

WITNESSED BY: Evan Carloni, Acton Board of Health
PERFORMED BY: William Murray SE#1723, Places Associates

Testhole # TP-1013-1 DATE: 10/22/13 Elevation: 397.4

Depth from Surface (feet)	Soil Horizon	Soil texture (USDA)	Soil Color (Munsell)	Soil Mottling	Other
0-16"	FILL	-	-	-	--
16-24"	A	SANDY LOAM	10YR 3/2	-	--
24-40"	B	MEDIUM SAND	10YR 5/7	-	--
40-90"	C1	COARSE SAND	10YR 7/2	-	5% GRAVEL
90-120"	C2	V. FINE LS	10YR 6/2	-	--

Groundwater Observed: NONE Refusal @ NONE
Estimated Seasonal High Groundwater: 120" Elevation: 387.4

Testhole # TP-1013-2 DATE: 10/22/13 Elevation: 396.3

Depth from Surface (feet)	Soil Horizon	Soil texture (USDA)	Soil Color (Munsell)	Soil Mottling	Other
0-14"	FILL	-	-	-	--
14-20"	A	SANDY LOAM	10YR 3/2	-	--
20-30"	B	MEDIUM SAND	10YR 5/6	-	--
30-86"	C1	COARSE SAND	10YR 7/2	-	5% GRAVEL
86-128"	C2	V. FINE LS	10YR 6/2	-	--

Groundwater Observed: NONE Refusal @ NONE
Estimated Seasonal High Groundwater: 128" Elevation: 385.6

GENERAL NOTES:

THE SOIL ABSORPTION SYSTEM IS DESIGNED TO ACCOMMODATE SANITARY SEWAGE DERIVED FROM DOMESTIC USAGE THAT IS COMPRISED OF WATER CARRIED PUTRESIBLE WASTES ONLY.

THE CONTRACTOR SHALL NOTIFY "DIG-SAFE" PRIOR TO ANY ON SITE EXCAVATION.

THE OWNER SHALL VERIFY COMPLIANCE WITH ZONING REGULATIONS PRIOR TO CONSTRUCTION.

THE PROPERTY LINES AND TOPOGRAPHIC INFORMATION SHOWN ON THIS PLAN ARE A RESULT OF AN ON THE GROUND TOPOGRAPHIC SURVEY PERFORMED BY PLACES ASSOCIATES, INC. THIS PLAN SHOWS ONLY THOSE FEATURES THAT WERE VISUALLY APPARENT ON THE DATE OF TOPOGRAPHY. THE ABSENCE OF SUBSURFACE STRUCTURES, UTILITIES, ETC. IS NOT INTENDED NOR IS IT IMPLIED.

THE LOCATION OF ANY INDICATED SUBSURFACE UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL OBTAIN ADEQUATE LOCATION INFORMATION FROM THE APPLICABLE UTILITY COMPANY.

PRIOR TO ANY CONSTRUCTION, A TEMPORARY BENCHMARK SHALL BE SET WITHIN 50' TO 75' OF THE PROPOSED SOIL ABSORPTION AREA.

WETLANDS PROTECTION ACT HAS REQUIREMENTS WHICH MAY AFFECT THE WORK PROPOSED HEREIN. PRIOR TO ANY REMOVAL OF SOILS OR VEGETATION WITHIN 100' OF ANY WETLAND OR WITHIN 200' OR ANY RIVER BANK (ANY AREAS PROTECTED BY C130 §40) A REQUEST FOR DETERMINATION OF APPLICABILITY OR A NOTICE OF INTENT MUST BE FILED WITH THE CONSERVATION COMMISSION. ADDITIONAL LOCAL BYLAWS MAY ALSO APPLY.

THERE ARE NO EXISTING PRIVATE WELLS WITHIN 100' OF THE PROPOSED SEWAGE DISPOSAL SYSTEM, 50' OF THE PROPOSED SEPTIC TANK.

ALL KNOWN WELLS WITHIN 150' OF THE PROPOSED PRIMARY AND EXPANSION LEACH SOIL ABSORPTION AREAS ARE SHOWN.

THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER PROMPTLY OF ANY PLAN DEFICIENCIES OR OTHER UNFORESEEN CONDITIONS WHICH MAY IMPACT THE FUNCTION OF THE COMPLETED SYSTEM PRIOR TO CONSTRUCTION.

DEVIATIONS FROM THE PLAN REQUIREMENTS OR DESIGN DURING CONSTRUCTION AND OPERATION OF THE PROPOSED SYSTEM SHALL VOID ANY CERTIFICATION MADE RELATIVE TO THE SUBSURFACE SEWAGE DISPOSAL SYSTEM.

MATERIAL SPECIFICATIONS:

ALL TANKS, D-BOXES, CHAMBERS AND TRAPS SHALL BE WATERTIGHT THROUGH THE MANUFACTURER'S SPECIFICATION OR WARRANTY.

ALL TANKS, CHAMBERS AND TRAPS SHALL BE EQUIPPED WITH TWENTY INCH MINIMUM DIAMETER WATERTIGHT ACCESS MANHOLE(S).

ALL TANKS, D-BOXES, CHAMBERS, TRAPS, COVERS, ACCESS MANHOLE AND PIPING SHALL BE ABLE TO WITHSTAND AN H-20 LOAD, H-20 LOADING CERTIFICATION FROM THE COMPONENT MANUFACTURER IF REQUIRED.

ALL TANKS, D-BOXES, CHAMBERS AND TRAPS SHALL BE PRECAST REINFORCED CONCRETE.

ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS.

CEMENT SHALL BE PORTLAND TYPE I OR II PER ASTM C150-81.

ALL CONCRETE ADMIXTURES SHALL BE PER ASTM C233-82.

ALL CONCRETE REINFORCEMENT SHALL BE WIRE FABRIC, GRADE 40/60 REOD PER ASTM A615.

THE SEPTIC TANK SHALL BE EMBOSSED WITH A SEAL STATING COMPLIANCE WITH ASTM D12703.

THE MINIMUM REINFORCED CONCRETE WALL THICKNESS IS THREE INCHES EXCEPT FOR D-BOXES WHICH IS TWO INCH MINIMUM.

ALL SYSTEM COMPONENTS SHALL BE CONSTRUCTED WITH CORROSION RESISTANT MATERIAL.

ALL PIPING SHALL BE POLYVINYL CHLORIDE (PVC) ASTM 26655 SCHEDULE 40 NSF.

THE BUILDING SEWER SHALL COMPLY WITH THE STATE PLUMBING CODE, 248 CMR 2.00.

ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE OR A COMPARABLE MEANS TO LOCATE THEM WHEN BURIED.

SEPTIC TANK NOTES:

THE INLET AND OUTLET TEES SHALL BE LOCATED ON THE CENTER LINE OF THE TANK, DIRECTLY UNDER THE TEE ACCESS MANHOLES.

THE TOP OF THE INLET AND OUTLET TEES SHALL BE AT LEAST THREE INCHES BELOW THE INSIDE TOP OF TANK.

THE OUTLET TEE SHALL BE FITTED WITH AN EFFLUENT FILTER, ZABEL P-122 OR EQUAL.

THE INLET PIPE INVERT SHALL BE AT LEAST TWO INCHES BUT NOT MORE THAN THREE INCHES ABOVE THE OUTLET PIPE INVERT.

THE INLET TEE SHALL EXTEND TEN INCHES BELOW THE OUTLET PIPE INVERT.

THE OUTLET TEE SHALL EXTEND 14 INCHES BELOW THE OUTLET PIPE INVERT PLUS 5 ADDITIONAL INCHES FOR EVERY FOOT OF TANK DEPTH IN EXCESS OF FOUR FEET.

SEPTIC TANKS SHALL HAVE AT LEAST NINE INCHES OF EARTHEN COVER.

THE DEPTH OF LIQUID BELOW THE INVERT OF THE OUTLET TEE SHALL BE FOUR FEET MINIMUM.

