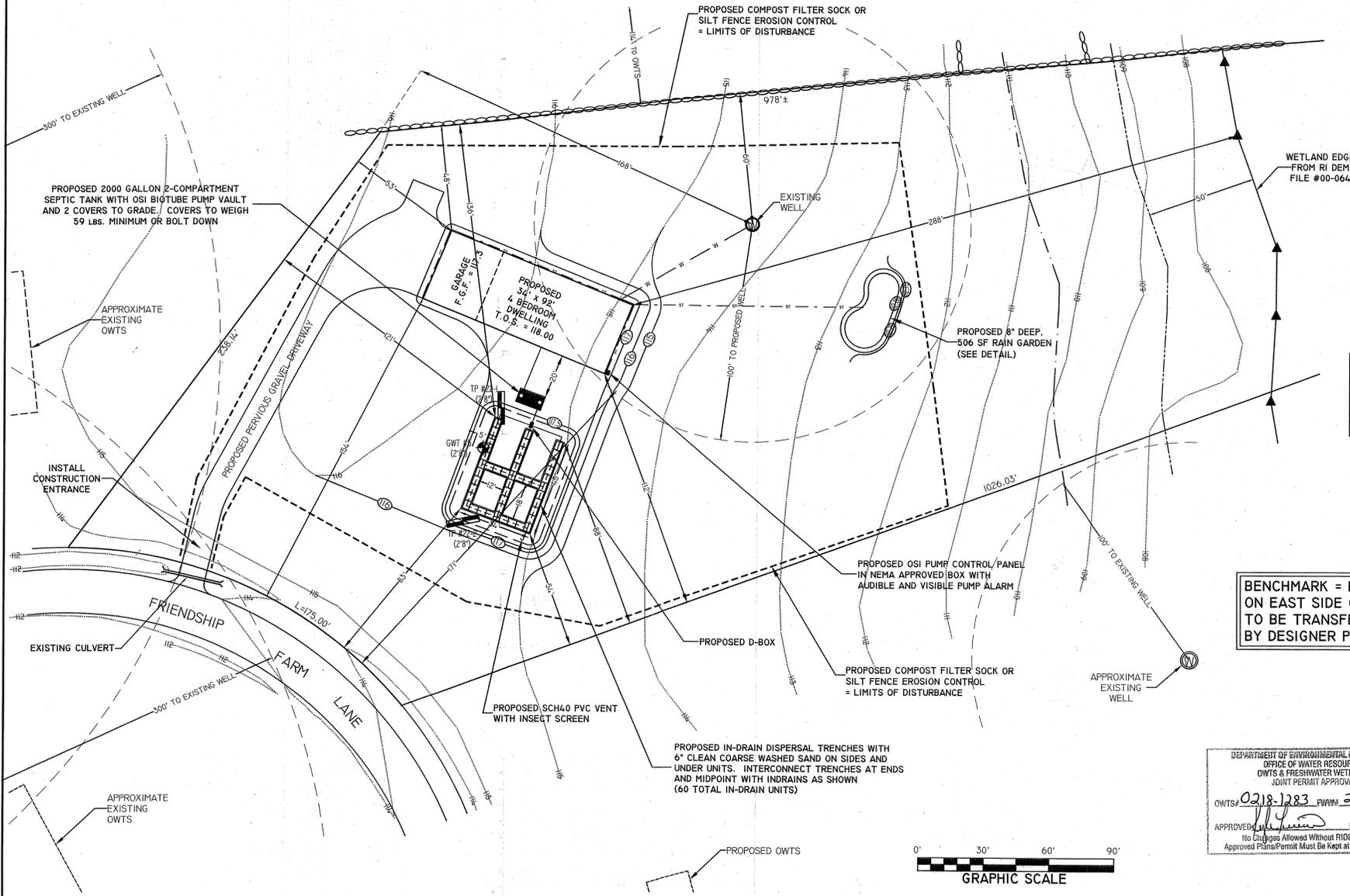
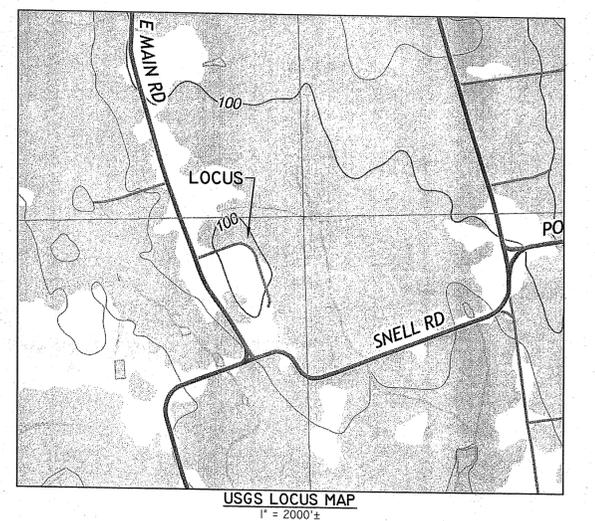
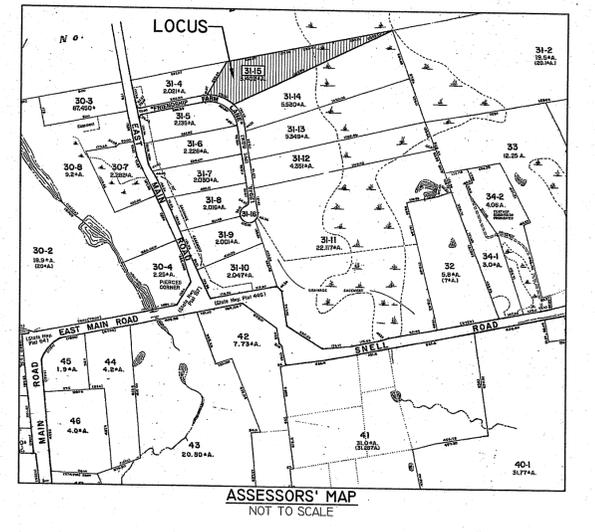
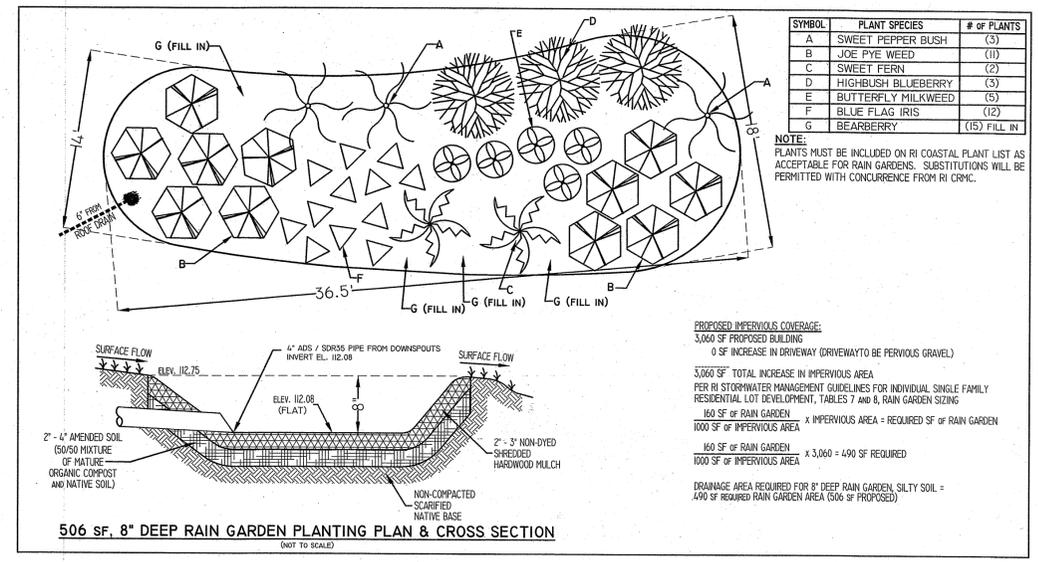


- LEGEND**
- 100'--- EXISTING CONTOUR
 - STONE WALL
 - ▲--- DELINEATED WETLAND EDGE
 - ▲--- 50' PERIMETER WETLAND
 - ▲--- 100' TOWN BUILDING & OWTS WETLAND SETBACK
 - WELL (AS NOTED)
 - SOIL EVALUATION TEST PIT
 - GWT TEST
 - W--- PROPOSED WATER SERVICE
 - PROPOSED CONTOUR
 - PROPOSED COMPOST FILTER SOCK OR SILT FENCE = LIMITS OF DISTURBANCE



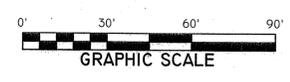
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 OWTS & FRESHWATER WETLANDS
 JOINT PERMIT APPROVAL
 OWTS# 0218-1283 P.W.M. 22-0354
 APPROVED: [Signature] DATE 10/24/22
 No Changes Allowed Without RIDEM Approval
 Approved Plans/Permit Must Be Kept at Construction Site

WILLIAM F. SMITH
 No. 85084
 REGISTERED PROFESSIONAL ENGINEER

PROPOSED OWTS NEW CONSTRUCTION PLAN
 PREPARED FOR
 PURCHASE & SALES AGREEMENT: DAVID WINKLER
 OWNER: KAREN MCARTHUR & DARLENE MAHONEY
 ASSESSOR'S PLAT 29 LOT 31-15
 10 FRIENDSHIP FARM LANE
 LITTLE COMPTON, RHODE ISLAND
 SCALE: AS NOTED DATE: JUNE 8, 2022
 Civil Engineering Concepts, Inc.
 34A MAIN STREET
 LITTLE COMPTON, RI 02837
 PH: (401) 592-0177
 FAX: (401) 592-0178
 EMAIL: wsmithce@aol.com

RI Environmental Management
 JUN 30 2022
 Office of Water Resources

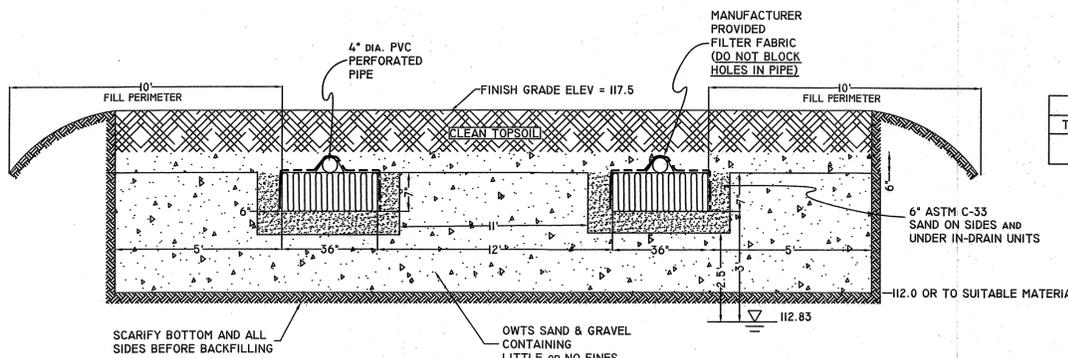
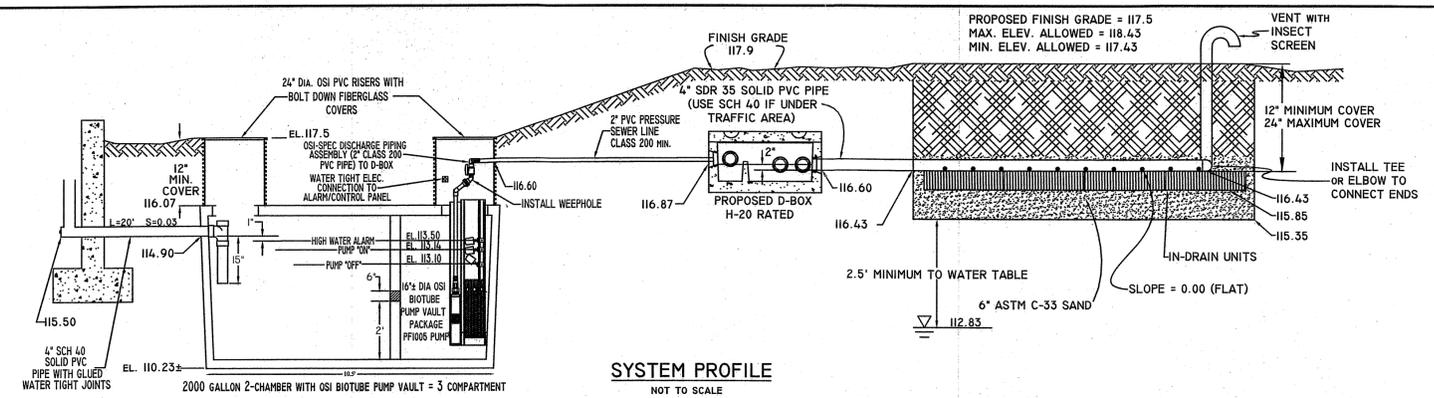
REFER TO RIDEM FILE #0218-1283 FOR PREVIOUS APPROVED OWTS. (EXPIRED 7/1/2021)
 REFER TO RIDEM FILE #15-0261 FOR PREVIOUS WETLAND PERMIT (EXPIRED 7/1/2021)



REVISIONS:

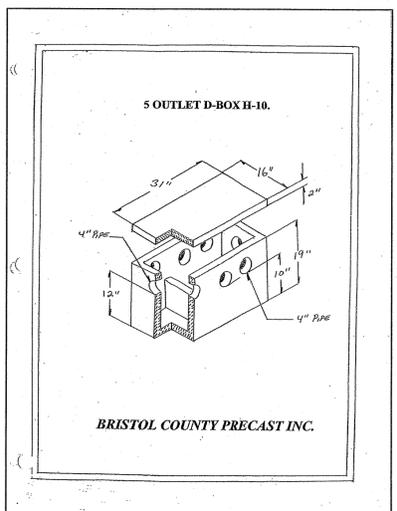
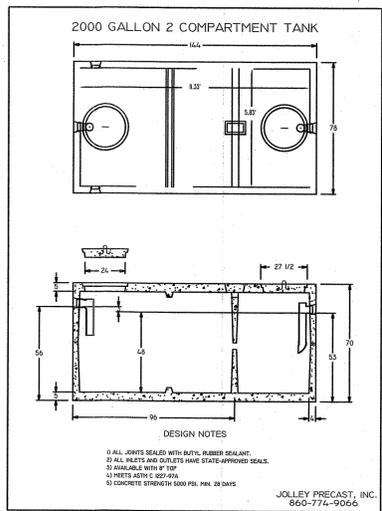
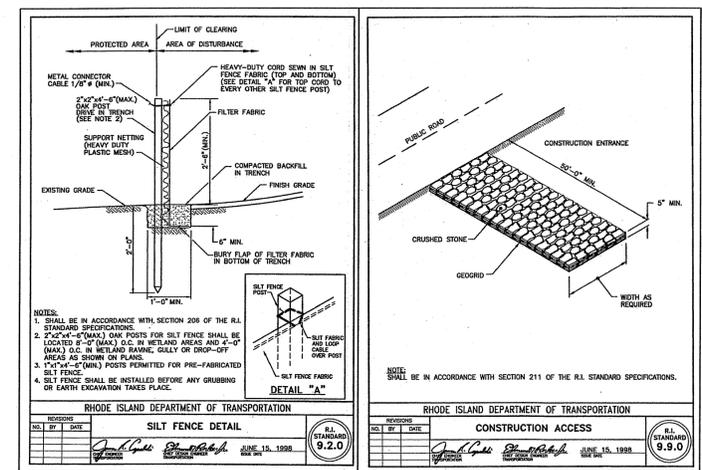
SHEET 1 OF 2

JOB#: 15-055



TYPE	LENGTH	WIDTH	HEIGHT	WEIGHT
B	4'	3'	7"	22 LBS.

2000 GALLON SEPTIC TANK BUOYANCY CALCULATIONS
 GIVEN:
 Weight of soil: 76 lbs./c.f.
 Density of Water: 62.4 lbs./c.f. (for calculating buoyancy force)(upward lift)
 Tank type: 2000 Gallon H-10 Tank Wt.: 15,400 lbs.
 Weight of Earth Cover (min. of 1' of soil on tank (76 lbs./c.f.): 5,928 lbs.
 Upward lift (neglecting soil friction):
 12' (length) x 6.3' (width) x 2.6' (max. submerged depth) x 62.4 lbs./c.f. = 12,655 lbs.
 Safety factor:
 (15,400 + 5,928) / 12,655 = 1.6



Pump Selection for a Non-Pressurized System - Single Family Residence Project
 15-055 Writter BIOTUBE to D-Box / Rev 08-09-22, Friendship Farm, LC

Parameter	Value	Unit
Discharge Assembly Size	1.00	inches
Transport Class	200	feet
Transport Line Size	1.25	inches
Discharge Valve Model	None	
Max Discharge Lift	1	feet
Design Flow Rate	12	gpm
Flow Meter	None	inches
Motor Power Losses	0	feet

Calculations

Parameter	Value	Unit
Transport Velocity	2.2	ft/s

Fractional Head Losses

Loss Type	Value	Unit
Loss through Discharge	156.4	feet
Loss in Transport	0.1	feet
Loss through Valve	0.0	feet
Loss through Elbow	0.0	feet
Minor Friction Losses	0.0	feet

Pipe Volumes

Parameter	Value	Unit
Vol of Transport Line	0.8	gals

Minimum Pump Requirements

Parameter	Value	Unit
Design Flow Rate	12.0	gpm
Head (gross) Head	164.3	feet

Pump Data

Model	Flow Rate (gpm)	Head (feet)
PP1000 High Head Effluent Pump	12	164.3
PP1000 High Head Effluent Pump	15	140.0
PP1000 High Head Effluent Pump	18	115.7
PP1000 High Head Effluent Pump	21	91.4
PP1000 High Head Effluent Pump	24	67.1
PP1000 High Head Effluent Pump	27	42.8

Legend

- Septic Chamber
- Pump Chamber
- Pump Discharge
- Pump Operation
- Open/Closed
- Open/Closed

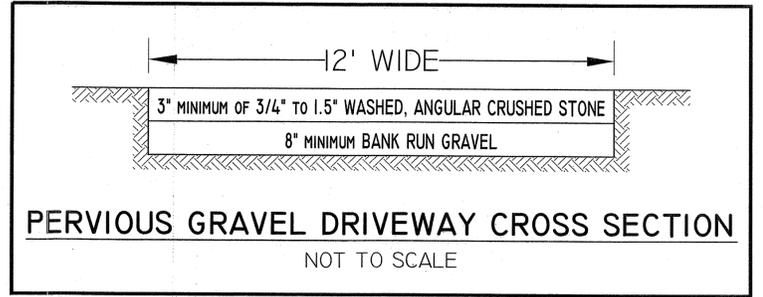
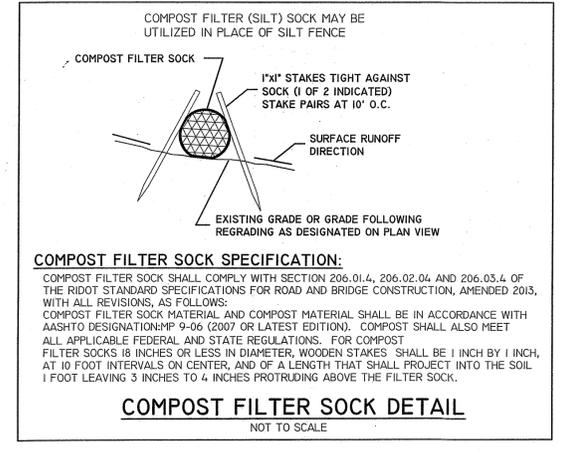
BASIS OF SANITARY DESIGN
 NUMBER OF BEDROOMS: 2
 GARBAGE GRINDER: NOT ALLOWED
 WATER SOFTENER: NOT ALLOWED
 JACUZZI/HOT TUB: NOT ALLOWED
 ESTIMATED SEWAGE FLOW: 460 GALLONS PER DAY
 SIZE OF SEPTIC TANK: 2000 GALLONS WITH BIO-TUBE PUMP VAULT
 DESIGN PERCOLATION RATE: SOIL CAT. 8 (0.46 G/SF/D)
 LEACHING AREA PROVIDED: 3 IN-DRAIN LEACHING TRENCHES AT 45' LONG
 = 1260 SF (45 UNITS TOTAL) (1000 SF REQUIRED)
 SYSTEM CAPACITY: 1260 SF x 0.46 GALLONS/SF/DAY = 579 GALLONS PER DAY

MAXIMUM ROOF PEAK..... 146.0 (TO BE VERIFIED BY BUILDING INSPECTOR)
FINISHED GARAGE FLOOR..... 117.3
TOP OF SLAB..... 118.00
TOP OF FOUNDATION..... REFER TO ARCHITECTURAL PLANS
FINISHED BASEMENT FLOOR..... N/A
INVERT AT DWELLING..... 115.50
INVERT INTO SEPTIC TANK..... 114.90
INVERT OUT OF SEPTIC TANK..... 116.60 THRU RISER
HIGH WATER ALARM..... 113.50
PUMP "ON"..... 113.14
PUMP "OFF"..... 113.10
INVERT INTO D-BOX..... 116.87
INVERT OUT OF D-BOX..... 116.70
INVERT AT BEGINNING OF TRENCH..... 116.43
INVERT AT END OF TRENCH..... 116.43
BOTTOM OF IN-DRAIN..... 115.85
BOTTOM OF C-33 SAND..... 115.35
BOTTOM OF OWTs SAND & GRAVEL..... 112.0 OR TO SUITABLE MATERIAL
ELEVATION OF WATER TABLE..... 112.83
EXISTING AVERAGE GRADE AT OWTs..... 115.5
 ***NOTE: ELEVATIONS ARE BASED ON CONVENTIONAL DWELLING. NOTIFY DESIGNER OF ANY DISCREPANCIES PRIOR TO ANY WORK. DESIGN DOES NOT PERMIT TOILETS IN BASEMENT AREA.

ALL EXISTING AND PROPOSED WELLS WITHIN 200' OF PROPOSED OWTs ARE SHOWN. NO EXISTING OR PROPOSED PUBLIC WELLS WERE OBSERVED WITHIN 500' OF PROPOSED OWTs. NO EXISTING OR PROPOSED SEPTIC SYSTEMS WITHIN 100' OF PROPOSED OWTs. MAINTAIN ELEVATION 116.43 WITHIN 10' OF PROPOSED OWTs. NO UPGRADIENT DRAINS ALLOWED WITHIN 25' OF PROPOSED OWTs. NO DOWNGRADIENT DRAINS ALLOWED WITHIN 50' OF PROPOSED OWTs. BRING SEPTIC TANK COVERS TO GRADE. COVER TO BE 20" MIN. (INSIDE DIA.) AND CAPABLE OF WITHSTANDING H-20 LOADING. COVERS TO WEIGH 59 LBS. MINIMUM OR BOLT DOWN. ALL OWTs PIPE TO BE 4" DIAMETER, PVC SDR 35 (MIN) PERFORATED OR SOLID AS REQUIRED. PRESSURE SEWER TO BE CLASS 200 MINIMUM (1.25" DIA.) WITH CONCRETE THRUST BLOCKS AT ALL CHANGES IN DIRECTION BUILDING SEWER TO BE 4" SCH 40 PVC WITH GLUED, WATERTIGHT JOINTS.

- NOTES:**
- ALL CONSTRUCTION SHALL CONFORM TO THE STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS DEPARTMENT OF ENVIRONMENTAL MANAGEMENT RULES AND REGULATIONS ESTABLISHING MINIMUM STANDARDS RELATING TO LOCATION, DESIGN, CONSTRUCTION AND MAINTENANCE OF ONSITE WASTEWATER TREATMENT SYSTEMS MOST RECENTLY AMENDED.
 - ALL WORK SHALL BE DONE IN A WORKMANLIKE MANNER WITH LINES LAID AS STRAIGHT AS POSSIBLE AND JOINTS MADE WATERTIGHT. ALL WORK TO BE DONE BY AN INSTALLER LICENSED IN THE STATE OF RHODE ISLAND.
 - SEPTIC TANK TO BE JOLLEY PRECAST 2000 GALLON TWO COMPARTMENT SEPTIC TANK. TWO SEPTIC TANK COVERS TO BE BROUGHT TO FINISH GRADE. OUTLET FILTER REQUIRED.
 - DISTRIBUTION BOX TO BE BCP 5 OUTLET D-BOX OR APPROVED EQUALS. ALL DISTRIBUTION LINES FROM BOX ONE FOOT INTO START OF TRENCH TO BE MINIMUM SOLID SDR-35. A DROP OF 2" IS REQUIRED FROM THE D-BOX TO THE START OF THE TRENCHES. BAFFLES AND INLET TEE REQUIRED IN D-BOX.
 - LEACHING AREA EXCAVATION SHALL BE LEVEL AND SCARIFIED. CARE SHALL BE TAKEN TO AVOID COMPACTION OF THE LEACHING AREA. EXCAVATION SHALL BE STRIPPED OF ALL BRUSH, TREES, TOPSOIL, SUBSOIL AND OTHER UNDESIRABLE MATERIAL.
 - OWTs SAND AND GRAVEL TO BE FREE OF ORGANIC MATTER AND FOREIGN SUBSTANCES AND SHALL NOT CONTAIN MATERIAL LARGER THAN 3" AND UP TO 10% MAY BE SIZED BETWEEN 3/4" AND 3" REFERENCE IS MADE TO STATE OF RHODE ISLAND RULES ESTABLISHING MINIMUM STANDARDS RELATING TO LOCATION, DESIGN, CONSTRUCTION, AND MAINTENANCE OF ONSITE WASTEWATER TREATMENT SYSTEMS RULE 6.33 M.
 - ALL BACKFILL MATERIAL PLACED OVER THE SEPTIC SYSTEM SHALL BE FREE OF LARGE STONES, RUBBISH, OR OTHER DELETERIOUS MATERIALS. HEAVY EQUIPMENT SHALL NOT BE ALLOWED TO RUN OVER THE LEACHING AREA.
 - THE SYSTEM IS NOT DESIGNED TO ACCOMMODATE A GARBAGE GRINDER, WATER SOFTENER, OR JACUZZI.
 - FOR PROPER OPERATION, THE SEPTIC TANK SHALL BE INSPECTED ANNUALLY AND PUMPED AT NO GREATER THAN 2 YEAR INTERVALS. OUTLET FILTER TO BE INSPECTED AND CLEANED SEMI-ANNUALLY.
 - NO PARKING IS PERMITTED IN THE VICINITY OF THE OWTs.
 - DIG SAFE NOTIFICATION IS REQUIRED PRIOR TO ANY EXCAVATION.
 - CONTRACTOR TO INSTALL 12" MINIMUM COVER OVER OWTs. CONTRACTOR IS TO INSURE 6" LOAM AND SEED OVER ALL DISTURBED AREAS UNLESS OTHER ARRANGEMENTS HAVE BEEN MADE FOR FINISH LANDSCAPING.
 - PROPERTY LINES AS DEPICTED ON THIS PLAN ARE BASED ON A BOUNDARY SURVEY.
 - CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL SAFETY AND BUILDING CODES ARE FOLLOWED.
 - DESIGNER TO BE NOTIFIED 72 HOURS (3 WORKING DAYS) PRIOR TO THE START OF OWTs CONSTRUCTION. CONTRACTOR IS TO INSURE THAT DESIGNER IS NOTIFIED 2 WORKING DAYS IN ADVANCE OF REQUIRED INSPECTIONS SO PROPER NOTIFICATION TO RIDEM CAN BE MADE. FAILURE TO PROVIDE ADVANCE NOTICE WILL RESULT IN DELAYS TO THE CONTRACTOR. WORK SHALL NOT CONTINUE UNTIL VARIOUS STAGE IS APPROVED.

- SEWAGE PUMP CHAMBER NOTES:**
- THE SEWAGE PUMP IS TO BE OSI PF1005 SUBMERSIBLE SEWAGE/EFFLUENT PUMP INSTALLED IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS.
 - THE PUMP SYSTEM TO BE INSTALLED IN A OSI BIO-TUBE PUMP VAULT WITHIN THE SECOND SEPTIC TANK COMPARTMENT. INSTALL SEPTIC COVERS TO GRADE. COVERS TO WEIGH 59 LBS. MINIMUM OR BOLT DOWN.
 - A SIGN SHALL BE INSTALLED IN THE VICINITY OF THE MANHOLE COVER WARNING OF THE POTENTIAL ACCUMULATION OF HAZARDOUS SEWER GAS AND THE NEED FOR ADEQUATE VENTING AND AIR MONITORING PRIOR TO WORKING ON THE SEWAGE PUMP ASSEMBLY.
 - ALL MATERIALS AND CONSTRUCTION SHALL MEET THE MANUFACTURERS REQUIREMENTS AND APPLICABLE BUILDING, PLUMBING, ELECTRICAL, AND SAFETY CODES. A MANUFACTURERS MAINTENANCE SCHEDULE SHALL BE ACQUIRED AND FOLLOWED.
 - THE USE OF A BACKUP ELECTRICAL GENERATOR IS STRONGLY RECOMMENDED.
 - FOR ADDITIONAL INFORMATION - SEE ADDITIONAL DETAILS CONTAINED WITHIN THIS PLAN AND WITHIN MANUFACTURERS PUBLISHED LITERATURE. THE INFORMATION CONTAINED WITHIN THIS PLAN IS INTENDED TO PROVIDE SCHEMATIC REQUIREMENTS ONLY. ACTUAL SHOP DRAWINGS ARE TO BE COORDINATED WITH THE MANUFACTURER. ALL ACCESSORIES SUCH AS AUDIO AND VISUAL ALARMS, FLOAT SWITCHES, LIFT OUT RAIL SYSTEM, ETC. ARE TO BE READILY ADAPTABLE TO FIT THE PROPOSED SYSTEM PER THE PUMP MANUFACTURER. ODD COMPONENTS REQUIRING EXTENSIVE MODIFICATION TO THE SYSTEM WILL NOT BE PERMITTED.
 - THE PUMP SHALL HAVE OVERLOAD PROTECTION TO PREVENT DAMAGE TO THE PUMP.
 - ALL STAGES OF THE PUMP SHALL BE INSPECTED BY THE DESIGN ENGINEER. IT IS THE RESPONSIBILITY OF THE INSTALLER TO PROVIDE ADEQUATE NOTICE OF INSPECTION SCHEDULING TO THE DESIGNER.
 - THE SEWER LINE BETWEEN THE PUMP CHAMBER AND THE DISTRIBUTION BOX IS TO BE 1.25" DIA. CLASS 200 PRESSURE PIPE. MAINTAIN POSITIVE DRAIN BACK TO PUMP CHAMBER.
 - A VENT WITH INSECT SCREEN IS REQUIRED AS SHOWN ON THE PLAN.
 - NO DRIVING OR PARKING OVER ANY COMPONENT OF THE SYSTEM IS PERMITTED.
 - A NEMA APPROVED ELECTRICAL BOX WITH AUDIO ALARM AND VISUAL ALARM (TO NOTIFY OF HIGH WATER LEVELS IN THE PUMP CHAMBER) IS TO BE INSTALLED. THIS ASSEMBLY SHALL BE LOCATED AS SHOWN.
 - INSTALL A THREADED DISCONNECT ON PUMP DISCHARGE LINE FOR PUMP SERVICING.
 - A CHECK VALVE SHALL BE INSTALLED ON THE PUMP DISCHARGE LINE FOR PUMP PROTECTION. A 1/4" DIA. WEEP HOLE SHALL BE DRILLED AFTER THE CHECK VALVE TO ALLOW BACKFLOW FROM DISCHARGE LINE INTO THE PUMP CHAMBER TO PREVENT LINE FREEZING.



WILLIAM F. SMITH
 No. 65084
 REGISTERED PROFESSIONAL ENGINEER

PROPOSED OWTs NEW CONSTRUCTION PLAN
 PREPARED FOR:
PURCHASE & SALES AGREEMENT: DAVID WINKLER
 OWNER: KAREN MCARTHUR & DARLENE MAHONEY
 ASSESSOR'S PLAT 29 LOT 31-15
 10 FRIENDSHIP FARM LANE
 LITTLE COMPTON, RHODE ISLAND
 SCALE: AS NOTED DATE: JUNE 8, 2022
Civil Engineering Concepts, Inc.
 31A MAIN STREET
 LITTLE COMPTON, RI 02857
 PH: (401) 592-0177
 FAX: (401) 592-0178
 EMAIL: vsmithccc@aol.com
 SHEET 2 OF 2 JOB#: 15-055