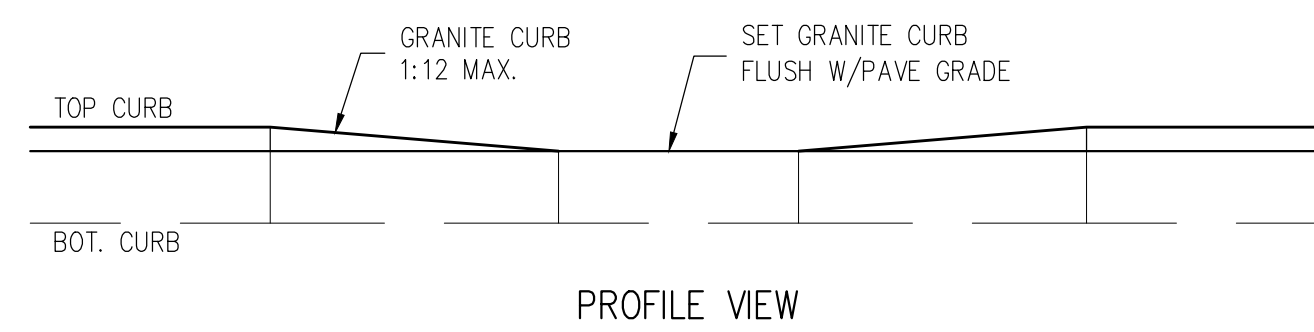
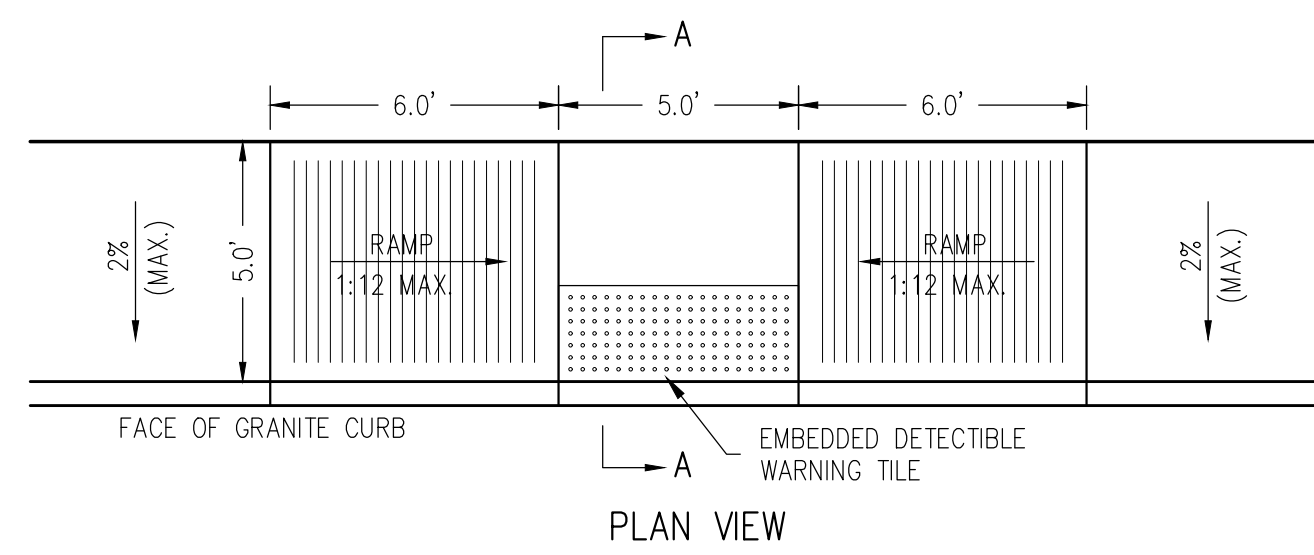
**WOODEN GUARDRAIL DETAIL**  
NOT TO SCALE



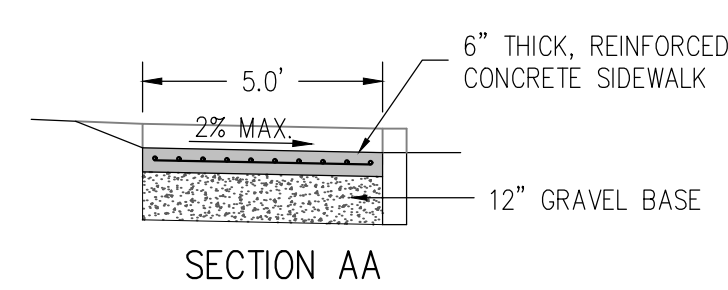
**BITUMINOUS CONCRETE CURB DETAIL**  
NOT TO SCALE



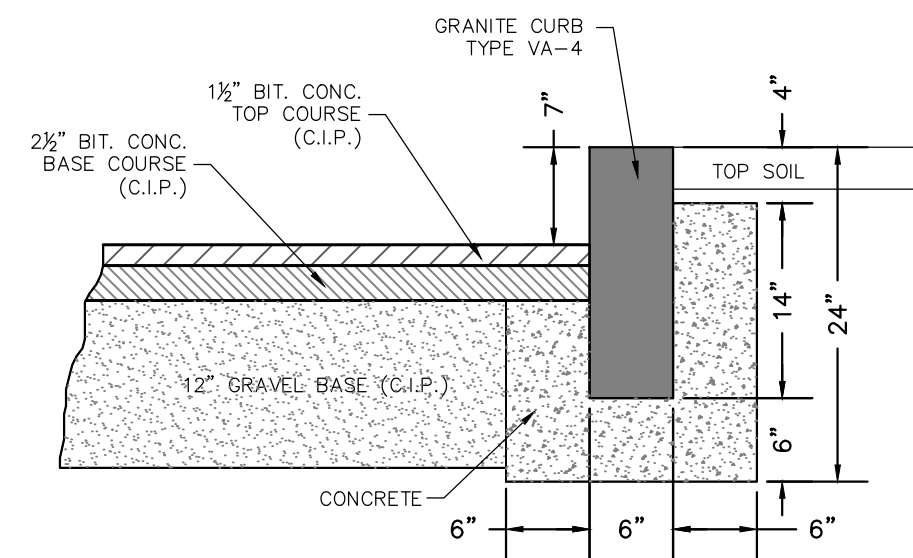
**CONCRETE SIDEWALK DETAIL**  
NOT TO SCALE



- NOTES:
1. REFER TO CURB DETAIL FOR SPECIFICATIONS PERTAINING TO INSTALLATION OF GRANITE CURBING.
  2. RAMP TO BE CONSTRUCTED IN ACCORDANCE WITH ADA AND MAAB STANDARDS.
  3. DETECTIBLE WARNING TILES TO BE AS MANUFACTURED BY ADA SOLUTIONS, INC.



**HANDICAP RAMP DETAIL**  
NOT TO SCALE



**GRANITE CURB DETAIL**  
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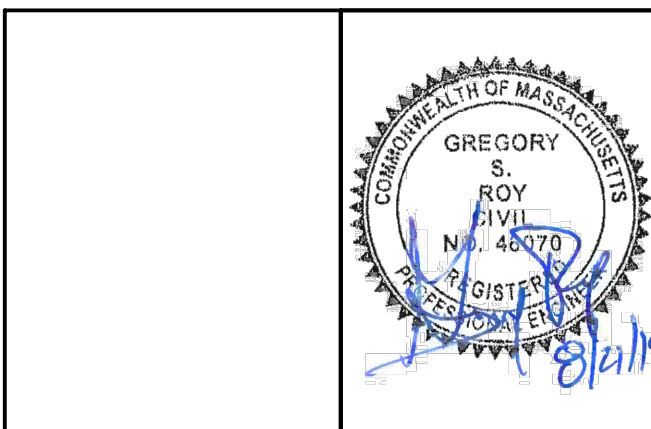
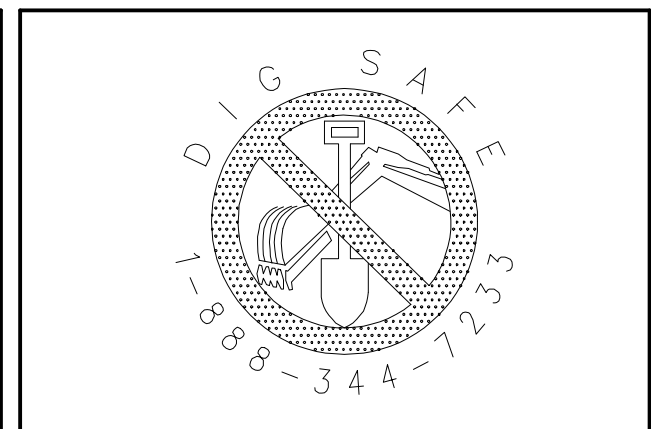
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APPLICANT:

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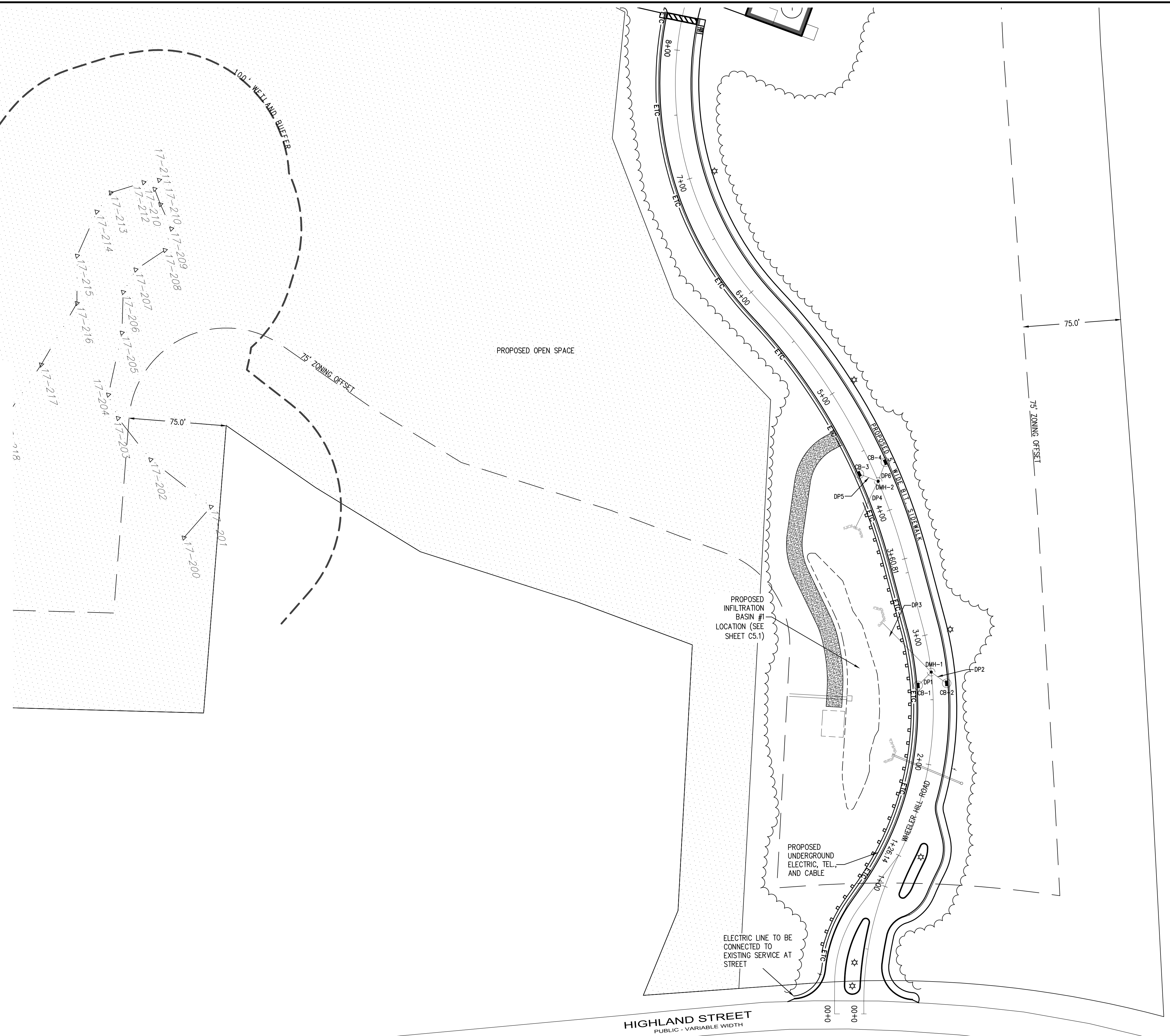
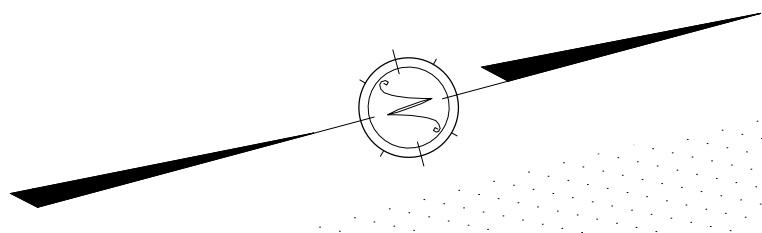
LAYOUT DETAILS HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
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JOB NO. 5676

DRAWING NO. 5676-LLP

SHEET NO. **C2.4**





**NOTES/REFERENCES:**

**A. GENERAL NOTES:**

- REFER TO SHEET C1.2 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS APPLICABLE TO THIS SHEET.
- CONTRACTOR SHALL PLACE ALL EROSION CONTROL MEASURES AS SHOWN ON SHEET C6.1 PRIOR TO CONSTRUCTION.
- FOR LAYOUT AND DIMENSIONING INFORMATION SEE SHEET C2.1.
- ALL GRADES SHOWN ARE FINISHED GRADE. CONTRACTOR SHALL CONSTRUCT PAVEMENT BASED ON DETAILS SHOWN ON SHEETS C5.1 THROUGH C5.3.
- STOCKPILING OF EXCESS MATERIAL SHALL BE DONE UPGRADIENT OF EROSION CONTROL BARRIER AS SHOWN ON SHEET C6.0.
- ALL DRAINAGE PIPE TO BE ADS N-12 OR EQUIVALENT. CONTRACTOR SHALL SUBMIT MANUFACTURERS PIPE CERTIFICATIONS TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
- ALL CATCH BASINS AND LEACHING CHAMBERS TO BE PRECAST CONCRETE STRUCTURES FOR H-20 LOADING. CONTRACTOR TO SUBMIT MANUFACTURERS CUT-SHEETS FOR APPROVAL PRIOR TO CONSTRUCTION.
- CONTRACTOR TO STRIP TOP AND SUB SOIL FROM UNDER ALL PAVEMENT AND BUILDING AREAS.
- ALL CATCH BASIN AND LEACHING CHAMBER CASTING TO BE ADJUSTED TO FINAL GRADE PRIOR TO PLACING THE WEARING COURSE.

**B. UTILITY NOTES:**

- CONTRACTOR TO COORDINATE WITH APPROPRIATE UTILITY COMPANY AND CONFORM TO REQUIRED CONSTRUCTION SPECIFICATIONS AS REQUIRED BY THE UTILITY.
- SANITARY SEWER SHALL BE 6" SDR-35 PIPE, OR APPROVED EQUAL.
- SANITARY SEWER MANHOLES TO BE STANDARD 4-FOOT DIAMETER, PRECAST STRUCTURES. REFER TO THE DETAIL FOR ADDITIONAL INFORMATION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR APPLYING FOR ALL PERMITS WITH THE NASHOBA BOARD OF HEALTH AND FOR ADHERENCE TO ALL APPLICABLE CONSTRUCTION REQUIREMENTS OF THE PERMIT.
- REFER TO SEPTIC PLANS & PERMIT FROM THE BOARD OF HEALTH RELATIVE TO DETAILS ON THE PROPOSED SEPTIC SYSTEM.
- SANITARY SEWER LATERALS TO BE CONNECTED TO THE MAINLINE SEWER WITH A STANDARD "WYE" CONNECTION. ALL LATERALS TO BE 4" DIAMETER SDR-35 PVC. REFER TO THE STANDARD DETAIL FOR ADDITIONAL INFORMATION.
- ELECTRICAL/TELEPHONE AND CABLE SERVICE TO BE UNDERGROUND WITHIN THE SITE.
- UTILITY CONDUIT TO BE SIZED AS REQUIRED BY THE UTILITY COMPANY.
- REFER TO THE DRAINAGE PLANS FOR ADDITIONAL INFORMATION RELATIVE TO THE DRAINAGE SYSTEM AND PIPES (SHEET C4.0)

**C. WATER SYSTEM NOTES:**

- WATER SYSTEM DEPICTED ON THIS PLAN IS PRELIMINARY. FINAL WATER SYSTEM PLANS TO BE PREPARED AND SUBMITTED TO D.E.P AS PART OF THE BRP WS 15 APPLICATION PROCESS
- WATER PUMPS TO BE SIZED TO ACCOMMODATE A RESIDENTIAL SPRINKLER FLOW IN THE UNITS (2 UNITS OPERATING SIMULTANEOUSLY). ALL PROPOSED SPRINKLER SYSTEMS ARE TO BE IN ACCORDANCE WITH THE NFPA 13D SPRINKLER SYSTEM STANDARD FOR EACH DWELLING UNIT.
- FURNISH AND INSTALL GATE VALVES WITH VALVE BOXES INSTALLED TO FINAL FINISHED GRADE.
- WATER AND SEWER CROSSING — PLACE WATER 18" ABOVE SEWER. IF LESS THAN 4- FEET OF COVER, PLACE WATER AT LEAST 18-INCHES BELOW SEWER AND SLEEVE WATER TO 10- FEET EITHER SIDE OF SEWER CROSSING
- ALL SLEEVES SHALL BE PVC SCH-40 OR EQUAL.
- ALL WATER MAINS SHALL BE BURIED A MINIMUM OF 5- FEET BELOW FINAL FINISHED GRADE.
- WATER MAIN WITHIN THE SITE SHALL BE 4" HPPE.
- ALL HYDRANTS, VALVES, AND FITTINGS CONFORM TO THE REQUIREMENTS OF THE MASS D.E.P GUIDELINES AND POLICY FOR PUBLIC DRINKING WATER SYSTEMS.
- WATER SERVICES TO BE 1 1/2" DIAMETER TUBING. EACH SERVICE TO BE EQUIPPED WITH A CURB STOP AND BOX.

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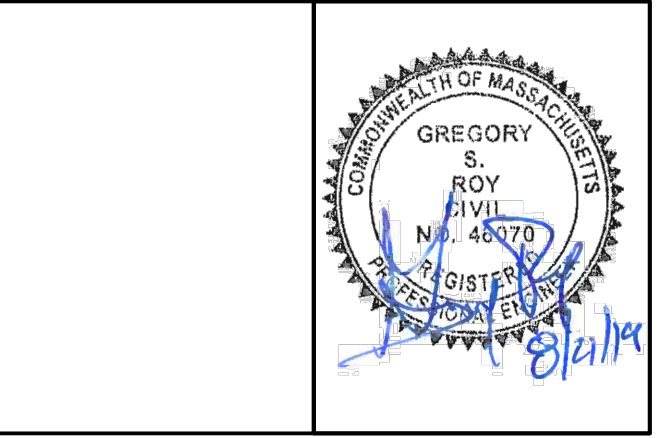
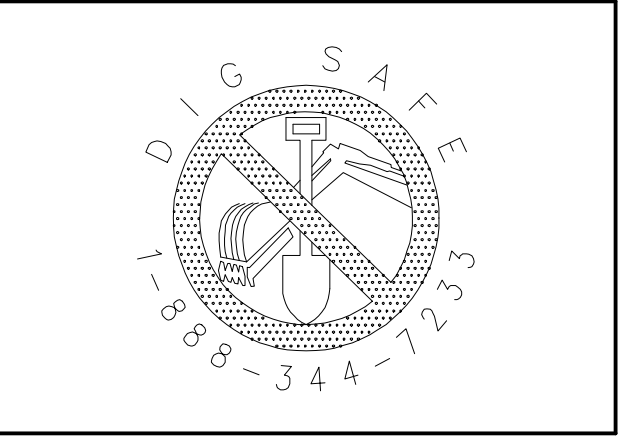
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APPLICANT:  
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SCALE:  
  
 1 in. = 40 ft.

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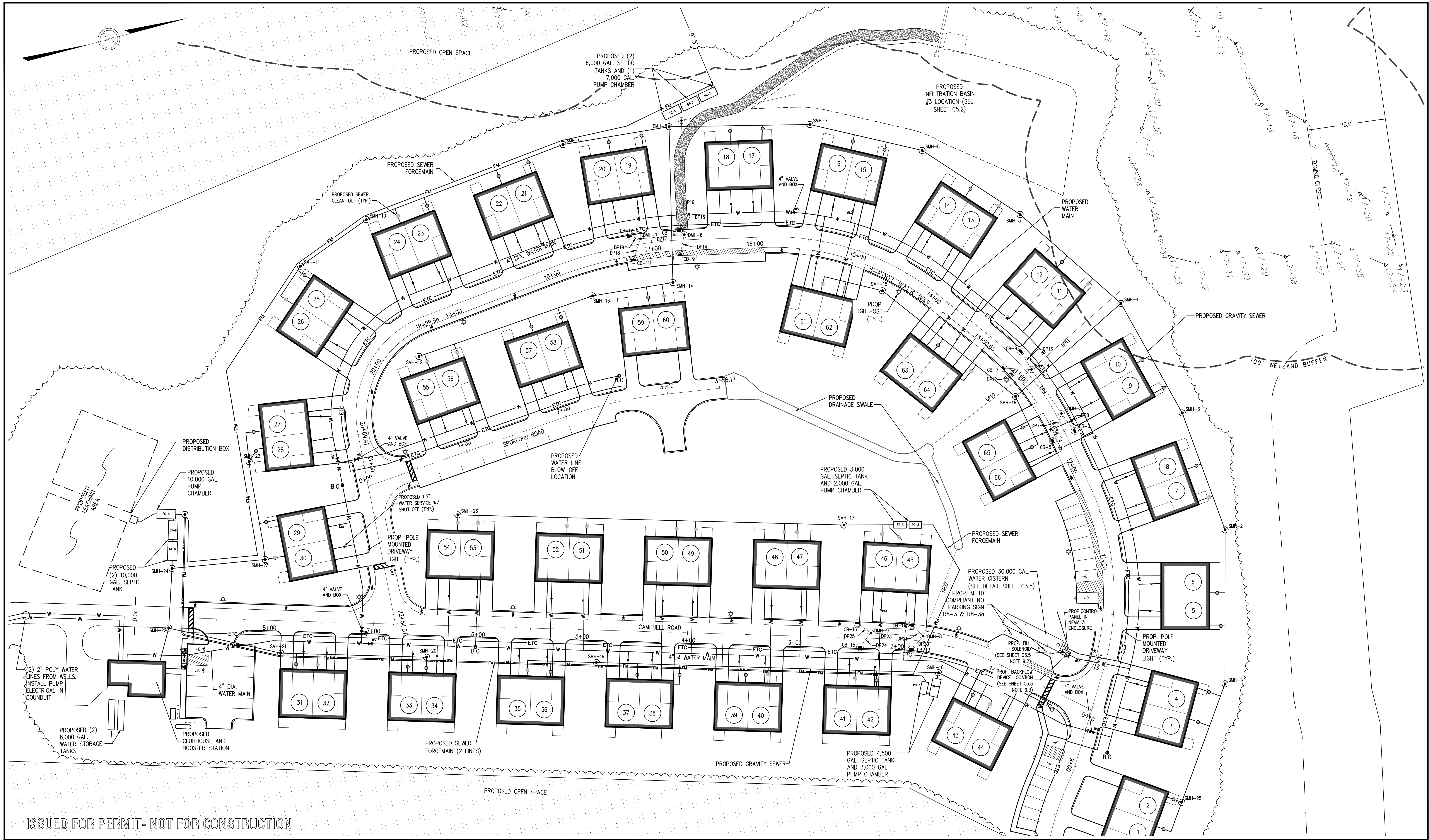


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DESIGN BY:	GSR
DRAWN BY:	GSR
CHECKED BY:	GSR

UTILITY PLAN 1 HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV
02.	6/7/19	ADDED WATER DISTRIBUTION DESIGN/SHEETS	GSR
03.	8/21/19	NOT REVISED	

JOB NO. 5676  
 DRAWING NO. 5676-UTIL  
 SHEET NO. **C3.1**





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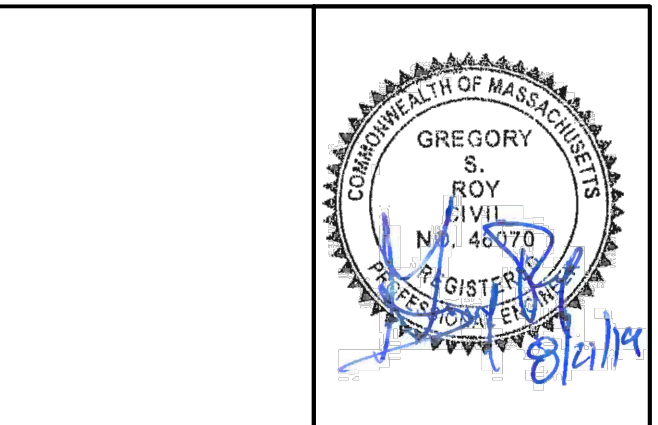
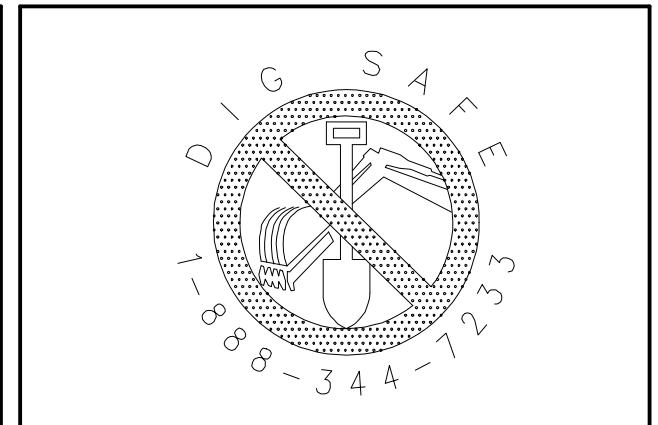
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SCALE:  
  
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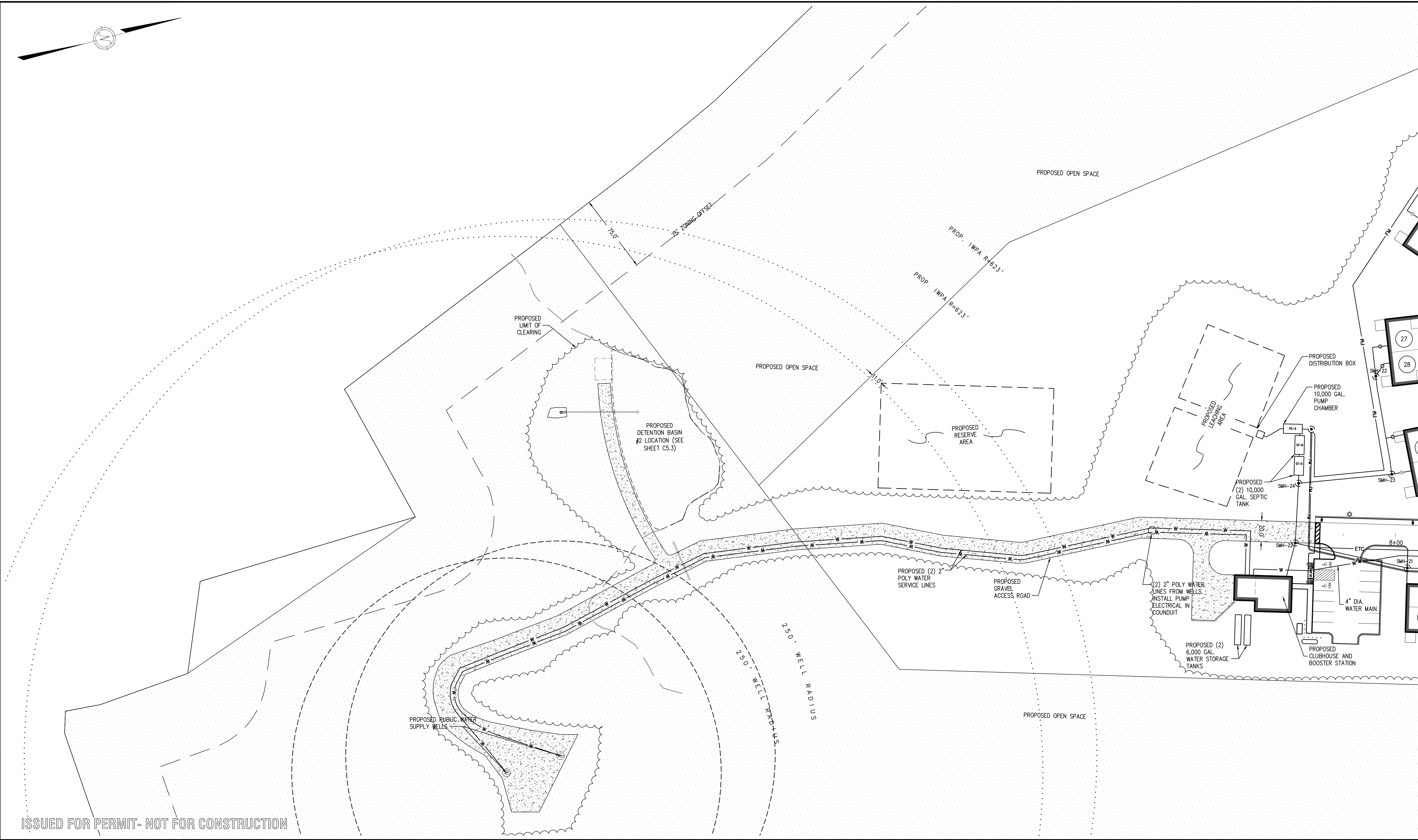
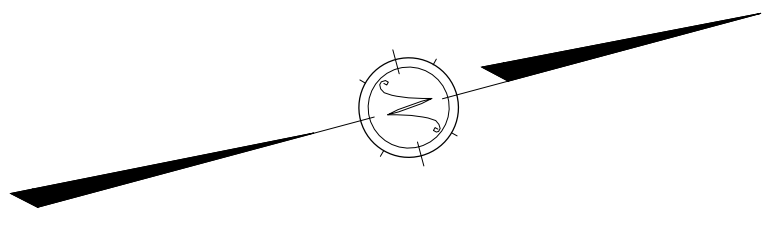


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UTILITY PLAN 2 HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV
02.	6/7/19	ADDED WATER DISTRIBUTION DESIGN/SHEETS	GSR
03.	8/21/19	NOT REVISED	

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 SHEET NO. **C3.2**





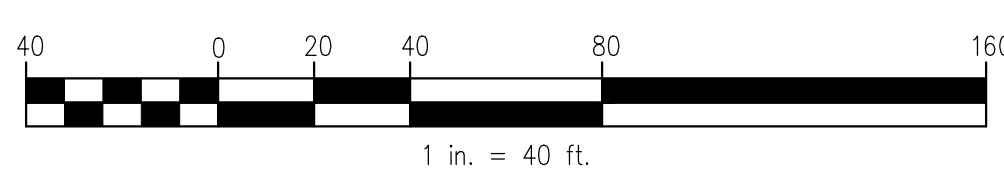
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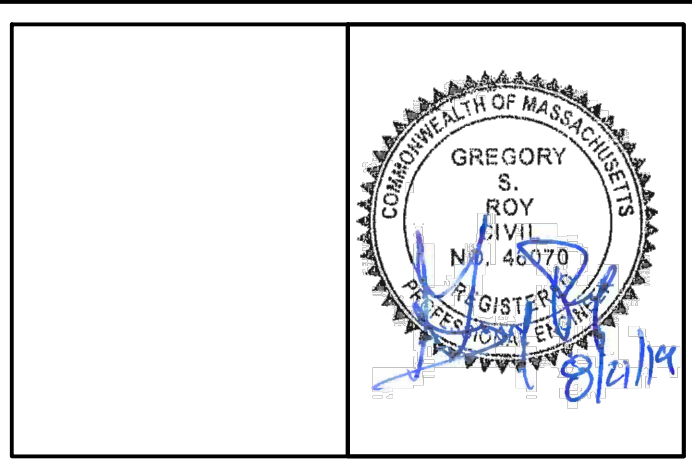
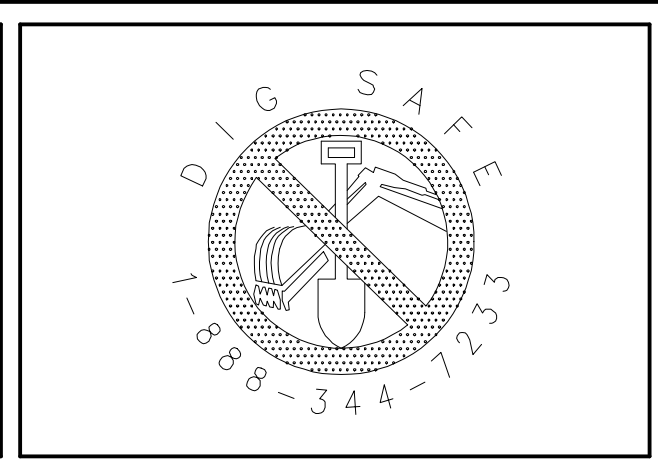
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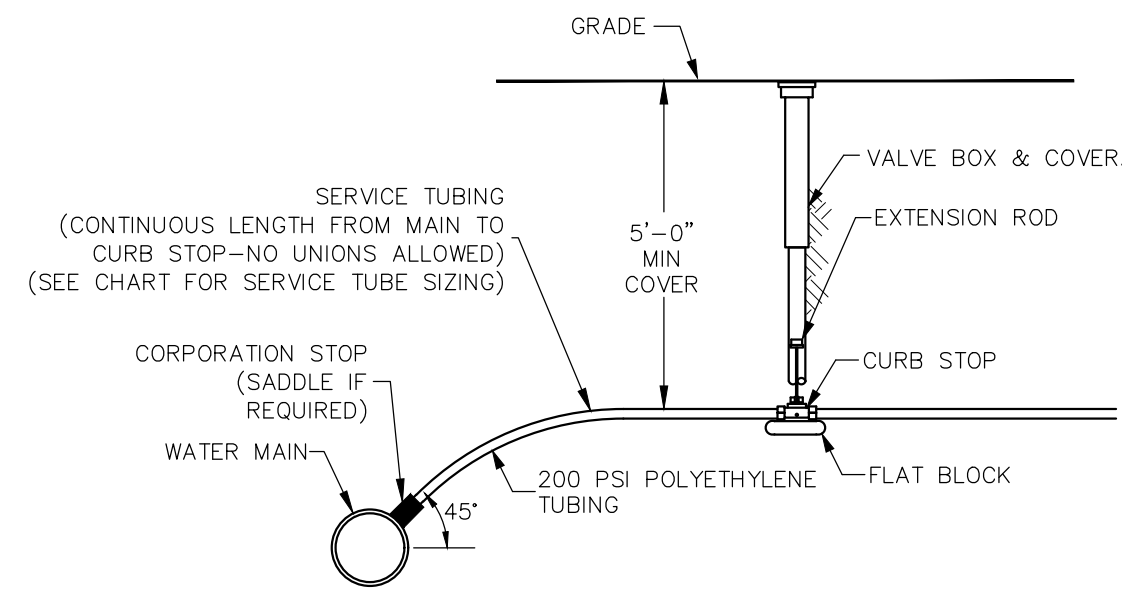


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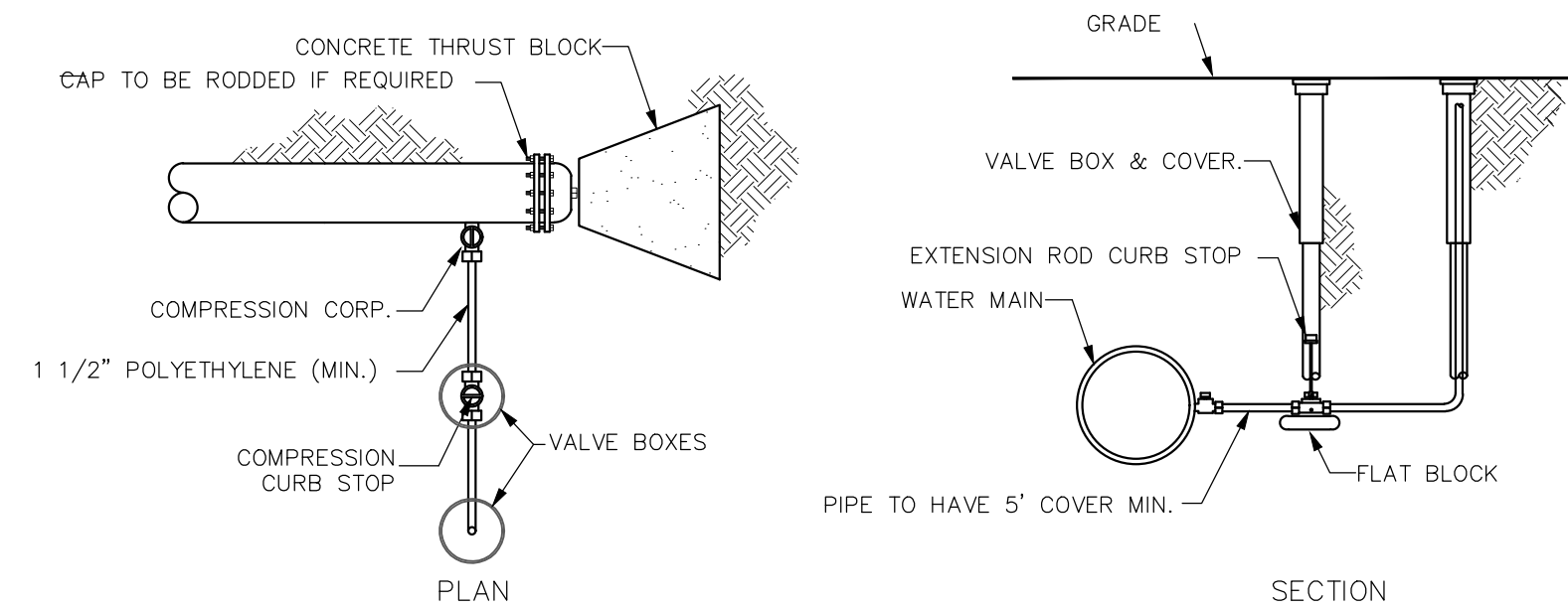
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NO.	DATE	DESCRIPTION	BY	
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV	
02.	6/7/19	ADDED WATER DISTRIBUTION DESIGN/SHEETS	GSR	
03.	8/21/19	NOT REVISED		

