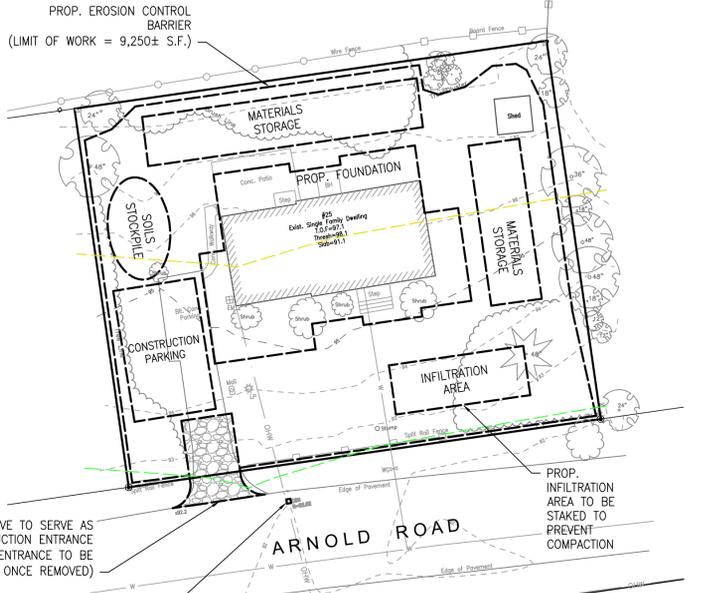


### SOIL TEST DATA

SOIL TESTING AND EVALUATION BY: GREGORY J. MORSE, S.E. #2906  
SOIL TESTING WITNESSED BY: PATRICK BRENNAN, P.E.  
DATE: AUGUST 7, 2025

TP-1	APPROX. GRADE EL. 96.5	TP-2	APPROX. GRADE EL. 94.5	TP-3	APPROX. GRADE EL. 94.0	TP-4	APPROX. GRADE EL. 96.0
EL. 95.8	FILL 8"	EL. 93.7	A HORIZON SANDY LOAM 10YR 5/3 10"	EL. 91.5	FILL 30"	EL. 94.0	FILL 24"
EL. 95.3	A HORIZON SANDY LOAM 10YR 5/3 14"	EL. 92.0	B HORIZON LOAMY SAND 10YR 5/6 30"	EL. 90.5	C HORIZON FINE LOAMY SAND 2.5Y 6/3 42"	EL. 93.5	A HORIZON SANDY LOAM 10YR 5/3 30"
EL. 93.3	B HORIZON LOAMY SAND 10YR 5/6 38"	EL. 84.5	C HORIZON FINE LOAMY SAND 2.5Y 6/3 120"	EL. 86.5	B HORIZON LOAMY SAND 10YR 5/3 90"	EL. 93.0	B HORIZON LOAMY SAND 10YR 5/3 36"
EL. 86.5	C HORIZON FINE LOAMY SAND 2.5Y 6/3 120"	WEEPING OBSERVED: 58" MOTTLING OBSERVED: 44" PERC. RATE: NONE ESHGW: 26" (EL. 92.3)		WEEPING OBSERVED: NONE MOTTLING OBSERVED: 40" PERC. RATE: NONE ESHGW: 40" (EL. 90.7)		EL. 86.7	C HORIZON FINE LOAMY SAND 2.5Y 6/3 112"
		WEEPING OBSERVED: 76" MOTTLING OBSERVED: 44" PERC. RATE: 3 MPI @ 38-56" ESHGW: 44" (EL. 92.8)		WEEPING OBSERVED: 78" MOTTLING OBSERVED: 42" PERC. RATE: 2 MPI @ 36-54" ESHGW: 42" (EL. 92.5)			

- ### CONSTRUCTION SCHEDULE
- INSTALL EROSION CONTROLS
  - TEMPORARILY CUT AND CAP UTILITY SERVICES
  - DEMOLISH AND REMOVE EXISTING HOME
  - CUT AND REMOVE TREES INDICATED TO BE REMOVED
  - REMOVE STUMPS
  - ROUGH GRADING
  - INSTALL STORMWATER CONTROLS
  - CONSTRUCT BUILDING FOUNDATION
  - CONNECT UTILITIES
  - CONSTRUCT BUILDING ON INSTALLED FOUNDATION
  - FINAL GRADING, LOAM, AND SEED
  - LANDSCAPING AND HARDSCAPING
  - FINAL PAVING
  - INSPECT DOWN GRADIENT AREAS AND REMOVE EROSION CONTROLS WHEN THE PROPERTY IS FULLY STABILIZED.



