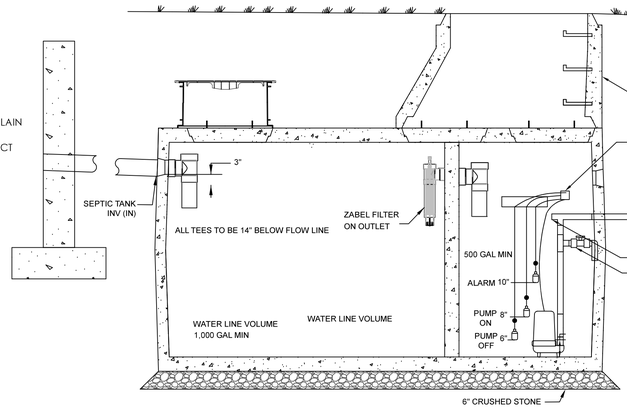
PROPERTY INFORMATION

OWNER OF RECORD: GERARDO ESPOSITO AND ADRIANA ESPOSITO
146 CHARLES STREET
CAMBRIDGE, MA 02141

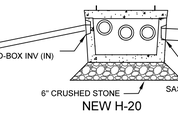
WAYLAND ASSESSORS: 47A / 74
LOT AREA: 3000 +/- SF (RECORD)
ZONING DISTRICT: R20
THIS PROPERTY IS LOCATED WITHIN IN A ZONE II
THIS PROPOSED WORK ON THIS PROPERTY IS NOT LOCATED WITHIN A 100-YEAR FLOOD PLAIN
THIS PROPERTY IS LOCATED WITHIN A NHESP PRIORITY HABITAT
THIS PROPERTY IS LOCATED WITHIN THE WAYLAND WATER RESOURCE PROTECTION DISTRICT
THE POPOSED WORK IS WITHIN 100' OF A FRESHWATER BANK
THERE ARE NO DRAINAGE STRUCTURES WITHIN 50' OF THE PROPOSED SEPTIC SYSTEM
THERE IS NO GARBAGE DISPOSAL INSTALLED IN THE HOUSE

ABBREVIATIONS:

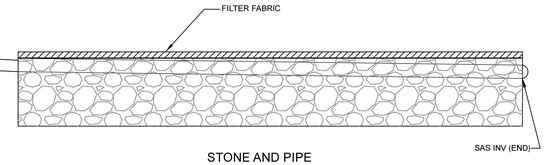
ASB	AS-BUILT
BW	BOTTOM OF WALL
BOH	BOARD OF HEALTH
CB	CATCH BASIN
CF	CUBIC FEET
CONC	CONCRETE
DMH	DRAIN MANHOLE
EX	EXISTING
ESHGW	ESTIMATED SEASONAL HIGH GROUND WATER
EL	ELEVATION
FFE	FINISHED FLOOR ELEVATION
INV	INVERT
LF	LINEAR FEET
PROP	PROPOSED
SAS	SOIL ABSORPTION SYSTEM
SYS	SYSTEM
TOF	TOP OF FOUDATION
TW	TOP OF WALL
TYP	TYPICAL
VIF	VERIFY IN FIELD



2,500 GALLON H-20 TWO COMPARTMENT SEPTIC TANK



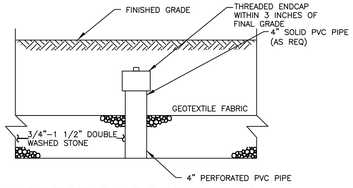
NEW H-20
DISTRIBUTION BOX



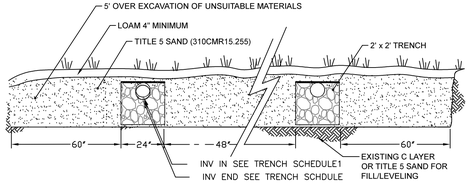
STONE AND PIPE TRENCH

SOIL ABSORPTION SYSTEM

SYSTEM PROFILE (NTS)