JOB NO. 5676  
 DRAWING NO. 5676-UTIL  
 SHEET NO. **C3.3**

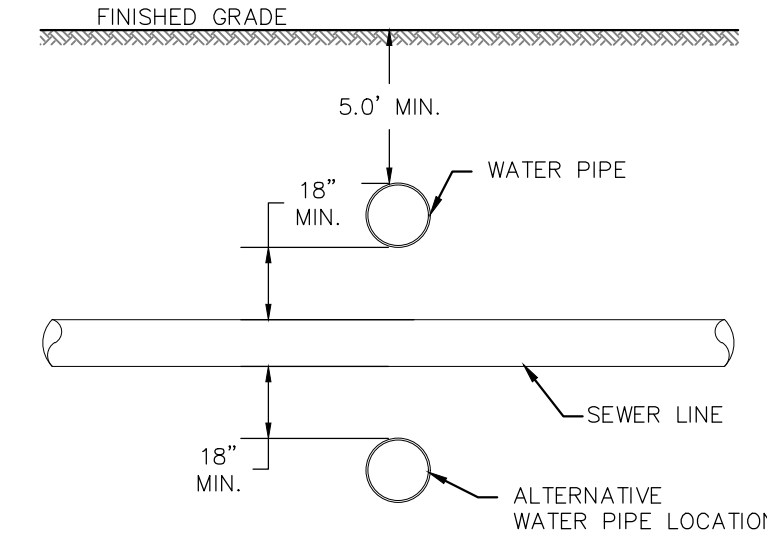




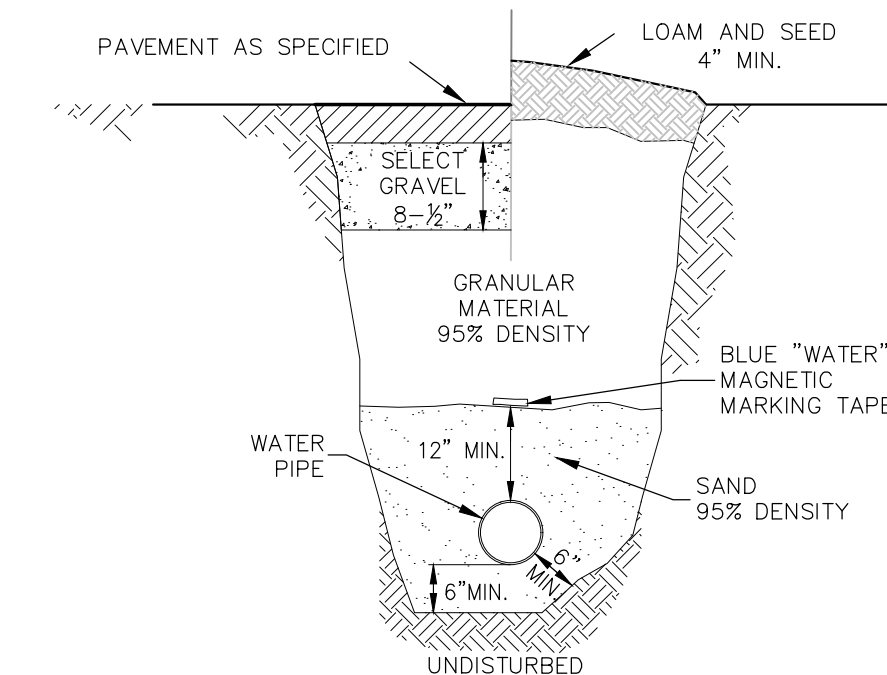
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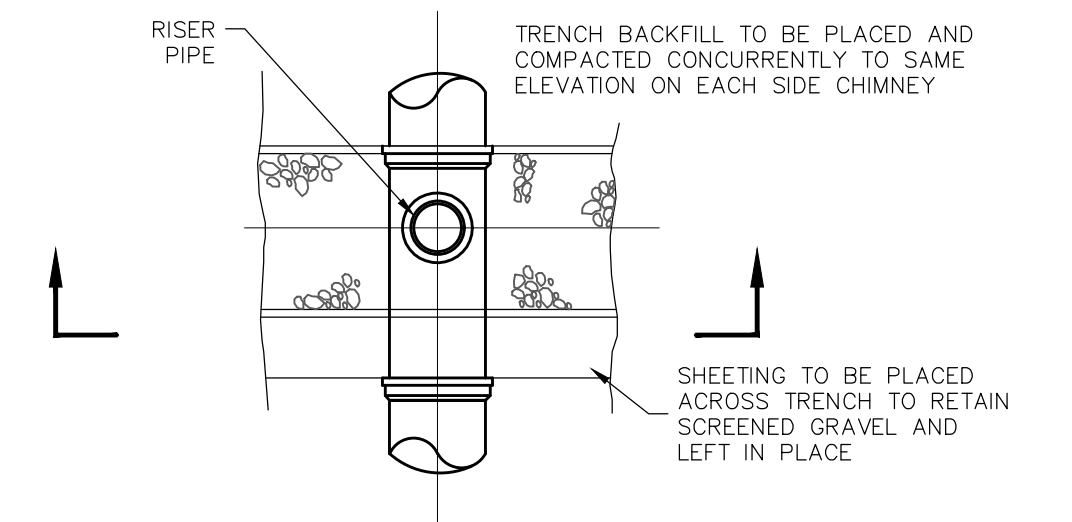
**BLOW-OFF DETAIL**  
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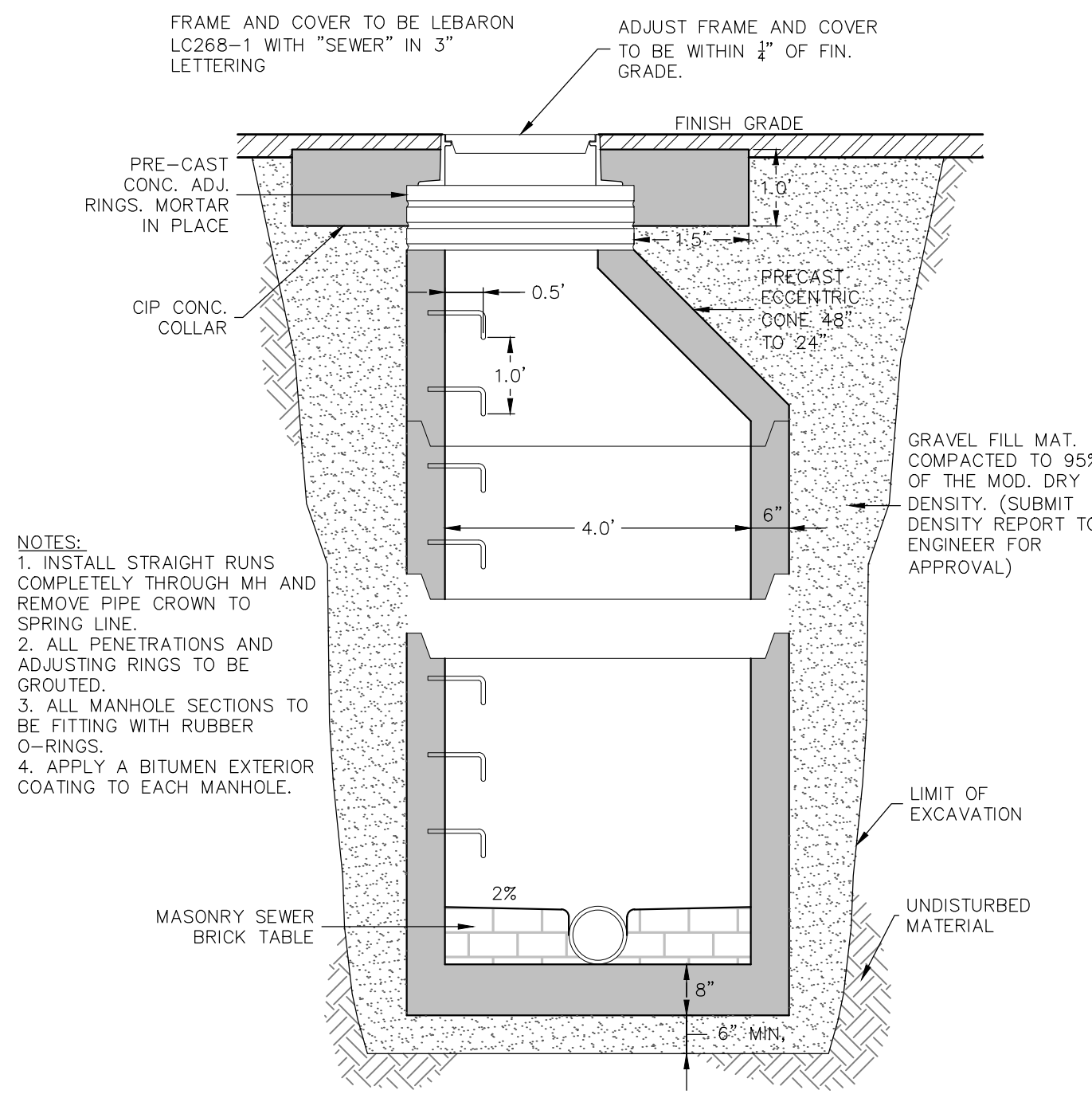
**WATER AND SEWER LINE CROSSING**  
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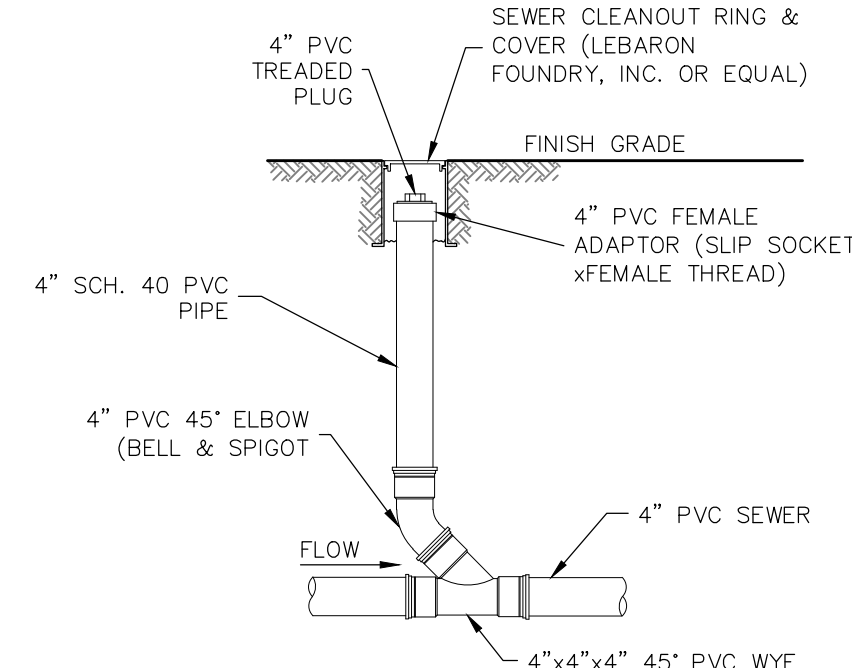
**WATER MAIN IN TRENCH DETAIL**  
NOT TO SCALE



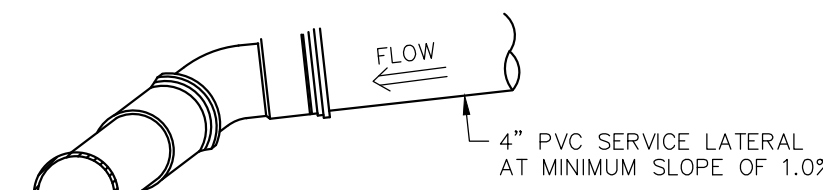
**SEWER CLEANOUT DETAIL  
(GRASS/GARDEN AREAS)**  
NOT TO SCALE



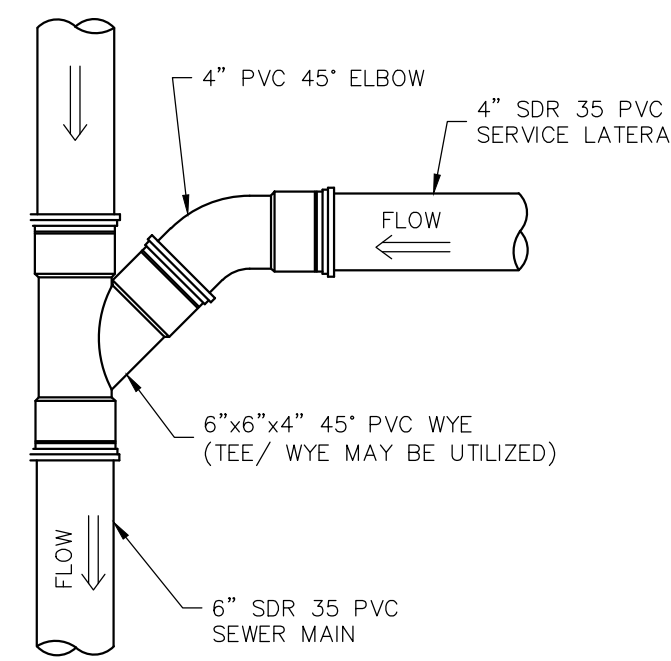
**SEWER MANHOLE DETAIL**  
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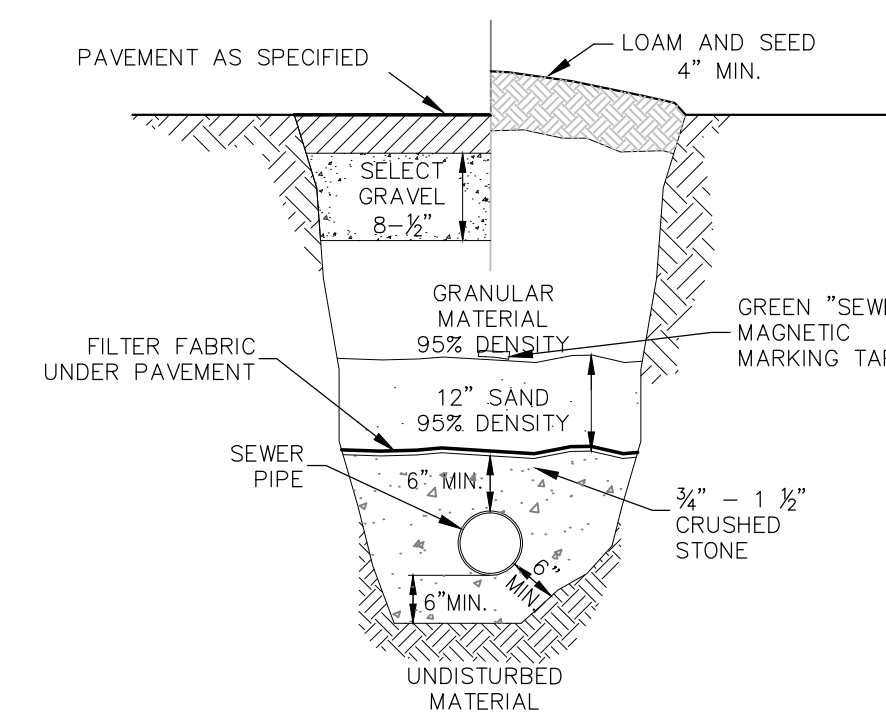
**SEWER CLEANOUT DETAIL  
(PAVED AREAS)**  
NOT TO SCALE



**CROSS-SECTION**



**SEWER SERVICE CONNECTION**  
NO SCALE



**SEWER LINE TRENCH DETAIL**  
NO SCALE

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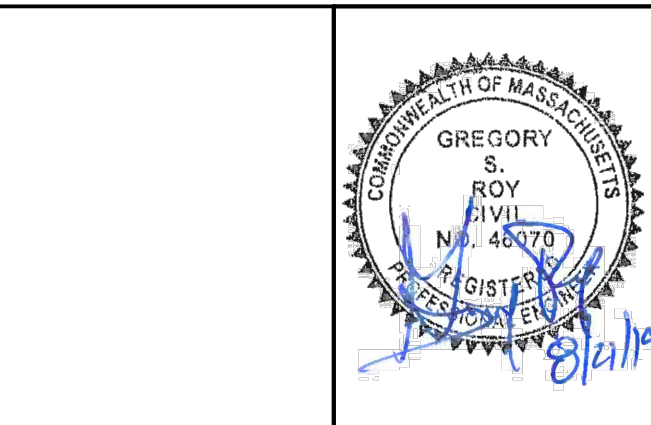
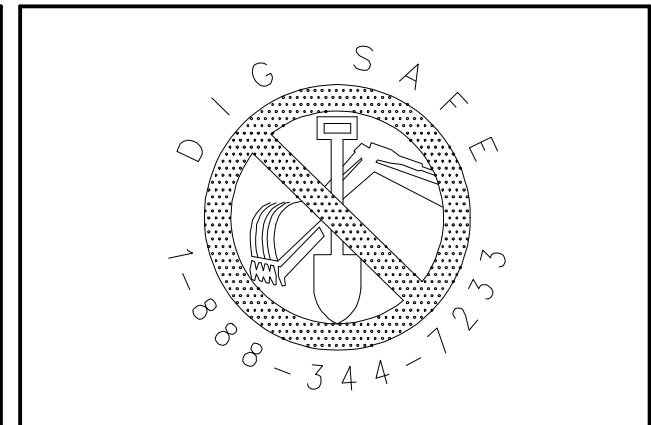
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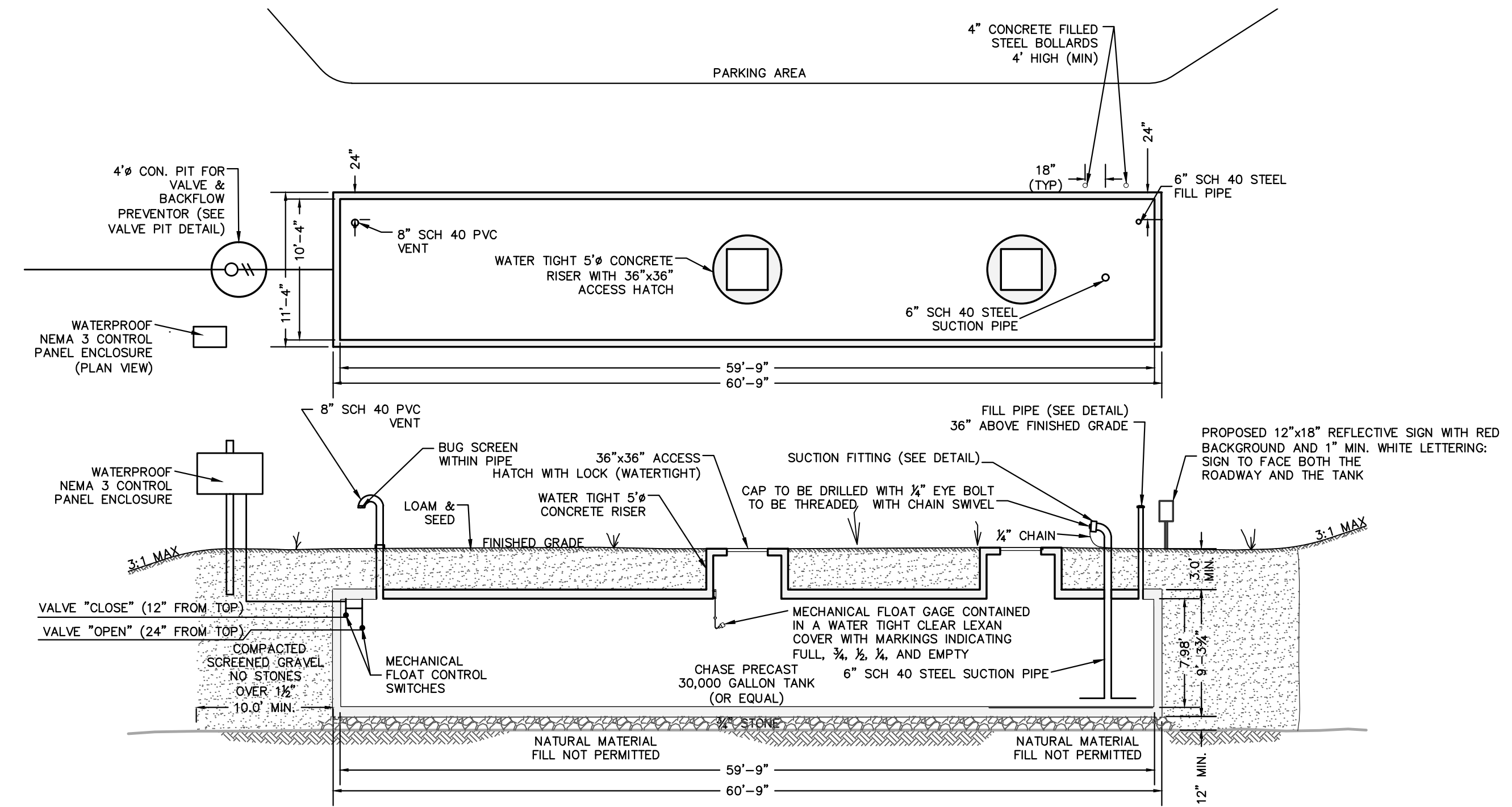
UTILITY DETAILS HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV
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03.	8/21/19	NOT REVISED	

JOB NO. 5676  
 DRAWING NO. 5676-UTIL  
 SHEET NO. **C3.4**

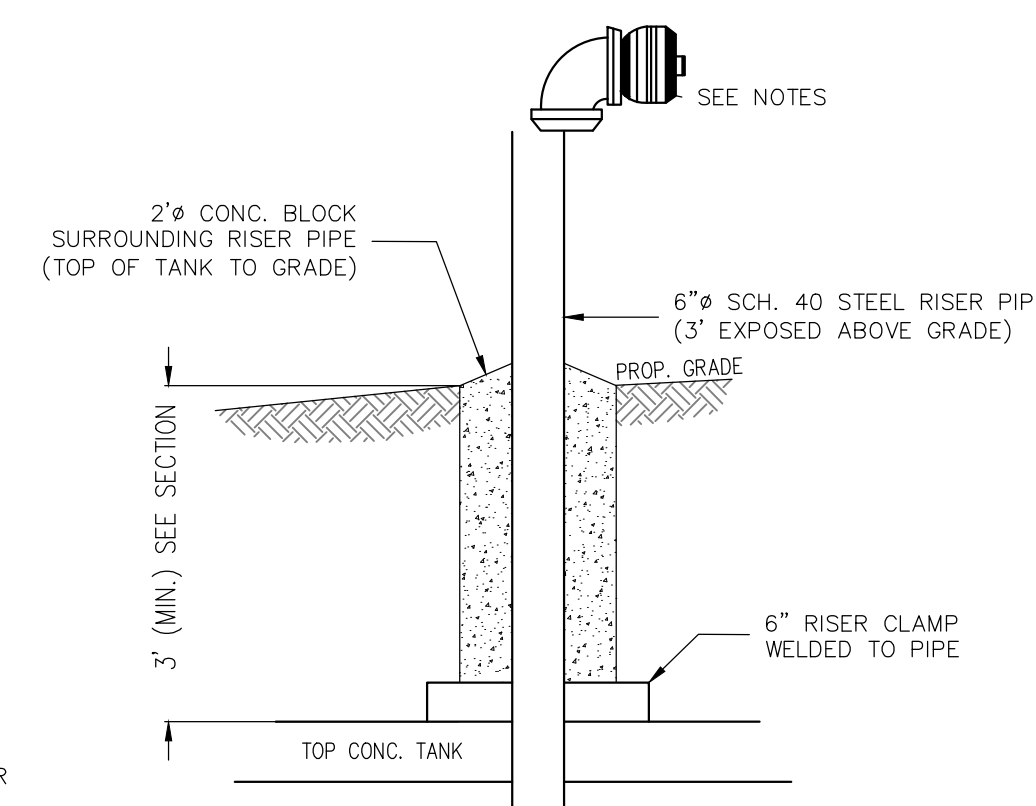


**FIRE CISTERN SPECIFICATIONS:**

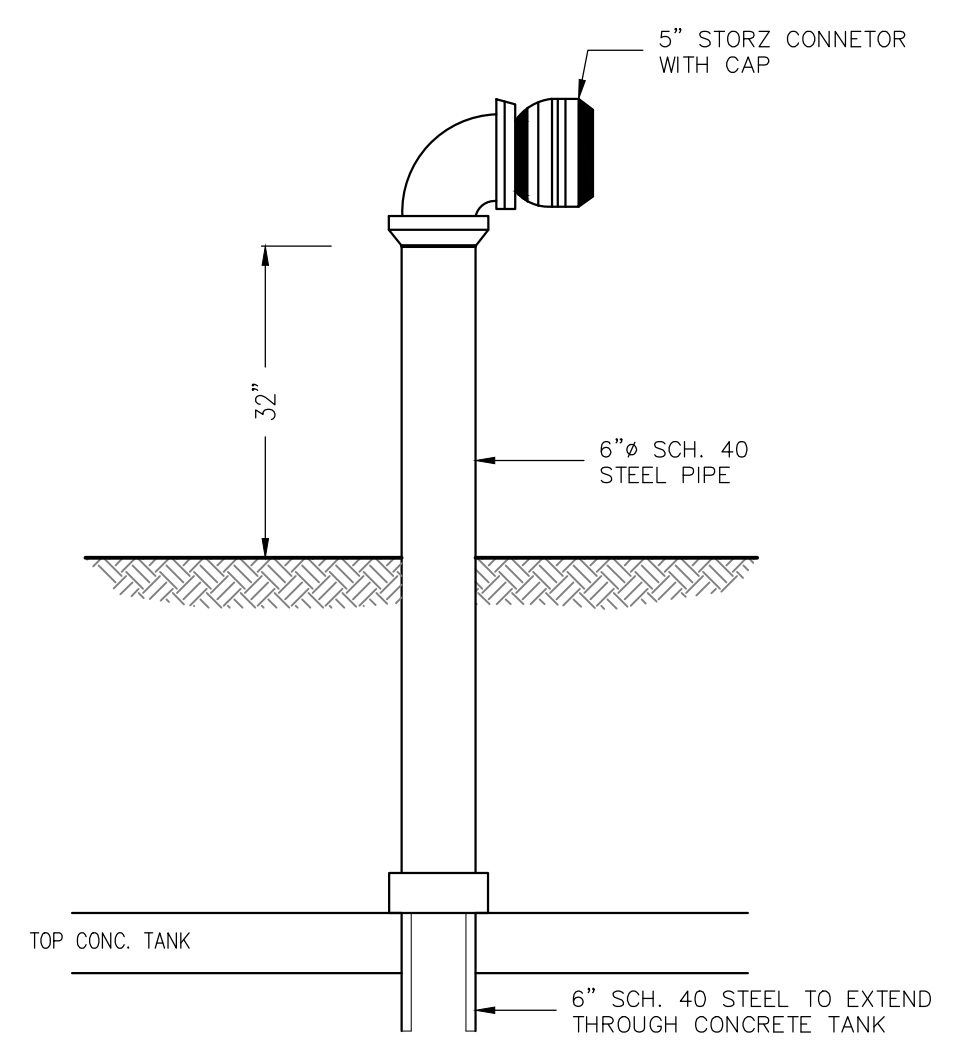
- FURNISH AND INSTALL A FIRE CISTERN SYSTEM WITH ONE 30,000 GAL. PRECAST CONCRETE TANK, MANHOLE RISERS AND COVERS, SUCTION PIPING, FILL PIPING, VENT PIPING, NOZZLES AND FITTINGS ARE REQUIRED BY THE BERLIN FIRE DEPARTMENT, AND OTHER APPURTENANCES AS REQUIRED.
- THE TANK SHALL BE 30,000 GAL. PRECAST CONCRETE TANKS RATED FOR H2O LOADING AS MANUFACTURED BY WACHUSETT PRECAST, OR APPROVED EQUAL. THE TANK SHALL BE FURNISHED WITH A MINIMUM OF (1) 32" ACCESS COVER WITH A 4" DIAMETER VERTICAL RISER TO GRADE. PROVIDE ALL TANK PENETRATIONS FOR THE PROPOSED SUCTION, FILL AND VENT PIPING IN THE LOCATIONS DEPICTED ON THE PLANS.
- MANHOLE COVERS SHALL BE E.J. PRESCOTT MODEL L-5, OR APPROVED EQUAL. MANHOLE COVERS SHALL BE UNLETTERED.
- SUCTION PIPING SHALL BE 6" SCH. 40 PIPING. FURNISH AND INSTALL A 5" STORZ FILL CONNECTOR OR OTHER FITTING AS REQUIRED BY THE BERLIN FIRE DEPARTMENT. CONTRACTOR SHALL PROVIDE ALL REQUIRED PIPE FITTINGS TO TRANSITION FROM 6" SCH. 40 TO THE 5" CONNECTOR.
- SUCTION PIPING SHALL BE FITTED WITH A 6" NST FEMALE SWIVEL WITH LONG HANDLE AND STRAINER, 6" NST MALE X 4 1/2" NST MALE ADAPTER WITH 4 1/2" NST END CAP WITH A CHAIN OR CABLE. SUCTION FITTING SHALL BE LOCATED IN THE LOCATION DEPICTED ON THE PLANS PROTECTED BY BOLLARDS (SEE DETAIL).
- FURNISH AND INSTALL AN ANTI-VORTEX PLATE WITHIN THE TANK AT THE BASE OF THE 6" SUCTION PIPE. THE PLATE SHALL BE 48"x48"x1/4" STEEL PLATE. PROVIDE 1" THREADED ANCHOR BOLTS FIXED TO THE BOTTOM OF THE TANK SUCH THAT THE CLEAR BETWEEN THE BOTTOM OF THE PLATE AND THE BOTTOM OF THE TANK IS 6". PROVIDE ADDITIONAL SPACERS AS REQUIRED TO SECURE THE PLATE TO THE TANK. PLATE SHALL BE WELDED TO THE RISER PIPE. A 6" STRAINER SHALL BE INSTALLED IN THE VERTICAL POSITION ON THE SUCTION PIPING AND CONNECTED TO THE ANTI-VORTEX PLATE.
- FILL PIPE SHALL BE 6" SCH. 40 PIPING. REFER TO THE DETAIL ON THIS SHEET FOR ADDITIONAL DETAILS RELATIVE TO THE CONNECTION OF THE PIPE TO THE TOP OF THE TANK AND REQUIREMENTS FOR PIPE PENETRATIONS.
- VENT PIPING SHALL BE 8" SCH. 80 PVC PIPING. REFER TO THE DETAIL ON THIS SHEET FOR ADDITIONAL DETAILS RELATIVE TO THE CONNECTION OF THE PIPE TO THE TOP OF THE TANK AND REQUIREMENTS FOR PIPE PENETRATIONS.
- PROVIDE WATERLINE CONNECTION FROM CLOSEST WATERMAIN FOR AUTOMATIC FILLING OF THE CISTERN:
  - WATER LINE TO BE 1" POLY WATER SERVICE RATED FOR 160 PSI (MINIMUM).
  - WATER LINE TO BE EQUIPPED WITH A 1" SOLENOID VALVE AS MANUFACTURED BY ASCO SERIES 8210 (OR EQUAL).
  - WATER LINE TO BE EQUIPPED WITH AN APPROVED BACKFLOW PREVENTER INSIDE VAULT TO (DISTRIBUTION SIDE) THE SOLENOID VALVE.
  - PROVIDE MECHANICAL FLOAT SWITCHES AS MANUFACTURED BY DAYTON (OR EQUAL).
  - FURNISH AND INSTALL A CONTROL PANEL MOUNTED IN A NEMA 3 WATER TIGHT CONTROL BOX. THE PANEL SHALL BE CAPABLE OF COMMUNICATION WITH THE PROPOSED SOLENOID VALVE. SOLENOID VALVE SHALL OPEN WITH THE "FILL" FLOAT SWITCH IS ACTIVATED AND CLOSE WHEN THE "CLOSE" SWITCH IS ACTIVATED.
- PAVED ACCESS AREA SHALL BE AT LEAST 50- FEET IN LENGTH AND 12' WIDE EXTENDING FROM THE CUTTER LINE OF THE ROADWAY.
- THE TANKS SHALL HAVE A MINIMUM BURY DEPTH OF 36" OVER EACH TANK OR BE INSULATED.
- PROVIDE 1" OF RIGID INSULATION WITH GALVANIZED NETTING FOR EVERY 1-FOOT OF COVER REDUCTION. TANK SHALL HAVE A MINIMUM OF 18 INCHES OF COVER. PLACE INSULATION 4- FEET BEYOND TANK (HORIZONTALLY) IN ALL DIRECTIONS.
- OVER-EXCAVATED AREA SUCH THAT A MINIMUM OF 12-INCHES OF CRUSHED STONE CAN BE PLACED IN THE BOTTOM OF THE HOLE.
- TANKS SHALL BE BACKFILLED WITH GRAVEL CONFORMING TO GRAVEL BORROW (M1.03.0).
- THE SUCTION, FILL AND VENT SHALL BE SET A MINIMUM OF 36" ABOVE FINAL FINISHED GRADE.
- RESTORE ALL AREAS WITH A MINIMUM OF 4" TOPSOIL, SEED, FERTILIZER AND MULCH OR AS SPECIFIED ON THE SITE PLANS.
- A LIGHTED CONTROL PANEL SHALL BE PROVIDED WITH GREEN POWER-INDICATING LIGHT-EMITTING DIODE (LED) AND LOW LEVEL FLASHING RED INDICATOR AND ORANGE PUMP RUNNING INDICATOR. THESE INDICATORS SHALL BE APPROPRIATELY LABELED. THE DEVELOPER MUST CONSTRUCT A MOUNTING PANEL AND HAVE METERED POWER CONNECTED TO THE CISTERN AFTER OBTAINING ALL NECESSARY ELECTRICAL PERMITS.
- A SIGN WHICH HAS A MINIMUM ONE-INCH WHITE REFLECTIVE LETTER ON A RED REFLECTIVE BACKGROUND SHALL BE PROVIDED. SIGNAGE SHALL STATE: (1) FIRE DEPARTMENT DRY HYDRANT OR CISTERN, (2) THE STORAGE CAPACITY, (3) THE FIRE DEPARTMENT ID NUMBER.
- ALL SUCTION AND FILL PIPING SHALL BE SCHEDULE 40 STEEL PIPE. VENT PIPING SHALL BE SCHEDULE 80 PVC PIPE WITH GLEED JOINTS. PIPES SHALL BE COATED WITH AN EPOXY PAINT TO PREVENT ULTRA-VIOLET DEGRADATION. SUCTION PIPING SHALL BE PAINTED RED. ALL OTHER EXPOSED PIPING SHALL BE PAINTED BLACK.
- ALL ELECTRICAL CONTROLS, BOXES AND MANHOLES SHALL BE LOCKED WITH "KEYED ALIKE" PADLOCKS. A KNOX BOX IS TO BE INSTALLED TO HOUSE ALL REQUIRED KEYS.
- A WATER PROOFING COATING SIMILAR TO DRYLOK LATEX BASE OR SIMILAR SHALL BE APPLIED TO THE INTERIOR OF THE TANKS.



