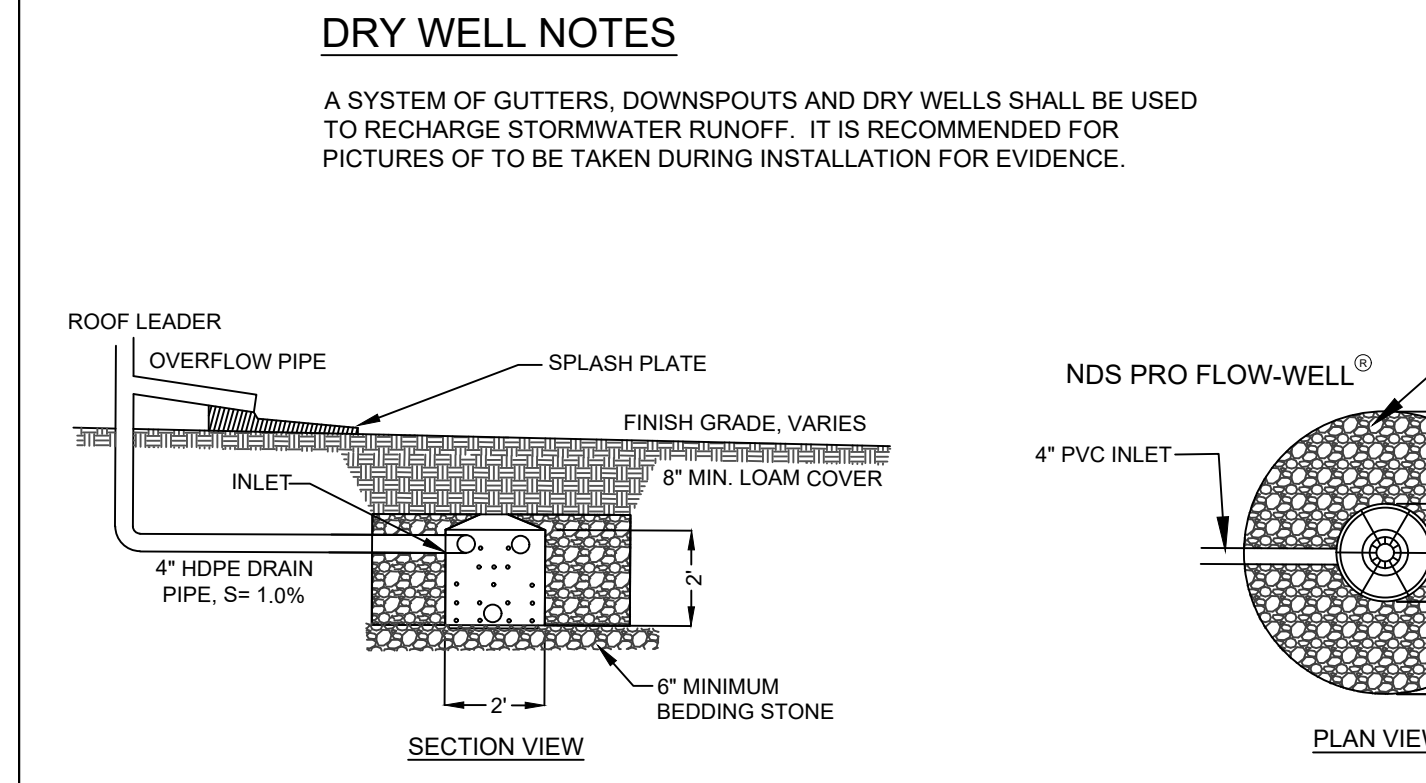


**SEPTIC SYSTEM NOTES**

- ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE STATE ENVIRONMENTAL CODE, TITLE 5 (310 CMR 15.00), AND THE LOCAL BOARD OF HEALTH.
- THERE SHALL BE NO CHANGES MADE IN THIS PLAN WITHOUT THE WRITTEN PERMISSION OF THE ENGINEER AND LOCAL BOARD OF HEALTH.
- ALL ERRORS, OMISSIONS, AND CHANGE OF CONDITIONS AT THE SITE SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PERFORMING THE RELATED WORK.
- ALL DISTURBED AREAS ARE TO BE LOAMED, SEEDED AND MAINTAINED TO PREVENT EROSION.
- FOR PROPER PERFORMANCE, SEPTIC TANK SHOULD BE INSPECTED AT LEAST ONCE A YEAR AND WHEN THE TOTAL DEPTH OF SCUM AND SOLIDS EXCEEDS 1/3 THE LIQUID DEPTH OF THE TANK, THE TANK SHOULD BE PUMPED.
- THIS SYSTEM HAS BEEN DESIGNED FROM DATA REVIEWED AND ACKNOWLEDGED BY THE MASS. D.E.P. AND THE LOCAL BOARD OF HEALTH; AND CONFORMS WITH THE REQUIREMENTS OF THE STATE ENVIRONMENTAL CODE, TITLE 5. NO GUARANTEE OF PERFORMANCE IS EXPRESSED OR IMPLIED.
- TEST HOLE INFORMATION SHOWN HEREON IS LIMITED TO SOIL CONDITIONS FOUND AT THAT PARTICULAR TEST HOLE LOCATIONS AND IS NOT CONSIDERED AN IMPLIED OR EXPRESSED WARRANTY OF SOIL CONDITIONS BEYOND LIMITS OF SUCH TEST HOLES.
- ALL ORGANIC AND UNSUITABLE MATERIAL MUST BE REMOVED FROM THE AREA DIRECTLY UNDER AND 5 FEET BEYOND THE PROPOSED LEACHING FACILITY. THIS AREA MUST BE BACKFILLED TO THE ELEVATIONS INDICATED ON THESE PLANS WITH SELECT ON-SITE OR IMPORTED SOIL MATERIAL, CONSISTING OF CLEAN GRANULAR SAND OR OTHER GRANULAR MATERIAL, FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES. MIXTURES AND LAYERS SHALL NOT BE USED. THE FILL MATERIAL SHALL CONFORM TO THE STATE ENVIRONMENTAL CODE, TITLE 5 - 310 CMR SECTION 15.25 (3) AND SHALL HAVE PERCOLATION RATE OF BETWEEN TWO AND FIVE MINUTES PER INCH, BEFORE AND AFTER PLACEMENT.
- ALL STONE MUST BE DOUBLE WASHED AND FREE FROM FINES AND ANY ORGANIC MATERIAL AND MUST HAVE LESS THAN 0.2 PERCENT MATERIAL FINER THAN A NUMBER 200 SIEVE.
- THE DESIGNER HAS NOT BEEN RETAINED BY THE CLIENT TO CONSTRUCT OR SUPERVISE THE CONSTRUCTION OF THE SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR MAKING ARRANGEMENTS FOR INSPECTION OF INSTALLATION OF THE SYSTEM WITH THE LOCAL BOARD OF HEALTH.
- THE GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL HORIZONTAL AND VERTICAL CONTROLL OF ALL SYSTEM COMPONENTS.
- RIGHT JOINT CONTROL MATERIAL TO CONSIST OF POLYVINYL CHLORIDE (P.V.C.) SCHEDULE 40, UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER FOR CONSTRUCTION INSPECTION AFTER EXCAVATION FOR THE LEACHING BED (PRIOR TO THE PLACEMENT OF STONE) AND ALSO AFTER PLACEMENT OF PIPE & STONE ROLL TO BACKFILLING.
- DESIGN ENGINEER SHALL CERTIFY CONSTRUCTION OF SYSTEM AND MATERIALS INSTALLED. THE CONTRACTOR SHALL PROVIDE A SIEVE ANALYSIS OF THE FILL MATERIAL REQUIRED. AN AS-BUILT PLAN SHALL BE SUBMITTED TO THE LOCAL BOARD OF HEALTH UPON COMPLETION.
- NO RUBBER TIRE CONSTRUCTION MACHINERY SHALL DRIVE OVER THE PROPOSED SEPTIC BED EXCAVATION DURING CONSTRUCTION.
- DIG-SAFE AND ALL OTHER NECESSARY AUTHORITIES SHALL BE NOTIFIED FOR THE PROPER LOCATION OF EXISTING UTILITIES PRIOR TO ANY EXCAVATION.
- WATER SERVICE LINE SHALL BE LOCATED AND MARKED PRIOR TO ANY EXCAVATION AND 10' MIN. SETBACK DISTANCE FROM SAID SERVICE TO THE SEPTIC SYSTEM SHALL BE MAINTAINED.
- ALL WATER LINES WITHIN 10' OF SEPTIC SYSTEM COMPONENTS SHALL BE SLEEVED WITHIN 4" PVC SCHEDULE 40 PIPE.



