PROPERTY OWNER CONTACT INFO:
JEFF PETERSEN
(707) 794-8056
JPETERSEN176@SBCGLOBAL.NET

CONTOUR LINES ARE TAKEN FROM SONOMA COUNTY VEGETATION MAPPING AND LIDAR PROGRAM

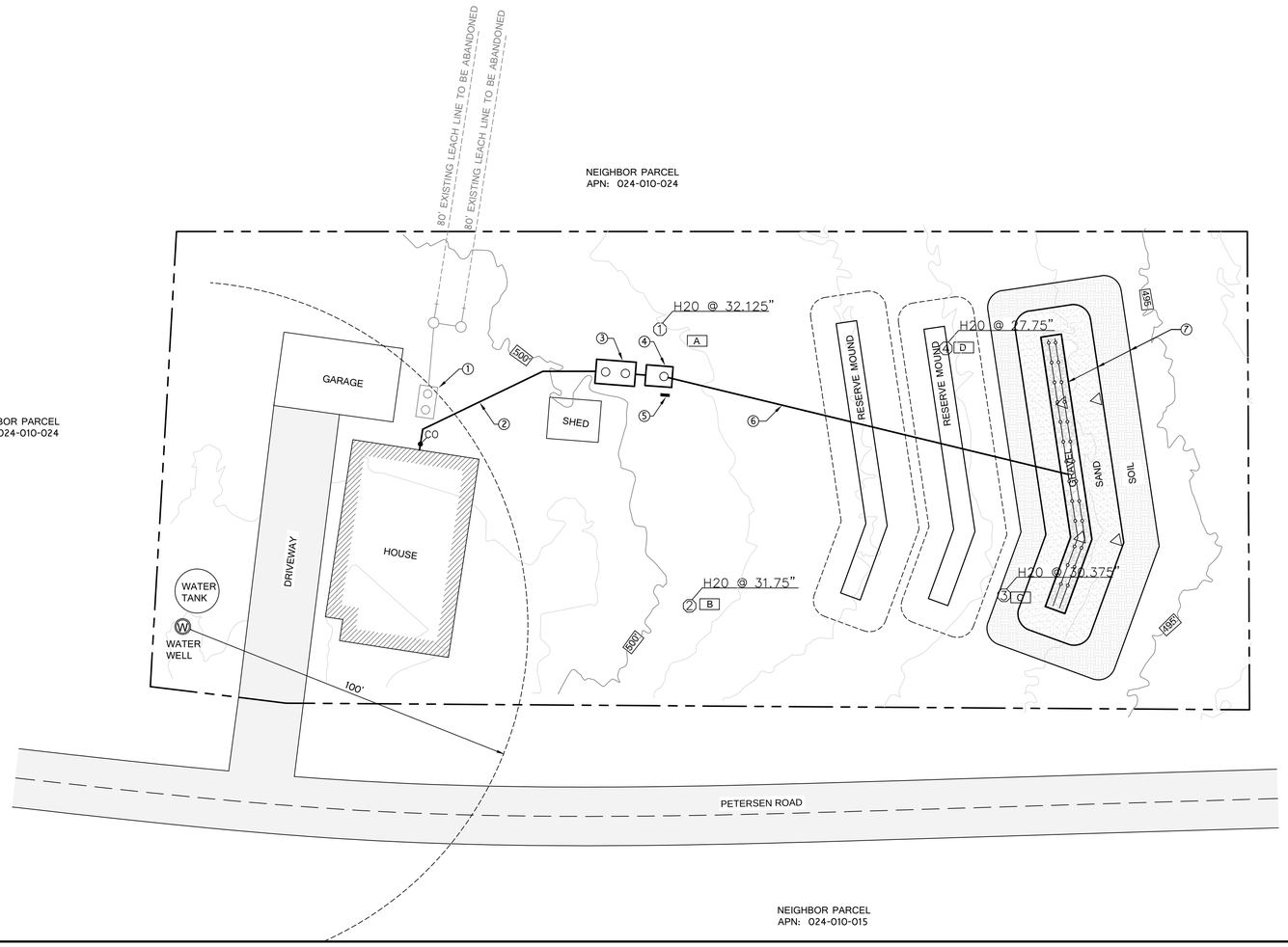
20 0 10 20 40 80

1 inch = 20 ft.

VICINITY MAP

LEGEND

- W — WATER WELL
- D — SOIL PROFILE HOLE
- WATER LEVEL / # — WET WEATHER GROUNDWATER HOLE
- △ — PERFORMANCE WELL
- CO — CLEANOUT - TWO WAYS
- APPROXIMATE BOUNDARY LINE



CONSTRUCTION NOTES:

1. DESTROY EXISTING SEPTIC TANK
2. INSTALL 4" ABS SCH 40 GRAVITY SEWER LINE WITH TWO-WAY CLEANOUT. SEWER LINE SHALL BE 1/8" PER FOOT DROP IN SLOPE.
3. INSTALL 1,500 GALLONS CONCRETE SEPTIC TANK, IAPMO APPROVED. (SEE ILLUSTRATION ON SHEET 2)
4. INSTALL 1,000 GALLONS CONCRETE SUMP TANK (SEE ILLUSTRATION ON SHEET 2).
5. INSTALL A CONTROL PANEL (SEE ILLUSTRATION ON SHEET 2).
6. INSTALL 2" Ø SCH 40 PVC SUPPLY PRESSURE SEWER LINE.
7. INSTALL A MOUND LEACH BED (SEE ILLUSTRATIONS AND GUIDELINE ON SHEETS 2, 3, AND 4).

The following conditions apply:

- [x] Water tightness test required for septic tank and sump at time of construction.
- [ ] Separate Operational Permit required.
- [x] Electrical work covered under separate permit which must be approved prior to final approval of septic permit.
- [x] Final septic inspection must include consultant, installer, service provider, and Well and Septic inspector.

APPROVED
PERMIT SONOMA
WELL AND SEPTIC SECTION
APPROVED BY Tuan Huynh
DATE June 6, 2024
PERMIT # SEP24-0130

REGISTERED ENVIRONMENTAL HEALTH SPECIALIST
TUAN NGUYEN
No. 7177
Exp. 12-31-25
STATE OF CALIFORNIA

APEX SEPTIC DESIGN
P.O. BOX 11247
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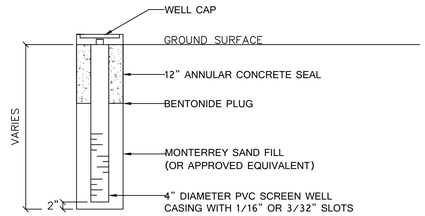
5975 PETERSEN ROAD
SEBATOPOL, CA 95472
APN: 024-010-014

