



LOCUS MAP

SCALE: 1" = 1,500'

BUOYANCY CALC'S

SEPTIC TANK:
TOTAL DOWNWARD FORCE : 20,576 LBS±
TOTAL UPWARD FORCE: 4,296 LBS±
FACTOR OF SAFETY: 4.79

PUMP CHAMBER:
TOTAL DOWNWARD FORCE : 37,047 LBS±
TOTAL UPWARD FORCE: 20,427 LBS±
FACTOR OF SAFETY: 1.81

CALCULATIONS:

HYDRAULIC LOADING:

FIVE (5) BEDROOMS AT 110 GALLONS PER DAY PER BEDROOM = 550 GALLONS PER DAY.

SEPTIC TANK SIZE:

AVERAGE DAILY FLOW = 550 G.P.D. X 200% = 1,100 GALLONS (MINIMUM STORAGE)
SEPTIC TANK PROVIDED = 1,500 GALLON, SINGULAR TNT 500-600 TREATMENT TANK.

PRIMARY LEACHING AREA (PRESBY ENVIRONMENTAL, INC.):

DESIGN PERCOLATION RATE = 3 M/I (SOIL CLASS I)
SLOPE ACROSS SYSTEM = 10%
LINEAL FOOTAGE REQUIRED = 350 L.F. (TABLE A - DESIGN REFERENCE GUIDE-REV. SEPT. 2019)
LINEAL FOOTAGE PROVIDED = 400 L.F. (8 - 50' LINES)
MINIMUM CENTER TO CENTER SPACING REQUIRED = 1.5 FEET
CENTER TO CENTER SPACING PROVIDED = 1.5 FEET
MINIMUM SAND BED REQUIRED = 446 S.F. (TABLE D - DESIGN REFERENCE GUIDE-REV. SEPT 2019)
SAND BED PROVIDED = 702 S.F. (52'x13.5')

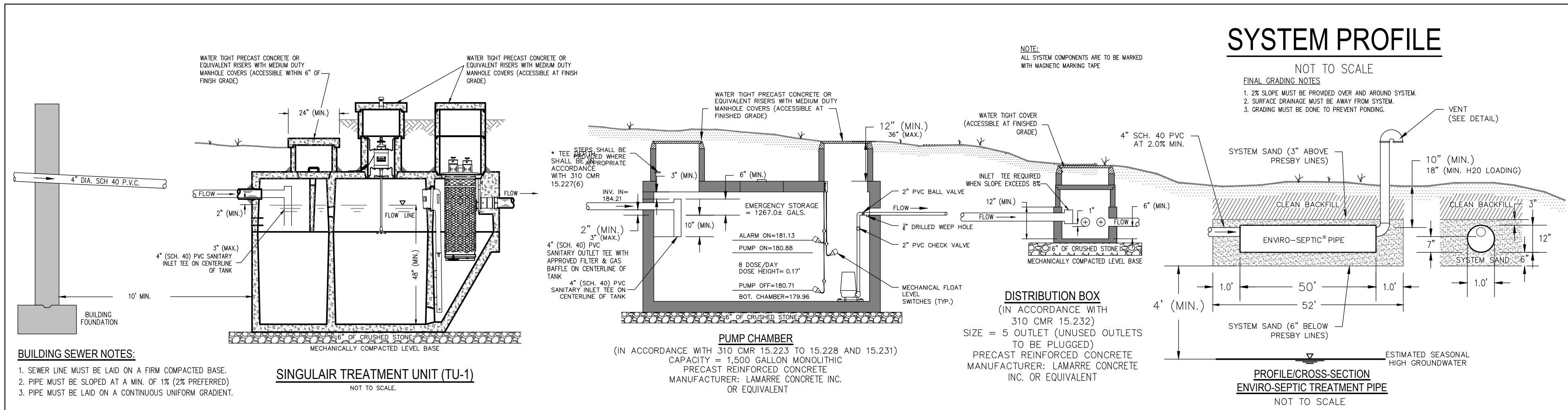
NORWECO-SINGULAR #TNT 500-600 WASTEWATER TREATMENT SYSTEM TANK

AS APPROVED BY D.E.P. ON JULY, 8, 2013

TRANSMITTAL #W059246

SCHEDULE OF ELEVATIONS:

SYSTEM ELEVATIONS:				PIPE DATA:			
TOP EL. OF FOUNDATION WALL= 189.64*				PIPE GRAVITY SEWER			
INV. EL. AT FOUNDATION WALL= 184.90±* (SEE REPAIR NOTES)				4" PVC (SCH. 40)			
				L= 15'			
				S= 0.02			
SEPTIC TANK (ST-1) - H-10				PIPE 2 GRAVITY SEWER			
4" INV. (IN)= 184.63* (SEE REPAIR NOTES)				4" PVC (SCH. 40)			
4" INV. (OUT)= 184.38				L= 1.7'			
				S= 0.10			
PUMP CHAMBER (PC-1)				PIPE 3 FORCE MAIN			
4" INV. (IN)= 184.21				2" PVC (SDR 21)			
2" INV. (OUT)= 183.96				L= 9.8'			
DISTRIBUTION BOX (DB-1)							
4" INV. (IN)= 185.71							
4" INV. (OUT)= 185.54							
PRIMARY PRESBY ELEVATIONS:				AS-BUILT PRESBY ELEVATIONS:			
LINE NO.	EL. INV. BEG. OF 4" PVC.	EL. INV. OF PRESBY PIPE.	EL. OF BOT. OF SAND BED.	LINE NO.	EL. INV. BEG. OF 4" PVC.	EL. INV. OF PRESBY PIPE.	
P1	185.37	184.78	184.28	P1	XXX.XX	XXX.XX	
P2	185.37	184.78	184.28	P2	XXX.XX	XXX.XX	
P3	185.37	184.78	184.28	P3	XXX.XX	XXX.XX	
P4	185.37	184.78	184.28	P4	XXX.XX	XXX.XX	
P5	185.37	184.78	184.28	P5	XXX.XX	XXX.XX	
P6	185.37	184.78	184.28	P6	XXX.XX	XXX.XX	
P7	185.37	184.78	184.28	P7	XXX.XX	XXX.XX	
P8	185.37	184.78	184.28	P8	XXX.XX	XXX.XX	



SYSTEM PROFILE

NOT TO SCALE

FINAL GRADING NOTES

1. 2% SLOPE MUST BE PROVIDED OVER AND AROUND SYSTEM.

2. SURFACE DRAINAGE MUST BE AWAY FROM SYSTEM.

3. GRADING MUST BE DONE TO PREVENT PONDING.

4" SCH. 40 PVC AT 2.0% MIN.

SEWER CLEANOUT RING & COVER (LEGARON FOUNDRY, INC. OR EQUAL)

4" PVC TREADED PLUG

4" SCH. 40 PVC AT 2.0% MIN.

PERFORATED SCH. 40 PVC PIPE

4" SCH. 40 PVC AT 2.0% MIN.

4" SCH. 40 PVC AT 2.0% MIN.

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4" SCH. 40 PVC AT 2.0% MIN.

INSPECTION PORT DETAIL

NOT TO SCALE

GENERAL NOTES:

1. TOPOGRAPHIC INFORMATION IS THE RESULT OF AN ON-THE-GROUND SURVEY PERFORMED BY DILLIS & ROY CIVIL DESIGN GROUP, INC. ELEVATIONS REFER TO AN ASSUMED DATUM (SEE BENCH MARK LOCATED ON PLOT PLAN).
2. PROPERTY LINE INFORMATION TAKEN FROM RECORDED PLAN ON FILE WITH THE MIDDLESEX REGISTRY OF DEEDS.
3. PLAN BOOK: 194-453
4. PROPERTY LINES SHALL BE DETERMINED PRIOR TO CONSTRUCTION OR INSTALLATION OF ANY OF THE PROPOSED IMPROVEMENTS HEREON.
5. PERCOLATION TESTS PERFORMED IN ACCORDANCE WITH 310 CMR (TITLE 5) REGULATIONS 15.104 AND 15.105.
6. ANY DEVIATIONS FROM THE DESIGN PLAN MUST BE APPROVED IN WRITING BY DILLIS & ROY CIVIL DESIGN GROUP, INC.
7. NO PERMANENT STRUCTURES MAY BE CONSTRUCTED OVER THE RESERVE LEACHING AREA.
8. THE BOARD OF HEALTH REQUIRES INSPECTION OF ALL CONSTRUCTION BY THE DESIGN ENGINEER OR BY AN AGENT OF THE BOARD OF HEALTH, AND THAT SUCH A PERSON CERTIFIES IN WRITING THAT ALL WORK HAS BEEN COMPLETED IN ACCORDANCE WITH THE TERMS OF THE PERMIT AND THE APPROVED PLANS.
9. FOR PROPER PERFORMANCE, A SEPTIC TANK SHOULD BE INSPECTED AT LEAST ONCE EVERY YEAR AND WHEN THE TOTAL DEPTH OF SOLID AND SOLIDS EXCEEDS ONE THIRD OF LIQUID DEPTH OF THE TANK, THE TANK SHOULD BE PUMPED.
10. THERE ARE NO POTABLE DRINKING WATER WELLS WITHIN 150 FEET OF THE PROPOSED SEWAGE DISPOSAL SYSTEM UNLESS OTHERWISE NOTED.
11. THIS DESIGN DOES NOT ACCOMMODATE A GARAGE DISPOSAL.
12. CONSTRUCTION WITHIN 100 FEET OF A WETLAND RESOURCE AREA AS DEFINED IN THE MASSACHUSETTS WETLAND PROTECTION ACT AND REGULATIONS (310 CMR 10.00) SHALL NOT BE PERFORMED UNTIL AN ORDER OF CONDITIONS OR NEGATIVE DETERMINATION OF APPLICABILITY HAS BEEN OBTAINED FROM THE LOCAL CONSERVATION COMMISSION.
13. EXISTING UTILITIES SHOWN ON THIS PLAN WERE OBTAINED FROM FIELD MEASUREMENT AND RECORD PLANS. THE UTILITIES SHOWN ON THIS PLAN ARE FOR REFERENCE ONLY AND SHOULD NOT BE ASSUMED TO BE CORRECT NOR SHOULD IT BE ASSUMED THAT THE UTILITIES SHOWN ARE THE ONLY UTILITIES LOCATED ON OR NEAR THE SITE. THE CONTRACTOR SHALL CALL OR GIVE A 1-800-486-5600 PRIOR TO CONSTRUCTION TO OBTAIN INFORMATION ON THE LOCATION OF UTILITIES.
14. A NOTICE OF THE EXISTENCE OF THIS ALTERNATIVE SYSTEM SHALL BE RECORDED AT THE REGISTRY OF DEEDS IN THE CHAIN OF TITLE TO THE PROPERTY.
15. THE OWNER SHALL BE RESPONSIBLE FOR THE APPLICABLE PROVISIONS SET FORTH IN 310 CMR 15.287.
16. THIS PLAN HAS BEEN PREPARED TO DETAIL THE CONSTRUCTION REQUIREMENTS FOR A SUBSURFACE SEWAGE DISPOSAL SYSTEM ONLY. THIS PLAN SHALL NOT BE UTILIZED FOR ANY OTHER PURPOSE.

