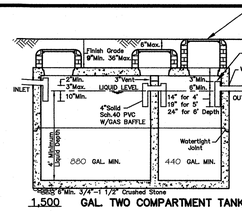
OBSERVATION TEST HOLE DATA
BY DANIEL B. WOLFE, D.E.R.A., INC.
WITNESSED BY JIM GARREFFI, N.A.B.O.H.
11/24/21

1121-5: ELEV. = 233.0'
Ap 0' - 14" FINE SANDY LOAM
Bw 14"- 36" LOAMY SAND
C 36"- 120" MEDIUM SAND
NO MOTTLING
NO GROUNDWATER OBSERVED
NO REFUSAL
E.S.H.W.T. AT >120" (223.0')

1121-7: ELEV. = 232.5'
Ap 0' - 8" FINE SANDY LOAM
Bw 8"- 24" LOAMY SAND
C 24"- 120" MEDIUM SAND
NO MOTTLING
NO GROUNDWATER OBSERVED
NO REFUSAL
E.S.H.W.T. AT >120" (222.5')

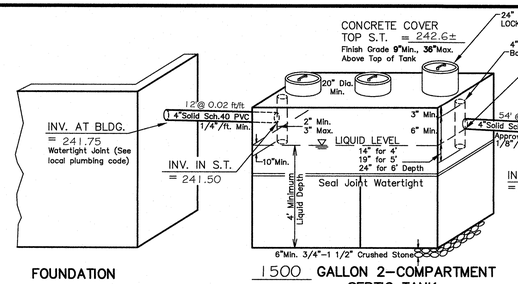
1121-6: ELEV. = 230.6'
Ap 0' - 12" FINE SANDY LOAM
Bw 12"- 30" LOAMY SAND
C 30"- 120" MEDIUM SAND
NO MOTTLING
NO GROUNDWATER OBSERVED
NO REFUSAL
E.S.H.W.T. AT >120" (220.6')

1121-8: ELEV. = 230.1'
Ap 0' - 12" FINE SANDY LOAM
Bw 12"- 30" LOAMY SAND
C 30"- 120" MEDIUM SAND
NO MOTTLING
NO GROUNDWATER OBSERVED
NO REFUSAL
E.S.H.W.T. AT >120" (220.1')




1,500 GAL TWO COMPARTMENT TANK

LEGEND
300 EXISTING CONTOUR
300 PROPOSED CONTOUR
PERCOLATION TEST HOLE
OBSERVATION TEST HOLE
S SEWER LINE
W WATER LINE
EDGE OF WETLANDS