### LAND DISTURBANCE

DISTURBANCE TOTAL = 9,250± S.F.  
DISTURBANCE >10% SLOPES = 200± S.F.

### WETLAND SETBACK TABLE

DESCRIPTION	SETBACK TO BWW
EROSION CONTROL BARRIER	47.4'
DRYWELLS	55.5'
SEPTIC TANKS	58.5'
LEACHING FIELD	82.2'
EXIST. DWELLING	87.0'
PROP. DWELLING	73.8'

### CONSERVATION MITIGATION REQUIREMENTS

DESCRIPTION	PERVIOUS ALTERNATION	IMPERVIOUS ALTERNATION
0-50' BUFFER	147 S.F.	0 S.F.
50-100' BUFFER	N/A	1,700 S.F.

(0 S.F.)(2:1) + (147 S.F.)(1:1) + (1,700 S.F.)(1:1) = 1,847 S.F. REQUIRED

### IMPERVIOUS TABLE

DESCRIPTION	EXISTING	PROPOSED
ROOF	1,128 S.F.	2,508 S.F.
WIN WELLS & STAIRS	0 S.F.	124 S.F.
PAVEMENT	468 S.F.	542 S.F.
HARDSCAPING	362 S.F.	147 S.F.
TOTAL	1,958 S.F.	3,321 S.F.

(69.6% INCREASE)

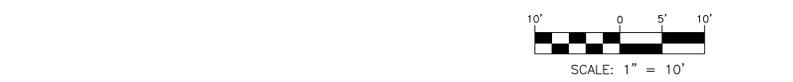
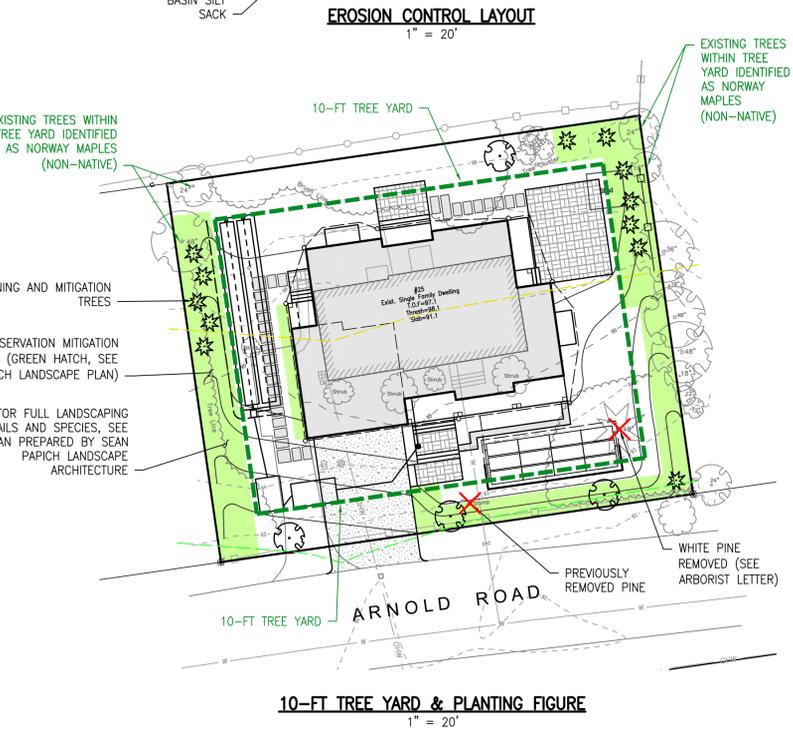
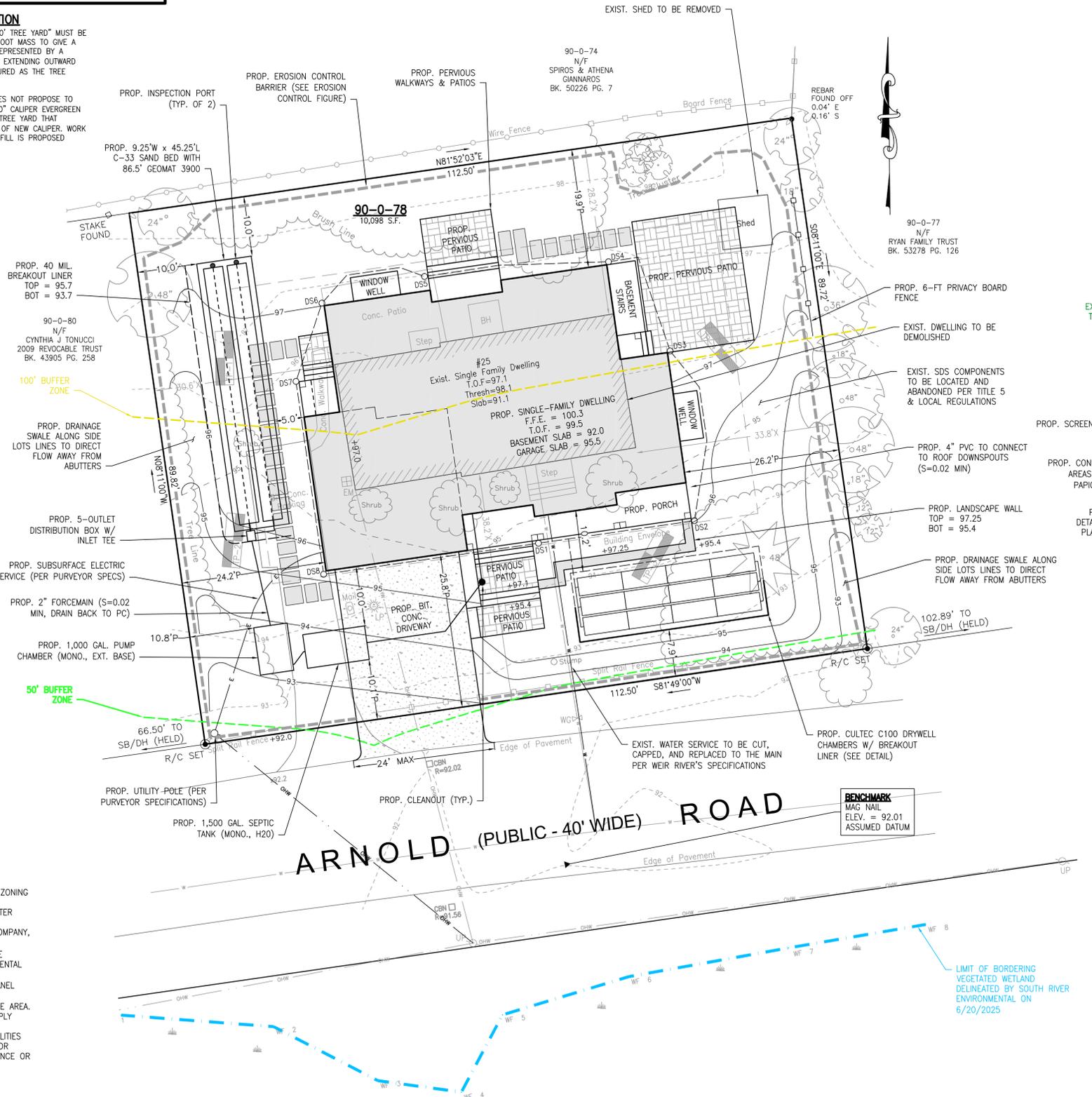
### ZONING TABLE