CONSTRUCTION NOTES:

1. CONTACT DESIGN ENGINEER PRIOR TO SYSTEM INSTALLATION. DESIGN ENGINEER MUST BE ON SITE ONCE TOPSOIL AND ORGANIC MATERIAL IS REMOVED AND PRIOR TO PLACEMENT OF ANY SAND OR FILL.
2. SYSTEM TO BE INSTALLED IN ACCORDANCE WITH PRODUCT DESIGN AND INSTALLATION MANUAL, AND STATE AND LOCAL REGULATIONS. FOR PRODUCT INFORMATION OR THE NEAREST DEALER, CONTACT PRESBY ENVIRONMENTAL, INC. 143 AIRPORT ROAD, WATERTOWN, MA 02458 - PHONE: 781-475-5359 - WWW.PRESBYENV.COM
3. MINIMUM OF 6" OF MEDIUM TO COARSE SAND MEETING THE REQUIREMENTS OF ASTM C-33, WITH LESS THAN 2% PASSING A # 200 SIEVE REQUIRED AROUND CIRCUMFERENCE OF ENVIRO-SEPTIC PIPES. (SEE DESIGN AND INSTALLATION MANUAL FOR COMPLETE SAND AND FILL SPECIFICATIONS.)
4. THE SYSTEM INSTALLER SHALL PROVIDE THE SYSTEM OWNER AND LOCAL APPROVING AUTHORITY WITH A BILL OF LADING CERTIFYING THE SYSTEM SAND FILL MEETS ASTM C-33.
5. SYSTEM SHALL NOT BE INSTALLED ON FROZEN GROUND OR LEFT UNCOVERED FOR EXTENDED PERIODS OF TIME.
6. FINISH GRADING SHALL BE DONE IN ACCORDANCE WITH THE PLOT PLAN. ALL DISTURBED AREAS SHALL BE COVERED WITH A MINIMUM OF 4" OF LOAM AND SEEDED WITH A NATIVE GRASS MIXTURE.
7. BACKFILL OVER THE SOIL ABSORPTION SYSTEM, SEPTIC TANK AND DISTRIBUTION BOX SHALL BE A MINIMUM OF 9 INCHES EXCLUDING TOPSOIL, PLACED IN LIFTS AND SUBSEQUENTLY COMPACTED FOR PREVENT DISPOSING DUE TO SETTLING. BACKFILL OVER THE SOIL ABSORPTION SYSTEM SHALL BE FREE OF STONES AND BOLLERS GREATER THAN 6 INCHES IN SIZE.
8. THE BUILDING SEWER SHALL BE LAID ON A COMPACTED FIRM BASE.
9. ALL PIPING SHALL BE MINIMUM OF SCHEDULE 40 UNLESS OTHERWISE NOTED.
10. ALL PIPE Joints AND CONNECTIONS TO SYSTEM COMPONENTS SHALL BE MECHANICALLY SOUNDED, WATER TIGHT AND PROTECTED AGAINST DAMAGE BY ROOTS.
11. ALL BUILDING SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STATE PLUMBING CODE 24B CMR 2.00.
12. OUTLET DISTRIBUTION LINE FROM THE D-BOX TO THE FIRST LINE SHALL BE LAID AT A MINIMUM SLOPE OF 2.00%.
13. FINAL COVER OVER THE SYSTEM SHALL BE GRADED TO REDUCE INFILTRATION OF SURFACE WATER AND MINIMIZE PROSSON. FINISH GRADE SHALL HAVE A MINIMUM SLOPE OF 2%.
14. EFFLUENT DISTRIBUTION LINES SHALL BE LAID LEVEL.
15. FILL MATERIAL FOR SYSTEMS CONSTRUCTED IN FILL SHALL CONSIST OF SELECT ON-SITE OR IMPORTED SOILS MATERIAL THAT MEET THE MINIMUM REQUIREMENTS STATED IN 310 CMR 15.295(3).
16. WHERE FILL IS REQUIRED TO REPLACE UNSUITABLE OR IMPERMEABLE SOILS, THE EXCAVATION OF THE UNSUITABLE MATERIAL SHALL EXTEND A MINIMUM OF 5 FEET LATERSL IN ALL DIRECTIONS BEYOND THE OUTER PERIMETER OF THE SOIL ABSORPTION SYSTEM TO THE DEPTH OF 10 INCHES INTO THE NATURALLY OCCURRING PERVIOUS MATERIAL.
17. THE BOTTOM SURFACE OF THE EXCAVATION SHALL BE SCARIFIED AND RELATIVELY DRY. FILL SHALL NOT BE PLACED DURING RAIN OR SNOW STORMS. IF THE WATER TABLE ELEVATION IS ABOVE THE ELEVATION OF THE BOTTOM OF THE EXCAVATION, THE EXCAVATION SHALL BE DRAINED.
18. SUBSURFACE COMPONENTS OF A SYSTEM SHALL NOT BE BACKFILLED OR OTHERWISE CONCEALED FROM VIEW UNTIL A FINAL INSPECTION HAS BEEN CONDUCTED BY THE APPROVING AUTHORITY AND PERMISSION HAS BEEN GRANTED BY THE APPROVING AUTHORITY TO BACKFILL. THE SYSTEM, THE DESIGNER SHALL INSPECT THE CONSTRUCTION AFTER THE INITIAL EXCAVATION, PRIOR TO BACKFILLING, AND DURING BACKFILLING. IN ADDITION, THE FINAL INSPECTION OF THE SYSTEM SHALL BE CONDUCTED BY THE APPROVING AUTHORITY. THE SYSTEM INSTALLER AND THE DESIGNER PRIOR TO THE ISSUANCE OF A CERTIFICATE OF COMPLIANCE PURSUANT TO 310 CMR 15.02(1)(c). ANY COMPONENT OF THE SYSTEM WHICH HAS BEEN COVERED WITHOUT SUCH PERMISSION SHALL BE UNCOVERED UPON THE REQUEST OF THE APPROVING AUTHORITY OR THE DEPS.
19. ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE OR A COMPARABLE MEANS IN ORDER TO LOCATE THEM ONCE BURIED.
20. ALL SOIL ABSORPTION SYSTEMS SHALL HAVE A MINIMUM FOUR (4) INCH PIPE A MINIMUM OF 10 INCHES DEEP TO THE BOTTOM OF THE EXCAVATION. THE PIPE SHALL BE LAID VERTICALLY TO THE NATURALLY OCCURRING SOIL OR SAND. THE PIPE SHALL FOLLOW THE SYSTEM SAND. THE PIPE SHALL BE CAPPED WITH A SCREW TYPE CAP AND ACCESSIBLE TO WITHIN THREE (3) INCHES OF FRESH GRADE. (SEE DETAIL.)

REPAIR NOTES:

1. CONTRACTOR TO VERIFY ELEVATION (*) PRIOR TO THE START OF CONSTRUCTION AND REPORT TO ENGINEER ANY VARIATIONS IN ELEVATIONS TO THOSE SHOWN ON THIS PLAN.
2. EXISTING SYSTEM MAY BE EXCAVATED DURING THE INSTALLATION OF NEW SOIL ABSORPTION SYSTEM. (S.A.S.) REMOVAL, DISPOSAL AND UTILIZATION OF MATERIAL SHALL BE IN ACCORDANCE WITH THE TOWN OF STOW'S BOARD OF HEALTH RULES AND REGULATIONS.
3. EXISTING SEPTIC TANK TO BE PUMPED, CRUSHED AND BACKFILLED WITH CLEAN GRANULAR MATERIAL AND/OR REMOVED IN ACCORDANCE WITH THE TOWN OF STOW'S BOARD OF HEALTH RULES AND REGULATIONS AND A NEW 1,500 GALLON SEPTIC SHALL BE INSTALLED.