AT LEAST THREE 20-INCH MINIMUM DIAMETER ACCESS MANHOLES SHALL BE PROVIDED IN THE TANK COVER. ACCESS MANHOLES SHALL BE LOCATED ON THE CENTER LINE ABOVE EACH INLET AND OUTLET TEE AND AT THE TANK CENTER.

AT LEAST ONE ACCESS MANHOLE SHALL BE BROUGHT TO WITHIN SIX INCHES OF FINISHED GRADE. FOR SEPTIC SYSTEMS WITH TWO TANKS, EACH INLET AND OUTLET MANHOLE SHALL BE BROUGHT TO WITHIN SIX INCHES OF FINISHED GRADE AND A MANHOLE TO GRADE OVER THE EFFLUENT FILTER. MANHOLES BROUGHT TO FINISHED GRADE SHALL BE MADE SECURE TO PREVENT UNAUTHORIZED ACCESS.

NO STRUCTURES OR OTHER FEATURE SHALL BE LOCATED OVER OR NEAR THE TANK SO AS TO ALLOW REQUIRED INSPECTION AND MAINTENANCE.

SYSTEM VENT NOTES:

THE SYSTEM SHALL BE VENTED THROUGH THE BUILDING STACK VENT WHERE POSSIBLE.

WHEN ADDITIONAL SYSTEM VENTS ARE INDICATED OR REQUIRED, THEY SHALL BE CONSTRUCTED WITH THE SAME PIPING SIZE AND MATERIAL, LOCATED 50 AS TO PREVENT THE ENTRANCE OF ANIMALS OR PRECIPITATION AND BACKFILLED TIGHTLY TO PREVENT THE MIGRATION OF SURFACE WATER INTO THE SOIL ABSORPTION SYSTEM.

CONSTRUCTION NOTES:

CONSTRUCTION VEHICLES SHALL BE KEPT OFF THE AREA TO BE USED AS THE SOIL ABSORPTION AREA PRIOR TO, DURING AND AFTER CONSTRUCTION.

FROM THE DATE OF INSTALLATION OF THE SOIL ABSORPTION SYSTEM, UNTIL THE RECEIPT OF A CERTIFICATE OF COMPLIANCE FROM THE LOCAL BOARD OF HEALTH, THE PERIMETER OF THE SOIL ABSORPTION SYSTEM SHALL BE STAKED AND FLAGGED, TO PREVENT THE USE OF THE AREA FROM ANY AND ALL ACTIVITIES WHICH MIGHT DAMAGE THE SOIL ABSORPTION SYSTEM. THE STOCKPILING OF MATERIALS OR EQUIPMENT WITHIN THE AREA IS PROHIBITED.

ALL LOAM, SUBSOIL, LARGE BOULDERS AND FOREIGN MATERIAL ENCOUNTERED DURING EXCAVATION SHALL BE REMOVED.

THE SOIL ABSORPTION AREA (LEACHING AREA) BOTTOM SHALL BE EXCAVATED TO A LEVEL RELATIVELY DRY SCARIFIED SURFACE AT A GRADE EQUAL TO THAT INDICATED FOR THE BOTTOM OF STONE.

IF THE REMOVAL OF STONES OR BOULDERS RESULTS IN LOCAL DEPRESSIONS, FILLING TO GRADE WITH SUITABLE EXCAVATED PARENT MATERIAL IS ACCEPTABLE.

IF THE REMOVAL OF UNSUITABLE MATERIAL, TOP AND OR SUBSOIL IS REQUIRED CREATING AREAS BELOW THE REQUIRED BOTTOM OF STONE ELEVATION, THE PLACEMENT OF SEPTIC SYSTEM FILL IS REQUIRED.

WHEN SEPTIC SYSTEM FILL IS REQUIRED, ALL UNSUITABLE OR IMPERMEABLE SOILS WITHIN 5' LATERALLY OF THE SOIL ABSORPTION SYSTEM SHALL BE REMOVED AND SEPTIC SYSTEM FILL PLACED GRADUALLY.