**EXISTING BUILDING SEWER NOTES**

- BUILDING SEWER PIPE TO BE RAISED WITHIN THE INTERIOR OF THE BUILDING TO PROVIDE A SEPTIC INVERT ELEVATION AS NOTED ABOVE.
- CONTRACTOR SHALL CONFIRM ELEVATIONS PRIOR TO CONSTRUCTION AND CONTACT ENGINEER IS THE ELEVATION FINDINGS ARE IN CONFLICT WITH THE INTENDED DESIGN.

**CONSERVATION NOTES**

THE LIMIT OF WORK WILL BE INSTALLED PRIOR TO ANY WORK, EXCAVATION, CONSTRUCTION OR CLEARING OF VEGETATION, IN ORDER TO PREVENT DAMAGE TO THE INTERESTS OF THE ACT AND BYLAW. THE LIMIT OF WORK WILL CONSIST OF A ROW OF STAKED SEDIMENT STOP OR COMPOST ROLL WITH SILT FENCE BACKING. THE SEDIMENT STOP ROLL WILL BE REPLACED AS NECESSARY TO BE MAINTAINED IN GOOD CONDITION THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD. NO FILL WILL BE ALLOWED TO BE PLACED AGAINST THE LIMIT OF WORK AT ANY TIME. UPON COMPLETION OF ALL CONSTRUCTION AND STABILIZATION OF THE SITE, SEDIMENT STOP ROLL WILL BE REMOVED AND PROPERLY DISPOSED OF.

PRIOR TO ANY WORK COMMENCING, ADVANCE WRITTEN NOTIFICATION WILL BE PROVIDED TO THE LOCAL CONSERVATION COMMISSION.

NO DEBRIS, EQUIPMENT OR MATERIALS WILL BE STORED, EVEN TEMPORARILY, OUTSIDE THE DESIGNATED LIMIT OF WORK AREA WITH THE EXCEPTION OF EQUIPMENT AND MATERIALS RELATED TO THE PLANTINGS FOR THE REQUIRED MITIGATION.

THE CONSTRUCTION SITE WILL BE CLEANED DAILY TO REMOVE ANY LOOSE DEBRIS.

ALL DISTURBED AREAS WITHIN THE LIMIT OF WORK REQUIRING RESTORATION WILL BE STABILIZED TO PREVENT EROSION. STABILIZATION WILL BE DONE IMMEDIATELY FOLLOWING COMPLETION OF CONSTRUCTION.

WORK AREA LIES COMPLETELY WITHIN PREVIOUSLY DISTURBED BUFFER ZONE AREAS.

ANY NEW LAWN AREAS WITHIN LOCAL CONSERVATION JURISDICTION SHALL BE PLANTED WITH GRASS SPECIES CONSISTING OF FESCUE AND RYES WITH BLUEGRASS VARIETIES COMPRISING NO MORE THAN 10% OF THE SEED MIX.