INSPECTION PORT DETAIL
NTS



TRENCH CROSS SECTION
NTS
NOTE: THREE TRENCHES REQUIRED
MINIMUM DEPTH OF COVER OVER THE TRENCHES SHALL BE 12" MIN

DESIGN NOTES:
1. DESIGN FLOW 3 BEDROOMS AT 110 GPD/BDRM
Fd = 330 GPD
WBOH DESIGN FLOW 3 BEDRROMS AT 165 GPD/BDRM
Fdw = 495 GPD
2. LTAR = 0.74 GPD/SF
3. CONVENTIONAL SOIL ABSORPTION SYSTEM
AREA REQUIRED
Ar = (330 GPD)/ (0.74 GPD/sf)
Ar = 445 sf
WBOH SOIL ABSORPTION SYSTEM REQUIREMENTS
Ar = 668 sf

TITLE 5 CONVENTIONAL SOIL ABSORPTION SYSTEM
LENGTH REQUIRED
Lr = (445 SF)/(6 SF/LF)
Lr = 74 LF
LAYOUT: 4 TRENCHES AT 19'
AREA PROVIDED:
Ap = (4 TR)(19 LF/TR)(6 SF/LF)
Ap= 456 SF

5. TITLE 5 CAPACITY PROVIDED
Cp = (456 SF)*(0.74 SF/GPD)
Cp = 337 GPD

6. SEPTIC TANK CAPACITY
COMPARTMENT 1 = 48 HR CAPACITY
REQUIRED 200% Fd
C1 = 1500 GAL MINIMUM PROVIDED

PUMP CALCULATIONS:
1.STATIC HEAD (SH)
DBOX INLET EL = 170.51
PC BOTTOM EL = 160.42
STATIC HEAD = 10.09
FRICTION LOSS (FL)
FM LENGTH = 25 lf
FRICTION LOSS = 2.8 ft/100 lf
TOTAL FRICTION LOSS = 0.7'
TDH = SH + FL
= 10.79
SAY TDH = 12
2. DOSE VOLUME (DESIGN) = 100 Gal
RUNBACK VOLUME = 4.7
TOTAL PUMP VOL = 105 Gal
3. VOLUME PER INCH = XX.XX GAL/IN
4. FLOAT SETTINGS (VOLUME BETWEEN FLOATS)
INVERT = XX" (372 GAL)
ALARM = XX" (132 GAL)
PUMP ON = X" (132 GAL)
PUMP OFF = X" (66 GAL)
5. STORAGE VOLUME ABOVE ALARM
Vs (48" - 10") = 418 GAL
STORAGE VOLUME IS GREATER THAN 24-HR DESIGN FLOW.

