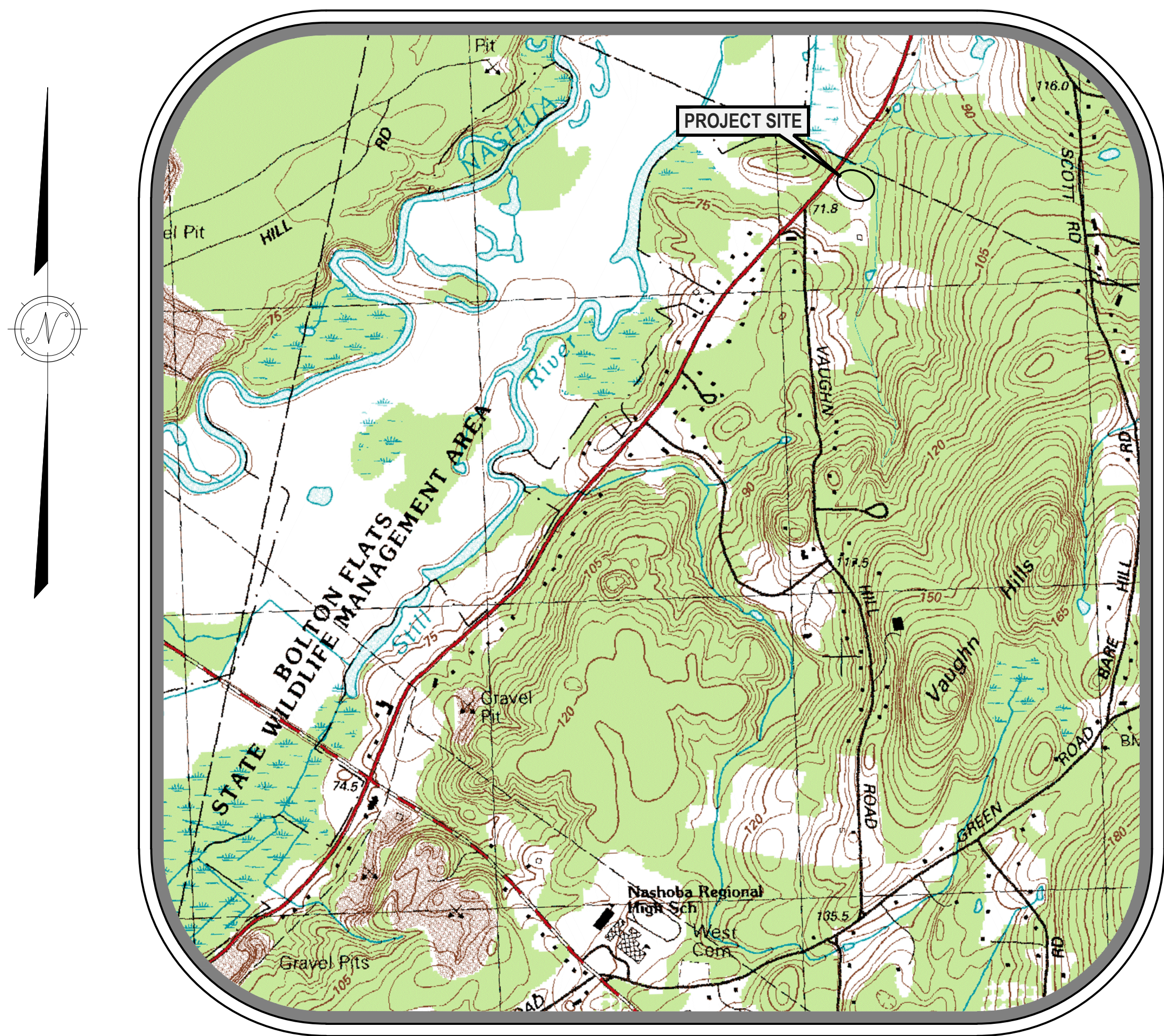


COMPREHENSIVE PERMIT PLAN

STILL RIVER ROAD, MAP 8.B PARCEL 32

BOLTON, MA

STILL RIVER COMMONS



USGS LOCUS MAP
SCALE: 1"=1,100'±



2014 ORTHOPHOTO LOCUS
SCALE: 1"=250'±

SHEET INDEX

SHEET NUMBER	SHEET TITLE
SHEET C1.0	TITLE SHEET
SHEET C1.1	GEN. NOTES, SYMBOLS & ABBREV.
SHEET C1.2	EXISTING CONDITIONS PLAN
SHEET C2.0	LOT LAYOUT PLAN
SHEET C2.1	UNIT LAYOUT PLAN
SHEET C3.0	UTILITIES PLAN
SHEET C3.1	UTILITIES DETAILS
SHEET C4.0	GRADING & DRAINAGE PLAN
SHEET C4.1	GRADING & DRAINAGE DETAILS
SHEET C5.0	EROSION & SEDIMENTATION CONTROL PLAN

RECORD INFORMATION

RECORD OWNER:
TURN LEFT, LLC
130 PARKER STREET, UNIT 12
LAWRENCE, MA 01843

DEED REFERENCE:
BOOK 58346 PAGE 149

PLAN REFERENCE:
PLAN BOOK 932 PLAN 91

ASSESSORS REFERENCE:
MAP: 8B PARCEL: 32

ZONING DISTRICT:
RESIDENCE DISTRICT

ZONING TABLE

	REQUIRED	PROVIDED LOT 2B	PROVIDED LOT 2C
MIN LOT AREA	80,000 SF	90,836 SF	200,035 SF
MIN LOT FRONTAGE	200'	281.36'	305.19'
MIN WIDTH AT 100' FROM STREET LINE	150'	248.38'	323.11'
MIN FRONT YARD	50'	99.9'	239.9'
MIN OTHER YARDS	20'	6.0'	12.8'
MIN SHAPE FACTOR	0.5	0.4	0.97

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION

PREPARED BY:

**DUCHARME & DILLIS**
Civil Design Group, Inc.
CIVIL ENGINEERS • LAND SURVEYORS • WETLAND CONSULTANTS

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BOLTON, MASSACHUSETTS 01740
PHONE: (978) 779-6091 FAX: (978) 779-0260
www.DucharmeandDillis.com

OWNER:

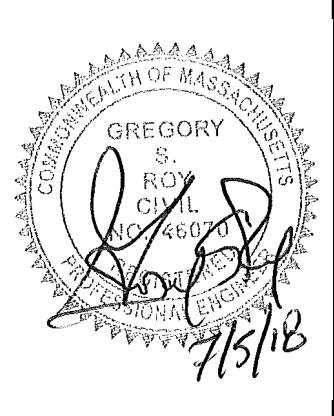
TURN LEFT, LCC
130 PARKER STREET, UNIT 12
LAWRENCE, MASSACHUSETTS

APPLICANT:

STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:

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DATE:

7/5/18

DESIGN BY:

JPL

DRAWN BY:

JPL

CHECKED BY:

GSR

TITLE SHEET STILL RIVER COMMONS BOLTON, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY

JOB NO.

3339-P

DRAWING NO.

3339-TITLE

SHEET NO.

C1.0

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

	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
	W		PROPOSED DOUBLE CATCH BASIN
	G		PROPOSED GAS GATE VALVE
	E		PROPOSED GAS GATE VALVE
	S		PROPOSED ELECTRICAL TRANSFORMER
	D		PROPOSED ELECTRICAL JUNCTION BOX
	RD		PROPOSED GAS METER
	UD		PROPOSED TRAFFIC SIGNAL SWITCH
	T		PROPOSED SIGN
	CATV		PROPOSED BORING
	BCCB		PROPOSED HANDICAPPED SPACE
	EOP		PROPOSED FLARED END SECTION
			PROPOSED RIPRAP
			PROPOSED STONE BOUND
			STANDARD TREE
			PINE TREE
			SHRUB

ABB.	DESCRIPTION
ATM	ATMOSPHERIC TANK
UD	UNDERDRAIN
FD	FOUNDATION DRAIN
F.S.	FIRE SERVICE
DOM	DOMESTIC WATER SERVICE
B.O	WATER FLOW OFF
DWH	DRAIN MANHOLE
SMH	SEWER MANHOLE
ST	SEPTIC TANK
PC	PUMP CHAMBER
DP1	DRAIN PIPE ID
SP1	SEWER PIPE ID
DB	DISTRIBUTION BOX
SC	STORMCEPTOR CATCH BASIN
GAL	GALLON
TOP	TOP OF FOUNDATION
EL.	ELEVATION
INV.	INVERT
WSO	WATER SHUTOFF
BCCB	BUTYRUMOUS CAGE COD BERM
RET.	RETAINING WALL
C.O.	CLEAN OUT
INS.P.T.	INSPECTION PORT
VCC	VERTICAL CULVERT CURB
BCCB	BUTYRUMOUS CAGE COD BERM

ABB.	DESCRIPTION
ATM	ATMOSPHERIC TANK
UD	UNDERDRAIN
FD	FOUNDATION DRAIN
F.S.	FIRE SERVICE
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B.O	WATER FLOW OFF
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C.O.	CLEAN OUT
INS.P.T.	INSPECTION PORT
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2. PROPERTY LINE INFORMATION SHOWN ON THIS PLAN WAS PREPARED BY DUCHARME & DILLIS CIVIL DESIGN GROUP, INC. BASED ON AN ON-THE-GROUND SURVEY AND RECORDED PLANS AND DEEDS. (SEE WORCESTER REGISTRY OF DEEDS PLAN BOOK 918, PLAN 86)
3. RESOURCE AREAS AS DEFINED BY THE MASSACHUSETTS WETLANDS PROTECTION ACT AND THE TOWN OF BOLTON WETLANDS BYLAW WERE Delineated BY DUCHARME & DILLIS CIVIL DESIGN GROUP, INC.
4. A PORTION OF THE SITE IS LOCATED WITHIN THE 100 YEAR FLOOD ZONE AS SHOWN ON THE FLOOD INSURANCE RATE MAP OF THE TOWN OF BOLTON, EFFECTIVE DATE JULY 10, 2011 FOR THE TOWN OF BOLTON.
5. EXISTING UTILITIES SHOWN ON THIS PLAN WERE COMPILED FROM FIELD MEASUREMENT AND RECORDED 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 PROJECTOR SHALL CALL DUE SAFETY—BUT NOT SAFE—PROVIDE TO CONSTRUCTION IN ACCORDANCE WITH STATE LAWS.
6. THE SITE IS LOCATED WITHIN A PRIORITY HABITAT OR RARE SPECIES. ALTERATIONS ARE SUBJECT TO APPROVAL BY N.H.E.S.P. UNDER FILE NUMBER 15-34941.
7. THIS PLAN IS INTENDED FOR THE FILING OF A COMPREHENSIVE PERMIT WITH THE BOLTON ZONING BOARD OF APPEALS.

ALL CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE COMPREHENSIVE PERMIT. IN THE EVENT OF A CONFLICT BETWEEN THE PERMIT AND THESE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER FOR CLARIFICATION PRIOR TO CONSTRUCTION.

1.1 **TREE CLEARING**

1.1.1 ALL EROSION CONTROL SHALL BE PLACED PRIOR TO TREE REMOVAL.

1.1.2 THE CONTRACTOR SHALL NOTIFY THE ENGINEER FOR STAKING OF THE LIMITS OF TREE REMOVAL REQUIRED FOR THE CONSTRUCTION OF THE ROAD AND APPURTENANCES PRIOR TO BEGINNING WORK.

1.1.3 TREE DEBRIS SUCH AS CHIPS, TRUNKS AND STUMPS SHALL BE CHIPPED OR REMOVED FROM SITE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. WOOD WASTE SHALL NOT BE BURIED ON-SITE.

1.2 **EARTHWORK**

1.2.1 STRIP TOPSOIL FROM ROADWAY, SEPTIC AND BUILDING AREAS AREAS.

1.2.2 STRIP SUBSOIL FROM UNDER ROADWAY WITHIN A 1' ON 1' INFLUENCE OF THE PROPOSED EDGE OF PAVEMENT.

1.2.3 CONTRACTOR TO REMOVE UNSUITABLE MATERIAL, IF ENCOUNTERED, FROM THE SITE.

1.2.4 SUB-SOIL MAY BE USED FOR NON-STRUCTURAL FILL ON SITE.

1.2.5 STOCKPILE TOPSOIL FOR REUSE ON SITE.

1.2.6 CONTRACTOR TO FILL AREAS UNDER THE PROPOSED ROADWAY TO SUB-GRADE AS REQUIRED.

1.2.7 REFER TO STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR ADDITIONAL REQUIREMENTS FOR STOCKPILING FOR LONG PERIODS OF TIME.

1.3 **COORDINATION WITH OTHER CONSTRUCTION ACTIVITIES**

1.3.1 CONTRACTOR TO REFER TO THE APPROVED SDS PLANS FOR DETAILS PERTAINING TO THE CONSTRUCTION OF THE ON-SITE SEWAGE DISPOSAL SYSTEMS AND WELLS.

1.3.2 CONTRACTOR TO REFER TO THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR ADDITIONAL REQUIREMENTS PERTAINING TO THE EROSION AND SEDIMENTATION CONTROL ON THE SITE DURING CONSTRUCTION ACTIVITIES.

2.1 PIPE & FITTINGS

2.1.1 STORM DRAIN PIPE SHALL BE AS SHOWN ON THE PLANS. ALL DRAIN PIPE SHALL BE AS SPECIFIED ON PLANS.

2.1.2 REFER TO THE APPROVED SDS PLANS FOR SPECIFICATIONS PERTAINING TO THE PIPES AND FITTINGS FOR PROPOSED SANITARY SEWER.