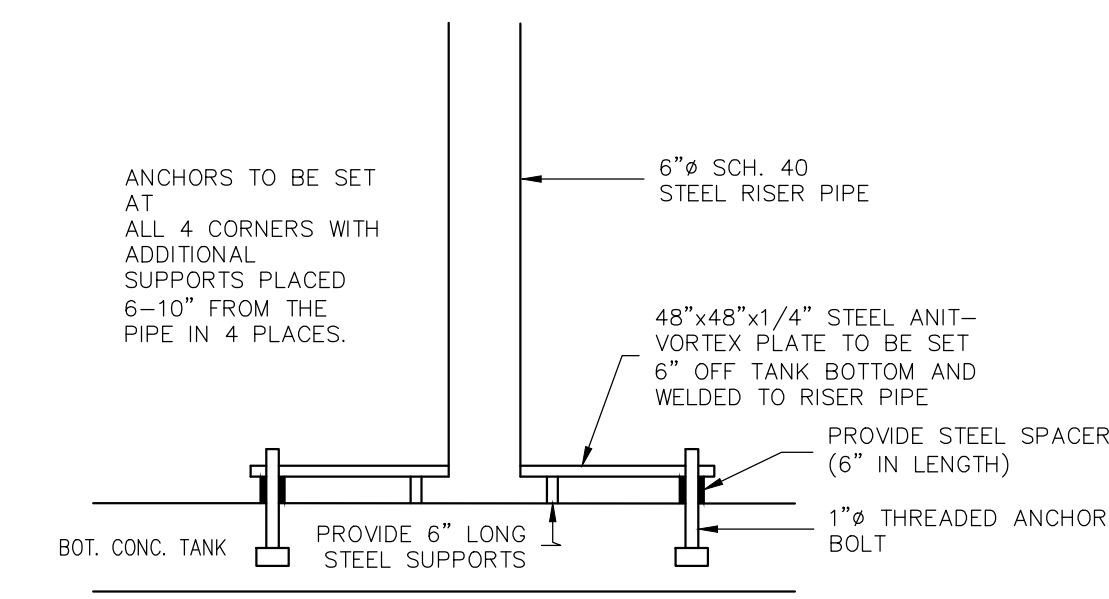
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NOT TO SCALE



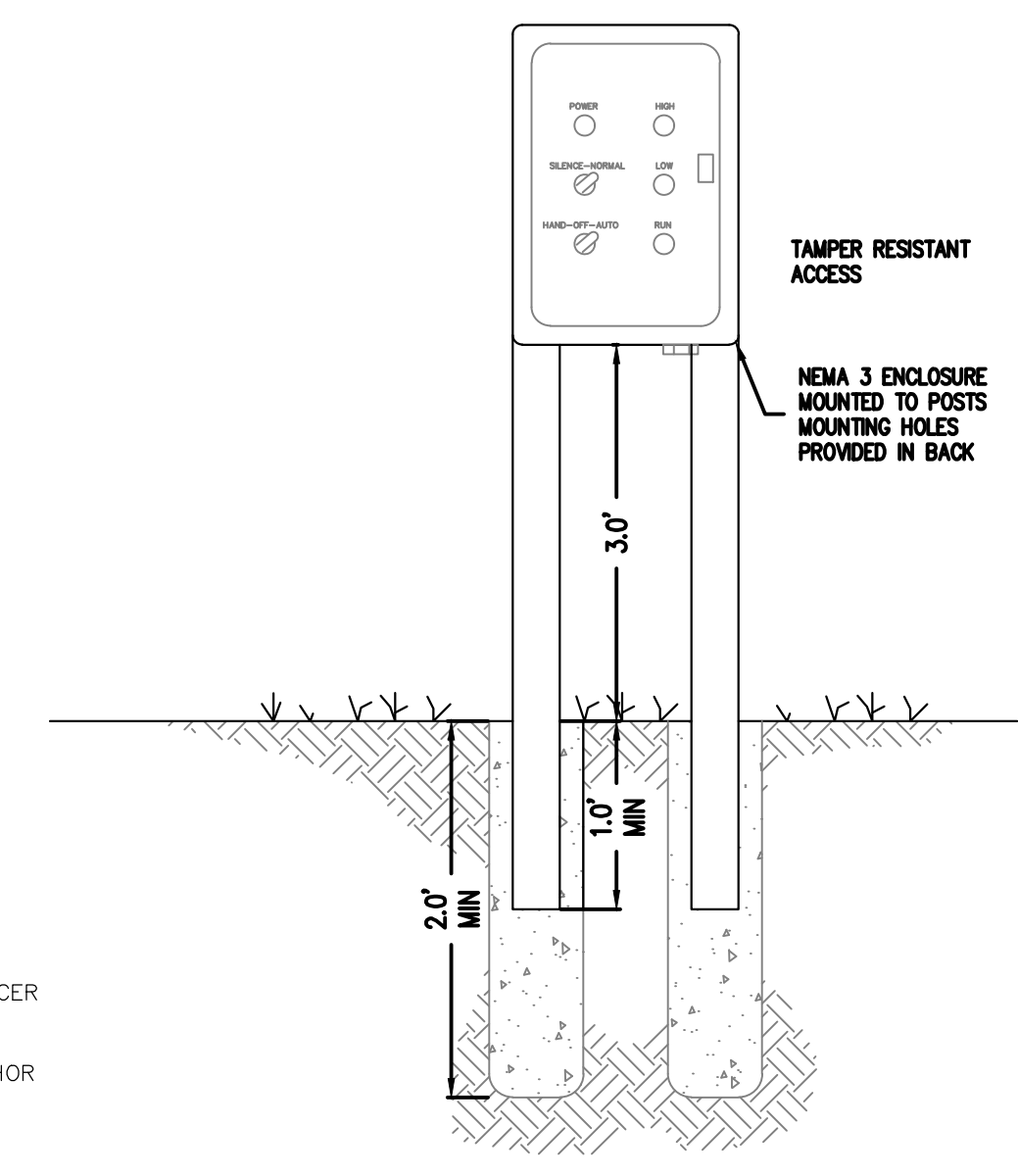
**DRY HYDRANT SUCTION FITTING**  
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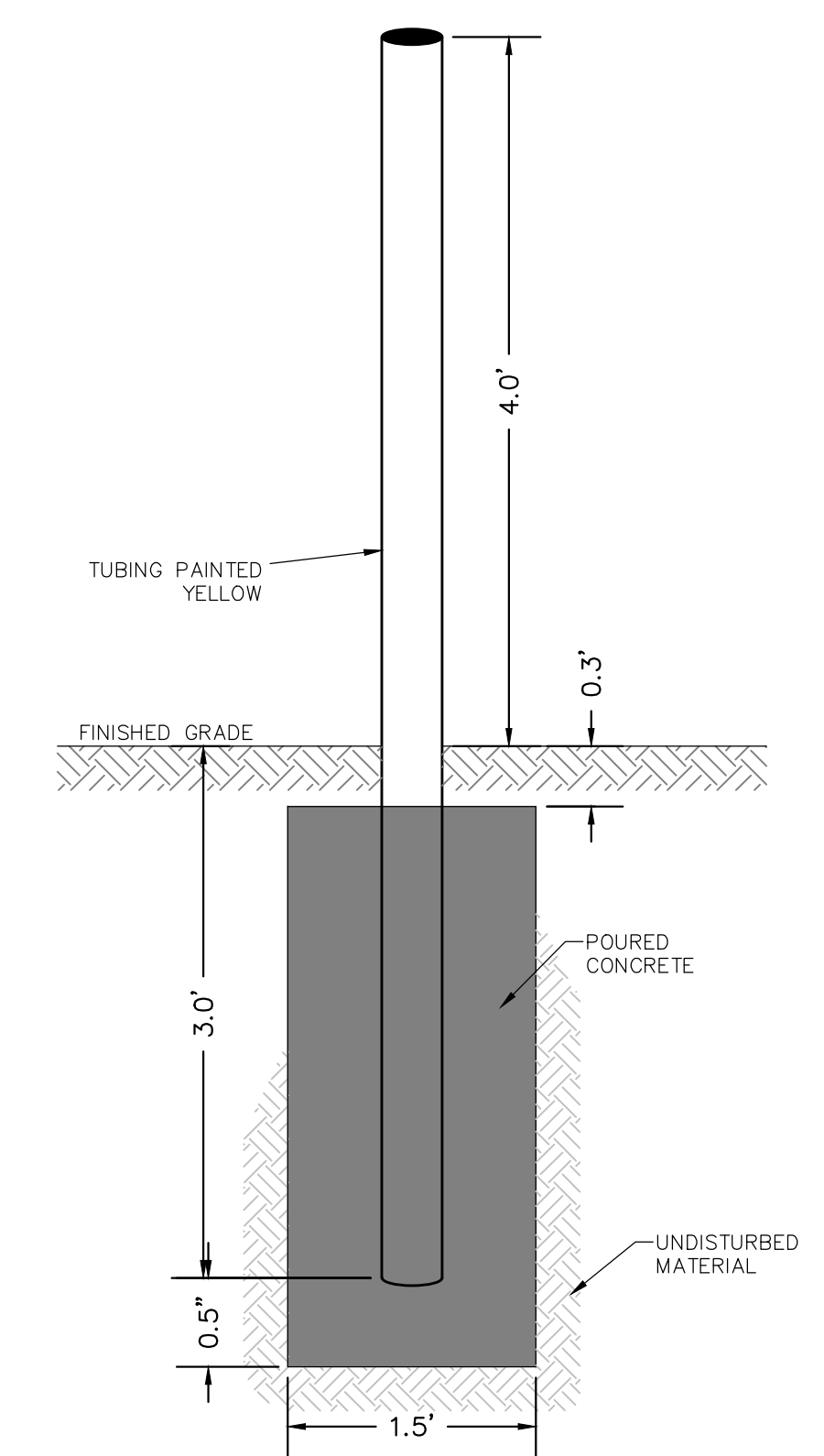
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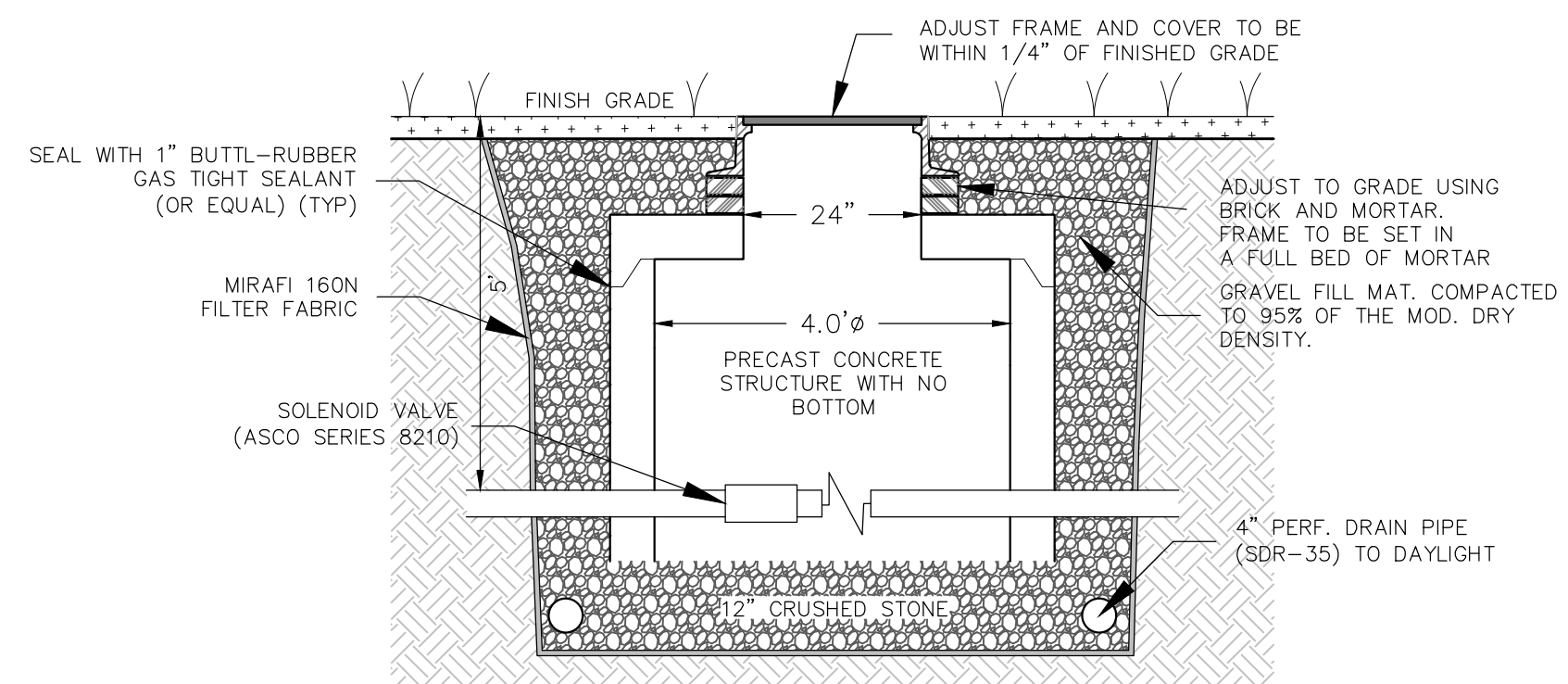
**ANIT-VORTEX PLATE**  
NOT TO SCALE



**CONTROL PANEL DETAIL**  
NOT TO SCALE



**BOLLARD DETAIL**  
NOT TO SCALE



**VALVE PIT DETAIL**  
NOT TO SCALE

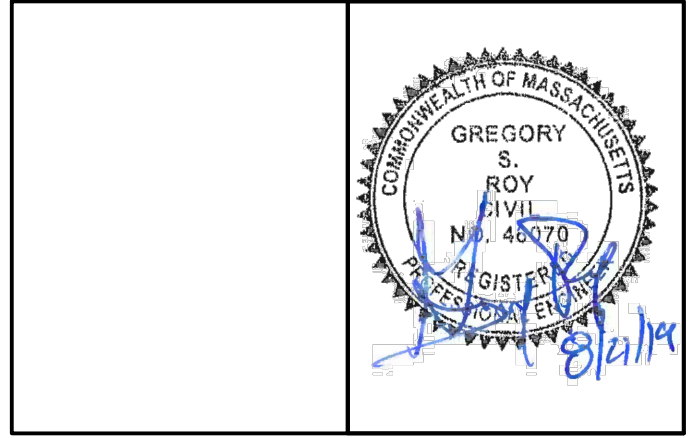
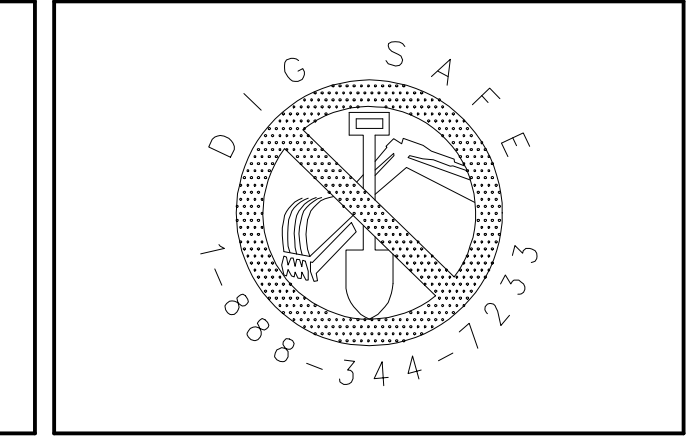
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SCALE:

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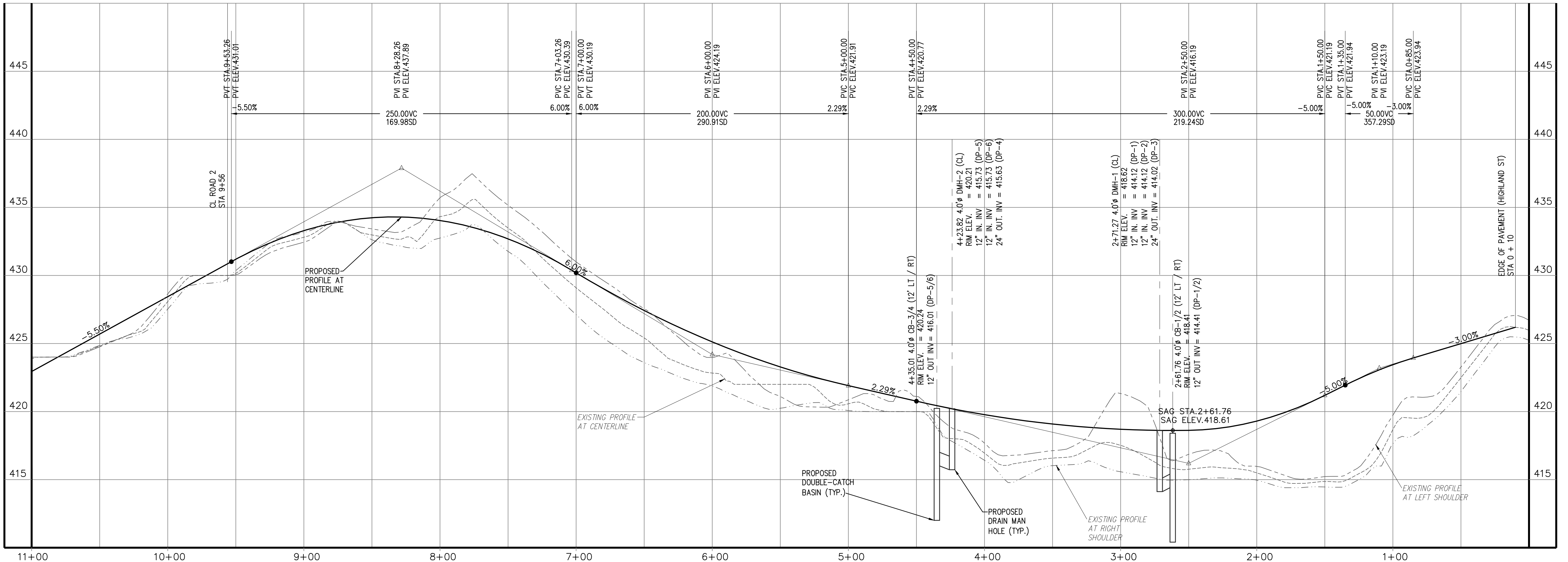
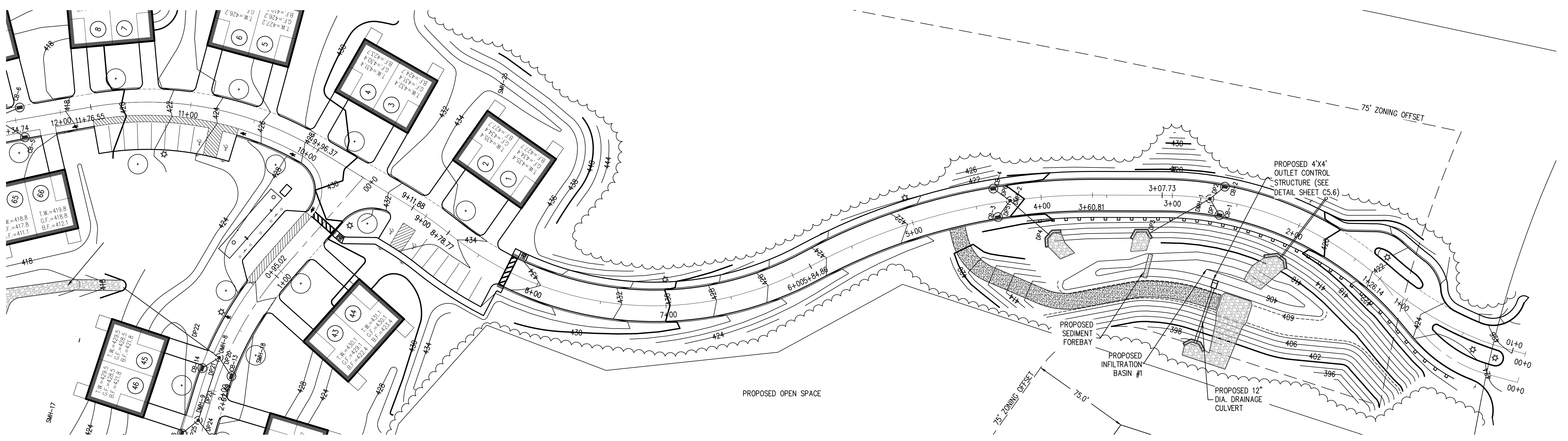
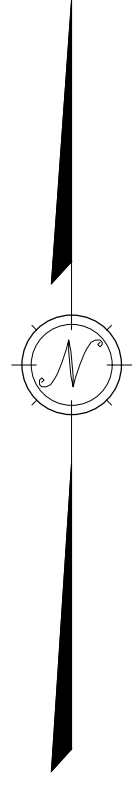


DATE:	7/12/18
DESIGN BY:	GSR
DRAWN BY:	GSR
CHECKED BY:	GSR

FIRE CISTERN DETAIL HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
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03.	8/21/19	NOT REVISED	

JOB NO. 5676  
 DRAWING NO. 5676-UTIL  
 SHEET NO. **C3.5**





SCALE: 1" = 40' (HOR.)  
1" = 4' (VERT.)

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OWNER:

KEN-CHRIS REALTY  
62 SOUTH BOLTON ROAD  
BOLTON, MA

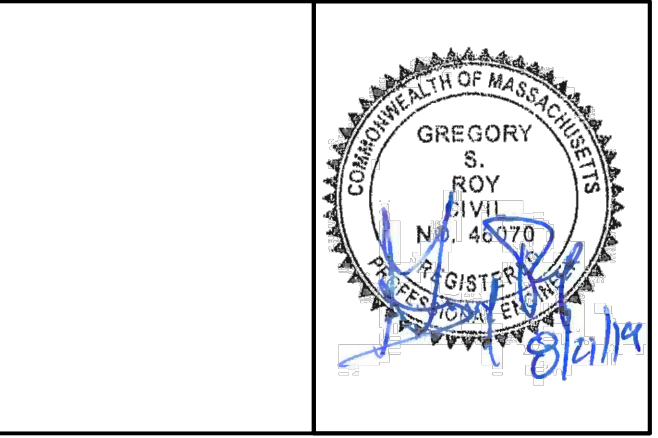
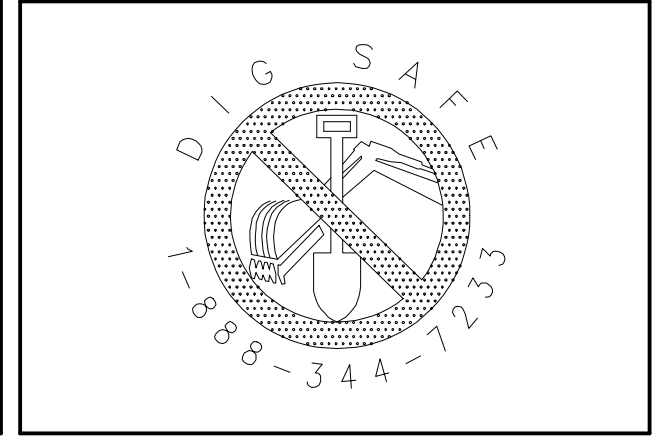
APPLICANT:

KEN-CHRIS REALTY  
62 SOUTH BOLTON ROAD  
BOLTON, MA

SCALE:

1 in. = 40 ft.

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DATE:	
DESIGN BY:	GSR
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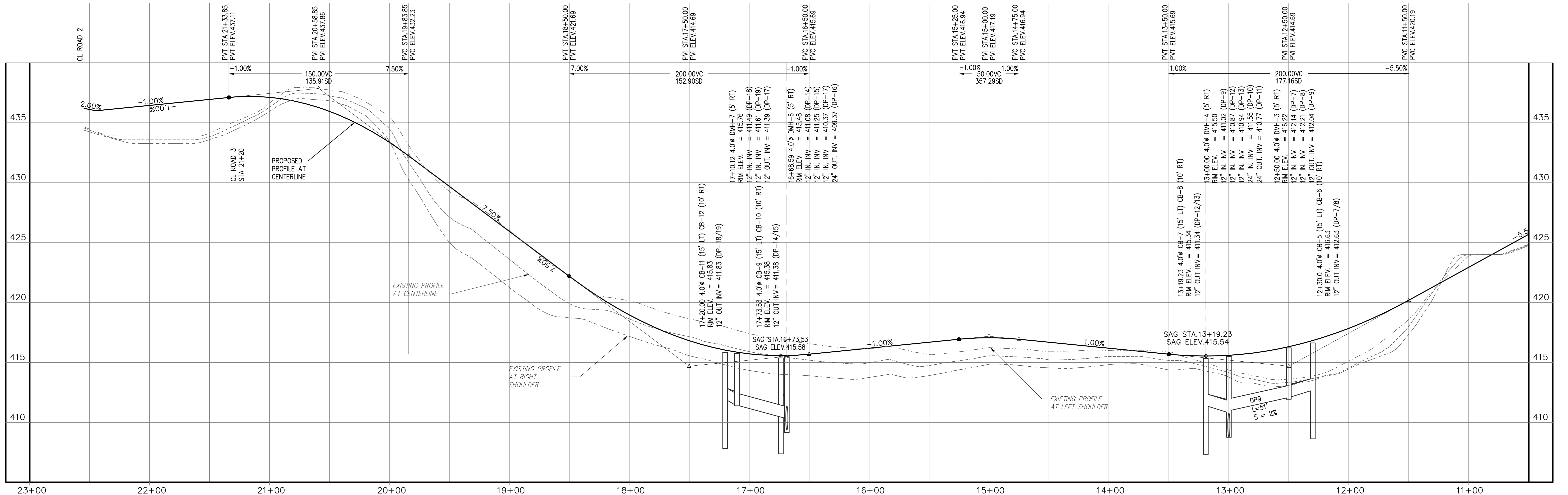
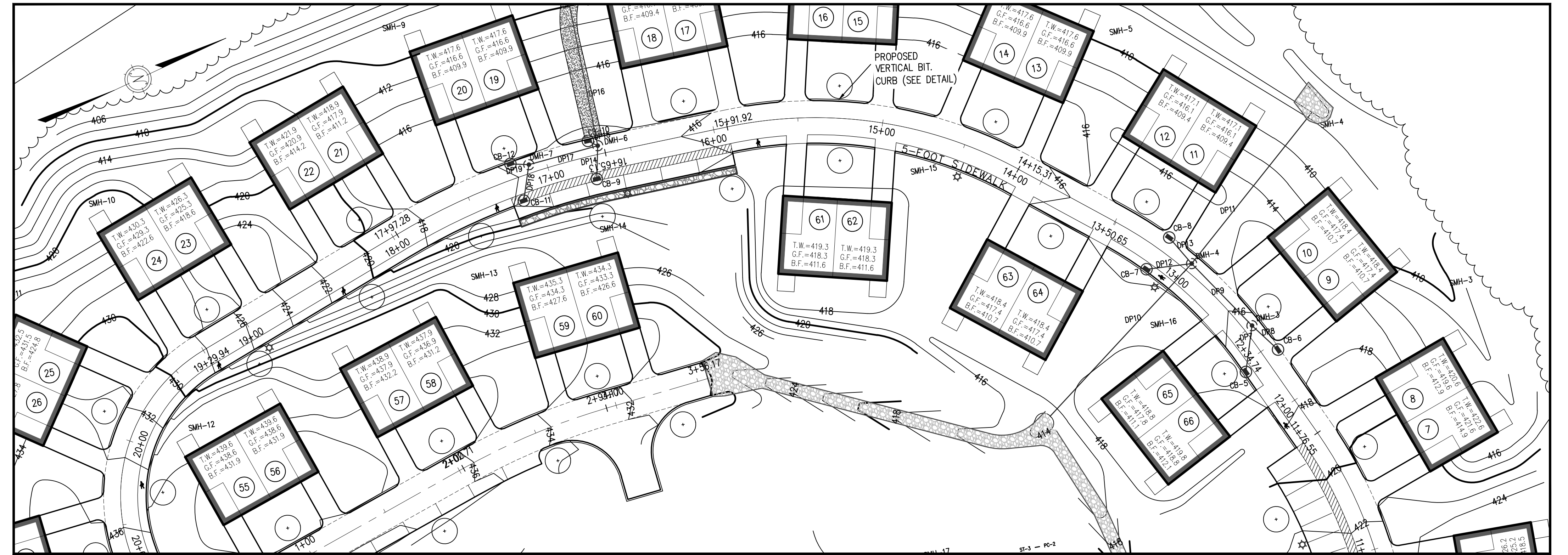
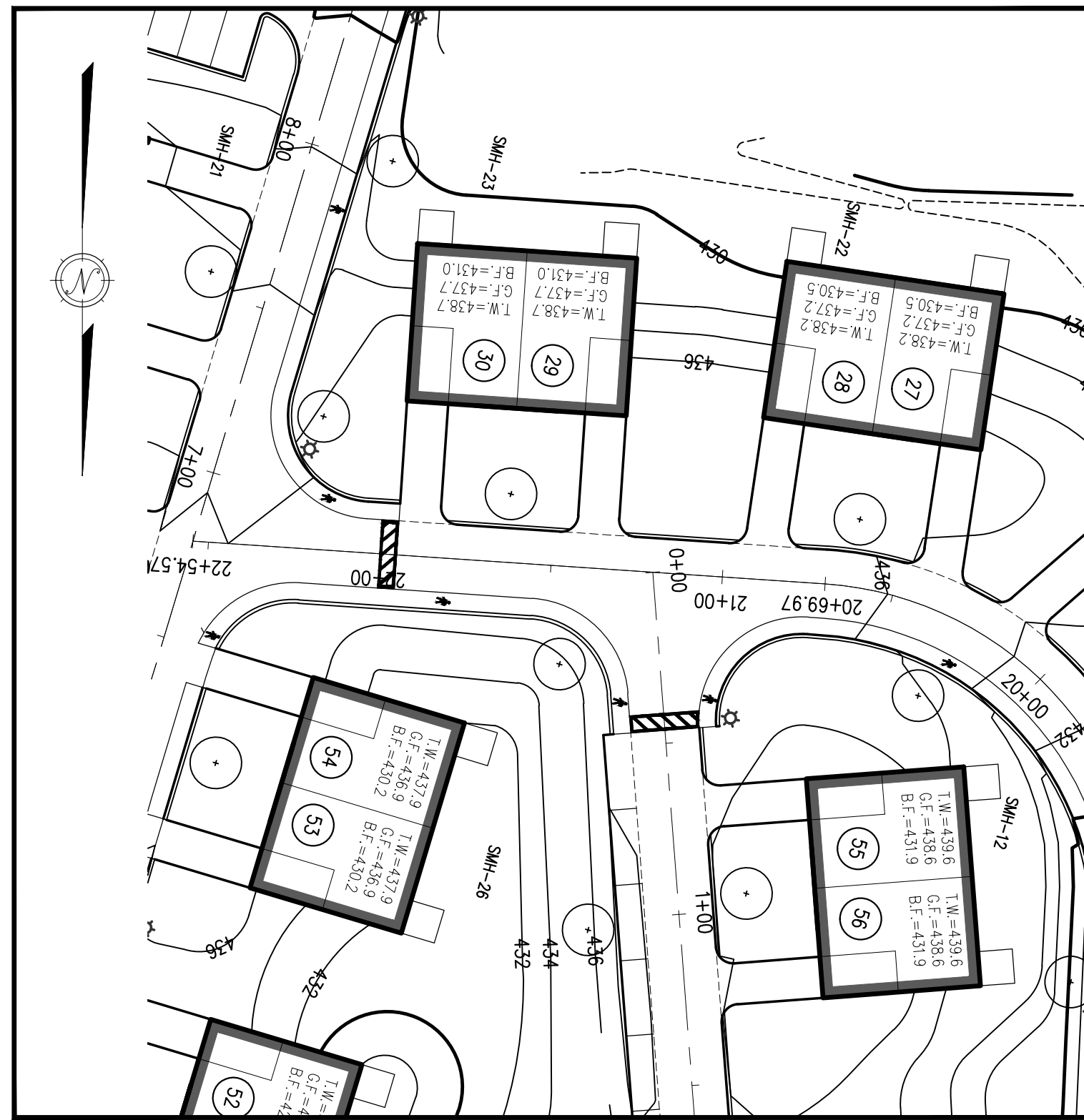
PLAN/PROFILE SHEET 1 HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV
02.	6/7/19	ADDED WATER DISTRIBUTION DESIGN/SHEETS	GSR
03.	8/21/19	NOT REVISED	

JOB NO. 5676

DRAWING NO. 5676-PRO

SHEET NO. **C4.1**





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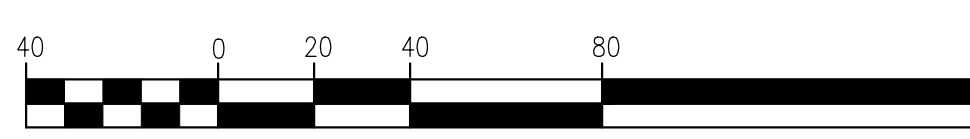
**ROAD 1 PROFILE**

SCALE: 1" = 40' (HOR.)  
1" = 4' (VERT.)

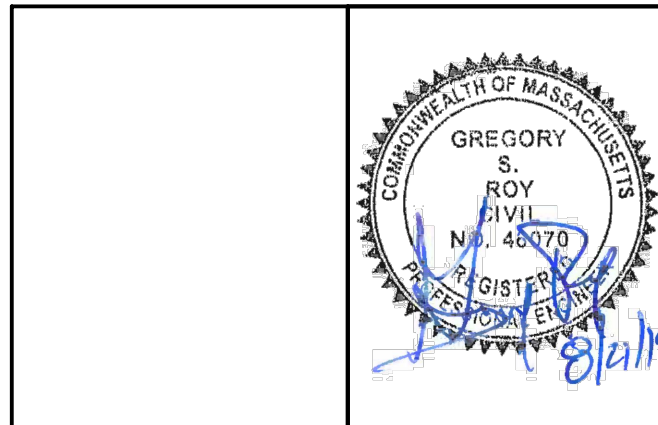
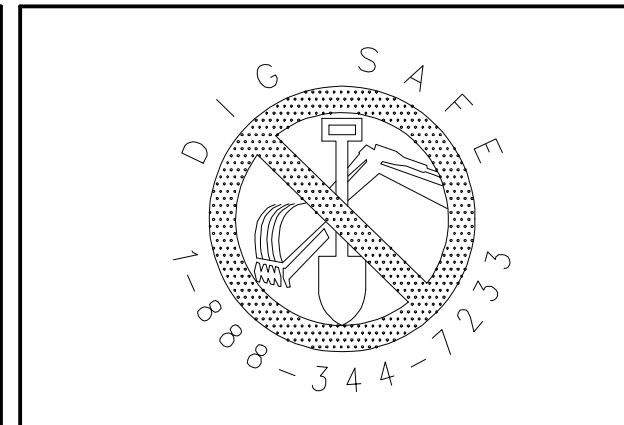
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APPLICANT:  
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 62 SOUTH BOLTON ROAD  
 BOLTON, MA

SCALE:  
  
 1 in. = 40 ft.

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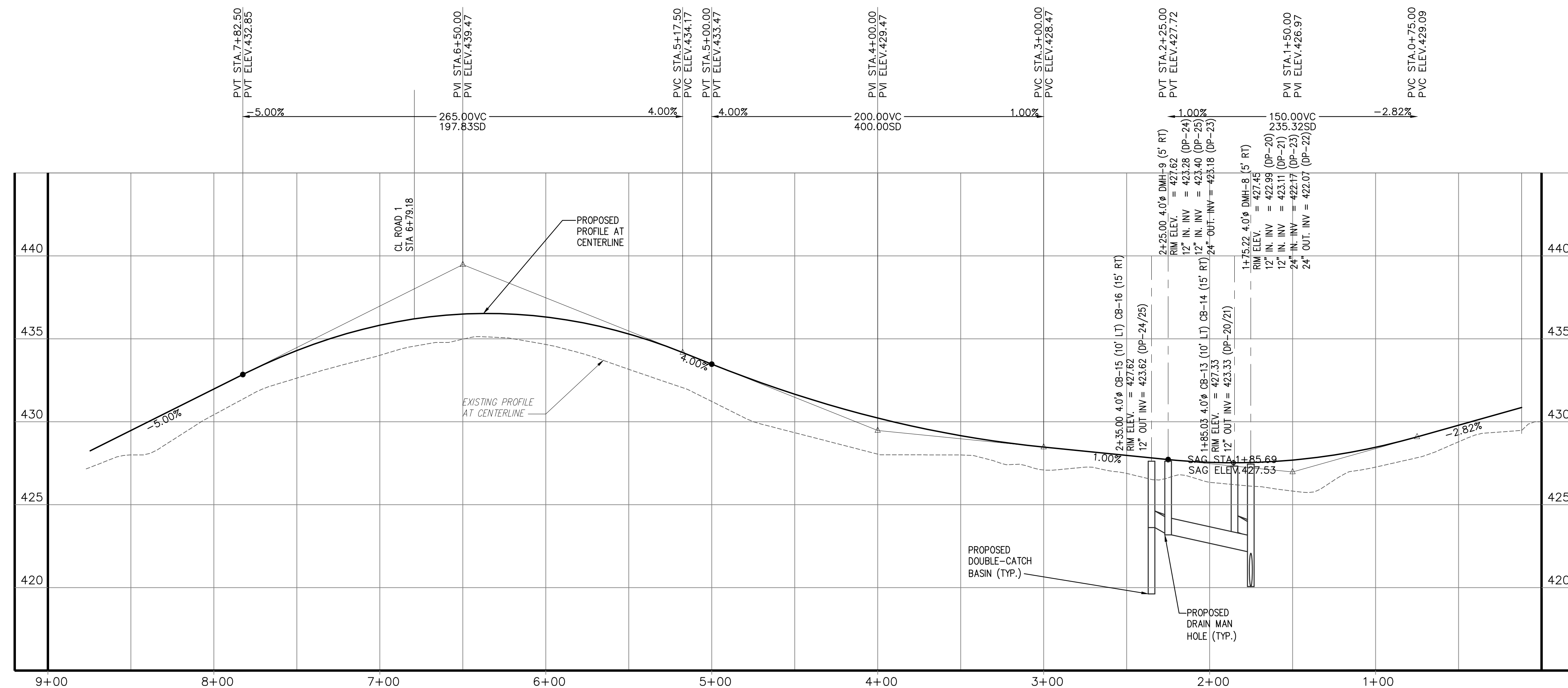
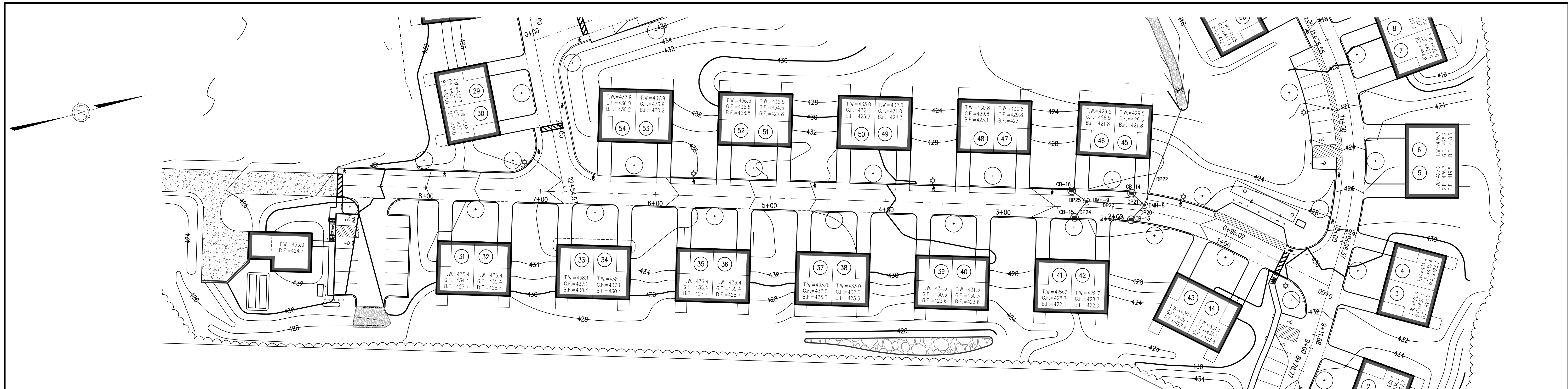


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 DESIGN BY: GSR  
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PLAN/PROFILE SHEET 2 HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
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JOB NO. 5676  
 DRAWING NO. 5676-PRO  
 SHEET NO. **C4.2**





**ROAD 2 PROFILE**

SCALE: 1" = 40' (HOR.)  
1" = 4' (VERT.)