NAME OF APPROVING AUTHORITY:				NAME OF SOIL EVALUATOR:			
STOW BOARD OF HEALTH				DILLIS & ROY CIVIL DESIGN GROUP			
KALENE GENDRON, NABOH AGENT				WILLIAM J. "JACK" MALONEY, JR. (SE-13704)			
IN-SEASON GROUND WATER TESTING - (IF REQ'D)				PERCOLATION TEST DATA			
TEST PVT NO.	DATE	SURFACE ELEVATION	DEPTH TO GROUNDWATER	TEST PVT NO.	DATE	BOTTOM OF TEST HOLE DEPTH FROM SURFACE	RATE PER INCH
				PA	3/25/2021	43"	184.01 2 M/I
SOIL CLASSIFICATION: MERRIMAC FINE SANDY LOAM							
GEOLOGICAL MATERIAL: PROGLACIAL OUTWASH							
LAND FORM: OUTWASH TERRACE							
SOIL LIMITATIONS: NONE							
GENERAL NOTES: 254-B							
DEEP TEST PIT: 321-1							
DATE OF TEST: 3/25/2021							
REFUSAL AT: NONE OBSERVED							
(SURFACE ELEV. = 184.03)							
ESTIMATED SEASONAL HIGH GROUND WATER							

I CERTIFY THAT I AM CURRENTLY APPROVED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION PURSUANT TO 310 CMR 15.017 TO CONDUCT SOIL EVALUATIONS AND THAT THE ABOVE ANALYSIS HAS BEEN PERFORMED BY ME OR BY AN AGENT OF MY FIRM WHO HAS THE REQUIRED TRAINING, EXPERIENCE, AND EXPERIENCE DESCRIBED IN 310 CMR 15.017. I FURTHER CERTIFY THAT THE RESULTS OF MY SOIL EVALUATION, AS INDICATED ON THE ATTACHED SOIL EVALUATION FORM, ARE ACCURATE IN ACCORDANCE WITH 310 CMR 15.017 THROUGH 15.107.

Jack Maloney

LICENSED SOIL EVALUATOR:
WILLIAM J. "JACK" MALONEY, JR. (S.E.# 13704)

LEGEND

DESCRIPTION	DRAWING ENTITY
100	100
98	98
100	100
98	98
5' EXC.	5' EXC.
S	S
W	W
ST-1	ST-1
PC-1	PC-1
DB-1	DB-1
C.O.	C.O.

PREPARED BY:

DILLIS & ROY
CIVIL DESIGN GROUP

CIVIL ENGINEERS LAND SURVEYORS WETLAND CONSULTANTS
1 MAIN STREET, SUITE 1 LUNENBURG, MA 01462
PHONE: (978) 779-6091
www.dillisonroy.com

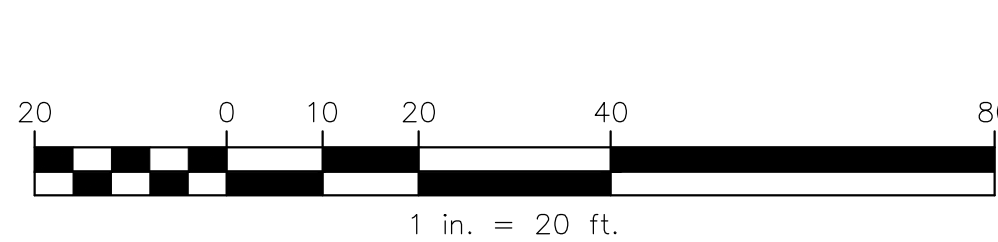
OWNER:

COHEN FAMILY REVOCABLE TRUST
479-483 GLEASONDALE ROAD
STOW, MASSACHUSETTS

APPLICANT:

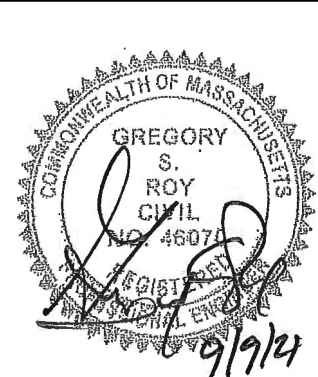
COHEN FAMILY REVOCABLE TRUST
479-483 GLEASONDALE ROAD
STOW, MASSACHUSETTS

SCALE:



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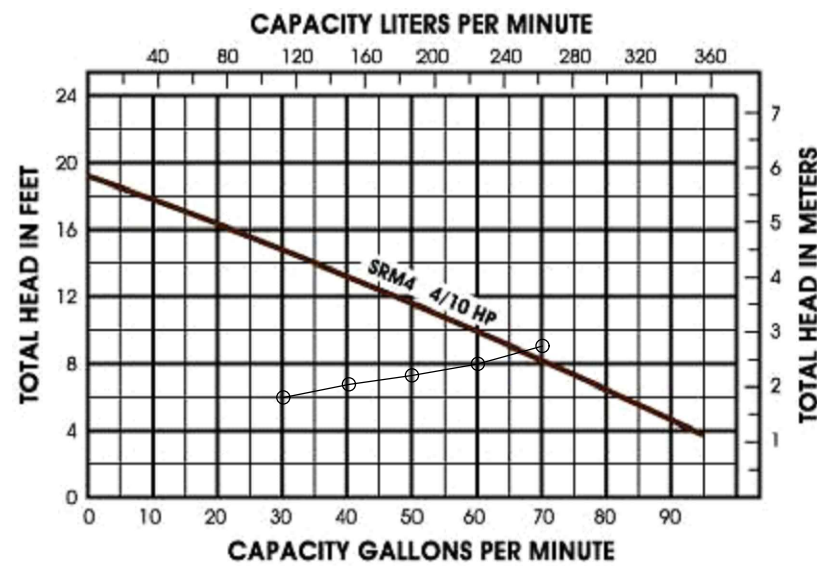
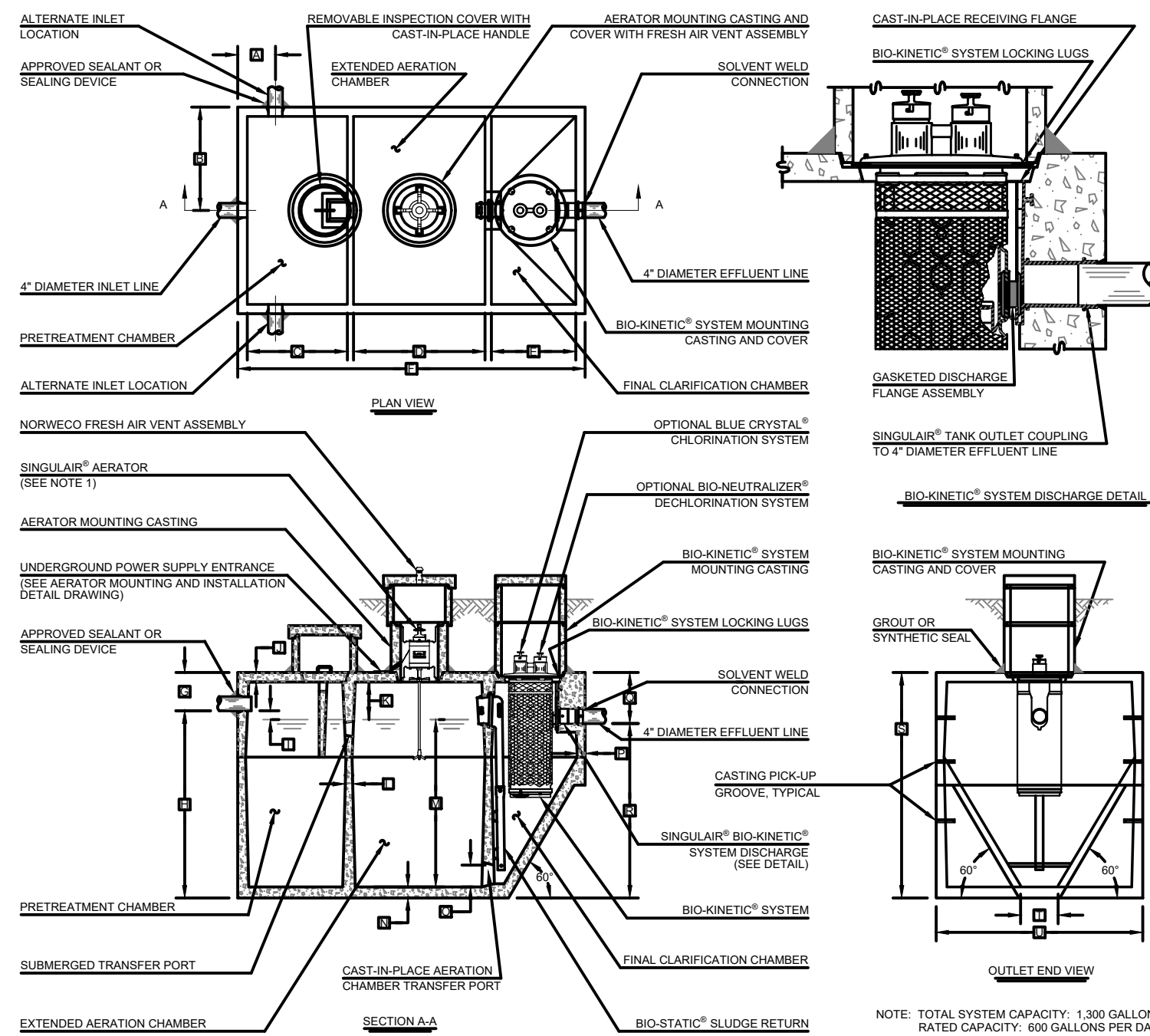
THE SEWAGE DISPOSAL SYSTEM SHOWN HEREON HAS BEEN DESIGNED IN ACCORDANCE WITH 310 CMR 15.00 (TITLE 5), MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION SYSTEM APPROVALS AND/OR CERTIFICATIONS AND THE MANUFACTURERS SYSTEM DESIGN GUIDANCE.



