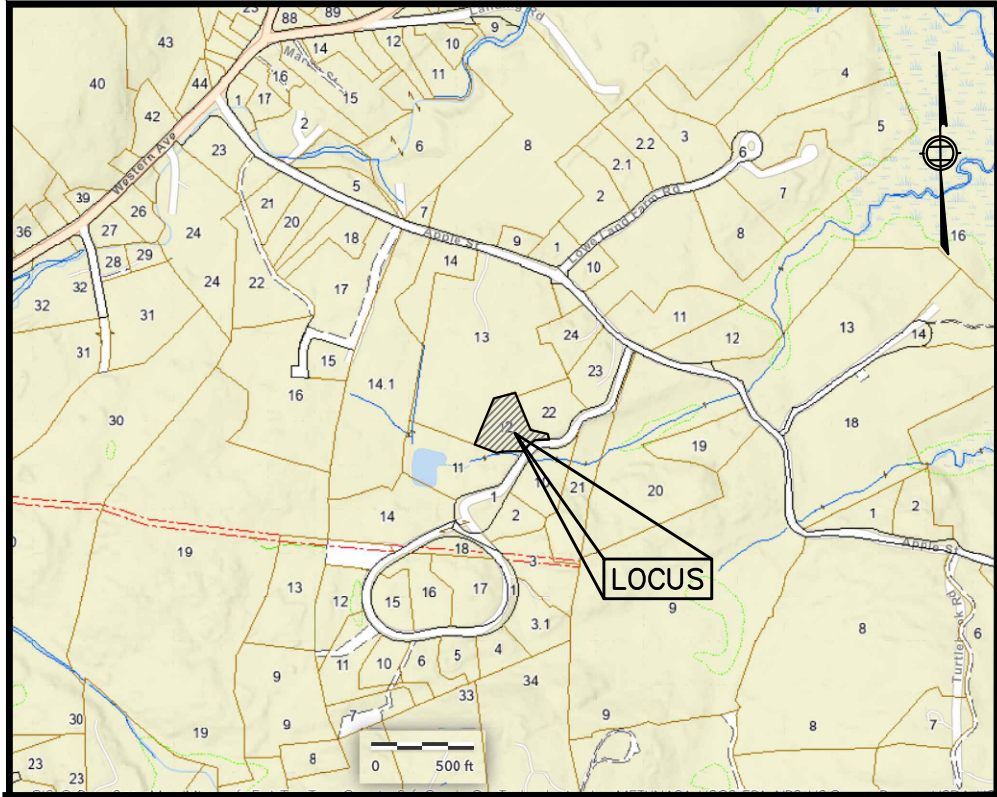
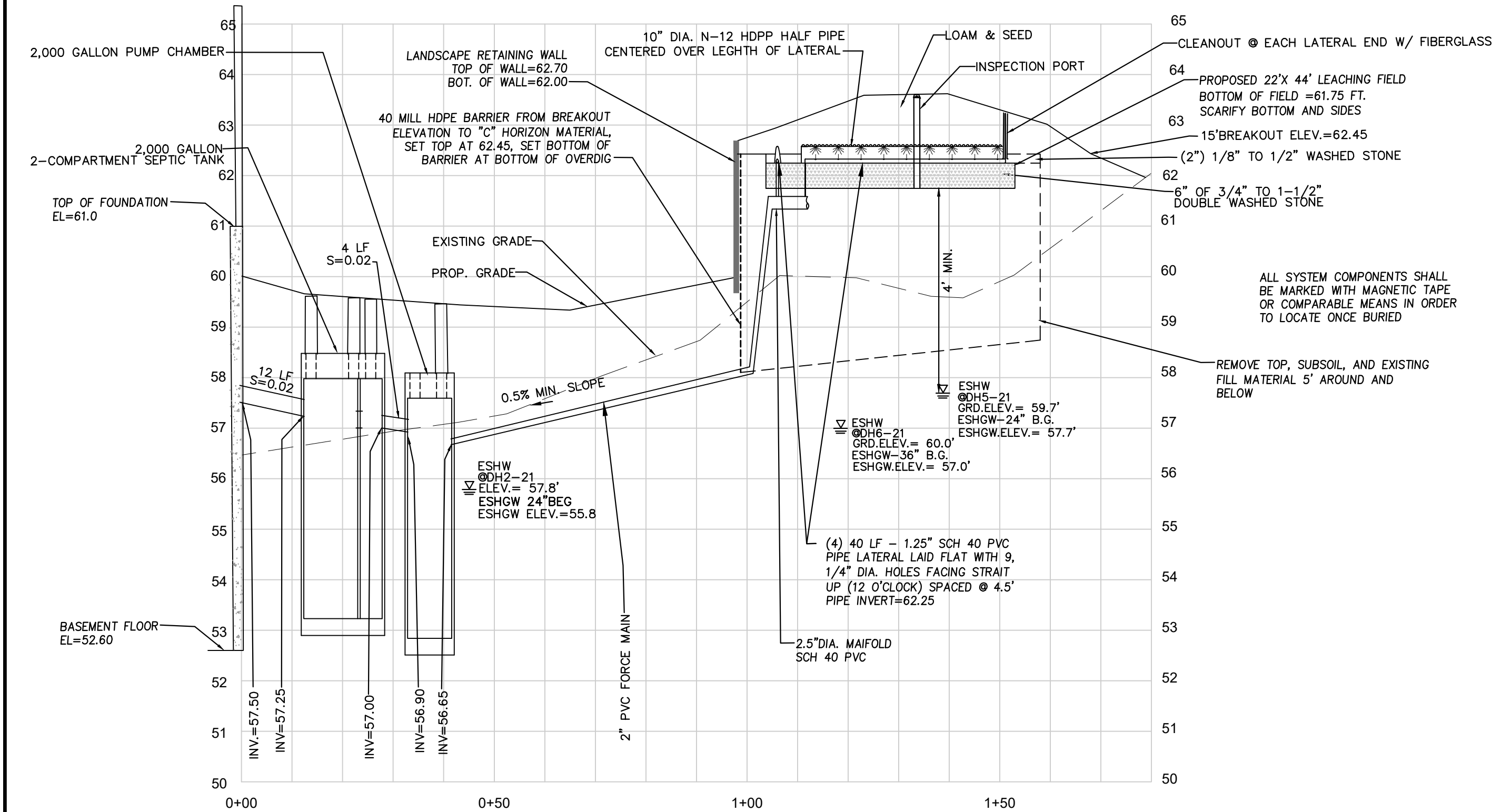