MOUND SYSTEM PLAN

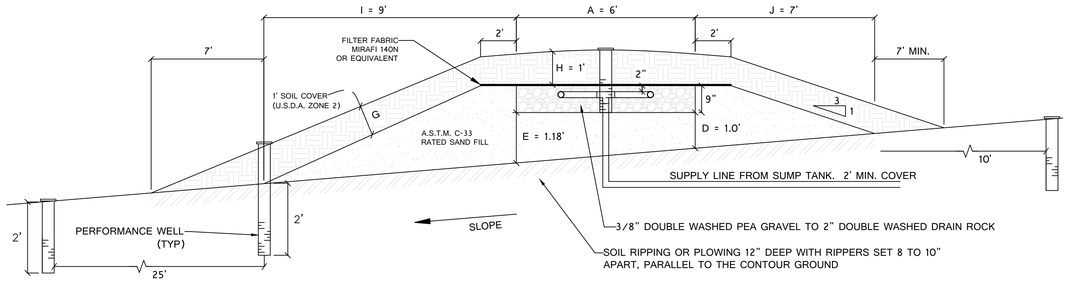
DRAWN: TN
CHECKED: TN
JOB NO:

No.	Revision

SHEET 1
of 4

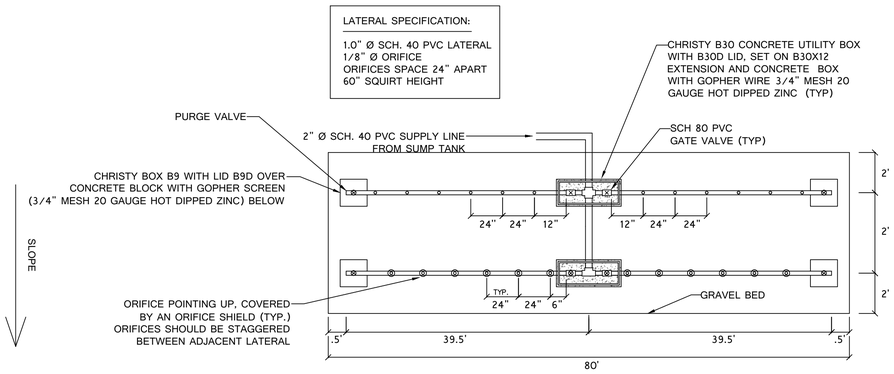


PERFORMANCE WELL DETAIL



MOUND CROSS-SECTION VIEW

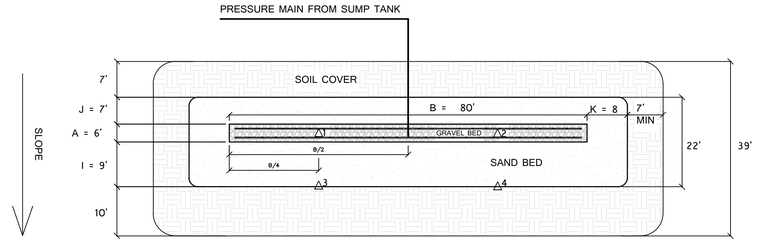
N.T.S.



DISTRIBUTION DETAIL

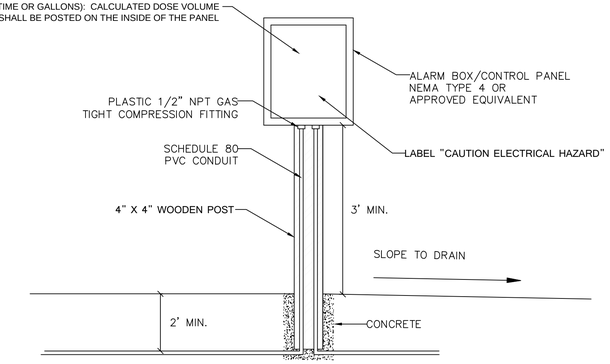
N.T.S.

WELL #	LOCATION AND DEPTH
1, 2	GRAVEL BED EXTEND TO THE BOTTOM OF THE GRAVEL BED. THE PERFORMANCE WELLS WITHIN THE GRAVEL BED ARE TO BE FILLED WITH PEA GRAVEL TO THE ANNULAR SEAL.
3, 4	DOWNSLOPE SAND TOE EXTEND 24 INCHES BELOW ORIGINAL GROUND SURFACE.



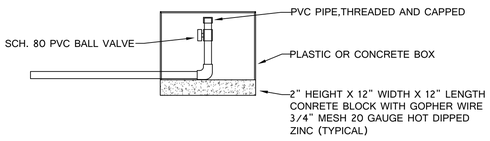
MOUND PLAN VIEW

N.T.S.



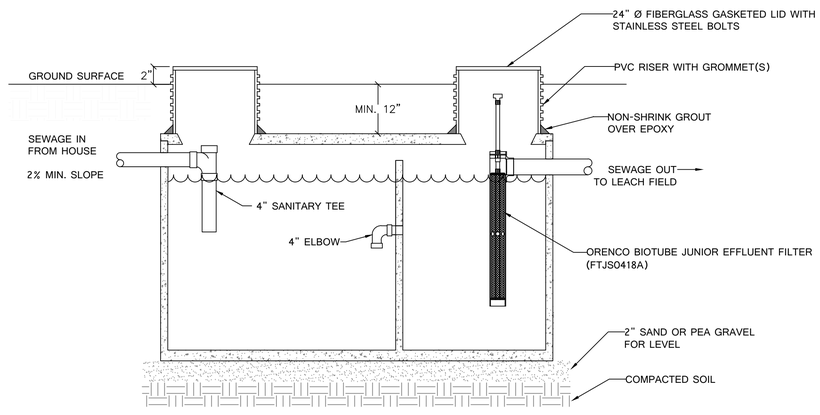
CONTROL PANEL

DETAIL — NOT TO SCALE



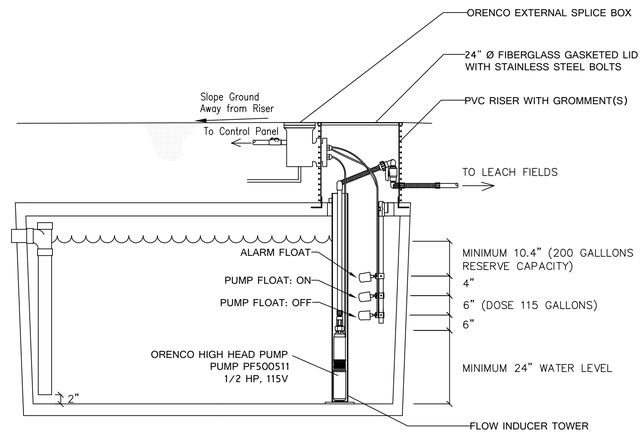
PURGE VALVE SIDE VIEW

N.T.S.



1500-GAL. SEPTIC TANK DETAIL

52" DEEP, 19.23
GALLON PER INCH



1000-GALLON SUMP TANK CROSS-SECTION

DETAIL — NOT TO SCALE

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APPROVED BY: Tuan Huynh
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MOUND SYSTEM PLAN

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GENERAL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL UNDERGROUND UTILITIES. UNDERGROUND SERVICE ALERT (U.S.A.) SHALL BE CALLED AT (800) 227-2600 AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION.

2. ALL OF THE LOCATIONS OF THE EXISTING UTILITIES SHOWN IN THE PLANS HAVE BEEN ESTABLISHED BY SITE VISIT, FILED SURVEY, OR OBTAINED FROM AVAILABLE RECORDS AND SHALL THEREFORE BE CONSIDERED APPROXIMATE AND NOT NECESSARILY COMPLETE. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO INDEPENDENTLY VERIFY THE ACCURACY OF ALL UTILITY LOCATIONS.