TOWN OF HINGHAM "RESIDENCE A" ZONING DISTRICT CRITERIA	REQUIRED	EXISTING	PROPOSED
LOT AREA	20,000 S.F.	10,098 S.F.	NO CHANGE
LOT WIDTH	100'	112.50'	NO CHANGE
FRONTAGE	125'	112.50'	NO CHANGE
FRONT SETBACK	25'	38.2'	25.8'
SIDE SETBACK	15'	30.6' (L) 33.8' (R)	24.2' (L) 26.2' (R)
REAR SETBACK	15'	28.2'	19.9'
BUILDING HEIGHT	2.5 STY	1.5 STY	2.5 STY

- ### DESIGN DATA
- BUILDING TYPE: SINGLE FAMILY DWELLING
  - NUMBER OF BEDROOMS: 3
  - DESIGN FLOW: 3 x 110 GPD/BEDROOM = 330 GPD (GALLONS PER DAY)
  - DESIGN PERCOLATION RATE: 3 MPI (TP-1, CLASS I)
  - GARBAGE DISPOSAL: NO
  - SEPTIC TANK DESIGN REQUIREMENT: 200% DESIGN FLOW  
330 x 2 = 660 GAL. (PROVIDE NEW 1,500 GALLON SEPTIC TANK)
  - LEACH AREA REQUIREMENTS (GALLONS PER DAY / SQUARE FOOT)\*  
BOTTOM: 1.22 GPD/S.F.  
SIDE: 1.22 GPD/S.F.
  - TOTAL LEACH AREA REQUIRED:  
TITLE 5: 330 GPD / (1.22 GPD/S.F.)\* = 270.5 S.F.  
GEOMAT 3900: 270.5 S.F. / 3.42 S.F./L.F.\*\* = 79.1 L.F. GEOMAT 3900 REQUIRED  
GEOMAT SAND BED: 3 BEDROOMS, 3 MPI @ 400 S.F. MINIMUM C-33 SAND BED\*\*\*  
PROVIDED: (2) ROWS OF 43.25' GEOMAT 3900 WITH 418 S.F. C-33 SAND BED  
CAPACITY: 86.50 L.F. \* 3.42 S.F./L.F. \* 1.22 GPD/S.F. = 360.9 GPD

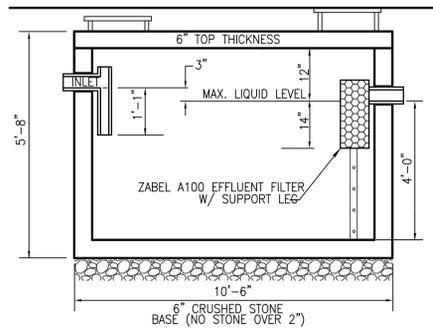
\*LOADING RATES PER TABLE 1 OF GEOMAT DESIGN MANUAL.  
\*\*SQUARE FEET PER LINEAR FOOT PER TABLE 2 OF GEOMAT DESIGN MANUAL.  
\*\*\*MINIMUM SAND BED REQUIREMENTS PER TABLE 3 OF GEOMAT DESIGN MANUAL.

- ### GENERAL NOTES:
- DEED REFERENCES: PLYMOUTH COUNTY REGISTRY OF DEEDS BOOK 54285 PAGE 7
  - PLAN REFERENCES: PLYMOUTH COUNTY REGISTRY OF DEEDS BOOK 4 PAGE 960
  - THE SUBJECT PROPERTY IS LOCATED WITHIN THE TOWN OF HINGHAM "RESIDENCE A" ZONING DISTRICT.
  - THE SUBJECT PROPERTY IS NOT LOCATED WITHIN THE TOWN OF HINGHAM GROUNDWATER PROTECTION OVERLAY DISTRICT.
  - THIS PLAN IS BASED ON A GROUND SURVEY PERFORMED BY MORSE ENGINEERING COMPANY, INC. ON 6/11/2025.
  - ALL WETLAND RESOURCE AREAS ON THE SUBJECT PROPERTY OR WITHIN 100' OF THE PROPOSED PROJECT ARE SHOWN, AND WERE DELINEATED BY SOUTH RIVER ENVIRONMENTAL ON JUNE 20, 2025.
  - THE SUBJECT PROPERTY LIES IN ZONE "X" AS SHOWN ON FEMA COMMUNITY MAP PANEL 25023 C0082K DATED 7/3/24.
  - THE SUBJECT PROPERTY DOES NOT LIE WITHIN A DEP DESIGNATED ZONE II RESOURCE AREA.
  - THE SUBJECT PROPERTY DOES NOT LIE WITHIN A DEP ZONE A SURFACE WATER SUPPLY AREA.
  - UTILITIES SHOWN ON THIS PLAN ARE BASED ON OBSERVANCE OF ABOVE GROUND UTILITIES AND RECORD LOCATION OF BELOW GROUND UTILITIES. NO WARRANTY IS EXPRESSED OR IMPLIED AS TO THE ACCURACY OF THE LOCATIONS OF SAID UTILITIES, OR THE EXISTENCE OR NON EXISTENCE OF ANY OTHER SUCH UTILITIES.
  - ELEVATIONS SHOWN REFERENCE AN ASSUMED DATUM.



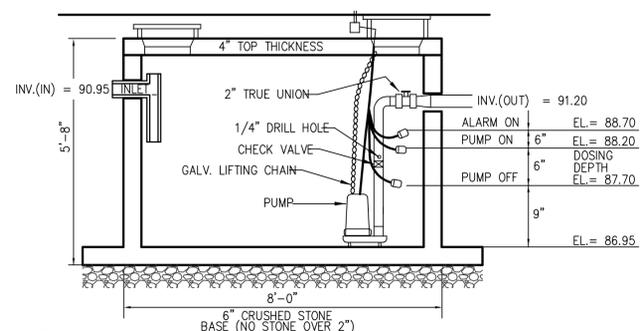
	PREPARED BY:		DESIGN:	PGG
	PROJECT:		25 ARNOLD ROAD ASSESSOR'S PARCE: 90-0-78 HINGHAM, MASSACHUSETTS	CHECK:
PREPARED FOR:	ATHENA & SPIROS GIANNAROS 392 MAIN STREET HINGHAM, MA 02043	DATE:	11/4/2025	
PLAN TITLE:	PROPOSED SITE & SEPTIC PLAN	REV:	12/17/2025	
		SHEET:		1 OF 2

**1,500 GAL. (H-20) MONOLITHIC SEPTIC TANK DETAIL**



- NOTES:**
1. THE SEPTIC TANK INLET COVER SHALL BE EXTENDED WITHIN 6" OF FINISHED GRADE & OUTLET COVER SHALL BE EXTENDED TO FINISHED GRADE & EQUIPPED WITH 20" DIA. CAST IRON FRAME & COVER.
  2. ALL PIPE CONNECTION AND CONSTRUCTION JOINTS SHALL BE SEALED WITH HYDRAULIC CEMENT.
  3. SEPTIC TANK SHALL BE INSTALLED ON A LEVEL 6" CRUSHED STONE BASE.
  4. OUTLET SHALL BE EQUIPPED WITH A ZABEL A100 EFFLUENT FILTER (OR APPROVED EQUAL).

**1,000 GAL. MONOLITHIC PUMP CHAMBER (EXT. BASE) DETAIL**

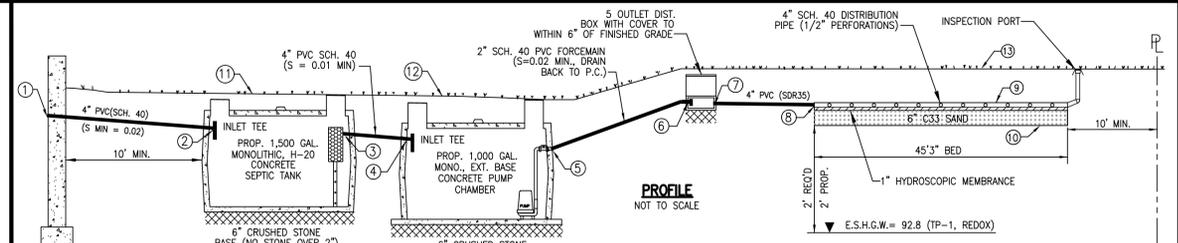


- NOTES:**
1. THE PUMP CHAMBER INLET COVER SHALL BE EXTENDED WITHIN 6" OF FINISHED GRADE & OUTLET COVER SHALL BE EXTENDED TO FINISHED GRADE & EQUIPPED WITH 20" DIA. CAST IRON FRAME & COVER.
  2. ALL PIPE CONNECTION AND CONSTRUCTION JOINTS SHALL BE SEALED WITH HYDRAULIC CEMENT.
  3. PUMP CHAMBER SHALL BE INSTALLED ON A LEVEL 6" CRUSHED STONE BASE.
  4. TANK TO BE MONOLITHIC AND EQUIPPED WITH UPLIFT STABILIZERS.

**PUMP DESIGN NOTES:**

1. THE PUMP CONTROLS SHALL BE DESIGNED TO ALLOW THE FIELD TO BE DOSED WITH 125 GAL. PER DOSE (APPROX. 2.7 TIMES IN A 24-HOUR PERIOD UNDER NORMAL OPERATING CONDITIONS).
2. USE GOULD WSO38 SUBMERSIBLE SEWAGE PUMP, 1/3 hp, 2" DISCHARGE, 2" SOLIDS CAPACITY T.D.H = 16.5± FT. @ 15 GPM OR APPROVED EQUAL. INSTALL HIGH WATER MERCURY FLOAT LEVEL CONTROL IN PUMP CHAMBER WITH VISIBLE FLASHING AND AUDIBLE ALARMS. CONTRACTOR TO COORDINATE LOCATIONS WITH HOMEOWNER. PUMP POWER SHALL BE LOCATED ON A SEPARATE POWER CIRCUIT FROM THE ALARM CIRCUIT. ALL ELECTRICAL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICIAN UNDER A VALID PERMIT AND INSPECTED BY THE TOWN WIRING INSPECTOR.
3. ELECTRICAL CONDUIT TO CONTROL PANEL (SIMPLEX OR EQUAL) MOUNTED INSIDE BUILDING. PUMP POWER CABLE AND FLOAT CONTROL TO BE PLACED IN CONDUIT IN ACCORDANCE WITH LOCAL BUILDING AND ELECTRICAL CODES.