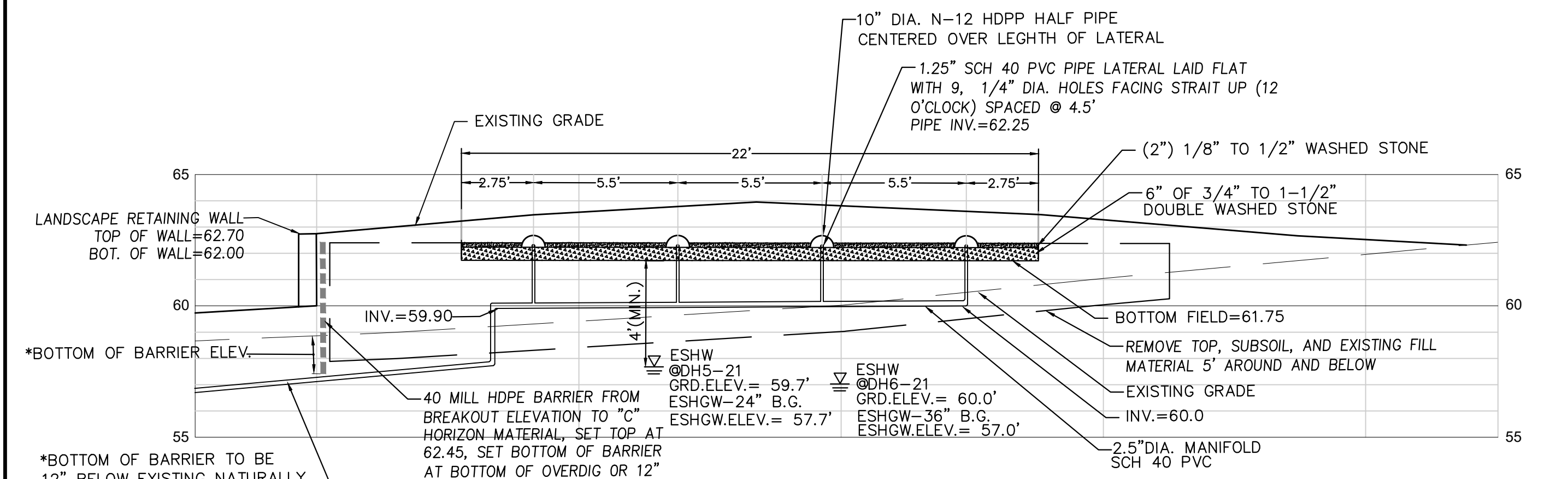
LOCUS MAP
SCALE: 1" = 1,000'

SOIL TESTING RESULTS							
T.PIT# DATE ELEV.	DEPTH (INCHES)	HORIZON	USDA TEXTURE	MUNSELL COLOR	ESHW WEEPING STND WATER	PERC. TEST DEPTH RESULTS (MPI)	NOTES
DH3-21 4/7/21 58.7	0-14 14-34 34-90+	A Bw Cd	F.S.LOAM L.S.LOAM L.SAND	10YR 3/2 10YR 4/4 10YR 3/6	30" 64" 64"	7 MPI	
DH4-21 4/7/21 58.5	0-12 12-32 32-86 86	A Bw Cd Cr	F.S.LOAM L.S.LOAM L.SAND BEDROCK	10YR 3/2 10YR 4/4 10YR 3/6	26" 64" 64"	-----	
DH5-21 4/7/21 59.7	0-10 10-24 24-56 54-66 66	A Bw Cd C2 Cr	F.S.LOAM L.S.LOAM L.SAND BEDROCK	10YR 3/2 10YR 4/4 10YR 3/6 2.5Y 4/4	24" 54" 54"	6 MPH	
DH6-21 4/7/21 60.0	0-10 10-24 24-36 36-76 76	A Bw1 Bw2 Cd Cr	F.S.LOAM L.S.LOAM L.SAND BEDROCK	10YR 3/2 7.5YR 5/8 10YR 4/4 10YR 3/6	36" 65" 65"	18 MPI	

SOIL TESTING PERFORMED BY: ISAAC DAROWE, S.E. / LICENSE #2736
TOWN WITNESS: ERIN KIRCHNER.



SYSTEM PROFILE
1"=20' HORIZ.
1"=2' VERT.



LEACH FIELD SECTION
SCALE 1"=4'