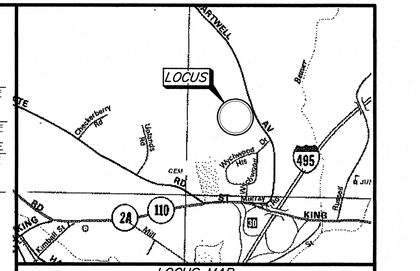

3 TRENCHES REQUIRED

FOUNDATION

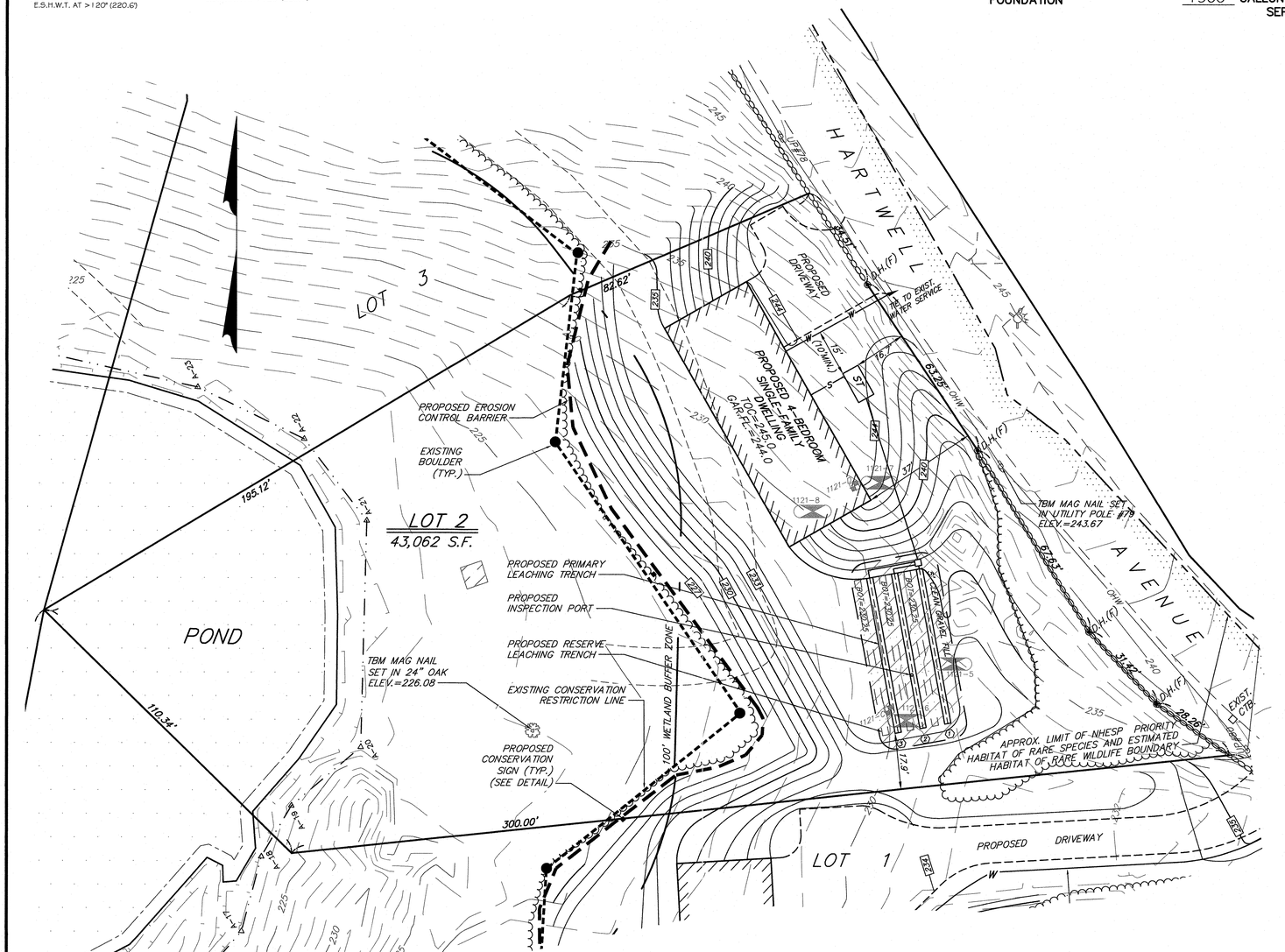
1,500 GALLON 2-COMPARTMENT SEPTIC TANK

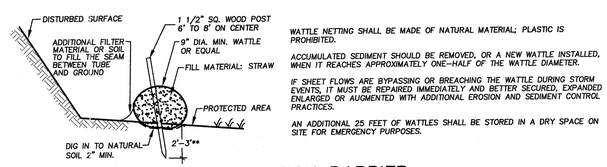
DISTRIBUTION BOX

LEACHING TRENCH




LOCUS MAP
NOT TO SCALE




WATTLE NETTING SHALL BE MADE OF NATURAL MATERIAL; PLASTIC IS PROHIBITED.

ACCUMULATED SEDIMENT SHOULD BE REMOVED, OR A NEW WATTLE INSTALLED, WHEN IT REACHES APPROXIMATELY ONE-HALF OF THE WATTLE DIAMETER.

IF SHEET FLOWS ARE BYPASSING OR BREACHING THE WATTLE DURING STORM EVENTS, IT MUST BE REPAIRED IMMEDIATELY AND BETTER SECURED, EXPANDED ENLARGED OR AUGMENTED WITH ADDITIONAL EROSION AND SEDIMENT CONTROL PRACTICES.

AN ADDITIONAL 25 FEET OF WATTLES SHALL BE STORED IN A DRY SPACE ON SITE FOR EMERGENCY PURPOSES.

SILTATION BARRIER WATTLE DETAIL
NOT TO SCALE

### SEPTIC TANK

SEPTIC TANK SHALL BE A PRECAST, REINFORCED CONCRETE TANK MADE WATERTIGHT. CONSTRUCTION MATERIALS AND DIMENSIONS SHALL CONFORM TO TITLE 5 AND AASHTO HS 10 REQUIREMENTS AND PLACED ON A STABLE MECHANICALLY COMPACTED LEVEL BASE.

TANK/ SYSTEM TO BE VENTED THROUGH THE BUILDING PLUMBING SYSTEM AS REQUIRED BY BUILDING CODE.

TANK SHOULD BE INSPECTED, MAINTAINED AND BE PUMPED OUT WHEN SLUDGE DEPTH IN THE BOTTOM EXCEEDS ONE FOURTH OF THE TOTAL LIQUID DEPTH.