IMPLEMENTATION NOTES:
1. CONTRACTOR SHALL CONTACT DIG SAVE AT 811 OR WWW.DIGSAFE.COM, NO LESS THAN 72 HOURS PRIOR TO STARTING THEIR WORK
2. THE EXISTING SYSTEM SHALL BE PUMPED AND EXCAVATED TO MAKE ROOM FOR THE PROPOSED SEPTIC TANK/PUMP CHAMBER, ANY OTHER SUBSURFACE DISPOSAL STRUCTURES THAT ARE FOUND SHALL BE PUMPED AND THEN CRUSHED IN PLACE AND FILL WITH CLEAN SOIL
3. SUBSURFACE CONDITIONS ARE NOT GUARANTEED, THE LOCATION AND PRESENCE OF SUBSURFACE UTILITIES ARE NOT WARRANTED TO BE COMPLETE, CONTRACTOR SHALL VERIFY ALL UTILITIES PRIOR TO THE COMMENCEMENT OF WORK.
4. CONTRACTOR SHALL MAINTAIN SERVICE TO THE RESIDENCE DURING CONSTRUCTION, SERVICEING SHALL BE PERFORMED AS NECESSARY.
5. CONTRACTOR SHALL COORDINATE THE INSPECTIONS WITH THE BOARD OF HEALTH AND THE ENGINEER, PROVIDE 24-HOURS NOTICE. MINIMUM INSPECTIONS SHALL INCLUDE:
- AFTER EXCAVATION - BOTTOM OF HOLE
- AFTER CONSTRUCTION IS COMPLETE, PRIOR TO BACKFILLING
- PUMP TEST, IF NECESSARY SHALL BE WITNESSED BY THE BOARD OF HEALTH
6. FINAL GRADES SHALL MEET EXISTING GRADES OR AS SHOWN ON THE PLAN.
7. ALL UNSUITABLE MATERIAL INCLUDING FILL, EXISTING SYSTEM AND ANY DELETERIOUS MATERIAL SHALL BE EXCAVATED FOR A DISTANCE OF AT LEAST 5' FROM THE EDGE OF THE PROPOSED SOIL ABSORPTION SYSTEM
8. SHOULD THE CONTRACTOR FIND THAT CONDITIONS ON THE PLAN, INCLUDING THE BUILDING SEWER ELEVATION DO NOT MEET THOSE ON THE PLAN, THE ENGINEER SHALL BE CONTACTED IMMEDIATELY.
9. SEWER TIE-IN MUST BE TO SCH40 PVC OR CAST IRON OR ELSE THE BUILDING SEWER SHALL BE REPLACED TO THE FOUNDATION.
10. IMPERVIOUS BARRIER SHALL BE ONE CONTINUOUS LENGTH WITH NO HOLES, CUTS OR SEAMS. IF TWO LENGTHS ARE REQUIRED IT SHALL BE OVERLAPPED BY 10 FEET USING APPROPRIATE ADHESIVE AS REQUIRED BY THE WAYLAND HEALTH DEPARTMENT, BOTTOM ELEVATION SHALL BE AS SPECIFIED ON THE CROSS SECTION OR BURIED TO A DEPTH OF ONE FOOT INTO NATURALLY OCCURRING SOIL, IMPERVIOUS BARRIER SHALL BE 6 INCHES ABOVE LEDGE AND AT LEAST 12 INCHES INTO NATURALLY OCCURRING MATERIAL.
11. AS REQUIRED BY THE WAYLAND HEALTH DEPARTMENT A CONFIRMATORY TEST HOLE SHALL BE EXCAVATED DURING THE BED BOTTOM INSPECTION AND SHALL BE WITNESSED BY THE ENGINEERING AND THE HEALTH AGENT
12 THE WATER LINE SHALL BE RELOCATED TO BE 5 FEET FROM THE PROPOSED SOIL ABSORPTION SYSTEM, AND SHALL BE SLEVED INSIDE OF 4" SCH 40 PVC AT ANY LOCATION THAT IS LESS TAHN 10 FEET FROM THE SAS AND SEALED AT BOTH ENDS

ON-SITE SOIL AND GROUNDWATER REVIEW

DATE: 20AUG2020 TIME: 1000 WEATHER: CLEAR MID 70'S
LAND USE: RESIDENTIAL SLOPE: <5% SURFACE STONES: NEGLIGIBLE
VEGETATION: NEGLIGIBLE
SOIL EVALUATOR: TED P. DOUCETTE, (CERTIFICATION NOV 13, 2003)
APPROVING AUTHORITY REPRESENTATIVE: DARREN MACCAUGHY, RS, WAYLAND HEALTH AGENT
DISTANCES FROM:
OPEN WATER BODY: 80' DRAINAGE: 100'+
POSSIBLE WET AREA: 100'+ PROPERTY LINE: 15'
DRINKING WATER WELL: 100'+ OTHER: N/A

DEEP HOLE NUMBER 12102018-1

DEEP OBSERVATION HOLE LOG

DEPTH (INCHES)	HORIZON/ LAYER	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	REDOXIMORPHIC FEATURES
0"-12"	A	SANDY LOAM	10YR4/3	–
12"-44"	B	FINE SANDY LOAM	10YR6/8	–
44"-96"	C	MED SAND/GRVL	10YR5/3	–

PARENT MATERIAL: SAND DEPTH TO BEDROCK: >96"
EXISTING GROUND ELEVATION AT TEST HOLE: 171.17
WEEPING FROM PIT FACE: NOT OBSERVED
STANDING WATER IN THE HOLE: NOT OBSERVED
REDOXIMORPHIC FEATURES: NOT OBSERVED
ESTIMATED SEASONAL HIGH GROUND WATER: <163.17