DATE: 5/17/2021
DESIGN BY: WJM
DRAWN BY: WJM
CHECKED BY: GSR

SEWAGE DISPOSAL SYSTEM DESIGN			
479-483 GLEASONDALE ROAD(M:U8, P:6)			
STOW, MASSACHUSETTS			
NO.	DATE	DESCRIPTION	BY
1.	8/17/2021	REVISED PLAN AS PER NABOH COMMENTS, TREATMENT TANK, ETC.	WJM
2.	8/27/2021	REVISED PLAN AS PER CONCOM COMMENTS, 35' BUFFER ZONE	WJM
3.	9/9/2021	REVISED PLAN AS PER NABOH COMMENTS, I/A DATES, PROP. LINES, ETC.	WJM

JOB NO. 6663
DRAWING NO. 6663-SDS
SHEET NO. 1
OF 2



GENERAL PUMP NOTES

1. **GENERAL**—
FURNISH AND INSTALL A COMPLETE PUMPING SYSTEM CONSISTING OF A SUBMERSIBLE SEWAGE PUMP AND MOTOR, DISCHARGE PIPING AND VALVES, FLOAT SWITCH LEVEL CONTROLS, HIGH WATER ALARM, SIMPLEX CONTROL PANEL AND A PRECAST CONCRETE PUMP CHAMBER. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS AND SHALL BE WARRANTED FOR AT LEAST ONE YEAR. THE CONTRACTOR SHALL PROVIDE A SUFFICIENT QUANTITY OF CLEAN WATER TO CONDUCT TWO PUMP OPERATION TESTS.

2. **PUMP CHAMBER**—
THE PUMP CHAMBER SHALL BE A REINFORCED PRECAST CONCRETE STRUCTURE. CONSTRUCTION JOINTS AND OPENINGS SHALL BE SEALED WITH A HYDRAULIC CEMENT OR OTHERWISE MADE WATERTIGHT.

3. **PUMP AND MOTOR**—
PUMP AND MOTOR SHALL BE MYERS SRM-4 SUBMERSIBLE SEWAGE PUMP CAPABLE OF PASSING 2-INCH SOLIDS. PUMP AND MOTOR SHALL BE FULLY SUBMERSIBLE AND SHALL OPERATE AT 1,000 RPM WITH A 220V, 60 CYCLE, SINGLE PHASE AC POWER SOURCE. (NOTE: ELECTRICAL CONTRACTOR SHALL VERIFY AVAILABLE VOLTAGE AT THE PUMP CONTROL PANEL PRIOR TO CONSTRUCTION.) PUMP SHALL BE RATED AS FOLLOWS:

H.P. 4/10 H.P.
RATE: 67 GPM
TDH: 8.5 FEET
MODEL: MYERS SRM4 - OR EQUAL (SEE SYSTEM CURVE)

4. **PIPING**—
2-INCH (SCHEDULE 80) PVC PIPE AND FITTINGS SHALL BE USED FOR INTERIOR PUMP STATION DISCHARGE PIPING AND FITTINGS. THE SEWAGE FORCE MAIN SHALL BE 2-INCH DIAMETER SDR 21 PVC PIPE OR EQUAL. THE DISCHARGE LINES WITHIN THE PUMP CHAMBER SHALL INCLUDE THE FOLLOWING:

- 1) IN THE VERTICAL POSITION: A 2-INCH CHECK VALVE.
- 2) IN THE HORIZONTAL POSITION: A 2-INCH BALL VALVE.

ALL PIPING BETWEEN THE PUMP CHAMBER AND THE DISTRIBUTION BOX SHALL BE INSULATED. (SEE NOTE 8)

5. **LEVEL CONTROLS**—
SEALED FLOAT TYPE MECHANICAL SWITCHES SHALL BE SUPPLIED TO CONTROL THE PUMP LEVEL AND ALARM SIGNAL. THREE FLOAT SWITCHES SHALL BE USED TO CONTROL THE PUMP LEVEL: ONE EACH FOR PUMP "ON" AND FOR PUMP "OFF" AND A THIRD SWITCH SHALL BE PROVIDED WITH A POWER SOURCE SEPARATE FROM THE PUMP POWER AND SHALL BE FOR THE ALARM UNIT. THE ALARM SHALL BE LOCATED IN THE BUILDING SERVED BY THE SYSTEM. FLOAT SWITCHES SHALL BE OF THE MECHANICAL TUBE TYPE SEALED IN POLYURETHANE FLOATS. THE FLOAT LEVEL CONTROLS SHALL BE SET TO OPERATE AT THE ELEVATIONS INDICATED ON THE PLANS. FLOATS AND ALARMS SHALL BE WIRED TO THE CONTROL BOX IN THE DWELLING WITHOUT THE USE OF A JUNCTION BOX.

6. **CONTROL PANEL**—
THE SIMPLEX CONTROL PANEL SHALL BE EQUIPPED WITH A RUN LIGHT FOR THE PROPERLY SIZED PUMP CIRCUIT BREAKERS, A TRANSFORMER TO GIVE PROPER VOLTAGE TO THE CONTROL CIRCUITS AND A THREE-WAY HAND CONTROL SWITCH. THE SWITCH POSITIONS SHALL BE AS FOLLOWS:

- 1) PUMP OFF
- 2) AUTOMATIC PUMP ON
- 3) MANUAL PUMP ON

THE CONTROL PANEL SHALL BE HOUSED IN A NEMA-1 CONTROL BOX FOR 220V, SINGLE PHASE OPERATION. PANEL SHALL BE INSTALLED IN A SUITABLE LOCATION INSIDE THE BUILDING.

7. **ALARM**—
A HIGH WATER ALARM SHALL BE SUPPLIED WITH BOTH AUDIBLE AND VISUAL ALARM WITH A SEPARATE POWER SUPPLY FROM THE PUMP. THE ALARMS SHALL BE MOUNTED IN A NEMA-1 ENCLOSURE SEPARATE FROM THE CONTROL PANEL. AN ALARM SILENCER BUTTON SHALL BE PROVIDED TO SILENCE THE AUDIBLE ALARM WHILE THE VISUAL ALARM REMAINS ILLUMINATED UNTIL MANUALLY RESET.

8. **PIPE INSULATION**—
FORCE MAIN SHALL BE COVERED WITH 2-INCH, THICK RIDGED POLYSTYRENE INSULATION.

9. **EFFLUENT TEE FILTER**—
EFFLUENT TEE FILTER SHALL BE ZABEL A-1800 OR EQUAL DEP APPROVED FILTER.

1. **GENERAL**—
FURNISH AND INSTALL COMPLETE NORWECO SINGULAR MODEL TMT-500-600 OPD SYSTEM WITH ALL NECESSARY PARTS AND EQUIPMENT AS DESCRIBED IN THE OWNERS MANUAL. TREATMENT OF WASTEWATER SHALL BE ACCOMPLISHED BY THE EXTENDED AERATION PROCESS WITH NON-MECHANICAL FLOW EQUALIZATION, PRETREATMENT OF THE INFLUENT AND FILTRATION OF THE EFFLUENT. ALL TREATMENT PROCESSES SHALL BE CONTAINED WITHIN REINFORCED PRECAST CONCRETE TANKAGE MEETING REQUIREMENTS OF ADO STANDARD SYS. THE SYSTEM SHALL BE CAPABLE OF REDUCING TOTAL NITROGEN WITHOUT THE ADDITION OF CHEMICALS. SPECIALIZED ADD-ON PROCESSES OR ADDITIONAL COMPONENTS. NITRIFICATION AND DENITRIFICATION SHALL BE ACCOMPLISHED WITH THE CHAMBERS OF THE TREATMENT SYSTEM PRIOR TO EFFLUENT DISPOSAL. THE TREATMENT SYSTEM SHALL INCLUDE PRECAST CONCRETE TANK PROVIDING SEPARATE PRETREATMENT, AERATION AND CLARIFICATION CHAMBERS. PRINCIPLE COMPONENTS SHALL BE 1725 RPM MECHANICAL AERATOR, UL LISTED SERVICE PRO CONTROL CENTER WITH MCD TECHNOLOGY, BIO-STATIC SLUDGE RETURN AND BIO-KINETIC TERTIARY TREATMENT DEVICE FOR FLOW EQUALIZATION AND FINAL FILTRATION OF SYSTEM EFFLUENT.