2.2 STORM DRAIN STRUCTURES

2.2.1 MANHOLES SHALL BE STANDARD 4' DIAMETER STRUCTURES AS SHOWN ON THE DETAIL ON SHEET C3.1.

2.2.2 CATCH BASINS SHALL BE STANDARD 4' DIAMETER STRUCTURE WITH A 4' SUMP AND HOOD AS SHOWN OF THE DETAIL ON SHEET C3.1.

2.2.3 MANHOLE RIMS SHALL BE AS MANUFACTURED BY E.J. PRESCOTT (OR APPROVED EQUAL).

2.2.4 CATCH BASIN RIMS SHALL BE AS MANUFACTURED E.J. PRESCOTT (OR APPROVED EQUAL).

2.3 CONCRETE

2.3.1 CAST-IN PLACE CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI OR GREATER UNLESS OTHERWISE NOTED.

2.3.2 CONTRACTOR TO PROVIDE FOR ALL FORM WORK AND REMOVAL OF FORMS AS REQUIRED FOR CAST IN PLACE CONCRETE STRUCTURES.

2.4 BITUMINOUS PAVEMENT

2.4.1 ASPHALT BINDER COURSE SHALL BE 3" THICK COMPACTED IN PLACE CONFORMING TO SSBH M03.11.03 TABLE A BINDER COURSE. BINDER SHALL BE PLACED IN TWO LIFTS.

2.4.2 ASPHALT WEARING COURSE SHALL BE 2" THICK COMPACTED IN PLACE CONFORMING TO SSBH M03.11.03 TABLE A TOP COURSE. TOP COURSE SHALL BE PLACED IN ONE LIFT.

2.4.3 ASPHALT FOR DRIVEWAYS SHALL BE 1 1/2" WEARING COURSE CONFORMING TO SSBH M03.11.03 TABLE A TOP COURSE OVER 1 1/2" BINDER COURSE CONFORMING TO SSBH M03.11.03 TYPE A BINDER COURSE.

2.4.4 NO PAVING BETWEEN NOVEMBER 15TH AND APRIL 1ST.

2.5 SOIL MATERIALS

2.5.1 ROAD GRAVEL SHALL BE PLACED IN TWO LIFTS AS SHOWN ON THE ROAD CROSS SECTIONS ON SHEET C5.3. PLACE 4" OF GRAVEL CONFORMING TO SSBH M1.03.0.0 TYPE B OVER 6" OF GRAVEL CONFORMING TO SSBH M1.03.0.0 TYPE B. ROAD GRAVEL SHALL BE COMPACTED TO 95% DRY DENSITY.

2.5.2 STRUCTURAL FILL SHALL CONFORM TO SSBH M1.03.0.0 TYPE C GRAVEL BORROW (UNLESS OTHERWISE NOTED ON PLANS).

2.5.3 COMMON FILL SHALL CONFORM TO SSBH M1.01.0.0 ORDINARY BORROW.

2.5.4 TOPSOIL SHALL CONFORM TO SSBH M1.07.0.0 TOPSOIL AND PLANTABLE SOIL BORROW.

2.5.6 CRUSHED STONE SHALL CONFORM TO SSBH M2.01.1 CRUSHED STONE.

2.5.7 CONTRACTOR IS RESPONSIBLE FOR PROVIDING SIEVE ANALYSIS, GRADATION AND COMPACTION TEST DATA OF MATERIALS AS REQUIRED BY THE TOWN'S INSPECTOR.

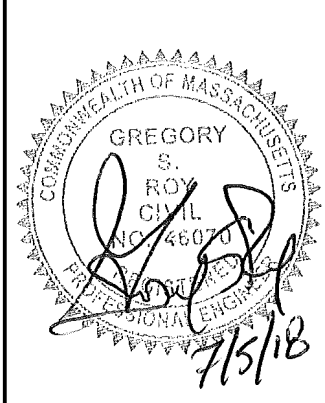
2.6 GUARDRAIL

2.6.1 GUARDRAIL SHALL BE CONSTRUCTED IN ACCORDANCE WITH APPROVED MASS HIGHWAY DETAILS AND PRACTICES.

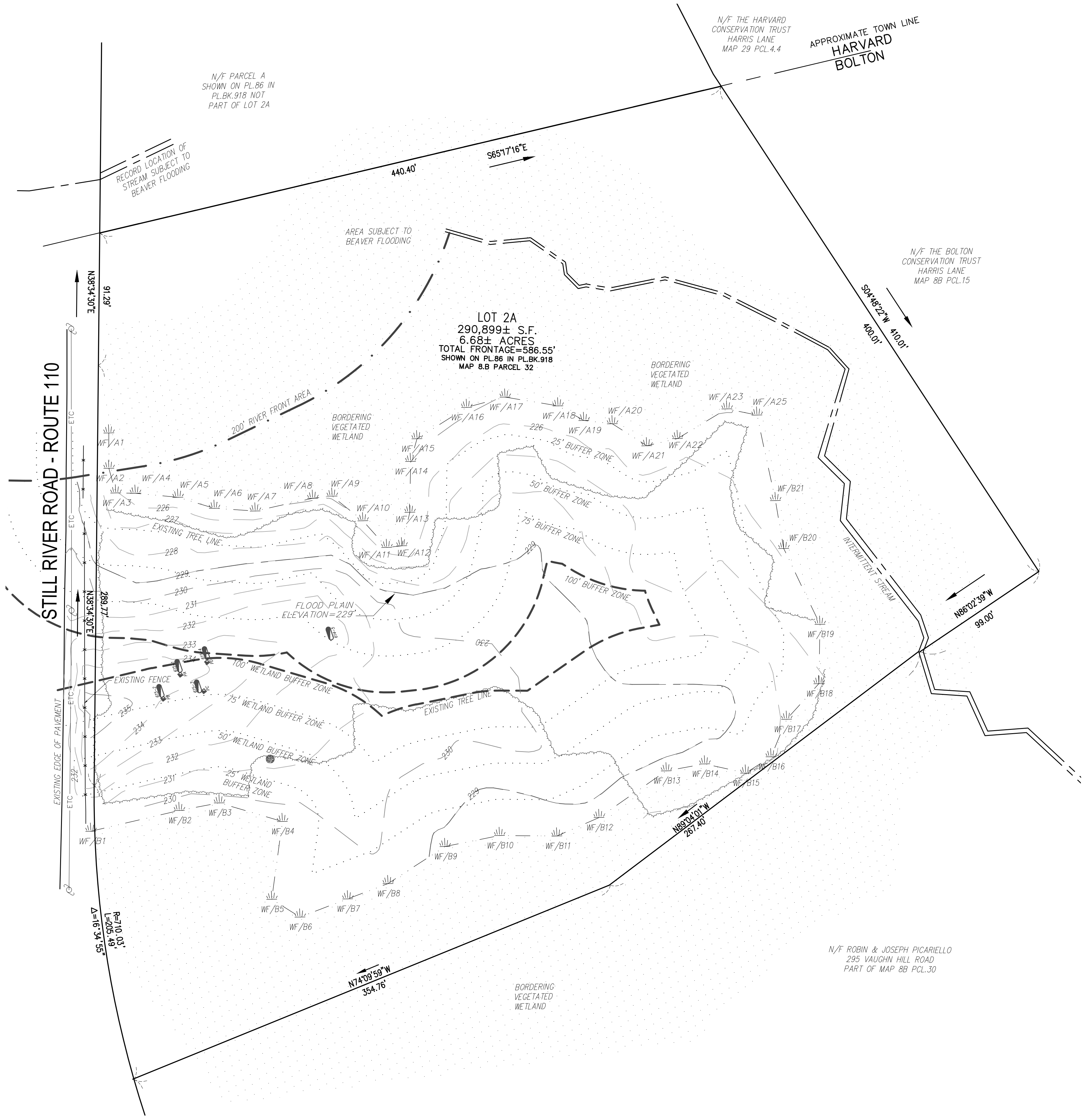
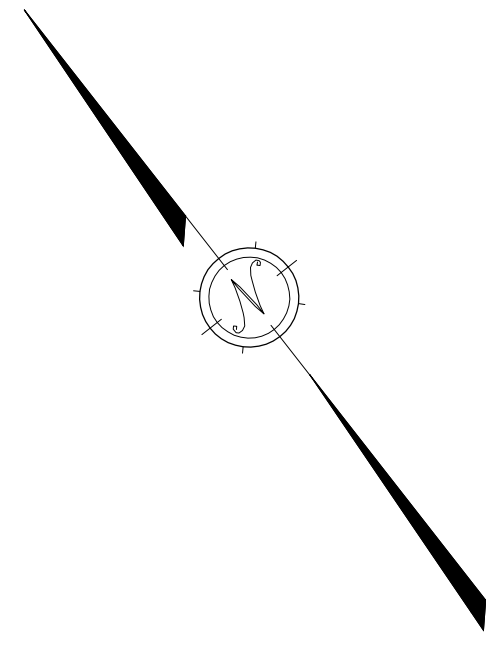
2.6.2 GUARDRAIL SHALL BE SUBMIT WITH STEEL REINFORCEMENT CONFORMING TO THE REQUIREMENTS OF MASS HIGHWAY STANDARDS.

2.6.3 CONTRACTOR TO PROVIDE DRAWINGS FOR APPROVAL BY THE ENGINEER PRIOR TO CONSTRUCTION OF THE GUARDRAIL.

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION



DATE:	7/5/18	NOTES, SYMBOLS AND ABBREVIATIONS STILL RIVER COMMONS BOLTON, MASSACHUSETTS			
DESIGN BY:	JPL				
DRAWN BY:	JPL	NO.	DATE	DESCRIPTION	BY
CHECKED BY:	GSR				



- GENERAL NOTES:**
1. TOPOGRAPHIC INFORMATION SHOWN ON THIS PLAN WAS PREPARED BY DUCHARME & DILLIS CIVIL DESIGN GROUP, INC. BASED ON AN ON-THE-GROUND SURVEY ON A VERTICAL DATUM OF N.A.V.D 1988.
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 4. A PORTION OF THE SITE IS LOCATED WITHIN THE 100 YEAR FLOOD ZONE AS SHOWN ON THE FLOOD INSURANCE RATE MAP: 2502704HASTE & 2502704HBE, EFFECTIVE DATE JULY 04, 2011 FOR THE TOWN OF BOLTON.
 5. 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.
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 7. THIS PLAN IS INTENDED FOR THE FILING OF A COMPREHENSIVE PERMIT WITH THE BOLTON ZONING BOARD OF APPEALS.

NAME OF APPROVING AUTHORITY:				NAME OF SOIL EVALUATOR:					
BOLTON BOARD OF HEALTH				DUCHARME AND DILLIS CIVIL DESIGN GROUP					
BILL BROOKINGS, NABOH AGENT				WILLIAM J. "JACK" MALONEY, JR. (SE-13704)					
IN-SEASON GROUND WATER TESTING - (IF REQ'D)				PERCOLATION TEST DATA					
TEST PIT NO.	DATE	SURFACE ELEVATION	DEPTH TO OBSERVED GROUNDWATER	G.WATER ELEVATION	TEST PIT NO.	DATE	TOP OF 12" OF WATER		RATE: MINUTES PER INCH
							DEPTH FROM SURFACE	SURFACE ELEVATION	
					PA	6/26/15	30"	234.24	2 MPI
					PB	6/26/15	45"	234.24	2 MPI
					PC	6/26/15	44"	233.84	2 MPI
					PD	6/26/15	46"	233.84	2 MPI
SOIL CLASSIFICATION:				WINDSOR-LOAMY FINE SAND					
GEOLOGICAL MATERIAL:				PROGLACIAL OUTWASH					
LAND FORM:				KAME TERRACE					

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OWNER:

TURN LEFT, LLC
130 PARKER STREET, UNIT 12
LAWRENCE, MASSACHUSETTS

APPLICANT:

STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:

1 in. = 40 ft.

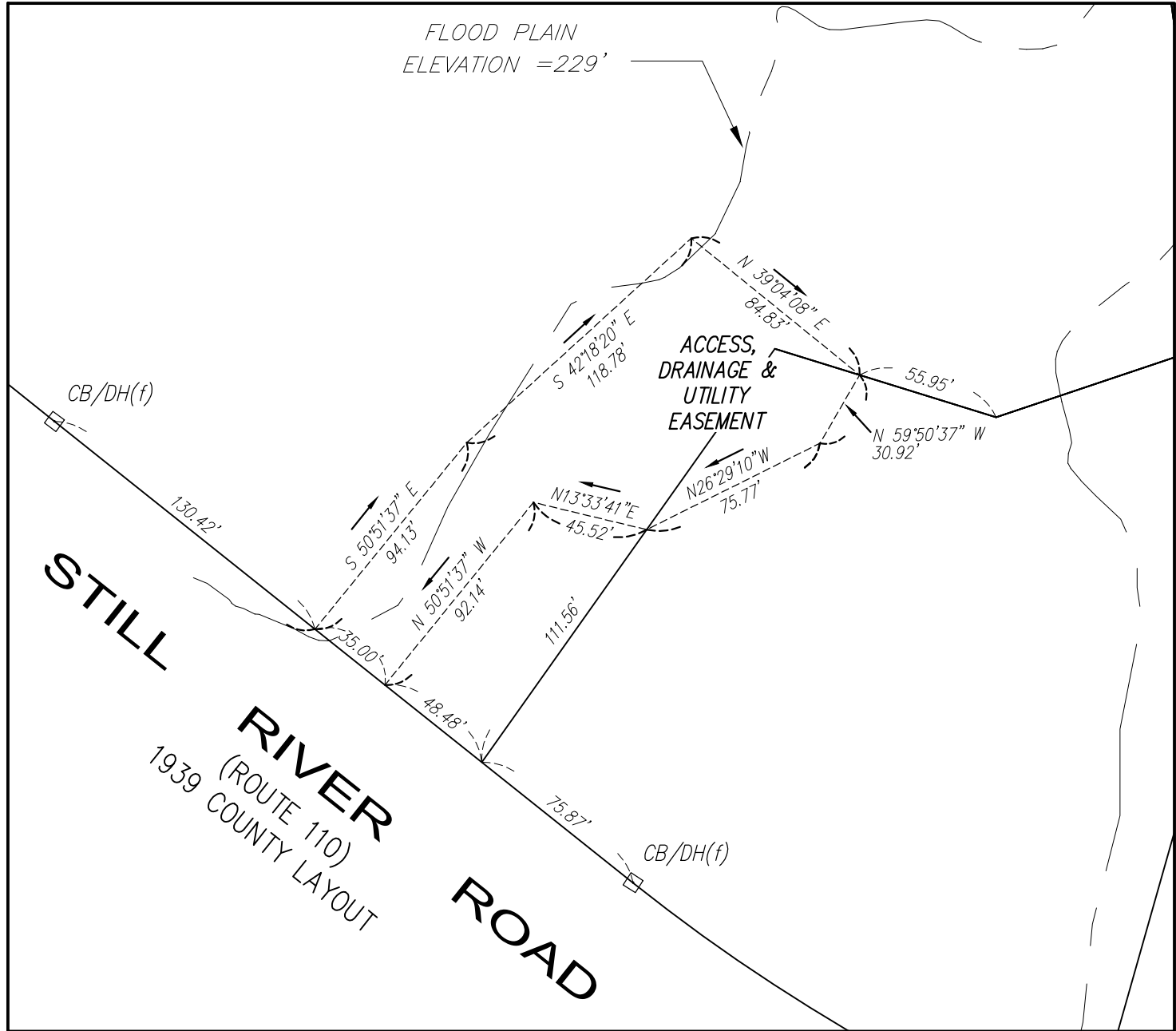
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EXISTING CONDITIONS PLAN
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-EXISTING
SHEET NO. **C1.2**