FILL SHALL NOT BE PLACED DURING RAIN OR SNOW STORMS, OR CONDITIONS RESULTING IN FROZEN FILL.

AN OFFSET OF AT LEAST TEN FEET TO ANY EXISTING OR PROPOSED WATER LINE SHALL BE PROVIDED FROM ALL SYSTEM COMPONENTS.

THE BUILDING SEWER LINE SHALL BE CONSTRUCTED WITH WATER TIGHT JOINTS.

THE BUILDING SEWER SHALL BE LAID WITH A 2 PERCENT MINIMUM SLOPE (1/4 INCH PER FOOT PITOT).

THE BUILDING SEWER SHALL BE LAID ON A CONTINUOUS LINE AND GRADE OR A MANHOLE SHALL BE PROVIDED.

MANHOLES SHALL BE PROVIDED FOR ANY PIPE LENGTH IN EXCESS OF 100 FEET, EXCLUSIVE OF FORCE MAINS.

THE BUILDING SEWER SHALL BE VENTED THROUGH THE BUILDING'S VENT STACK.

THE BACKFILL ABOVE THE SOIL ABSORPTION AREA SHALL BE A MINIMUM OF NINE INCHES EXCLUDING TOPSOIL.

THE BACKFILL ABOVE THE SOIL ABSORPTION AREA SHALL BE A MINIMUM OF TWELVE INCHES INCLUDING TOPSOIL.

THE BACKFILL ABOVE THE SOIL ABSORPTION SYSTEM SHALL BE CLEAN, FREE OF STONE GREATER THAN SIX INCHES AND FREE OF TAILINGS, CLAY OR SIMILAR MATERIAL.

ALL BACKFILL SHALL BE PLACED IN LIFTS AND COMPACTED TO PREVENT SETTLING.

THE FINISHED GRADE OVER THE SOIL ABSORPTION AREA SHALL BE GRADED WITH A MINIMUM TWO PERCENT SLOPE TO REDUCE RAINFALL INFILTRATION INTO THE SYSTEM.

THE GRADING AROUND THE SOIL ABSORPTION AREA SHALL BE DONE SO AS TO DIRECT SURFACE DRAINAGE AWAY FROM THE SYSTEM.

ALL DISTURBED AREAS SHALL BE LOAMED AND SEEDED TO PREVENT EROSION.

MAX. COVER ABOVE ANY SYSTEM COMPONENT IS 36".

SYSTEM OPERATION & MAINTENANCE:

PROPER OPERATION AND MAINTENANCE IS ESSENTIAL TO THE LONG TERM FUNCTION OF SUBSURFACE SEWAGE DISPOSAL SYSTEMS.

THE OWNER OR OPERATOR OF THE SEWAGE DISPOSAL SYSTEM IS RESPONSIBLE FOR THE INSPECTION AND MAINTENANCE OF, AND ANY UPGRADES TO, THE SYSTEM.

A SYSTEM INSPECTION BY STATE CERTIFIED PERSONNEL IS REQUIRED WITHIN TWO YEARS PRIOR TO ANY TRANSFER IN TITLE (SALE OF THE PROPERTY). AN INSPECTION WITHIN THREE YEARS PRIOR IS ALLOWED IF ACCOMPANIED WITH WRITTEN ANNUAL SYSTEM PUMPING RECORDS THE SYSTEM SHALL BE INSPECTED UPON ANY CHANGE IN USE OR EXPANSION FOR WHICH A BUILDING PERMIT OR OCCUPANCY PERMIT IS REQUIRED FROM THE LOCAL BUILDING INSPECTOR.

THE SYSTEM SHALL BE INSPECTED PRIOR TO THE SALE OF ANY PORTION OF THE PROPERTY (ANR PLAN OR SUBDIVISION).

THE RESULTS OF REQUIRED INSPECTIONS SHALL BE SUBMITTED TO THE LOCAL BOARD OF HEALTH WITHIN THIRTY DAYS BY THE APPROVED SYSTEM INSPECTOR.

EVERY SEPTIC TANK SHALL BE PUMPED WHENEVER NECESSARY TO ENSURE PROPER SYSTEM FUNCTION.