24 HOUR EMERGENCY STORAGE (330 GAL. MIN.)  
 EL. = 90.95 INVERT IN  
 EL. = 88.70 ALARM ON  
 2.25' GAL. AVAILABLE STORAGE  
 x 250 GAL./VERT. FOOT = 562.50 GALLONS



**SCHEDULE OF ELEVATIONS**

1. INV. OF PIPE AT FOUNDATION = 92.0± (MINIMUM BASED ON 2% SLOPE)	8. INV. OF 4" SCH40 AT FIELD = 95.37
2. INV. OF PIPE AT SEPTIC TANK INLET = 91.25	9. TOP OF LEACHING FIELD (BREAKOUT) = 95.72
3. INV. OF PIPE AT SEPTIC TANK OUTLET = 91.00	10. BOTTOM OF C-33 SAND = 94.80
4. INV. OF PIPE AT PUMP CHAMBER INLET = 90.95	11. FINISHED GRADE OVER SEPTIC TANK = 93.0 (MIN.) - 95.3 (MAX.)
5. INV. OF PIPE AT PUMP CHAMBER OUTLET = 90.20	12. FINISHED GRADE OVER PUMP CHAMBER = 93.0 (MIN.) - 95.3 (MAX.)
6. INV. OF PIPE AT DISTRIBUTION BOX INLET = 95.64	13. FINISHED GRADE OVER LEACHING FIELD = 96.2 (MIN.) - 97.7 (MAX.)
7. INV. OF PIPE AT DISTRIBUTION BOX OUTLET = 95.47	

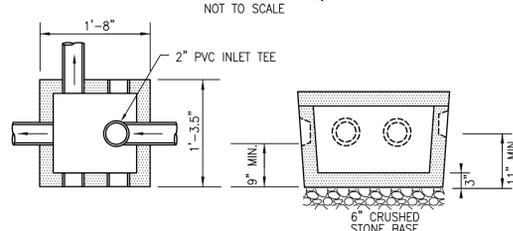
**1/A TECHNOLOGY CREDITS (REMEDIAL USE)**

1. ELIMINATION OF REQUIREMENT FOR 5'-FT OVERDIG.
2. REDUCTION IN THE SETBACK BETWEEN A LEACHING FIELD AND FOUNDATION TO 5'-FT.
3. MAXIMUM 40% SIZE REDUCTION OF LEACHING FIELD (SEE DESIGN LOADING RATES IN TABLE 1).
4. REDUCTION IN SETBACK BETWEEN BOTTOM OF SAS AND ESHGW FROM 4'-FT TO 2'-FT.

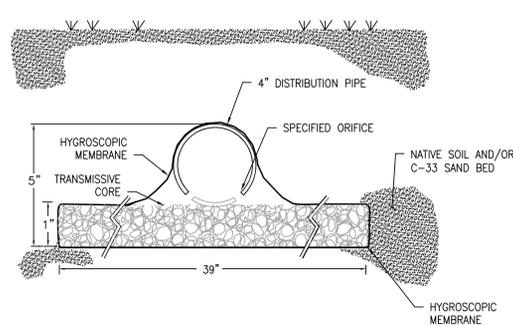
**HINGHAM LOCAL BYLAW VARIANCE REQUEST:**

1. TO ALLOW A REDUCTION FROM 5'-FT (REQ'D) TO 0'-FT (PROP) OF NATURALLY OCCURRING PERVIOUS STRATA BETWEEN MAXIMUM GROUNDWATER ELEVATION AND THE BOTTOM OF THE SOIL ABSORPTION FIELD.
2. TO ALLOW A REDUCTION FROM 5'-FT (REQ'D) TO 0'-FT (PROP) BETWEEN THE BOTTOM OF THE SOIL ABSORPTION FIELD AND SEASONAL HIGH GROUNDWATER.

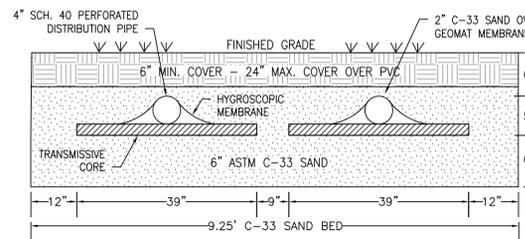
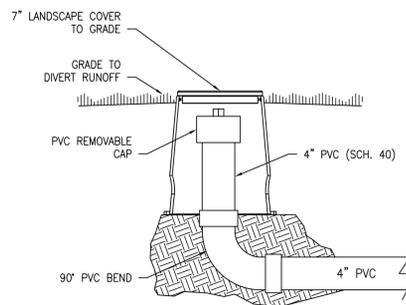
**5-OUTLET DISTRIBUTION BOX W/ INLET TEE**



- NOTES:**
1. DISTRIBUTION BOX COVER SHALL BE EQUIPPED WITH RISERS AS NECESSARY TO BRING THE COVER TO WITHIN 6" OF FINISHED GRADE.
  2. ALL PIPE CONNECTION AND CONSTRUCTION JOINTS SHALL BE SEALED WITH HYDRAULIC CEMENT.
  3. DISTRIBUTION BOX TO BE INSTALLED ON A LEVEL 6" CRUSHED STONE BASE.
  4. THE FIRST 2 FT. OF PIPE EXITING THE DISTRIBUTION BOX SHALL BE INSTALLED LEVEL.
  5. A PVC INLET TEE SHALL BE PROVIDED.