ACCESS, DRAINAGE & UTILITY EASEMENT DETAIL
1"=60'

NOTES:

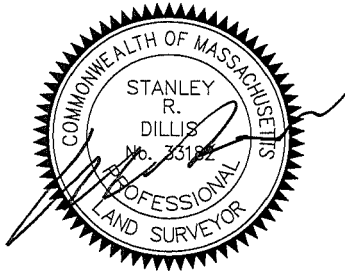
RECORD OWNER:
TURN LEFT, LLC
130 PARKER STREET, UNIT 12
LAWRENCE, MA
DEED REFERENCE:
BOOK 58346 PAGE 149

PLAN REFERENCE:
PLAN BOOK 728 PLAN 87
PLAN BOOK 728 PLAN 63
PLAN BOOK 814 PLAN 73
PLAN BOOK 809 PLAN 96
PLAN BOOK 808 PLAN 36
PLAN BOOK 918 PLAN 86
PLAN BOOK 932 PLAN 91

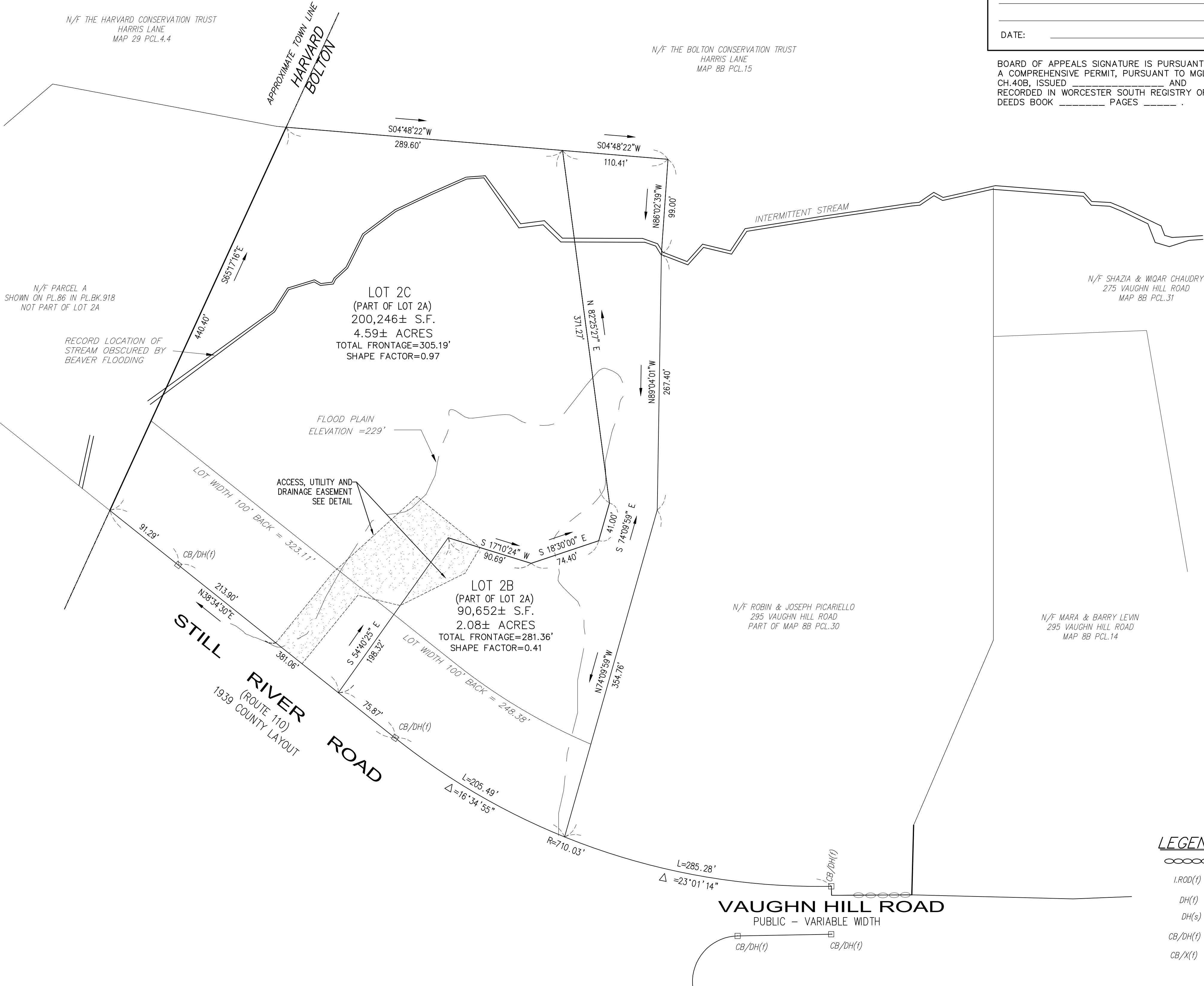
ASSESSORS REFERENCE: MAP 8B, PARCEL 32
ZONING DISTRICT: RESIDENTIAL

LOTS 2B & 2C ARE A DIVISION OF LOT 2A SHOWN ON PL.86 IN
PL.BK.918.

I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES
AND REGULATIONS OF THE REGISTERS OF DEEDS OF
THE COMMONWEALTH OF MASSACHUSETTS.



PROFESSIONAL LAND SURVEYOR



LEGEND

- ○ ○ ○ ○ DENOTES STONE WALL
- I.ROD(f) ○ DENOTES IRON PIPE FOUND
- DH(f) ● DENOTES DRILL HOLE FOUND
- DH(s) ● DENOTES DRILL HOLE SET
- CB/DH(f) □ DENOTES CONCRETE BOUND WITH DRILL HOLE FOUND
- CB/X(f) □ DENOTES CONCRETE BOUND WITH X FOUND

APPROVAL NOT REQUIRED UNDER
THE SUBDIVISION CONTROL LAW
BOLTON ZONING BOARD OF APPEALS

DATE: _____

BOARD OF APPEALS SIGNATURE IS PURSUANT TO
A COMPREHENSIVE PERMIT, PURSUANT TO MGL
CH.40B, ISSUED _____ AND
RECORDED IN WORCESTER SOUTH REGISTRY OF
DEEDS BOOK _____ PAGES _____ .

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OWNER:

TURN LEFT, LCC
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LAWRENCE, MASSACHUSETTS

APPLICANT:

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28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:

60 0 30 60 120 240
1 in. = 60 ft.

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DATE: 7/5/18

DESIGN BY: JPL

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CHECKED BY: GSR

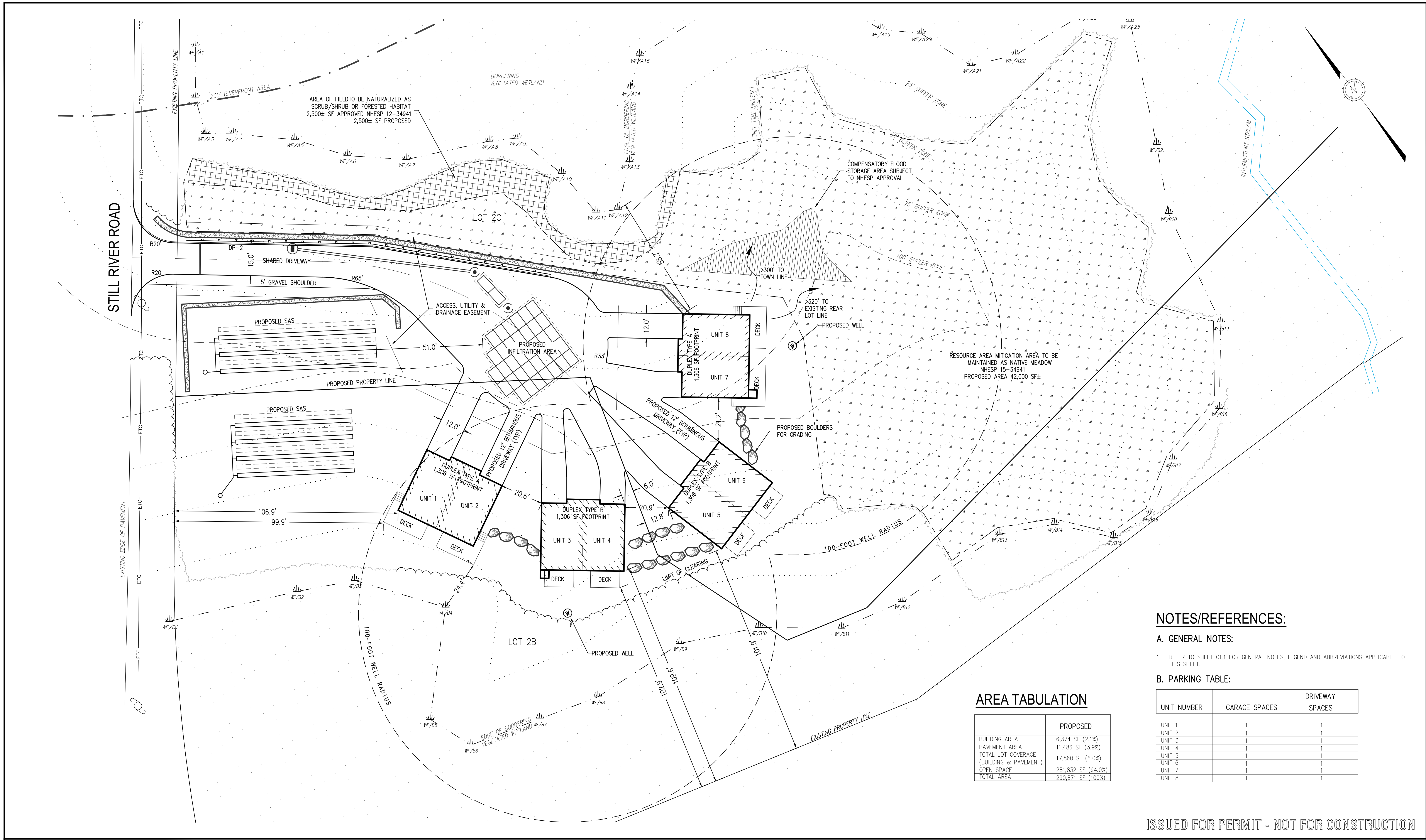
LOT LAYOUT PLAN
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P

DRAWING NO. 3339-EXISTING

SHEET NO. C2.0



NOTES/REFERENCES:

A. GENERAL NOTES:

1. REFER TO SHEET C1.1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS APPLICABLE TO THIS SHEET.

B. PARKING TABLE:

UNIT NUMBER	GARAGE SPACES	DRIVEWAY SPACES
UNIT 1	1	1
UNIT 2	1	1
UNIT 3	1	1
UNIT 4	1	1
UNIT 5	1	1
UNIT 6	1	1
UNIT 7	1	1
UNIT 8	1	1

AREA TABULATION

	PROPOSED
BUILDING AREA	6,374 SF (2.1%)
PAVEMENT AREA	11,486 SF (3.9%)
TOTAL LOT COVERAGE (BUILDING & PAVEMENT)	17,860 SF (6.0%)
OPEN SPACE	281,832 SF (94.0%)
TOTAL AREA	290,671 SF (100%)

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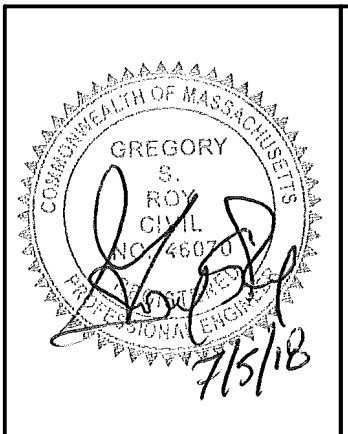
APPLICANT:

STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:


1 in. = 20 ft.

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DATE:

7/5/18

DESIGN BY:

JPL

DRAWN BY:

JPL

CHECKED BY:

GSR

UNIT LAYOUT STILL RIVER COMMONS BOLTON, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY

JOB NO.