THE SEPTIC TANK SHALL BE PUMPED WHEN THE TOP OF THE SLUDGE LAYER IS WITHIN TWELVE INCHES OF THE BOTTOM OF THE OUTLET TEE.

THE SEPTIC TANK SHALL BE PUMPED WHEN THE TOP OF THE SCUM LAYER IS WITHIN TWO INCHES OF THE TOP OF THE OUTLET TEE OR WHEN THE BOTTOM OF THE SCUM LAYER IS WITHIN TWO INCHES OF THE BOTTOM OF THE OUTLET TEE.

ALL SYSTEMS ARE DIFFERENT, THEREFORE IT IS RECOMMENDED THAT THE PUMPING FREQUENCY BE ADJUSTED TO OCCUR WHEN THE SLUDGE DEPTH IS NOT MORE THAN ONE QUARTER THE DESIGN LIQUID DEPTH. PUMPING SHALL OCCUR NOT MORE THAN THREE YEARS APART.

SEPTIC SYSTEM FILL SHALL CONSIST OF CLEAN GRANULAR SAND, FREE FROM ORGANIC MATTER AND DELETERIOUS SUBSTANCES MIXTURES OF DIFFERENT CLASS SOILS IS NOT ALLOWED. THE FILL SHALL NOT CONTAIN ANY PARTICLE GREATER THAN TWO INCHES IN SIZE. A SEIVE ANALYSIS USING A #4 SEIVE SHALL BE PERFORMED ON A REPRESENTATIVE SAMPLE OF THE FILL, UP TO 45% BY WEIGHT OF THE FILL SAMPLE MAY BE RETAINED ON THE #4 SEIVE. ADDITIONAL SEIVE ANALYSIS SHALL BE PERFORMED ON THE PORTION PASSING THE #4 SEIVE. THE MATERIAL PASSING THE #4 SEIVE MUST MEET THE FOLLOWING CRITERIA:

SEIVE SIZE	EFFECTIVE PARTICLE SIZE	% PASSING SEIVE
# 4	4.75 mm	100
# 50	0.30 mm	10-100
# 100	0.15 mm	0-20
# 200	0.075 mm	0-5

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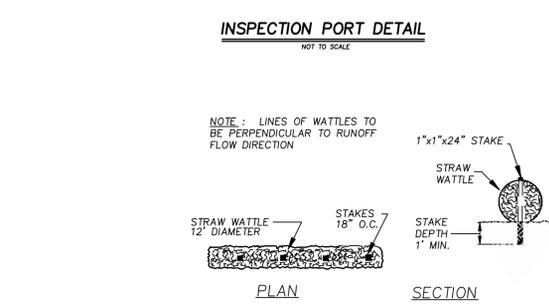
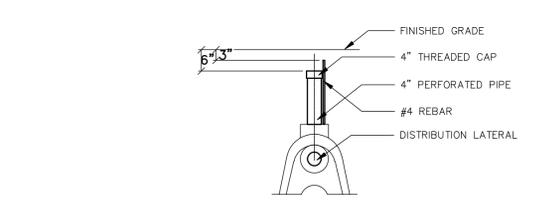
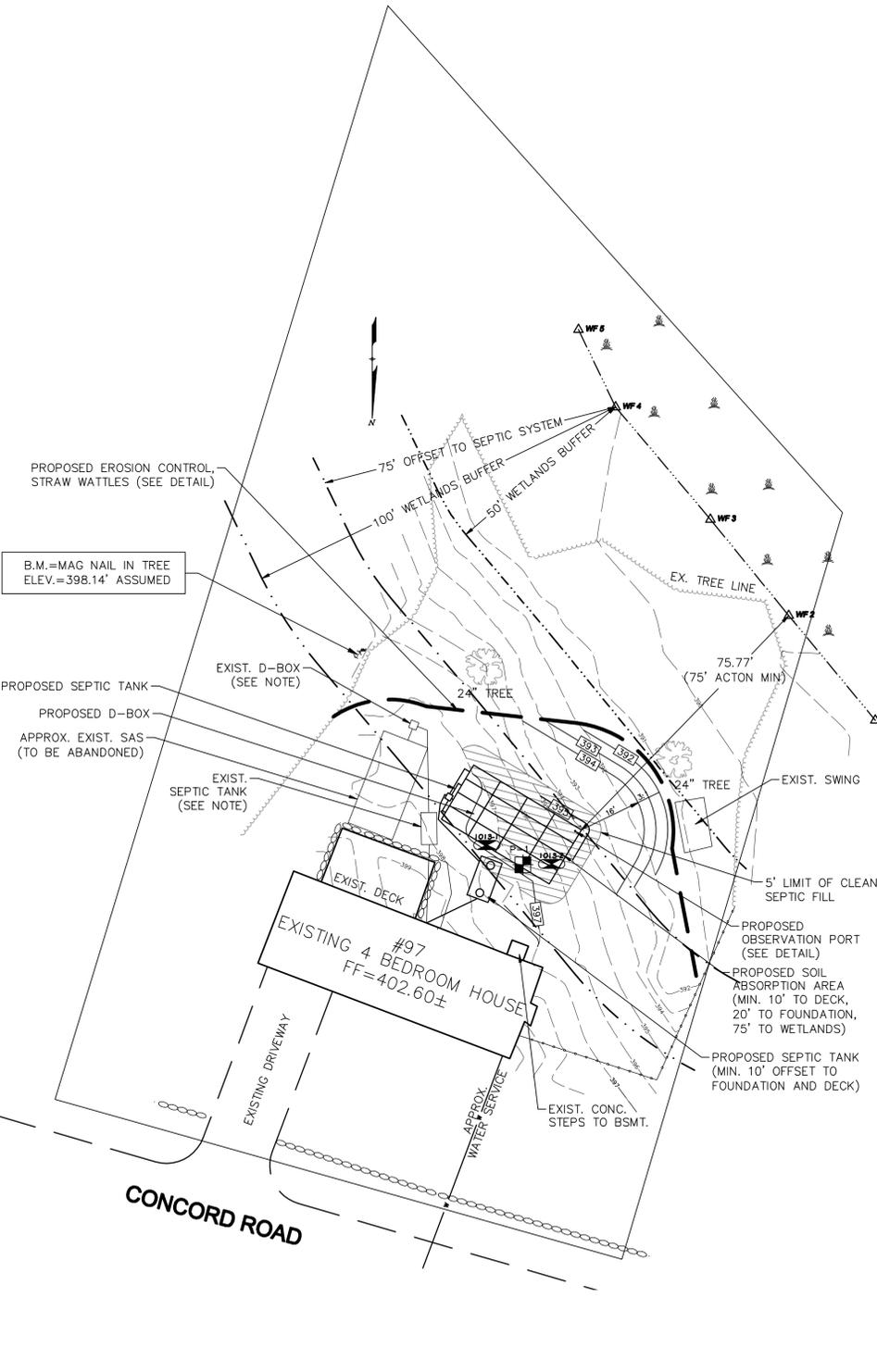
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ELEVATION SCHEDULE

	PROPOSED	AS-BUILT
TOP OF EXIST FND.	401.60	
INVERT AT FND.	397.77*	
INVERT IN SEPTIC TANK	395.00	
INV. OUT SEPTIC TANK	394.75	
TOP OF SEPTIC TANK	396.1±	
INVERT IN DIST. BOX	394.00	
INV. OUT DIST. BOX	393.83	
GROUNDWATER OFFSET	REQUIRED ** 6'	
GROUNDWATER OFFSET	PROVIDED 6'	

* CONTRACTOR SHALL VERIFY EXISTING BUILDING SEWER ELEVATION PRIOR TO THE PLACEMENT OF THE SEPTIC TANK
** SITE IS IN THE GROUNDWATER PROTECTION DISTRICT 3 WHICH REQUIRES A 6' MIN. OFFSET.

