

LEGEND

- 300 --- EXISTING CONTOUR
 --- 500 --- PROPOSED CONTOUR
 [Symbol] PERCOLATION TEST HOLE
 [Symbol] OBSERVATION TEST HOLE
 --- S --- SEWER LINE
 --- W --- WATER LINE
 --- --- EDGE OF WETLANDS

NOTES:

1. DUE TO THE SHALLOW GROUNDWATER TABLE ENCOUNTERED, DEWATERING PRACTICES SHALL BE PUT INTO USE DURING THE INSTALLATION OF THIS HOLDING TANK.
2. EXCAVATION SHALL INCLUDE THE USE OF A TRENCH BOX TO ENSURE THE STABILITY OF THE EXCAVATION SIDEWALLS, AS WELL AS TO LIMIT THE INFILX OF GROUNDWATER INTO THE EXCAVATION.
3. DEWATERING OF THIS EXCAVATION SHALL PUMP THE GROUNDWATER TOWARD THE EXISTING CATCH BASIN WITHIN IVY ROAD. THIS CATCH BASIN SHALL BE SURROUNDED BY STRAW WATTLES, AS SHOWN, AS WELL AS A STONE FILTER TO CLEAR THE GROUNDWATER OF ANY SILT OR DEBRIS, PRIOR TO ENTERING THE EXISTING DRAINAGE SYSTEM.
4. EXCAVATED MATERIAL SHALL BE DIRECTLY LOADED TO A TRANSPORT TRUCK TO REMOVE EXCESS MATERIAL FROM THE SITE. A STOCKPILE OF MATERIAL SHALL ONLY BE PRESERVED AS BACKFILL FOR INSTALLED TANK.
5. ALL GROUND SURFACES SHALL BE RESTORED TO PRECONSTRUCTION ELEVATIONS AT THE COMPLETION OF INSTALLATION AND RESTORED/STABILIZED WITH LOAM AND SEED, AS APPROPRIATE.

PROJECT NAME: Mazzone
 JOB NUMBER: 34221
 PLAN #: L-14631
 DATE: 7/18/2023

BUOYANCY CALCULATIONS

DESCRIPTION: HOLDING TANK
 TANK MANUFACTURER: SHEA
 ITEM NUMBER:
 TANK SIZE: 4,000 GAL. (Shallow)

OUTSIDE DIMENSIONS: LENGTH = 17.50 ft. ASSUMPTIONS: $T_{WATER} = 62.4 \text{ lb/ft}^3$
 WIDTH = 8.00 ft. $T_{CONCRETE} = 150.0 \text{ lb/ft}^3$
 HEIGHT = 7.17 ft. $T_{SOIL} = 110.0 \text{ lb/ft}^3$

INSIDE DIMENSIONS: LENGTH = 16.50 ft.
 WIDTH = 7.00 ft.
 HEIGHT = 6.00 ft.

SEASONAL HIGH GROUNDWATER ELEVATION = 97.9 ft.
 TOP OF TANK ELEVATION = 99.1 ft.
 BOTTOM OF TANK ELEVATION = 92.0 ft.
 DEPTH OF SOIL COVER PROPOSED = 1 ft.

UPWARD FORCE OF GROUNDWATER (F)

$$F = PA$$

WHERE:
 P = (GROUNDWATER ELEV. - BOT. OF TANK ELEV.) $\times$ T_{WATER}
 A = AREA OF TANK

$$F = 51,979 \text{ lbs.}$$

DOWNWARD WEIGHT OF EMPTY TANK (W_t)

$$W_t = (\text{OUTSIDE VOL. DIMENSIONS} - \text{INSIDE VOL. DIMENSIONS}) \times T_{CONCRETE}$$

$$W_t = 46,620 \text{ lbs.}$$

DOWNWARD WEIGHT OF SOIL COVER (W_s)

$$W_s = \text{DEPTH OF SOIL COVER PROPOSED} \times \text{AREA OF TANK} \times T_{SOIL}$$

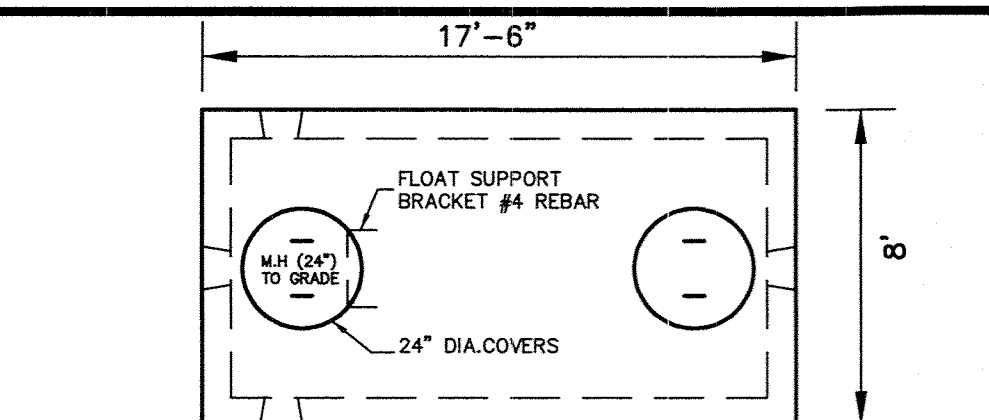
$$W_s = 15,400 \text{ lbs.}$$

SUMMARY

$$W_t + W_s = 62,020 \text{ lbs.}$$

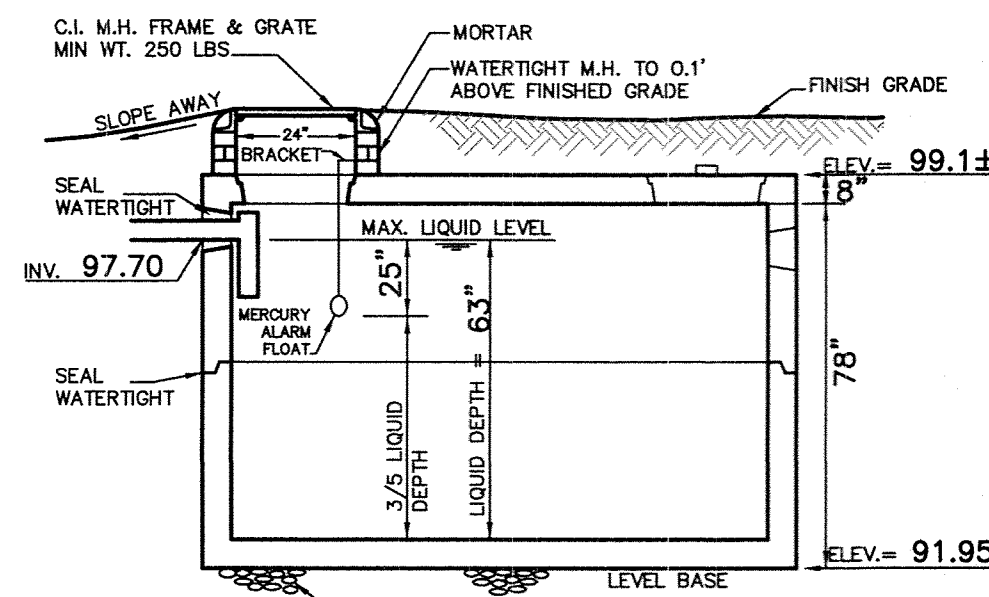
$$F = 51,979 \text{ lbs.}$$

Additional lbs. of ballast needed:



PLAN VIEW

EXIST. INV. @
 HOUSE = 98.5±



4,000 GALLON HOLDING TANK
 NOT TO SCALE

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

TANK TO HAVE ALL JOINTS SEALED WATERTIGHT IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

CONSTRUCTION MATERIALS AND DIMENSIONS TO CONFORM TO TITLE 5, ASHTO HS-10 LOADING.

TANK DIMENSIONS MAY VARY, DEPENDING UPON MANUFACTURER'S STANDARD, AS LONG AS LIQUID VOLUME CONFORMS WITH REQUIRED LIQUID CAPACITY.

TANK LOCATION MUST BE ACCESSIBLE YEAR ROUND.

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

ALARM SPECIFICATIONS

ALARM TO BE SIGNALLED BY SELF CONTAINED MERCURY FLOAT SWITCH AT 3/5 TANK CAPACITY.

ALARM TO BE LOCATED INSIDE BUILDING AT VISIBLE LOCATION.

ALARM TO BE AUDIO/VISUAL WITH MANUAL RESET ON AUDIO ONLY.

ALL WORK TO CONFORM WITH STATE AND LOCAL CODES.

NO JUNCTION BOXES SHALL BE PLACED WITHIN TANK OR OUTSIDE HOUSE.

ALARM SHALL BE SEPARATE-FUSED CIRCUIT.

DESIGN CRITERIA

FLOWS: 3 BEDROOM AT 110 GPD = 330 GPD
 (220 GPD MINIMUM)

HOLDING TANK: PROPOSED 4,000 GAL. TANK

ABSOLUTE MIN. PER TITLE 5 POLICY = 2,000 GAL. TANK
 CALCULATED MIN.: 330 GPD $\times$ 5.0 = 1,650 GAL. TANK

ESTIMATED FREQUENCY OF REMOVAL (PUMPING)

12 DAYS PER TITLE 5 ESTIMATION OF FLOWS.
 NOTE: ALTHOUGH TITLE 5 ESTIMATIONS SHOW A FREQUENCY OF PUMPING EVERY 12 DAYS, CONSERVATIVE USE OF ALL WATER GENERATING FACILITIES WILL YIELD A LESS FREQUENT PUMPING SCHEDULE.

TIGHT TANK OPERATION AND MAINTENANCE PLAN

FREQUENCY OF PUMPING: THE TANK SHALL BE PUMPED WHEN THE CAPACITY REACHES THREE FIFTHS OF THE TOTAL CAPACITY (2400 GALLONS). THIS POINT SHALL BE SIGNALLED BY THE ALARM FLOAT SWITCHES DETAILED ON THE PROPOSED PLAN. TITLE 5 ESTIMATES THAT THIS PEAK FREQUENCY WILL BE EVERY 36 DAYS, HOWEVER, CONSERVATIVE USE OF ALL WATER GENERATING FACILITIES WILL YIELD A LESS FREQUENT PUMPING SCHEDULE. IN ADDITION, SEASONAL USE WILL ALSO NEGATE THE PUMPING REQUIREMENT IN THE OFF-SEASON. END OF SEASON SHUT DOWN OF THE FACILITY SHALL INCLUDE A FINAL PUMPING.

METHOD OF DISPOSAL: THE WASTE IS TO BE DISPOSED OF AT A WASTE WATER TREATMENT FACILITY LICENSED TO ACCEPT DOMESTIC WASTE WATER.

MAINTENANCE: THE WASTE HAULER IS TO VISUALLY INSPECT THE TANK FOR STRUCTURAL INTEGRITY AT EACH PUMPING. HE WILL REPORT ANY OBSERVED IRREGULARITIES TO THE FACILITY OWNER WHO WILL INVESTIGATE AND FOLLOW UP AS NEEDED.

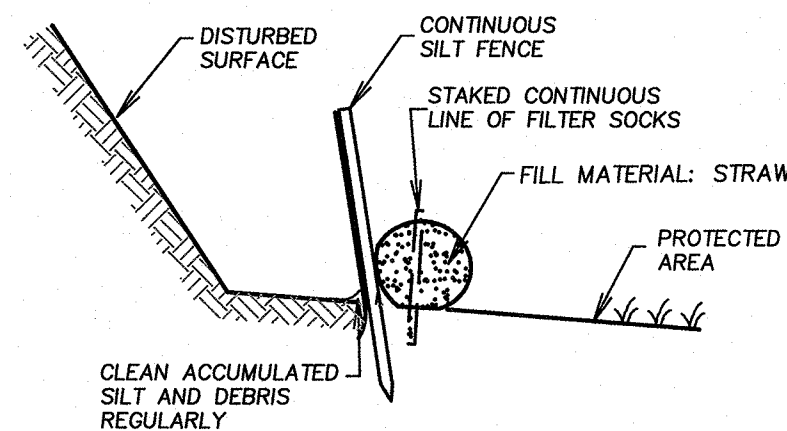
THE FLOAT SWITCHES AND ALARM SYSTEM ARE TO BE INSPECTED AT LEAST ONCE EACH YEAR, PREFERABLY AT THE START OF THE SEASONAL USE, AND TESTED MONTHLY. IF THE TANK REACHES THREE FIFTHS CAPACITY (2400 GALLONS) AND THE ALARM PROPERLY ACTIVATES, THIS IS CONSIDERED TO BE A SUCCESSFUL TEST.

NO PERMANENT STRUCTURES ARE TO BE PLACED SUCH THAT THEY WILL INTERFERE WITH ACCESS TO THE TANK.

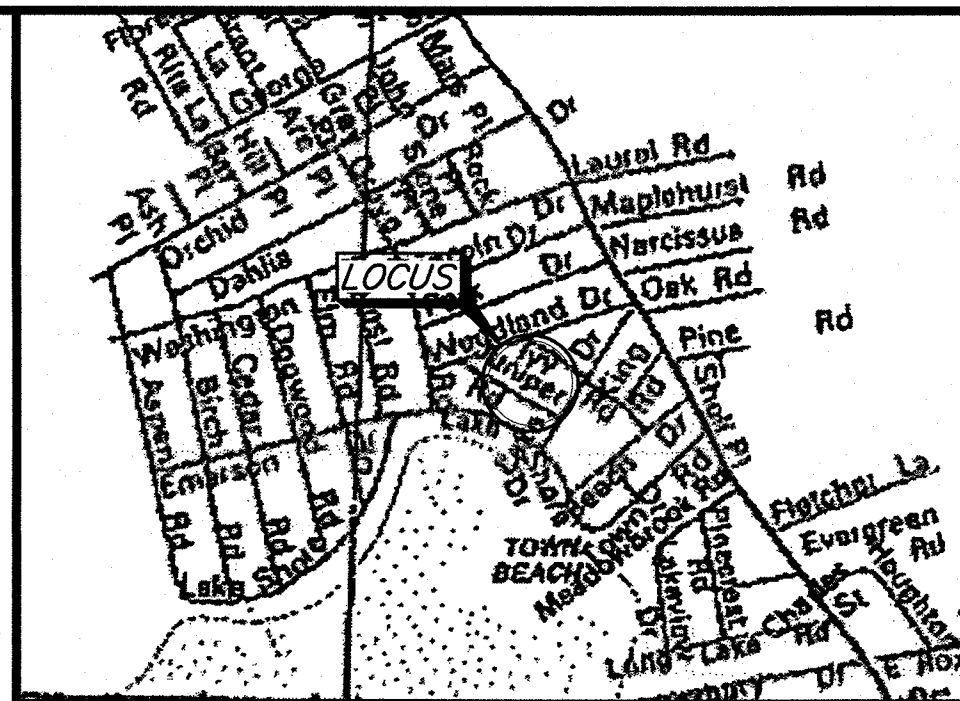
THE LOCAL BOARD OF HEALTH MAY ADD ADDITIONAL ITEMS TO THIS OPERATION AND MAINTENANCE PLAN IF IT FEELS THEY ARE NEEDED TO PROTECT PUBLIC HEALTH AND THE ENVIRONMENT.

OBSERVATION TEST HOLE DATA
 BY DANIEL B. WOLFE, D.E.R.A., INC.
 WITNESSED BY JIM GARRETT, N.A.B.H.
 11/07/22

1122-1: ELEV. = 98.5'
 A 0' - 16" FINE SANDY LOAM
 Bw 16" - 26" LOAMY SAND
 C1 26" - 86" COARSE SAND AND GRAVEL
 C2 86" - 90" FINE SAND
 MOTTLED AT 16"
 GROUNDWATER OBSERVED AT 41"
 NO REFUSAL
 E.S.H.W.T. AT 16" (97.2)



STRAW WATTLE
 SILTATION BARRIER
 (NOT TO SCALE)



LOCUS MAP
 NOT TO SCALE

NOTES:

T.O.C. ELEVATION NOT TO BE USED AS A BENCHMARK FOR CONSTRUCTION UNTIL VERIFIED WITH BENCHMARK NAIL AS SHOWN.

CONTRACTOR SHALL VERIFY EXISTING SEWER INVERT OUT OF THE HOUSE PRIOR TO PLACEMENT OF THE HOLDING TANK AND REPORT ANY DISCREPANCIES TO THE DESIGN ENGINEER.

EXISTING SEPTIC TANK IS TO BE PUMPED OUT AND REMOVED OR PUNCTURED AND BACKFILLED WITH CLEAN GRAVEL FILL.

ALL BOOTS OR PIPE JOINTS ARE TO BE SEALED WITH HYDRAULIC CEMENT OR INSTALLED WITH WATERTIGHT SLEEVES AND THE TANK PROVEN WATERTIGHT. EXPANDABLE FOAM SPRAY IS NOT AN ACCEPTABLE ALTERNATIVE FOR SEALING PIPE JOINTS.

CONTRACTOR TO NOTE THE MINIMUM GRADE ELEVATION OVER THE HOLDING TANK IS SET TO MEET BUOYANCY CONCERNS.

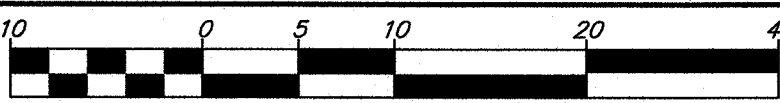
PRIOR TO THE ISSUANCE OF A CERTIFICATE OF COMPLIANCE FOR THE SYSTEM, THE SYSTEM OWNER SHALL RECORD AND/OR REGISTER IN THE APPROPRIATE REGISTRY OF DEEDS AND/OR LAND REGISTRATION OFFICE, A NOTICE DISCLOSING THE EXISTENCE OF A HOLDING TANK.

LOCAL UPGRADE APPROVAL REQUIRED:

15.405(1)(i) REDUCTION OF THE REQUIRED SEPARATION BETWEEN THE INLET AT THE HOLDING TANK AND THE HIGH GROUNDWATER.

WETLAND PROTECTION ACT (C131 S40)

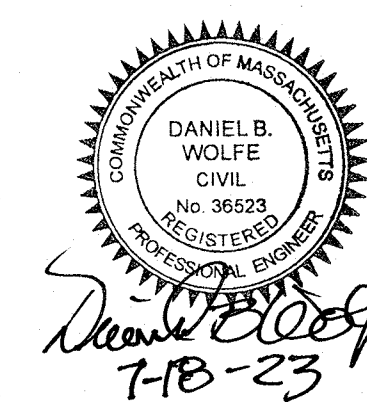
PRIOR TO INITIATING ANY ALTERATIONS (REMOVAL OF VEGETATION, EXCAVATIONS, GRADING, ETC.) WITHIN 100' OF WETLANDS (PONDS, BROOKS, SWAMPS, ETC.) OR WITHIN 200' OF AN AREA SUBJECT TO THE RIVER'S ACT (PERMANENTLY FLOWING RIVER, BROOK OR STREAM), A REQUEST FOR DETERMINATION OF APPLICABILITY OR A NOTICE OF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



SURV.: SPM/GSN	CALC.: SPM	DRAFT: PJT
N.B.: 841-34	DEED: 983-81	CHECK: DBW
840-70		

REVISIONS

12-22-22 Original endorsement
 6-19-23 Added erosion control
 7-18-23 Revised tank dimensions, added construction notes & sediment controls



SHEET TITLE:

SEWAGE DISPOSAL SYSTEM
 HOLDING TANK

DESIGNED FOR:

FRANCES MAZZONE

ADDRESS:

18 IVY ROAD
 LITTLETON, MA

LOT NO.: --	ASSESSOR MAP: U17	ASSESSOR PARCEL: 227
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DAVID E. ROSS
 ASSOCIATES, INC.

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SCALE: 1"=10'	DATE: DECEMBER, 2022
REF.: --	PLAN NO.: L-14631
JOB NO.: 34221	SHEET NO.: 1 of 1