2. **OPERATING CONDITIONS**—
TOTAL HOLDING CAPACITY SHALL PROVIDE A MINIMUM OF 48 HOUR RETENTION OF THE DAILY FLOW. THE PRETREATMENT CHAMBER SHALL PROVIDE AT LEAST 18 HOUR RETENTION. EXTENDED AERATION CHAMBER SHALL PROVIDE AT LEAST 24 HOUR RETENTION AND THE CLARIFICATION SHALL PROVIDE AT LEAST 6 HOUR RETENTION.

3. **PRETREATMENT CHAMBER**—
PRETREATMENT SHALL BE AN INTEGRAL PART OF THE WASTEWATER TREATMENT SYSTEM. ALL DOMESTIC WASTEWATER SHALL BE PRECONDITIONED AND FLOW EQUALIZED WHILE PASSING THROUGH THE PRETREATMENT CHAMBER PRIOR TO BEING INTRODUCED TO THE EXTENDED AERATION CHAMBER. THE OUTLET OF THE PRETREATMENT CHAMBER SHALL BE EQUIPPED WITH A DISCHARGE TEE THAT EXTENDS VERTICALLY INTO THE LIQUID SO THAT ONLY PRECONDITIONED EQUALIZED FLOW FROM THE CENTER AREA OF THE CHAMBER IS DISPLACED TO THE EXTENDED AERATION CHAMBER. THE DISCHARGE TEE AND TRANSFER PORT SHALL BE OF ADEQUATE SIZE TO HANDLE A PEAK FLOW FACTOR OF FOUR WITHOUT RESTRICTING THE OUTLET AND DISTURBING HYDRAULIC DISPLACEMENT TO THE EXTENDED AERATION CHAMBER. A REMOVABLE INSPECTION COVER SHALL BE CAST INTO THE TOP OF THE TANKS TO ALL TANK AND TRANSFER TEE INSPECTION. AS A SAFETY MEASURE, THE UNCOVERED OPENING SHALL BE SMALL ENOUGH TO INSURE THAT THE TANK CANNOT BE ENTERED FOR INSPECTION OR SERVICE.

4. **AERATION CHAMBER**—
CHAMBER SIZE SHALL BE OF SUFFICIENT SIZE TO PROVIDE A MINIMUM OF 80 CU FT PER POUND OF BOD. LENGTH TO WIDTH RATION SHALL PROVIDE UNIFORM MIXING AND OPTIMUM TREATMENT. CHAMBERS SHALL BE CONSTRUCTED OF REINFORCED 5,000 PSI, 28 DAY COMPRESSIVE STRENGTH PRECAST CONCRETE. CASTING SHALL BE MONOLITHIC WITH EXTERNAL AND INTERNAL WALLS.

5. **FINAL CLARIFICATION CHAMBER**—
FINAL CLARIFICATION CHAMBER SHALL CONSIST OF 5 FUNCTIONALLY INDEPENDENT ZONES OPERATING TOGETHER. LIQUID SHALL BE HYDRAULICALLY DISPLACED FROM THE INLET ZONE TO SLUDGE RETURN ZONE. NON-MECHANICAL EQUALIZATION OF THE FLOW THROUGH ALL 5 INDEPENDENT ZONES SHALL PROVIDE OPTIMAL SETTLING AND CLARIFICATION.

6. **BIO-STATIC SLUDGE RETURN**—
SHALL BE INSTALLED INTO THE CAST IN PLACE OPENINGS IN THE AERATION/CLARIFICATION CHAMBER WALL TO PROVIDE POSITIVE RETURN OF SETTLED SOLIDS. AERATION CHAMBER HYDRAULIC CURRENTS SHALL ENTER THE SLUDGE RETURN AND BE DIRECTED INTO THE SLUDGE RETURN ZONE OF THE CLARIFICATION CHAMBER. BIO-STATIC SLUDGE RETURN SHALL ACCOMPLISH RESUSPENSION AND RETURN OF SETTLED SOLIDS WITHOUT DISTURBING THE CLARIFIED LIQUID IN THE FINAL SETTLING ZONE AND OUTLET.

7. **MECHANICAL AERATOR**—
SINGULAR AERATION SHALL BE INSTALLED IN A CONCRETE AERATOR MOUNTING CASTING ABOVE THE AERATION CHAMBER. FRESH AIR SHALL BE SUPPLIED THROUGH A MOLDED PLASTIC VENT ASSEMBLY CAST INTO THE CONCRETE ACCESS COVER ABOVE THE AERATOR. SINGULAR AERATOR SHALL INCLUDE PLATED MOUNTING BRACKETS, NEMA 6 RATED ELECTRICAL CONNECTORS, UL RECOGNIZED FRACTIONAL HORSEPOWER MOTOR, MOLDED PLASTIC LIFTING HANDLE, MOLDED PLASTIC AIR INTAKE SCREENS, MOLDED PLASTIC FOAM RESTRICTOR, STAINLESS STEEL ASPIRATOR SHAFT AND MOLDED GLASS-FILLED NYLON ASPIRATOR TIP. THE MOTOR SHALL CONTAIN PRECISION MANUFACTURED O-RING TYPE SEALS INSTALLED BETWEEN THE MOTOR SHELL AND THE MACHINED ALUMINUM ENDBELLS TO ENSURE WATERTIGHT INTEGRITY. MOLDED NYLON SHAFT SEALS SHALL BE UTILIZED TO PROTECT THE BEARINGS FROM CONTAMINATION. ONLY THE STAINLESS STEEL ASPIRATOR SHAFT AND GLASS FILLED NYLON ASPIRATOR TIP SHALL BE INSTALLED IN CONTACT WITH THE LIQUID. SUBMERGED ELECTRICAL MOTORS, BEARINGS OR FIXED AIR PIPING SHALL NOT BE SUBMERGED. AERATOR MOTORS SHALL NOT BE DESIGNED TO EXCEED MOTOR NAMEPLATE RATING WHEN INSTALLED AND OPERATED AS RECOMMENDED FOR THE SYSTEM. FRACTIONAL HORSEPOWER MOTOR AERATOR MOTOR SHALL BE EQUIPPED WITH A FOAM RESTRICTOR TO PROTECT THE MOTOR AGAINST HIGH WATER AND FOAM. THE MOTOR POLE SHALL BE 4-POLE 1725 RPM, 115 VOLT, 60 HERTZ SINGLE PHASE. BALL BEARING CONSTRUCTED WITH A 1.0 SERVICE FACTOR. IT SHALL DRAW LESS THAN 4.0 AMPS WHEN OPERATING AT THE RATED NAMEPLATE VOLTAGE. AERATOR MOTORS WITHOUT UL LISTING SHALL NOT BE CONSIDERED FOR THIS APPLICATION.

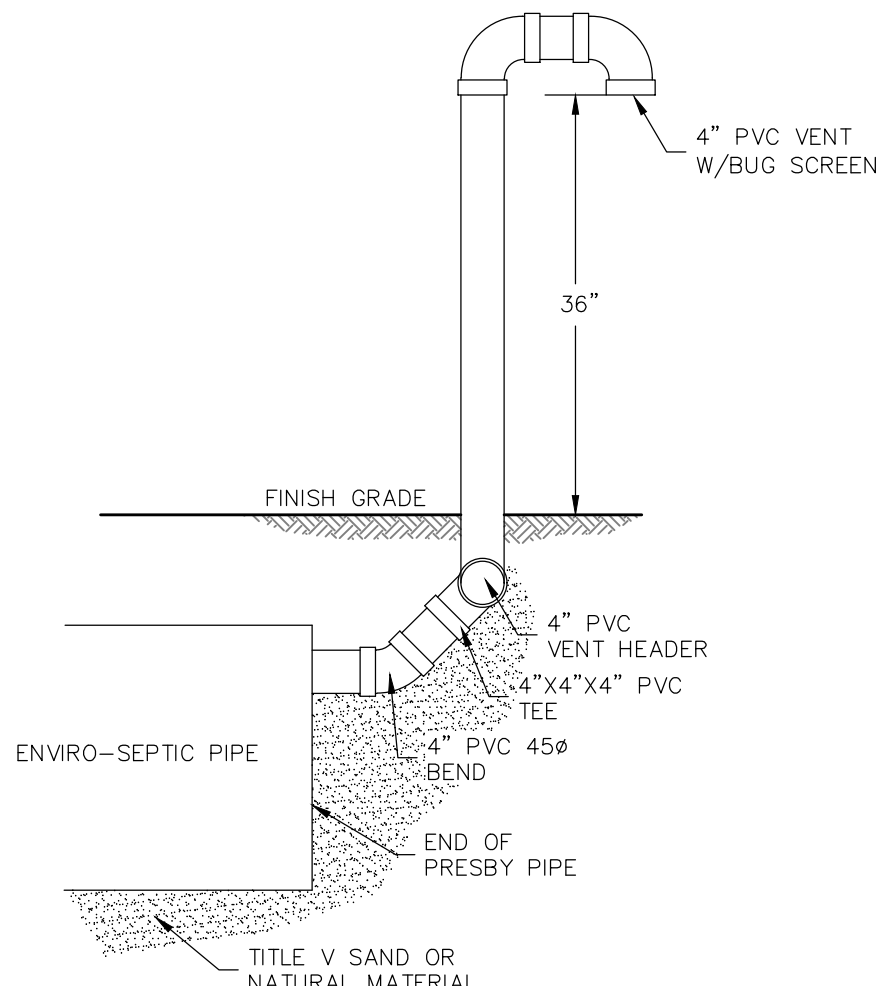
8. **SERVICE PRO CONTROL CENTER**—
SERVICE PRO CENTER WITH MCD TECHNOLOGY SHALL PROVIDE MONITORING, COMPLIANCE AND DIAGNOSTIC FUNCTIONS FOR THE SINGULAR TREATMENT USING A MICROPROCESSOR BASED PLATFORM. CONTROL CENTER SHALL CONTAIN NONVOLATILE MEMORY TO PREVENT LOSS OF PROGRAMMING IN THE EVENT OF A POWER FAILURE. PRE-WIRED CONTROLS SHALL BE MOUNTED IN A LOCKABLE NEMA RATED ENCLOSURE DESIGNED SPECIFICALLY FOR OUTDOOR USE. CONTROL CENTER SHALL BE UL LISTED AND INCLUDE FACTORY PROGRAMMED TIMER, ALARM LIGHT, RESET BUTTON, POWER SWITCH, POWER LIGHT, PHONE LIGHT, AERATOR ALARM LIGHT AND THREE AUXILIARY ALARM LIGHTS. CONTROL CENTER SHALL MONITOR ALL TREATMENT SYSTEMS INCLUDING AERATOR OVER CURRENT, AERATOR UNDER CURRENT AND OPEN MOTOR CIRCUIT. POWER TO THE AERATOR SHALL BE INTERRUPTED AND A DIAGNOSTIC SEQUENCE SHALL BEGIN AND VISUAL ALARM ACTIVATED IN THE EVENT THE CONTROL CENTER DETECTS AN ALARM. ALARM AND CONTROL CIRCUITS ARE TO BE CONNECTED TO INDEPENDENT POWER SOURCES FROM THE MAIN POWER SOURCE OF THE FACILITY.