IF APPLICABLE, FERTILIZER APPLICATION AND LAWN MAINTENANCE TO BE PERFORMED IN ACCORDANCE WITH LOCAL REGULATION NITROGEN LOADING/LAWN STANDARDS.

**DESIGN DATA**

- TYPE OF ESTABLISHMENT: 3-BEDROOM RESIDENCE
- SEWAGE SYSTEM DESIGN FLOW: 110 GALLONS PER BEDROOM = 110 x 3 = 330 GPD
- NOTE: THIS SEPTIC SYSTEM IS NOT DESIGNED FOR A GARBAGE GRINDER
- REQUIRED MINIMUM 1,500 GALLON SEPTIC TANK
- DESIGN PERCOLATION RATE: MEASURED AT 4.7 MINUTES PER INCH IN B LOAMY SAND LAYER
- SOIL ABSORPTION SYSTEM TYPE: QUICK4 PLUS STANDARD CHAMBER BED SYSTEM
- LEACHING AREA REQUIRED: MINIMUM 330 GPD / (0.74 GPD/S.F., CLASS I SOIL) = 446 S.F.
- LEACHING SYSTEM PROPOSED: 3 ROWS OF 8 INFILTRATOR CHAMBERS FOR A TOTAL OF 96 L.F. EFFECTIVE LEACHING AREA PER LINEAL FEET = 4.73 S.F. / L.F. OF CHAMBER TOTAL AREA PROPOSED = 96 L.F. x 4.73 S.F. / L.F. = 454 S.F.
- LEACHING SYSTEM CAPACITY PROPOSED = 454 S.F. x 0.74 GPD/S.F. = 336 GPD

**SOIL EVALUATOR'S LOG**

| Depth from surface in inches                                 | Soil Horizon | Soil Texture (USDA) | Soil Color (Munsell) | Soil Mottles and Depth | Other Relative Factors |
|--|--------------|---------------------|----------------------|------------------------|------------------------|
| <b>DEEP OBSERVATION HOLE TP#1 &amp; TP#2, ELEVATION 13.2</b> |              |                     |                      |                        |                        |
| 0 - 11   | A            | SANDY LOAM          | 7.5 YR 4/3           |                        |                        |
| 11 - 35  | B            | LOAMY SAND          | 7.5 YR 5/8           |                        |                        |
| 35 - 112   | C1           | COARSE SAND         | 10 YR 8/6 @ 108"     |                        | 40% GRAVEL             |
| 112 - 134  | C2           | SILT LOAM           | 2.5 Y 6/3            | YES                    |                        |
| 134 - 140  | C3           | MEDIUM SAND         | 2.5 Y 7/3            | YES                    |                        |

PERCOLATION RATE = < 5 MINUTES / INCH (MPI) AT A DEPTH OF 10" TO 22" IN B LAYER, PRESOAK FROM 0 TO 15' 12" TO 9" DROPTIMED FOR 9-44 9" TO 8" DROPTIMED FOR 14-10 = 4.7 MINUTES PER INCH C1 COARSE SAND LAYER ASSIGNED < 2 MINUTES PER INCH DEPTH TO GROUNDWATER = NONE ENCOUNTERED AT DEPTH OF 140 INCHES (ELEVATION 1.53) ADJUSTED HIGH GROUNDWATER = BASED ON SPRING HIGH TIDE AT EITHER THE SHORES OF BUZZARDS BAY AND CEDAR CREEK POND OF ELEVATION 3.1' THE ESTIMATED HIGH GROUNDWATER FOR 43 BENEDICT RD PER HEALTH DEPARTMENT RECORD PLAN ADJUSTED BY CHADY COFFIN, HEALTH AGENT, IN 1991 TO ELEVATION 2.3' NGVD = 3.14 NAVD88 ESTIMATED HIGH GROUNDWATER BASED ON REDOX @ 108" DEPTH TO ELEVATION 3.87 OBSERVATIONS BY: RAUL LIZARDI-RIVERA, P.E. WITNESSED BY: KAITLYN SHEA DATE TESTED: MARCH 25, 2021