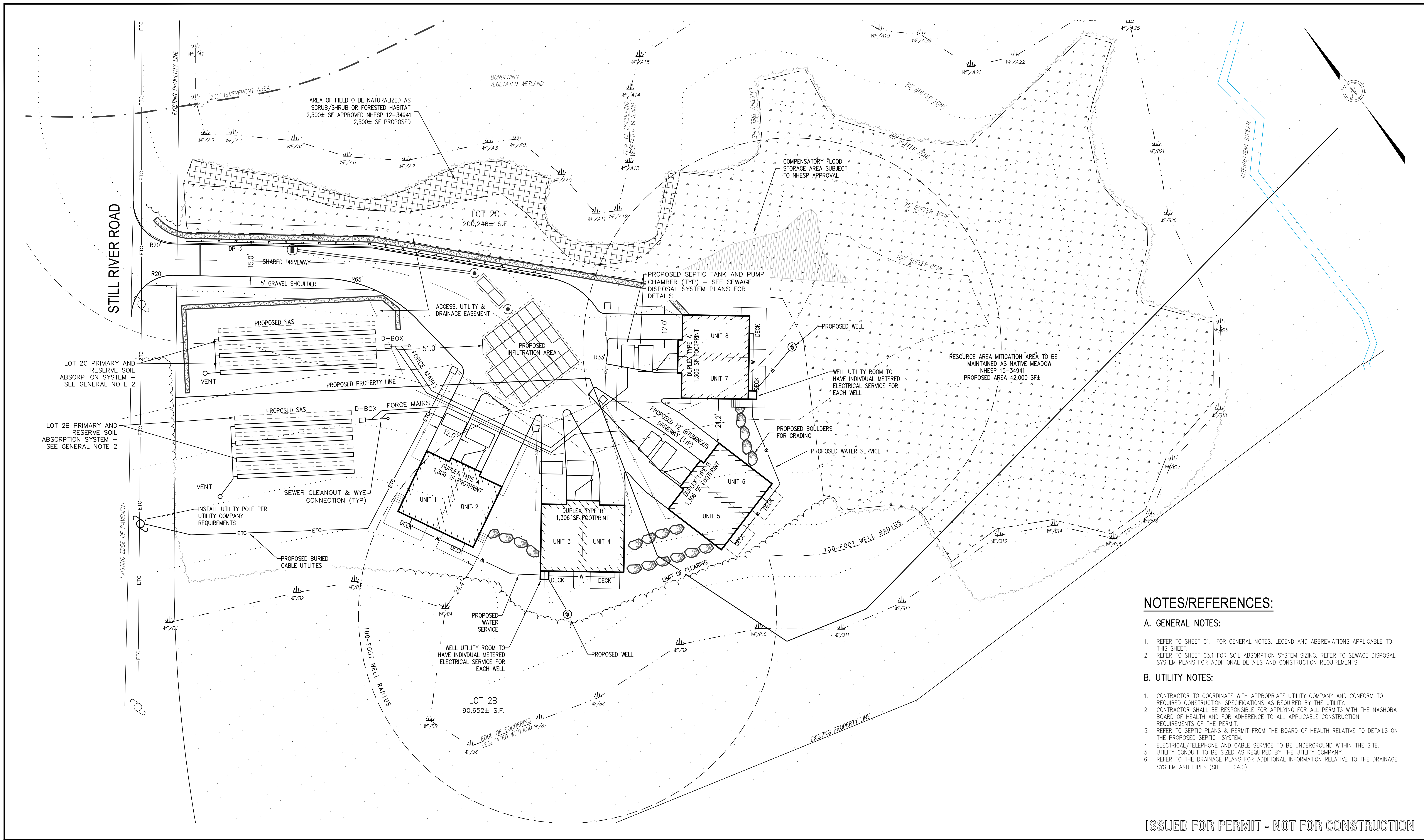
3339-P

DRAWING NO.

3339-UNIT_LAYOUT

SHEET NO.

C2.1



NOTES/REFERENCES:

A. GENERAL NOTES:

- REFER TO SHEET C1.1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS APPLICABLE TO THIS SHEET.
- REFER TO SHEET C3.1 FOR SOIL ABSORPTION SYSTEM SIZING. REFER TO SEWAGE DISPOSAL SYSTEM PLANS FOR ADDITIONAL DETAILS AND CONSTRUCTION REQUIREMENTS.

B. UTILITY NOTES:

- CONTRACTOR TO COORDINATE WITH APPROPRIATE UTILITY COMPANY AND CONFORM TO REQUIRED CONSTRUCTION SPECIFICATIONS AS REQUIRED BY THE UTILITY.
- 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.
- 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)

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PHONE: (978) 779-6091 FAX: (978) 779-0260

www.DucharmeandDillis.com

OWNER:

TURN LEFT, LLC

130 PARKER STREET, UNIT 12

LAWRENCE, MASSACHUSETTS

APPLICANT:

STILL RIVER ROAD DEVELOPMENT, LLC

28 COUNTRY CLUB LANE

MIDDLETON, MASSACHUSETTS

SCALE:

20 0 10 20 40 80

1 in. = 20 ft.

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DATE: 7/5/18

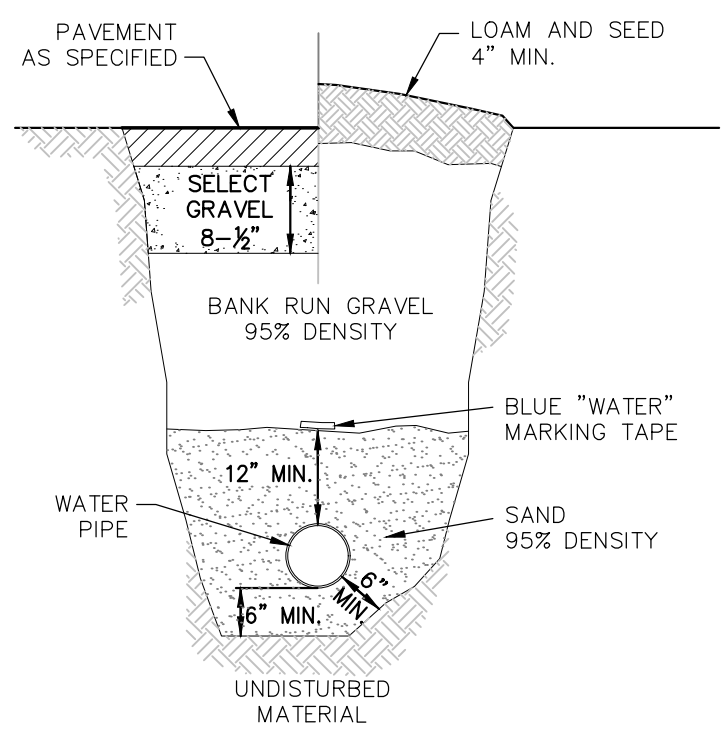
DESIGN BY: JPL

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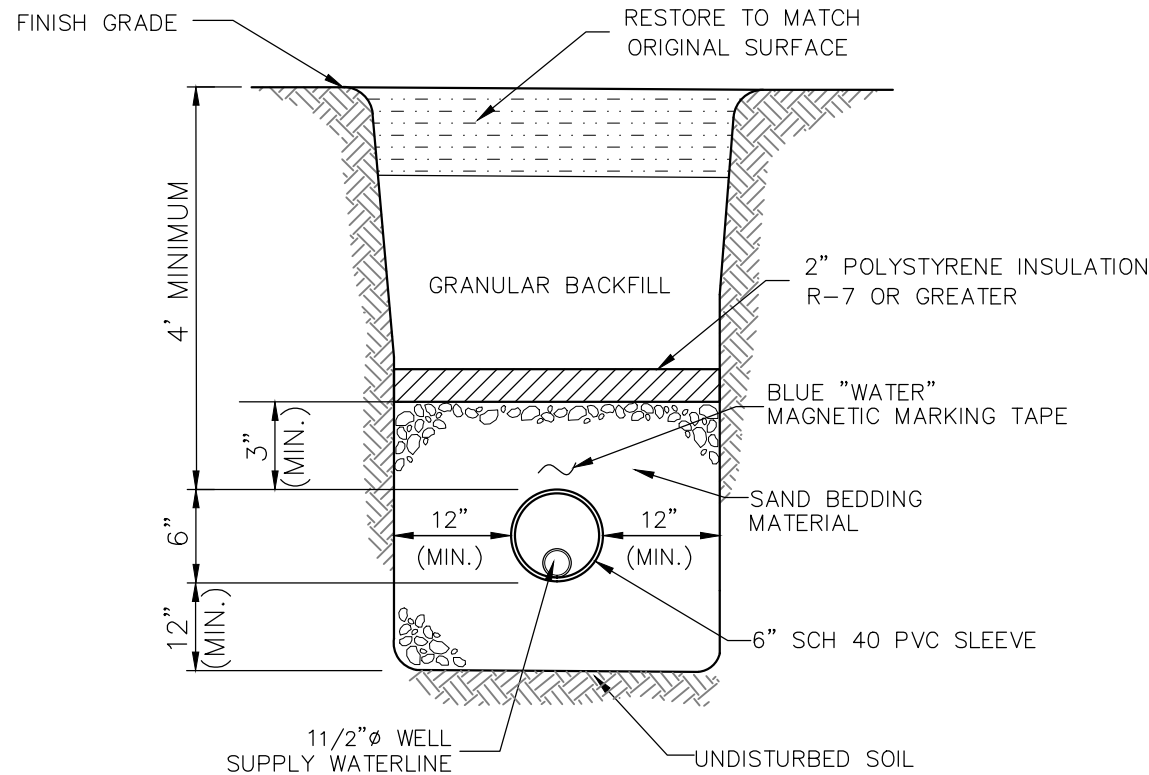
UTILITIES PLAN			
STILL RIVER COMMONS			
BOLTON, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY

JOB NO.	3339-P
DRAWING NO.	3339-UTILITY
SHEET NO.	C3.0



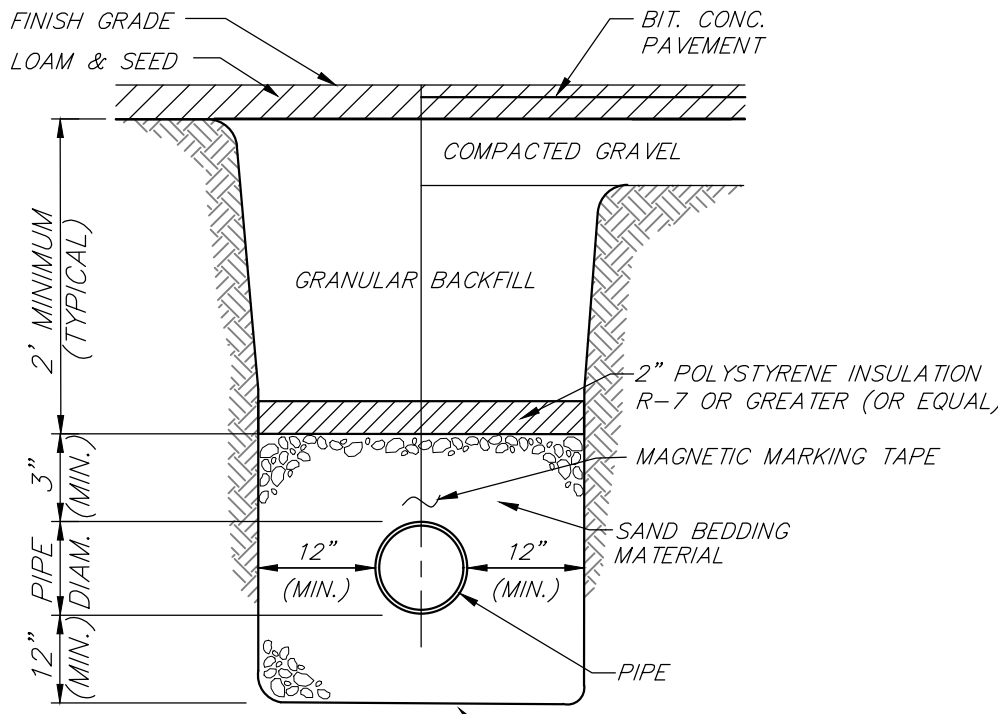
WATER MAIN IN TRENCH DETAIL

NOT TO SCALE



WATERLINE INSULATION

AT WETLAND CROSSING
NOT TO SCALE



FORCE MAIN INSULATION

NOT TO SCALE

SEWAGE DISPOSAL CALCULATIONS:

HYDRAULIC LOADING:
EACH SYSTEM HAS BEEN DESIGNED FOR NINE (9) BEDROOMS AT 110 GALLONS PER DAY PER BEDROOM = 990 GALLONS PER DAY.

SEPTIC TANK SIZE:
AVERAGE DAILY FLOW 2 BEDROOM UNIT = 220 GPD
MINIMUM STORAGE REQUIRED 2 BEDROOM UNIT: 220 GPD X 200% = 440 GAL
AVERAGE DAILY FLOW 3 BEDROOM UNIT = 330 GPD
MINIMUM STORAGE REQUIRED 3 BEDROOM UNIT: 330 GPD X 200% = 660 GAL
SEPTIC TANK PROVIDED UNITS 1 & 2 = 2,500 GALLON TWO-COMPARTMENT TANK (H2O REQUIRED)
SEPTIC TANK PROVIDED UNITS 3 & 4 = 2,500 GALLON TWO-COMPARTMENT TANK (H2O REQUIRED)
SEPTIC TANK PROVIDED UNITS 5 & 6 = 2,500 GALLON TWO-COMPARTMENT TANK (H2O REQUIRED)
SEPTIC TANK PROVIDED UNITS 7 & 8 = 2,500 GALLON TWO-COMPARTMENT TANK (H2O REQUIRED)

PRIMARY LEACHING AREA LOT 2B (UNITS 1 - 4):
DESIGN PERCOLATION RATE = 2 M.P.I. (SOIL CLASS I)
EFFLUENT LOADING RATE = 0.74 GALLONS/S.F.
LEACHING AREA REQUIRED = 990 GPD / 0.74 GPD/S.F. = 1338 S.F.
TOTAL LEACHING AREA PROVIDED = (4) 56' TRENCHES, 2' WIDE X 2' DEEP (4 X 56 X 6) = 1344 S.F.
TOTAL DESIGN FLOW = 1344 S.F. X 0.74 GALLON/S.F. = 994 GALLONS.