9. **AERATOR TIME CYCLE**—
FACTORY PROGRAMMED TIMER BUILT INTO THE SERVICE PRO CONTROL CENTER SHALL PROVIDE A TOTAL OF 12 HOURS OF AERATOR OPERATION PER DAY. A NON-ADJUSTABLE TIMER SHALL CREATE A 60 MINUTE AERATION CYCLE FOLLOWED BY A 60 MINUTE ANOXIC CYCLE DURING WHICH THE AERATOR SHALL BE OFF. SYSTEMS THAT HAVE NOT BEEN PERFORMANCE CERTIFIED, AT A TIMER AERATION CYCLE, BY AN INDEPENDENT ANSI ACCREDITED TESTING LABORATORY SHALL NOT BE CONSIDERED FOR THIS APPLICATION.

10. **SERVICE PRO MONITORING CENTER**—
MONITORING CENTER SHALL CONTAIN A 128 BIT ENCRYPTED PASSWORD PROTECTED WEB SITE FOR INTERFACE WITH THE MONITORING CENTER DATABASE.

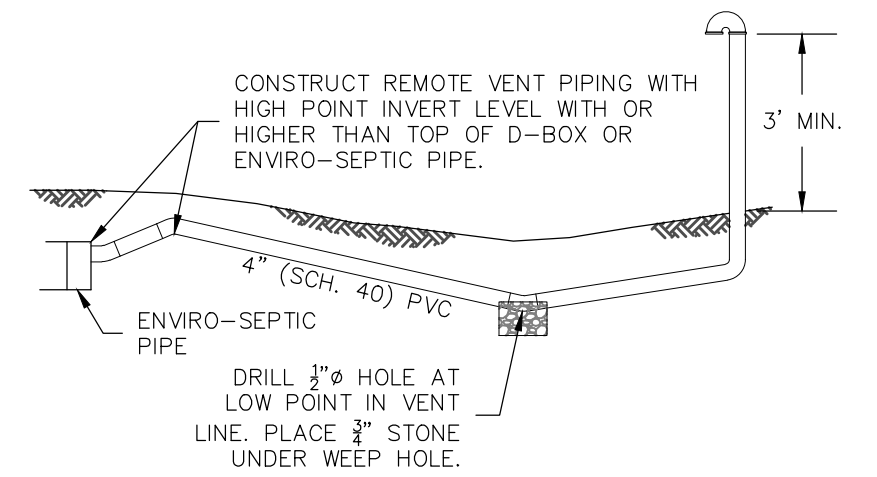
11. **BIO-KINETIC SYSTEM**—
BIO-KINETIC SYSTEM SHALL BE INSTALLED IN THE MOUNTING CASTING(S) ABOVE THE CLARIFICATION CHAMBER. EACH BIO-KINETIC SYSTEM SHALL PROVIDE NON-MECHANICAL FLOW EQUALIZATION THROUGH ALL PLANT PROCESSES INCLUDING PRETREATMENT, AERATION, CLARIFICATION, TERTIARY FILTRATION, CHLORINATION AND DECHLORINATION. THE ASSEMBLY SHALL BE SUPPLIED WITH LOCKING LUGS AND REMOVABLE MOISTURE/VAPOR SHIELD AND SHALL CONSIST OF A DESIGN FLOW AND PEAK FLOW MICROFILM MOLDING FILTER, BAFFLED PERIMETER SETTLING ZONE, FLOW DISTRIBUTION DECK, LIFTING HANDLES, LEVEL INDICATOR, ADJUSTMENT LUGS, OPTIONAL CHLORINATION FEED TUBE, UNBAFFLED PERIMETER SETTLING ZONE, SOLIDS CONTACT ZONE, VERTICAL INLET ZONE, COMPARTMENTED SETTLING ZONE CONSISTING OF 42 BAFFLED CHAMBER PLATES, EFFLUENT STILLING WELL, FINAL DISCHARGE ZONE, ADJUSTABLE OUTLET WEIR, OPTIONAL DECHLORINATION FEED TUBE, OUTLET ZONE AND CASKETED DISCHARGE FLANGE. ALL COMPONENTS SHALL BE MANUFACTURED FROM INERT SYNTHETIC MATERIALS OR RUBBER, ASSEMBLED IN CIRCULAR FASHION AND CONNECTED TO A PLASTIC OUTLET COUPLING. THE OUTLET COUPLING SHALL ACCEPT A 4" DIAMETER, SCHEDULE 40, PVC PIPE. EACH BIO-KINETIC SYSTEM SHALL BE INSTALLED WITH THE INVERTS OF THE DESIGN FLOW EQUALIZATION PORTS LOCATED AT THE NORMAL LIQUID LEVEL OF THE CLARIFIER. IF INTERMITTENT FLOW RATES EXCEED THE CAPACITY OF THE DESIGN FLOW PORTS, FLOW SHALL BE HELD UPSTREAM UNTIL THE INTERMITTENT FLOW DISSIPATES. IF THE INTERMITTENT FLOW CONTINUES TO INCREASE, THE LIQUID LEVEL MAY REACH A PAIR OF SUSTAINED FLOW EQUALIZATION PORTS. WITH FOUR PORTS IN USE, FLOW THROUGH THE SYSTEM INCREASES WHILE CONTINUING TO PROVIDE FLOW EQUALIZATION TO ALL UPSTREAM AND DOWNSTREAM PROCESSES. PEAK FLOW EQUALIZATION PORTS ARE SUPPLIED BUT SHOULD NOT BE REQUIRED IN A PROPERLY SIZED SYSTEM. OPTIONAL BLUE CRYSTAL AND BIO-NEUTRALIZER TABLET FEED TUBES SHALL BE POSITIONED SUCH THAT THE FLOW-ACTIVATED CHEMICAL CANNOT MAKE CONTACT WITH THE LIQUID UPSTREAM OF THE FEED TUBES.

12. **FLOW EQUALIZATION**—
THE WASTEWATER TREATMENT SYSTEM SHALL INCLUDE A NON-MECHANICAL DEMAND USE, FLOW EQUALIZATION DEVICE. THE DEVICE SHALL CONTROL NORMAL RESIDENTIAL FLOW RATES AND REDUCE TYPICAL RESIDENTIAL FLOW SURGES. THE FLOW EQUALIZATION RATE SHALL BE DEPENDENT UPON THE SPECIFIC LOADING PATTERN AND THE DURATION OF FLOW SURGES. AT THE 600 GALLON PER DAY DESIGN LOADING SCHEDULE OF NSF STANDARD 40 AND NSF STANDARD 245, MINIMUM PERFORMANCE OF THE DEVICE SHALL EQUALIZE DAILY FLOW AN AVERAGE OF 50%.