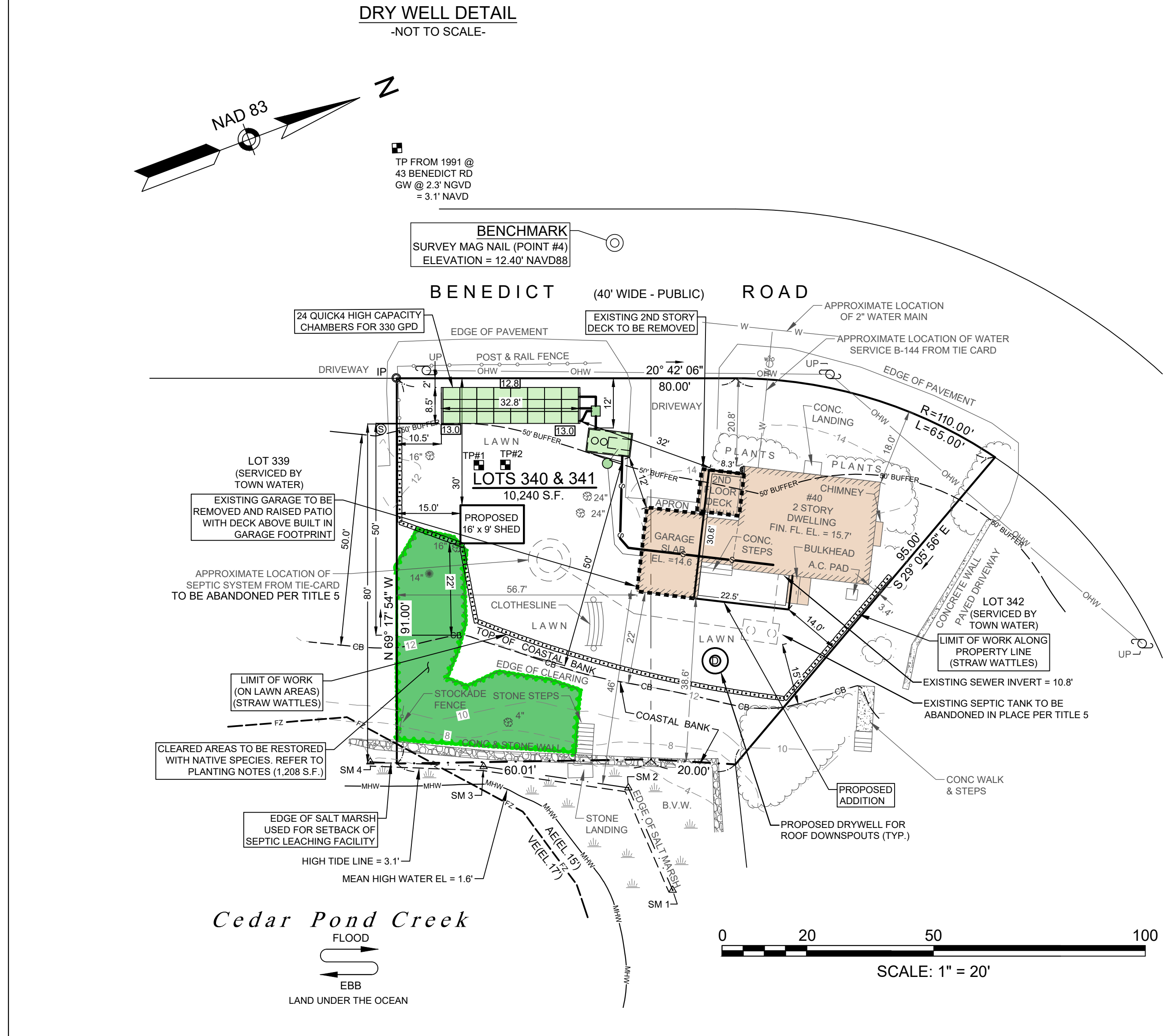
**LOCAL UPGRADE APPROVAL REQUEST**

| NO | DESCRIPTION                             | BYLAW REQUIRED | TITLE 5 REQUIRED | PROPOSED | WAIVER  |
|----|---|----------------|------------------|----------|---------|
| 1  | SOIL ABSORPTION SYSTEM TO PROPERTY LINE | 10 FT.         | 10 FT.           | 2 FT.    | 8 FT.   |
| 2  | SOIL ABSORPTION SYSTEM TO COASTAL BANK  | 150 FT.        | 50 FT.           | 80 FT.   | 70 FT.  |
| 3  | SOIL ABSORPTION SYSTEM TO COASTAL BANK  | 150 FT.        | 50 FT.           | 50 FT.   | 100 FT. |

A MICROFAST INNOVATIVE ALTERNATIVE SYSTEM IS PROPOSED TO PROVIDE SIMILAR OR BETTER TREATMENT COMPARED TO A CONVENTIONAL SEPTIC SYSTEM.

**COMMONWEALTH OF MASSACHUSETTS**  
MATTIEU C. COSTA  
No. 52292  
REGISTERED PROFESSIONAL ENGINEER

**COMMONWEALTH OF MASSACHUSETTS**  
RAUL LIZARDI-RIVERA  
CIVIL No. 45845  
REGISTERED PROFESSIONAL ENGINEER



**RESTORATION PLANTING NOTES**

PROPOSED MITIGATION PLANTINGS TO BE 2 GALLON CONTAINERS OR LARGER, STAGGERED IN FORMATION AND PLANTED 3 FEET ON CENTER OR AS NECESSARY TO ADEQUATELY RE-VEGETATE AREA.