PERCOLATION TEST

DATE: 20AUG2020	TIME: A.M.
NUMBER:	1
LOCATION	DTH-1
DEPTH OF PERC	60"
PRE SOAK: START	0950
PRE SOAK: END	CNS
12"	
9"	
6"	
TIME 9"-6" (MIN)	
PERC RATE (MIN/IN)	<2

GENERAL NOTES:
1. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH 310CMR 15, TITLE 5 OF THE STATE ENVIRONMENTAL CODE AND THE WAYLAND BOARD OF HEALTH REGULATIONS.
2. NO WORK SHALL BE CONDUCTED UNTIL ALL NECESSARY PERMITS ARE OBTAINED
3. THE SEPTIC SYSTEM SHALL BE INSTALLED BY A CONTRACTOR LICENSED IN THE TOWN OF WAYLAND
4. THIS PLAN IS INTENDED FOR THE INSTALLATION OF THE SEWAGE DISPOSAL SYSTEM ONLY; PROPERTY LINES SHALL BE CONSIDERED APPROXIMATE AND SHALL NOT BE USED FOR THE LOCATION OF STRUCTURES FENCES OR OTHER PROPERTY LINE OFFSETS.
5. PROPERTY LINES ARE BASED UPON THE FOLLOWING PLAN: PLAN OF LAND IN WAYLAND, MA. BY SULLIVAN & CONNORS, SUDBURY MASSACHUSETTS.
6. NO CHANGES SHALL BE MADE TO THE APPROVED PLAN WITHOUT PRIOR APPROVAL OF THE BOARD OF HEALTH AND THE ENGINEER.
7. THIS SYSTEM IS NOT DESIGNED FOR THE USE OF A GARBAGE GRINDER.