AT LEAST THREE 20" MANHOLES SHALL BE PROVIDED AND EQUIPPED WITH RISERS TO WITHIN 6" OF FINISH GRADE.

### "D" BOX

"D" BOX TO BE MADE WATERTIGHT. CONSTRUCTION MATERIALS AND DIMENSIONS SHALL CONFORM TO TITLE 5 AND AASHTO HS 10 REQUIREMENTS AND PLACED ON A STABLE MECHANICALLY COMPACTED LEVEL BASE.

"D" BOX OUTLETS SHALL BE INSTALLED LEVEL ("BUILT UP" INVERTS, NOT PERMITTED.

FIRST 2' (MIN.) OF OUTLETS SHALL BE INSTALLED LEVEL TO EQUALIZE FLOW.

THE MINIMUM INSIDE DIMENSIONS OF THE "D" BOX TO BE 12" AND THE MINIMUM WALL THICKNESS TO BE 2".

WHEN INLET PIPE SLOPE EXCEEDS 8%-PVC INLET TEE REQUIRED. CUT LOW END 1" ABOVE OUTLET INVERT.

"D" BOX COVER TO BE SEALED WITH BITUMEN. "D" BOXES BURIED GREATER THAN 9" BELOW GRADE SHALL BE EQUIPPED WITH A RISER TO WITHIN 6" OF FINISH GRADE.

### LEACH AREA

ALL LOAM, LARGE BOULDERS OR FOREIGN MATERIAL ENCOUNTERED DURING EXCAVATION ARE TO BE REMOVED FROM THE LEACHING AREA.

ALL SOIL INTERFACES SHALL BE SCARIFIED PRIOR TO THE PLACEMENT OF STONE.

ALL STONE IN PLACE SHALL BE DURABLE, FREE FROM IRON, FINES AND DUST AND DOUBLE WASHED.

WHEN GRAVEL FILL IS REQUIRED, ALL LOAM AND ORGANIC MATERIAL SHALL BE REMOVED FROM AREA TO BE FILLED. FILL SHALL BE COMPACTED TO MINIMIZE SETTLEMENT AND SHALL BE CLEAN GRANULAR MATERIAL, FREE FROM FINES AND ORGANIC MATERIALS, AND SHALL BE IN ACCORDANCE WITH 310 CMR 15.255(3).

ALL DISTURBED AREAS ARE TO BE LOAMED, SEEDED AND MAINTAINED TO PREVENT EROSION.

AREAS ABOVE THE SOIL ABSORPTION SYSTEM SHALL REMAIN PERVIOUS UNLESS UNAVOIDABLE. IN SUCH CASES THE SYSTEM SHALL BE VENTED.

### GENERAL NOTES

SYSTEM IS DESIGNED TO ACCOMMODATE SANITARY SEWAGE ASSOCIATED WITH NORMAL DOMESTIC USE AND CONSISTING OF WATER CARRIED PUTRESIBLE WASTE ONLY.

ALL COMPONENTS OF THE SEWAGE DISPOSAL SYSTEM SHALL BE COVERED BY A MAXIMUM OF 36" OF CLEAN BACKFILL MATERIAL, FREE OF STONES AND BOULDERS GREATER THAN 6" IN SIZE.

ALL COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE OR A COMPARABLE MEANS IN ORDER TO LOCATE THEM ONCE BURIED.

OWNER SHALL VERIFY EFFECTIVE ZONING REGULATIONS PRIOR TO CONSTRUCTION.

PLAN SHOWS ONLY THOSE FEATURES THAT WERE VISUALLY APPARENT ON DATE OF TOPOGRAPHY, AND THE ABSENCE OF SUBSURFACE STRUCTURES, UTILITIES, ETC. IS NOT INTENDED OR IMPLIED.

ALL PIPING SHALL BE LAID TRUE TO LINE, GRADE AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

THERE ARE NO EXISTING WELLS WITHIN 100' OF THE PROPOSED SEWAGE DISPOSAL SYSTEM. ( 50' OF THE SEPTIC TANK.) THERE ARE NO EXISTING SEWAGE DISPOSAL SYSTEMS WITHIN N/A OF THE PROPOSED WELL. TOWN WATER PROVIDED

ALL KNOWN WELLS WITHIN 200' OF THE PROPOSED PRIMARY AND EXPANSION LEACH AREAS ARE SHOWN.

THE DESIGN ENGINEER SHALL BE NOTIFIED PROMPTLY OF ANY PLAN DEFICIENCIES FOUND DUE TO UNFORESEEN SUBSURFACE CONDITIONS OR OTHER REASONS THAT MIGHT AFFECT THE FUNCTION OF THIS DESIGNED SYSTEM.