3. SEPTIC SYSTEM CAN BE CONSTRUCTED IF THE SOIL MOISTURE AT THE APPROPRIATE DEPTHS IS NOT SO HIGH AS TO HAVE THE SOIL SMEAR OR COMPACT DUE TO CONSTRUCTION ACTIVITIES.

4. SEPTIC SYSTEM CANNOT BE CONSTRUCTED DURING OR AFTER A HEAVY RAIN.

5. INSTALLATION OF A CONTROL PANEL AND CONNECTING ELECTRICAL WIRE WILL REQUIRE AN ELECTRICAL PERMIT FROM THE COUNTY.

6. THE CONTRACTOR SHALL CALL AT LEAST 48 HOURS IN ADVANCE TO SCHEDULE AN INSPECTION FROM THE COUNTY DISTRICT SEPTIC INSPECTOR. THE INSPECTION REQUEST IS TO BE CALLED IN THROUGH SELECTRON AT 565-3551. PLEASE NOTE THIS IS ONLY A REQUEST FOR AN INSPECTION, NOT A GUARANTEE. THE SEPTIC TANK, SEWER LINE, D-BOXES, LEACH LINES, AND ANY OTHER WORKS SHALL BE LEFT OPEN (NO SOIL COVER) FOR THE INSPECTION. A TRANSIT SHOULD BE AT THE SITE TO CHECK THE LEVEL OF THE LEACH LINES.

7. THE DESIGNER SHALL BE NOTIFIED IMMEDIATELY OF ANY ADVERSE CONDITIONS DISCOVERED DURING CONSTRUCTION.

8. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT INCLUDING THE SAFETY OF PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL HOLD HARMLESS, INDEMNIFY, AND DEFEND THE COUNTY OF SONOMA AND THE DESIGNER WITH HER ASSISTANT OF ALL LIABILITY CLAIMS, LOSSES, OR DAMAGE ARISING OR ALLEGED TO ARISE FROM THE PERFORMANCE OF THE WORK DESCRIBED HEREIN, BUT NOT INCLUDING THE SOLE NEGLIGENCE OF THE SONOMA COUNTY STAFF, AND THE DESIGNER.

9. THE CONTRACTOR IS RESPONSIBLE FOR INSURING ALL CONSTRUCTION MEETS CODES.

10. THE CONTRACTOR SHALL FURNISH ALL NECESSARY LABOR, MATERIALS, SUPPLIES, AND EQUIPMENTS FOR THE CONSTRUCTION ON THIS PLAN.

11. THE BOUNDARY LINES ON THIS PARCEL ARE APPROXIMATE AND FOR INFORMATIONAL PURPOSES ONLY. THIS DRAWING DOES NOT REPRESENT A BOUNDARY SURVEY.

12. IT IS THE SOLE RESPONSIBILITY OF THE DEVELOPER OR CONTRACTOR OR OWNER TO OBTAIN ANY NECESSARY PERMIT TO START THE CONSTRUCTION.

13. ALL SITE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS, STAMPED BY THE COUNTY. ANY DEVIATION FROM THE APPROVED PLANS WILL REQUIRE WRITTEN OR VERBAL APPROVAL FROM THE DESIGNER.

14. THE DRAWING WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR WILL REVIEW THE DRAWING AND BRING ANY DISCREPANCIES TO THE DESIGNER PRIOR TO COMMENCING CONSTRUCTION WORK.

15. THE HOUSE AND ANY BUILDING WITH BATHROOM SHALL HAVE AN 1.6 GALLONS LOW FLUSH TOILET IN ALL BATHROOMS. WE RECOMMEND LOW FLOW FIXTURES IN THE HOUSE TO REDUCE SEWAGE WASTE FLOW.

16. HOMEOWNERS AND CONTRACTORS ARE PROHIBITED FROM PLACING UNACCEPTABLE PLANTS, SHRUBS TREES, ORNAMENTS, VEGETATIVE COVER, AND IRRIGATION SYSTEMS OVER THE SEPTIC SYSTEM.

17. DOWNSPOUT OF THE HOUSE'S ROOF DRAINAGE SHALL BE DIRECTED AWAY FROM THE SEPTIC TANK AND LEACH FIELD.

18. NO FOUNDATION, GRADE CUT OR FILL SHALL BE LOCATED WITHIN 50 FEET DOWNSLOPE OR LATERALLY TO THE LEACH FIELD AND RESERVE AREA AND 25 FEET TO THE SEPTIC TANK.

19. PROPOSED SEPTIC TANK, LEACH FIELD, AND RESERVE AREAS SHALL BE LEFT UNDISTURBED BEFORE AND AFTER THE SEPTIC SYSTEM INSTALLATION.

NONSTANDARD GENERAL CONSTRUCTION NOTES

1. THE PROPERTY OWNER SHALL HIRE A LICENSED A OR C-42 TYPE CONTRACTOR THAT HAVE THE EDUCATION, TRAINING, EXPERIENCE, AND ALL OF THE SPECIALTY EQUIPMENT REQUIRED TO PROPERLY INSTALL THE SEPTIC SYSTEM.

2. THE DESIGNER SHALL INSPECT THE SITE AND EVALUATE WEATHER CONDITIONS PRIOR TO CONSTRUCTION OF THE SYSTEM TO VERIFY DRY AND ACCEPTABLE SOIL AND THAT WEATHER CONDITIONS ARE SUITABLE TO BEGIN CONSTRUCTION. THE FOLLOWING IS PROCEDURE TO DETERMINE IF CONSTRUCTION CAN BEGIN:
   A. SELECT A HANDFUL OF SOIL FOR TESTING (ANY NON-SOIL MATERIAL, ROCKS, ROOTS, ETC. SHOULD BE REMOVED). DO NOT ADD MOISTURE OR LET DRY-OUT. SAMPLE SHOULD BE TAKEN AT THE DEPTH OF EXCAVATION (ABSORPTION AREA).
   B. ROLL THE SAMPLE BETWEEN THE PALMS (IN THE SHAPE OF A PENCIL/WORM SHAPE).
   C. CONTINUE ROLLING THE THREAD UNTIL IT REACHES AN UNIFORM DIAMETER OF 1/8 INCH IF POSSIBLE.
   D. IF THE SAMPLE DOES NOT REACH A DIAMETER OF 1/8 INCH, THE SOIL IS ABOVE THE PLASTIC LIMIT AND CONSTRUCTION CAN PROCEED.
   E. IF THE SAMPLE IS ROLLED INTO A DIAMETER EQUAL TO 1/8 INCH BEFORE BREAKING, THE SOIL IS TOO WET AND CONSTRUCTION SHOULD NOT OCCUR.

