SITE PLAN REFERENCES:

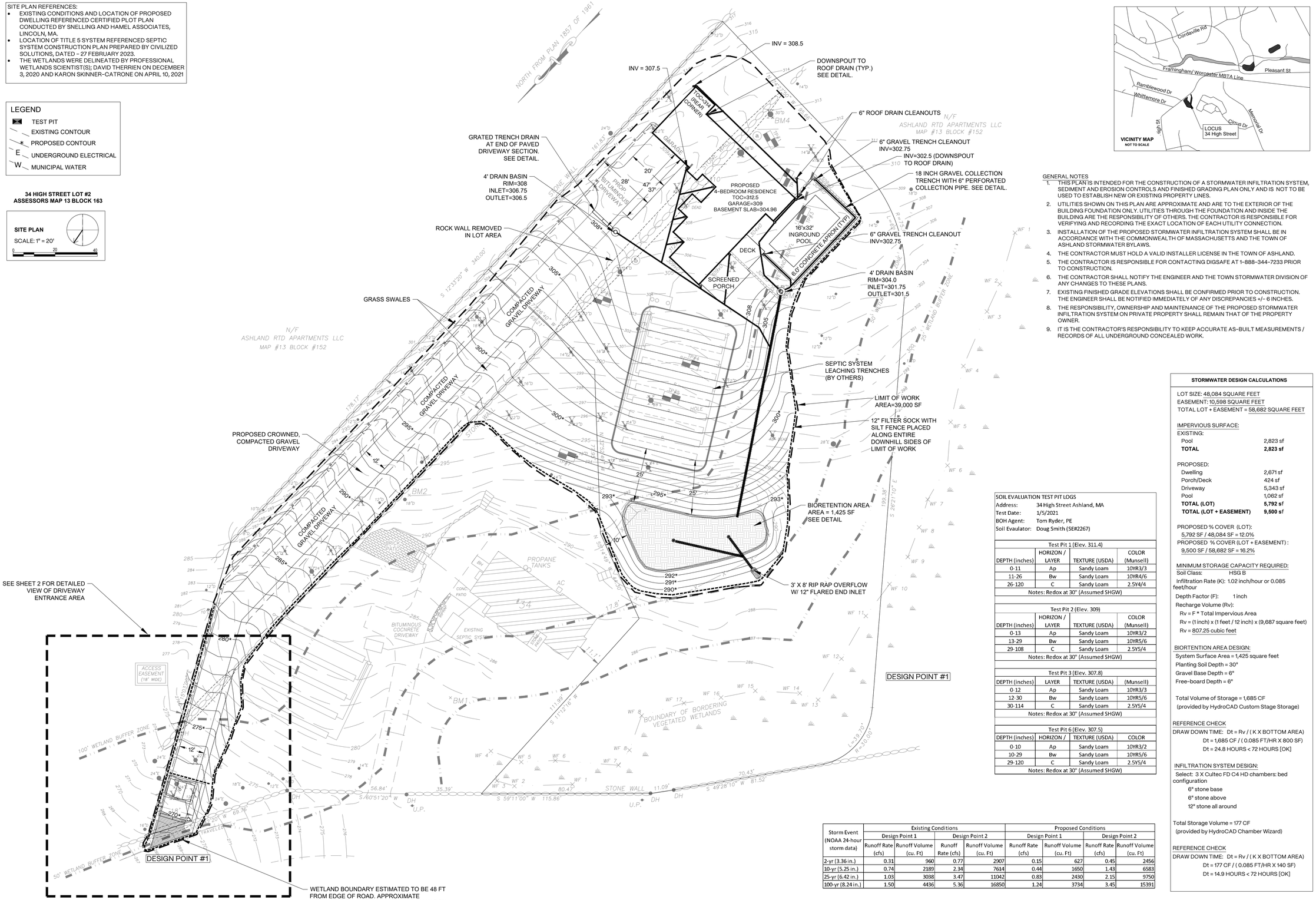
- EXISTING CONDITIONS AND LOCATION OF PROPOSED DWELLING REFERENCED CERTIFIED PLOT PLAN CONDUCTED BY SNELLING AND HAMEL ASSOCIATES, LINCOLN, MA.
- LOCATION OF TITLE 5 SYSTEM REFERENCED SEPTIC SYSTEM CONSTRUCTION PLAN PREPARED BY CIVILIZED SOLUTIONS, DATED – 27 FEBRUARY 2023.
- THE WETLANDS WERE DELINEATED BY PROFESSIONAL WETLANDS SCIENTIST(S); DAVID THERRIEN ON DECEMBER 3, 2020 AND KARON SKINNER-CATRONE ON APRIL 10, 2021