RESERVE LEACHING AREA LOT 2B (UNITS 1 - 4):
DESIGN PERCOLATION RATE = 2 M.P.I. (SOIL CLASS I)
EFFLUENT LOADING RATE = 0.74 GALLONS/S.F.
LEACHING AREA REQUIRED = 990 GPD / 0.74 GPD/S.F. = 1338 S.F.
TOTAL LEACHING AREA PROVIDED = (4) 56' TRENCHES, 2' WIDE X 2' DEEP (4 X 56 X 6) = 1344 S.F.
TOTAL DESIGN FLOW = 1344 S.F. X 0.74 GALLON/S.F. = 994 GALLONS.

PRIMARY LEACHING AREA LOT 2C (UNITS 5-6):
DESIGN PERCOLATION RATE = 2 M.P.I. (SOIL CLASS I)
EFFLUENT LOADING RATE = 0.74 GALLONS/S.F.
LEACHING AREA REQUIRED = 990 GPD / 0.74 GPD/S.F. = 1338 S.F.
TOTAL LEACHING AREA PROVIDED = (3) 75' TRENCHES, 2' WIDE X 2' DEEP (3 X 75 X 6) = 1350 S.F.
TOTAL DESIGN FLOW = 1350 S.F. X 0.74 GALLON/S.F. = 999 GALLONS.

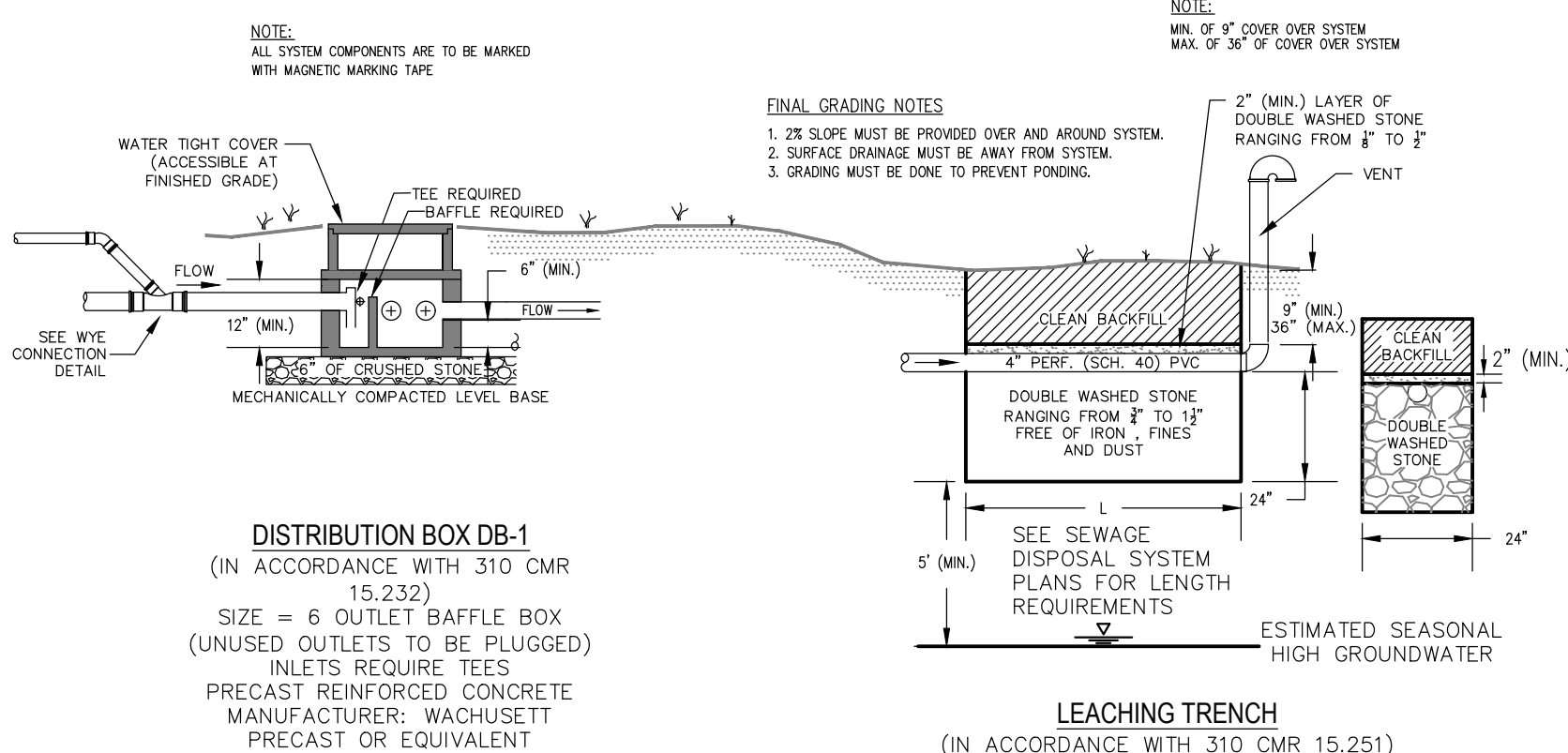
RESERVE LEACHING AREA LOT 2C (UNITS 5-6):
DESIGN PERCOLATION RATE = 2 M.P.I. (SOIL CLASS I)
EFFLUENT LOADING RATE = 0.74 GALLONS/S.F.
LEACHING AREA REQUIRED = 990 GPD / 0.74 GPD/S.F. = 1338 S.F.
TOTAL LEACHING AREA PROVIDED = (3) 75' TRENCHES, 2' WIDE X 2' DEEP (3 X 75 X 6) = 1350 S.F.
TOTAL DESIGN FLOW = 1350 S.F. X 0.74 GALLON/S.F. = 999 GALLONS.

NITROGEN LOADINGS:
LOT AREA / 40,000 SF X 440 GPD

LOT 2B
90,836 SF / 40,000 SF X 440 GPD = 999 GPD
OK 999 GPD > 990 GPD

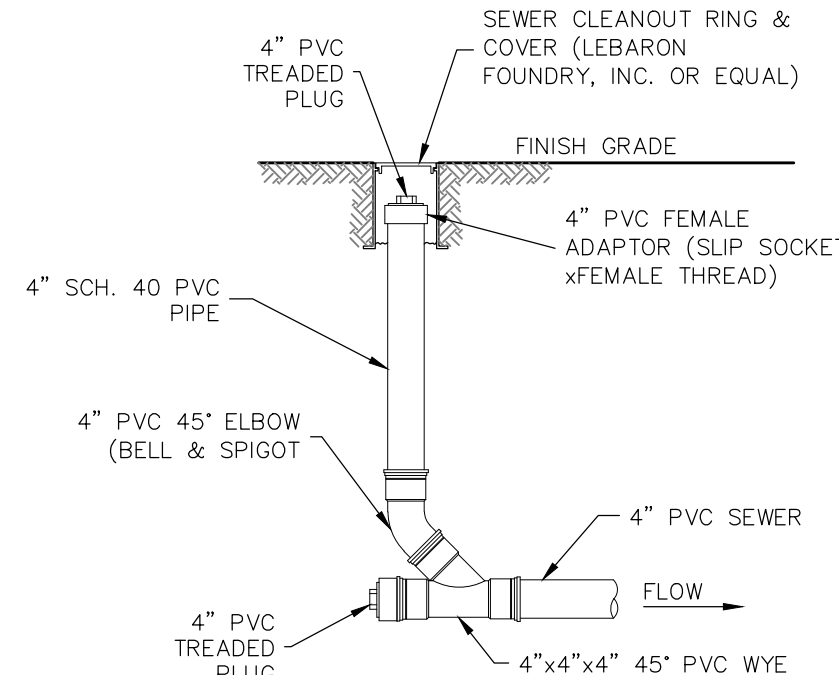
LOT 2C
200,035 SF / 40,000 SF X 440 GPD = 2,200 GPD
OK 2,200 GPD > 990 GPD

SEE SEWAGE DISPOSAL SYSTEM PLANS FOR DESIGN DETAILS, CONSTRUCTION DETAILS AND PUMPING SPECIFICATIONS



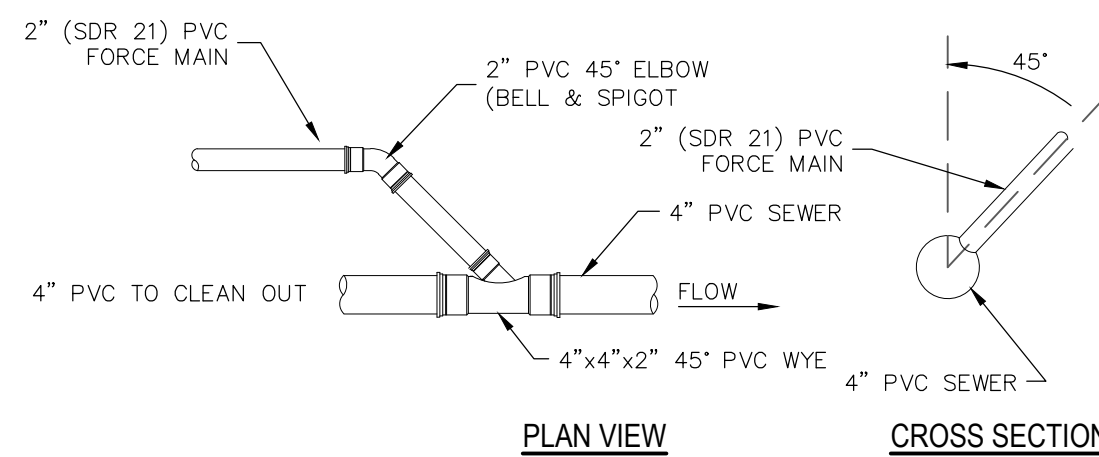
TYPICAL SAS PROFILE

NOT TO SCALE



SEWER CLEANOUT DETAIL

NOT TO SCALE



WYE CONNECTION DETAIL

NOT TO SCALE

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1092 MAIN STREET, P.O. BOX 428 BOLTON, MASSACHUSETTS 01740

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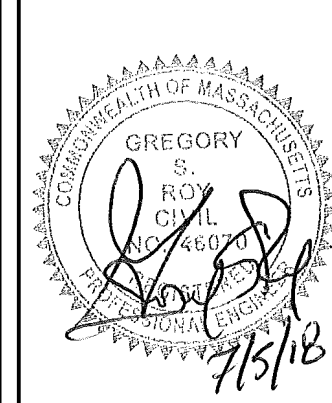
TURN LEFT, LLC
130 PARKER STREET, UNIT 12
LAWRENCE, MASSACHUSETTS

APPLICANT:

STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:

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DATE:

7/5/18

DESIGN BY:

JPL

DRAWN BY:

JPL

CHECKED BY:

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UTILITY DETAIL PLAN STILL RIVER COMMONS BOLTON, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY

JOB NO.

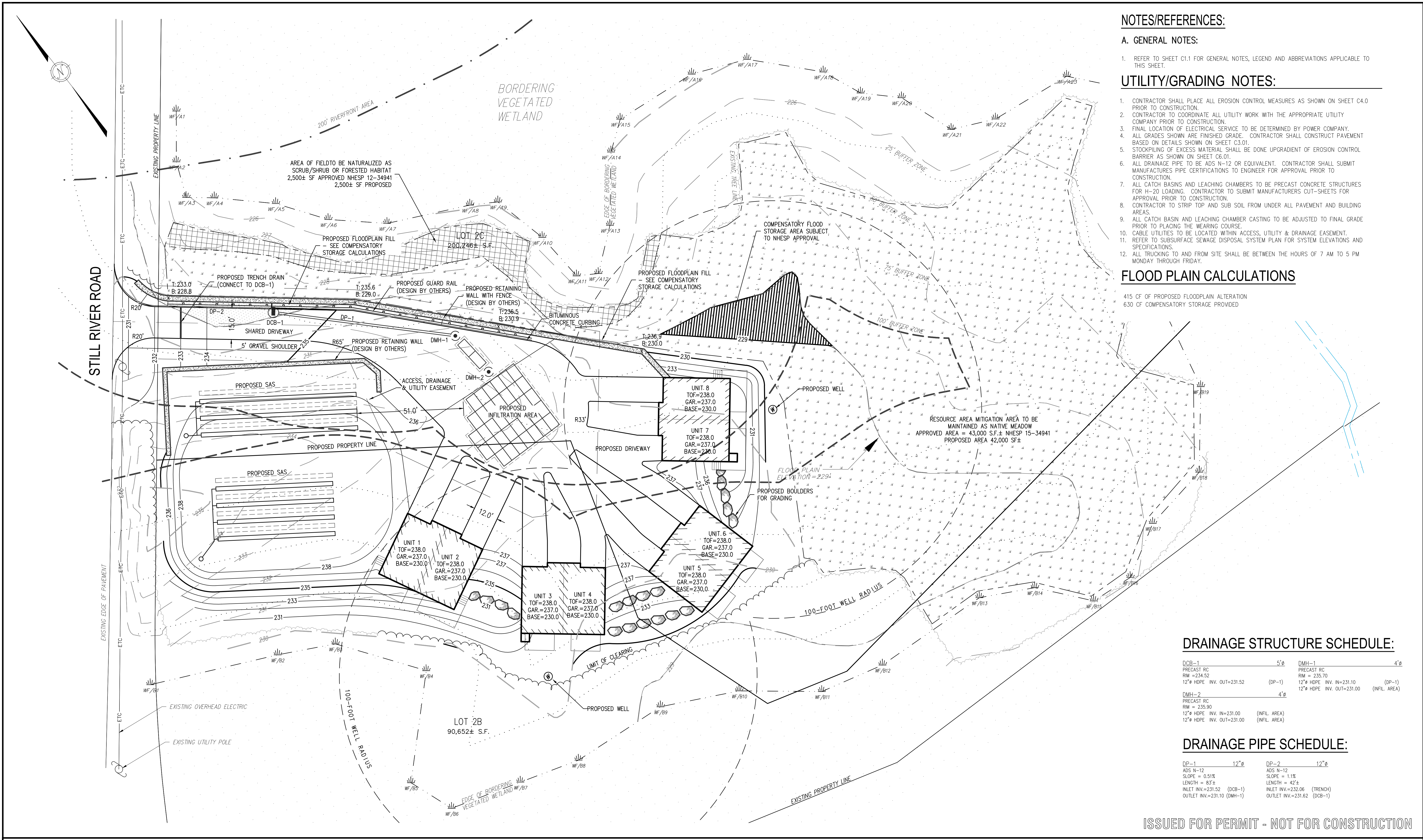
3339-P

DRAWING NO.

3339-UTILITY

SHEET NO.

C3.1



NOTES/REFERENCES:

A. GENERAL NOTES:

1. REFER TO SHEET C1.1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS APPLICABLE TO THIS SHEET.

UTILITY/GRADING NOTES:

1. CONTRACTOR SHALL PLACE ALL EROSION CONTROL MEASURES AS SHOWN ON SHEET C4.0 PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO COORDINATE ALL UTILITY WORK WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO CONSTRUCTION.
3. FINAL LOCATION OF ELECTRICAL SERVICE TO BE DETERMINED BY POWER COMPANY.
4. ALL GRADES SHOWN ARE FINISHED GRADE. CONTRACTOR SHALL CONSTRUCT PAVEMENT BASED ON DETAILS SHOWN ON SHEET C3.01.
5. STOCKPILING OF EXCESS MATERIAL SHALL BE DONE UPGRADIENT OF EROSION CONTROL BARRIER AS SHOWN ON SHEET C6.01.
6. ALL DRAINAGE PIPE TO BE ADS N-12 OR EQUIVALENT. CONTRACTOR SHALL SUBMIT MANUFACTURERS PIPE CERTIFICATIONS TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
7. 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.
8. CONTRACTOR TO STRIP TOP AND SUB SOIL FROM UNDER ALL PAVEMENT AND BUILDING AREAS.
9. ALL CATCH BASIN AND LEACHING CHAMBER CASTING TO BE ADJUSTED TO FINAL GRADE PRIOR TO PLACING THE WEARING COURSE.
10. CABLE UTILITIES TO BE LOCATED WITHIN ACCESS, UTILITY & DRAINAGE EASEMENT.
11. REFER TO SUBSURFACE SEWAGE DISPOSAL SYSTEM PLAN FOR SYSTEM ELEVATIONS AND SPECIFICATIONS.
12. ALL TRUCKING TO AND FROM SITE SHALL BE BETWEEN THE HOURS OF 7 AM TO 5 PM MONDAY THROUGH FRIDAY.

FLOOD PLAIN CALCULATIONS

415 CF OF PROPOSED FLOODPLAIN ALTERATION
630 CF COMPENSATORY STORAGE PROVIDED

DRAINAGE STRUCTURE SCHEDULE:

DCB-1	5"	DMH-1	4"
PRECAST RC		PRECAST RC	
RM = 234.52		RM = 235.70	
12" HDPE INV. OUT=231.52	(DP-1)	12" HDPE INV. IN=231.10	(DP-1)
		12" HDPE INV. OUT=231.00	(INFIL. AREA)
DMH-2	4"		
PRECAST RC			
RM = 235.90			
12" HDPE INV. IN=231.00	(INFIL. AREA)		
12" HDPE INV. OUT=231.00	(INFIL. AREA)		

DRAINAGE PIPE SCHEDULE:

DP-1	12"	DP-2	12"
ADS N-12		ADS N-12	
SLOPE = 0.51%		SLOPE = 1.1%	
LENGTH = 83'±		LENGTH = 42'±	
INLET INV.=231.52 (DCB-1)		INLET INV.=232.06 (TRENCH)	
OUTLET INV.=231.10 (DMH-1)		OUTLET INV.=231.62 (DCB-1)	

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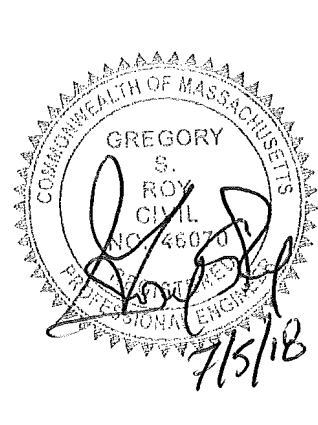
MIDDLETON, MASSACHUSETTS

SCALE:

20 0 10 20 40 80

1 in. = 20 ft.

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DATE:

7/5/18

DESIGN BY:

JPL

DRAWN BY:

JPL

CHECKED BY:

GSR

GRADING & DRAINAGE PLAN

STILL RIVER COMMONS

BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO.

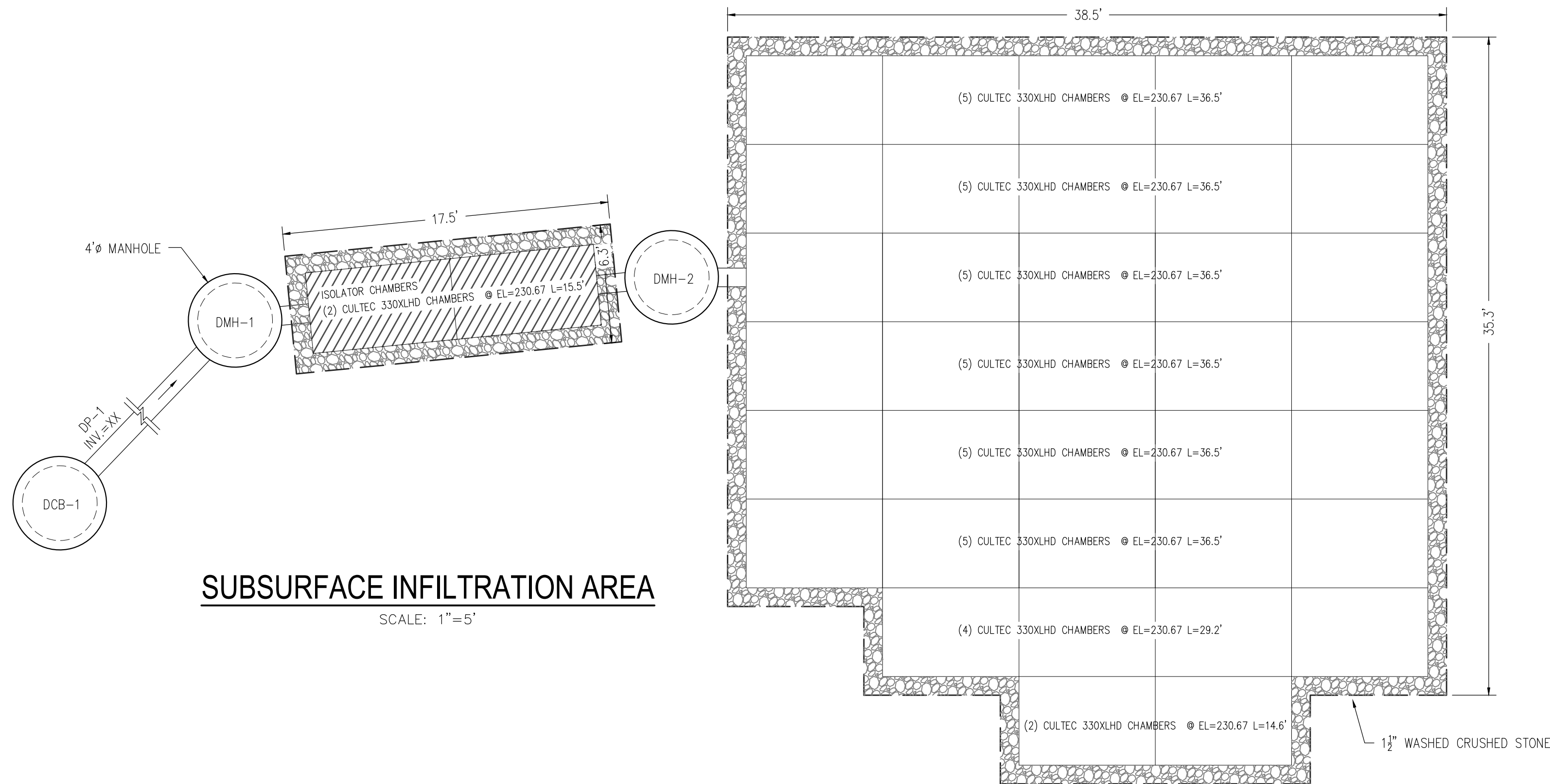
3339-P

DRAWING NO.

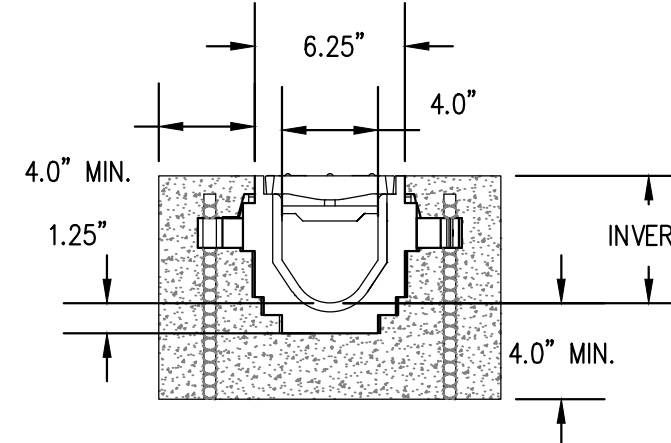
3339-GRADE

SHEET NO.

C4.0



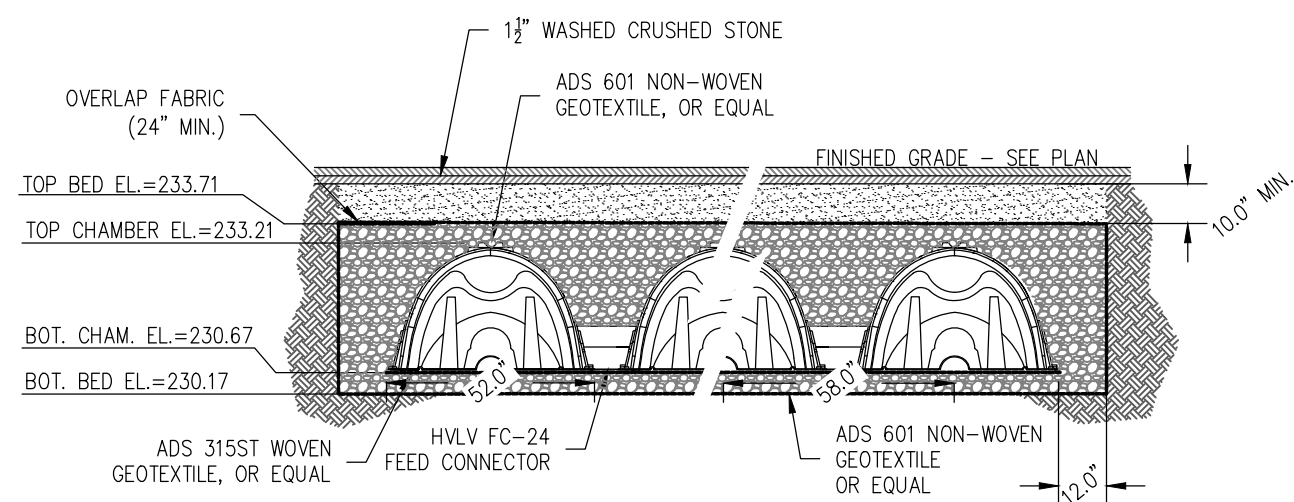
SUBSURFACE INFILTRATION AREA
SCALE: 1"=5'



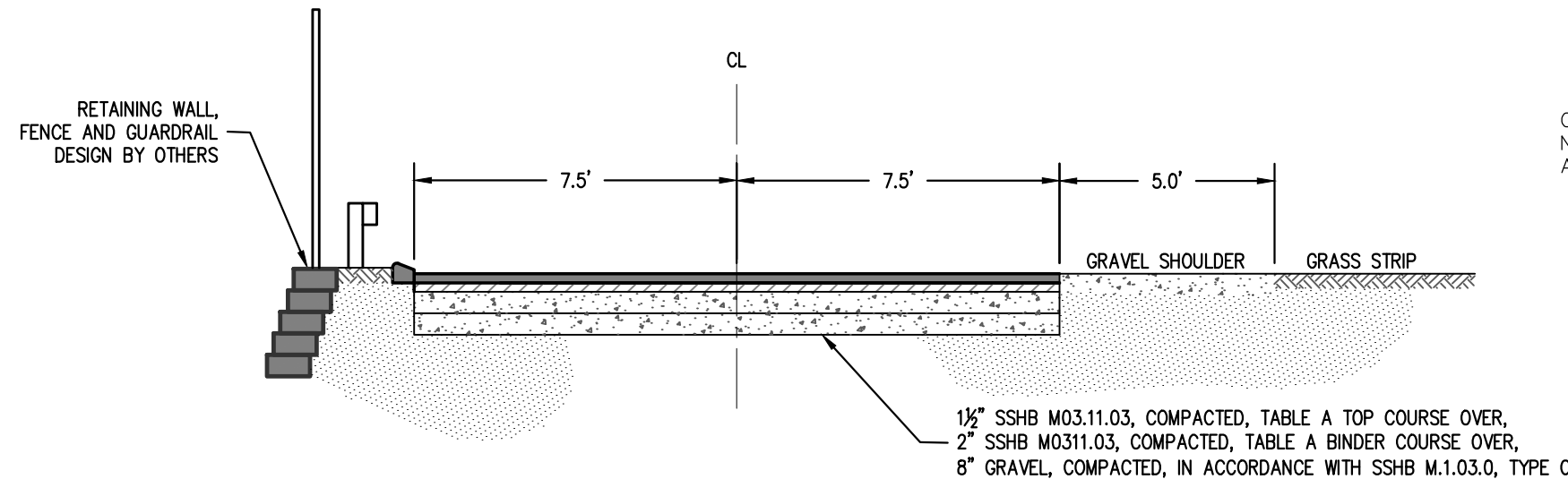
ZURN TRENCH DRAIN SYSTEM		
#Z886 HDPE CHANNEL, SERIES CPZ886		
TRENCH #	SHALLOW INV. (C)	DEEP INV. (D)
8612	10.10"	10.70"
8613	10.70"	11.30"

NOTES:
1. ACTUAL CHANNEL LENGTH IS 81.25" TO ALLOW FOR OVERLAP.
2. INSTALL Z886 E 4" OUTLET END CAP.