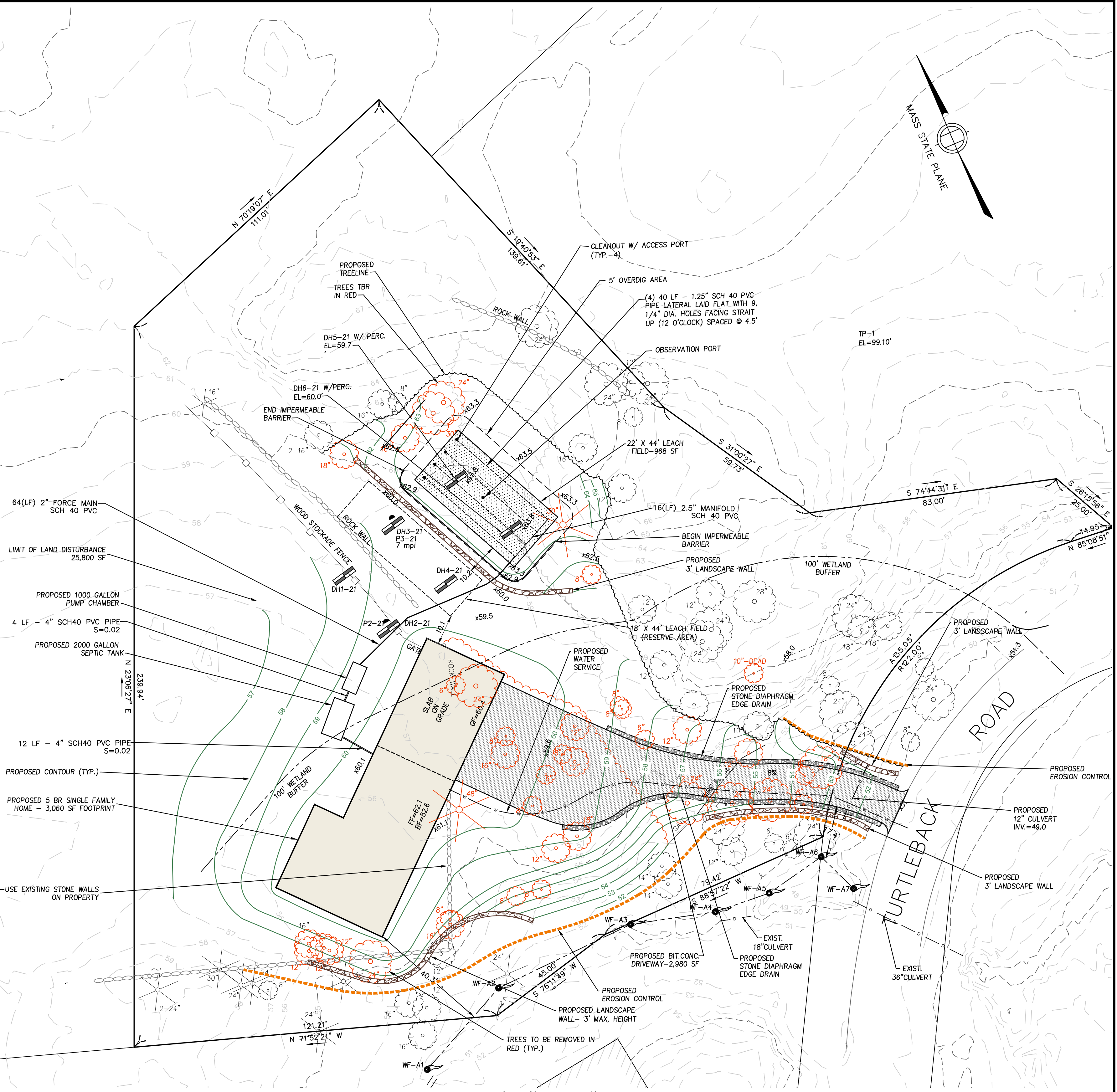
NOTES

THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED SEPTIC SYSTEM ON THE PROPERTY FOR PERMITTING BEFORE THE TOWN OF ESSEX CONSERVATION COMMISSION. THE EXISTING CONDITIONS ON THE LOT AND IS THE RESULT OF AN ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY WINTER GEC ON JUNE 30 AND JULY 21, 2025. CONTOURS ARE COMPUTED FROM 2021 LIDAR DOWNLOADED FROM NOAA DIGITAL COAST ACCESS VIEWER.

WETLAND RESOURCE AREAS ARE AS DELINEATED BY DEROSA ENVIRONMENTAL CONSULTANTS. FLAGS LOCATED BY WINTER GEC SURVEY.

OWNERSHIP INFORMATION USED IN THE PREPARATION OF THIS PLAN WAS OBTAINED FROM THE TOWN OF ESSEX ASSESSOR'S OFFICES.

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION, AND BELIEF, THIS PLAN CONFORMS TO THE TECHNICAL AND PROCEDURAL STANDARDS FOR THE PRACTICE OF LAND SURVEYING IN THE COMMONWEALTH OF MASSACHUSETTS.



INVERT TABLE:

FOUNDATION WALL = 57.50
1500 SEPTIC TANK INLET = 50.25
1500 SEPTIC TANK OUTLET = 57.00
1000 SEPTIC TANK INLET = 58.90
1000 SEPTIC TANK OUTLET = 56.65
PRES. DOSE LEACH PIPE FLAT = 62.25

SITE PLAN
SCALE: 1"=20'

I certify the locations, elevations and ties shown on this plan result from an actual survey made on the ground.

(Signature of Designer) (Date)

LOCUS TITLE INFORMATION

3 TURTLE BACK ROAD

OWNER: APPLETON SKINCARE INC

DEED REFERENCE: CERT 95689

ASSESSORS: MAP 142 PARCEL 12

Winter GEC, LLC SBS Engineering

44 MERRIMAC STREET
NEWBURYPORT, MA 01950
978-270-8626

15 COLLINS STREET
NEWBURYPORT, MA 01950
978-884-6850

SCALE:
HORIZ: 1"= 20'
VERT: N.A.

1.	10/20/25	SBS	TOWN HEALTH DEPT. REVIEW
NO.	DATE	BY	REVISIONS

FIELD: JK
CALCS: CO/EC
CHECKED: SBS
APPROVED: SBS

PROPOSED SEWAGE
DISPOSAL SYSTEM PLAN

3 TURTLE BACK ROAD

PLAN OF LAND IN
ESSEX, MASSACHUSETTS
SURVEYED FOR
MARK MSCISZ

PROJECT NO.
2025-3TURTLEBACK

DATE: SEPT. 9, 2025

SHEET NO.

1 OF 2

DESIGN CALCULATIONS

1. DESIGN DATA: 5 BEDROOM HOME

CALCULATE DAILY SEWAGE FLOW
5 BEDROOMS X 110 GALLONS PER DAY (GPD) PER BEDROOM = 550 GPD

CALCULATE SEPTIC TANK SIZE
TITLE 5 - TANK = 200% OF DAILY FLOW
550 GPD X 2 = 1,100 GALLONS
2,000 GALLON 2-COMPARTMENT TANK PROVIDED
COMPARTMENT 1- 1,333 GALLON
COMPARTMENT 2 - 666 GALLONS

CALCULATE LEACH AREA REQUIREMENTS (TITLE-5)
PERCOLATION RATE = 18 MIN./INCH
L.T.A.R. - CLASS II SOIL =0.58 GPD PER SQUARE FOOT(PRES,DOSE)
550 GPD / 0.58GPD/SF =948 S.F. REQUIRED
PROPOSED 22'X44' LEACHING BED = 968 S.F. (MIN. REQUIRED AREA)

2. DESIGN PRESSURE DOSING SYSTEM (PER DEP'S "PRESSURE DISTRIBUTION GUIDE")

DISTRIBUTION NETWORK - 4 LATERALS @ 40' EACH
1/4" DIA. HOLES SPACED @ 4.5' - FIRST HOLE 2' FEET IN FROM MANIFOLD,
LAST HOLE 2' FROM END OF LATERAL.
9 HOLES X 4 LATERALS = 36 HOLES

SELECT LATERAL SIZE = 1.25"(DEP FIGURE 4)

CALCULATE LATERAL DISCHARGE RATE(LDR): (DISTAL HEAD = 4')
LDR= 1.47 GPM(DEP TABLE 1)
1.47 GPM/HOLE X 9 HOLES/LATERAL = 13.2 GPM/LATERAL
4 LATERALS = 13.2 X 4 = 52.8 GPM
ADD 3 GPM FOR 3/8" HOLE WITHIN PUMP CHAMBER
TOTAL = 55.8 GPM

DOSE VOLUME= 7X PUMP NETWORK VOLUME
LATERAL VOLUME= (1.25"/2/12) X 3.14= 0.0085SFx40'=0.34CFx4=1.36 CF
MANIFOLD VOLUME=(2.5"/2/12) X 3.14=0.034x16'=0.54 CF
FORCE MAIN VOLUME=(2"/2/12) X 3.14=0.0218x64'=1.40 CF
3.3CF X 7.47GAL/CF= 25 GAL X 8= 175
PUMP RUN TIME = 175 GAL. PER DOSE /56 GPM = 3.1 MIN.

3. PUMP DESIGN DATA:

DAILY FLOW = 550 GALLONS
NO. OF GAL PER DOSE = 175 GAL
NUMBER DOSE PER DAY 550/175 = 3.1 DOSE PER DAY

1000 GALLON PUMP CHAMBER
8.83'(L)X 4.17'(W)X 4.5'(H) INSIDE DIMENSIONS
GALS. PER FOOT OF TANK=36.82 CU.FT.X 7.48 GAL./C.F.=275 GAL/FT.
175 GAL. DOSE/275 GAL/FT.= 0.64" OR 8"

PUMP CHAMBER ELEVATIONS
INV. IN 56.90
BOTTOM PC 52.65
ALARM ON 54.32
PUMP ON 54.07
PUMP OFF 53.40

DAYS OF FLOW ABOVE ALARM ELEVATION
PUMP CHAMBER 56.90-54.32=2.58' OF STORAGE
2.58'X275GAL/FT. = 709 GAL
709 GAL / 550 GAL/DAY = 1.3 DAYS STORAGE

SEPTIC TANK BUOYANCY CALCULATIONS

BUOYANCY CALCULATIONS
(W/S + W/T) / W/W = FS

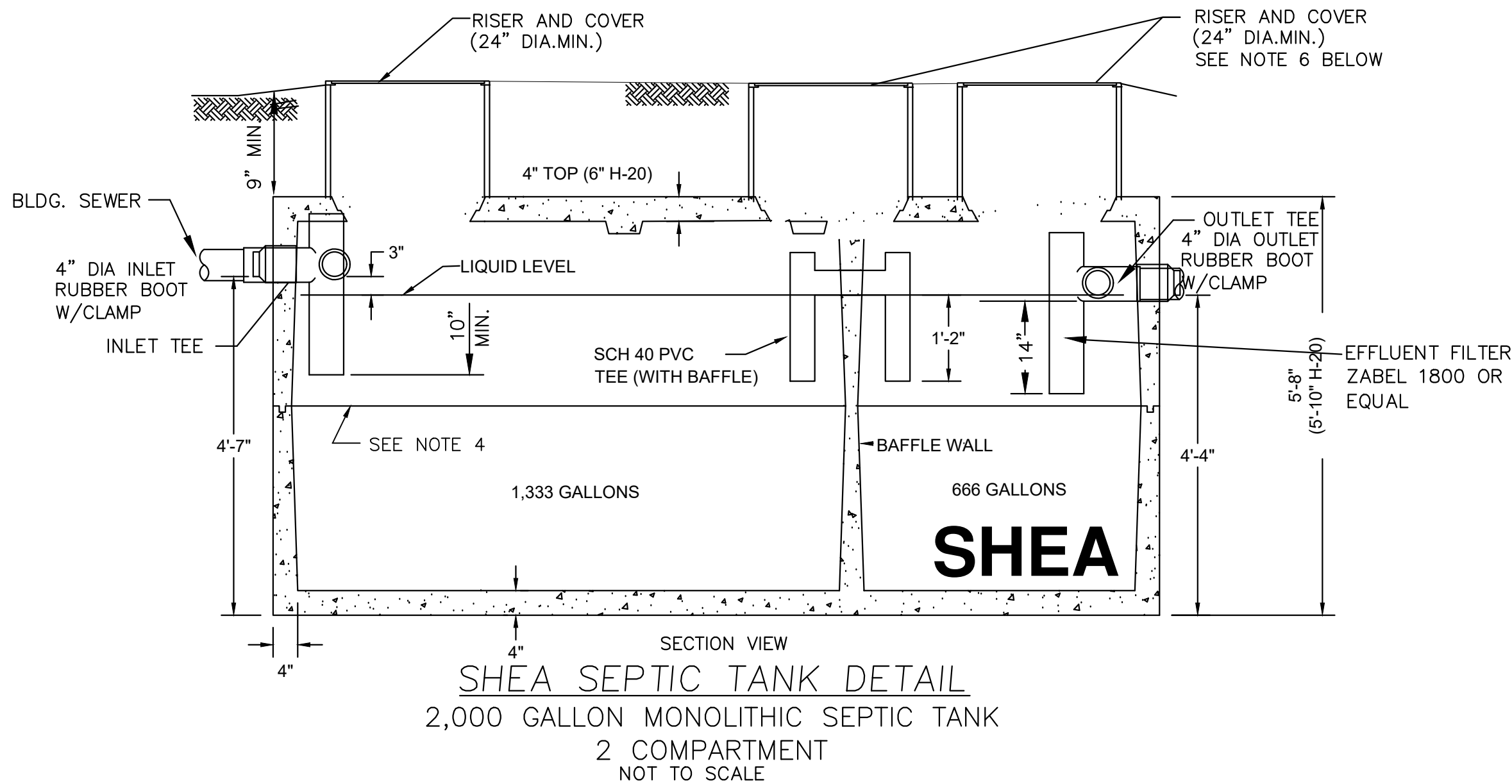
WHERE:
W/S = (A/T)(D/S)(v/S)
W/T = GIVEN BY MANUFACTURER
W/W = (A/T)(D/W)(v/W)

ASSUMPTIONS

- v/W = 62.4
- DEPTH OF WATER DISPLACED BASED ON HIGHEST ESTIMATED SEASONAL HIGH WATER TABLE FROM DH-2 ESHGW 24" BELOW GRADE
- TANK MODEL = SHEA CONCRETE 2000-2C
- A/T = 78.0 SF
- W/T = 15,685 LBS

SEPTIC TANK BUOYANCY CALCULATION
W/S = (78.0 SF)(0.8')(110 PCF) = 6,864LBS
W/W = (78.0 SF)(2.9')(62.4 PCF) = 14,114LBS
W/T+S = 15,685LBS + 6,864LBS = 22,546LBS

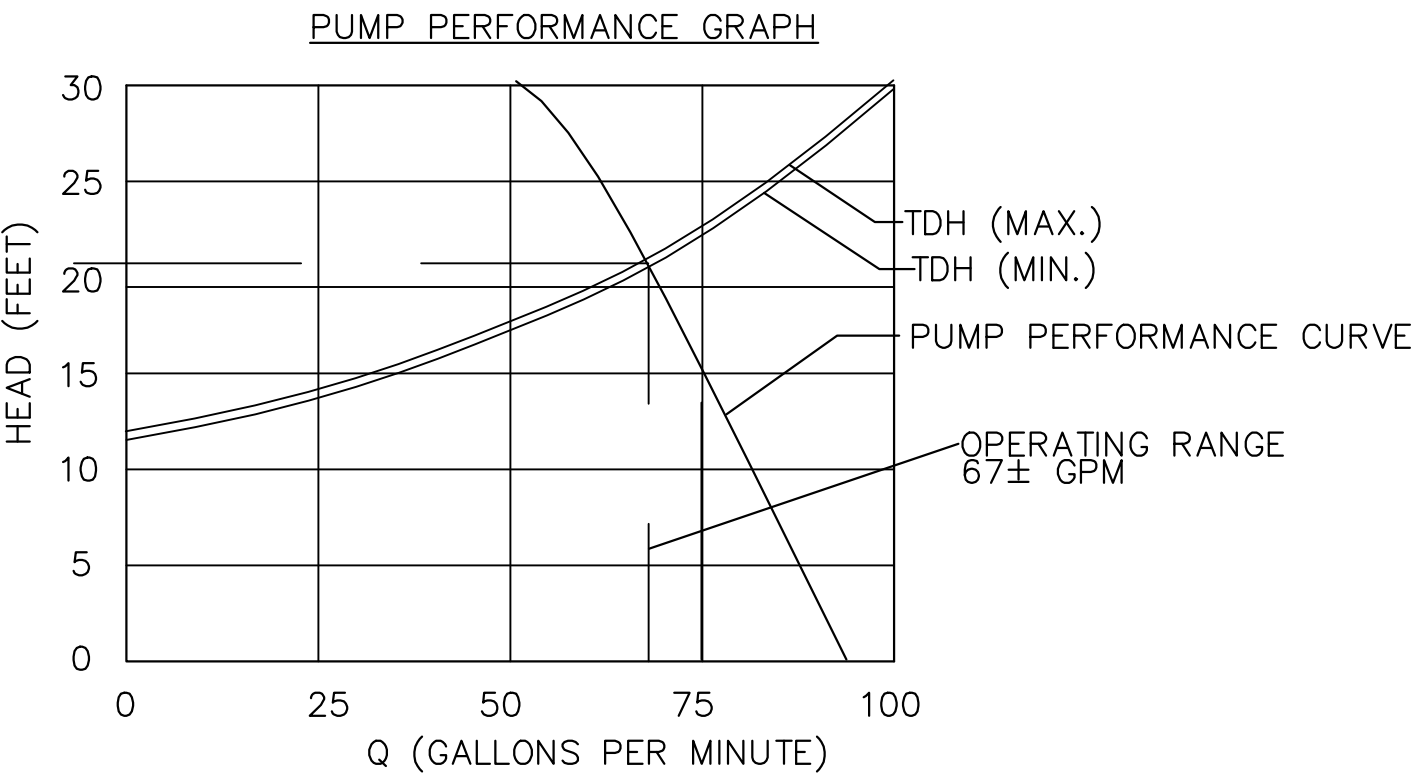
FS = 22,546 / 14,114 =1.6



5. FORCE MAIN DATA
Pump Off Elevation = 53.40 ft.
Pump On Elevation = 54.07 ft.
Outfall Elevation = 62.50 ft.

Delivery Pipe Dia. D= 2 inch Pipe Dia.
Pipe length(total) L= 64 ft.
Friction Factor C= 120
Distal Head Dh 4.0 ft.

Flow	Q	V	Fric.	Vel.	Network	Static	TDH
GPM	CFS	FPS	Losses	Head	Losses	Head	MAX
0	0.00	0.0	0.0	0.0	3.3	9.1	12.4
25	0.06	2.55	1.3	0.1	3.3	9.1	13.8
50	0.11	5.11	4.6	0.4	3.3	9.1	17.4
75	0.17	7.6	9.7	1.0	3.3	9.1	23.1
100	0.22	10.2	16.5	1.6	3.3	9.1	30.5



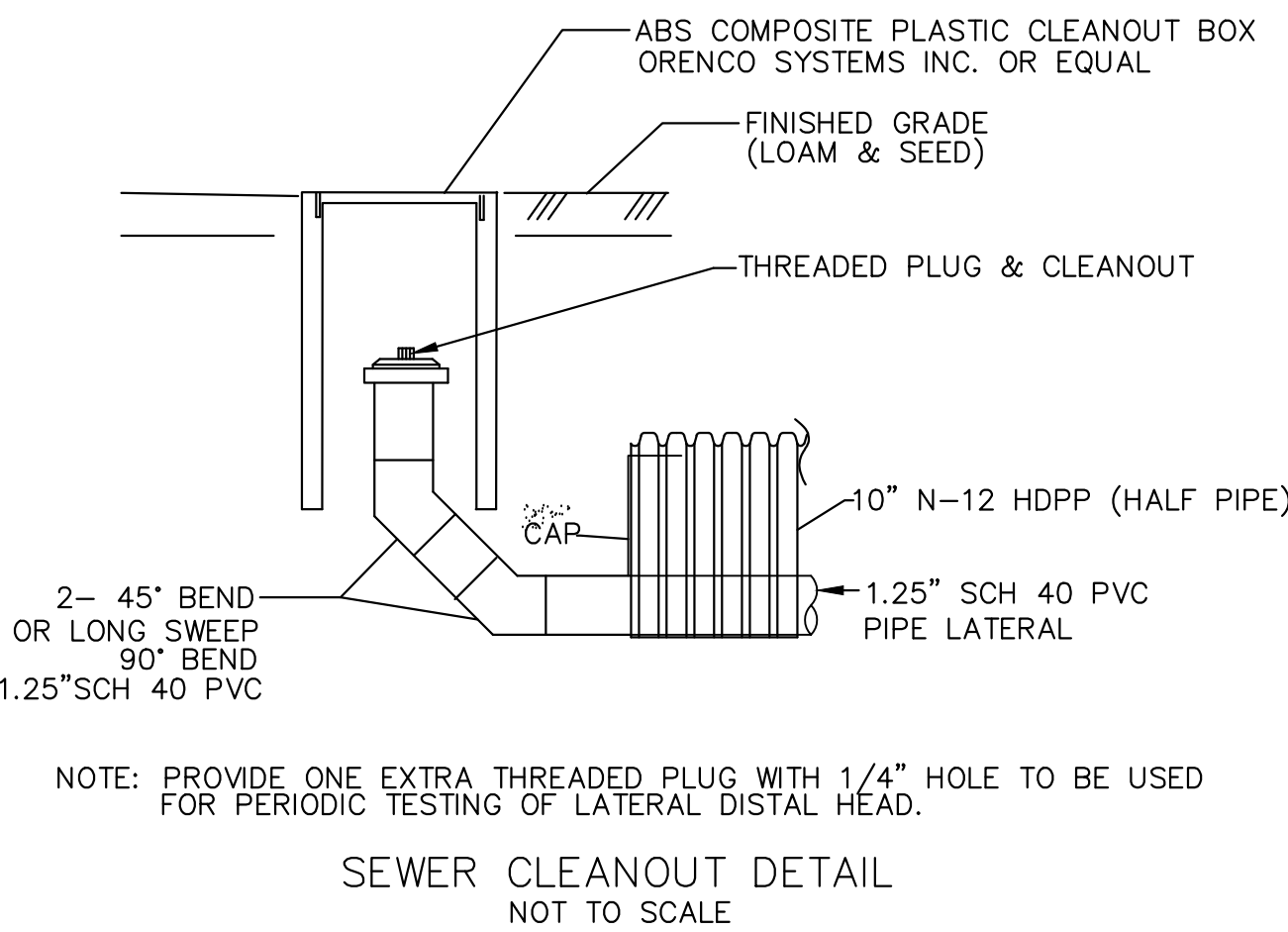
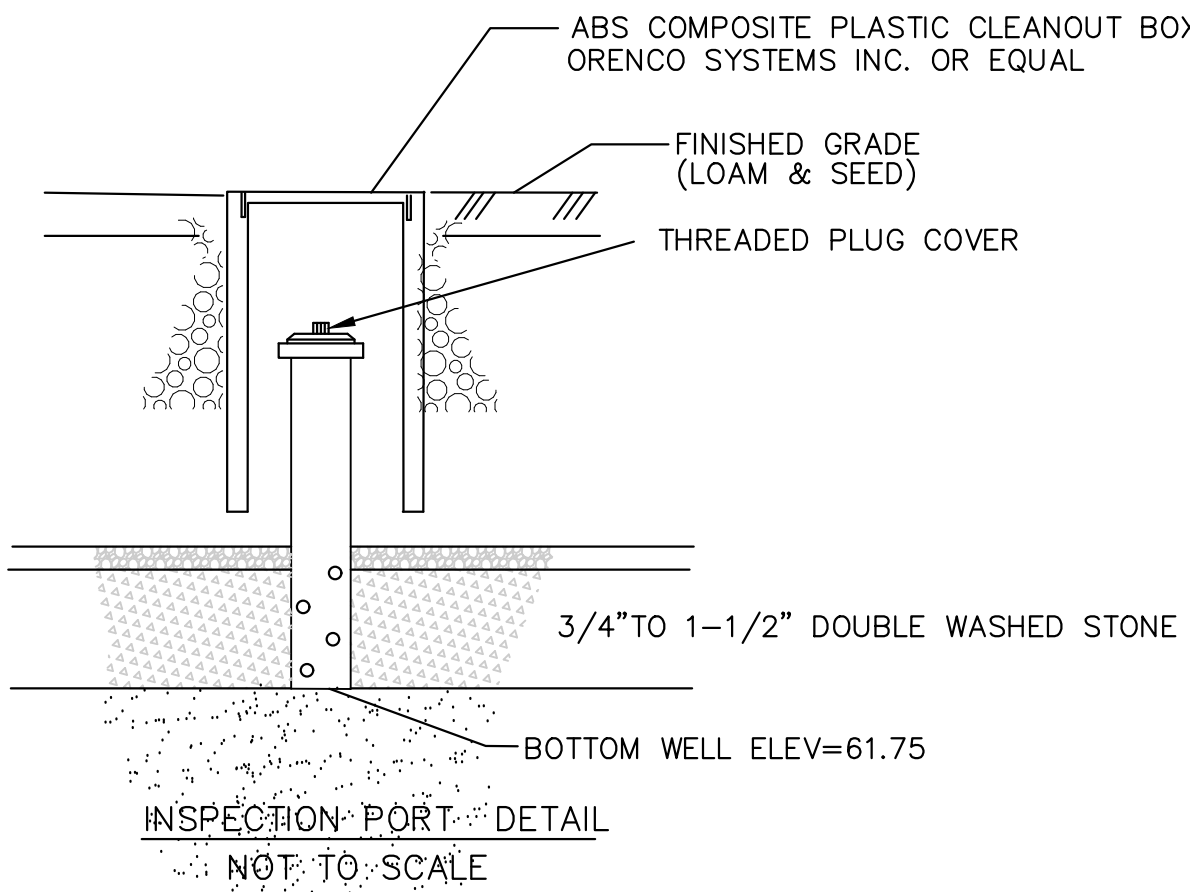
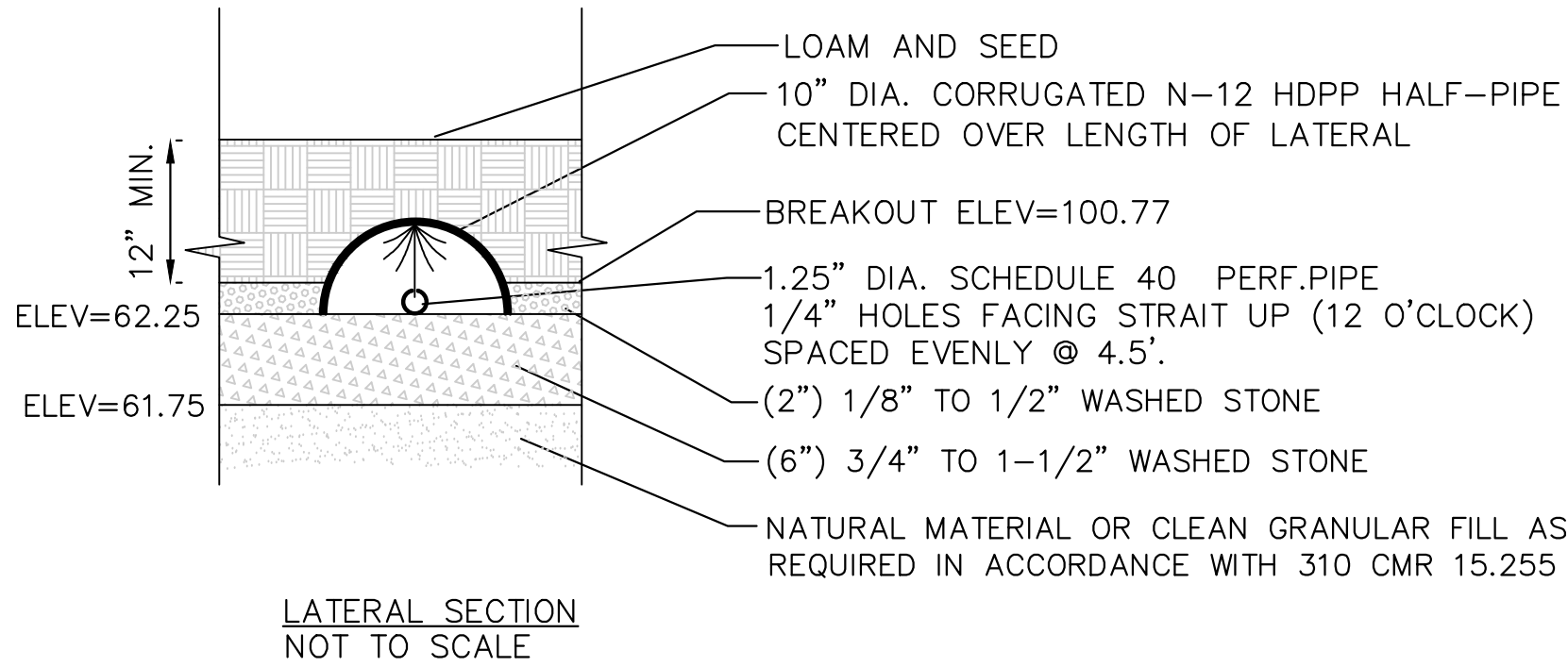
PUMP EQUIPMENT NOTES:

1. PUMP: LIBERTY FL50 SERIES , 0.5 HP

2. PUMP AND CONTROLS TO BE APPROVED BY DESIGN ENGINEER PRIOR TO INSTALLATION.

3. PUMP CONTROLS SHALL BE MERCURY TYPE SWITCH ONLY.

4. ALARM SHALL BE VISIBLE, AUDIBLE, AND LOCATED WITHIN THE BUILDING.



SEPTIC TANK & PUMP CHAMBER NOTES:

1) CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.

2) DESIGN CONFORMS WITH 310 CMR 15.00, DEP TITLE 5 REGS, FOR SEPTIC TANKS.

3) ALL REINFORCEMENT PER ASTM C1227-93.

4) TONGUE & GROOVE JOINT SEALED WITH BUTYL RESIN.

5) THE SEPTIC TANK IS TO HAVE PVC TEES. TRANSVERSE CONCRETE BAFFLES ARE NO LONGER ACCEPTABLE UNDER THE REVISED TITLE V REQUIREMENTS.

6) ACCESS COVERS OVER OUTLET, OVER INLET, AND OVER ANY FILTERS OR TEES ARE TO BE BROUGHT TO FINISH GRADE WITH RISERS AND MADE SECURE FROM UNAUTHORIZED OR ACCIDENTAL ACCESS. ALL RISERS TO BE MADE WATER TIGHT BEFORE BACKFILLING. RISERS IN OR ADJACENT TO PAVED AREAS SHALL HAVE CAST IRON COVERS.

7) IT IS RECOMMENDED THAT THE INLETS AND OUTLETS TO THE PROPOSED SEPTIC TANK AND PUMP CHAMBER HAVE PRE-CAST RUBBER BOOT CONNECTIONS TO ENSURE WATER TIGHTNESS. IF PRE-CAST BOOTS ARE NOT USED, ALL PIPES SHALL BE SEALED USING A HYDRAULIC CEMENT COMPOUND

8) PERMANENTLY SEAL ACCESS COVER TO BE WATER TIGHT

9) THE SEPTIC TANK AND PUMP CHAMBER ARE TO BE WATER TIGHT TO BE CONFIRMED BY VACUUM TESTING. TEST SHALL MAINTAIN THE VACUUM FOR AT LEAST TEN (10) MINUTES. IF THE VACUUM FALLS MORE THAN 0.5 INCH IN TWO MINUTES, THE STRUCTURE MUST BE REPAIRED AND THE TEST REPEATED. VACUUM TESTING TO BE WITNESSED BY BOARD OF HEALTH REPRESENTATIVE OR DESIGNEE.

10) PUMP CHAMBER ALARM IS REQUIRED TO BE IN THE BUILDING AND POWERED FROM A SEPARATE CIRCUIT FROM THE PUMP.

DESIGN CRITERIA

GENERAL NOTES & SPECIFICATIONS

1. SYSTEM DESIGNED IN ACCORDANCE WITH TITLE 5 OF THE STATE ENVIRONMENTAL CODE AND LOCAL REGULATIONS, EXCEPT AS NOTED IN THE VARIANCE REQUEST. CONSTRUCTION TO CONFORM TO SAME. THIS DESIGN IS FOR A NEW 5 BEDROOM SEPTIC SYSTEM.

2. PERIMETER AND TOPOGRAPHIC INFORMATION WAS DONE FROM FIELD SURVEY BY WINTER GEC SURVEY.

3. THE PLANS SHOW ONLY THOSE FEATURES THAT WERE VISIBLY APPARENT ON THE DATE OF TOPOGRAPHY AND THE ABSENCE OF SUBSURFACE STRUCTURES, UTILITIES, ETC. IS NOT INTENDED OR IMPLIED. THE CONTRACTOR SHALL NOTIFY "DIG-SAFE" PRIOR TO ANY EXCAVATION WORK ON THIS PROJECT. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO EXCAVATION.

4. THIS PLAN IS TO SHOW THE DESIGN OF THE SUBSURFACE SEWAGE DISPOSAL SYSTEM ONLY. THE SYSTEM IS DESIGNED FOR FLOWS ESTIMATED UNDER DESIGN CRITERIA.

5. THIS SEWAGE DISPOSAL SYSTEM IS NOT DESIGNED FOR GARBAGE GRINDERS. GARBAGE GRINDERS SHALL NOT BE USED WITH THIS SYSTEM.

6. THERE ARE NO KNOWN EXISTING WELLS WITHIN 100 FEET OF THE PROPOSED LEACHING AREA.

7. THERE ARE NO EXISTING SURFACE WATER SUPPLIES OR TRIBUTARIES WITHIN 400 FEET OF THIS SEWAGE DISPOSAL SYSTEM.

8. THERE ARE NO KNOWN EXISTING SUBSURFACE DRAINS WITHIN 50 FEET OF THE LEACHING FACILITY DISCHARGING DIRECTLY INTO A WATERCOURSE OR LOCATED WITHIN 50 FEET DOWN-GRADIENT OF THE LEACHING FACILITY.

9. ALL CONSTRUCTION ACTIVITY WITHIN 100 FT. OF A WETLAND OR RESOURCE AREA REQUIRES FILING IN ACCORDANCE WITH THE WETLAND PROTECTION ACT M.G.L. c 131 SECT 40.

10. THE INSTALLER OF THIS SYSTEM MUST BE LICENSED BY THE TOWN OF ESSEX.

12. TOPSOIL,SUBSOIL AND FILL BENEATH AND WITHIN FIVE FEET(5') OF DISPOSAL SYSTEM AREA SHALL BE REMOVED AND REPLACED AS SHOWN ON THE PLANS. CONTRACTOR SHALL ADHERE TO THE PROCEDURES PERTAINING TO PREPARATION FOR AND PLACEMENT OF FILL MATERIAL SET FORTH IN 310 CMR 15255. FILL SHALL BE COMPACTED TO 95% DRY DENSITY.

13. DISPOSAL SYSTEM AREAS ARE TO BE RAKED (SCARIFIED) BEFORE INSTALLATION OF STONE. ALL STONES EXCEEDING 2 INCHES IN DIAMETER, ALL TOPSOIL, SUBSOIL OR FOREIGN MATERIAL ENCOUNTERED DURING EXCAVATION ARE TO BE REMOVED FROM THE LEACHING AREA BED SURFACE.

14. WASHED STONE AGGREGATE SHALL BE PROVIDED IN ACCORDANCE WITH 310 CMR 15.247 AND APPROVED BY THE LOCAL BOARD OF HEALTH AGENT.

15. COVER MATERIAL AND THE FINISHED GRADE, INCLUDING SYSTEM SIDE SLOPES, SHALL BE SUFFICIENTLY STABILIZED WITH LOAM AND SEED. PROVIDE HAY OR MULCH IN NON-GROWING SEASON FOR TEMPORARY EROSION CONTROL UNTIL GRASS COVER CAN BE ESTABLISHED.

16. IT IS THE RESPONSIBILITY OF THE INSTALLER TO NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCY BETWEEN OBSERVED FIELD CONDITIONS AND CONDITIONS AS DESCRIBED ON THE PLAN, BEFORE PROCEEDING WITH THE INSTALLATION.

17. DEVIATION FROM THE APPROVED PLAN IS PERMISSIBLE ONLY WITH THE CONSENT OF THE BOARD OF HEALTH AND THE DESIGN ENGINEER.

18. AN IMPERMEABLE BARRIER SHALL BE INSTALLED BETWEEN THE LANDSCAPE WALL AND THE LEACHING FIELD. THE BOTTOM OF THE BARRIER SHALL BE BOTTOM OF OVER-DIG ELEVATION, AND THE TOP SHALL BE SET ELEVATION 62.45 . THE BARRIER SHALL BE CONSTRUCTED OF A CONTINUOUS LENGTH OF SEAMLESS ROOFING RUBBER OR HIGH DENSITY POLYETHYLENE HAVING A MINIMUM THICKNESS OF 45 MILS. RUBBER SHALL BE CARLISLE EDPM 45 MIL ROOFING RUBBER OR APPROVED EQUAL. DURING INSULATION CARE SHALL BE TAKEN SO THAT THE MEMBRANE IS NOT PUNCTURED.

PUMP CHAMBER BUOYANCY CALCULATIONS

BUOYANCY CALCULATIONS
(W/S + W/T) / W/W = FS

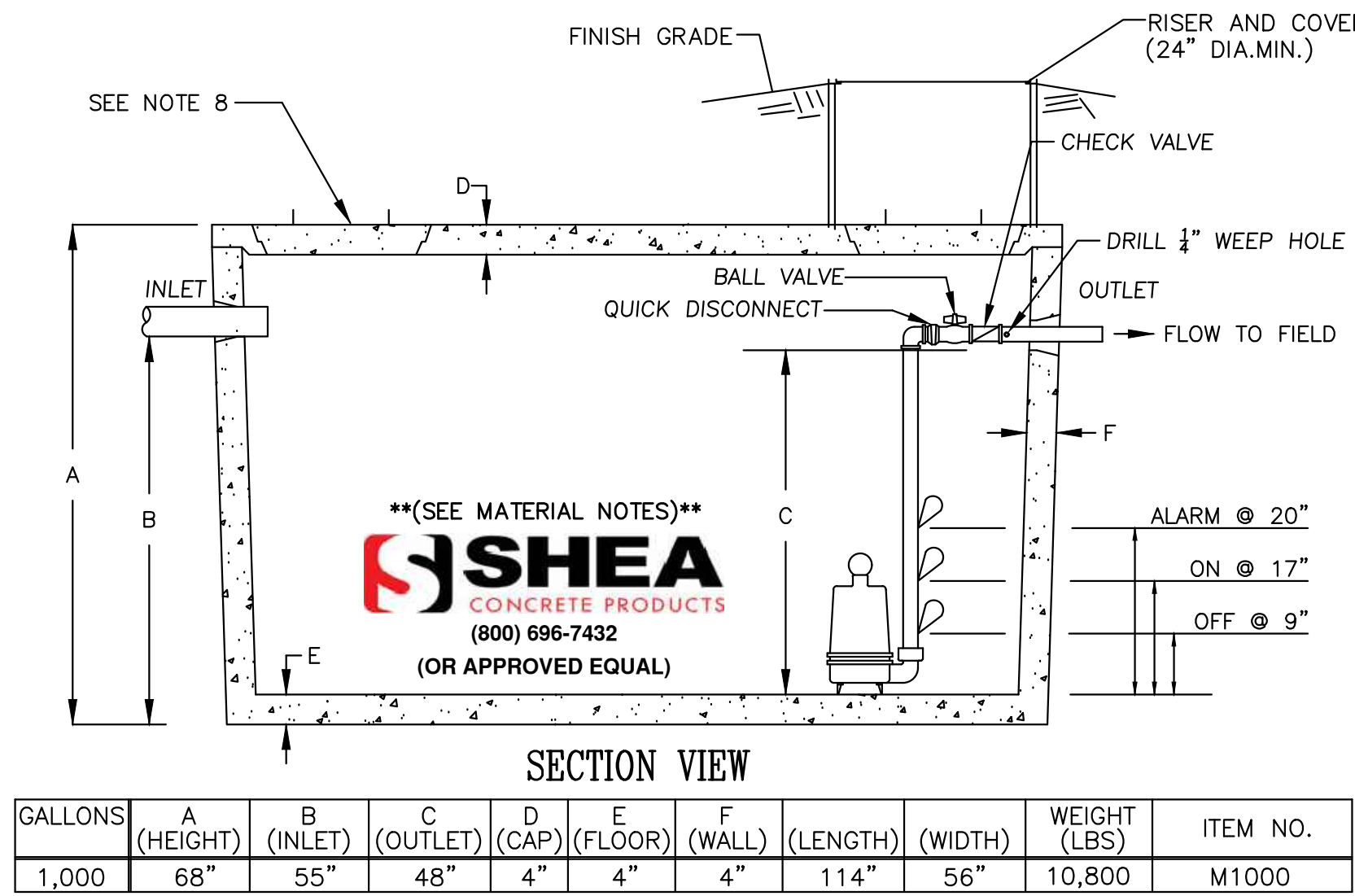
WHERE:
W/S = (A/T)(D/S)(v/S)
W/T = GIVEN BY MANUFACTURER
W/W = (A/T)(D/W)(v/W)

ASSUMPTIONS

- v/W = 62.4
- DEPTH OF WATER DISPLACED BASED ON HIGHEST ESTIMATED SEASONAL HIGH WATER TABLE FROM DH-2 ESHGW 24" BELOW GRADE
- TANK MODEL = SHEA CONCRETE M1000
- A/T = 44.8 SF
- W/T = 10,800 LBS

PUMP CHAMBER BUOYANCY CALCULATION
W/S = (44.8 SF)(1.3')(110 PCF) = 6,406LBS
W/W = (44.8 SF)(3.3')(62.4 PCF) = 9,225LBS
W/T+S = 10,800LBS + 6,406LBS = 17,206LBS

FS = 17,206 / 9,225 =1.86



ELEVATION DATUM

INLET EL. = 56.90
OUTLET EL. = 56.90
ALARM ON = 54.32 (20" FROM CHAMBER BOTTOM)
PUMP ON = 54.07 (17" FROM CHAMBER BOTTOM)
PUMP OFF = 53.40 (9" FROM CHAMBER BOTTOM)
BOTTOM CHAMBER (INSIDE) =

PUMP EQUIPMENT NOTES:

1. PUMP: LIBERTY SERIES FL50 , 0.5 HP (OR EQUAL)

2. PUMP CONTROLS SHALL BE MERCURY TYPE SWITCH ONLY.

3. ALARM SHALL BE VISIBLE, AUDIBLE WITHIN LIVING UNIT, WITH ACCESS TO CONTROLS.CONTROL BOX SHALL BE LOCKABLE.

4. ALL VALVES SHALL BE REMOVABLE W/ NO GLUED JOINT

SHEA PUMP CHAMBER DETAIL

1,000 GALLON MONOLITHIC PUMP CHAMBER

Winter GEC, LLC

44 MERRIMAC STREET
NEWBURYPORT, MA 01950
978-270-8626

SBS Engineering

15 COLLINS STREET
NEWBURYPORT, MA 01950
978-884-6850

SCALE:

HORIZ: 1"= 20'

VERT: N.A.

NO.	DATE	BY	REVISIONS
1.	10/20/25	SBS	TOWN HEALTH DEPT. REVIEW

FIELD: JK

CALCS: CO/EC

CHECKED: SBS

APPROVED: SBS

PROPOSED SEWAGE
DISPOSAL SYSTEM

3 TURTLE BACK ROAD

PLAN OF LAND IN
ESSEX, MASSACHUSETTS

SURVEYED FOR
MARK MSCISZ

PROJECT NO.
2025-3TURTLEBACK

DATE: SEP. 8, 2025

SHEET NO.

2 OF 2