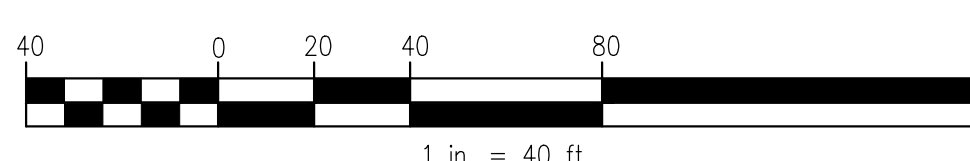
PRELIMINARY - NOT FOR CONSTRUCTION

PREPARED BY:  

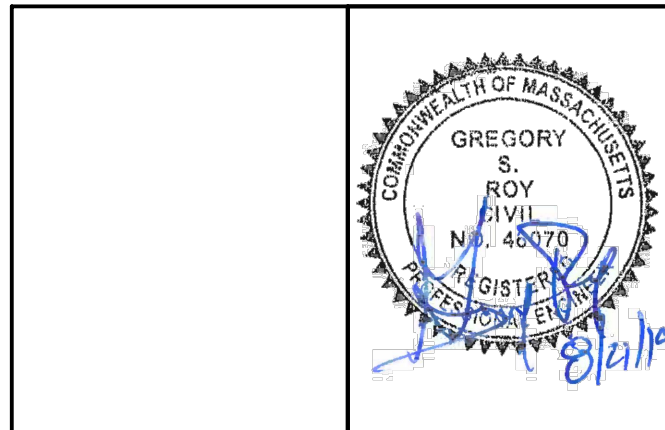
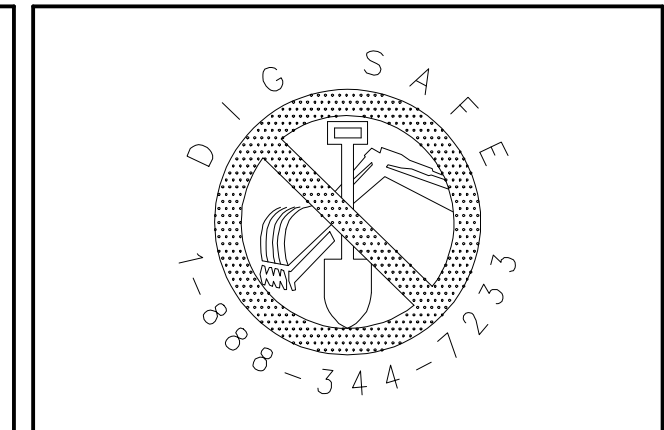
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 62 SOUTH BOLTON ROAD  
 BOLTON, MA

SCALE:  
  
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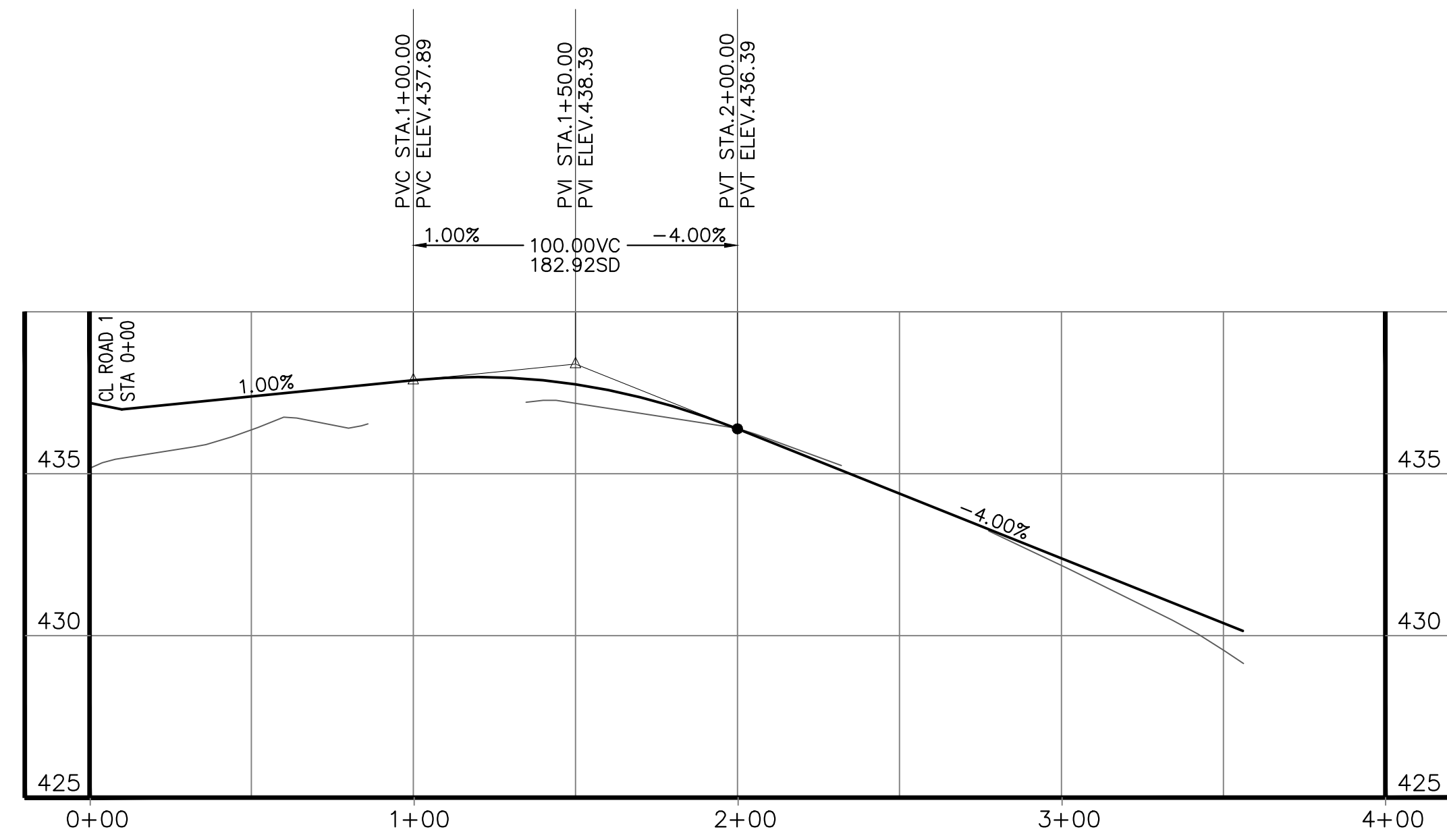
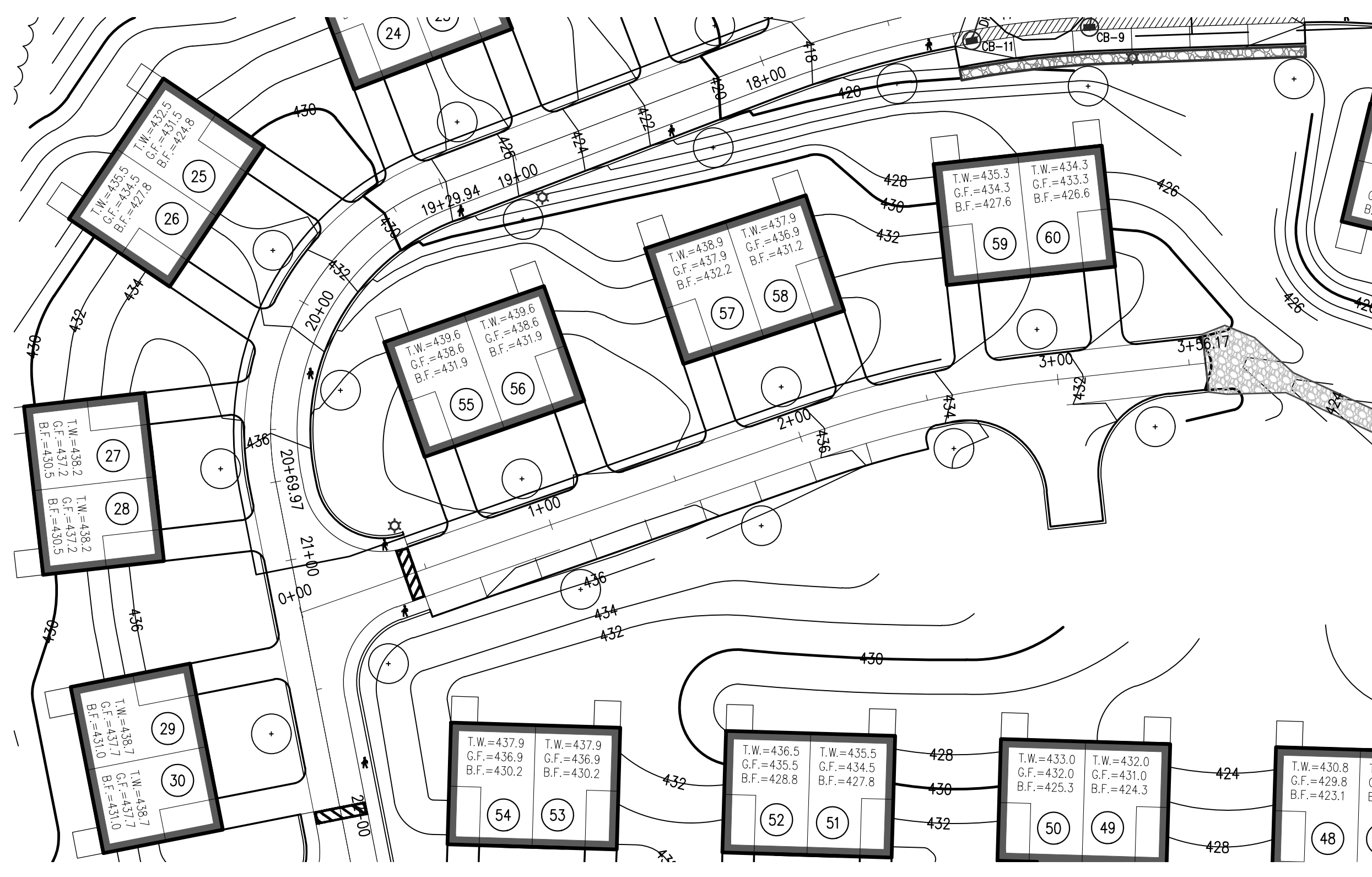
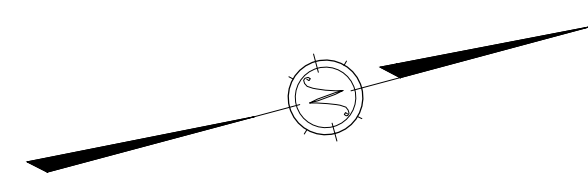


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PLAN/PROFILE SHEET 3 HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
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03.	8/21/19	NOT REVISED	

JOB NO. 5676  
 DRAWING NO. 5676-PRO  
 SHEET NO. **C4.3**





**ROAD 3 PROFILE**

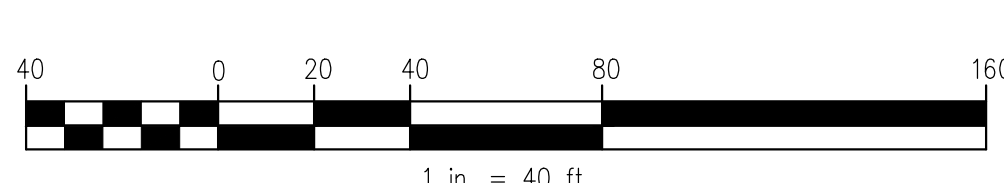
SCALE: 1" = 40' (HOR.)  
1" = 4' (VERT.)

PRELIMINARY - NOT FOR CONSTRUCTION

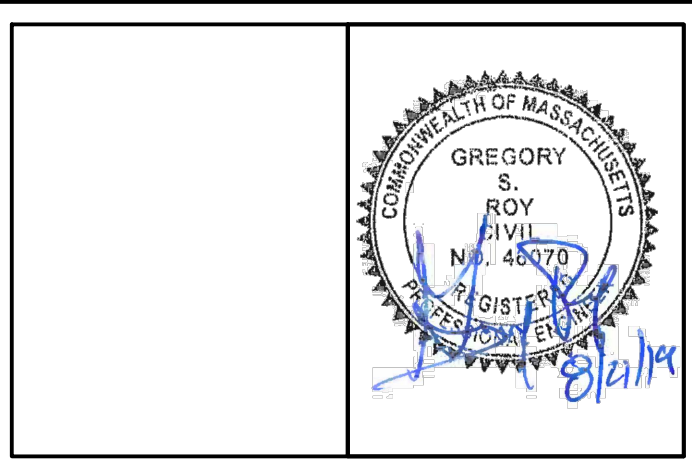
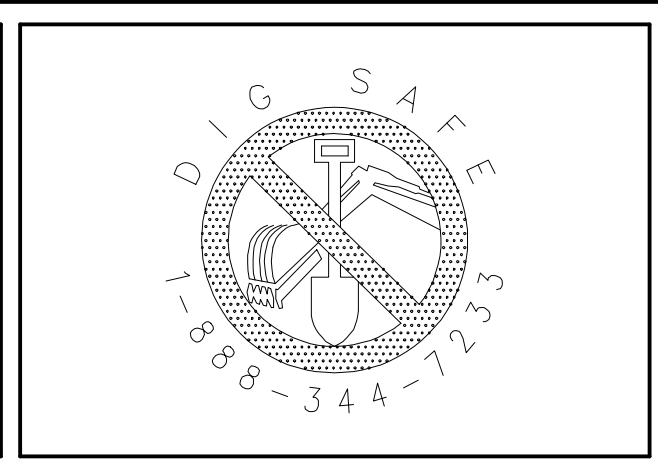
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OWNER:  
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 62 SOUTH BOLTON ROAD  
 BOLTON, MA

APPLICANT:  
 KEN-CHRIS REALTY  
 62 SOUTH BOLTON ROAD  
 BOLTON, MA

SCALE:  
  
 1 in. = 40 ft.

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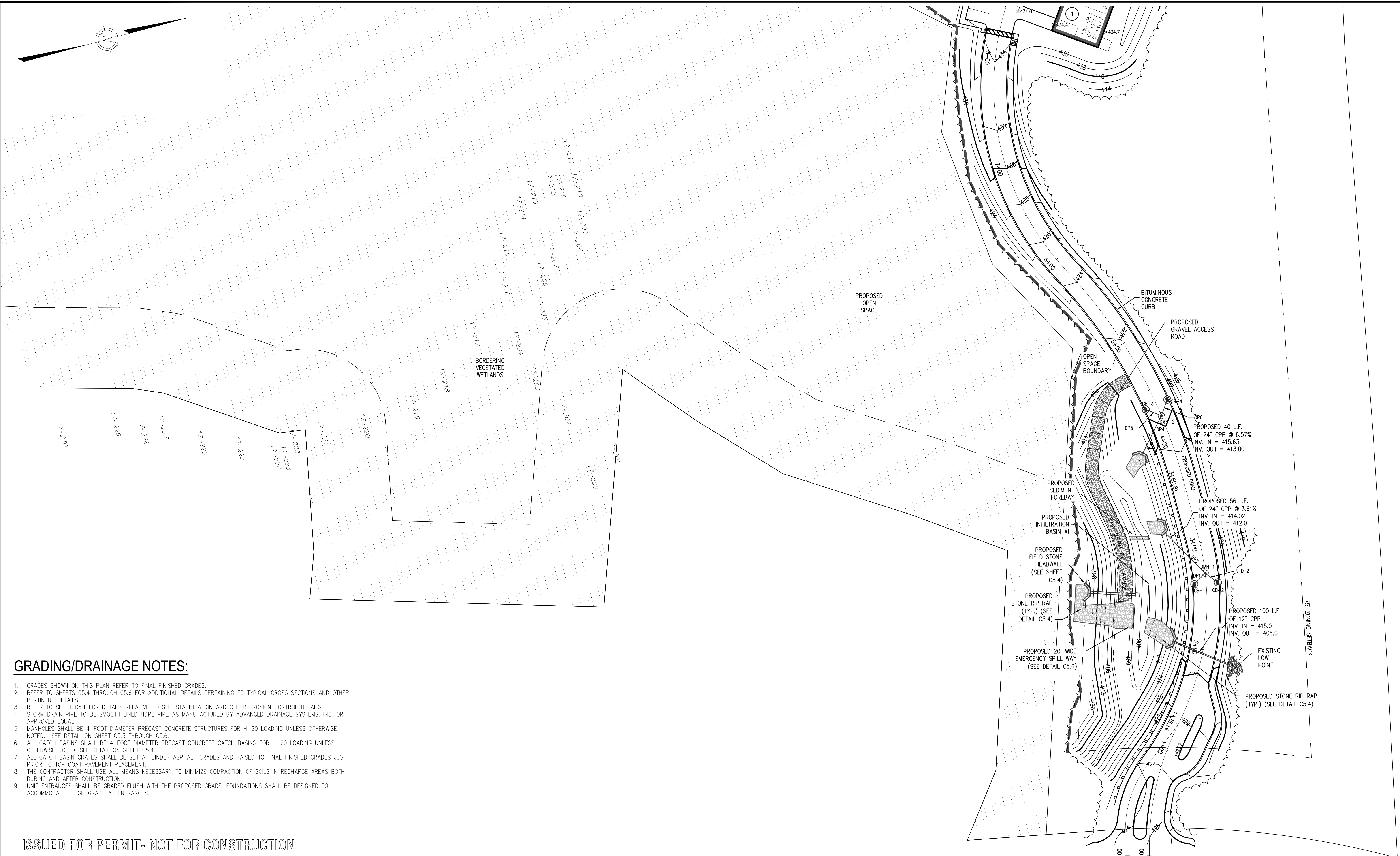
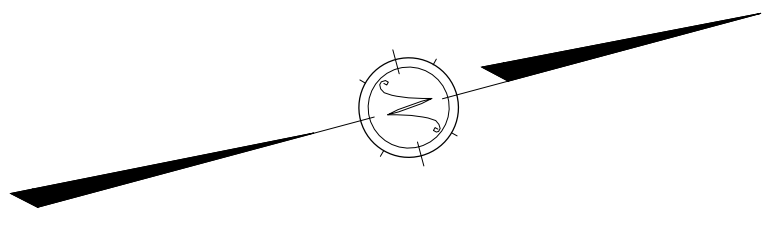


DATE:	
DESIGN BY:	GSR
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CHECKED BY:	GSR

PLAN/PROFILE SHEET 4 HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
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JOB NO. 5676  
 DRAWING NO. 5676-PRO  
 SHEET NO. **C4.4**





**GRADING/DRAINAGE NOTES:**

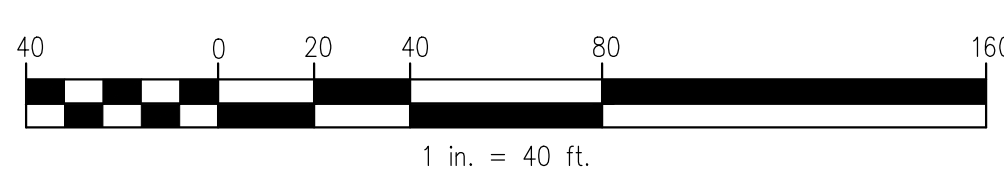
1. GRADES SHOWN ON THIS PLAN REFER TO FINAL FINISHED GRADES.
2. REFER TO SHEETS C5.4 THROUGH C5.6 FOR ADDITIONAL DETAILS PERTAINING TO TYPICAL CROSS SECTIONS AND OTHER PERTINENT DETAILS.
3. REFER TO SHEET C6.1 FOR DETAILS RELATIVE TO SITE STABILIZATION AND OTHER EROSION CONTROL DETAILS.
4. STORM DRAIN PIPE TO BE SMOOTH LINED HDPE PIPE AS MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS, INC. OR APPROVED EQUAL.
5. MANHOLES SHALL BE 4-FOOT DIAMETER PRECAST CONCRETE STRUCTURES FOR H-20 LOADING UNLESS OTHERWISE NOTED. SEE DETAIL ON SHEET C5.3 THROUGH C5.6.
6. ALL CATCH BASINS SHALL BE 4-FOOT DIAMETER PRECAST CONCRETE CATCH BASINS FOR H-20 LOADING UNLESS OTHERWISE NOTED. SEE DETAIL ON SHEET C5.4.
7. ALL CATCH BASIN GRATES SHALL BE SET AT BINDER ASPHALT GRADES AND RAISED TO FINAL FINISHED GRADES JUST PRIOR TO TOP COAT PAVEMENT PLACEMENT.
8. THE CONTRACTOR SHALL USE ALL MEANS NECESSARY TO MINIMIZE COMPACTION OF SOILS IN RECHARGE AREAS BOTH DURING AND AFTER CONSTRUCTION.
9. UNIT ENTRANCES SHALL BE GRADED FLUSH WITH THE PROPOSED GRADE. FOUNDATIONS SHALL BE DESIGNED TO ACCOMMODATE FLUSH GRADE AT ENTRANCES.

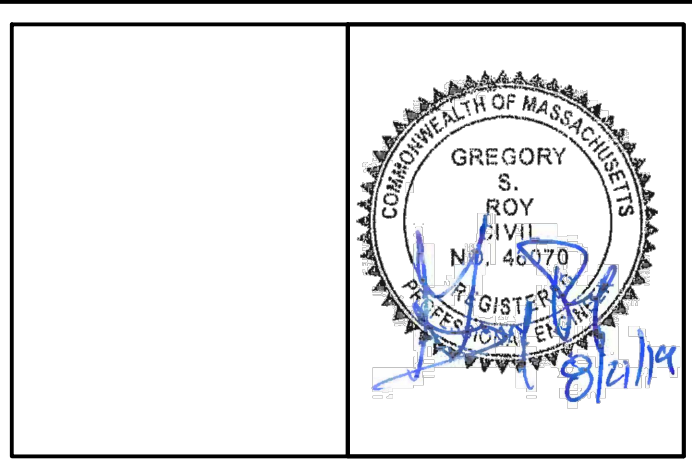
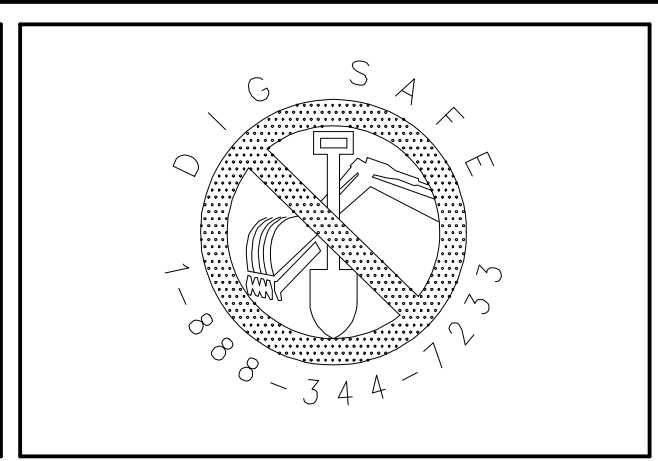
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 PHONE: (978) 779-6091 FAX: (978) 779-0260  
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OWNER:  
 KEN-CHRIS REALTY  
 62 SOUTH BOLTON ROAD  
 BOLTON, MA

APPLICANT:  
 KEN-CHRIS REALTY  
 62 SOUTH BOLTON ROAD  
 BOLTON, MA

SCALE:  
  
 1 in. = 40 ft.  
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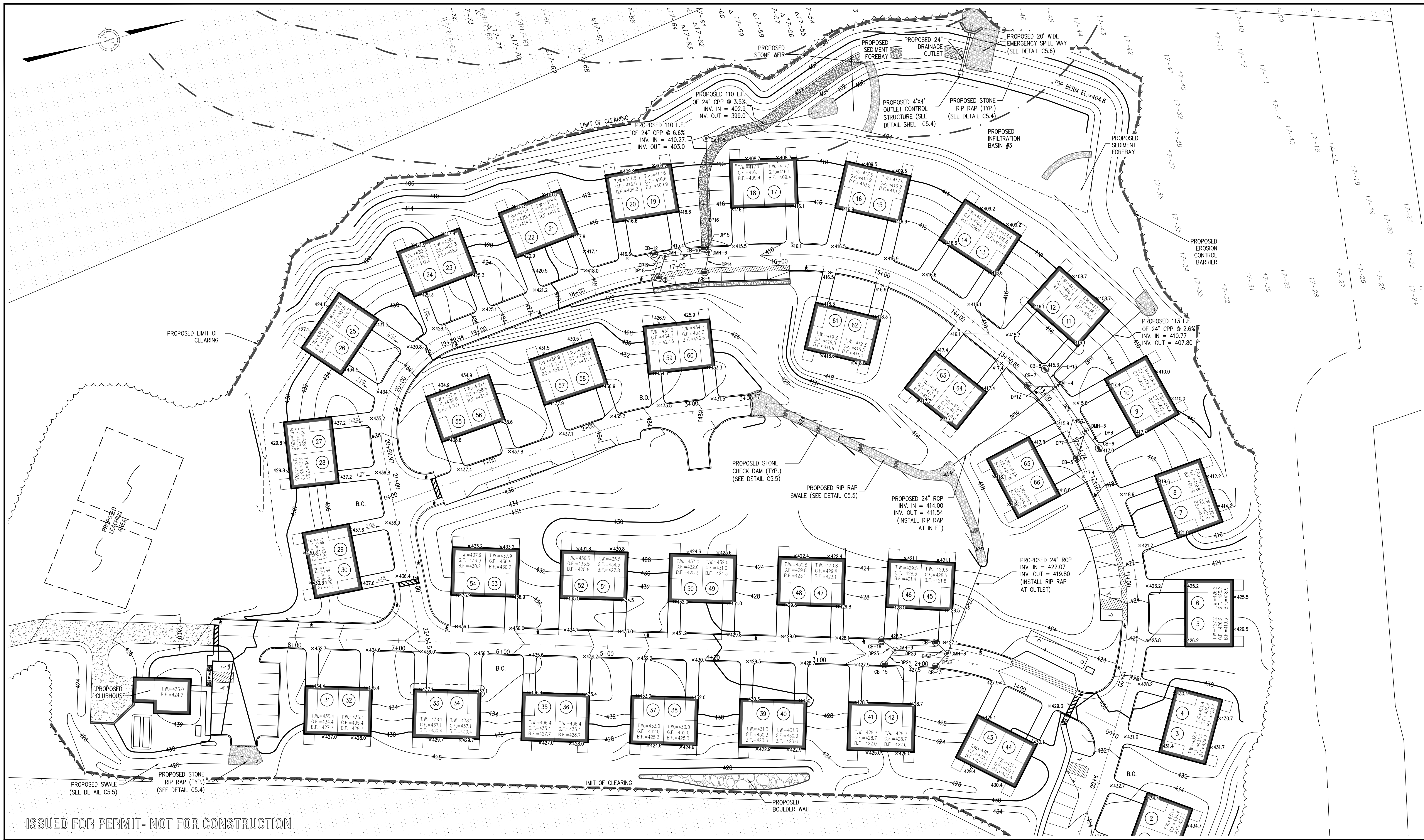


DATE:	7/12/18
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GRADING PLAN 1 HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
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JOB NO. 5676  
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 SHEET NO. **C5.1**





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OWNER:

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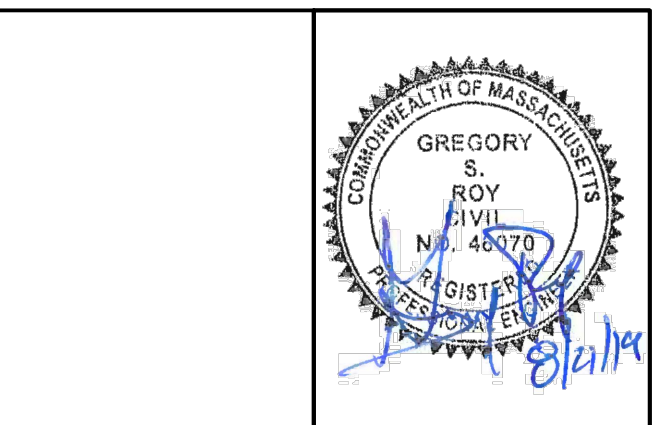
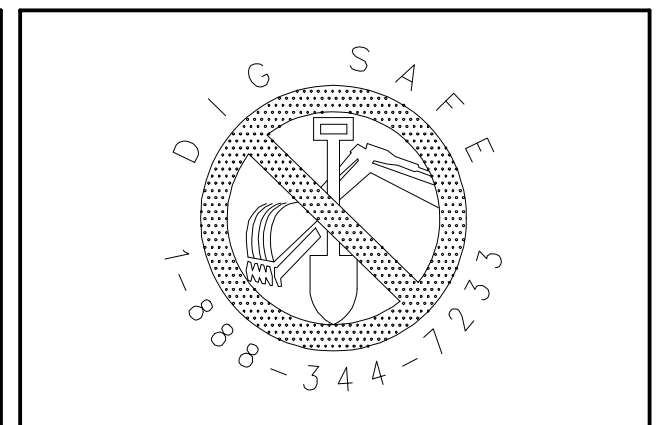
APPLICANT:

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62 SOUTH BOLTON ROAD  
BOLTON, MA

SCALE:

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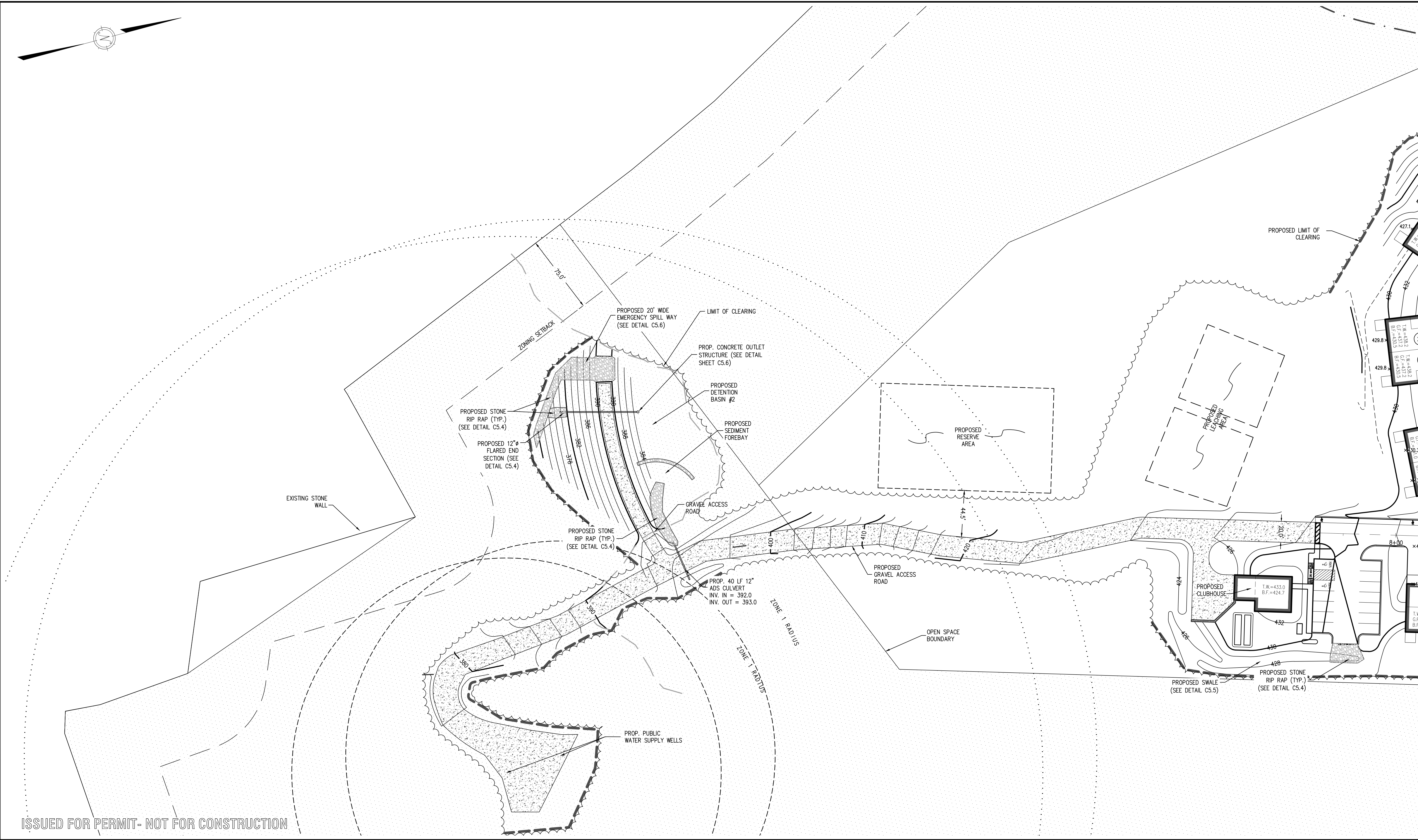
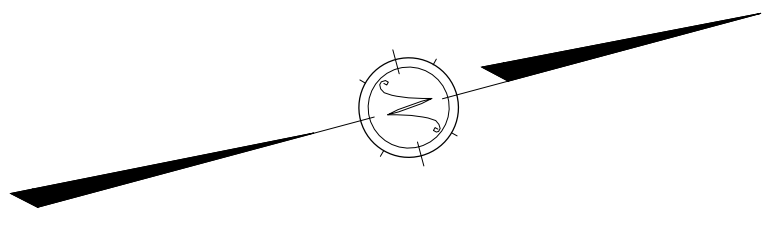
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NO.	DATE	DESCRIPTION	BY
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV
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03.	8/21/19	NOT REVISED	

JOB NO. 5676

DRAWING NO. 5676-GRD

SHEET NO. **C5.2**





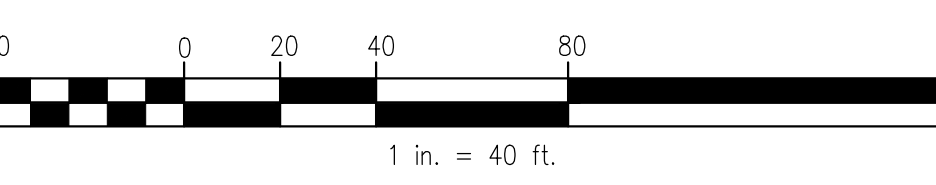
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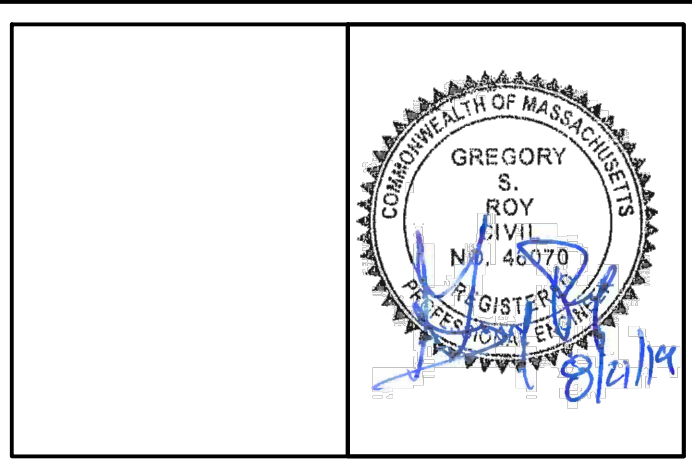
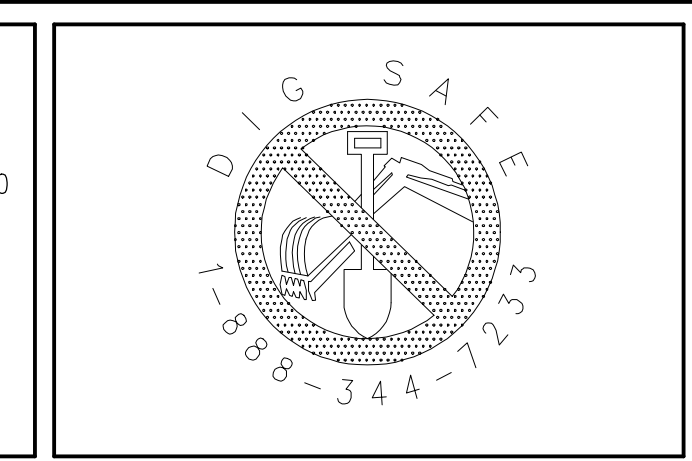
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SCALE:  
  
 1 in. = 40 ft.

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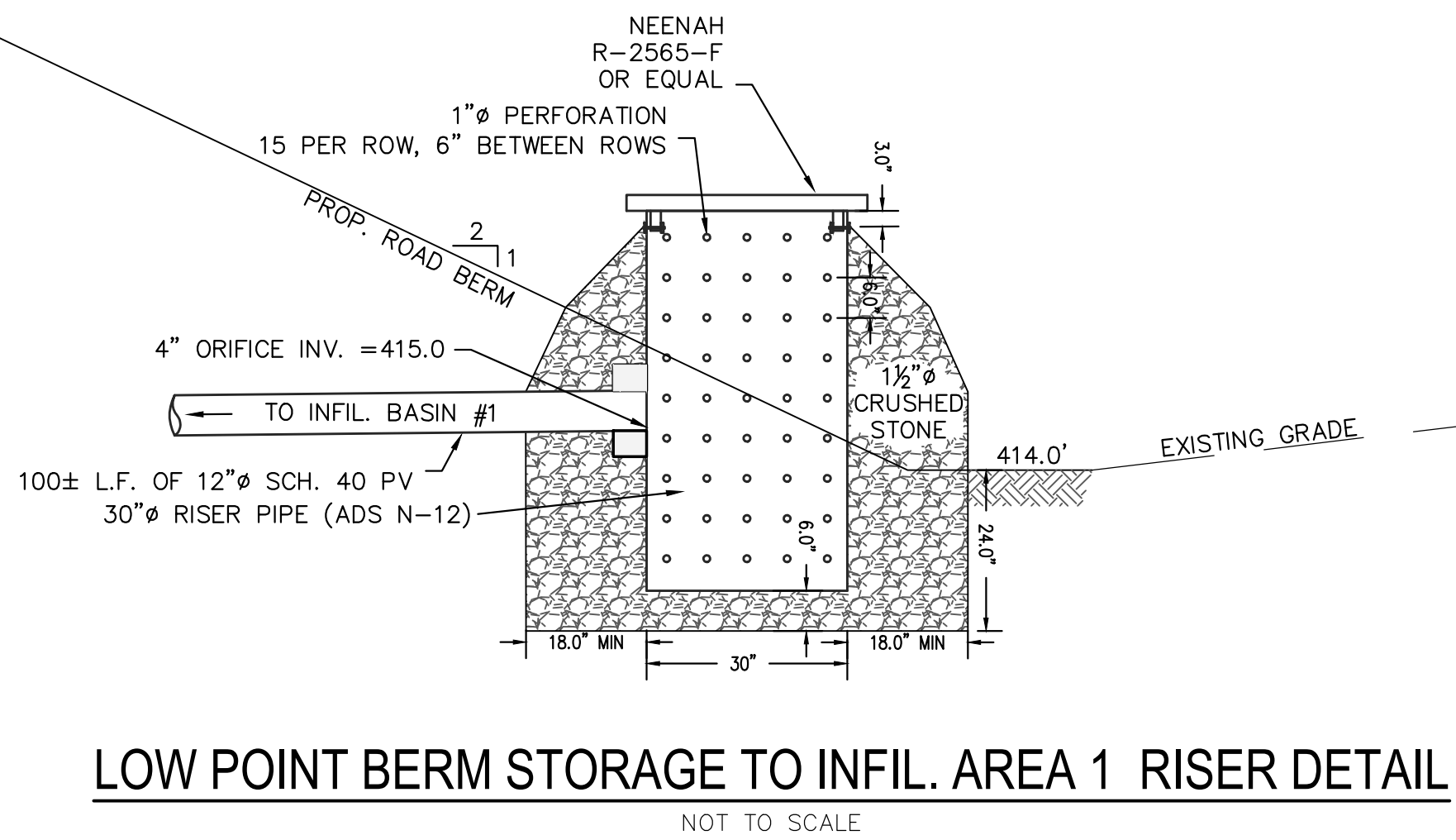
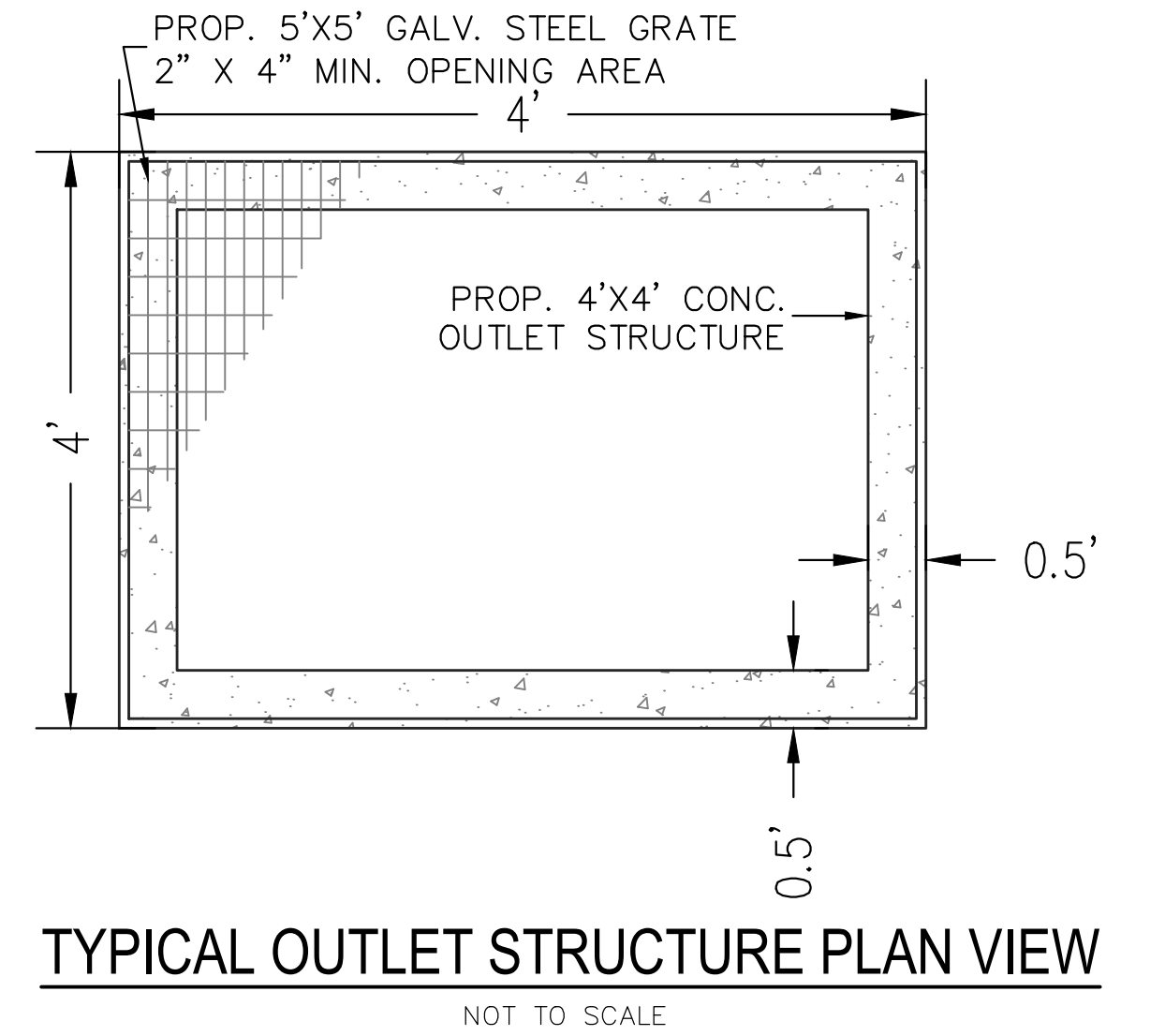
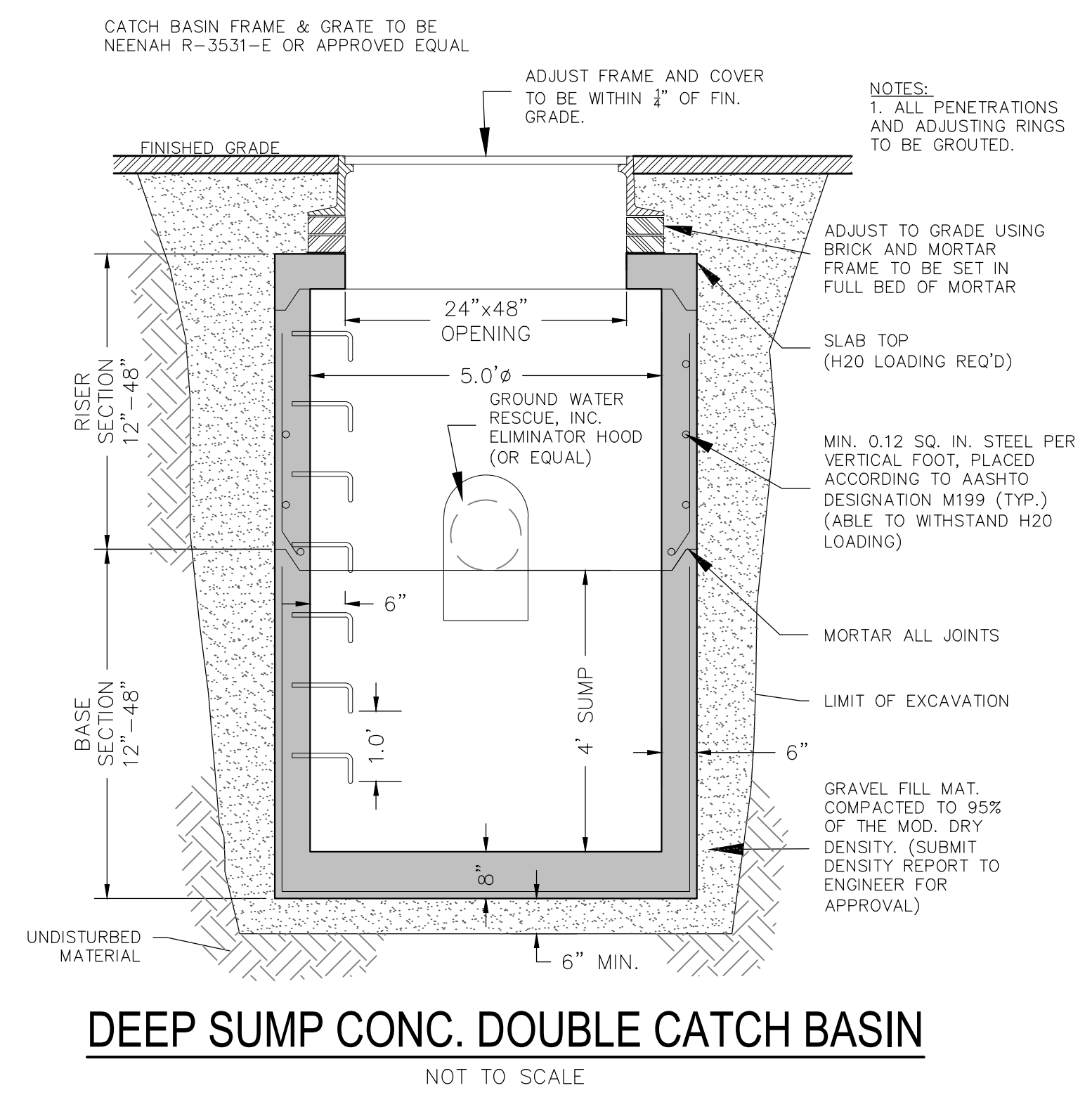
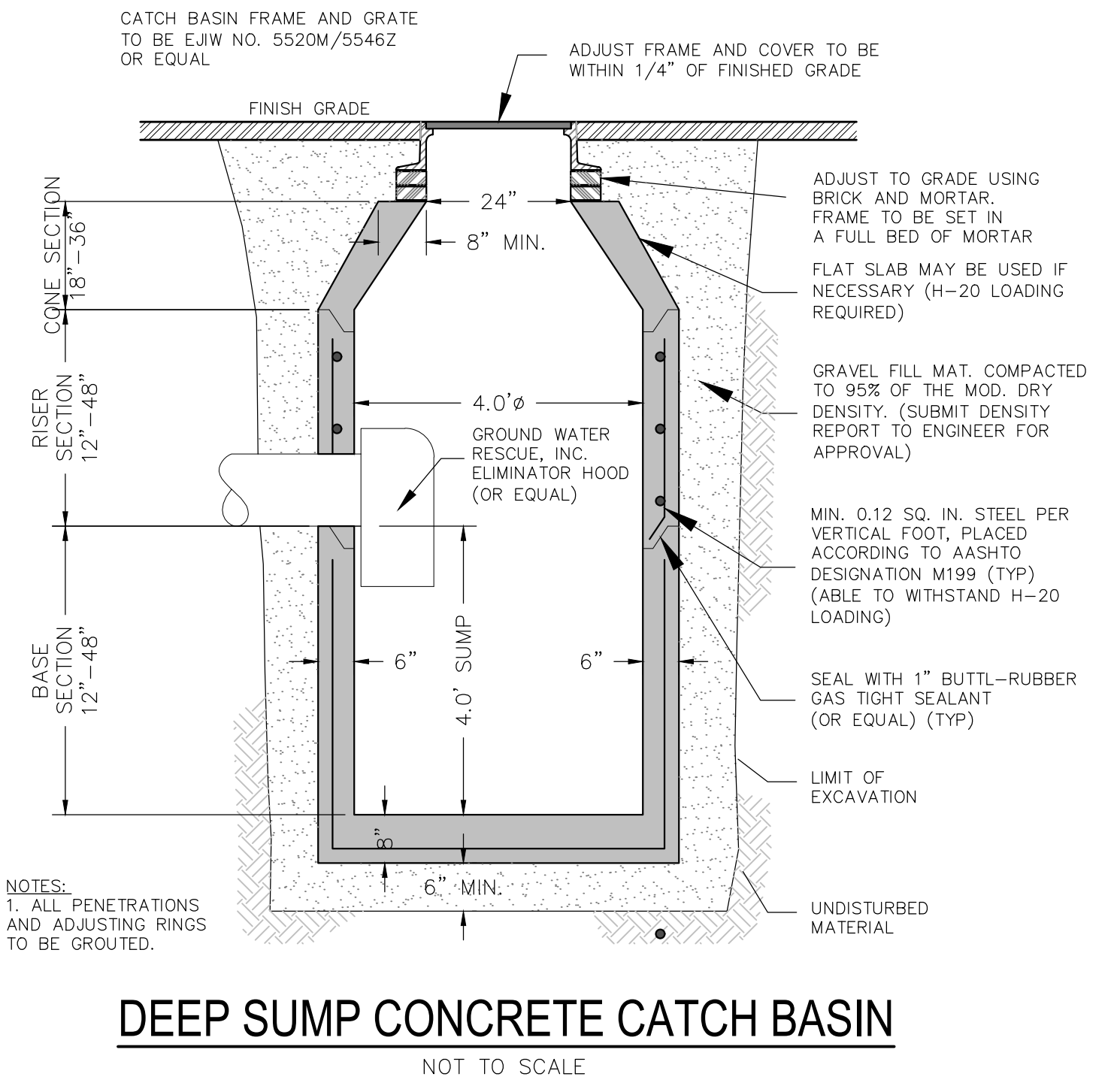
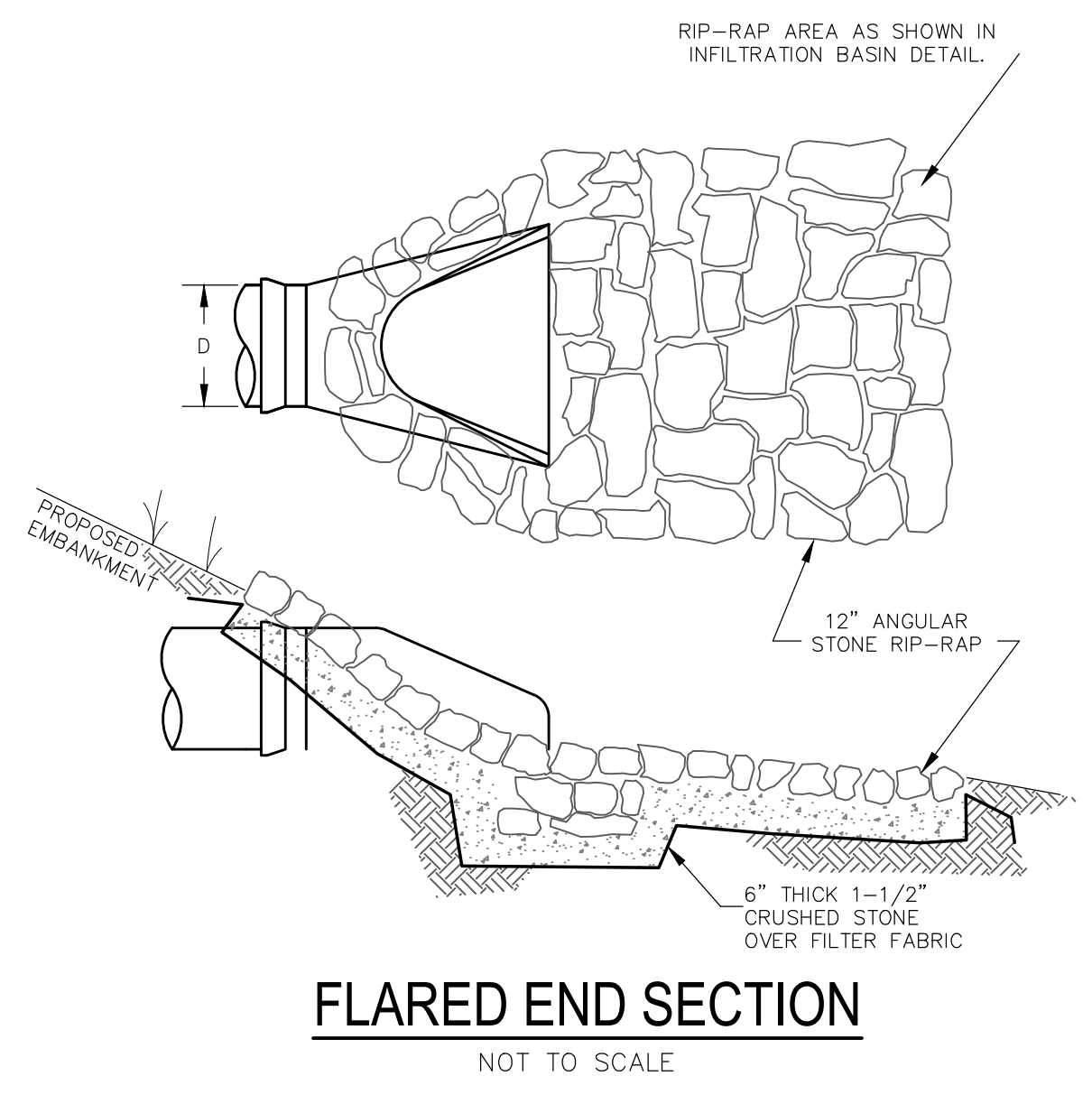
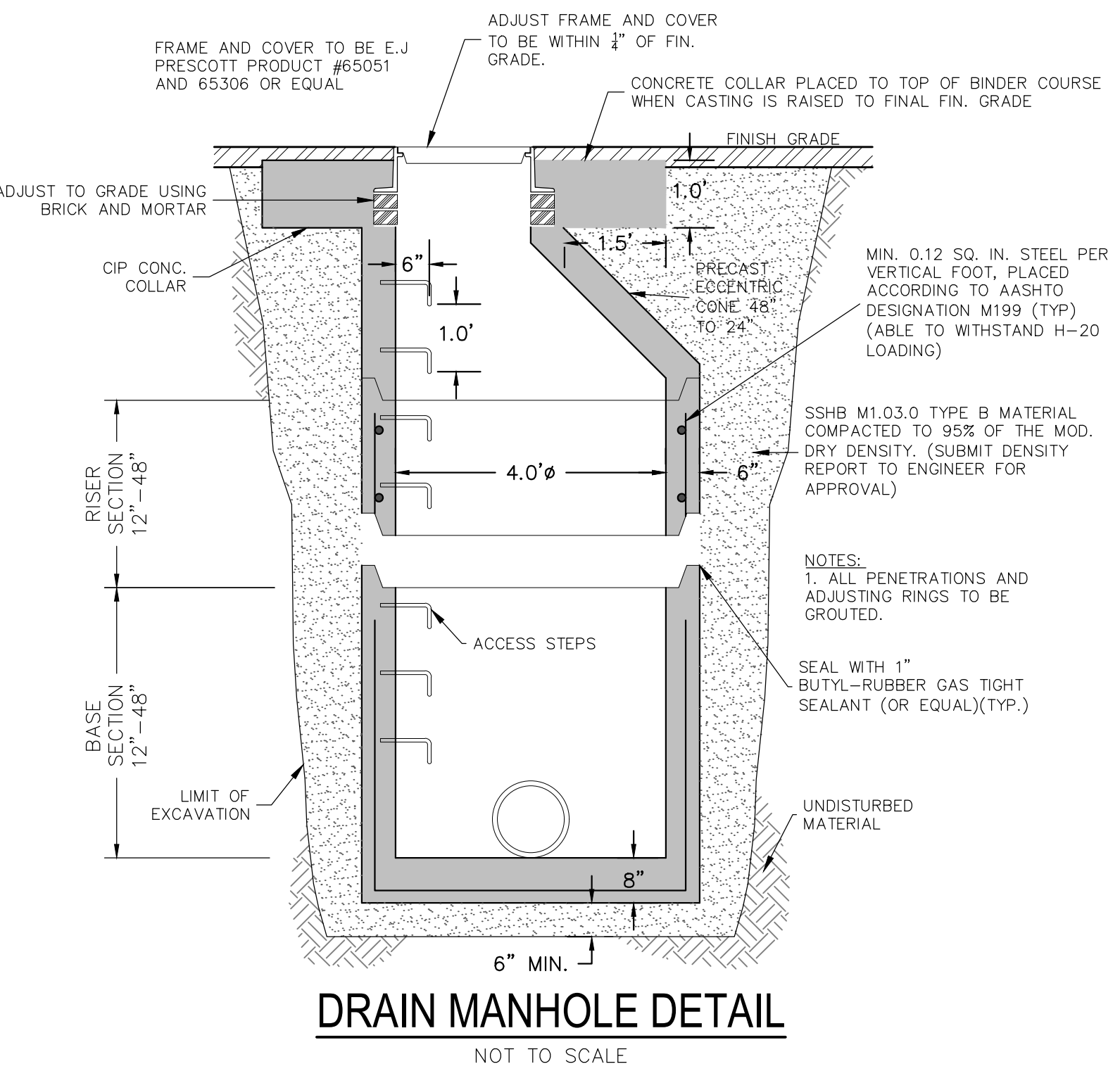
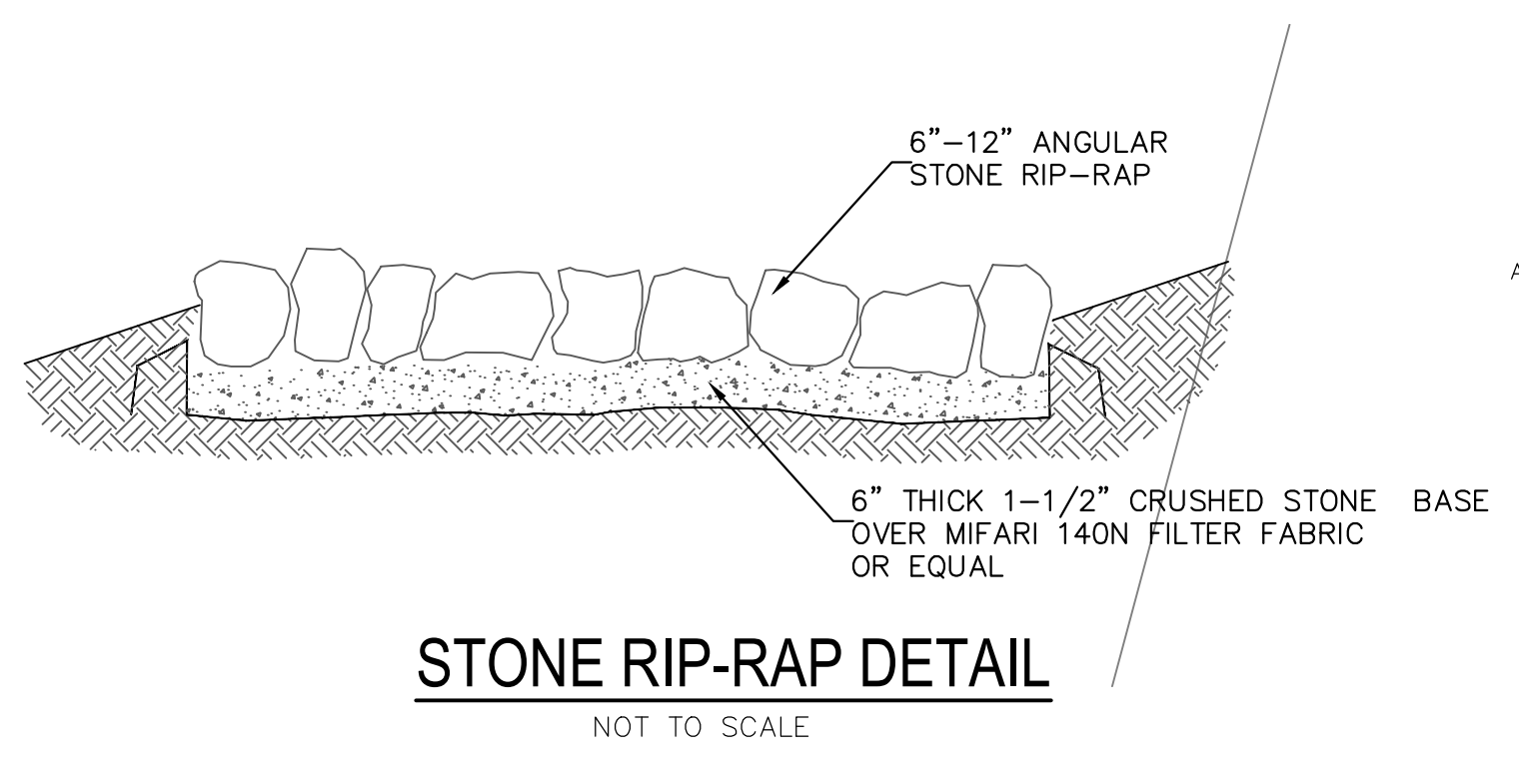
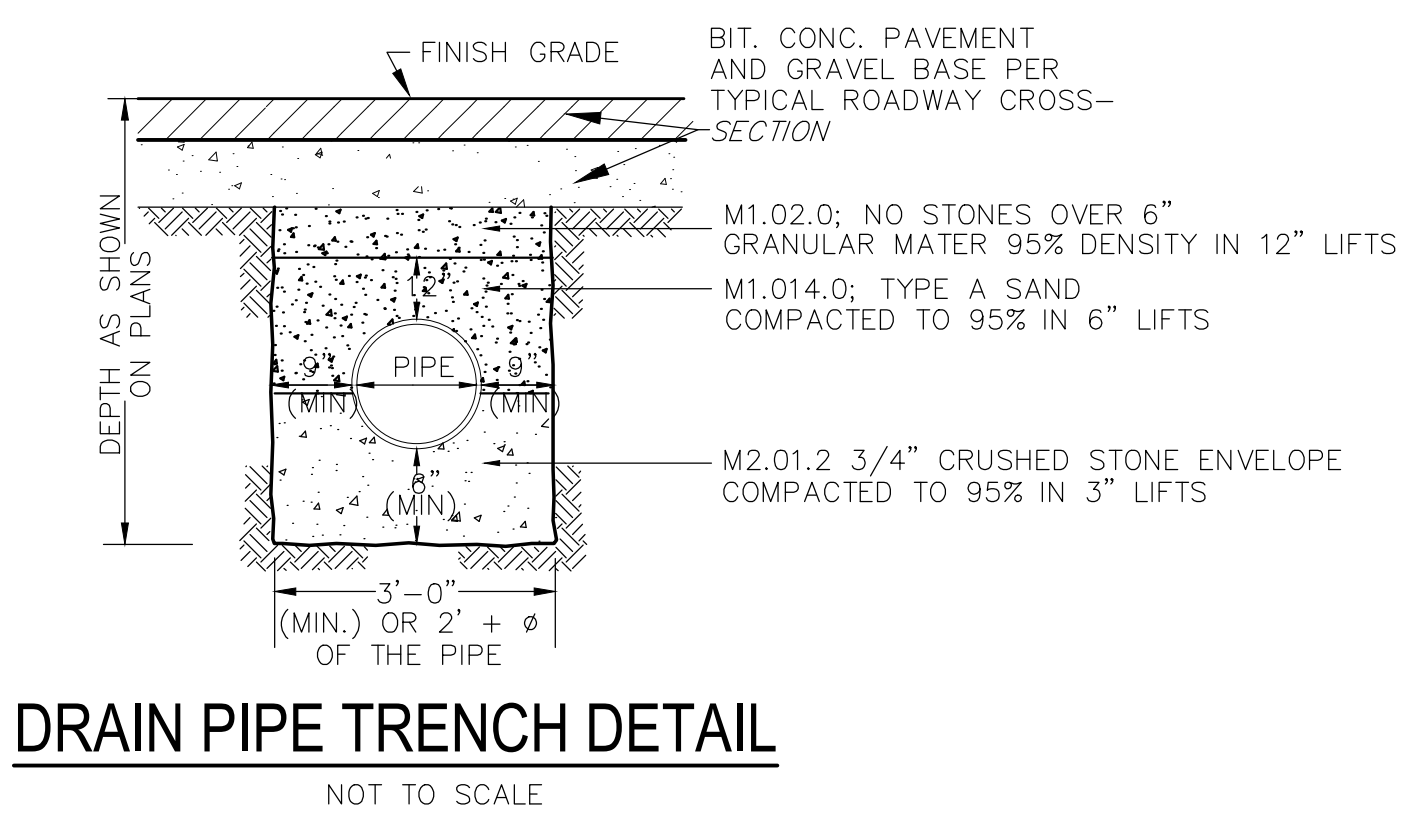
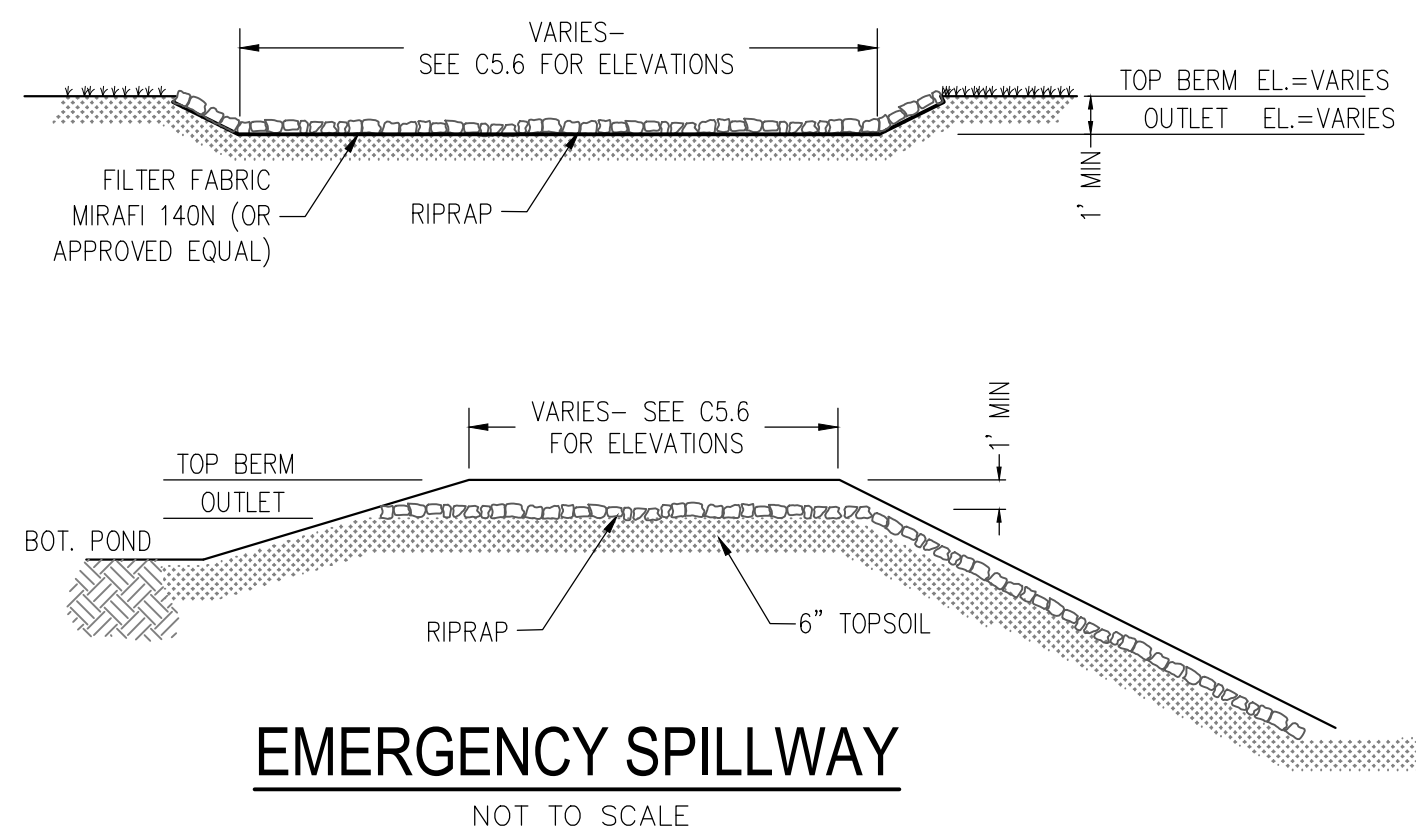


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 SHEET NO. **C5.3**





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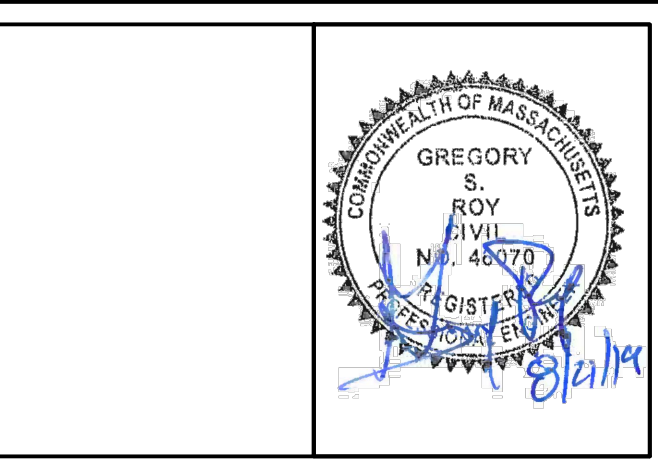
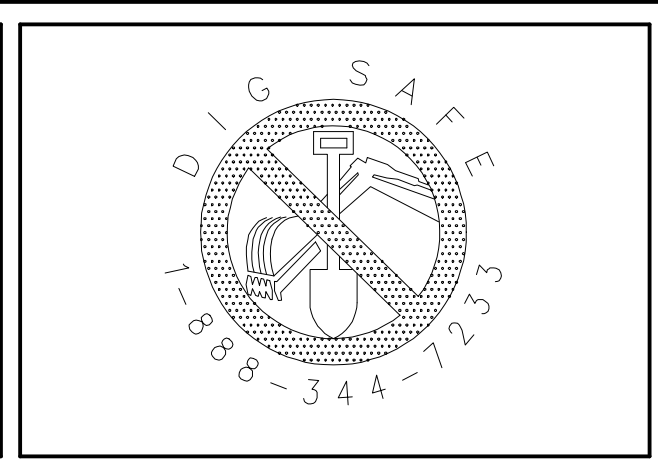
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 BOLTON, MA

APPLICANT:  
 KEN-CHRIS REALTY  
 62 SOUTH BOLTON ROAD  
 BOLTON, MA

SCALE:

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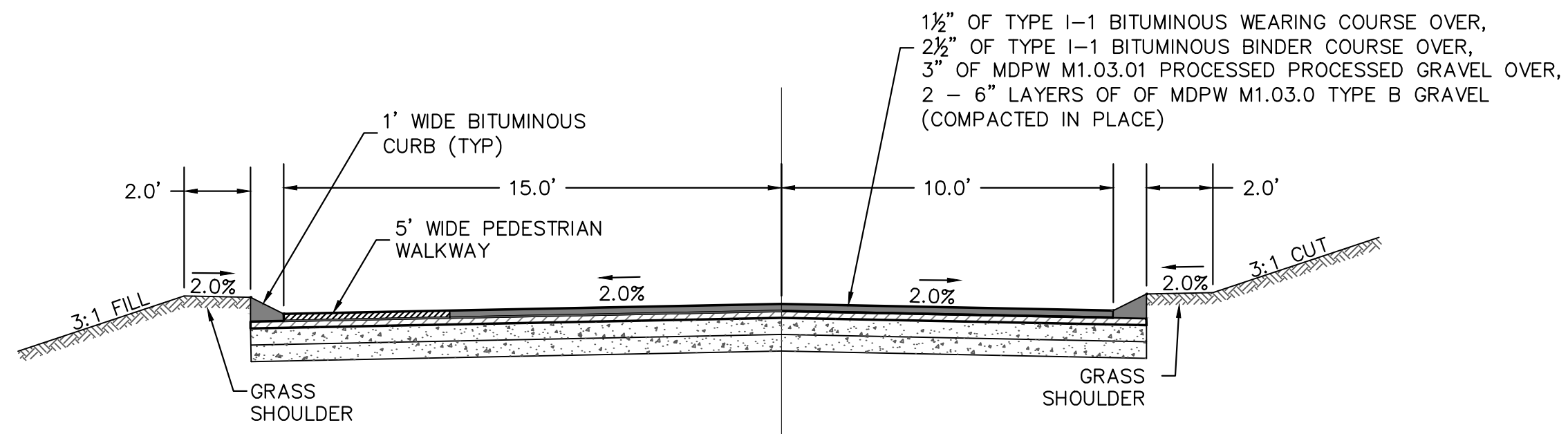
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NO.	DATE	DESCRIPTION	BY
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JOB NO. 5676

DRAWING NO. 5676-GRD DET 1

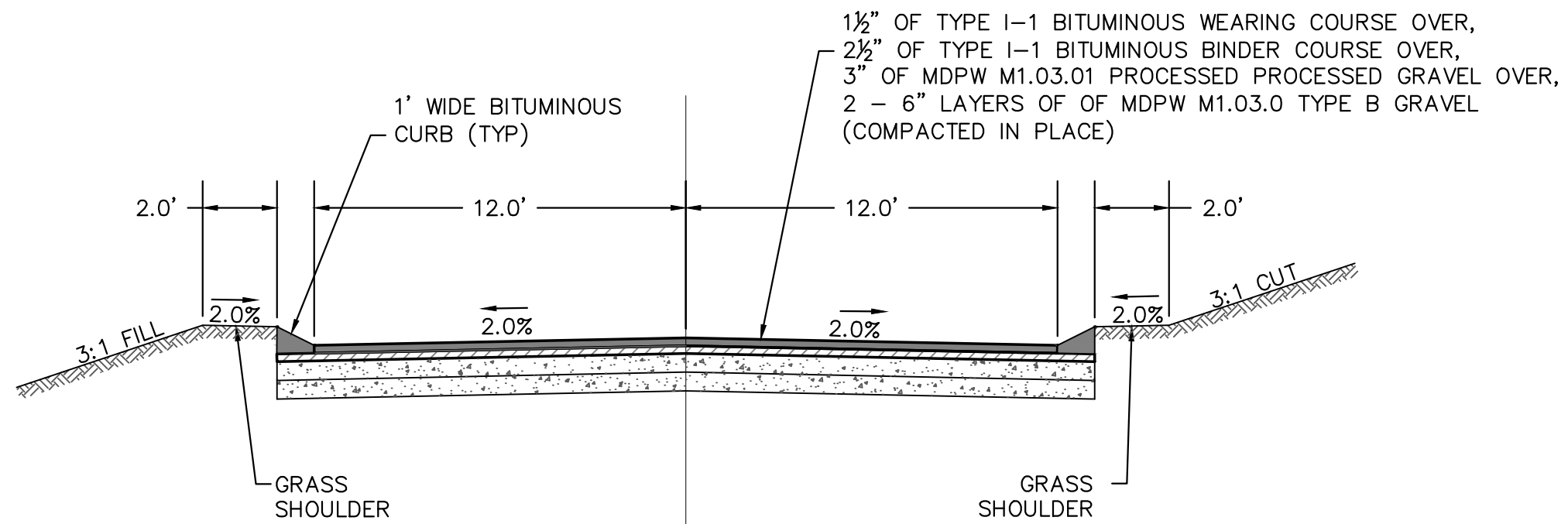
SHEET NO. **C5.4**



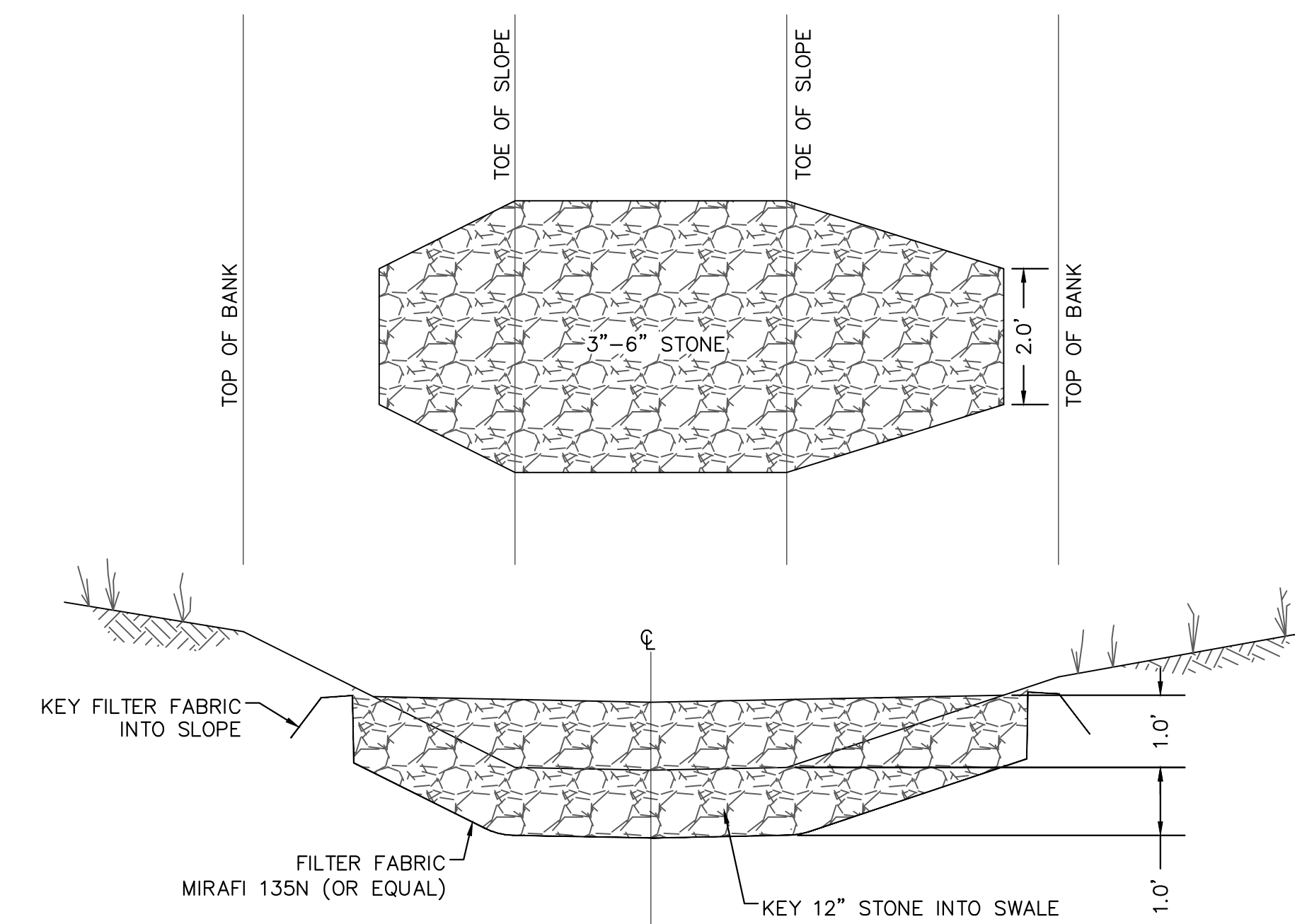


TYPICAL 25' WIDE PAVEMENT CROSS-SECTION

- PAVING SPECIFICATIONS**  
IN ACCORDANCE TO SECTION 401 OF THE TOWN OF BERLIN SUBDIVISION RULES AND REGULATIONS
1. A BINDER COURSE OF CLASS I, TYPE 1, BITUMINOUS CONCRETE PAVEMENT WITH A ROLLED DEPTH OF TWO AND 1/2 INCHES (2 1/2"), APPLIED IN TWO COURSES, SHALL BE INSTALLED OVER THE GRAVEL BASE.
  2. THE BINDER COURSE SHALL BE EXPOSED TO ONE WINTER SEASON PRIOR TO THE APPLICATION OF THE WEARING SURFACE.
  3. PRIOR TO INSTALLATION OF THE WEARING SURFACE, THE BINDER SHALL BE SWEEPED CLEAN, DRIED IF NECESSARY, AND TREATED WITH AN ASPHALT EMULSION OR TACK COAT TO ENSURE A SATISFACTORY BOND BETWEEN PAVEMENT COURSES.
  4. THE BINDER COURSE SHALL BE TREATED FOR THE FULL WIDTH OF THE ROADWAY WITH A WEARING SURFACE OF 1 1/2 INCHES OF CLASS I, TYPE 1, BITUMINOUS CONCRETE PAVEMENT APPLIED IN ONE COURSE.
  5. IN ORDER TO MINIMIZE DAMAGE TO THE WEARING SURFACE, THE WEARING COURSE SHALL NOT BE APPLIED UNTIL ALL CONSTRUCTION ON LOTS SERVED BY THE SUBDIVISION STREETS IS IN THE OPINION OF THE BOARD COMPLETED OR SUBSTANTIALLY COMPLETED.

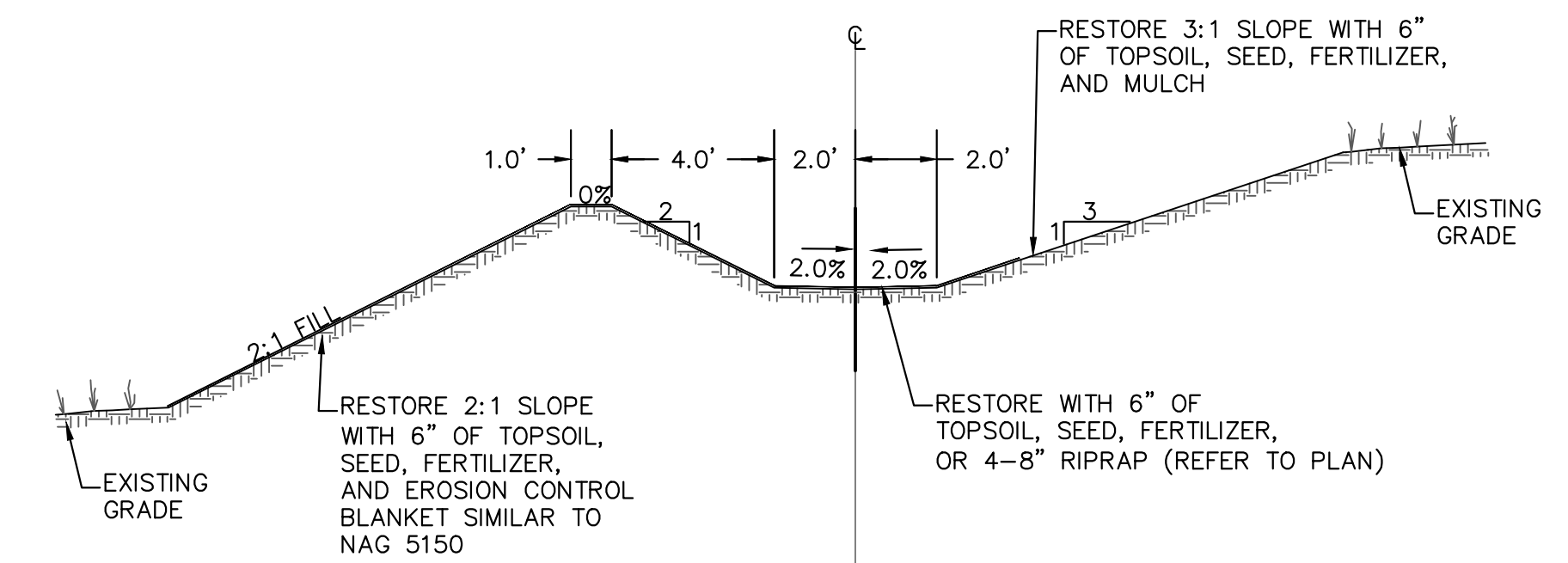


TYPICAL 24' WIDE PMNT. CROSS-SECTION



CHECK DAM DETAIL

SCALE: 1"=2'



SWALE CROSS-SECTION

NOT TO SCALE

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PREPARED BY:  

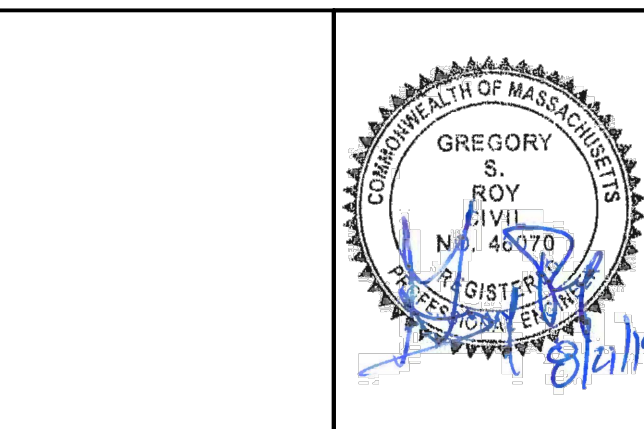
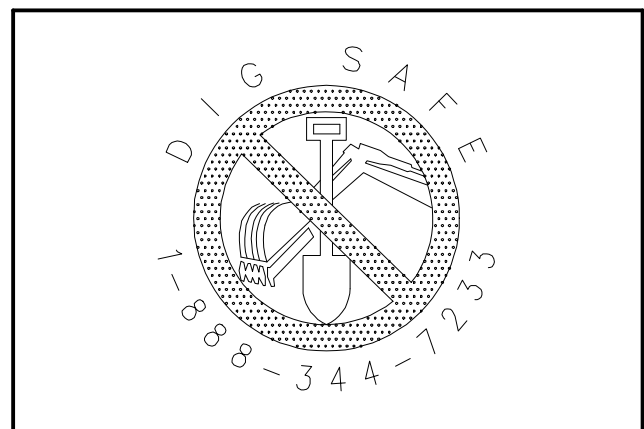
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SCALE:

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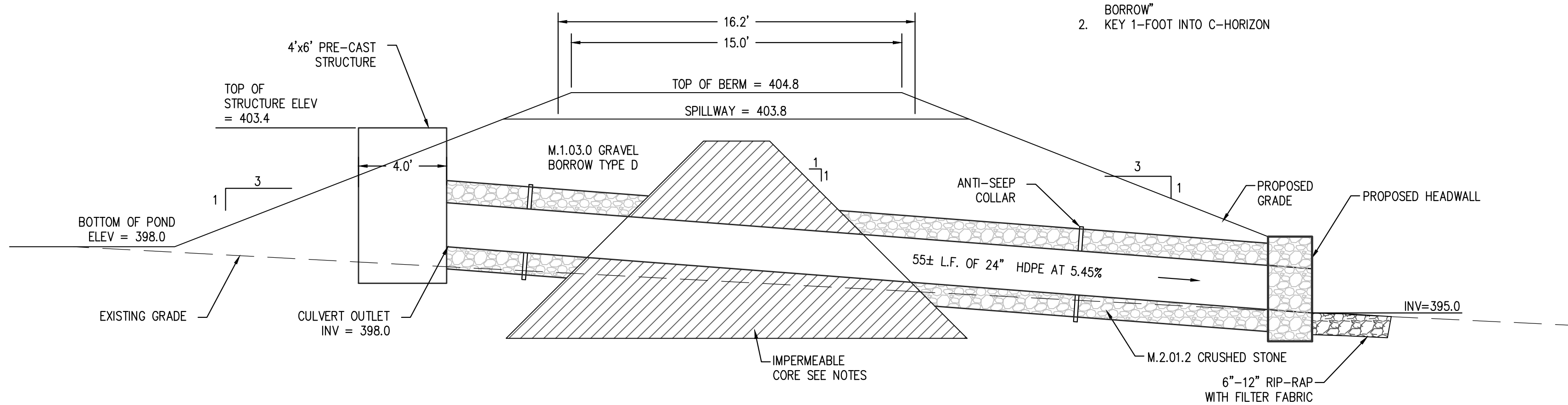
DATE:	7/12/18
DESIGN BY:	GSR
DRAWN BY:	GSR
CHECKED BY:	GSR

GRADING DETAILS 2 HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV
02.	6/7/19	ADDED WATER DISTRIBUTION DESIGN/SHEETS	GSR
03.	8/21/19	NOT REVISED	

JOB NO. 5676  
 DRAWING NO. 5676-GRD DET 3  
 SHEET NO. **C5.5**

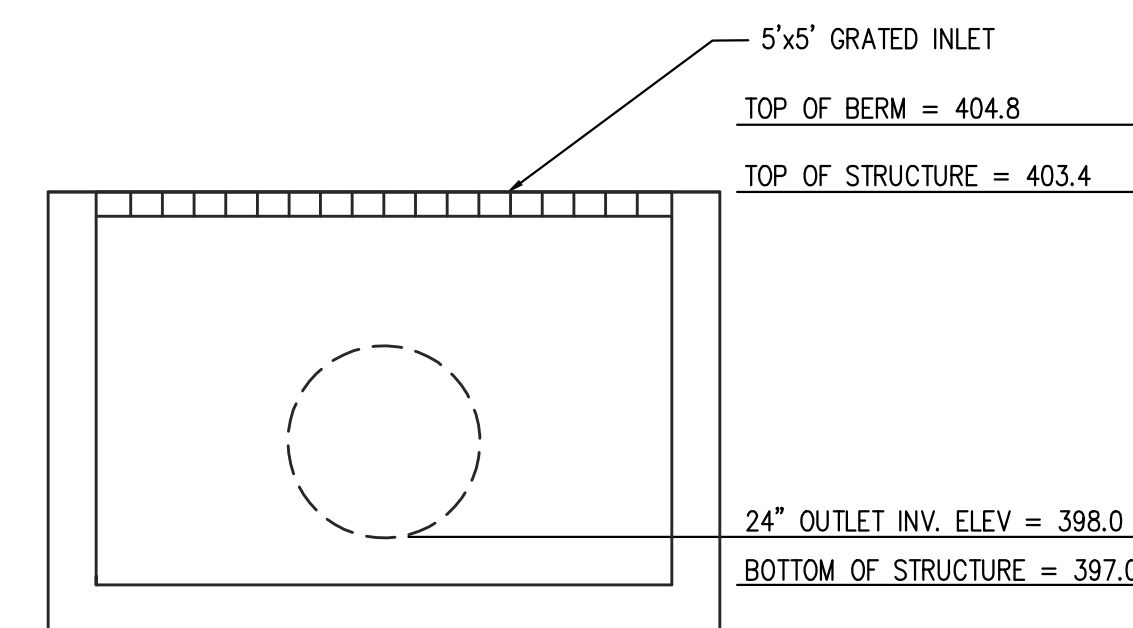


IMPERMEABLE CORE NOTES:  
 1. REFER TO MASS DOT, DIVISION III MATERIALS SPECIFICATIONS SECTION M1.08.0 "IMPERVIOUS SOIL BORROW"  
 2. KEY 1-FOOT INTO C-HORIZON



**BASIN #3 OUTLET STRUCTURE DETAIL**

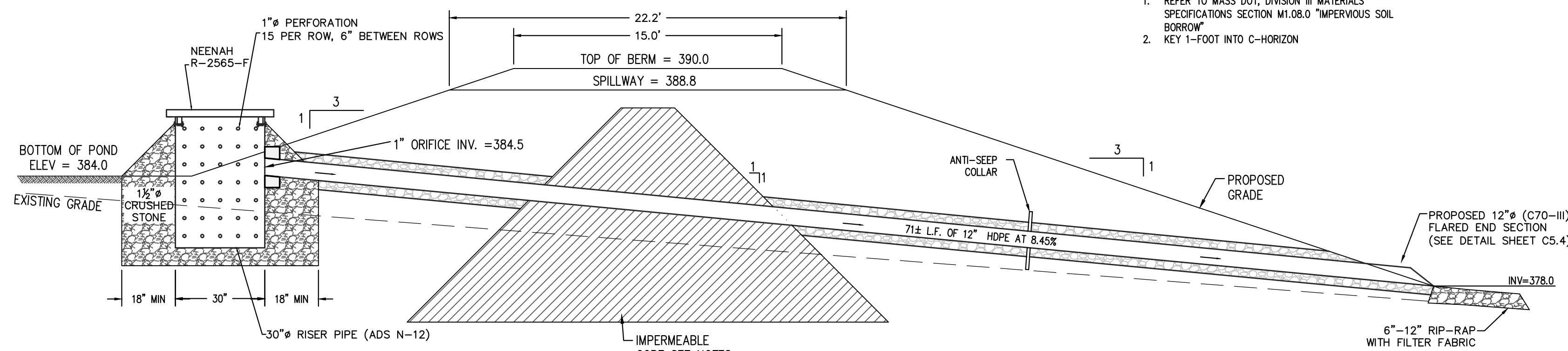
NOT TO SCALE



**FRONT VIEW**

SCALE: 1"=2'

IMPERMEABLE CORE NOTES:  
 1. REFER TO MASS DOT, DIVISION III MATERIALS SPECIFICATIONS SECTION M1.08.0 "IMPERVIOUS SOIL BORROW"  
 2. KEY 1-FOOT INTO C-HORIZON

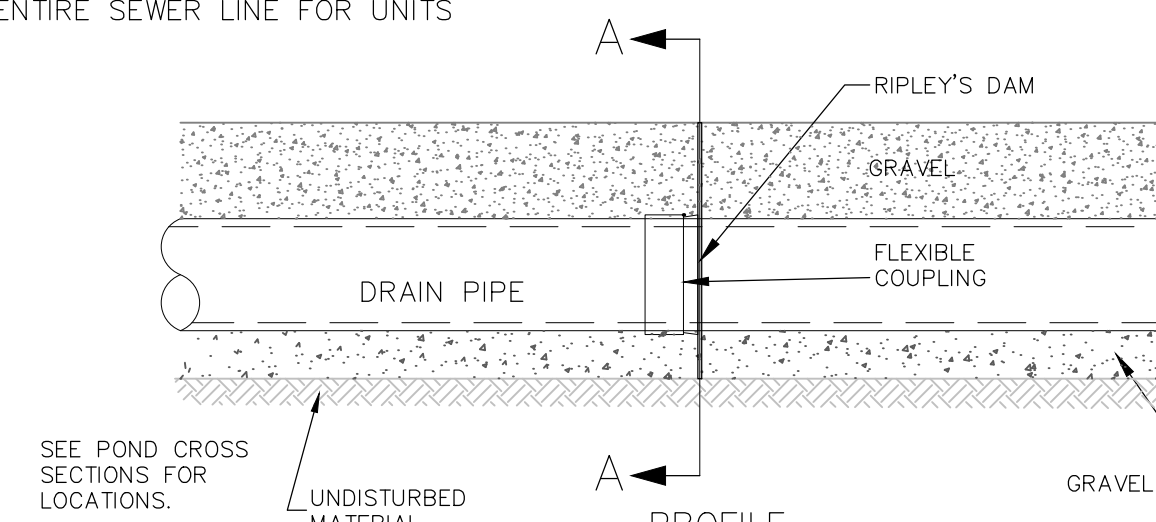
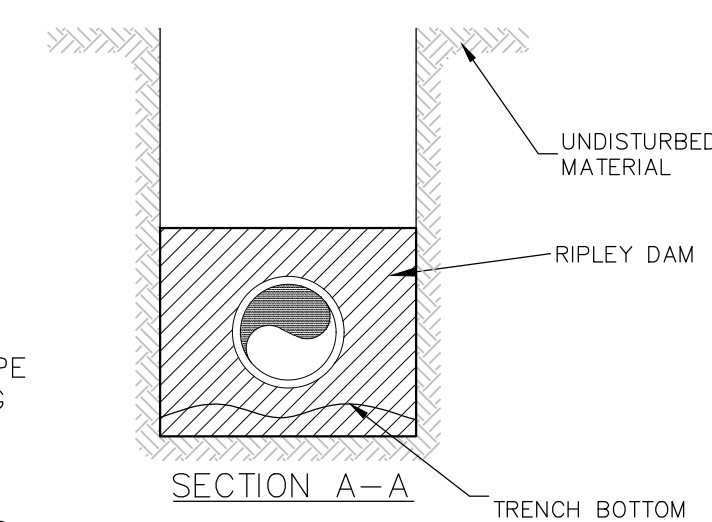


**BASIN #2 OUTLET STRUCTURE DETAIL**

NOT TO SCALE

ANTI-SEEP COLLAR NOTES:

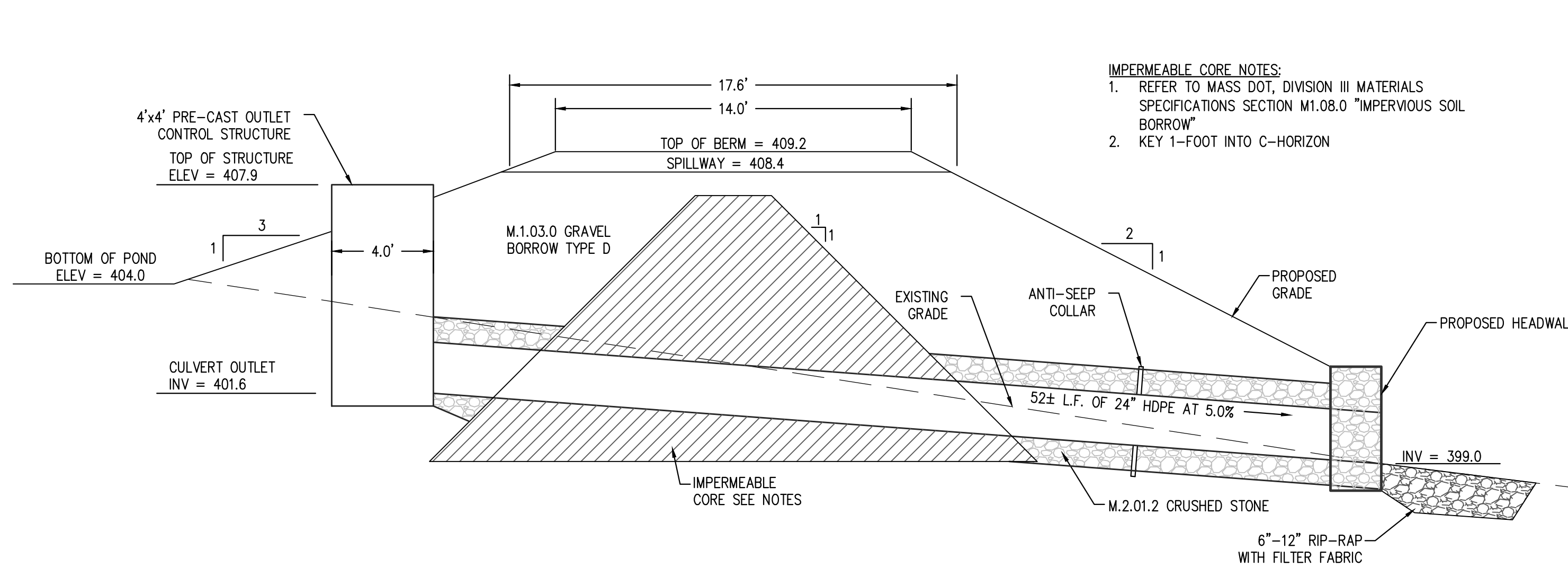
- ANTI-SEEP COLLARS TO BE INSTALLED EVERY 100' ALONG SEWER AND DRAINAGE LINES IN LOCATIONS WHERE PROPOSED PIPE IS GREATER THAN 5 FEET BELOW EXISTING GRADE (SEE STATIONS IN TABLE).
- ANTI-SEEP COLLARS TO BE INSTALLED ALONG THE ENTIRE SEWER LINE FOR UNITS 10-31.



**ANTI-SEEP COLLAR DETAIL**

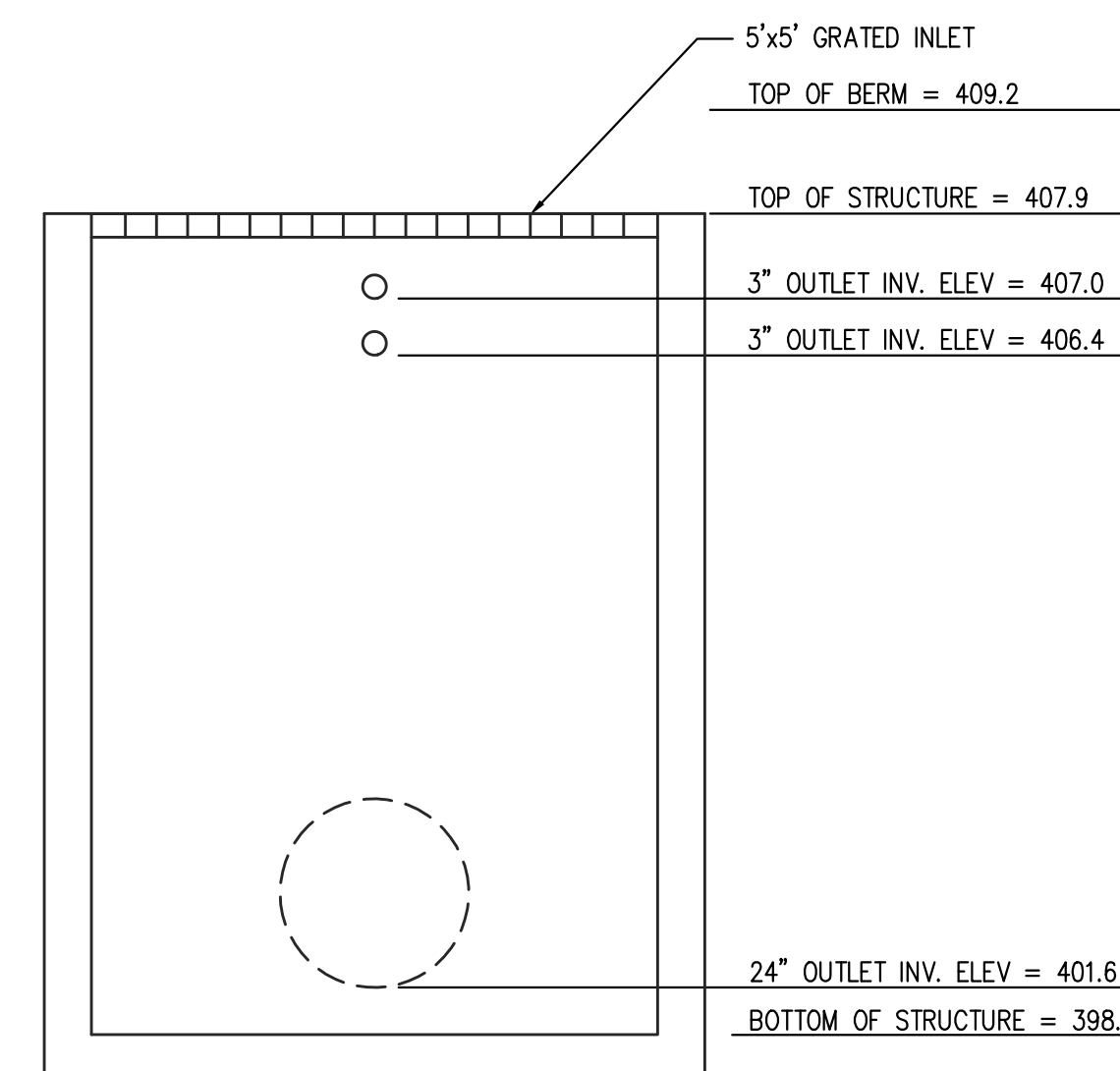
NOT TO SCALE

IMPERMEABLE CORE NOTES:  
 1. REFER TO MASS DOT, DIVISION III MATERIALS SPECIFICATIONS SECTION M1.08.0 "IMPERVIOUS SOIL BORROW"  
 2. KEY 1-FOOT INTO C-HORIZON



**BASIN #1 OUTLET STRUCTURE DETAIL**

NOT TO SCALE



**FRONT VIEW**

SCALE: 1"=2'

ISSUED FOR PERMIT- NOT FOR CONSTRUCTION

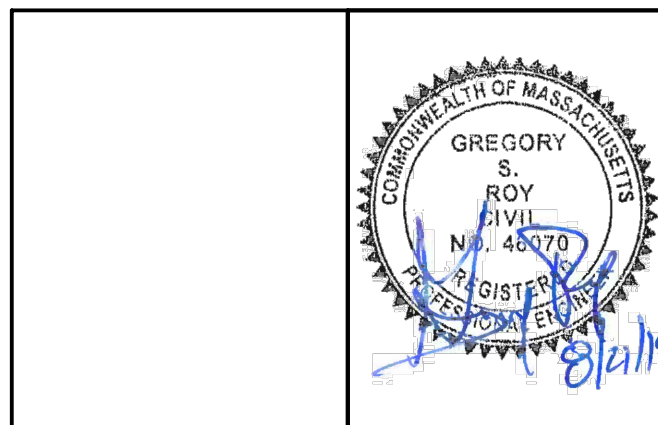
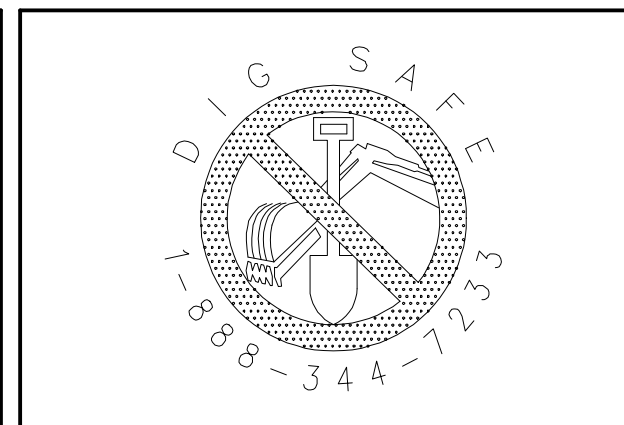
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SCALE:

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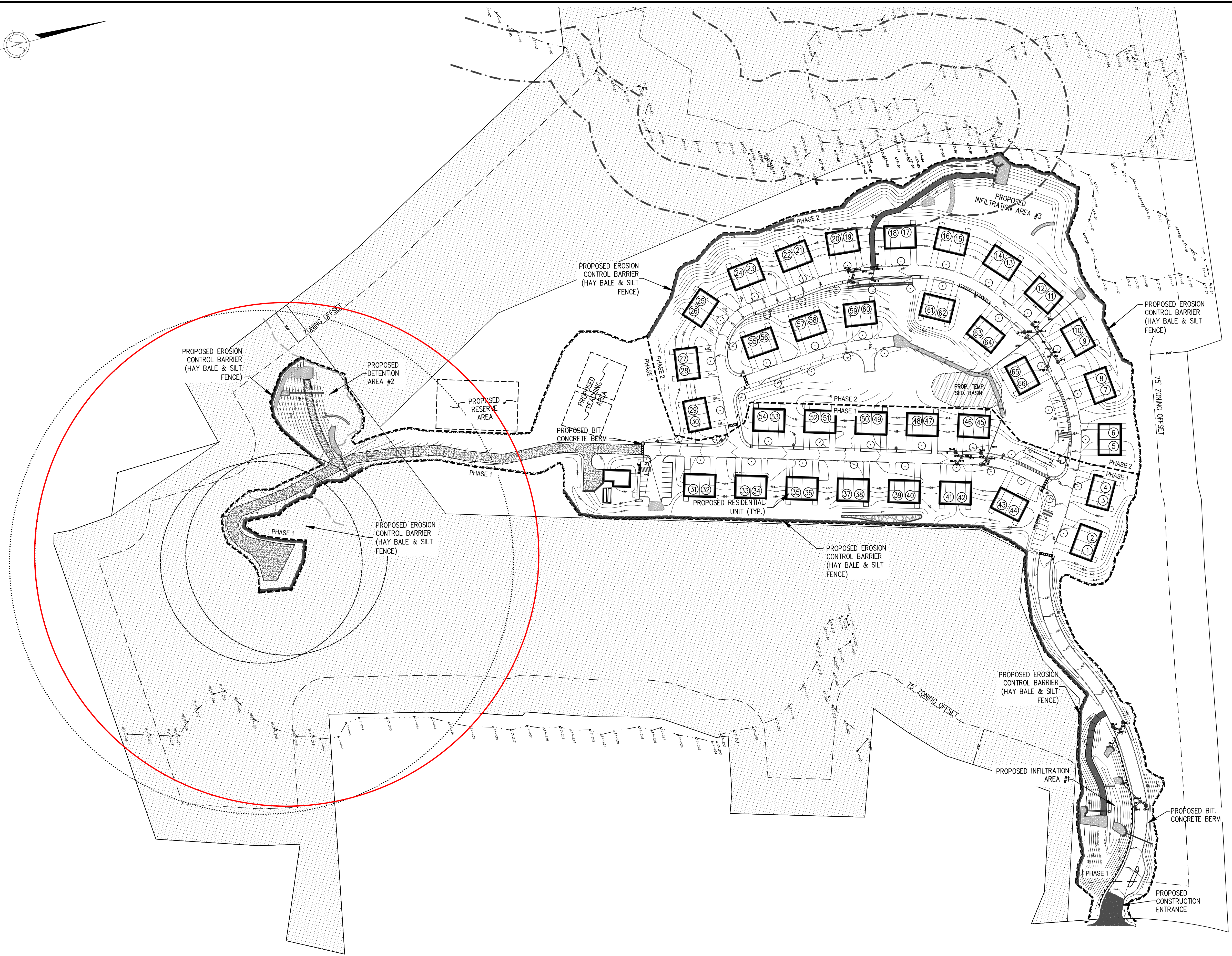
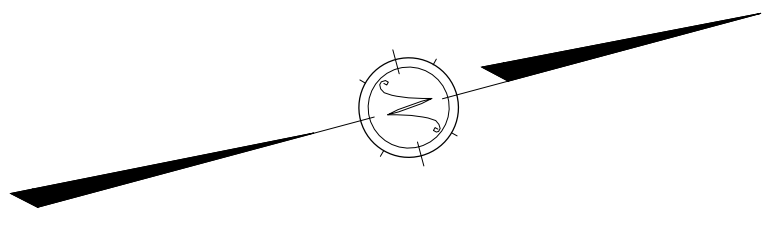
GRADING DETAILS 3 HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV
02.	6/7/19	ADDED WATER DISTRIBUTION DESIGN/SHEETS	GSR
03.	8/21/19	NOT REVISED	

JOB NO. 5676

DRAWING NO. 5676-GRD DET 4

SHEET NO. **C5.6**





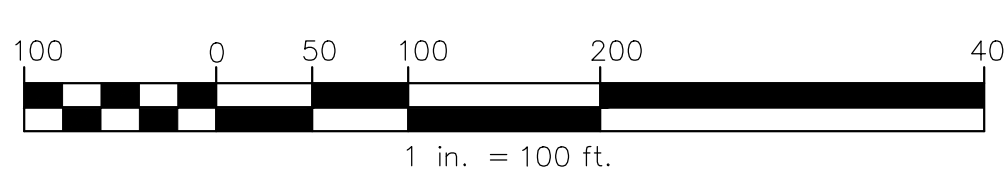
ISSUED FOR PERMIT- NOT FOR CONSTRUCTION

PREPARED BY:  

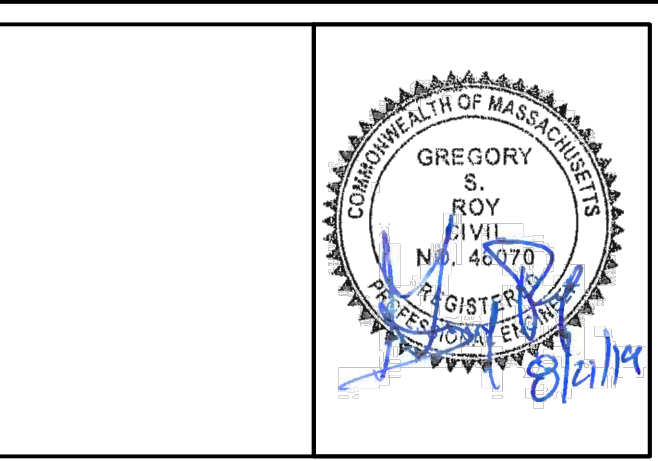
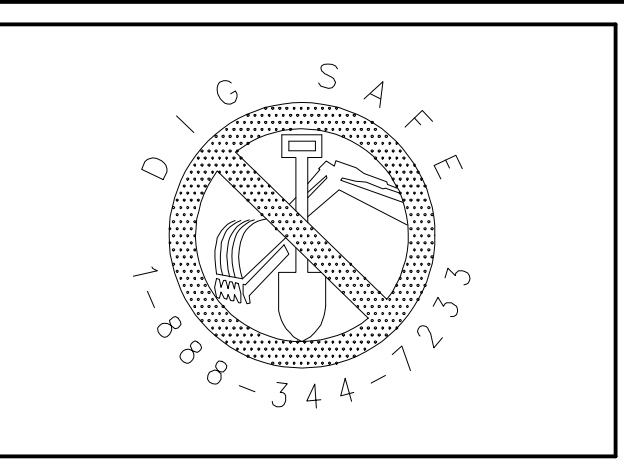
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 BOLTON, MA

SCALE:  
  
 100 0 50 100 200 400  
 1 in. = 100 ft.

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EROSION CONTROL PLAN 1 HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV
02.	6/7/19	ADDED WATER DISTRIBUTION DESIGN/SHEETS	GSR
03.	8/21/19	NOT REVISED	

JOB NO. 5676  
 DRAWING NO. 5676-UTIL  
 SHEET NO. **C6.1**



# EROSION & SEDIMENTATION CONTROL NOTES:

## 1.1 GENERAL REQUIREMENTS

- 1.1.1 CONTRACTOR TO COMPLY WITH THE REQUIREMENT OF THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARED BY DUCHARME & DILLIS CIVIL DESIGN GROUP, INC. CONTRACTOR SHALL PREPARE & FILE AN EPA NOI ONCE THE SWPPP IS COMPLETE.
- 1.1.2 CONSTRUCTION SHALL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
- 1.1.3 EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY DISTURBANCE ON SITE.
- 1.1.4 AREAS WHICH ARE NOT TO BE DISTURBED SHALL BE CLEARLY MARKED BY FLAGS, SIGNS, ETC. RETAIN EXISTING VEGETATION WHERE FEASIBLE.
- 1.1.5 THERE SHALL BE NO STORAGE OF ANY KIND OF ANY CHEMICALS, PESTICIDES, FUELS AND OTHER POTENTIALLY TOXIC OR HAZARDOUS MATERIALS ON SITE.
- 1.1.6 NO DEBRIS, JUNK, RUBBISH OR OTHER WASTE MATERIALS SHALL BE BURIED ON THE SITE.
- 1.1.7 STUMPS AND OTHER WOOD DEBRIS SHALL BE DISPOSED OF IN ACCORDANCE WITH THE "POLICY ON THE DISPOSAL OF WOODWASTES" PUBLISHED BY THE DEPARTMENT OF ENVIRONMENTAL AFFAIRS, DATED AUGUST 14, 1987.
- 1.1.8 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL PRACTICES.

## 1.2 MAINTENANCE/ PERFORMANCE STANDARDS

- 1.2.1 ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH RAINFALL WITH AN ACCUMULATION OF 1/2" OR MORE. THE FOLLOWING ITEMS SHALL BE CHECKED IN PARTICULAR:
  - 1.2.1.1 THE SILT FENCE BARRIERS SHALL BE CHECKED REGULARLY FOR TEARS, DETERIORATION AND UNDERMINING AND SHALL BE REPAIRED AS REQUIRED.
  - 1.2.1.2 ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE RESEED AS NEEDED.
- 1.2.2 THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD, DIRT DEBRIS, ETC., ONTO THE PUBLIC ROAD. THIS MAY REQUIRE PERIODIC UP KEEP/RECONSTRUCTION OF THE TOP DRESSING WITH 2 INCH STONE AS CONDITIONS DEMAND AND OR CLEANOUT/REPLACEMENT OF STONE IF CLOGGING OR SEDIMENTATION OCCURS. ALL MATERIALS SPILLED DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO THE TOWN ROAD MUST BE REMOVED DAILY BY SWEEPING OR OTHER SUITABLE MEANS.
- 1.2.3 ALL AREAS ON SITE SUBJECT TO EROSION/SEDIMENTATION SHALL BE INSPECTED ON A REGULAR BASIS. ALL ITEMS SPECIFIED ON THIS AND OTHER PLANS SHALL BE INSPECTED TO VERIFY THAT THEY ARE OPERATING AS DESIGNED AND INTENDED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN AND REPAIR ALL STRUCTURES.
- 1.2.4 THE ENTIRE DRAINAGE SYSTEM SHALL BE INSPECTED ON A REGULAR BASIS AND PRIOR TO AND IMMEDIATELY AFTER ANY RAINFALL EVENT WHILE THE SITE IS DISTURBED. CONTRACTOR SHALL PREVENT SEDIMENT FROM ENTERING THE DRAINAGE POND DURING CONSTRUCTION.

## 1.3 TEMPORARY MEASURES

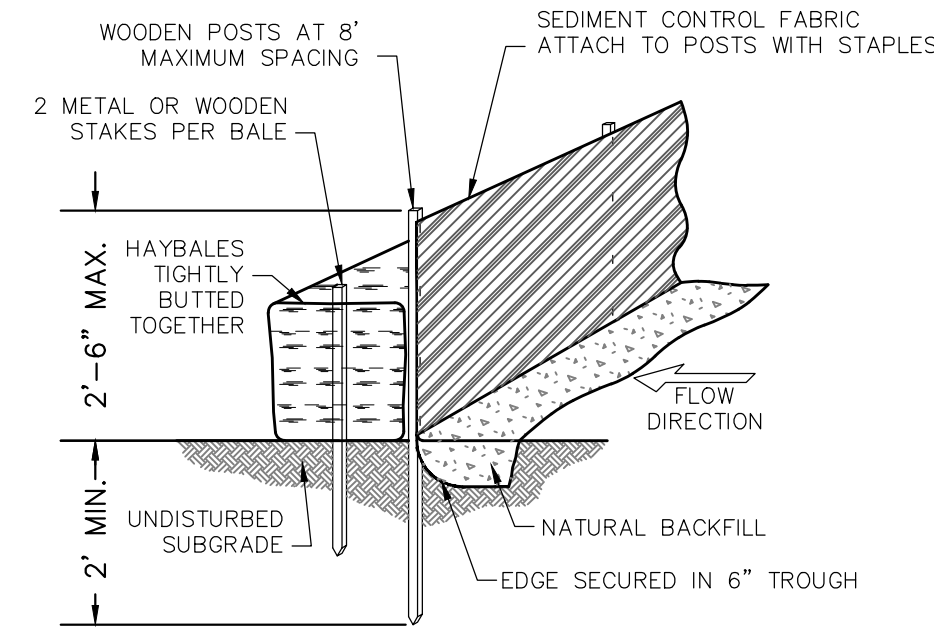
- 1.3.1 PLACE SILT FENCE WITH HAY BALES AS SHOWN ON THE EROSION CONTROL PLAN.
- 1.3.2 IF LOAM IS PLACED OUTSIDE OF THE NORMAL GROWING SEASON SILT FENCE OR STRAW WADDLES SHALL BE PLACED BETWEEN THE LAWN AREA AND PAVEMENT.
- 1.3.3 CONSTRUCT TEMPORARY STONE PAD AT EXIT TO THE SITE AS SHOWN ON THE EROSION CONTROL PLAN.
- 1.3.4 DURING DRY PERIODS, PROVIDE MEANS FOR MITIGATION OF DUST, SUCH AS WATERING OF EXPOSED AREAS.
- 1.3.5 STOCKPILE LOCATIONS SHALL BE WITHIN THE PROPOSED LIMIT OF WORK AND OUTSIDE ALL RESOURCE AREAS. SOIL STOCKPILES STORED FOR 24 HOURS OR LONGER WILL BE PROVIDED WITH ANY NECESSARY EROSION CONTROL. PILES LEFT FOR 21 DAYS OR MORE SHALL BE SEEDED.
- 1.3.6 WASTE DISPOSAL RECEPTACLES AND TRAILERS SHALL BE USED FOR THE DISPOSAL OF CONSTRUCTION DEBRIS, WHICH SHALL BE REMOVED FROM SITE ACCORDING TO STATE, LOCAL AND FEDERAL GUIDELINES. CONSTRUCTION DEBRIS INCLUDES PAVEMENT, UTILITY, EARTH AND BUILDING MATERIALS THAT CANNOT BE REUSED. THE RECEPTACLES SHALL BE LOCATED ON-SITE OUTSIDE OF ALL RESOURCE AREAS AND COVERED.
- 1.3.7 THE TEMPORARY MEASURES SHALL NOT BE REMOVED UNTIL PERMANENT STABILIZATION HAS OCCURRED AND ONLY AFTER APPROVAL BY THE BOLTON CONSERVATION COMMISSION AND THE ENGINEER.

## 1.4 PERMANENT STABILIZATION

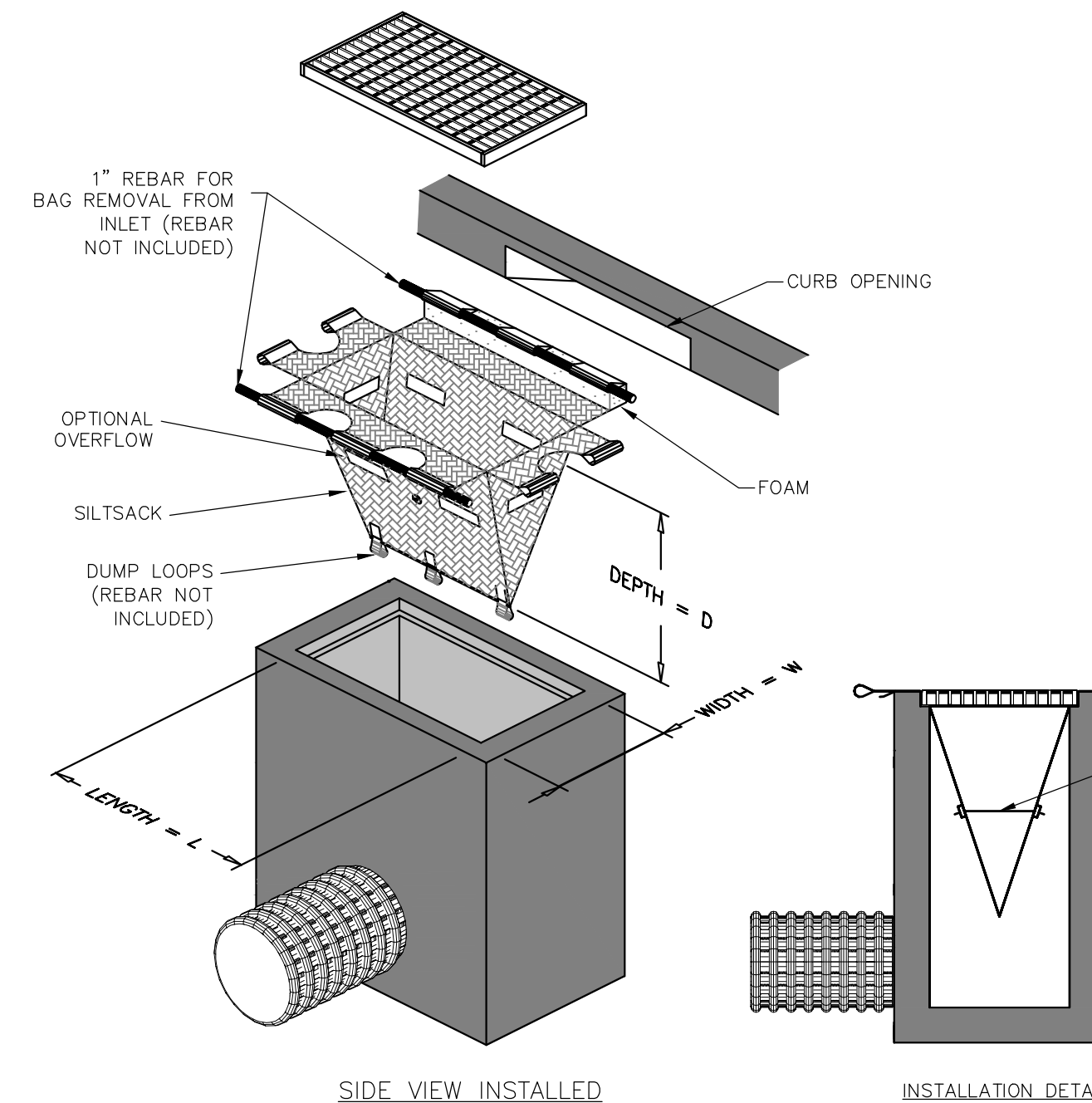
- 1.4.1 SLOPES IN EXCESS OF 3 TO 1 SHALL BE HYDRO-MULCHED, LOAMED (6" MIN.) AND SEEDED SLOPES SHALL BE PROTECTED FROM WASHOUT BY MULCHING OR OTHER ACCEPTABLE SLOPE PROTECTION UNTIL VEGETATION IS ESTABLISHED.
- 1.4.2 UNLESS OTHERWISE INDICATED HEREON ALL DISTURBED AREAS SHALL BE LOAMED (6" MIN.) AND SEEDED WITH AN APPROPRIATE MIXTURE OF GRASSES SUITABLE FOR THE AREA. AREAS NOT STABILIZED BEFORE THE END OF THE FALL PLANTING SEASON SHALL BE HYDRO-MULCHED AND SEEDED IN THE SPRING. ALL DISTURBED AREAS DURING THE WINTER MONTHS WILL BE STABILIZED BY LIMITING THE SLOPES TO 3 TO 1 OR HYDRO-MULCHED, AS DESCRIBED ABOVE.

## 1.5 DEWATERING

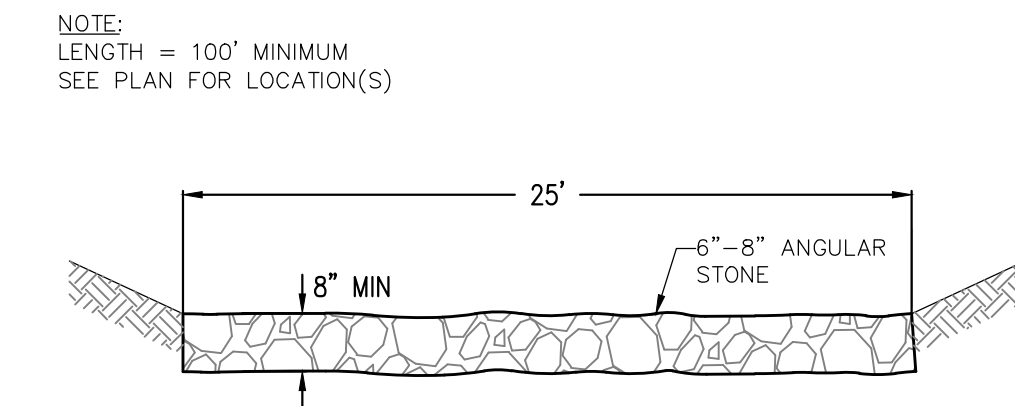
- 1.5.1 THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEWATERING OPERATIONS DURING CONSTRUCTION.
- 1.5.2 DEWATERING SHALL BE PERFORMED TO ACHIEVE CONSTRUCTION OF FOOTINGS, FOUNDATIONS, PAVEMENTS, AND OTHER SUBSURFACE UTILITIES AND APPURTENANCES IN DRY CONDITIONS.
- 1.5.3 DEWATERING SHALL BE PERFORMED THROUGH THE USE OF IN TRENCH SUMP PUMPS, WELLS, DRAINS AND OTHER ITEMS NECESSARY FOR CONSTRUCTION. CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN, OPERATE AND REMOVE ALL DEWATERING DEVICES AND APPURTENANCES AS REQUIRED FOR CONSTRUCTION. SUCH ACTIVITIES SHALL BE INCLUDED IN THE CONTRACTORS BID.
- 1.5.4 THE FLOW FROM DEWATERING PUMPS SHALL BE DISCHARGED TO A SEDIMENTATION BASIN PRIOR TO DISCHARGE TO A RESOURCE AREA. CONSTRUCT SEDIMENTATION BASIN WITH HAY BALES STAKED IN PLACE. BASINS TO BE 10-FEET X 10-FEET INTERIOR DIMENSIONS.



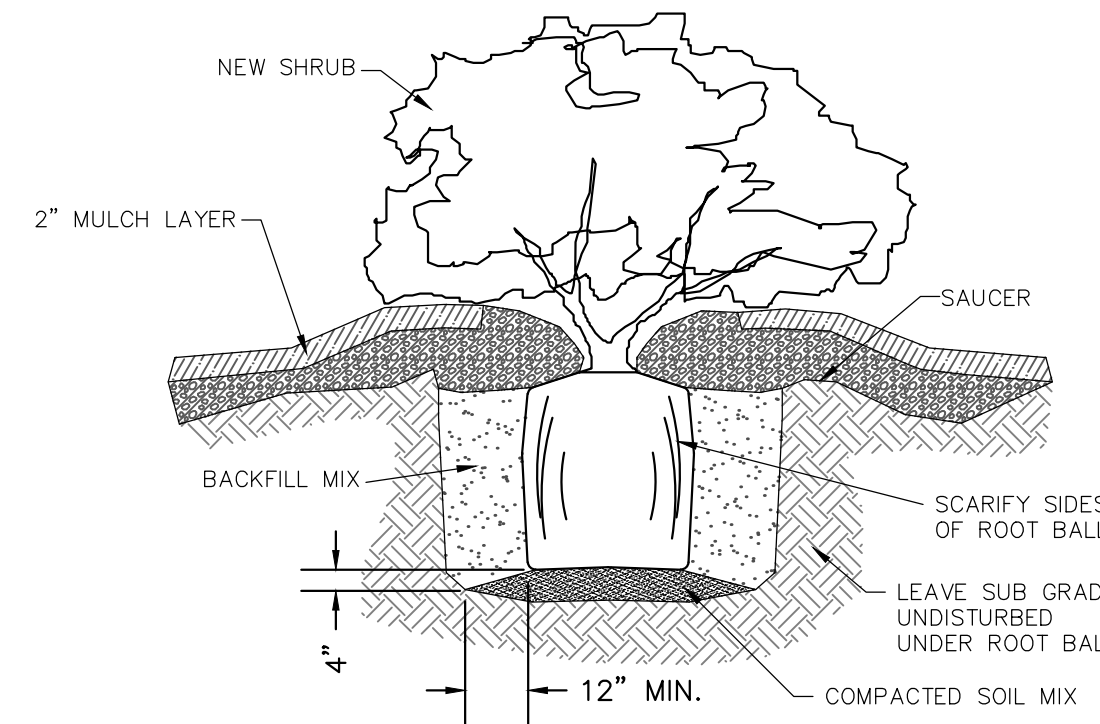
**SILTATION BARRIER**  
NOT TO SCALE



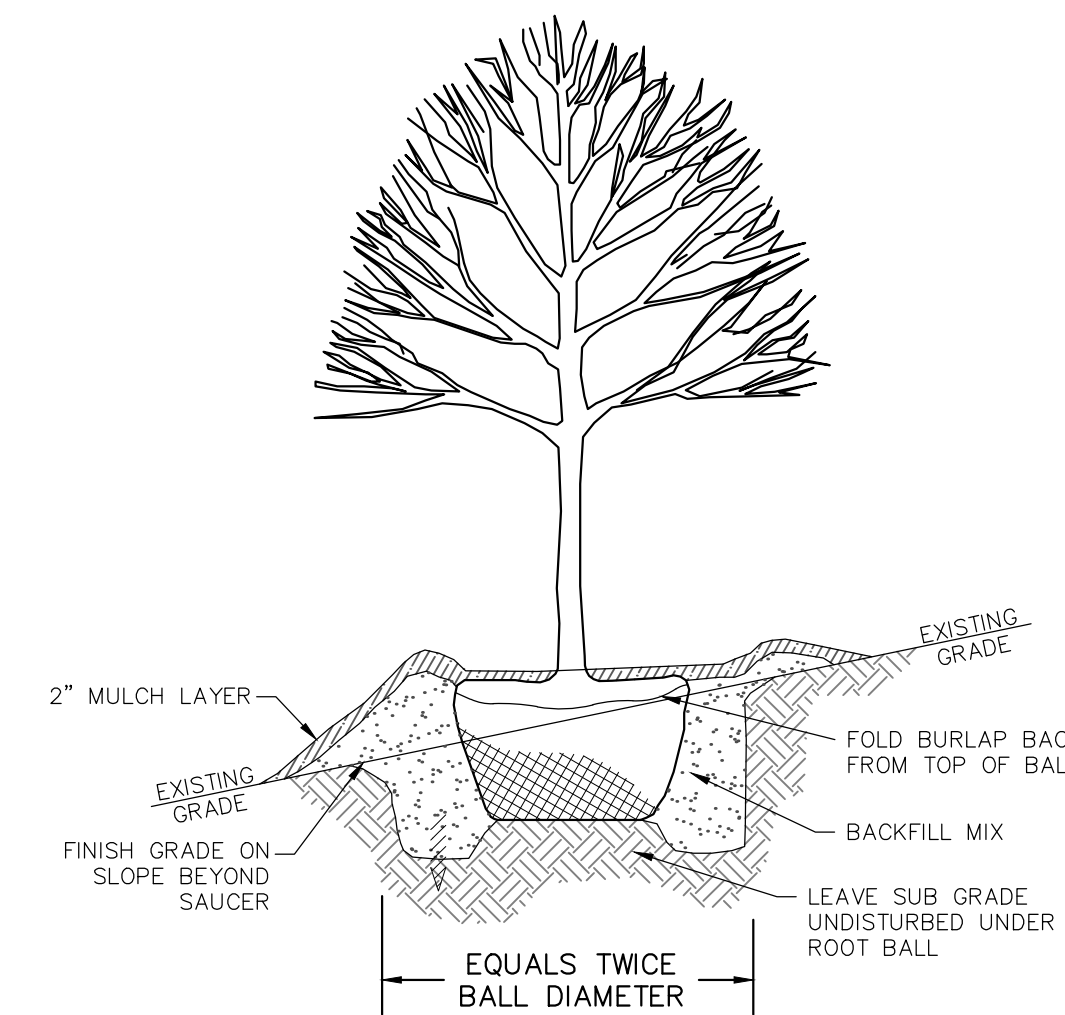
**SILT SACK**  
NOT TO SCALE



**TEMP. CONSTRUCTION ENTRANCE DETAIL**  
NOT TO SCALE



**SHRUB PLANTING DETAIL**  
NOT TO SCALE



**TREE PLANTING DETAIL**  
NOT TO SCALE

- NOTE:
- 1. DO NOT PLACE ANY MATERIAL OTHER THAN MULCH ON ROOT BALL.
- 2. REFER TO PLANTING SCHEDULE ON SHEET C5.2 FOR CALIPER & HEIGHT.

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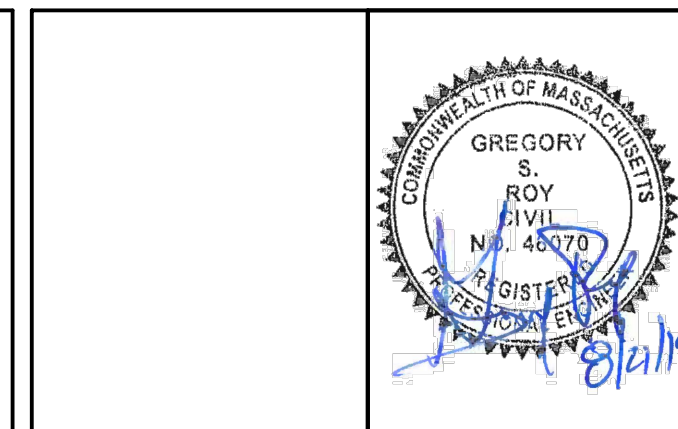
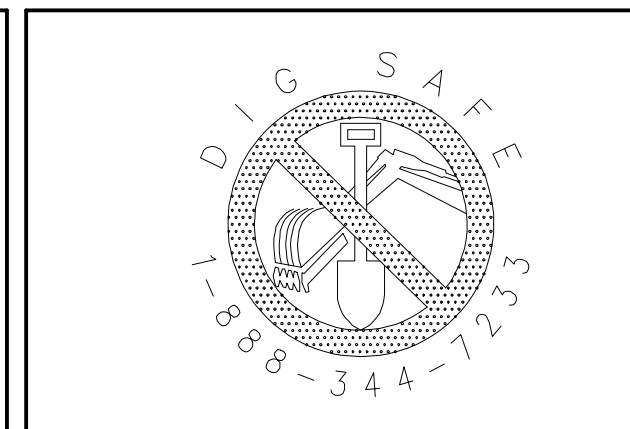
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 62 SOUTH BOLTON ROAD  
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SCALE:

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DRAWN BY:	GSR
CHECKED BY:	GSR

EROSION CONTROL DETAILS & NOTES			
HIGHLAND RIDGE			
BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
01.	11/28/18	REVISIONS PER TOWN REVIEW COMMENTS	RPV
02.	6/7/19	ADDED WATER DISTRIBUTION DESIGN/SHEETS	GSR
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JOB NO. 5676

DRAWING NO. 5676-UTIL

SHEET NO. **C6.2**



**GENERAL NOTES/REFERENCES:**

1. WATER MAIN SHALL BE 4" HDPE PIPE, UNLESS OTHERWISE NOTED.
2. WATER SERVICES SHALL BE 1 1/2" HDPE.
3. PROVIDE CURB STOP AND BOX AT EACH WATER SERVICE.
4. FIRE SPRINKLING SYSTEMS IN EACH BUILDING (2 UNITS) SHALL BE CONNECTED THROUGH ONE (1) OF THE WATER SERVICES SUCH THAT THE SPRINKLING SYSTEM FOR THE ENTIRE BUILDING (WHICH INCLUDES BOTH UNITS) SHALL HAVE ONE CONNECTION POINT TO THE DOMESTIC WATER SERVICE. CONTRACTOR SHALL INSTALL A BACKFLOW PREVENTER IMMEDIATELY AFTER THE SPLIT FROM THE DOMESTIC WATER LINE WITHIN EACH BUILDING.
5. EACH BUILDING SHALL BE CONSTRUCTED WITH A WATER ROOM THAT IS ACCESSIBLE FROM THE EXTERIOR OF THE BUILDING BY THE CONDO ASSOCIATION, INDEPENDENT OF EACH INDIVIDUAL UNIT. THE BACKFLOW PREVENTER FOR THE BUILDING SPRINKLER SYSTEM SHALL BE LOCATED WITHIN THIS ROOM. ACCESS TO THESE WATER ROOMS SHALL BE ALLOWED BY AUTHORIZED REPRESENTATIVES OF THE CONDO ASSOCIATION FOR REQUIRED OPERATION, MAINTENANCE AND REQUIRED INSPECTIONS, WHICH SHALL BE WRITTEN INTO THE MASTER CONDO DEED.



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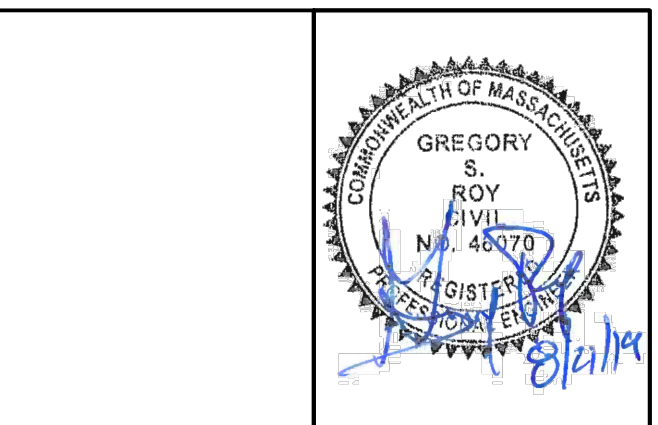
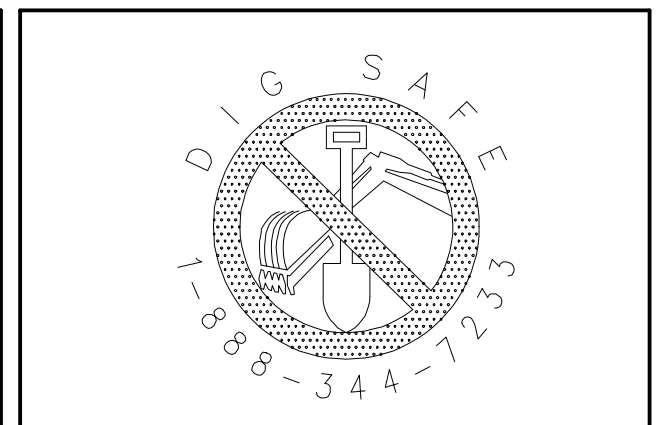
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 BOLTON, MA

SCALE:  
  
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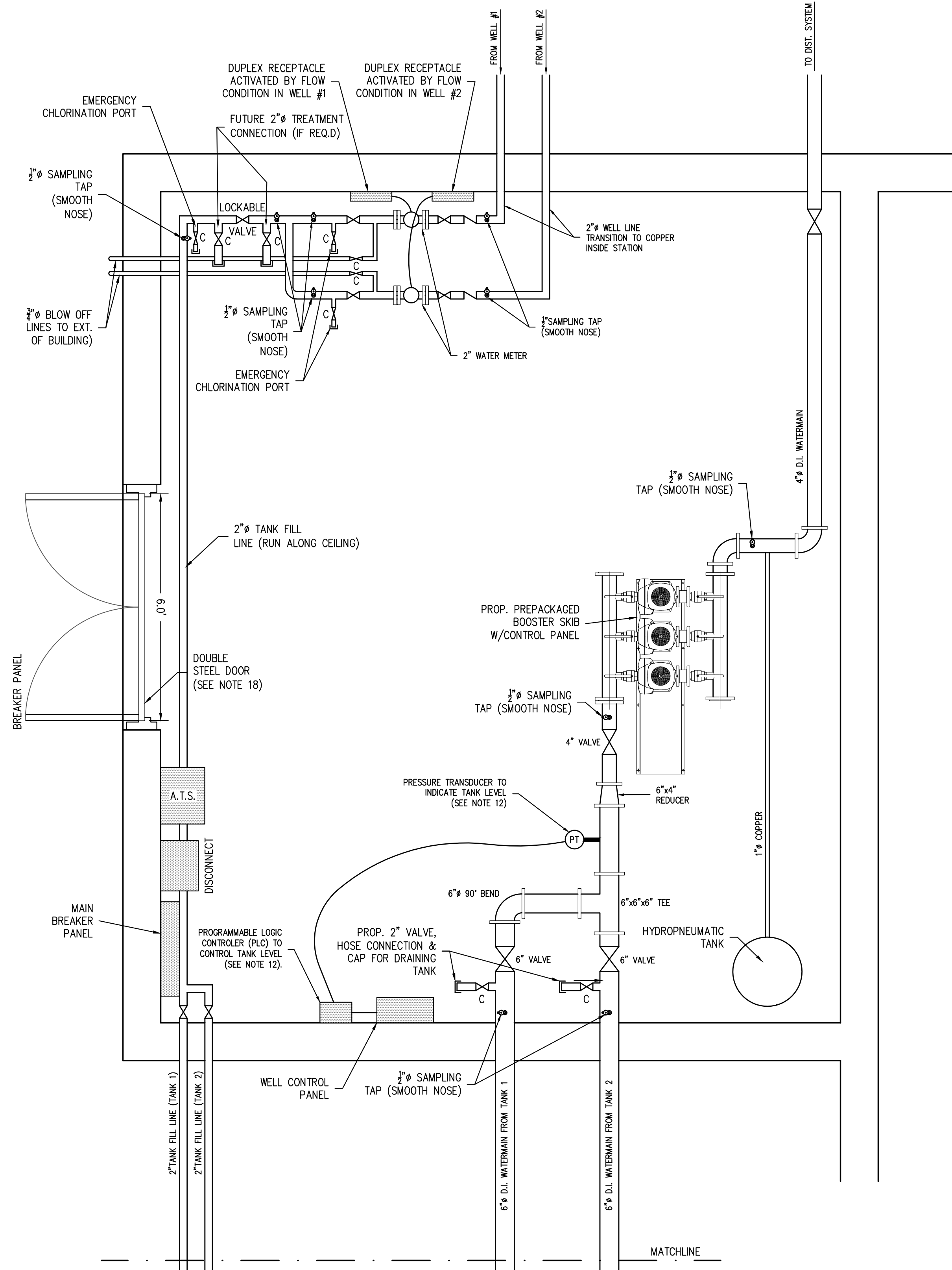
WATER DISTRIBUTION PLAN HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
01.	11/28/18	NOT ISSUED	
02.	6/7/19	ADDED WATER DISTRIBUTION DESIGN/SHEETS	GSR
03.	8/21/19	REVISED PER DEP COMMENTS	GSR

JOB NO. 5676  
 DRAWING NO. 5676-WATER  
 SHEET NO. **C7.1**

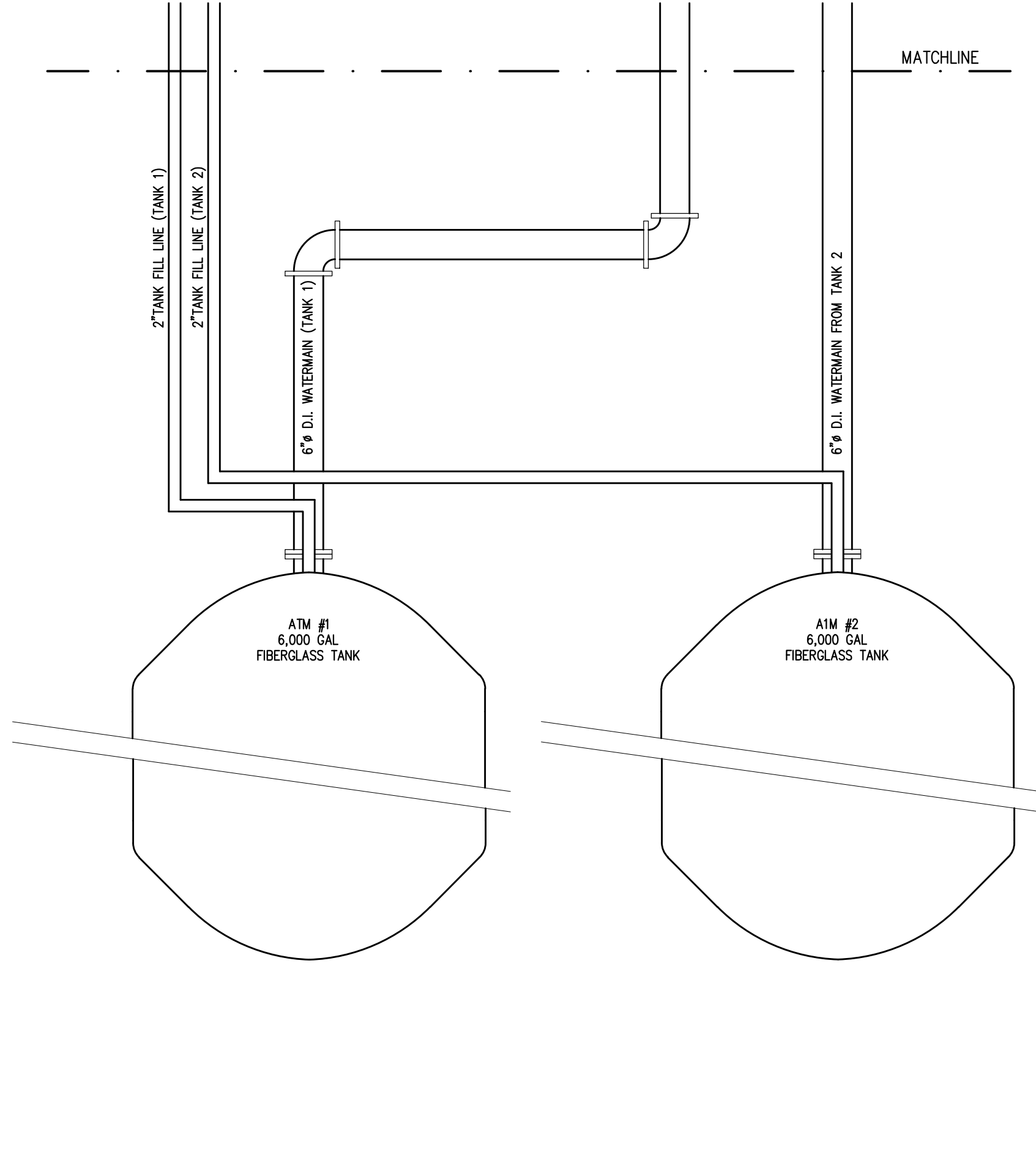








**BUILDING LAYOUT PLAN**  
SCALE: 1"=2'



**TANK/PIPING LAYOUT PLAN**  
SCALE: 1"=2'

**NOTES/REFERENCES:**

**A. WATER SYSTEM NOTES:**

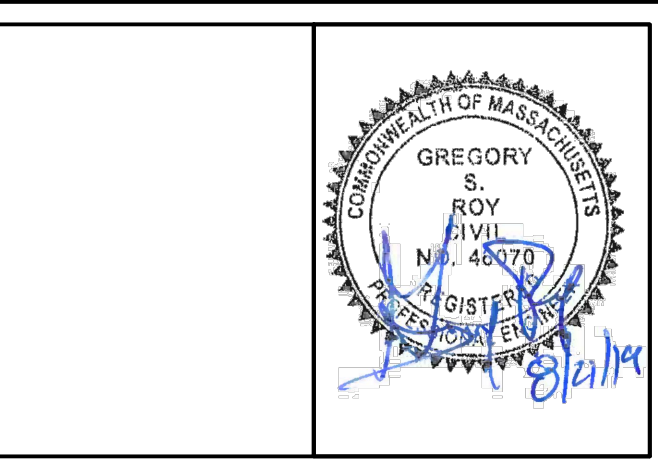
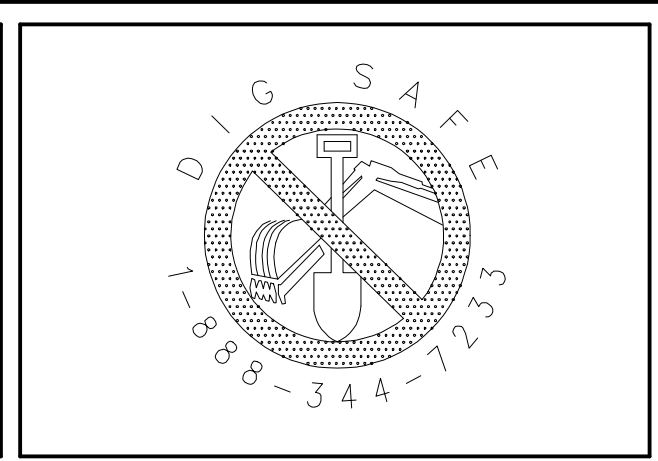
1. REFER TO ARCHITECTURAL AND MECHANICAL PLANS (BY OTHERS) FOR DETAILS RELATIVE TO BUILDING CONSTRUCTION REQUIREMENTS.
2. CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE AND FEDERAL BUILDING PERMIT REQUIREMENTS FOR THE CONSTRUCTION OF THE FOUNDATION AND BUILDING.
3. STRUCTURAL DESIGN OF FOUNDATION IS BY OTHERS.
4. SYSTEM SHALL BE EQUIPPED WITH A STANDBY PROPANE POWERED GENERATOR WITH AN AUTOMATIC TRANSFER SWITCH. (DESIGN BY OTHERS)
5. PLACE SMOOTH NOSED SAMPLE TAPS IN THE LOCATIONS SHOWN ON THIS PLAN. AT A MINIMUM, SAMPLE TAPS ARE REQUIRED IN THE FOLLOWING LOCATIONS:
  - 5.1. ON EACH WELL LINE AFTER THE EMERGENCY CHLORINE INJECTION PORT.
  - 5.2. ON THE TANK FILL LINE JUST PRIOR TO THE FUTURE TREATMENT CONNECTION POINT.
  - 5.3. ON THE TANK FILL LINE JUST AFTER THE FUTURE TREATMENT CONNECTION POINT.
  - 5.4. ON THE SUCTION SIDE OF THE BOOSTER SKID (ON EACH LINE FROM TANK).
  - 5.5. ON THE DISCHARGE SIDE OF THE BOOSTER SKID JUST PRIOR TO LEAVING THE BUILDING.
6. INSTALL A 2" WATER METER ON EACH WELL LINE SIMILAR TO OMEGA FTB SERIES, OR APPROVED EQUAL. METERS SHALL BE WIRED SUCH THAT A FLOW CONDITION IN THE METER WILL ACTIVATE DUPLEX RECEPTACLE FOR EACH METER.
7. INSTALL EMERGENCY CHLORINATION PORTS ON EACH WELL LINE IMMEDIATELY AFTER THE PROPOSED FLOW METERS. CHLORINE PORTS SHALL BE 1" COPPER WITH A BALL VALVE AND THREADED CAP FOR FUTURE CONNECTION OF A CHEMICAL FEED PUMP.
8. BOOSTER PUMPS SHALL BE AS MANUFACTURED BY GRUNDFOS. BOOSTER SKID SHALL BE MODEL HYDRO MPC E 30RE15-04 3x208V. SKID SHALL BE SUPPLIED WITH 4-INCH MANIFOLDS FOR SUCTION AND DISCHARGE PIPING. CONTROL PANEL SHALL BE MOUNTED TO THE PUMP SKID. CONTROL PANEL SHALL BE EQUIPPED WITH SERVICE DISCONNECT SWITCHES, SURGE PROTECTION, PUMP RUN LIGHTS, AND ALARM CIRCUITS. PANEL SHALL BE EQUIPPED WITH AUTO DIAL NOTIFICATION OF PUMP RUN FAULT FOR NOTIFICATIONS PURPOSES.
9. CONTRACTOR TO FURNISH AND INSTALL ALL PIPING, FITTINGS, VALVES, BACK FLOW PREVENTERS, SAMPLE TAPS, HOSE BIBS AS REQUIRED.
10. CONTRACTOR TO FURNISH AND INSTALL A FAULT LIGHT ON THE EXTERIOR OF THE BUILDING. FAULT LIGHT SHALL ILLUMINATE IN THE FOLLOWING CONDITIONS:
  - 10.1. WELL PUMP FAILURE
  - 10.2. BOOSTER PUMP FAILURE
  - 10.3. LOW TANK LEVEL
  - 10.4. HIGH TANK LEVEL
11. CONTRACTOR TO FURNISH AND INSTALL A WELL PUMP PANEL THAT SHALL REGULATE THE CONTROL OF EACH WELL PUMP IN AN ALTERNATING LEAD/LAG CONFIGURATION AND HAVE THE FOLLOWING CAPABILITIES FOR EACH WELL PUMP:
  - 11.1. MOTOR RUNNING LIGHT
  - 11.2. HOUR METER FOR EACH WELL PUMP
  - 11.3. HAND-OFF SELECTOR SWITCH
  - 11.4. HI LEVEL INDICATOR LIGHT "RED"
  - 11.5. LOW LEVEL ALARM INDICATOR LIGHT "RED"
  - 11.6. PUMP FAIL INDICATOR LIGHT "RED" TO OPERATE BASED ON A "NO-FLOW" CONDITION IN FLOW SWITCH.
  - 11.7. AUDIBLE AND VISIBLE ALARMS WITH SILENCE AND RESET FUNCTIONS
  - 11.8. PUMP ON, OFF, HIGH AND LOW LEVEL TANK LEVEL ALARMS TO BE OPERATED BY PLC/PRESSURE TRANSDUCER.
  - 11.9. WELL LEVELS VIA CONNECTION TO IN WELL TRANSDUCERS.
12. CONTRACTOR TO FURNISH AND INSTALL A PROGRAMABLE LOGIC CONTROLLER TO COMMUNICATE WITH WITH A PRESSURE TRANSDUCER INSTALLED IN THE COMBINED 6" SUCTION LINE. CONTROLLER AND TRANSDUCER SHALL BE CAPABLE OF PROVIDING THE FOLLOWING SIGNALS AT THE SET TANK DEPTHS:
  - 12.1. LOW WATER CUTOFF (WATER LEVEL = 18" IN TANKS) - SIGNAL SHALL TURN OFF BOOSTER SKID.
  - 12.2. LOW WATER ALARM (WATER LEVEL = 21" IN TANKS) - SIGNAL SHALL TRIGGER AN AUDIBLE AND VISUAL ALARM AS WELL AS A CALL THROUGH THE AUTO-DIALER TO THE WATER SYSTEM OPERATOR.
  - 12.3. WELL PUMP "ON" (WATER LEVEL = 32" IN TANKS) - SIGNAL SHALL TURN OF THE LEAD WELL PUMP (WELL'S PUMPS SHALL BE SET TO ALTERNATE IN LEAD/LAG COFIGURATION).
  - 12.4. WELL PUMP "OFF" (WATER LEVEL = 59" IN TANKS) - SIGNAL SHALL TURN OFF WELL PUMP
  - 12.5. HIGH WATER ALARM (WATER LEVEL = 62" IN TANKS) - SIGNAL SHALL TRIGGER AN AUDIBLE AND VISUAL ALARM AS WELL AS A CALL THROUGH THE AUTO-DIALER TO THE WATER SYSTEM OPERATOR
13. CONTRACTOR TO FURNISH AND INSTALL AND AUTO-DIALER TO SEND THE FOLLOWING SIGNALS:
  - 13.1. LOW WELL LEVEL
  - 13.2. WELL PUMP FAULT
  - 13.3. LOW TANK LEVEL
  - 13.4. BOOSTER PUMP FAULT
  - 13.5. LOW TEMPERATURE IN BUILDING
14. BUILDING TO BE HEATED SUCH THAT AMBIENT TEMPERATURE DOES NOT DROP BELOW 55 DEGREES AT ALL SEASONS. HEATER SHALL BE EITHER PROPANE OR ELECTRIC. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR PROPOSED BUILDING HEATING.
15. PROVIDE RIDGE VENTING FOR VENTILATION.
16. BUILDING PENETRATIONS SHALL BE EQUIPPED WITH LINK SEAL FITTINGS, OR APPROVED EQUAL, AND BE MADE WATER TIGHT.
17. CONTRACTOR TO PROVIDE REQUIRED, APPROPRIATELY SIZED PIPE SUPPORT BRACKETS AS REQUIRED FOR CONSTRUCTION.
18. EXTERIOR DOOR SHALL BE RATED FOR EXTERIOR INSTALLATION AND SHALL COMPLY WITH ALL LOCAL, STATE AND FEDERAL BUILDING CODES. DOOR SHALL BE 6- FEET IN WIDTH.
19. BOOSTER PUMP SKID SHALL BE PERMANENTLY FIXED TO THE FLOOR.
20. ELECTRICAL PANELS AND EQUIPMENT SHOWN ON THIS PLAN ARE FOR GRAPHICAL PURPOSES ONLY. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO CONSTRUCTION.
21. ATMOSPHERIC WATER TANKS SHALL BE AN 6-FOOT DIAMETER, 6,000 GAL. SINGLE WALL FIBERGLASS TANKS AS MANUFACTURED BY CONTAINMENT SOLUTIONS, INC., OR EQUAL AS APPROVED BY ENGINEER. TANKS SHALL BE EQUIPPED WITH THE FOLLOWING FITTINGS:
  - 21.1. (5) 4" NPT FITTINGS ALONG THE TOP CENTERLINE OF THE TANK,
  - 21.2. (1) 6" NPT FITTING ON THE TOP OF CENTERLINE OF THE TANK,
  - 21.3. (1) 24" MANWAY WITH RISER AND COVER ALONG THE TOP CENTERLINE OF THE TANK,
  - 21.4. (1) 4" FLANGE FOR TANK OVERFLOW ON THE TOP END OF THE TANK (LEFT),
  - 21.5. (1) 2" FLANGE FOR CONNECTION TO SIGHT TUBE INSIDE THE BOOSTER STATION ON THE BOTTOM END OF THE TANK (LEFT),
  - 21.6. (1) 2" FLANGE FOR CONNECTION TO THE WELL LINES (FILL LINES) ON THE THE TOP END OF THE TANK (RIGHT),
  - 21.7. (1) 6" FLANGE FOR SUCTION PIPING ON THE BOTTOM END OF THE TANK (RIGHT),

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WATER BOOSTER STATION HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
01.	11/28/18	NOT ISSUED	
02.	6/7/19	ADDED WATER DISTRIBUTION DESIGN/SHEETS	GSR
03.	8/21/19	REVISED PER DEP COMMENTS	GSR

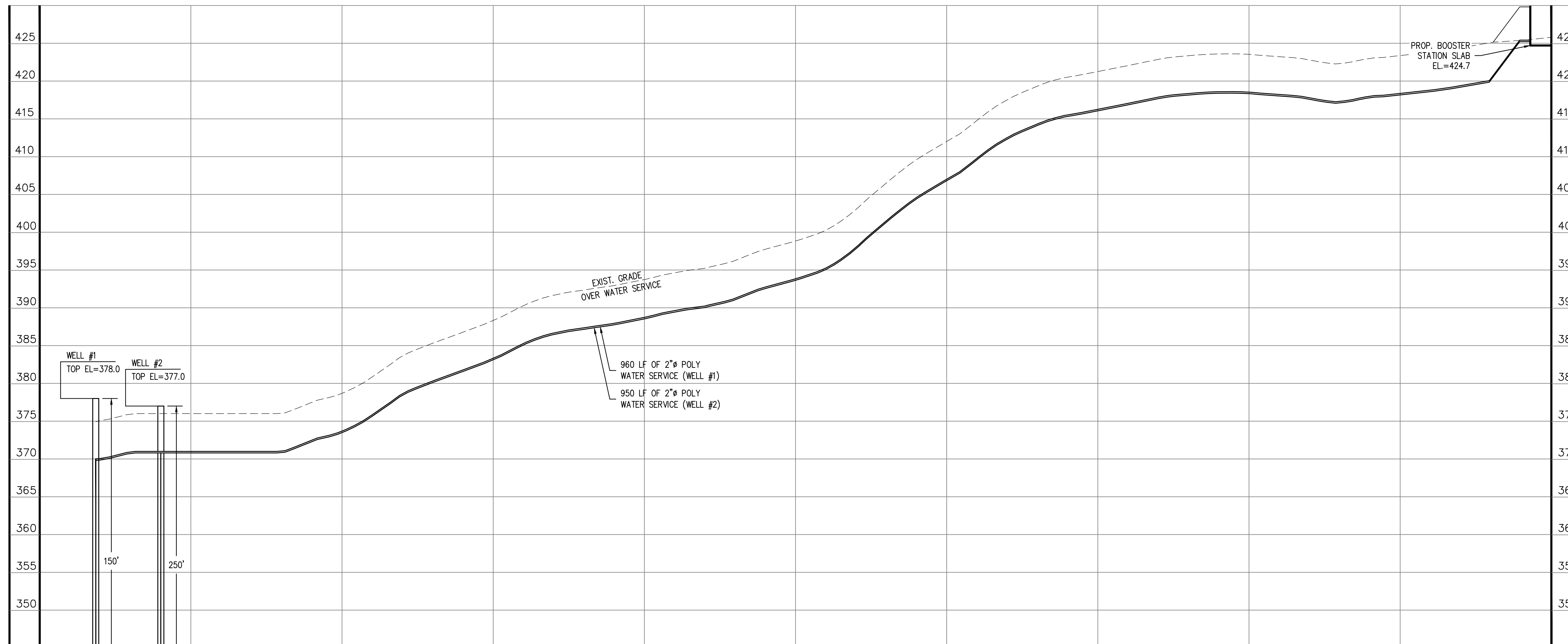
JOB NO. 5676  
 DRAWING NO. 5676-WATER  
 SHEET NO. **C9.3**

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**NOTES/REFERENCES:**

1. CONTRACTOR TO REFER TO THE WELL SOURCE APPROVAL ISSUED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION DATED FOR ADDITIONAL DETAILS AND REQUIREMENTS RELATIVE TO THE CONSTRUCTION OF THE WATER SYSTEM.
2. WELL PUMP SHALL BE GOULDS MODEL 35G550CBM WITH A CENTRIPRO M50430 4", 3 H.P. 3/60/200 MOTOR, OR APPROVED EQUAL.
3. WELL PUMP SHALL BE HUNG AT THE FOLLOWING DEPTHS. CONTRACTOR TO FURNISH AND INSTALL SUBMERSIBLE WELL PUMP, ALL REQUIRED FITTINGS, PIPING AND OTHER APPURTENANCES REQUIRED FOR THE PLACEMENT OF THE PUMP.
  - 3.1. WELL #1 - 150'
  - 3.2. WELL #2 - 250'
4. WELL DROP PIPE SHALL BE 2" SCH. 40 GALVANIZED STEEL PIPE WITH THREADED CONNECTIONS.
5. WELL SERVICE CONNECTION PIPING SHALL BE 2" HDPE.
6. ELECTRICAL CONDUIT FROM THE PUMP HOUSE TO WELLS SHALL BE AS SPECIFIED BY MECHANICAL CONTRACTORS.
7. PROVIDE SEPARATE CONDUIT FOR LOW VOLTAGE ELECTRICAL CABLE FOR THE SUBMERSIBLE TRANSDUCERS TO WELL.
8. WELL SERVICE CONNECTION PIPING SHALL BE PLACED A MINIMUM OF 5- FEET BLOW FINAL FINISHED GRADE.
9. CONTRACTOR SHALL INSTALL A PRESSURE TRANSDUCER IN EACH WELL AS MANUFACTURED BY MERCOID, MODEL NUMBER MBLT-25C-IVPF-150-170. TRANSDUCER SHALL BE SET AT THE HEIGHT OF THE WELL PUMP AND BE CONNECTED TO THE WELL CONTROL PANEL IN THE BOOSTER STATION. TRANSDUCER SHALL LOG THE WELL WATER DEPTHS, AND SHALL SEND A SIGNAL TO THE WELL CONTROL PANEL TO SHUT THE WELL PUMPS OFF IN THE EVENT OF THE WATER LEVEL IN THE WELLS DROPPING TO WITHIN 5- FEET OF THE TOP OF THE WELL PUMP.



**WELL CONNECTION PROFILE**

SCALE: 1" = 40' (HOR.)  
1" = 8' (VERT.)

WELL #1	WELL #2
PUMP EL = 228.0	PUMP EL = 127.0
WELL #1	WELL #2
BOT. EL = 193.0	BOT. EL = 92.0

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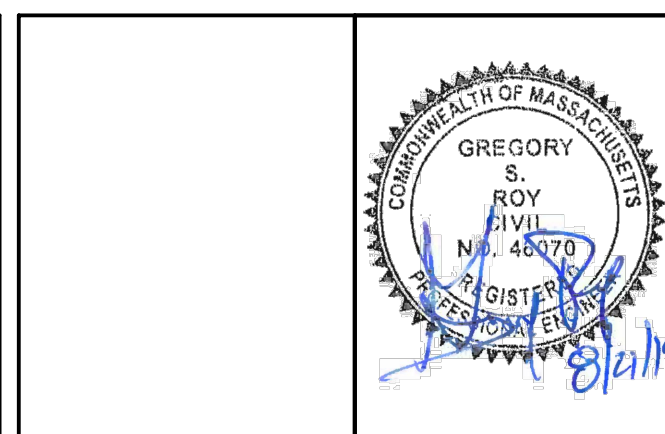
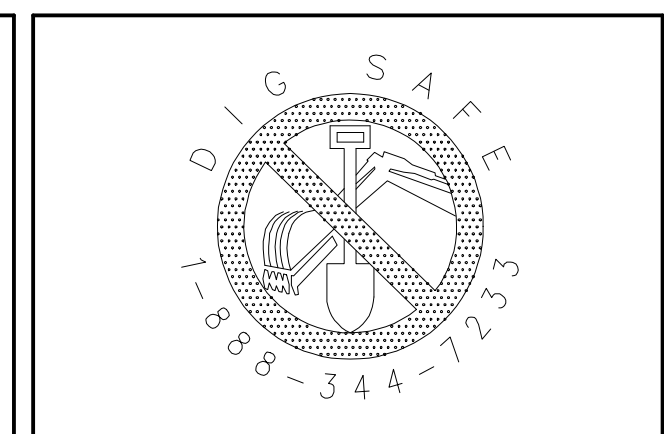
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SCALE:  
 1" = 40' (HOR.)  
 1" = 8' (VERT.)

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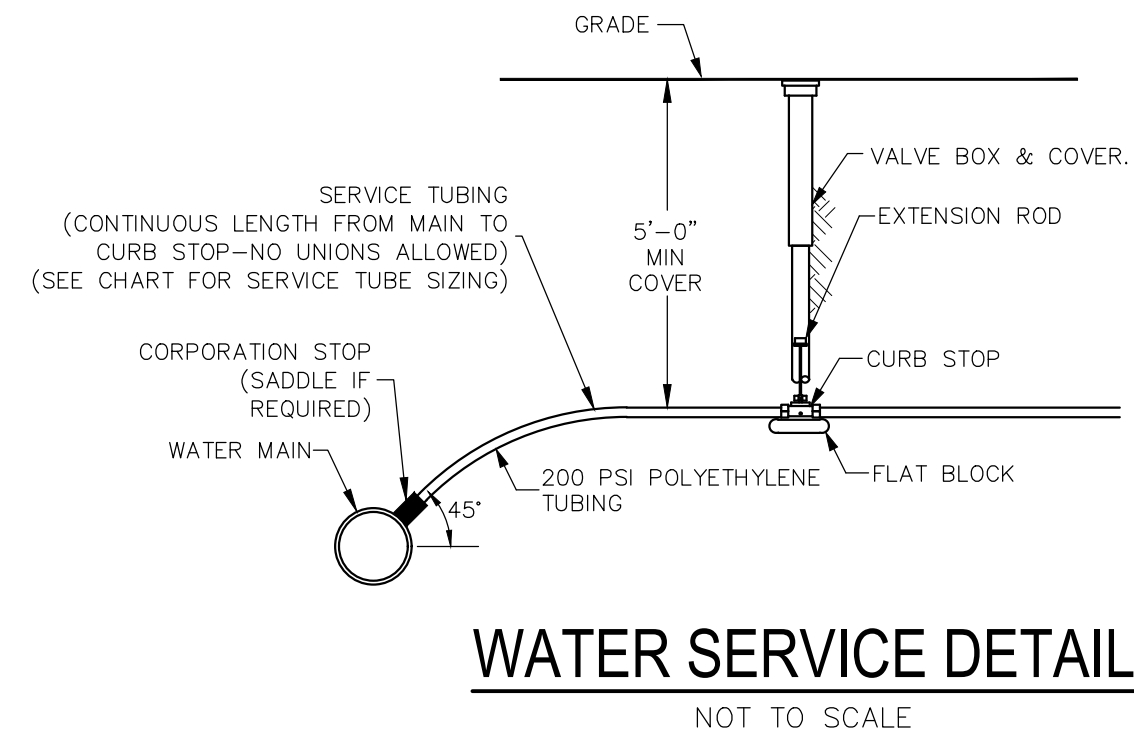


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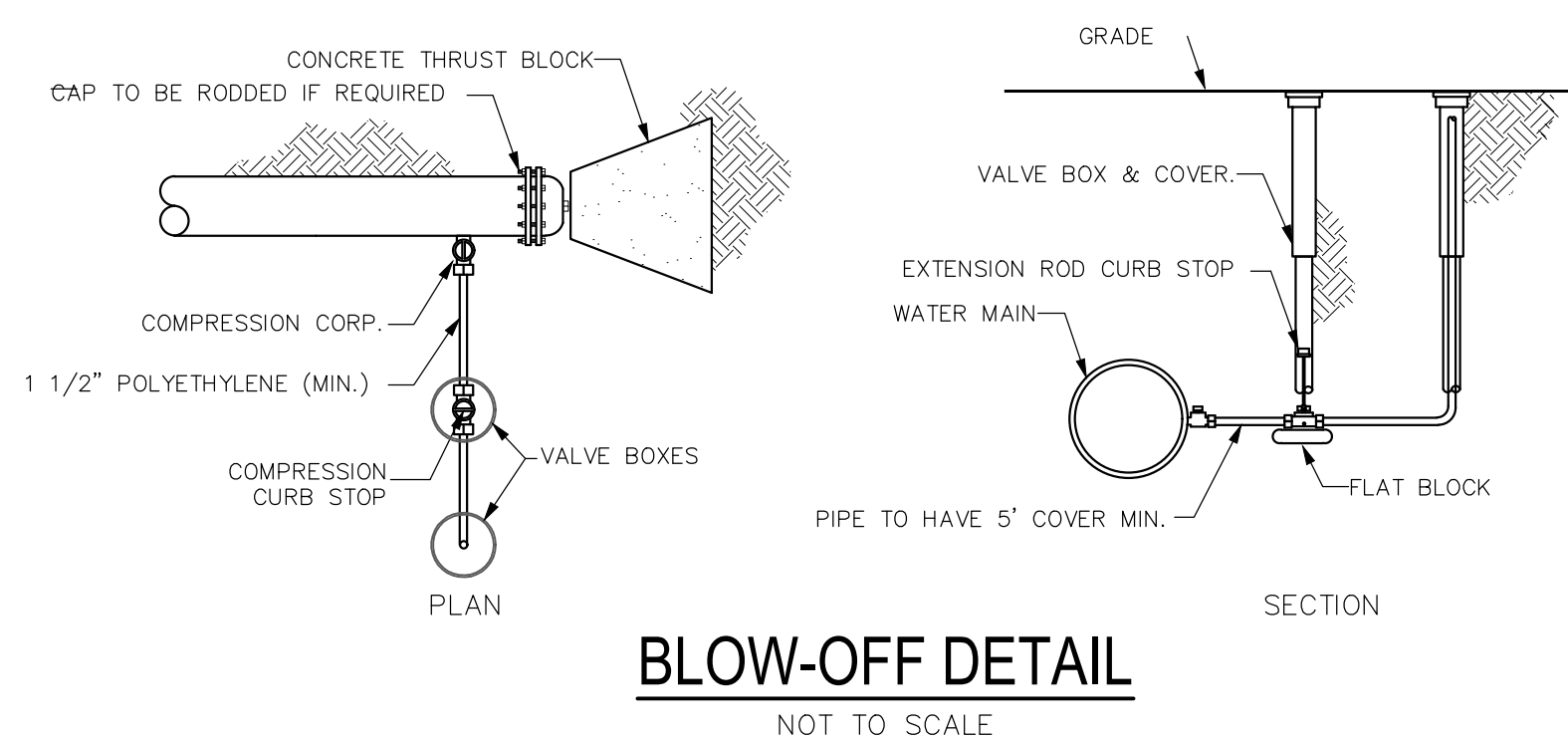
WELL SERVICE CONNECTION PROFILE HIGHLAND RIDGE BERLIN, MASSACHUSETTS			
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JOB NO. 5676  
 DRAWING NO. 5676-WATER  
 SHEET NO. **C7.4**

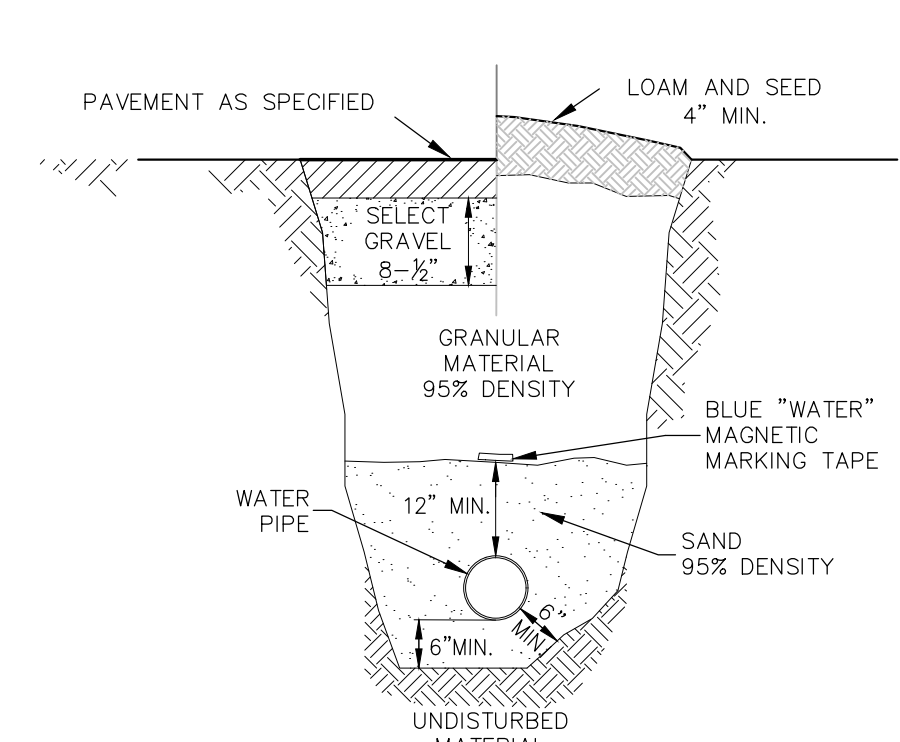




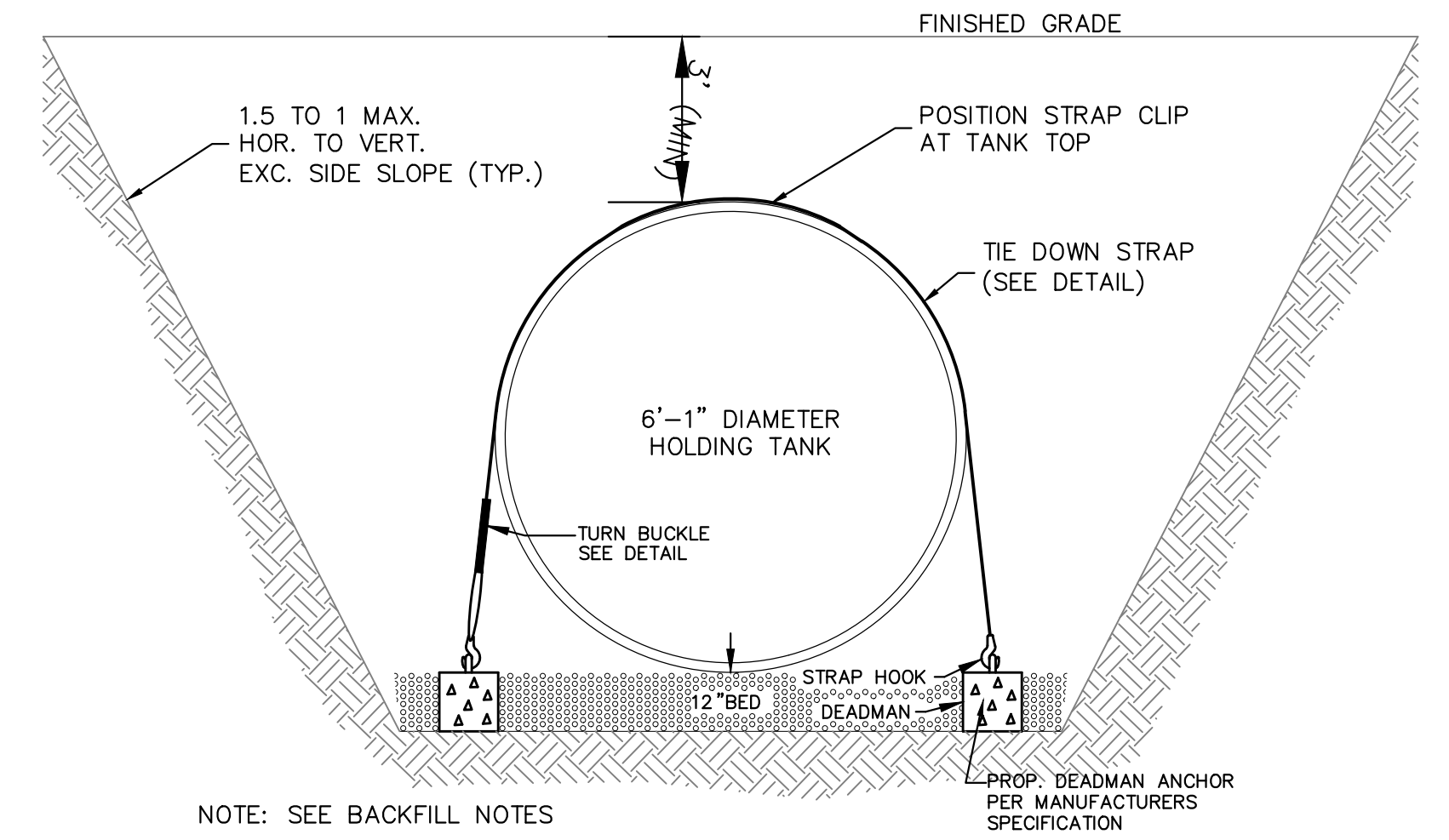
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NOT TO SCALE



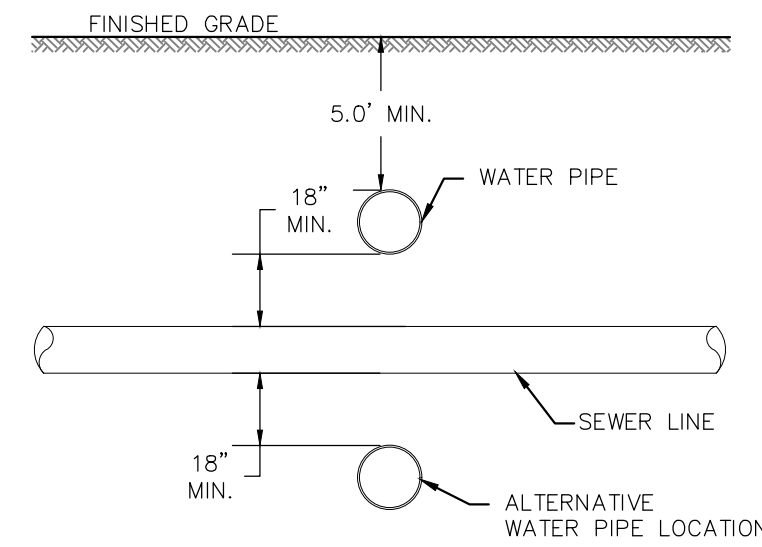
**BLOW-OFF DETAIL**  
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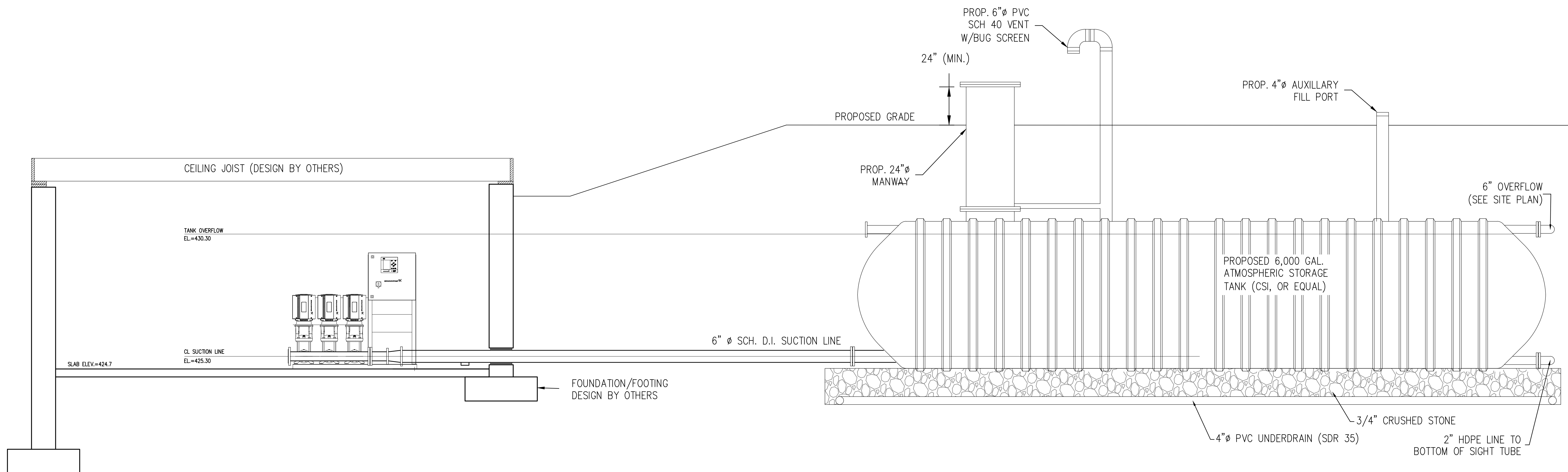
**WATER MAIN IN TRENCH DETAIL**  
NOT TO SCALE



**TANK ANCHOR DETAIL**  
NOT TO SCALE



**WATER AND SEWER LINE CROSSING**  
NOT TO SCALE



**TANK ANCHOR DETAIL**

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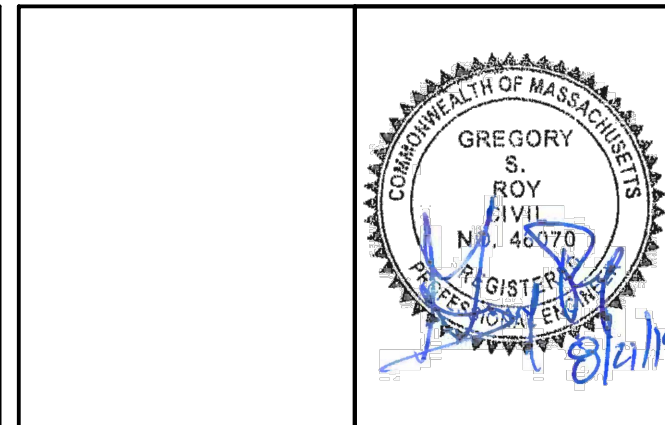
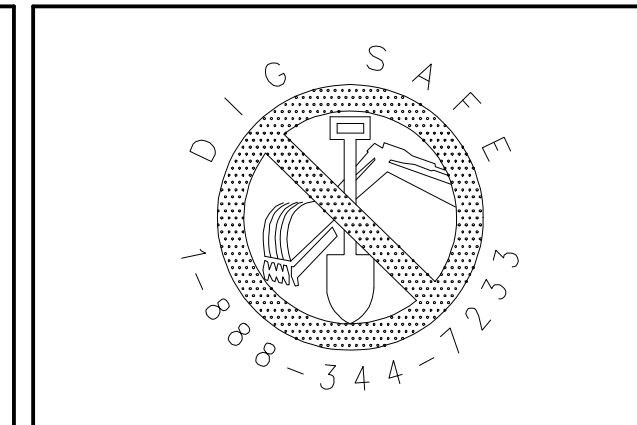
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WATER SYSTEM DETAILS			
HIGHLAND RIDGE			
BERLIN, MASSACHUSETTS			
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JOB NO. 5676

DRAWING NO. 5676-WATER

SHEET NO. **C7.5**