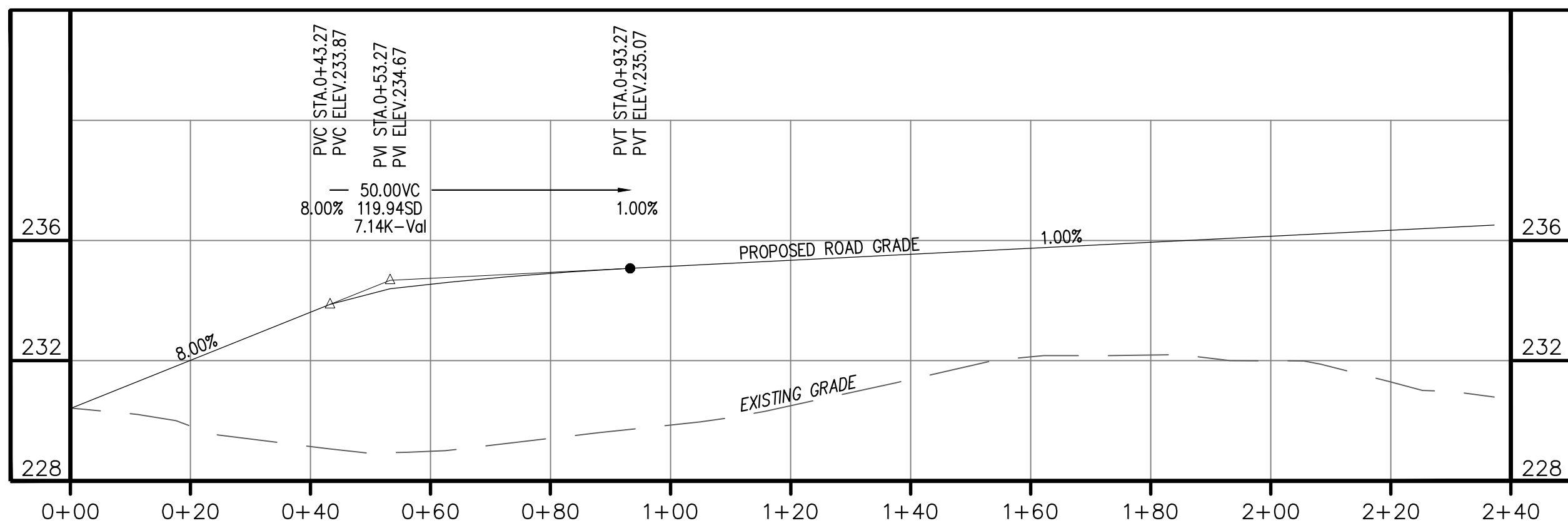
ZURN TRENCH DRAIN DETAIL
NOT TO SCALE



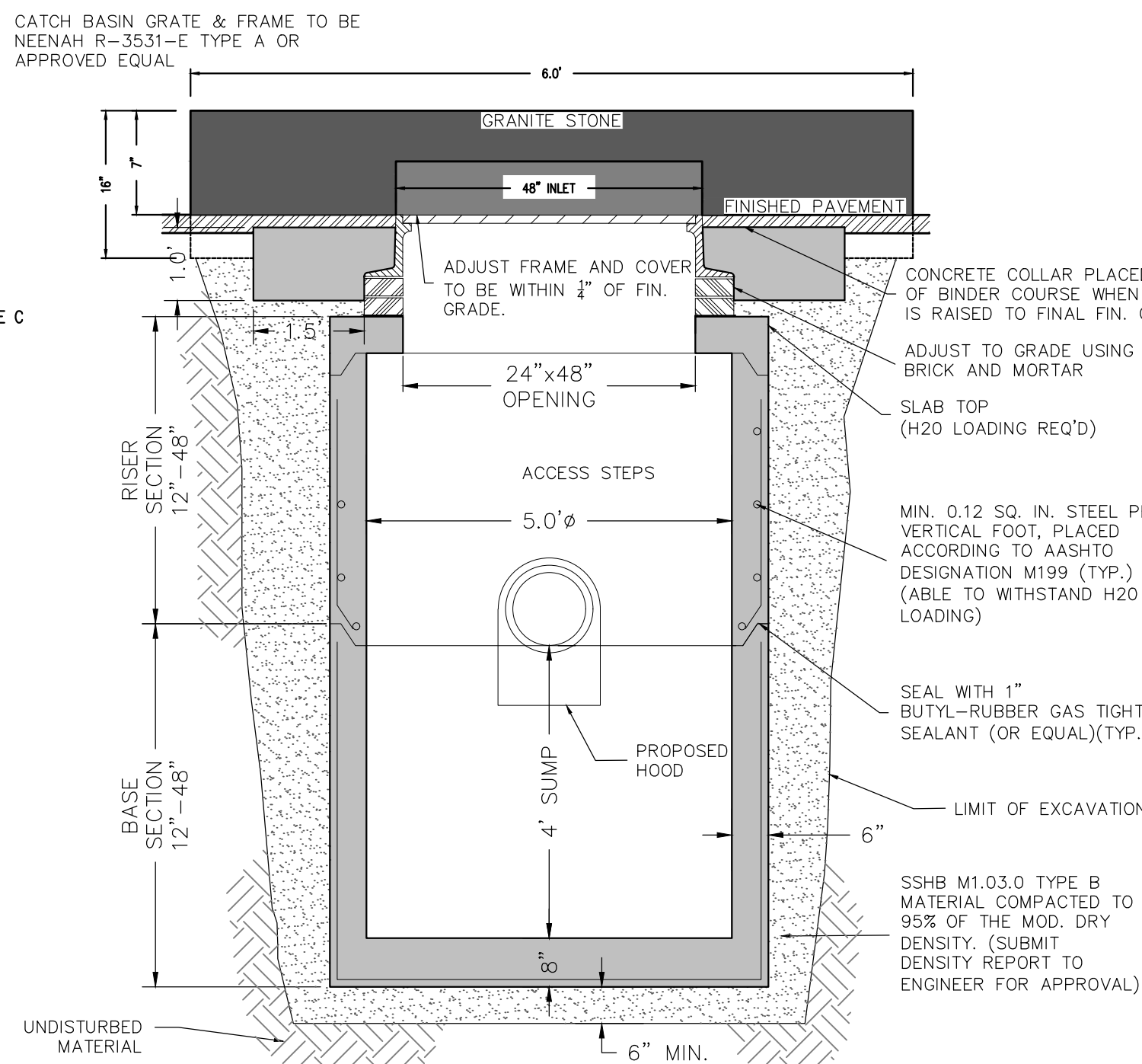
**SUBSURFACE INFILTRATION AREA
CROSS-SECTION**
SCALE: 1"=4'



DRIVEWAY CROSS SECTION
SCALE: 1"=4'

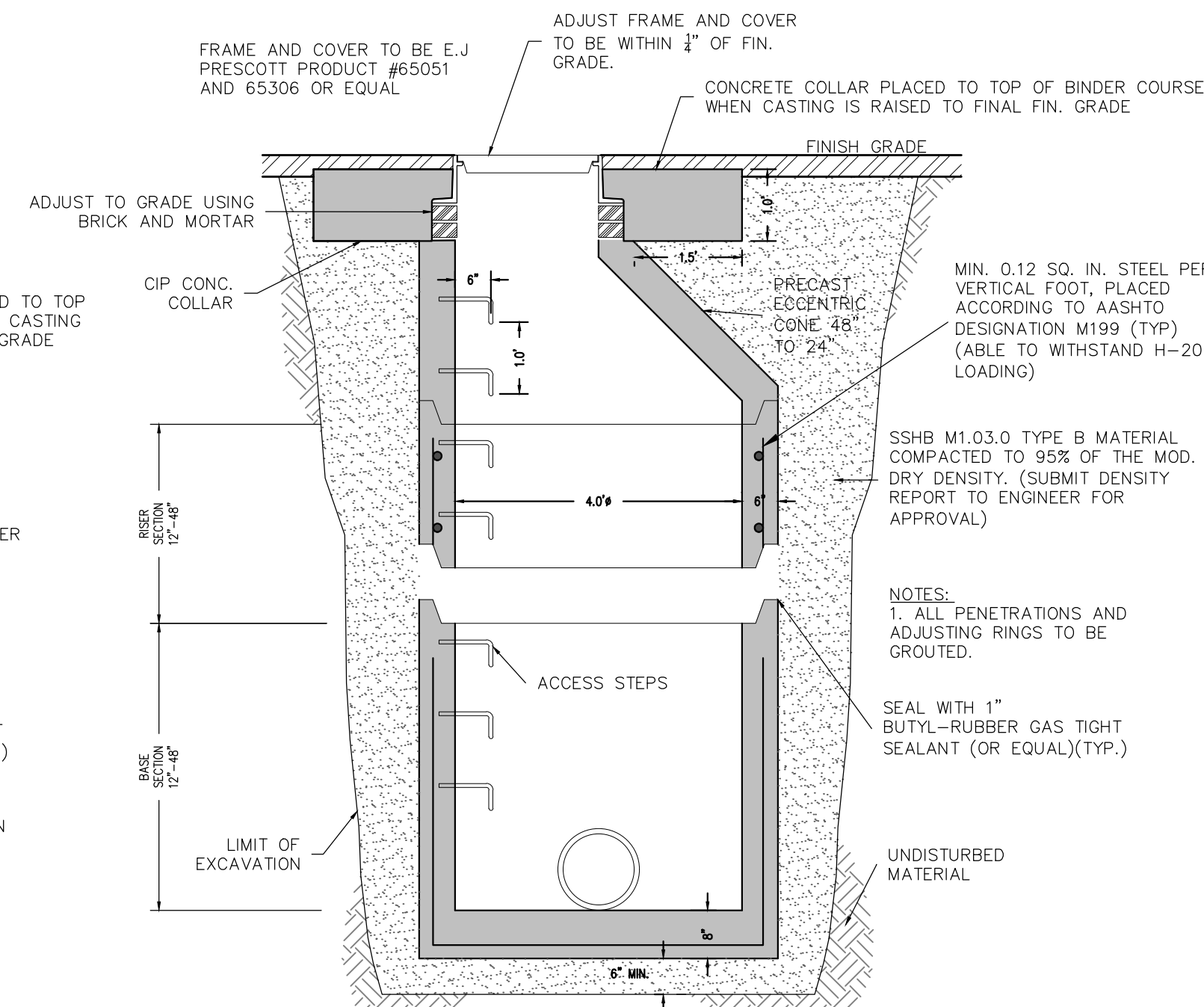


DRIVEWAY PROFILE
SCALE: 1" = 20' (HOR.)
1" = 4' (VERT.)



DEEP SUMP CONC. DOUBLE CATCH BASIN
NOT TO SCALE

NOTES:
1. ALL PENETRATIONS AND ADJUSTING BRICKS TO BE GROUTED.
2. INSTALL AN ADS ENVIROHOOD (OR EQUAL) ON OUTLET



DRAIN MANHOLE DETAIL
NOT TO SCALE

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EROSION CONTROL NOTES:

A. MANAGEMENT STRATEGIES:

- CONSTRUCTION SHALL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
- EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY DISTURBANCE ON SITE.
- AREAS WHICH ARE NOT TO BE DISTURBED SHALL BE CLEARLY MARKED BY FLAGS, SIGNS, ETC. RETAIN EXISTING VEGETATION WHERE FEASIBLE.
- THERE SHALL BE NO STORAGE OF ANY KIND OF ANY CHEMICALS, PESTICIDES, FUELS AND OTHER POTENTIALLY TOXIC OR HAZARDOUS MATERIALS ON SITE.
- NO DEBRIS, JUNK, RUBBISH OR OTHER WASTE MATERIALS SHALL BE BURIED ON THE SITE.
- 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.
- THE JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL PRACTICES.