PROPOSED PLANTINGS INCLUDE SPECIES FROM THE FOLLOWING LIST:  
ARROWWOOD (*Viburnum dentatum*), WILD RAISIN (*Viburnum nudum cassinoides*), SWEET PEPPERBUSH (*Clethra alnifolia*), INKBERRY (*Ilex glabra compacta*), BLACK CHOKEBERRY (*Aronia melanocarpa*), AND WINTERBERRY (*Ilex verticillata*).

APPLICANT OR APPLICANT'S REPRESENTATIVE SHALL HAVE AN ON-SITE MEETING WITH CONSERVATION AGENT PRIOR TO INSTALLING PLANTS TO REVIEW LOCATION OF SPECIFIC PLANT SPECIES. ANY CHANGES IN PLANT SPECIES TO BE APPROVED BY CONSERVATION AGENT PRIOR TO INSTALLATION.

PLANTINGS SHALL BE MAINTAINED IN GOOD HEALTH AND SHALL BE REPLACED IN KIND AS NECESSARY TO PROPERLY ESTABLISH VEGETATION.

PLANTS TO BE MAINTAINED IN GOOD HEALTH AND REPLACED AS NEEDED FOR 3 GROWING SEASONS.

PLANTINGS SHALL BE INSTALLED PRIOR TO COMPLETION OF CONSTRUCTION ACTIVITIES. OWNER SHALL NOTIFY CONSERVATION AGENT FOR FINAL INSPECTION WITHIN 30 DAYS AFTER ALL PLANTINGS HAVE BEEN INSTALLED.

**GENERAL NOTES**

LOCATIONS ARE BASED ON AN "ON THE GROUND" INSTRUMENT SURVEY AND ELEVATIONS BASED ON THE NAVD 1988 DATUM. COORDINATE SYSTEM USED IS THE MA-MANLY AND COORDINATE SYSTEM. DATUM: NAD 83, UNITS: U.S. SURVEY FEET.