3. THE DESIGNER WILL VERIFY WITH THE CONTRACTOR THE PROPER STAKING OF THE SYSTEM PRIOR TO ANY CONSTRUCTION.

4. ALL MEETINGS AND INSPECTIONS SHALL BE SCHEDULE WITH THE DESIGNER A MINIMUM OF 48 HOURS IN ADVANCE AND SHALL INCLUDE AS A MINIMUM:

PRE-CONSTRUCTION: CHECK BY DESIGNER.
- A) SOIL MOISTURE AT THE APPROPRIATE DEPTHS IS NOT SO HIGH AS TO HAVE THE SOIL SMEAR OR COMPACT DUE TO CONSTRUCTION ACTIVITIES.
- B) IMMINENT WEATHER CONDITIONS APPEAR THEY WILL NOT CREATE UNSUITABLE SOIL MOISTURE CONDITIONS DURING THE COURSE OF CONSTRUCTION.
- C) LAYOUT AND STAKING OF THE PRIMARY SYSTEM BASAL AREA, DISTRIBUTION BED, AND THE RESERVE AREA BOUNDARY TO SUBSTANTIALLY CONFORM TO THE APPROVED CONSTRUCTION.
- D) THE SOURCE OF THE SOIL COVER MATERIAL SHALL BE DESIGNATED, AND A SAMPLE SHALL BE MADE AVAILABLE AND APPROVED BY THE DESIGNER PRIOR TO PLACEMENT.

INTERIM INSPECTION: JOINT INSPECTION FROM THE DESIGNER, COUNTY SEPTIC STAFF, AND CONTRACTOR PRIOR TO SOIL COVERING. THE INSPECTION WOULD INCLUDE:
- A) LINE AND GRADE OF ALL EXCAVATIONS, INCLUDING THE LENGTH AND LEVEL OF THE LEACH LINES, AND FILLS AS APPLICABLE.
- B) FUNCTION AND SETTING OF ANY CONTROL DEVICES, INCLUDING BUT NOT LIMITED TO VALVES, SWITCHES, AND ALARMS.
- C) HYDRAULIC TESTING OF ANY PUMP AND DISTRIBUTION SYSTEM TO ASSURE THAT THE PUMP IS ADEQUATE FOR DESIGN FLOWS.
- D) ALL THE REMAINING ELEMENTS REQUIRED TO COMPLETE THE SYSTEM SHALL BE ON SITE AT THE TIME FOR VERIFICATION AND APPROVAL BY THE DESIGNER FOR CONFORMANCE WITH THE PLANS AND SPECIFICATIONS.

FINAL INSPECTION: JOINT INSPECTION FROM THE DESIGNER, COUNTY SEPTIC STAFF, AND CONTRACTOR AFTER SOIL COVER. THE INSPECTION SHALL INCLUDE:
- A) SOIL COVER AND PERFOMANCE WELLS
- B) THE DESIGNER SHALL VERIFY THAT ALL CONSTRUCTION IS IN GENERAL CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.
- C) A FINAL LETTER FROM THE DESIGNER TO THE COUNTY WELL AND SEPTIC SECTION SHALL STATE THAT ALL CONSTRUCTION HAS BEEN COMPLETED, APPROVED,AND IS IN CONFORMANCE WITH ALL SPECIFICATIONS.
- D) AN ELECTRICAL PERMIT MUST BE APPLIED AT PRMD FOR THE PUMP AND ALARM SYSTEM AND GIVEN A FINAL APPROVAL PRIOR TO THE FINAL APPROVAL OF THE SEPTIC SYSTEM.

SEPTIC TANK INSTALLATION

1. THE SEPTIC TANK SIZE IS DETERMINED BY THE NUMBER OF BEDROOMS. SEPTIC TANK MUST BE ACCEPTED BY IAPMO AS MEETING STANDARD PS-1.

1-2 BEDROOMS.....MIN. 810-GALLON SEPTIC TANK

3-4 BEROOMS.....MIN. 1200-GALLON SEPTIC TANK

5-6 BEROOMS.....MIN. 1500-GALLON SEPTIC TANK

2. THE SEPTIC TANK SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATION.

3. THE SEPTIC TANK IS TO BE SET LEVEL IN THE EXCAVATION WITH 2" SAND OR PEA GRAVEL FOR LEVEL. THE SEPTIC TANK SHALL HAVE A MINIMUM SOIL COVER OF 12".

4. THE INSIDE OF A SEPTIC TANK SHALL BE COATED WITH EITHER THOROSEAL OR ASPHALT EMULSION.

5. WATER TIGHTNESS TEST SHALL BE CONDUCTED FOR THE SEPTIC TANK AS WELL AS SUMP TANK (IF DESIGNED). THE INLET AND OUTLET HOLES SHALL BE PLUGGED BY PIGS (MECHANICAL PLUGS). CLEAR WATER IS ADDED TO 2 INCHES ABOVE THE TANK/RISER SEAM. MEASURE AND RECORD THE LEVEL OF THE WATER. THE TEST DURATION SHALL BE 30 MINUTES. A WATER LEVEL DECLINE OF 1/8 INCH OR MORE INDICATES A FAILED WATER TIGHTNESS TEST.

6. RISERS SHALL BE CONSTRUCTED OVER THE MANHOLES TO AT LEAST 2 INCHES ABOVE THE GROUND SURFACE. PVC RISERS SHALL BE SEALED BY EPOXY OVERLAID WITH NON-SHRINK GROUT.

7. ALL RISERS SHALL BE FITTED WITH DURABLE, AIRTIGHT LIDS THAT HAVE A LOCKING MECHANISM TO PREVENT UNWANTED ENTRY AND INSECT AND RODENT ACCESS.

8. THE SANITARY TEE SHALL BE INSTALLED AT THE INLET HOLE, AND EFFLUENT FILTER SHALL BE INSTALLED AT THE OUTLET HOLE OF THE SEPTIC TANK.

9. TRAFFIC RATED SEPTIC TANK IS REQUIRED WITHIN THE PARKING AREA OR DRIVE WAY WITH TRAFFIC RATED CONCRETE RISERS. CONCRETE RISERS SHALL BE SEALED BY XYPEX OVERLAID WITH NON-SHRINK GROUT.

MOUND CONSTRUCTION NOTES

1. THE USE OF WHEEL TYPE VEHICLES IS PROHIBITED.
   - A) FOR THE PURPOSE OF RIPPING.
   - B) WHEN DRIVING ON ANY AREAS THAT HAVE BEEN RIPPED.
   - C) WHEN DRIVING ON THE SAND FILL.
   - D) WHEN PLACING OR MOVING THE SOIL COVER.
   - E) AT ANYTIME THAT THE SOIL CONDITIONS ARE WET, MOIST, OR SATURATED.

2. PLACEMENT OF THE PRESSURIZED TRANSMISSION LINE FROM THE SUMP TANK TO THE MOUND MANIFOLD SHALL BE A MINIMUM OF 24 INCHES BELOW THE SURFACE OF THE GROUND.

3. SITE PREPARATION OF SOIL SURFACE TO A DEPTH OF 8 TO 12 INCHES.
   - A) MOW EXCESSIVE VEGETATION.
     - 1) REMOVE TREES.
     - 2) CUT AND GRIND STUMPS TO A DEPTH OF 12 INCHES.
   - B) PERFORM INITIAL RIPPING PARALLEL TO THE CONTOURS OF THE GROUND WITHIN THE LIMITS OF THE SAND BASE; RIPPERS SET 8 TO 10 INCHES APART.
   - C) AFTER ALL THE SAND HAS BEEN PLACED AND PRIOR TO MOUND SOIL COVER PLACEMENT, RIP THE NATIVE SOIL THAT WILL INTERFACE WITH THE MOUND SOIL.
   - D) PROHIBIT ALL TRAFFIC ON ANY RIPPED SURFACES UNTIL THE FULL DEPTH OF FILL OR COVER MATERIAL HAS BEEN PLACED.