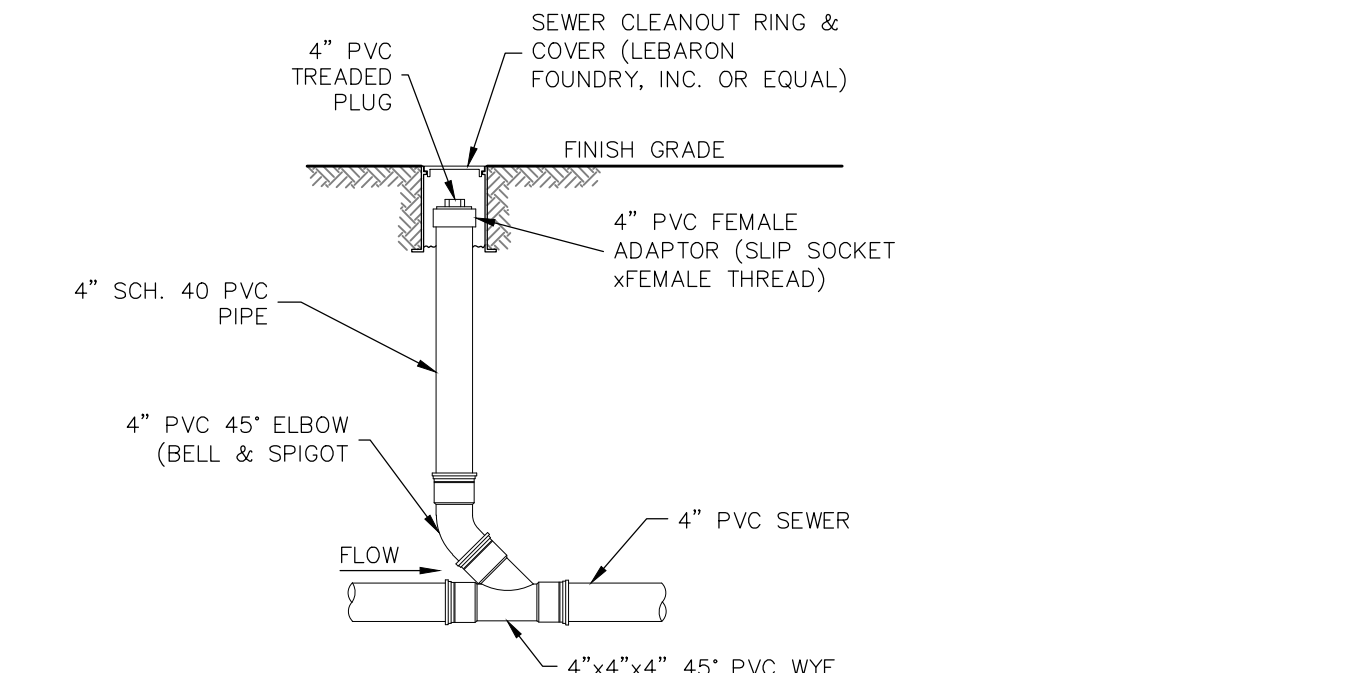
LOW VENT DETAIL

NOT TO SCALE



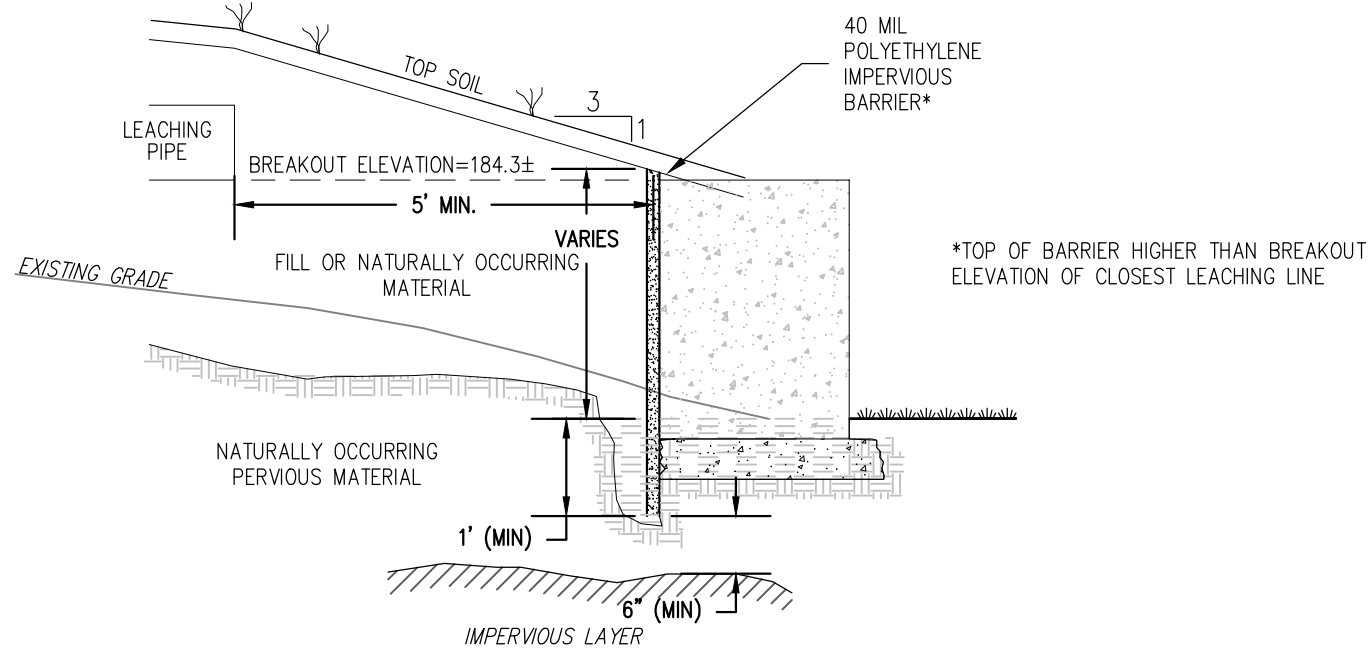
REMOTE VENTING DETAIL

NOT TO SCALE.



SEWER CLEANOUT DETAIL

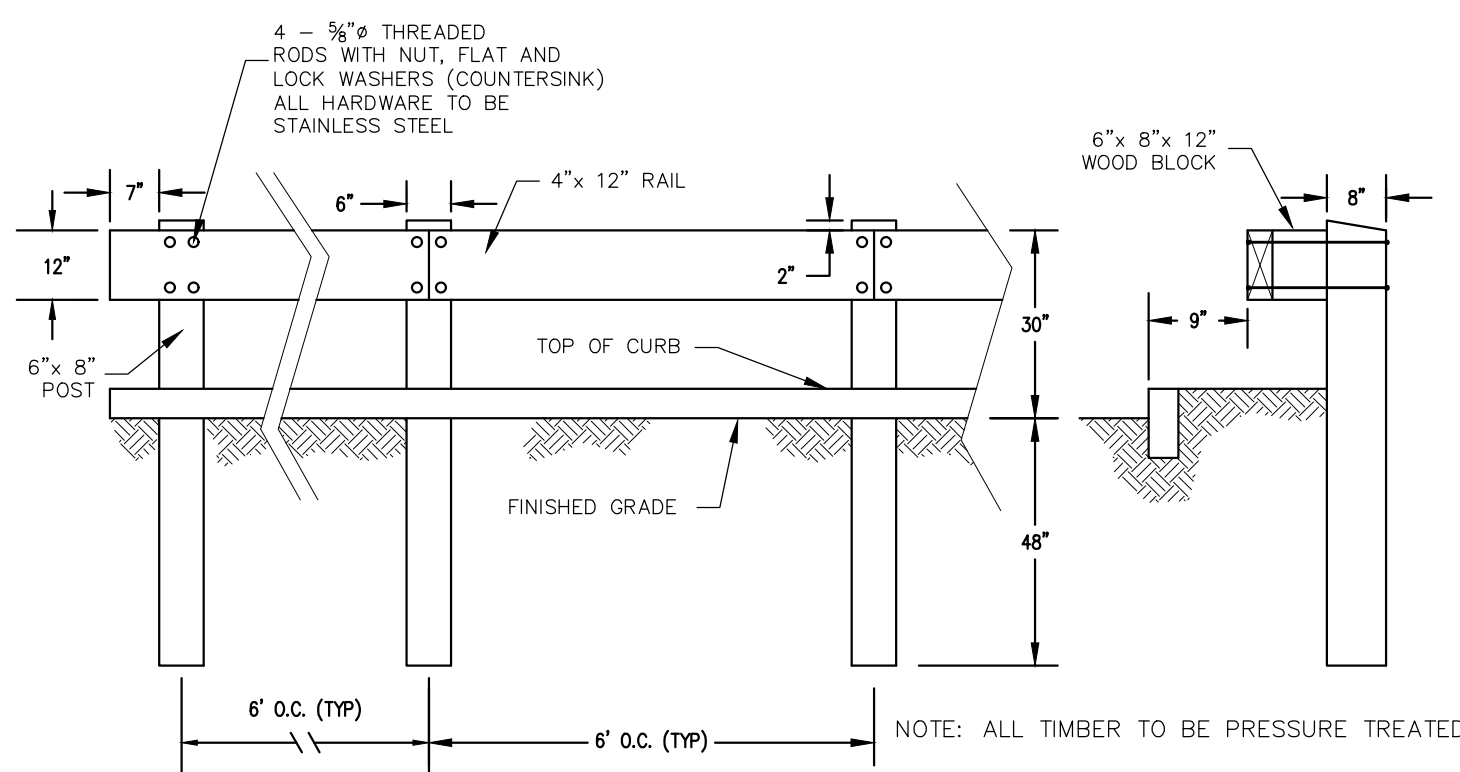
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IMPERVIOUS BARRIER DETAIL