LEGEND

- TEST PIT
- EXISTING CONTOUR
- PROPOSED CONTOUR
- E UNDERGROUND ELECTRICAL
- W MUNICIPAL WATER

34 HIGH STREET LOT #2
ASSESSORS MAP 13 BLOCK 163

SITE PLAN
SCALE: 1" = 20'
0 20 40



GENERAL NOTES

1. THIS PLAN IS INTENDED FOR THE CONSTRUCTION OF A STORMWATER INFILTRATION SYSTEM, SEDIMENT AND EROSION CONTROLS AND FINISHED GRADING PLAN ONLY AND IS NOT TO BE USED TO ESTABLISH NEW OR EXISTING PROPERTY LINES.
2. UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE AND ARE TO THE EXTERIOR OF THE BUILDING FOUNDATION ONLY. UTILITIES THROUGH THE FOUNDATION AND INSIDE THE BUILDING ARE THE RESPONSIBILITY OF OTHERS. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING AND RECORDING THE EXACT LOCATION OF EACH UTILITY CONNECTION.
3. INSTALLATION OF THE PROPOSED STORMWATER INFILTRATION SYSTEM SHALL BE IN ACCORDANCE WITH THE COMMONWEALTH OF MASSACHUSETTS AND THE TOWN OF ASHLAND STORMWATER BYLAWS.
4. THE CONTRACTOR MUST HOLD A VALID INSTALLER LICENSE IN THE TOWN OF ASHLAND.
5. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING DIGSAFE AT 1-888-344-7233 PRIOR TO CONSTRUCTION.
6. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND THE TOWN STORMWATER DIVISION OF ANY CHANGES TO THESE PLANS.
7. EXISTING FINISHED GRADE ELEVATIONS SHALL BE CONFIRMED PRIOR TO CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES +/- 6 INCHES.
8. THE RESPONSIBILITY, OWNERSHIP AND MAINTENANCE OF THE PROPOSED STORMWATER INFILTRATION SYSTEM ON PRIVATE PROPERTY SHALL REMAIN THAT OF THE PROPERTY OWNER.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO KEEP ACCURATE AS-BUILT MEASUREMENTS / RECORDS OF ALL UNDERGROUND CONCEALED WORK.

STORMWATER DESIGN CALCULATIONS

LOT SIZE: 48,084 SQUARE FEET
EASEMENT: 10,598 SQUARE FEET
TOTAL LOT + EASEMENT = 58,682 SQUARE FEET

IMPERVIOUS SURFACE:
EXISTING:

Pool	2,823 sf
TOTAL	**2,823 sf**

PROPOSED:

Dwelling	2,671 sf
Porch/Deck	424 sf
Driveway	5,343 sf
Pool	1,062 sf
TOTAL (LOT)	**5,792 sf**
TOTAL (LOT + EASEMENT)	**9,500 sf**

PROPOSED % COVER (LOT):
5,792 SF / 48,084 SF = 12.0%
PROPOSED % COVER (LOT + EASEMENT) :
9,500 SF / 58,682 SF = 16.2%

MINIMUM STORAGE CAPACITY REQUIRED:
Soil Class: HSG B
Infiltration Rate (K): 1.02 inch/hour or 0.085 feet/hour
Depth Factor (F): 1 inch
Recharge Volume (Rv):
Rv = F * Total Impervious Area
Rv = (1 inch) x (1 feet / 12 inch) x (9,687 square feet)
Rv = 807.25 cubic feet