DEVATIONS IN DESIGN OR CONSTRUCTION FROM THIS PLAN OR ANY OF THE CONDITIONS RELATING TO THE USE OR MAINTENANCE OF THE PROPOSED SYSTEM SHALL BE DEEMED TO VOID ANY CERTIFICATION OR REPRESENTATION MADE RELATIVE TO THIS SUBSURFACE SEWAGE DISPOSAL SYSTEM.

CONTRACTOR SHALL NOTIFY "DIG SAFE" PRIOR TO ANY EXCAVATION. 1-888-DIG-SAFE (344-7233)

PRIOR TO ANY CONSTRUCTION A BENCHMARK SHALL BE SET WITHIN 50-75' OF THE PROPOSED SEWAGE DISPOSAL SYSTEM.

| SCHEDULE OF ELEVATIONS | PROPOSED | AS-BUILT |
|---|---|---|
| TOP CONCRETE FOUNDATION | 245.0 | |
| INVERT AT FOUNDATION | 241.75 | |
| INVERT TANK INLET | 241.50 | |
| INVERT TANK OUTLET | 241.25 | |
| TOP SEPTIC TANK | 242.6± | |
| INV. "D" BOX INLET | 231.82 | |
| INV. "D" BOX OUTLET | 231.65 | |
| GROUNDWATER OFFSET REQUIRED | 5' | |
| GROUNDWATER OFFSET UTILIZED | 5' | |

### TRENCH ELEVATIONS

| TRENCH NUMBER | TOP STONE | HIGH INV. ELEV. | LOW INV. ELEV. | BOTTOM STONE |
|---|---|---|---|---|
| 1 - 3 | 232.00 | 231.50 | 231.25 | 230.25 |

## DESIGN CRITERIA

GARBAGE GRINDERS - NOT PERMITTED

PERC. TESTS: PERFORMED BY DANIEL WOLFE, D.E.R.A., INC.
WITNESSED BY JIM GARREFFI, N.A.B.O.H.

| PERC. # | RATE (M/I) | ELEVATION | DEPTH | DATE |
|---|---|---|---|---|
| 1121-C | <2 | 230.2 | 49" | 11/24/21 |
| 1121-D | <2 | 230.2 | 49" | 11/24/21 |

FLOWS: 4 BEDROOMS AT 110 GPD = 440 GPD (330 GPD MIN.)

SEPTIC TANK REQUIRED: ( 1500 GAL. MIN.)
440 GPD X 2.0 = 880 GAL. TANK

### LEACHING AREA PROVIDED:

A. BASIS 2 MIN./IN. PERCOLATION RATE
B. SIDEWALL AREA PROVIDED 300 S.F.
300 S.F. X 0.74 GPD/SF= 222 GPD
C. BOTTOM AREA PROVIDED = 300 S.F.
300 S.F. X 0.74 GPD/SF= 222 GPD
D. TOTAL G.P.D. PROVIDED 444
E. TOTAL SF. PROVIDED 600

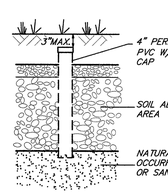
### SYSTEM IN FILL ☒ REQUIRED ☐ NOT REQUIRED

IF ANY PORTION OF THE PROPOSED LEACHING AREA IS LOCATED ABOVE EXISTING GRADE OR WITHIN TOPSOIL, PEAT OR OTHER UNSUITABLE OR IMPERVIOUS SOIL LAYER, THEN THE PLACEMENT OF FILL IS REQUIRED. PRIOR TO THE PLACEMENT OF FILL, ALL UNSUITABLE OR IMPERMEABLE SOILS SHALL BE EXCAVATED TO A MINIMUM OF FIVE FEET LATERALLY IN ALL DIRECTIONS BEYOND THE OUTER PERIMETER OF THE SOIL ABSORPTION SYSTEM TO THE DEPTH OF NATURALLY OCCURRING PERVIOUS MATERIAL. FILL MATERIAL SHALL BE SELECT, ON-SITE OR IMPORTED SOIL, CONSISTING OF CLEAN GRANULAR SAND, FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES. MIXTURES AND LAYERS OF DIFFERENT SOIL CLASSES SHALL NOT BE USED. THE FILL SHALL NOT CONTAIN ANY MATERIAL LARGER THAN 2 INCHES. A SIEVE ANALYSIS USING A #4 SIEVE, SHALL BE PERFORMED ON A REPRESENTATIVE SAMPLE OF THE FILL. UP TO 45% BY WEIGHT OF THE FILL SAMPLE MAY BE RETAINED IN THE #4 SIEVE. SIEVE ANALYSES SHALL ALSO BE PERFORMED ON THE FRACTION OF FILL SAMPLE PASSING THE #4 SIEVE. SUCH ANALYSES MUST DEMONSTRATE THAT THE MATERIAL MEETS EACH OF THE FOLLOWING SPECIFICATIONS:

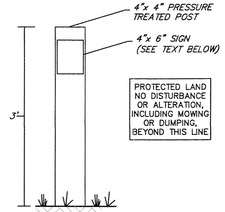
| SIEVE SIZE | EFFECTIVE PARTICLE SIZE | % THAT MUST PASS SIEVE |
|---|---|---|
| # 4 | 4.75 MM | 100% |
| # 50 | 0.30 MM | 10%-100% |
| #100 | 0.15 MM | 0%-20% |
| #200 | 0.075 MM | 0%-5% |

### WETLAND PROTECTION ACT (C131 S40)

PRIOR TO INITIATING ANY ALTERATIONS (REMOVAL OF VEGETATION, EXCAVATIONS, GRADING, ETC.) WITHIN 100' OF WETLANDS (PONDS, BROOKS, SWAMPS, ETC.) OR WITHIN 200' OF AN AREA SUBJECT TO THE RIVER'S ACT (PERENNIALLY FLOWING RIVER, BROOK OR STREAM), A REQUEST FOR DETERMINATION OF APPLICABILITY OR A NOTICE OF INTENT UNDER THE WETLANDS PROTECTION ACT (310 CMR 10.00) SHOULD BE FILED WITH THE TOWN'S CONSERVATION COMMISSION. LOCAL BYLAWS MAY ALSO APPLY.




INSPECTION PORT
NOT TO SCALE




CONSERVATION SIGN
NOT TO SCALE

NOTES:

AN EFFLUENT FILTER IS TO BE INSTALLED IN THE SEPTIC TANK OUTLET TEE. THE FILTER SHOULD BE MAINTAINED, AT A MINIMUM, ON AN ANNUAL BASIS OR ACCORDING TO MANUFACTURERS RECOMMENDATIONS.

THERE SHALL BE WRITTEN NOTICE PROVIDED IN A CONSPICUOUS PLACE NEAR THE BUILDING SEWER OR SOME OTHER METHOD TO SHOW THAT AN OUTLET TEE FILTER IS INSTALLED TO ENSURE THAT THE OUTLET TEE FILTER IS CLEANED WHEN THE SEPTIC SYSTEM TANK IS SERVICED.

NO PLASTIC RISERS, FRAMES, OR COVERS ARE ALLOWED ON PROPOSED SEPTIC TANKS OR DISTRIBUTION BOXES.

PROPERTY LINES TAKEN FROM A PLAN ENTITLED, "PLAN OF LAND IN LITTLETON, MASS PREPARED FOR HARTWELL HILL HOMES, LLC" DATED APRIL, 2023 BY DAVID E. ROSS ASSOCIATES, INC. (ROBERT T. CONWAY, PLS#56614)

20 0 10 20 40 60
GRAPHIC SCALE IN FEET

| SURV.: GSN/JPS | CALC.: SPM | DRAFT: PJT |
|---|---|---|
| NB: 833-63,67 | DEED: 79438-166 | CHECK: DBW |

REVISIONS
5/2/22 Original endorsement
7/25/22 Added Effluent Filter and access
3/28/23 Revised plan note
11/14/23 Added Conservation Restriction line & signs

COMMONWEALTH OF MASSACHUSETTS
DANIEL B. WOLFE
CIVIL
NO. 36523
REGISTERED PROFESSIONAL ENGINEER
11-14-23

SHEET TITLE: SEWAGE DISPOSAL SYSTEM

DESIGNED FOR: DUTCHCO BUILDERS, LLC

ADDRESS: HARTWELL AVENUE LITTLETON, MA

| LOT NO.: 2 | ASSESSOR MAP: R17 | ASSESSOR PARCEL: Portion of Parcel 3 |
|---|---|---|


DAVID E. ROSS ASSOCIATES, INC.
CIVIL ENGINEERS - LAND SURVEYORS
ENVIRONMENTAL CONSULTANTS
6 Lancaster County Road
P.O. Box 795
Harvard, MA 01451-0795
978-772-6232
FAX 978-772-6258
www.davideross.com


| SCALE: 1"=20' | DATE: MAY, 2022 |
|---|---|
| REF.: L-14520, L-14517 | PLAN NO.: L-14544 |
| JOB NO.: 33895 | SHEET NO.: 1 of 1 |

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