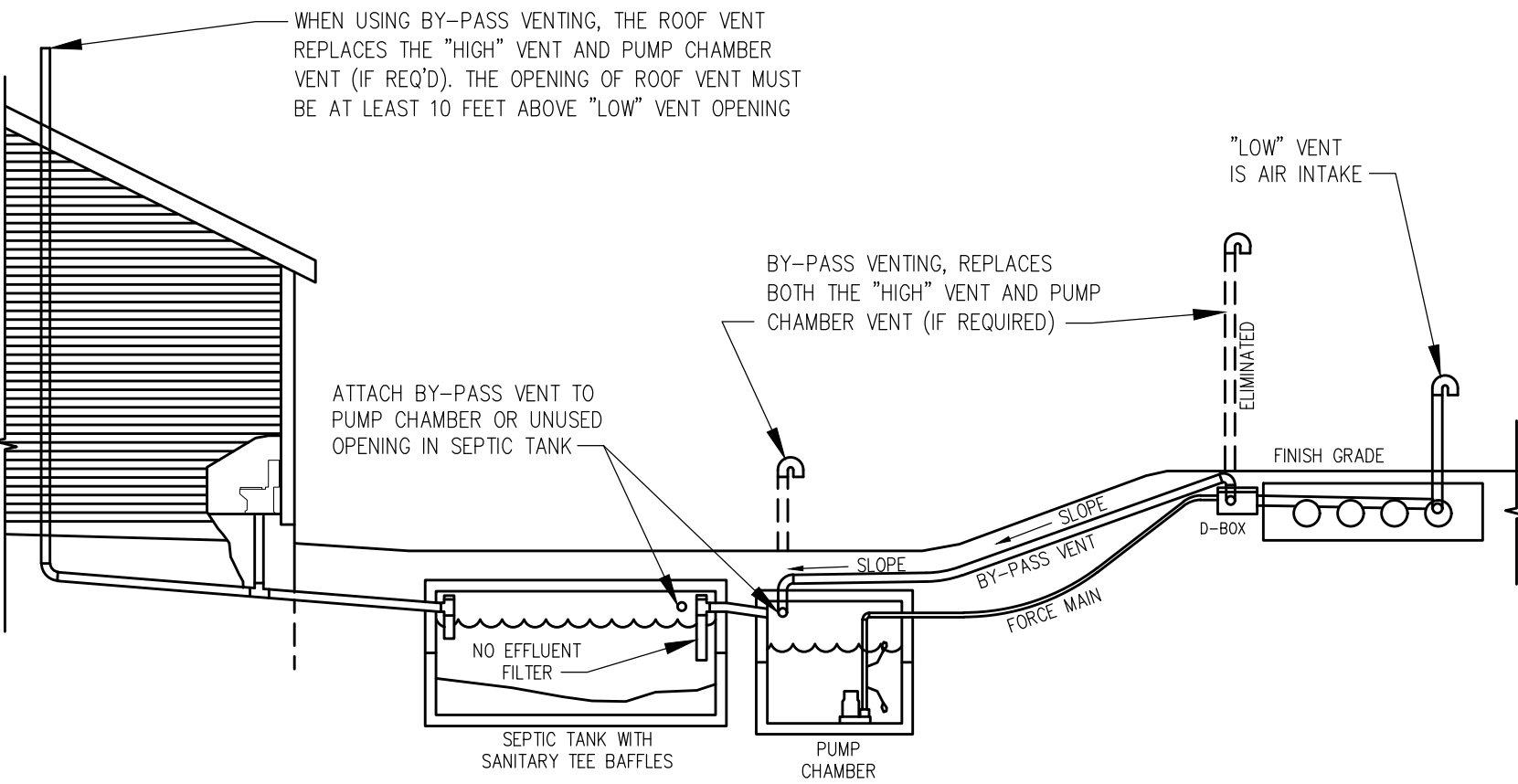
CROSS-SECTION

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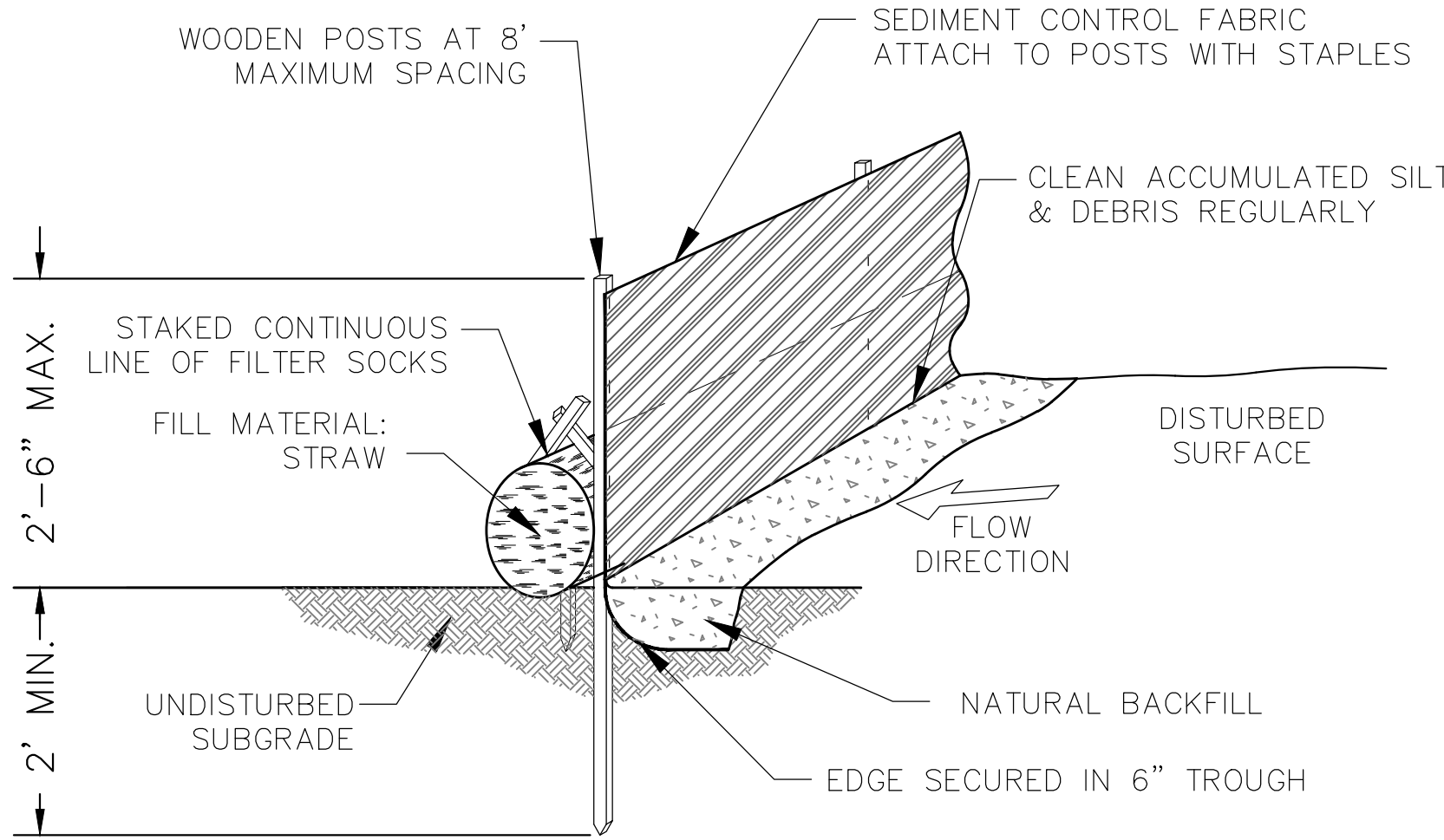
WOODEN GUARDRAIL DETAIL

NOT TO SCALE



BY-PASS VENT DETAIL

NOT TO SCALE



SILTATION BARRIER

NOT TO SCALE

PREPARED BY:



CIVIL ENGINEERS LAND SURVEYORS WETLAND CONSULTANTS
1 MAIN STREET, SUITE 1 LUNENBURG, MA 01462
PHONE: (978) 779-6091
www.dillisonroy.com

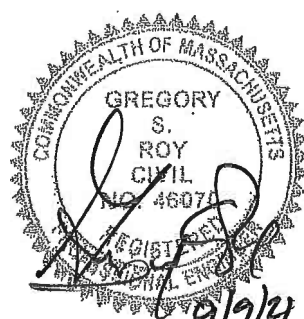
OWNER:

COHEN FAMILY REVOCABLE TRUST
479-483 GLEASONDALE ROAD
STOW, MASSACHUSETTS

APPLICANT:

COHEN FAMILY REVOCABLE TRUST
479-483 GLEASONDALE ROAD
STOW, MASSACHUSETTS

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DATE:

5/17/2021

DESIGN BY:

WJM

DRAWN BY:

WJM

CHECKED BY:

GSR

SEWAGE DISPOSAL SYSTEM DESIGN
479-483 GLEASONDALE ROAD(M:U8, P:6)
STOW, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY
1.	8/17/2021	REVISED PLAN AS PER NABOH COMMENTS, TREATMENT TANK, ETC.	WJM
2.	8/27/2021	REVISED PLAN AS PER CONCOM COMMENTS, 35' BUFFER ZONE	WJM
3.	9/9/2021	REVISED PLAN AS PER NABOH COMMENTS, I/A DATES, PROP. LINES, ETC.	WJM

JOB NO.

6663

DRAWING NO.

6663-SDS

SHEET NO.

2

OF 2