SPECIFICATIONS:
GENERALLALL COMPONENTS
ALL MATERIALS SHALL BE AS SPECIFIED - ANY REPLACEMENT SHALL BE SUBMITTED TO THE ENGINEERING INCLUDING CUT SHEETS OR SPECIFICATIONS AND APPROVED PRIOR TO INSTALLATION
310.CMR15 AND WAYLAND BOARD OF HEALTH REGULATIONS FOR ON-SITE SUBSURFACE SEWAGE DISPOSAL SYSTEMS SHALL BE CONSIDERED PART OF THESE SPECIFICATION, ALL MATERIALS SHALL MEET THESE SPECIFICATIONS
ALL PIPING SHALL BE 4" MINIMUM SCH40 PVC.
BUILDING SEWER SHALL BE IN ACCORDANCE WITH THE PLUMBING CODE, 248CMR2.00,
ALL JOINTS SHALL BE WATERTIGHT, AND SHALL TIE INTO CAST IRON OR PVC
ALL SEWAGE DISPOSAL ACCESS MANHOLES SHALL BE NO GREATER THAN SIX INCHES BELOW FINISHED GRADE.
IN ACCORDANCE WITH 310CMR15.221 ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE OR COMPARABLE MEANS IN ORDER TO LOCATE THEM ONCE BURIED
RISERS FITTED WITH CAST-IRON MANHOLE FRAMES AND COVERS OR APPROPRIATE EQUIVALENTS SHALL BE AFFIXED TO ANY SYSTEM COMPONENT WITH A DEPTH GREATER THAN 9", BRINGING ACCESS TO A POINT 6' OR LESS FROM FINAL GRADE ELEVATION
COVERS TO GRADE SHALL BE OF SUFFICIENT WEIGHT OR OTHERWISE SECURED TO PREVENT UNAUTHORIZED OPENING
SEPTIC TANK/PUMP CHAMBER
THE SEPTIC TANK/PUMP CHAMBER SHALL BE 2,500 GALLON TWO COMPARTMENT SEPTIC TANK, FIRST COMPARTMENT SHALL BE MINIMUM OF 1,500 GALLONS; SECOND COMPARTMENT SHALL BE MINIMUM OF 1,000 GALLONS
TEES SHALL BE IN ACCORDANCE WITH 310CMR15.227(6) - 14" BELOW FLOW LINE FOR 4' 4" OPERATING DEPTH.
AN EFFLUENT TEE FILTER APPROVED BY MASSDEP SHALL BE INSTALLED ON THE OUTLET TEE OF THE FIRST COMPARTMENT, THE COVER OVER THE FILTER SHALL BE BROUGHT TO GRADE.
TANK SHALL BE EF EF SHEA 2500ZCH
PUMP SHALL BE MYERS WHR5H **½ hp 2.25 IMPELLER OR APPROVED EQUAL**
PUMP CURVE PROVIDED AS A REGULATORY REQUIREMENT ONLY AND IS NOT REQUIRED FOR PUMP SELECTION
OPERATING POINT: TDH 25 FEET, AND 30 GPM
A BALL VALVE SHALL BE PLACED INLINE ON THE FORCEMAIN WITHIN THE PUMP CHAMBER TO THROTTLE THE FLOW. A CHECK VALVE SHALL NOT BE INSTALLED
PUMP AND ALARM SHALL BE ON SEPARATE CIRCUITS
CONTROL PANEL SHALL HAVE MANUAL RUN SWITCH AND CYCLE COUNTER
DISTRIBUTION BOX
THE DISTRIBUTION BOX SHALL BE CONCRETE. INVERT ELEVATIONS OF ALL OUTLETS SHALL BE EQUAL AND TWO INCHES BELOW THE INVERT OF THE INLET
OUTLET DISTRIBUTION LINES SHALL BE LEVEL FOR THE FIRST 2'.
THERE SHALL BE A MINIMUM SUMP OF 6" BELOW THE OUTLET INVERT.
DISTRIBUTION BOX ACCESS MANHOLES SHALL NOT BE MORE THAN 6 INCHES BELOW GRADE.
SPEED LEVELERS SHALL NOT BE USED.
INLET TEE IS REQUIRED
SOIL ABSORPTION SYSTEM
SOIL ABSORPTION SYSTEM PIPE MAY BE SCH40 PERFORATED PVC GENERAL PURPOSE SEWER PIPE OR SDR35 PERFORATED GRAVITY SEWER PIPE
WHERE THE SOIL ABSORPTION SYSTEM IS NOT INSTALLED IN THE C -LAYER ALL UNSUITABLE MATERIAL INCLUDING THE A AND B HORIZONS, THE EXISTING SYSTEM AND ANY OTHER DELETERIOUS MATERIAL SHALL BE REMOVED FOR A DISTANCE OF FIVE FEET FROM THE LIMIT OF THE SOIL ABSORPTION SYSTEM. THE C HORIZON NEED NOT BE REMOVED
THE MINIMUM COVER OVER THE SOIL ABSORPTION SYSTEM SHALL BE 12" AND FILL SHALL BE FREE OF STONES. BOULDERS GREATER THAN 6"
THE SOIL ABSORPTION SYSTEM SHALL HAVE ONE INSPECTION PORT CONSISTING OF A PERFORATED 4" PIPE PLACED VERTICALLY DOWN INTO THE NATURALLY OCCURRING SOIL OR OR SAND FILL BELOW THE SOIL ABSORPTION SYSTEM; INSPECTION PORT MUST BE ACCESSIBLE WITHIN 3 INCHES OF GRADE
THE SOIL ABSORPTION SYSTEM SHALL BE CONSTRUCTED OF FOUR STONE TRENCHES, 2'X2' FOR LONGCURRING OF 19 FEET
STONE SHALL BE DOUBLE WASHED **¾ TO 1 ½ INCH STONE FREE OF IRON, FINES AND DUST. GEOTEXTILE SHALL BE USED IN PLACE OF THE TWO-INCH LAYER OF STONE OVER THE TRENCH**