BIORTENTION AREA DESIGN:
System Surface Area = 1,425 square feet
Planting Soil Depth = 30"
Gravel Base Depth = 6"
Free-board Depth = 6"

Total Volume of Storage = 1,685 CF
(provided by HydroCAD Custom Stage Storage)

REFERENCE CHECK
DRAW DOWN TIME: Dt = Rv / (K X BOTTOM AREA)
Dt = 1,685 CF / (0.085 FT/HR X 800 SF)
Dt = 24.8 HOURS < 72 HOURS [OK]

INFILTRATION SYSTEM DESIGN:
Select: 3 X Cultec FD C4 HD chambers: bed configuration
6" stone base
6" stone above
12" stone all around

Total Storage Volume = 177 CF
(provided by HydroCAD Chamber Wizard)

REFERENCE CHECK
DRAW DOWN TIME: Dt = Rv / (K X BOTTOM AREA)
Dt = 177 CF / (0.085 FT/HR X 140 SF)
Dt = 14.9 HOURS < 72 HOURS [OK]

SOIL EVALUATION TEST PIT LOGS
Address: 34 High Street Ashland, MA
Test Date: 1/5/2021
BOH Agent: Tom Ryder, PE
Soil Evaulator: Doug Smith (SE#2267)

Test Pit 1 (Elev. 311.4)

DEPTH (inches)	HORIZON / LAYER	TEXTURE (USDA)	COLOR (Munsell)
0-11	Ap	Sandy Loam	10YR3/3
11-26	Bw	Sandy Loam	10YR4/6
26-120	C	Sandy Loam	2.5Y4/4
Notes: Redox at 30" (Assumed SHGW)			

Test Pit 2 (Elev. 309)

DEPTH (inches)	HORIZON / LAYER	TEXTURE (USDA)	COLOR (Munsell)
0-13	Ap	Sandy Loam	10YR3/2
13-29	Bw	Sandy Loam	10YR5/6
29-108	C	Sandy Loam	2.5Y5/4
Notes: Redox at 30" (Assumed SHGW)			

Test Pit 3 (Elev. 307.8)

DEPTH (inches)	LAYER	TEXTURE (USDA)	(Munsell)
0-12	Ap	Sandy Loam	10YR3/3
12-30	Bw	Sandy Loam	10YR5/6
30-114	C	Sandy Loam	2.5Y5/4
Notes: Redox at 30" (Assumed SHGW)			

Test Pit 6 (Elev. 307.5)

DEPTH (inches)	HORIZON /	TEXTURE (USDA)	COLOR
0-10	Ap	Sandy Loam	10YR3/2
10-29	Bw	Sandy Loam	10YR5/6
29-120	C	Sandy Loam	2.5Y5/4
Notes: Redox at 30" (Assumed SHGW)			

Storm Event (NOAA 24-hour storm data)	Existing Conditions				Proposed Conditions			
	Design Point 1		Design Point 2		Design Point 1		Design Point 2	
	Runoff Rate (cfs)	Runoff Volume (cu. Ft)	Runoff Rate (cfs)	Runoff Volume (cu. Ft)	Runoff Rate (cfs)	Runoff Volume (cu. Ft)	Runoff Rate (cfs)	Runoff Volume (cu. Ft)
2-yr (3.36 in.)	0.31	960	0.77	2907	0.15	627	0.45	2456
10-yr (5.25 in.)	0.74	2189	2.34	7614	0.44	1650	1.43	6583
25-yr (6.42 in.)	1.03	3038	3.47	11042	0.83	2430	2.15	9750
100-yr (8.24 in.)	1.50	4436	5.36	16850	1.24	3734	3.45	15391

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Providence, RI 02909
P: +1 (508) 954 0677
E: jay@robialwater.com

CONSULTANTS:

JAY M. THRASHER CIVIL No. 54434 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
6-20-23

No.	REVISION/SUBMISSION	DATE
1.	REVISED PER C.C. COMMENTS	6/20/23

PROJECT No. SW2023.003

SHEET TITLE:

SITE LAYOUT & SYSTEM DESIGN

SHEET SIZE: 24 IN. X 36 IN. (ARCH D)
DATE: 06 April 2023
SHEET NUMBER:

SHEET 1 of 2

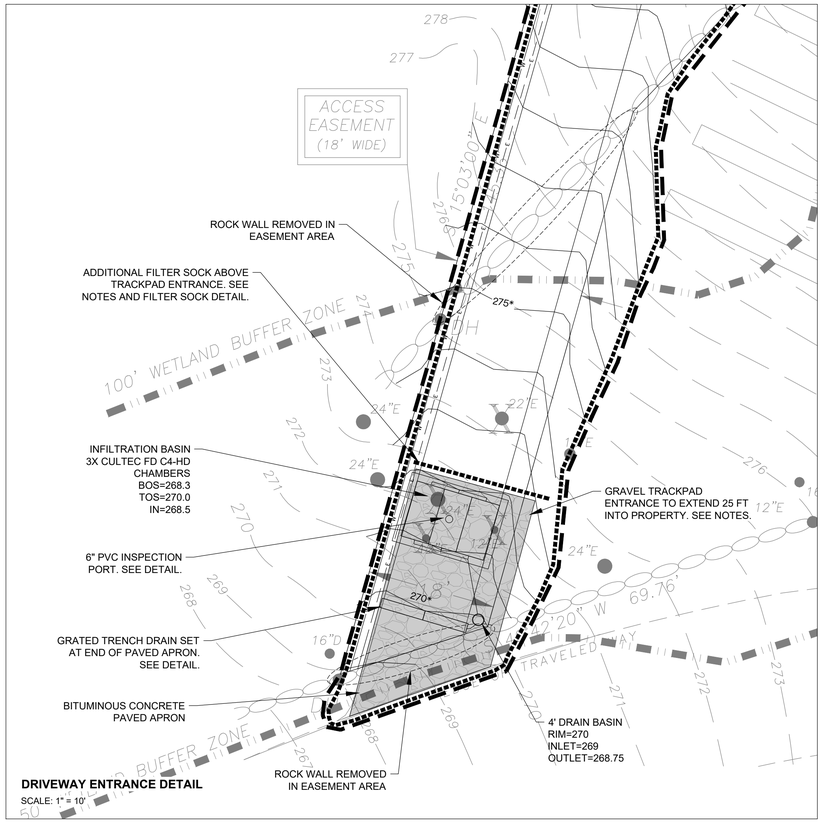
PROJECT:

STORMWATER MANAGEMENT

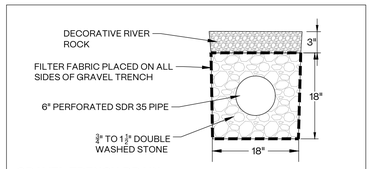
CONSTRUCTION DRAWINGS

34 High Steet
Ashland, MA 01721

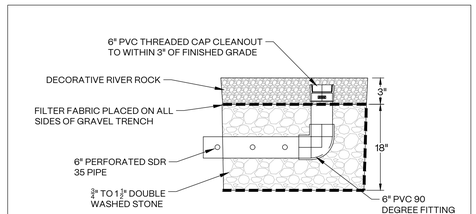
Plotted: 20 Jun 2023 - 11:37:51 AM
Plotted By: Jay Thrasher
Drawing Name: C:\Users\jthrasher\Dropbox (Robial)\Active Projects\MA Residential\Stormwater\34 High St Ashland\Drawings\34 High St_2023.06.20.dwg



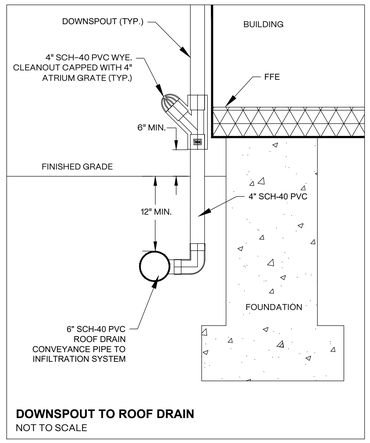
DRIVEWAY ENTRANCE DETAIL
SCALE: 1" = 10'