THE FINISHED FLOOR ELEVATION (FIN. FL. EL.) SHOWN HEREON IS BASED ON AN ASSUMED 1" LOWER THAN THE SURVEYED THRESHOLD ELEVATION. AN INTERIOR INSPECTION OF BUILDINGS WAS NOT PERFORMED.

ZONING DISTRICT: R-40

PROPERTY IS LOCATED WITHIN AN AREA HAVING A ZONE DESIGNATION OF AE (ELEV 15) AND VE (ELEV 17) BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), ON FLOOD INSURANCE RATE MAP NO. 25001C0501J, WITH A MAP EFFECTIVE DATE OF JULY 16, 2014.

THIS LOT IS NOT LOCATED WITHIN A DEP APPROVED ZONE I WELLHEAD PROTECTION AREA. THIS LOT IS NOT MAPPED WITHIN AN AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC). THIS LOT IS NOT MAPPED WITHIN A MESA NATURAL HERITAGE AND ENDANGERED SPECIES AREA. WIND EXPOSURE CATEGORY: ZONE C

LOT COVERAGE:  
LOT AREA = 10,240 S.F.  
EXISTING LOT COVERAGE BY STRUCTURES = 1,287 S.F. (12.6%)  
PROPOSED LOT COVERAGE BY STRUCTURES = 1,598 S.F. (16%)  
EXISTING MINIMUM USABLE OPEN SPACE = 8,275 S.F. (80.8%)  
PROPOSED MINIMUM USABLE OPEN SPACE = 8,071 S.F. (79%)

DEED REFERENCE: BOOK 33224 PAGE 314 PLAN REFERENCE: BOOK 16 PAGE 43

OWNER: JOHN D. & LINDA M. DELLA VOLPE  
43 OLD PICKARD ROAD, CONCORD, MA 01742

**NOTICE**

THIS PLAN MAY NOT BE ADDED TO, DELETED FROM, OR ALTERED IN ANY WAY BY ANYONE OTHER THAN CAPE & ISLANDS ENGINEERING, INC.

UNLESS AND UNTIL SUCH TIME AS AN ORIGINAL (RED) STAMP APPEARS ON THIS PLAN NO PERSON OR PERSONS, MUNICIPAL OR PUBLIC OFFICIAL MAY RELY UPON THE INFORMATION CONTAINED HEREIN, AND THIS PLAN REMAINS THE PROPERTY OF CAPE & ISLANDS ENGINEERING, INC.

COPYRIGHT (C) BY CAPE & ISLANDS ENGINEERING, INC. ALL RIGHTS RESERVED

| DATE    | DESCRIPTION   | BY  | CHK |
|---------|---|-----|-----|
| 5/9/21  | REVISE SEPTIC DESIGN TO INCLUDE MICROFAST TANK      | RLR | RLR |
| 4/14/21 | ADD SOIL TEST INFORMATION AND SEPTIC PROFILE DETAIL | RLR | RLR |
| 2/19/21 | ADD SEPTIC SYSTEM UPGRADE DESIGN                    | RLR | MC  |

PREPARED FOR:  
JOHN D. & LINDA M. DELLA VOLPE  
43 OLD PICKARD ROAD  
CONCORD, MA 01742

PROJECT:  
40 BENEDICT ROAD  
BOURNE, MASSACHUSETTS

SHEET NO.: 1 OF 1 DATE: DECEMBER 16, 2020  
DRAWN BY: JVB & RLR CHECKED BY: MC

PREPARED BY:  
**CAPE & ISLANDS ENGINEERING**  
SUMMERFIELD PARK  
800 FALMOUTH ROAD SUITE 301C 508.477.7272 PHONE  
MASHPEE, MA 02649 508.477.9072 FAX www.CapeEng.com

DRAWING TITLE:  
**SITE & SEPTIC UPGRADE DESIGN PLAN**

ASSESSORS INFORMATION: MAP 26.3 PARCEL 8  
BENEDICT\_40\_DELLAVOLPE\_SF