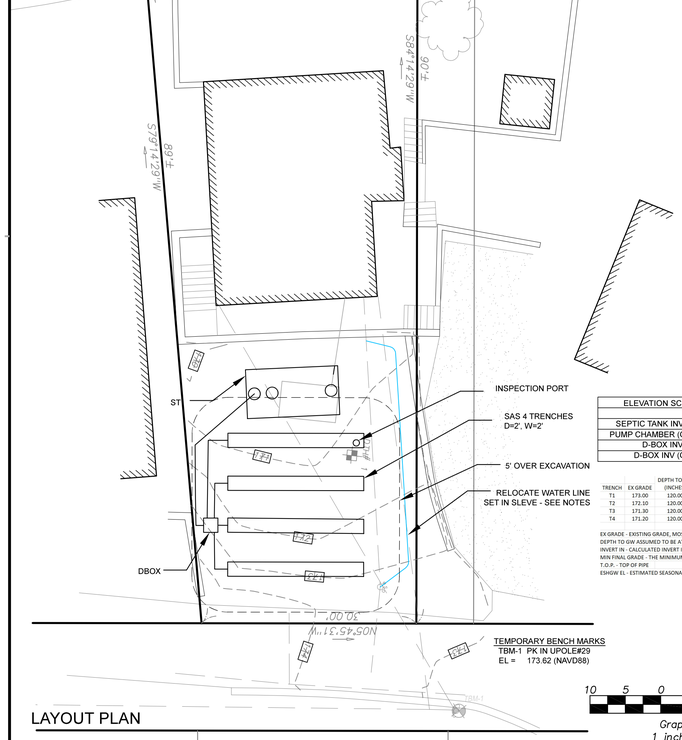
CERTIFICATION:
BY MY SIGNATURE AND STAMP BELOW, I CERTYF THE FOLLOWING:

1. THAT ON 13NOV2003 I HAVE PASSED THE SOIL EVALUATOR EXAMINATION APPROVED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THAT THE ABOVE ANALYSIS WAS PERFORMED BY ME CONSISTENT WITH THE REQUIRED TRAINING, EXPERTISE DESCRIBED IN 310 CMR 15.017

VARIANCE REQUEST:
DUE TO THE SIZE OF THE LOT THE FOLLOWING VARIANCES ARE REQUESTED.

1. RELIEF FROM 310CMR15.211(1) TO ALLOW THE PROPOSED SOIL ABSORPTION SYSTEM TO BE INSTALLED LESS THAN 10 FEET FROM A PROPERTY LINE/RIGHT OF WAY WITH THE REFERENCE TO A PROPERTY LINE DETERMINATION FROM A REGISTERED PROFESSIONAL LAND SURVEYOR.
2. RELIEF FROM WAYLAND BOARD OF HEALTH REGULATION SECTION II C. 1. VOLUME OF SANITARY SEWAGE - TO ALLOW THE SOIL ABSORPTION SYSTEM TO BE DESIGNED BASED ON TITLE 5 REQUIREMENTS OF 110 GALLONS PER BEDROOM PER DAY.
3. RELIEF FROM WAYLAND BOARD OF HEALTH REGULATION SECTION II C. 2. MINIMUM LEACHING AREA - TO ALLOW A SYSTEM DESIGN LESS THAN MINIMUM REQUIRED AREA

PRICING SET
NOT FOR CONSRUCTION



TEMPORARY BENCH MARKS
TBM-1 PK IN UPOLE#29
EL = 173.62 (NAVD88)

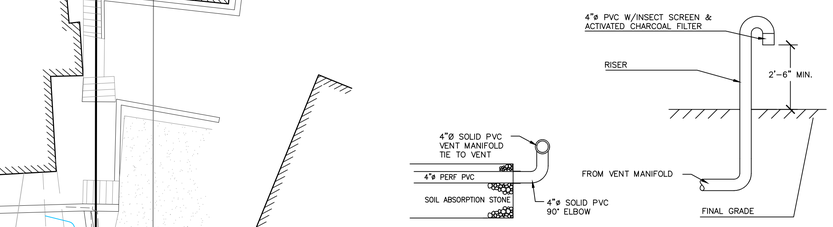
10 5 0 10 20
Graphic Scale
1 inch = 10 feet