**GEOMAT GRAVITY LEACHING SYSTEM (CROSS SECTION)**  
NOT TO SCALE



**GEOMAT 3900 GRAVITY LEACHING SYSTEM**  
NOT TO SCALE

- NOTES:**
1. GEOMAT LEACHING SYSTEMS ARE AN ALTERNATIVE TECHNOLOGY APPROVED FOR GENERAL AND REMEDIAL USE PURSUANT TO 310 CMR 15.000.
  2. GEOMAT SYSTEMS ARE NOT DESIGNED FOR H-20 LOADING AND SHOULD NOT BE PLACED UNDER PAVED SURFACES OR AREAS THAT EXPERIENCE VEHICULAR TRAFFIC OR STORAGE OF HEAVY MATERIALS.
  3. GEOMAT LATERALS SHOULD LAID LEVEL, NOT EXCEED 50'-FT, AND SHOULD BE PRECEDED BY A STATE-APPROVED EFFLUENT FILTER. PARALLEL DISTRIBUTION IS REQUIRED.
  4. DISTRIBUTION PIPES FOR GRAVITY SYSTEMS MAY BE 2" SCH.40 WITH 1/2" PERFORATIONS OR 4" SCH. 40 PERFORATED PIPE.
  5. A FIVE FOOT OVERDIG IS NOT REQUIRED FOR THIS SYSTEM, AND THE SYSTEM MAY BE PLACED WITHIN 5'-FT OF FOUNDATION WALLS. NO PLANTING OR SOIL EXCAVATION SHOULD OCCUR WITHIN 5'-FT OF LEACHING FIELD ONCE INSTALLED.
  6. MAXIMUM COVER IS 24" UNLESS A SOLAIR PUMP IS USED.
  7. 2% SLOPE MINIMUM SLOPE FOR FINISHED GRADE ABOVE THE GEOMAT SYSTEM. BREAKOUT BARRIERS MAY BE PLACED 2' OFF EDGE OF LEACHING FIELD.

**INSPECTION PORT**  
NOT TO SCALE

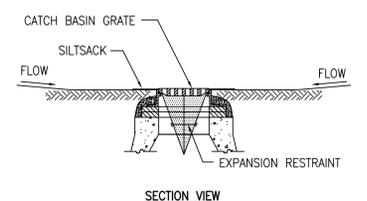
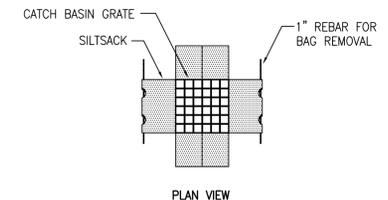
**REMOVE & REPLACE NOTE**

CONTRACTOR TO REMOVE FILL A & B HORIZONS WITHIN THE FOOTPRINT OF THE PROPOSED SOIL ABSORPTION SYSTEM & REPLACE WITH CLEAN TITLE 5 PERC & C33 SAND.

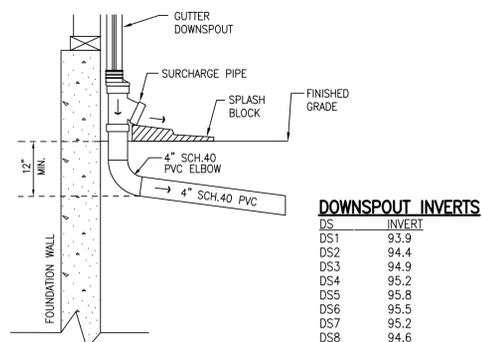
C33 SAND REQUIRED:  
 13'D x 9.25'D x 45.25' x 1.2% / 27 = 21± C.Y.

TITLE 5 SAND REQUIRED:  
 9.25' x 45.25' x (94.8 - 92.0) x 1.2 / 27 = 53± C.Y.\*  
 (58') x 2' x (95.72-92.0) x 1.2 / 27 = 20± C.Y.\*

\*APPROX. SAND AREA REQUIRED SHOWN ON CROSS SECTION A-A.  
 \*\*A FIVE-FOOT OVERDIG IS NOT REQUIRED FOR THIS SYSTEM PER GENERAL AND REMEDIAL USE APPROVAL LETTER.