4. UNIFORMLY PLACE AND COMPRESS THE SAND FILL BY DETERMINED BY THE MOUND DIMENSIONS. A TOLERANCE OF NO MORE THAN 0.25 FEET (3 INCHES) VERTICALLY TO 100 FEET HORIZONTALLY IS ALLOWED. ADD ADDITIONAL SAND AS THE SAND FILL AREA IS COMPRESSED. THE SAND MATERIAL SHALL MEET THE SAND SPECIFICATION TO WISCONSIN MOUND CRITERIA. THE SIEVE ANALYSIS FOR THE SAND MATERIAL SHOULD FIT BETWEEN THE SOLID LINES IN THE WISCONSIN MOUND SIEVE ANALYSIS GRAPH.

5. CONSTRUCT GRAVEL BED WITH SPECIAL ATTENTION TO PROPER ELEVATION.
   - A) TEMPORARY FORM BOARDS ARE REQUIRED FOR PLACEMENT OF THE DISTRIBUTION BED GRAVEL.
   - B) FORM BOARDS SHALL BE FULLY ENVELOPED BY THE SAND BED AND SHALL BE REMOVED PRIOR TO COVER PLACEMENT.

C) THE GRAVEL SHALL BE 3/8" TO 2" DOUBLE RUN, DOUBLE WASHED NON-DETERIORATING AGGREGATE ROCK.

6. PERFORM HYDRAULIC TEST AFTER THE DISTRIBUTION HAS BEEN COMPLETED.
   - A) HYDRAULIC ORIFICE DISCHARGE SHALL BE A MINIMUM OF 60 INCHES FOR UPWARD DISCHARGE. ORIFICES SHALL HAVE A PROTECTIVE SHIELD.
   - B) DISTRIBUTION TO ALL LATERALS SHALL BE EQUAL.
   - C) THE TEST SHALL BE INSPECTED BY THE DESIGNER AND COUNTY SEPTIC STAFF.

7. CONDITION SOIL COVER MATERIAL WITH SUFFICIENT MOISTURE TO PERMIT TRACK ROLLING TO A FIRM COHESIVE SURFACE.

8. ESTABLISH THE FINISHED GRADE OF THE MOUND BY TRACK ROLLING AND GROOMING BY HAND. COMPLETE PROPER DRAINAGE WORK AND EROSION CONTROL MEASURES BEFORE FINAL INSPECTION.

9. INSTALL MONITORING WELLS AND DETAILS AS SHOWN ON THE PLANS.

10. PRIOR TO SEPTIC SYSTEM FINAL APPROVAL, ACCEPTABLE EROSION CONTROL MUST BE COMPLETED. THE INSTALLED MOUND AREA SHALL BE SEEDED AND STRAWED FOR EROSION CONTROL.

WISCONSIN MOUND SIEVE ANALYSIS GRAPH

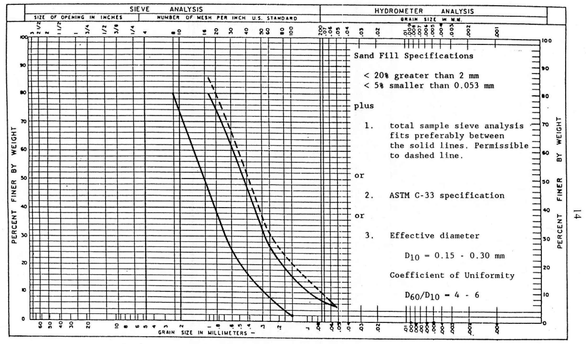
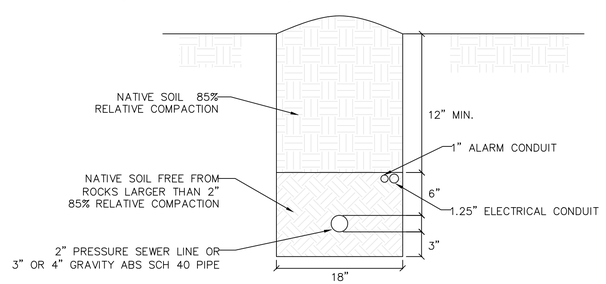
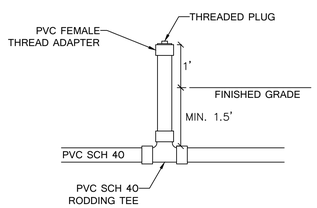


Figure 5. A guideline for the selection of the sand fill for Wisconsin Mounds. The total sample sieve analysis contains 20% or less material larger than 2.0 mm and contains 5% or less material finer than 0.053 mm plus one of the three additional specifications listed in figure. The fraction greater than 2 mm can have stones and cobbles.

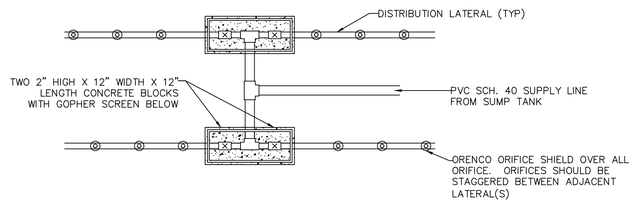
SEWER TRANSMISION LINE CROSS-SECTION (NONSTANDARD)



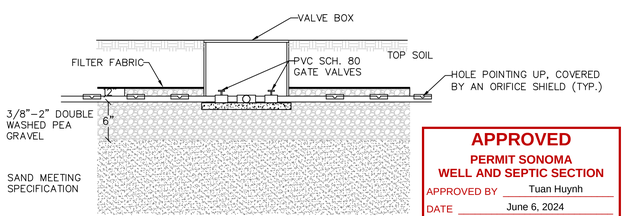


CLEAN-OUT CROSS-SECTION

BALANCING VALVE (MANIFOLD) PLAN VIEW



BALANCING VALVE (MANIFOLD) SIDE VIEW



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MOUND SYSTEM PLAN

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REQUIRED FEATURES FOR THE SUMP

1. THE MINIMUM WORKING CAPACITY OF ALL SUMPS IS 300 GALLONS, INCLUDING:
   A. THE DESIGN DOSE VOLUME.
   B. A MINIMUM 200 GALLON ADDITIONAL STORAGE CAPACITY BETWEEN THE HIGH WATER ALARM AND INLET.
   C. THE MINIMUM WORKING CAPACITY OF SUMPS FOR NON-STANDARD OWTS IS 500 GALLONS OR 3 TIMES THE DESIGNED DOSE, WHICHEVER IS GREATER.
   D. ALTERNATIVE CONFIGURATIONS MAY BE APPROVED FOR SYSTEMS UTILIZING PRETREATMENT AND REPAIRS IF JUSTIFIED BY THE DESIGNER.

2. CONCRETE TANKS SHALL BE A MONOLITHIC CASTING OR JOINTS SEALED WITH APPROPRIATE SEALANTS.
   A. CONCRETE TANKS SHALL BE MADE OF SULFATE-RESISTING CEMENT, SPECIFICATION C 150, TYPE II OR HIGHLY SULFATE-RESISTING CEMENT, SPECIFICATION C 150, TYPE V OR COATED WITH AN ASPHALT EMULSION OR EQUIVALENT ON THE INSIDE.
   B. THE COATED INTERIOR SHALL BE ALLOWED TO DRY FOR AT LEAST 24 HOURS.
   C. ASPHALT EMULSION OR TAR SHALL NOT BE USED AS JOINT SEALANTS.

3. SUMP TANKS SHALL BE CONSTRUCTED OF SOLID DURABLE MATERIALS, WHICH ARE NOT SUBJECT TO EXCESSIVE CORROSION AND DEGRADATION IN THE PRESENCE OF DOMESTIC SEWAGE AND SHALL BE WATERTIGHT.
   A. THEY SHALL MEET THE IAPMO CONSTRUCTION STANDARDS FOR SEPTIC TANKS OF THE SAID MATERIAL (GLASS-FIBER-REINFORCED POLYESTER, POLYETHYLENE, SYNTHETIC FIBER REINFORCED).
   B. WOOD AND/OR METAL TANKS ARE NOT ALLOWED.

4. ALL SUMPS SHALL HAVE A RISER THAT EXTENDS TO AT LEAST 2 INCHES ABOVE THE FINISHED GRADE.
   A. RISERS SHALL BE SEALED WATERTIGHT TO THE SUMP CHAMBER WITH MATERIALS SUITED FOR THE SPECIFIC APPLICATION.
   B. WOOD RISERS ARE NOT ALLOWED.
   C. RISERS AND LIDS IN TRAFFIC AREAS SHALL BE TRAFFIC RATED AND MAY BE FLUSH WITH THE GROUND ELEVATION.

5. ALL PIPES AND/OR ELECTRICAL CONDUITS ENTERING THE SUMP TANK OR RISER SHALL BE SEALED TO MAKE THE PASSAGE GAS AND WATER TIGHT.
   A. IF THE PIPES AND/OR ELECTRICAL CONDUITS ENTER A SYNTHETIC TANK OR PLASTIC RISER, RUBBER GROMMETS SHALL BE USED
   B. NON-SHRINK GROUTS SHOULD BE USED WITH CONCRETE TANKS OR RISERS.

6. SUMPS ON DOWNHILL RUNS SHALL BE PLACED WITHIN 30 FEET OF THE LEACHFIELD, UNLESS GREATER DISTANCES ARE ALLOWED. WHEN PRACTICAL, SUMPS SHALL BE LOCATED AT A LOWER ELEVATION THAN THE LEACHFIELD.
   A. THE SUMP TANK LOCATION MUST BE ACCESSIBLE FOR A SEPTIC TANK PUMPER TO PUMP THE TANK.

7. A PRE-SCREENING DEVICE OR FILTER CAPABLE OF SCREENING SOLIDS IN MINIMUM 3/16 INCHES SIZE SHALL BE INSTALLED IN THE SEPTIC TANK OR SUMP CHAMBER TO ASSIST IN PREVENTING SUSPENDED SOLIDS FROM REACHING THE PUMP.

8. WASTEWATER SHALL EXIT THE SUMP ONLY THROUGH PUMP AND PRESSURE LINES. GRAVITY OVERFLOWS ARE PROHIBITED.

REQUIRED FEATURES OF THE PUMP ARE AS FOLLOWS:

1. FLOAT CONTROLS FOR THE PUMP AND AUDIO/VISUAL ALARM SHALL BE MOUNTED TO A SCHEDULE 40 PVC POLE, MOUNTED INSIDE A PUMP CHAMBER, WHICH CAN BE REMOVED FOR MAINTENANCE.

2. CONTROL FLOATS SHALL BE ATTACHED TO THE PVC POLE BY PLASTIC TIE STRAPS OR PLASTIC FLOAT COLLARS. A. STAINLESS STEEL STRAPS WILL NOT BE ACCEPTED.

3. THE PUMP SHALL BE MOUNTED A MINIMUM OF 4 INCHES ABOVE THE BOTTOM OF THE SUMP CHAMBER. A. IF APPLICABLE, NON-CORROSIVE MATERIALS SHALL BE USED TO SUPPORT THE PUMP.

4. FOR THE SITUATIONS WHERE A PUMP MUST BE INSTALLED IN THE SECOND CHAMBER OF THE SEPTIC TANK, THE PUMP SHALL BE PLACED IN A SCREENED PUMP VAULT WITHIN THE SECOND CHAMBER.
   A. MICRODOSING SHALL BE REQUIRED TO MINIMIZE SWINGS IN THE LIQUID LEVEL.

REQUIRED ELECTRICAL FEATURES ARE AS FOLLOWS

1. ALL MATERIALS, CONNECTIONS, AND SPECIFICATIONS SHALL MEET THE CALIFORNIA ELECTRIC CODE. A. IN ALL CASES IN WHICH A SUMP WITH A PUMP IS USED FOR AN OWTS, THE CONTRACTOR/OWNER SHALL OBTAIN AN ELECTRICAL PERMIT FROM PERMIT AUTHORITY OR CITY BUILDING DEPARTMENT HAVING JURISDICTION.
   B. THE PERMIT AUTHORITY SHALL BE RESPONSIBLE FOR INSPECTION AND APPROVAL OF ALL ELECTRICAL CODE REQUIREMENTS.
   C. DISCONNECTING MEANS (CONTROL PANEL OR DISCONNECTING SWITCH) SHALL BE LOCATED IN SIGHT FROM THE PUMP LOCATION PER THE COUNTY ADOPTED ELECTRICAL CODE.

2. THE ALARM SHALL BE EQUIPPED WITH: A. A LOUD (87 DECIBELS AT A 10-FOOT MINIMUM HORIZONTAL DISTANCE FROM THE ALARM LOCATION) AUDIO ALARM OPERATED BY A FLOAT SWITCH OR SWITCHES TO INDICATE AN "ALARM" SITUATION.
   B. A MINIMUM SIZED 7/8-INCH DIAMETER RED LIGHT SHALL BE MOUNTED ON THE FACE OF THE PANEL, WHICH SHALL GLOW AS LONG AS THE "ALARM" CONDITION EXISTS.
   C. A MOMENTARY "ALARM TEST/ALARM SILENCE" SWITCH TO TEST THE ALARM LIGHT AND HORN TO SIMULATE AN "ALARM" CONDITION AND TO SILENCE THE AUDIO ALARM HORN.

3. AN APPROVED LISTED MODEL OR TYPE OF FLOAT SWITCH SHALL BE USED TO ACTIVATE EACH PUMP. THE ALARM/CONTROL PANEL SHALL BE EQUIPPED WITH A MOTOR CONTACTOR FOR THE PUMP AND A PUMP HAND/OFF/AUTOMATIC SWITCH TO MANUALLY RUN THE PUMP BYPASSING THE CONTROL PANEL AUTOMATIC MODE AND TO TEST THE ALARM.

4. POWER SUPPLY TO EACH CIRCUIT BREAKER IN THE CONTROL PANEL SHALL BE FROM A SEPARATE DEDICATED CIRCUIT WITH CIRCUIT PROTECTION, OF EQUIVALENT OR HIGHER AMPERAGE RATING, AT THE POWER SUPPLY PANEL.
   A. THE ALARM/CONTROL PANEL SHALL BE EQUIPPED INTERNALLY WITH SEPARATE CIRCUIT PROTECTION FOR THE CONTROL AND PUMP CIRCUITRY.
      I. MULTIPLEX (MORE THAN 1 PUMP) SYSTEMS SHALL HAVE SEPARATE POWER SUPPLY CIRCUITS.
      II. SEPARATE CIRCUITS ARE REQUIRED FOR CONTROLS AND EACH PUMP.
      III. JOINT CIRCUITS MAY BE ACCEPTABLE FOR EXISTING SUMP/PUMP SYSTEMS THAT WERE INSTALLED PRIOR TO THIS REQUIREMENT IF FUSED PURSUANT TO THE CURRENT ELECTRICAL CODE.
   B. PUMP PROTECTION SHALL BE PROVIDED BY A THERMAL MAGNETIC CIRCUIT BREAKER FOR OVERLOAD PROTECTION.
      I. IF THE PUMP IS SINGLE-PHASE, THE MOTOR WINDINGS SHALL HAVE INTERNAL THERMAL OVERLOAD PROTECTION.
      II. IF THE PUMP IS 3-PHASE, THE CIRCUIT PROTECTION IN THE ALARM/CONTROL BOX SHALL BE EQUIPPED WITH AN ADJUSTABLE THERMAL OVERLOAD PROTECTION.

5. BELOW GRADE ELECTRICAL SPLICES SHALL BE PLACED IN A SONOMA COUNTY APPROVED PULL BOX INSTALLATION OR A SONOMA COUNTY APPROVED EXTERNAL SPLICE BOX WITH WATERPROOF SLICE CONNECTORS.
   A. TRAFFIC-RATED PULL BOXES SHALL BE USED IN TRAFFIC AND ADJACENT AREAS.

6. ELECTRICAL NON-METALLIC SPLICE BOXES MAY BE PLACED WITHIN THE SUMP CHAMBER FOR EXISTING SUMP/PUMP SYSTEMS THAT WERE INSTALLED PRIOR TO THIS REQUIREMENT. THEY SHALL BE GAS-TIGHT BOXES WITH WATERPROOF SPLICE CONNECTORS.

7. THE PUMP POWER LEAD AND THE FLOAT SWITCH CONTROL WIRES MAY RUN IN A COMMON CONDUIT. HIGH VOLTAGE AND LOW VOLTAGE CONDUCTORS SHALL BE RUN IN SEPARATE CONDUITS.
   A. ALL CORDS GOING INTO THE SUMP SHALL BE INDIVIDUALLY SEALED WITH NON-METALLIC GAS TIGHT FITTINGS IN EITHER THE RISER, JUNCTION BOX OR ALARM/CONTROL PANEL AS APPROPRIATE.
   B. METALLIC GAS TIGHT FITTINGS ARE NOT ALLOWED.
   C. ALL EXPOSED PVC CONDUIT SHALL BE SCHEDULE 80.

REQUIRED FEATURES FOR THE SUMP, CONTINUE:

8. THE CONTROL PANEL AND ITS CONTENTS SHALL BE UL LISTED.
   A. THE CONTROL PANEL SHALL BE PLACED IN AN EASILY ACCESSIBLE LOCATION.
   B. A NON-RESETTABLE DOSE COUNTER SHALL BE INSTALLED IN CONTROL BOXES UTILIZED FOR NON- STANDARD OWTS.
   C. IF A DOSE COUNTER IS NOT PROVIDED, A NON-RESETTABLE FLOW METER SHALL BE PROVIDED ON THE OUTGOING LINE TO THE DISPERSAL FIELD. ADDITIONALLY, SYSTEMS WITH FLUSH MODES SHALL BE EQUIPPED WITH A FLOW METER ON THE RETURN LINE. THE FLOW METER SHALL READ IN GALLONS PER MINUTE AND TOTAL GALLONS.
   D. THE CONTROL PANEL SHALL BE EQUIPPED SO SETTINGS CAN BE ADJUSTED MANUALLY ON-SITE.
   E. CONTROL BOXES THAT MUST BE OPENED TO VIEW THE DOSE COUNTER SHALL BE EQUIPPED WITH A CLEAR PLASTIC OR PYREX SAFETY SHIELD INSIDE THE CONTROL BOX.
   F. THE CONTROL BOX SHALL BE LABELED "CAUTION-ELECTRICAL HAZARD."
   G. THE DOSE SETTINGS (TIME OR GALLONS), CALCULATED DOSE VOLUME AND FLOAT SETTINGS SHALL BE POSTED ON THE INSIDE OF THE PANEL.

9. ALL EXTERIOR MOUNTED ALARM AND CONTROLLER ENCLOSURE SHALL BE NEMA TYPE 4. IF THE ALARM/CONTROLLER IS MOUNTED MORE THAN 75 FEET FROM ANY RESIDENCE OR COMMERCIAL STRUCTURE SERVED BY THE SYSTEM, A SEPARATE AUDIBLE/VISIBLE ALARM SHALL BE PROVIDED AT THE PRIMARY STRUCTURE CONNECTED TO THE OWTS.
   A. THE ENCLOSURE FOR THE REMOTE AND AUDIO/VISUAL ALARM SHALL BE NEMA TYPE 1 IF MOUNTED INDOORS.

REQUIRED FEATURES OF SEWAGE PIPING ARE AS FOLLOWS:

1. THE EFFLUENT LINE ENTERING THE SUMP SHALL BE MINIMUM OF 3 INCH DIAMETER, ABS SCH 40 OR PVC SCH 40, AND SHALL BE SEALED WITH A COUPLING INTEGRALLY CAST INTO THE TANK, A PROPERLY FIT NEOPRENE GROMMET OR WITH NON-SHRINK GROUT AS APPROPRIATE. A. THE EFFLUENT LINE SHALL BE TURNED DOWN WITH A SANITARY TEE FITTING AND DROP THAT EXTEND TO WITHIN 4 INCHES OF THE TANK FLOOR.

2. MINIMUM 1 INCH PVC SCHEDULE 40 FROM PUMP TO DISPERSAL FIELD IS REQUIRED WITH:
   A. A 1/8-INCH DIAMETER ANTI-SIPHON AND AIR VENT HOLE LOCATED BETWEEN THE PUMP AND CHECK VALVE ANGLED DOWN AND AWAY FROM THE FLOATS;
   B. PVC CHECK VALVE;
   C. PVC GATE OR BALL VALVE AND UNION(S).

3. BRASS TYPE FITTINGS, VALVES, AND PIPING ARE PROHIBITED IN SUMP CHAMBERS.
4. HIGH POINTS IN THE TRANSMISSION LINE AFTER THE SUMP MAY REQUIRE AN "AIR RELIEF VALVE" DEPENDING ON THE DESIGN SITUATION.

Design Calculation For A Mound System

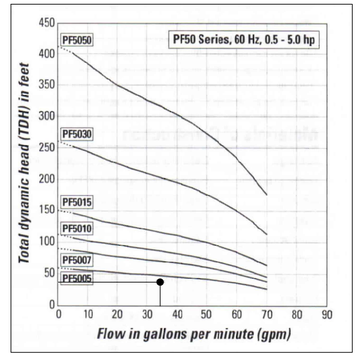
= enter field

Project Address: 5975 Petersen Rd SEB
APN: 024-010-014

No. of Bedrooms:		4	Bedrooms
Design Flow:		480	Gal/Day
Percolation Rate:		10	Min/Inch
(SAR) Soil Absorption Rate:		0.8	Gal/Sq Ft/Day
(LLR) Linear Loading Rate:		6	Gal/Lf/Day
(SLR) Sand Loading Rate:	Residental=1, Commercial = 0.8	1	Gal/Sq Ft/Day
Slope:		3	%
(DCF) Downslope Correction Factor:		1.1	
(UCF) Upslope Correction Factor:		0.92	
Required Sand Area Check:	Design Flow ÷ SLR	480	Sq Ft
(A) Gravel Bed Width:	Linear Loading Rate ÷ SLR	6	Feet
(B) Gravel Bed Length:	Design Flow ÷ LLR	80	Feet
(D) Uphill Sand Depth:		1	Feet
(E) Downhill Sand Depth:	D + (Slope X A)	1.18	Feet
(F) Gravel Bed Height:	Residental= 0.75, Commercial = 1.0	0.75	Feet
(G) Top Soil Height at the Side:		0.5	Feet
(H) Top Soil Height at the Crown:		1	Feet
(I) Downslope Sand Width:	3 [(E + F)+ (2 X slope)] (DCF) + 2' shoulder	8.57	Feet
	Use =	9.00	feet
(J) Upslope Sand Width:	3 [(D + F) - (2 X slope)] (UCF) + 2' shoulder	6.66	Feet
≤ 1% slope = 1' shoulder , > 1% slope = 2' shoulder	Use =	7.00	Feet
(K) End Width Sand:	[(D + E) ÷ 2 + F] X 3 + 2' shoulder	7.52	Feet
	Use =	8	Feet
(L) Overall Length Gravel & Sand:	B + 2K	96	Feet
(W) Overall Width Gravel & Sand:	I + A + J	22	Feet
Basal Area Required:	Design Flow ÷ SAR	600	Sq Ft
Basal Area Available:	B(A+I)	1200	Sq Ft

Upslope Soil Width = 7', End Soil Width = 7', Downslope Soil Width = 10'

J and K not included in the calculation if the slope greater than 1%



PUMP CURVE

PUMP SIZING = Enter Field

(A) Width of Gravel Bed			= 6	Feet
(B) Length of Gravel Bed			= 80	Feet
Total Length of Supply Line (From pump to manifold)			= 150	Feet
Supply Line diameter			= 2	Inches
Lateral Specification (Center Feed):				
No. of Lateral Legs			= 4	
Length per Lateral Leg =	(B/2) - 0.5'		= 39.5	Feet
Lateral Diameter			= 1	Inches
Spacing between laterals			= 2	Feet
Hole Diameter	(Select From 1/8, 3/16, or 1/4")	=	1/8"	
Hole Spacing			= 2	Feet
System Discharge: Pump to Leach Field (SDPL)				
Total Number of Holes			= 79.00	Holes
(Length per Lateral Leg X No. of Laterals) ÷ Hole Spacing				
Discharge Rate per Hole for 5' Distal Head @	1/8"	Diameter hole =	0.41	Gal/Min
Req. Discharge Rate = Total No. Holes X Discharge Rate per Holes		=	**32.39**	Gal/Min
		(SDPL) , Use =	**33**	Gal/Min
System Discharge: Single Longest Lateral (SDSL)				
Total Number of Holes = Single Longest Lateral Leg ÷ Hole Spacing		=	19.75	Holes
Discharge Rate per Hole for 5' Distal Head @	1/8"	Diameter hole =	0.41	Gal/Min
Req. Discharge Rate = Total No. Holes X Discharge Rate per Holes		=	8.10	Gal/Min
		(SDSL), Use =	8.10	Gal/Min

Pump Sizing:

1. Elevation Head (in Feet) From Pump to D-box:
   500 Highest Elev. Point - 485 Pump Elev. = 15 Feet

2. Pressure Head (Squirt Height) = 5 Feet

3. Supply Line Friction Loss From 2 " Diameter Supply Line & Manifold:

	No. of Fitting		Equivalent Feet		
Gate Valve	1	X	1.4	= 1.4	Feet
Check Valve	1	X	17	= 17	Feet
Tee	2	X	11	= 22	Feet
90° Elbow	4	X	9	= 36	Feet
45° Elbow	4	X	4	= 16	Feet
Coupling/Quick Disconnect	1	X	2	= 2	Feet
			Total Friction Loss From Fitting =	94.40	Feet
Total length = Supply Line Length + Total Friction Loss From Fitting			=	244.40	Feet
Friction Loss Per 100 feet of Pipe (From Chart)			=	2.58	Feet
Supply Line Friction Loss = (Total Length) X (Friction Loss Per 100 feet of Pipe ÷ 100)			=	6.31	Feet

4. Lateral Friction Loss From 1 " Diameter Lateral:

	No. of Fitting		Equivalent Feet		
Gate Valve	4	X	0.9	= 3.6	Feet
Check Valve	0	X	11	= 0	Feet
Tee	0	X	7	= 0	Feet
90° Elbow	0	X	7	= 0	Feet
45° Elbow	0	X	3	= 0	Feet
Coupling/Quick Disconnect	4	X	1	= 4	Feet
			Total Friction Loss From Fitting =	7.60	Feet
Total Lateral Length = length of Lateral Leg X No. Lateral Legs			=	158	
Total length = Total Lateral Length + Total Friction Loss From Fitting			=	165.60	Feet
Friction Loss Per 100 feet of Pipe (From chart)			***Gal/Min = 8.10***	= 5.10	Feet
Lateral Line Friction Loss = (Total Length) X (Friction Loss Per 100 feet of Pipe ÷ 100)			=	8.45	Feet

5. Total Dynamic Head = **34.75** Feet
   Elevation Head + Pressure Head + Supply Line Friction Loss + Lateral Friction Loss

Pump Must Discharge 33 Gallons Per Minutes Against A Head of 35 Feet

Recommend Pump: Orenco High Head Pump PF500511, 0.5 HP, 115V

APPROVED
PERMIT SONOMA
WELL AND SEPTIC SECTION
APPROVED BY Tuan Huynh
DATE June 6, 2024
PERMIT # SEP24-0130

REGISTERED ENVIRONMENTAL HEALTH SPECIALIST
TUAN N. HUYNH
Exp. 12-31-25
No. 7177
STATE OF CALIFORNIA

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APN: 024-010-014

MOUND SYSTEM PLAN

DRAWN: TN
CHECKED: TN
JOB NO:

No.	Revision