SCHEDULE OF BED ELEVATIONS

No.	Top Chamber	Bottom Chamber	Invert into Chamber
PRI	394.21	393.50	393.75

DESIGN CRITERIA:

THIS SYSTEM IS NOT DESIGNED FOR GARBAGE GRINDERS.

Flows: 4 BEDROOMS @ 110 GPD 440 GPD

SEPTIC TANKS:

PROVIDE A TWO COMPARTMENT SEPTIC TANK

COMPARTMENT 1: 440 GPD x 2.0 = 880 GALLON MIN.
COMPARTMENT 2: 440 GPD x 1.0 = 440 GALLON MIN.
PROVIDE: 1,500 GALLON TANK (1,000/500)

LEACHING AREA:

PERCOLATION RATE USED: 2 MIN/IN
SOIL CLASSIFICATION: 1
APPLICATION RATE: 0.74 GPD/SF
LEACHING AREA REQUIRED: 595 S.F.
MINIMUM LEACHING AREA REQ'D PER ACTON: 800 S.F.
EFFECTIVE LEACHING AREA:
CULTEC C4 CHAMBER = 6.7 SF / LF
CULTEC C4 CHAMBER = 53.6 SF / CHAMBER
LEACHING CAPACITY PROVIDED:
NUMBER OF ROWS OF CHAMBERS 4
NUMBER CHAMBERS PER ROW 4
EFFECTIVE LEACHING AREA PROVIDED: 857 S.F.
LEACHING CAPACITY PROVIDED: 634 GPD

WETLANDS NOTE:

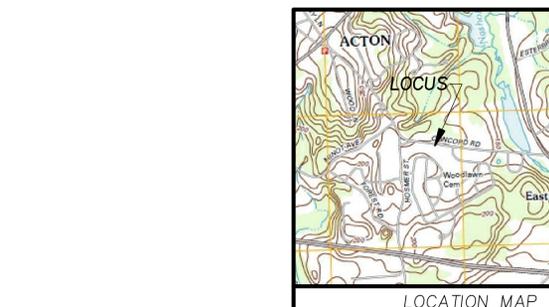
SITE IS LOCATED WITHIN THE 100' BUFFER ZONE TO THE BORDERING VEGETATIVE WETLANDS AND REQUIRES A FILING WITH THE ACTON CONSERVATION COMMISSION UNDER THE WETLANDS PROTECTION ACT MGL CH 131 S 40 CMR 15.00 AND THE ACTON WETLANDS BYLAW (CHAPTER F- ENVIRONMENTAL PROTECTION).

EXISTING SEPTIC SYSTEM NOTE:

EXISTING SAS TO BE ABANDONED AND EXISTING SEPTIC TANK TO BE REMOVED OR THE BOTTOM RUPTURED AND FILLED WITH SAND, IN ACCORDANCE WITH TITLE 5, 310 CMR 15.354 'ABANDONMENT OF SYSTEMS'

OWNER OF RECORD:
JASON & CAROLYN BRADY
REGISTRY OF DEEDS SOUTH DISTRICT
DEED BOOK 45393 PAGE 355
TOWN ATLAS - ACTON, MASSACHUSETTS
MAP F4 PARCEL 101

SITE IS LOCATED IN A GROUNDWATER PROTECTION DISTRICT 3



WITNESSED BY: Evan Carloni, Acton Board of Health
PERFORMED BY: William Murray SE#1723, Places Associates

DATE: 10/22/13

PERC: PT-1
DEPTH: 58" RATE: 2 MPI

SEWAGE DISPOSAL SYSTEM

LOCATION: 97 CONCORD ROAD
TOWN: ACTON, MASSACHUSETTS

PREPARED FOR:
JASON AND CAROLYN BRADY

SCALE: 1"=20' DATE: OCTOBER 25, 2013

Places Associates, Inc.
Planning, Landscape Architecture,
Civil Engineering, Surveying

256 GREAT ROAD, SUITE 4
LITTLETON, MA 01460
978.486.0334 Ph.
978.486.0447 Fax
places@placesassociates.com

PROJECT No.: 13-5019 PLAN No. 5019 SDS-1