**SILTSACK SEDIMENT TRAP**  
NOT TO SCALE



**ROOF DOWNSPOUT DETAIL**  
NOT TO SCALE

**DOWNSPOUT INVERTS**

DS	INVERT
DS1	93.9
DS2	94.4
DS3	94.9
DS4	95.2
DS5	95.8
DS6	95.5
DS7	95.2
DS8	94.6

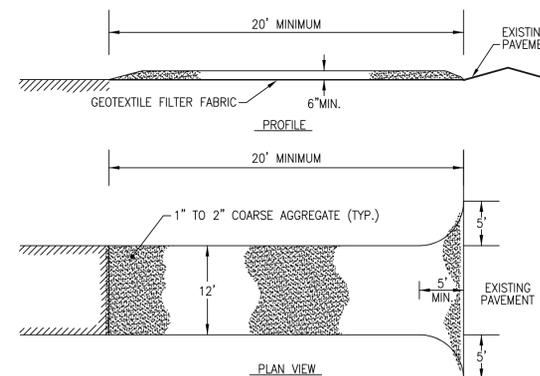
**PERVIOUS PAVER WALKWAY & PATIO DETAIL**

NOTE: PERVIOUS PATIO SHALL BE INSPECTED BY PROFESSIONAL ENGINEER POST-CONSTRUCTION TO VERIFY PERMEABILITY. ENGINEER SHALL PROVIDE AS-BUILT CERTIFICATION.

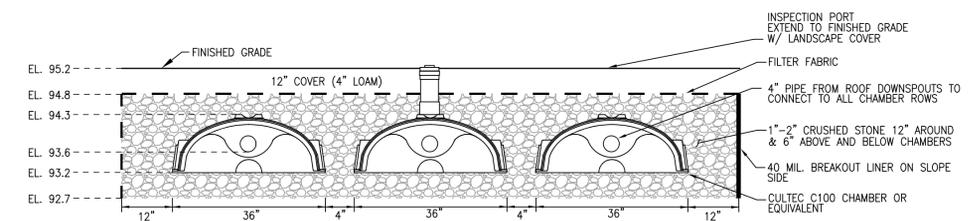
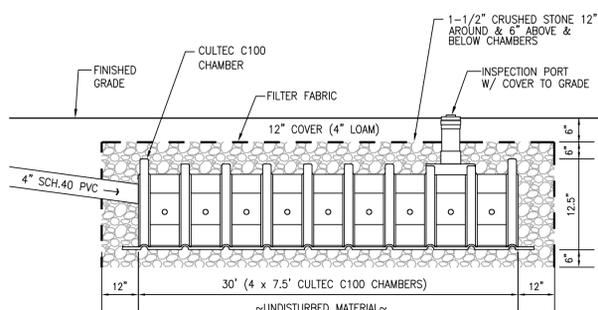
**PERVIOUS PAVER WALKWAY & PATIO DETAIL**  
NOT TO SCALE



**STAKED MULCH SOCK DETAIL**  
NOT TO SCALE



**STABILIZED CONSTRUCTION ENTRANCE DETAIL**  
NOT TO SCALE



- NOTES:**
1. 4" PVC INLET PIPES TO CHAMBERS SHALL BE VIA CENTER FEED MANIFOLD.
  2. NO CONSTRUCTION ACTIVITY (TRAFFIC) SHALL BE ALLOWED OVER THE ROOF DRYWELL AREA.
  3. BACKFILL CHAMBERS WITH WASHED CRUSHED STONE FOR 12" AROUND AND 6" ABOVE AND BELOW.
  4. CRUSHED STONE SHALL BE WRAPPED IN GEOTEXTILE FABRIC (CULTEC NO. 410 OR EQUAL).
  5. DRYWELLS TO BE INSPECTED BY ENGINEER PRIOR TO BACKFILL OF SYSTEM.

**SUBSURFACE ROOF RECHARGE SYSTEM DETAIL**  
SCALE: N.T.S.

	PREPARED BY: MORSE ENGINEERING CO., INC. 10 NEW DRIFTWAY SUITE 303 SCITUATE, MA 02066 T. 781-545-0895	DESIGN: PGG CHECK: JDG JOB NO: 25-183
	PROJECT: 25 ARNOLD ROAD ASSESSOR'S PARCE: 90-0-78 HINGHAM, MASSACHUSETTS	PREPARED FOR: ATHENA & SPIROS GIANNAROS 392 MAIN STREET HINGHAM, MA 02043
PLAN TITLE: PROPOSED SITE & SEPTIC PLAN		2 OF 2