LAYOUT PLAN

ELEVATION SCHEDULE	DESIGN
SEPTIC TANK INV (IN)	165.50
PUMP CHAMBER (OUT)	165.25
D-BOX INV (IN)	1170.51
D-BOX INV (OUT)	170.34

TRENCH	EX GRADE	DEPTH TO GW (INCHES)	C LAYER (APPROX)	ESHGW EL	BOTTOM TRENCH	GW OFFSET	INVERT END	INVERT IN	T.O.P./BREAKOUT	MIN FINAL GRADE	MAX FINAL GRADE
T1	173.00	120.00	169.33	163.00	168.10	5.10	170.10	170.17	170.50	171.50	173.50
T2	172.10	120.00	168.43	162.10	167.20	5.10	169.20	169.27	169.60	170.60	172.60
T3	171.30	120.00	167.63	161.30	166.40	5.10	168.40	168.47	168.80	169.80	171.80
T4	171.20	120.00	167.53	161.20	166.30	5.10	168.30	168.37	168.70	169.70	171.70

EX GRADE - EXISTING GRADE, MOST CONSERVATIVE ELEVATION ALONG TRENCH TAKEN
DEPTH TO GW ASSUMED TO BE AT LEAST 10' BASED ON REDOXIMORPHIC FEATURES NOT FOUND AND DUDLEY POND ELEVATION 23 FT BELOW GRADE
INVERT IN - CALCULATED INVERT INTO THE TRENCH BASED ON 4FT TRENCH AT 0.5%
MIN FINAL GRADE - THE MINIMUM FINAL GRADE BASED ON MINIMUM COVER OVER THE TRENCHES OF 12"
T.O.P. - TOP OF PIPE
ESHGW EL - ESTIMATED SEASONAL HIGH GROUND WATER ELEVATION

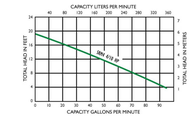


CONNECTION MANIFOLD RISER

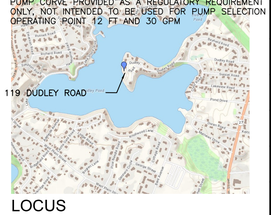
SOIL ABSORPTION SYSTEM VENT
NTS

LEGEND

98	EXISTING CONTOUR
98	PROPOSED CONTOUR
E	BURIED ELECTRIC (EX)
E	BURIED ELECTRIC (PROP)
W	DOMESTIC WATER LINE (EX)
W	DOMESTIC WATER LINE (PROP)
G	GAS SERVICE (EX)
G	GAS SERVICE (PROP)
S	SEPTIC VENT
RD	ROOF DRAIN (PROP)
FM	FORCE MAIN
FD	FOUNDATION DRAIN (PROP)
	STONE WALL
	PROPERTY LINE (APPROX)
	PROPERTY LINE (PROPOSED)
	EDGE OF PAVEMENT (EX)
	EDGE OF PAVEMENT (PROP)
	WOOD FENCE
	WIRE FENCE
	LIMIT OF WORK
	EROSION CONTROL/STRAW WATTLE
101.10	PROPOSED SPOT GRADE
(101.10)	SPOT GRADE TO REMAIN
DTH-2	DEEP TEST HOLE
PERC-1	PERCOLATION TEST
TBM-2	TEMPORARY BENCH MARK
CTH-1	CONFIRMATORY TEST HOLE
	SURVEY CONTROL DO NOT DISTURB



PUMP CURVE
NOTES
PUMP CURVE PROVIDED AS A REGULATORY REQUIREMENT ONLY, NOT INTENDED TO BE USED FOR PUMP SELECTION
OPERATING POINT 12 FT AND 30 GPM



LOCUS
NTS
SOURCE: MASS GIS

Sewage Disposal System Design for
119 Dudley Road, Wayland, Massacchusetts.

DOUCETTE ENGINEERING
152 Whitcomb Avenue, Littleton, Massachusetts 01460
978.621.2138 ▪ doucette.engineering@comcast.net
www.doucetteengineering.com

Date: DRAFT
Scale: as noted
Sheet 1 of 1
Drawn by: TPD
Drawing number: 2020-138
Revisions: