

**SOIL LOGS**  
DATE PERFORMED: 06/11/15  
PERFORMED BY: ALEXANDER PARKER, SE #1848  
WITNESSED BY: MS. KENDELL LONGO, BOXFORD BOH

TP 15-1 ELEV. = 100.1	TP 15-2 ELEV. = 100.3
0" - 7" Ap: 10YR3/2, SL	0" - 9" Ap: 10YR3/2, SL
7" - 57" C: 10YR3/4, HIM SL(FILL)	9" - 43" Ab: 10YR2/2, SL
57" - 67" C1: 10YR4/3, SAND	43" - 47" Bw: 10YR5/6, SL
67" - 111" C2: 2.5Y5/4, SAND	47" - 61" C1: 2.5YR5/6, LS
	61" - 85" C2: 2.5Y5/4, SAND
	85" - 116" NO ESHWT @ 116" (90.6)

**PERCOLATION TEST**  
PRESOAK: START: 12:15, END: 12:30  
TIME AT 9": 12:36  
TIME AT 6": 12:46  
RATE: 3.3 MPI

**SITE NOTES:**

- RECORD OWNER: JOSEPH R. MASSARO, 120 HIGH RIDGE ROAD, BOXFORD, MA 01921, BK. 30999, PG. 78
- RECORD PLANS: PROPERTY LINE INFORMATION COMPILED FROM "PLAN OF LAND IN BOXFORD, PROPERTY OF HERRICK FARM CORP." PREPARED BY HANCOCK SURVEY ASSOCIATES, INC., DATED JANUARY 3, 1980, RECORDED WITH THE SOUTHERN ESSEX REGISTRY OF DEEDS, PLAN 2 OF 1981 AND SHOULD BE CONSIDERED APPROXIMATE.
- WETLANDS: WETLANDS DELINEATED BY GREG HOCHMUTH OF WILLIAMS & SPARAGES, LLC, 189 NORTH MAIN STREET, MIDDLETON MA 01949 (978-539-8088) IN MAY 2015.
- WATER SUPPLY: THERE IS NO KNOWN DRINKING WATER SUPPLY ZONE IT'S AND NO KNOWN INTERIM WELLHEAD PROTECTION ZONES ON THE SUBJECT PARCEL BASED ON THE DEPARTMENT OF ENVIRONMENTAL PROTECTION MAPS.
- FLOOD PLAIN: THE AREA OF WORK ON THE PROPERTY IS SITUATED WITHIN A FEMA ZONE X AS ILLUSTRATED ON THE MOST RECENT FLOOD INSURANCE RATE MAP PANEL 25009C-0242-F WITH EFFECTIVE DATE OF JULY 3, 2012.
- DATUM: ELEVATION SHOWN HEREON ARE ON AN ASSUMED DATUM.
- EXISTING CONDITIONS: EXISTING CONDITIONS INFORMATION OBTAINED FROM A FIELD SURVEY PERFORMED BY THE MORIN-CAMERON GROUP, INC. ON JUNE 29, 2015.

**CONVENTIONAL SOIL ABSORPTION SYSTEM DESIGN CALCULATIONS:**

- BUILDING TYPE: SINGLE FAMILY DWELLING
- NO. OF BEDROOMS: 4 BEDROOMS
- DESIGN FLOW (TITLE 5): 4 X 110 GPD/BEDROOM = 440 GPD (NOTE: SYSTEM MUST BE DESIGNED FOR GRINDER PER BOXFORD BOG REGULATIONS)
- DESIGN PERCOLATION RATE: CLASS I SOIL, <5 MPI, LTR = 0.74 GPD/SF
- GARBAGE DISPOSAL: DESIGNED FOR PER BOXFORD BOH REGULATIONS (USE OF GRINDER NOT RECOMMENDED BY DESIGN ENGINEER).
- SEPTIC TANK DESIGN REQUIREMENT: MIN. 200% DESIGN FLOW TANK REQUIRED: 200% X 440 GPD = 880 GAL. (MIN. 1,500 GAL. REQUIRED)  
TWO COMPARTMENT TANK REQUIRED FOR GRINDER  
FIRST COMPARTMENT = 440 X 200% = 880 GAL.  
SECOND COMPARTMENT = 440 X 100% = 440 GAL. (USE 2-COMPARTMENT, 1,500 GAL. TANK)
- LEACH TRENCH SIZE REQUIREMENT:  
BOTTOM AREA = 0.74 GAL./SF X 2 SF/LF = 1.48 GAL./LF  
SIDEWALL AREA = 0.74 GAL./SF X (2X2) SF/LF = 2.96 GAL./LF  
TOTAL GALLONS PER LINEAR FOOT = 4.44 GAL./LF  
REQUIRED LENGTH OF TRENCH = 440/4.44 = 99.1 LINEAR FEET  
NOTE: SYSTEM MUST BE DESIGNED FOR GRINDER, THEREFORE SYSTEM SIZING MUST BE INCREASED BY 50%. 99.1 LF X 1.5 = 148.7' (USE 150 LF)  
USE 3 TRENCHES: 50' LONG, 2' WIDE, 2' DEEP  
TOTAL BOTTOM & SIDEWALL AREA = [(2'+2'+2') X 50'] X 3 = 900 SF  
TOTAL LEACH TRENCH SYSTEM CAPACITY = 900 SF X 0.74 GAL./SF = 666 GAL.

**CONSTRUCTION INSPECTIONS:**  
THE FOLLOWING INSPECTIONS WILL BE NECESSARY DURING CONSTRUCTION:

- INSPECT THE BOTTOM OF D-BOX AND TANKS TO ENSURE PROPER BASE.  
DATE COMPLETED: \_\_\_\_\_ INITIAL: \_\_\_\_\_
- INSPECT THE BOTTOM OF THE LEACH BED AT THE TIME IT IS SCARIFIED.  
DATE COMPLETED: \_\_\_\_\_ INITIAL: \_\_\_\_\_
- FINAL INSPECTION OF INSTALLED ONSITE WASTEWATER SYSTEM.  
DATE COMPLETED: \_\_\_\_\_ INITIAL: \_\_\_\_\_

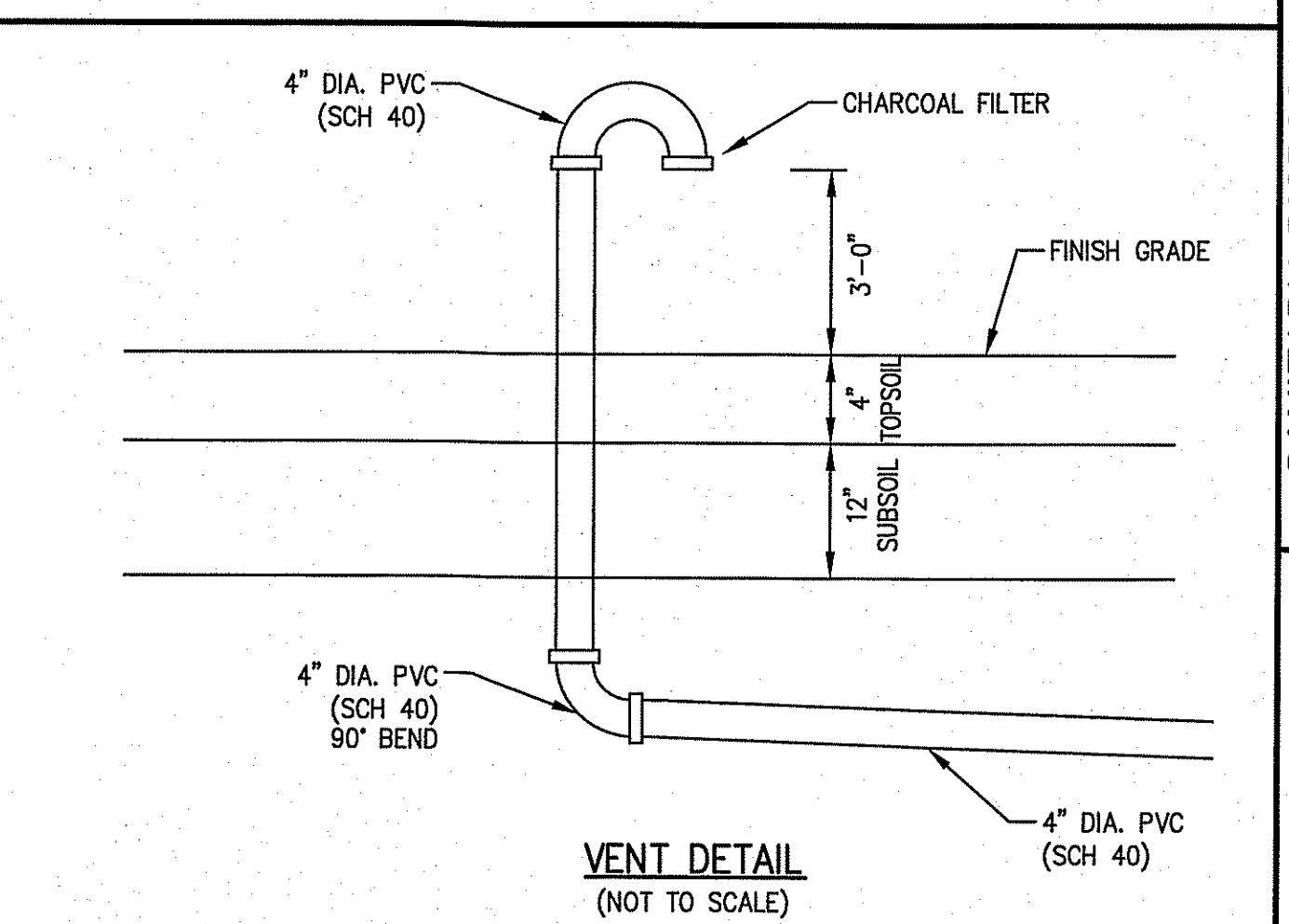
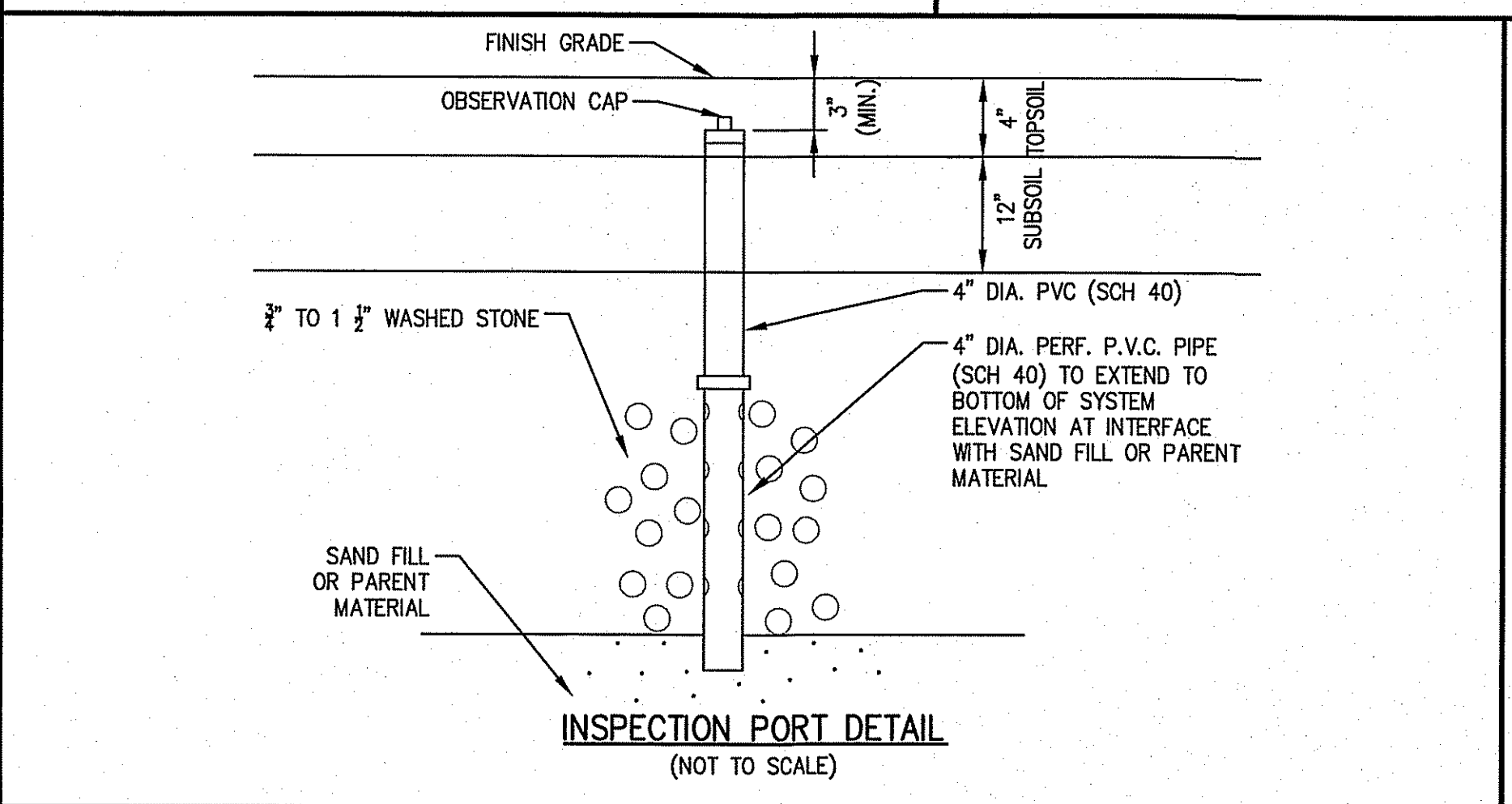
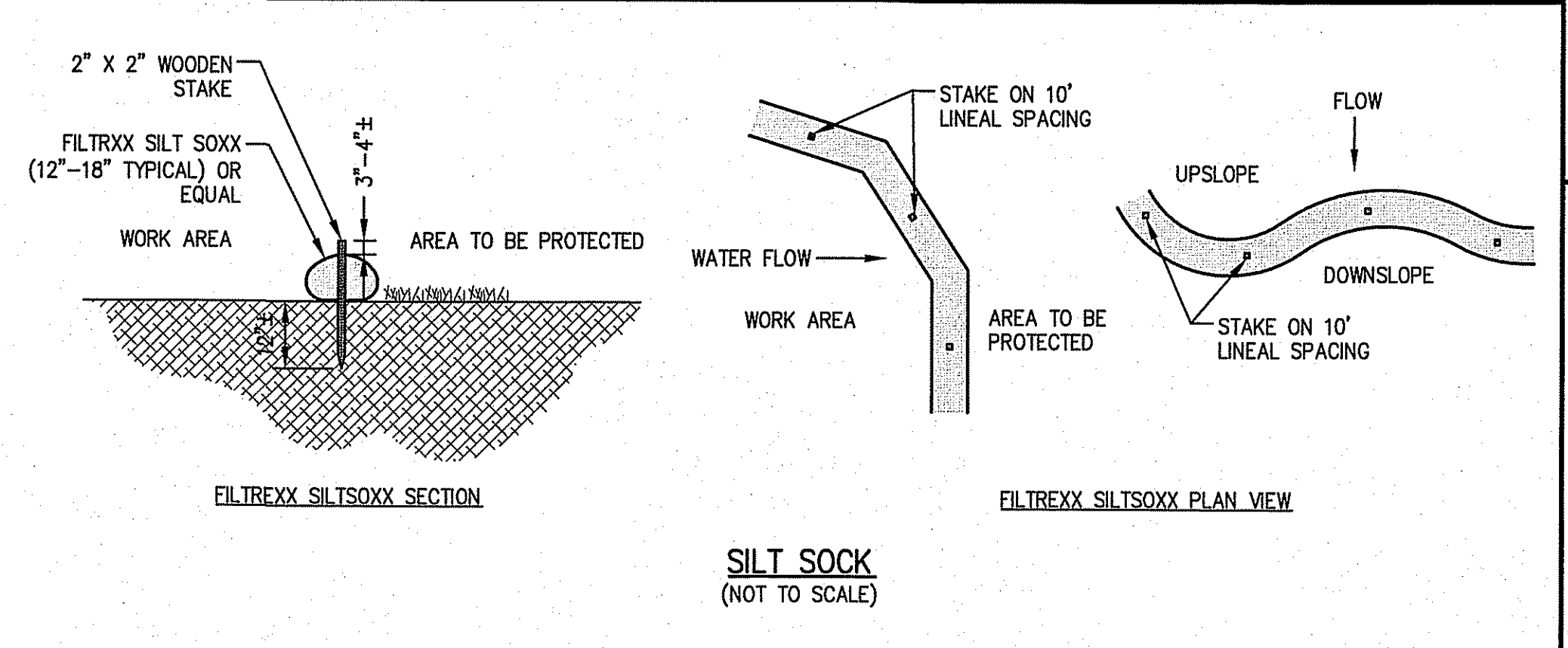
THE CONTRACTOR SHALL NOTIFY THE LOCAL BOARD OF HEALTH AND DESIGN ENGINEER AT LEAST 24 HOURS PRIOR TO INSPECTION TIMES.  
THE SYSTEM SHALL NOT BE BACKFILLED WITHOUT PERMISSION FROM THE BOH.

**GENERAL NOTES:**

- CONTRACTOR SHALL VERIFY THAT ALL EXISTING PLUMBING, WITH THE EXCEPTION OF ANY FOUNDATION DRAINS OR WATER SOFTENERS, SHALL BE TIED INTO NEW SEPTIC SYSTEM.
- THIS PLAN IS TO SHOW THE DESIGN OF THE SUBSURFACE SEWAGE DISPOSAL SYSTEM ONLY. THE SYSTEM IS DESIGNED FOR FLOWS ESTIMATED UNDER DESIGN CRITERIA.
- SYSTEM IS DESIGNED ONLY TO ACCOMMODATE SANITARY SEWAGE ASSOCIATED WITH NORMAL DOMESTIC USAGE AND CONSISTING OF WATER-CARRIED PUTRESCIBLE WASTE.
- THE SYSTEM IS DESIGNED FOR A GARBAGE GRINDER, HOWEVER THE USE OF ONE IS NOT RECOMMENDED BY THE DESIGN ENGINEER.
- THE PLAN SHOWS ONLY THOSE FEATURES THAT WERE VISUALLY APPARENT ON DATE OF THE TOPOGRAPHY.
- THE INSTALLER OF THIS SYSTEM MUST BE LICENSED BY THE LOCAL BOARD OF HEALTH.
- THERE ARE KNOWN WELLS WITHIN 100 FEET OF THE PROPOSED SOIL ABSORPTION SYSTEM.
- DISPOSAL SYSTEM AREAS ARE TO BE RAKED (SCARIFIED) BEFORE INSTALLATION OF STONE. ALL STONES EXCEEDING 2 INCHES IN EXCAVATION ARE TO BE REMOVED FROM THE LEACHING AREA BED.
- FINISHED SURFACE OF THE LEACHING AREA SHALL BE GRADED TO ASSURE WATER RUNOFF (2% MINIMUM SLOPE).
- ALL DISTURBED AREAS ARE TO BE LOAMED, SEEDED, AND MAINTAINED TO PREVENT EROSION.
- THE SEPTIC TANK SHOULD BE PERIODICALLY INSPECTED AND MAINTAINED AND SHOULD BE PUMPED WHEN THE SLUDGE IN THE BOTTOM EXCEEDS 1/4 OF THE DEPTH.
- ALTERNATE MANUFACTURES FOR CONCRETE STRUCTURES AND EQUIPMENT SHOWN ON THESE PLANS MAY BE USED UPON THE WRITTEN APPROVAL OF THE DESIGN ENGINEER. ALTERNATE MANUFACTURES WILL NOT BE USED IF THE USE OF THEIR EQUIPMENT REQUIRES DESIGN CHANGES.
- NO CHANGES ARE TO BE MADE IN THE FIELD WITHOUT THE APPROVAL OF THE BOARD OF HEALTH OR ITS DESIGNEE AND THE DESIGN ENGINEER.
- ALL WORK IS TO COMPLY WITH THE COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION AGENCY STATE SANITARY CODE, TITLE 5 AND ANY LOCAL BOARD OF HEALTH SUPPLEMENTARY REGULATIONS.
- THE LOCAL BOARD OF HEALTH AGENT WILL CONDUCT PERIODIC INSPECTIONS AS NEEDED.
- THESE PLANS AND SPECIFICATIONS ARE INTENDED TO BE EXPLANATORY OF THE WORK TO BE DONE AND OF EACH OTHER, BUT SHOULD ANY OMISSION, ERRORS, OR DISCREPANCIES APPEAR, THEY SHALL BE SUBJECT TO CORRECTION AND INTERPRETATION BY THE DESIGN ENGINEER THEREBY DEFINING AND FULFILLING THE INTENT OF THE PLANS. THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO INSTALLATION.
- FILL REQUIREMENT: REMOVE TOPSOIL, SUBSOIL & FILL FOR A DISTANCE OF 5 FEET BEYOND THE LEACHING FACILITY. REPLACE WITH FILL AS SPECIFIED IN 310 CMR 15.000, "TITLE 5" SECTION 15.255 (3) OR ASTM C-33 SAND (SYSTEM SAND). FOR THE BOUNDARY OF THE SAND FILL REQUIREMENT, SEE PLAN VIEW, CROSS-HATCHED AREA ON SYSTEM PROFILE. A SIEVE ANALYSIS SHALL BE PERFORMED ON THE FILL MATERIAL TO BE USED. A COPY OF THE SIEVE ANALYSIS RESULTS SHALL BE SUBMITTED TO THE BOARD OF HEALTH.
- ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE IN ACCORDANCE WITH 310 CMR 15.221(11).

**LOCAL B.O.H. VARIANCE REQUESTS**

	STATE (TITLE 5)	LOCAL (BOH)	REQUEST
MINIMUM SETBACK DISTANCE BETWEEN LEACHING FACILITY AND POTABLE WATER SUPPLY (BOXFORD BOARD OF HEALTH REGULATIONS, CHAPTER 201, SECTION 9(D))	100'	150'	120'
MINIMUM SETBACK DISTANCE BETWEEN LEACHING FACILITY AND WETLAND RESOURCE AREAS (BOXFORD BOARD OF HEALTH REGULATIONS, CHAPTER 201, SECTION 9(E))	50'	150'	100'



**The Morin-Cameron GROUP, INC.**  
CIVIL ENGINEERS | ENVIRONMENTAL CONSULTANTS  
LAND SURVEYORS | LAND USE PLANNERS  
447 BOSTON STREET • U.S. ROUTE 1, TOPSFIELD, MASSACHUSETTS 01863  
P: 978-857-5556, F: 978-857-3480, W: WWW.MORINCAMERON.COM

**REVISIONS**

NO.	DESCRIPTION	DATE
1	REVISE PATIO REPLACEMENT NOTE TO INCORPORATE ON ISSUANCE FROM BOXFORD CONSERVATION COMMISSION	10-14-15

SURVEY BY: PWS/SR  
DRAFTED BY: WAS  
CHECKED BY: JMM  
APPROVED BY: JMM  
SCALE: 1"=20'  
DATE: SEPTEMBER 25, 2015

**SANITARY DISPOSAL SYSTEM REPAIR PLAN**  
IN  
**BOXFORD, MASSACHUSETTS**  
120 HIGH RIDGE ROAD  
(ASSESSOR'S MAP 24, BLOCK 4, LOT 9.26)  
PREPARED FOR:  
**JOSEPH MASSARO**

**SSD**  
DRAWING NO. **1 OF 2**

PROJ. #3355