B. MAINTENANCE/ PERFORMANCE STANDARDS:

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:

- THE SILT FENCE BARRIERS SHALL BE CHECKED REGULARLY FOR TEARS, DETERIORATION, AND UNDERMINING.
- ALL SEEDING AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE RESEED AS NEEDED.
- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO THE PUBLIC ROAD. THIS MAY REQUIRE PERIODIC 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.
- 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 CONTRACTORS RESPONSIBILITY TO MAINTAIN AND REPAIR ALL STRUCTURES.
- 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.
- CATCH BASINS SHALL BE INSPECTED WEEKLY TO ENSURE THAT THEY ARE WATER TIGHT, HAVE ADEQUATE SUMP CAPACITY, THAT OIL AND GAS TRAPS ARE IN PLACE. THEY SHALL ALSO BE INSPECTED AFTER EVERY SIGNIFICANT RAINFALL EVENT (I.E. A TWO-YEAR STORM EVENT OR GREATER) DURING THE FIRST THREE (3) MONTHS OF BEING PLACED IN SERVICE TO ENSURE THAT THEY ARE FUNCTIONING IN AN ADEQUATE FASHION. THE BASINS SHALL BE CLEANED WITH A VACUUM TRUCK WHEN 1/2 OF THE SUMP IS FILLED WITH SEDIMENT BUT NOT LESS THAN TWO (2) TIMES PER YEAR. AFTER THE FIRST THREE (3) MONTHS OF SERVICE THE BASINS SHALL BE INSPECTED NOT LESS THAN ONE (1) TIME PER YEAR TO ENSURE ADEQUATE FUNCTIONALITY. OIL/GAS TRAPS SHALL BE CLEANED WITH A VACUUM TRUCK AND MONITORED FOR HYDROCARBON BUILD UP SEMIANNUALLY.
- THE TRENCH DRAIN DURING CONSTRUCTION SHALL BE INSPECTED MONTHLY FOR SEDIMENT ACCUMULATION AND LEAF BUILDUP. ALL SEDIMENT SHALL BE REMOVED AND LEAF LITTER REMOVED.
- DEWATERING OF EXCAVATIONS DURING CONSTRUCTION SHALL BE ADDRESSED ON AN INDIVIDUAL BASIS AS NEEDED. IF TEMPORARY DEWATERING IS REQUIRED ON THE SITE OR IN CLOSE PROXIMITY TO THE 100 FT BUFFER ZONE, SEDIMENT BASINS SHALL BE CONSTRUCTED OR SILT TRAPS SHALL BE UTILIZED. SILT TRAPS AND SEDIMENT BASINS SHALL BE MAINTAINED DURING THE DEWATERING OPERATION.

D. TEMPORARY MEASURES:

- PLACE SILT FENCE AND SILT FENCE WITH STRAW BALES AS SHOWN ON THIS PLAN.
- IF LOAM IS PLACED OUTSIDE OF THE NORMAL GROWING SEASON SILT FENCE OR STRAW WADDLES SHALL BE PLACED BETWEEN THE LAWN AREA AND PAVEMENT.
- CONSTRUCT TEMPORARY STONE PAD AT EXIT TO THE SITE AS SHOWN ON THE EROSION CONTROL PLAN.
- DURING DRY PERIODS, PROVIDE MEANS FOR MITIGATION OF DUST, SUCH AS WATERING OF EXPOSED AREAS.
- STOCKPILE LOCATIONS SHALL BE WITHIN THE PROPOSED LIMIT OF WORK. PLACE SILT FENCE AROUND ALL STOCK PILE AREAS. PILES LEFT FOR 21 DAYS OR MORE SHALL BE SEED OR COVER WITH PLASTIC SHEETING.
- WASTE DISPOSAL RECEPTACLES AND TRAILERS WILL BE USED FOR THE DISPOSAL OF CONSTRUCTION DEBRIS, WHICH WILL BE REMOVED FROM SITE ACCORDING TO STATE, LOCAL AND FEDERAL GUIDELINES. CONSTRUCTION DEBRIS WILL INCLUDE PAVEMENT, UTILITY, EARTH AND BUILDING MATERIALS THAT CANNOT BE REUSED. THE RECEPTACLES WILL BE LOCATED ON-SITE AND COVERED.
- PLACE CATCHBASIN INSERTS IN CATCHBASINS AFTER CONSTRUCTION.
- IN ADDITION TO WHAT IS DEPICTED ON THE PLANS, SILT FENCE SHALL BE PLACED DOWN GRADIENT (UP-GRADE OF ANY STORM WATER APURTANCES, WETLAND BUFFER ZONES AND AREAS TO BE LEFT UNDISTURBED) TO EACH STRUCTURE DURING THE CONSTRUCTION PROCESS UNTIL THE DISTURBED AREA IS RESTORED.

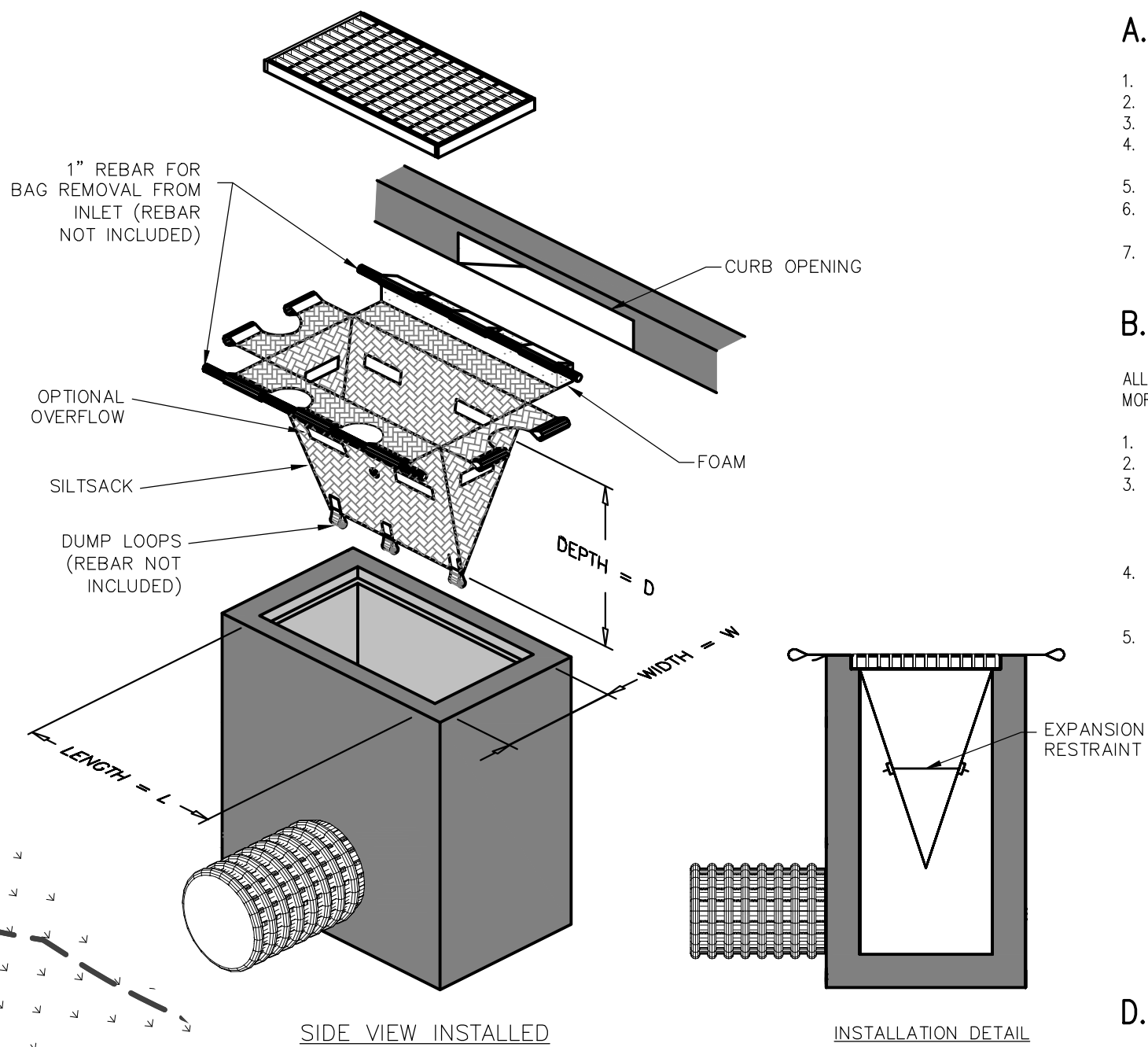
E. PERMANENT STABILIZATION:

- SLOPES IN EXCESS OF 3 TO 1 SHALL BE HYDRO-MULCHED, LOAMED (6" MIN.) AND SEEDED SLOPES WILL BE PROTECTED FROM WASHOUT BY MULCHING OR OTHER ACCEPTABLE SLOPE PROTECTION UNTIL VEGETATION IS ESTABLISHED.
- 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.
- SLOPES STEEPER THAN 3 TO 1 SHALL BE RESTORED WITH 6" OF LOAM (MIN.), SEED, FERTILIZER AND STAKED DOWN EROSION CONTROL BLANKET SIMILAR TO NORTH AMERICAN GREEN SC 150 BN. INSTALL IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.
- THE TEMPORARY MEASURES WILL NOT BE REMOVED UNTIL PERMANENT STABILIZATION HAS OCCURRED.
- PROPOSED GARDEN AREA SHALL HAVE 12" ORGANIC MATERIAL CONFORMING TO SS3B M1.06.1.

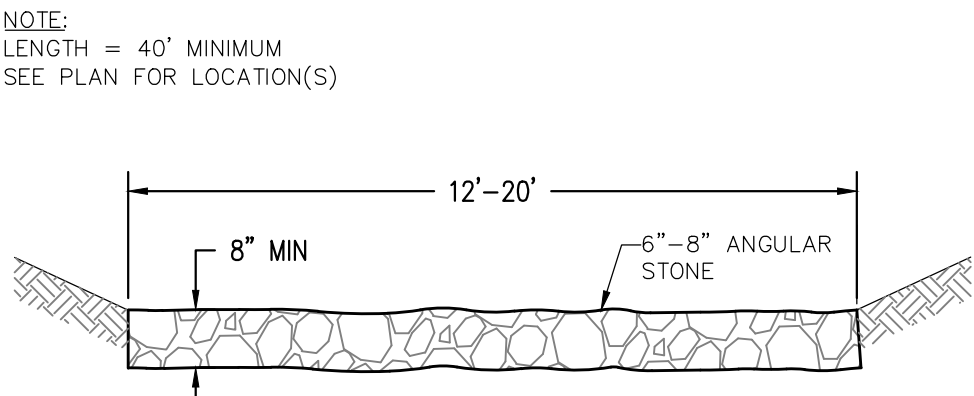
F. CONSTRUCTION SEQUENCE:

DURING THIS SEQUENCE ALL EROSION CONTROLS SHALL BE INSPECTED AND MAINTAINED. ALL DISTURBED AREAS SHALL BE STABILIZED BY SEEDING OR SODDING AS SOON AS POSSIBLE AFTER GRADING IS COMPLETE. EROSION BARRIERS SHALL BE REMOVED AFTER SLOPE STABILIZATION IS COMPLETE.

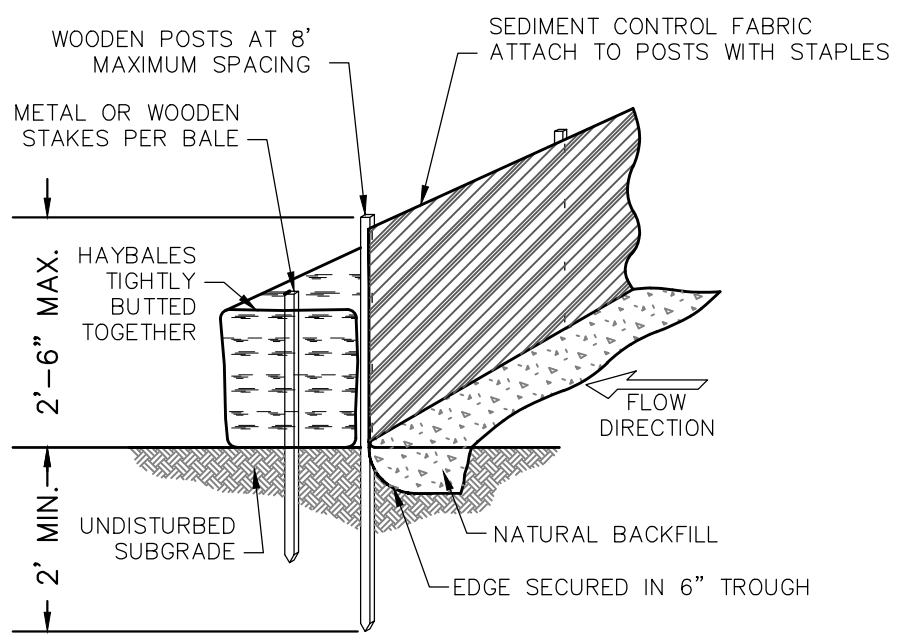
- INSTALL EROSION AND SEDIMENT CONTROL MEASURES.
- EXCAVATE TO SUBGRADE IN CUT SECTIONS; BRING FILL SECTIONS TO SUBGRADE USING EXCAVATED SOIL.
- INSTALL BUILDING PAD AND UTILITIES INCLUDING, DRAINAGE SYSTEM, WATER, GAS AND ELECTRICAL UTILITIES.
- PLACE COMPACTED BASE GRAVEL FOR THE PAVED AREAS; ROUGH GRADE AREAS TO BE LOAMED AND SEEDDED.
- INSTALL PAVEMENT.
- FINALIZE GRADING. LOAM, SEED AND MULCH DISTURBED AREAS.



SILT SACK
NOT TO SCALE



TEMP. CONSTRUCTION ENTRANCE DETAIL
NOT TO SCALE



SILTATION BARRIER
NOT TO SCALE

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION

PREPARED BY:

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STILL RIVER ROAD DEVELOPMENT, LLC

28 COUNTRY CLUB LANE

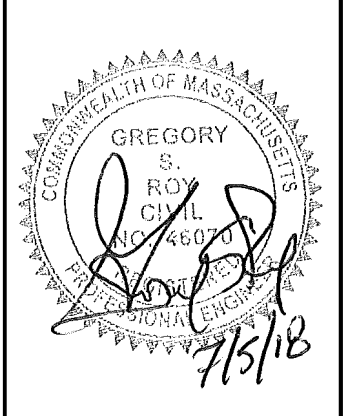
MIDDLETON, MASSACHUSETTS

SCALE:

20 0 10 20 40 80

1 in. = 20 ft.

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DATE:

7/5/18

DESIGN BY:

JPL

DRAWN BY:

JPL

CHECKED BY:

GSR

EROSION & SEDIMENTATION CONTROL PLAN

STILL RIVER COMMONS

BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO.

3339-P

DRAWING NO.

3339-EROSION

SHEET NO.

C5.0