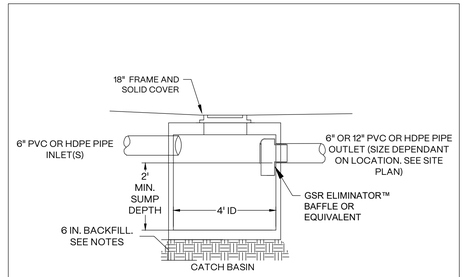
GRAVEL TRENCH DRAIN
NOT TO SCALE



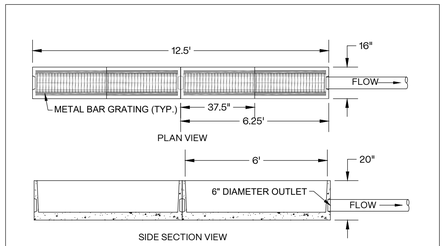
GRAVEL TRENCH DRAIN CLEANOUT
NOT TO SCALE



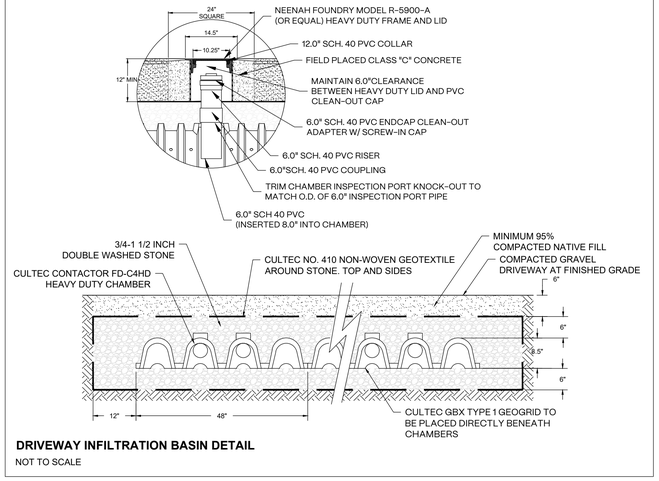
DOWNSPOUT TO ROOF DRAIN
NOT TO SCALE



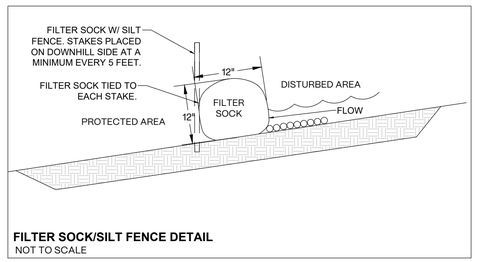
DRAIN BASIN DETAIL
NOT TO SCALE



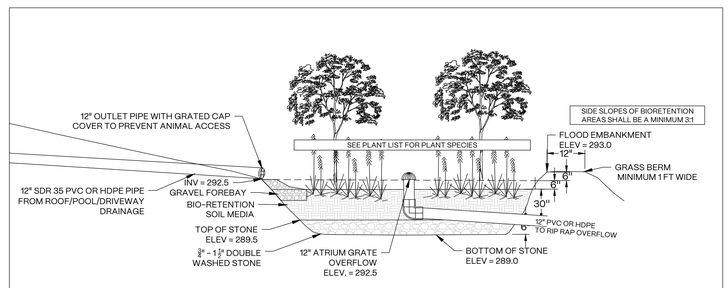
GRATED TRENCH DRAIN DETAIL (DRIVEWAY)
NOT TO SCALE



DRIVEWAY INFILTRATION BASIN DETAIL
NOT TO SCALE



FILTER SOCK/SILT FENCE DETAIL
NOT TO SCALE



BIORETENTION AREA DETAIL
NOT TO SCALE

SEDIMENT AND EROSION CONTROL NOTES:

1. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL CONTACT THE TOWN STORMWATER AGENT PRIOR TO CONSTRUCTION TO INSPECT THE SEDIMENT AND EROSION CONTROLS.
3. THE FILTER SOCK/SILT FENCE SHALL NOT BE REMOVED UNTIL ALL SOILS ARE STABILIZED AND THE STORMWATER AGENT HAS APPROVED ITS REMOVAL.
4. THE SEDIMENT AND EROSION CONTROL SHALL BE A 12 INCH FILTER SOCK WITH SILT FENCE OR APPROVED SEDIMENT CONTROL EQUIVALENT TO BE PLACED ON THE DOWN-SLOPE SIDE OF THE PROPOSED LIMIT OF WORK (SEE FILTER SOCK DETAIL).
5. THE CONTRACTOR SHALL INSPECT SEDIMENTATION AND EROSION CONTROLS ON A DAILY BASIS AND IMMEDIATELY AFTER EACH RAINFALL; REPAIRS SHALL BE MADE BY THE END OF THE WORKING DAY, ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR WHEN THE VOLUME REACHES ONE HALF OF THE HEIGHT OF THE FILTER SOCK OR AS DIRECTED BY THE LOCAL AUTHORITY.
6. SOIL STOCKPILES SHALL BE STABILIZED TO PREVENT EROSION, AND A PERIMETER SEDIMENT CONTROL SYSTEM SHALL BE INSTALLED.
7. DISTURBED AREAS SHALL BE STABILIZED BY LOAMING AND SEEDING OR BY ANOTHER APPROVED METHOD, AS SOON AS POSSIBLE AFTER THE FINISHED GRADE HAS BEEN MET.
8. ALL VEHICLES SHALL ENTER AND EXIT THE SITE VIA THE EASEMENT, WHICH SHALL BE STABILIZED WITH 3/4" TO 1-1/2" CRUSHED STONE AT A 12" DEPTH FOR THE FIRST 25 FEET FROM THE PAVED DRIVEWAY OR BY USE OF A *TRACK PAD*.
9. THE FILTER SOCK AT BASE OF PROPOSED DRIVEWAY SHALL BE REPLACED AT THE END OF EACH WORK DAY OR DURING RAIN EVENTS. VEHICLES SHALL BE PROHIBITED FROM DRIVING OVER THE FILTER SOCK. SEE FILTER SOCK DETAIL.
10. ALL SEDIMENT TRACKED ONTO PUBLIC RIGHT-OF-WAYS SHALL BE SWEPT AT THE END OF EACH WORKING DAY.

STORMWATER SYSTEM NOTES:

1. ALL DRAINAGE PIPING TO BE SDR 35 PVC UNLESS OTHERWISE SPECIFIED.
2. ALL STORMWATER CONVEYANCE PIPE ROUTING SHOWN ON SITE LAYOUT IS APPROXIMATE. CONTRACTOR SHALL DETERMINE MOST EFFICIENT ROUTING IN THE FIELD MAINTAINING A MINIMUM SLOPE OF 1 PERCENT BETWEEN DOWNSPOUT INVERT AND INFILTRATION SYSTEM INLET INVERT. CONVEYANCE PIPING SHALL NOT PENETRATE RETAINING WALLS.
3. CLEANOUTS SHALL BE INSTALLED ON DRAIN PIPE FLUSH TO FINISHED GRADE AT EVERY POINT WHERE THE DRAIN PIPE CHANGES DIRECTION GREATER THAN 45 DEGREES..
4. PLANT THE BIORETENTION AREA AS SPECIFIED; AT A MINIMUM, SEED THE SYSTEM FLOOR AND SIDE SLOPES WITH RYE GRASS MIXTURE CONTAINING PERENNIAL AND WINTER RYES, AT A RATE SPECIFIED BY THE MANUFACTURER. STABILIZE THE SLOPES WITH STRAW TO A DEPTH OF 1".
5. LIGHTLY COMPACT FINISHED FLOOR ELEVATION AND FINISHED SLOPES USING THE BUCKET OF AN EXCAVATOR, NON-MOTARIZED ROLLER, HAND TAMP, OR OTHER MEANS, THEN ROUGHEN SURFACE WITH A RAKE TO LOOSEN SOILS BEFORE SEEDING. DO NOT COMPACT THE SUBGRADE AT THE BOTTOM OF EXCAVATION UNLESS PERMEABILITY EXCEEDS 1 X 10 ^ -5 CM/S.
6. BIORETENTION SOIL MEDIA (BSM) MIXTURE SPECIFICATIONS:
   - 6.1. STICKS AND ROOTS SHOULD BE MINIMIZED IN THE BSM MIXTURE, AND PREFERABLY NOTHING LARGER THAN 4.76 MM.
   - 6.2. NO DEBRIS OR OTHER FOREIGN MATERIALS.
   - 6.3. ORGANIC MATTER SHOULD MAKE UP A MINIMUM 3% BY VOLUME AND A MAXIMUM 8% BY VOLUME OF THE BSM.
   - 6.4. BSM MIXTURE SHALL HAVE A SOIL REACTION pH OF 6 TO 7.
   - 6.5. CATION EXCHANGE CAPACITY (CEC) OF BSM SHOULD BE A MINIMUM OF 10 meq PER 100 mL AT A pH OF 7.
7. IF BSM IS PURCHASED FROM A MANUFACTURER, BSM MIXTURE SHALL NOT CONTAIN THE FOLLOWING:
   - 7.1. UNSUITABLE MATERIALS: CONCRETE SLURRY, CONCRETE LAYERS OR CHUNKS, CEMENT, PLASTER, BUILDING DEBRIS, ASPHALT, BRICKS, OILS, GASOLINE, DIESEL FUEL, PAINT THINNER, TERPENTINE, TAR, ROOFING COMPOUND, ACID, SOLID WASTE, OR OTHER EXTRANEOUS MATERIALS THAT ARE HARMFUL TO PLANTS.
   - 7.2. UNSUITABLE MATERIALS: STONES, ROOTS, SOD, CLAY LUMPS, OR POCKETS OF COASRE SAND THAT EXCEED A COMBINED MAXIMUM OF 5% NY DRY WEIGHT OF THE MANUFACTURED SOIL.
   - 7.3. LARGE MATERIALS: STONES, CLODS, ROOTS, CLAY LUMPS EXCEEDING 4.76 MM IN ANY DIMENSION.
8. ORGANIC SOIL AMENDMENTS:
   - 8.1. NO COMPOST SHOULD BE USED IN THE PLANTING MIX.
   - 8.2. SHPAGNUM PEAT: PARTIALLY DECOMPOSED SPHAGNUM PEAT MOSS, FINELY DIVIDED OR OF GRANULAR TEXTURE WITH 100% PASSING THROUGH A ¼" SIEVE, WITH A pH OF 3.4 TO 4.8.
   - 8.3. WOOD DERIVATIVES: SHREDDED WOOD, WOOD CHIPS, GROUND BARK, OR WOOD WASTE: UNIFORM TEXTURE AND FREE OF STONES, STICKS, SOIL, OR TOXIC MATERIAL.
   - 8.4. THE CRUSHED STONE LAYER SHALL CONSIST OF ASSHTO #5 STONE (⅜ - 1½").

BIO-RETENTION AREA PLANT LIST

QUANTITY	SYMBOL	BOTANICAL NAME	COMMON NAME	HEIGHT	SPREAD
8	SM	ASCLEPIAS INCARNATA	SWAMP MILKWEED	3-6'	2'
5	BI	IRIS VERSICOLOR	BLUE IRIS	2-3'	2-3'
12	RF	OSMUNDA REGALIS	ROYAL FERN	3-6'	1.5'

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CONSULTANTS:

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6-20-23

No.	REVISION/SUBMISSION	DATE
1.	REVISED PER C.C. COMMENTS	6/20/23

PROJECT No. SW2023.003

SHEET TITLE:

DETAILS

SHEET SIZE: 24 IN. X 36 IN. (ARCH D)
DATE: 06 April 2023
SHEET NUMBER:

SHEET 2 of 2

PROJECT:

STORMWATER MANAGEMENT

CONSTRUCTION DRAWINGS

34 High Steet
Ashland, MA 01721

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Ashland
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