Paul
996-6330

Design
330 ucp - 30.2k
Perm'd - Follow-up

Low Pressure Pipe Septic System Plan

For Cloverhill Road Lot 293

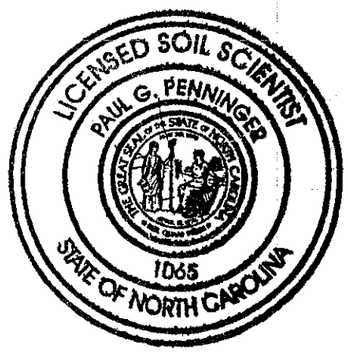
Mooresville, North Carolina

by

Toney C. Jacobs & Associates, Inc.
Consulting Soil Scientists
168 Broadbill Drive
Mooresville, NC 28117

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February 7, 2003



To: Mr. Trevor P. Ashline
115 Cloverhill Road
Mooresville, NC 28117

Mr. Brady Freeman, R.S.
Iredell County Environmental Health Dept.
Mooresville, NC

Paul G. Penninger, LSS

Toney C. Jacobs, LSS

BACKGROUND

The proposed system would serve a new 4-bedroom home on a waterfront lot off Cloverhill Road in Iredell County, NC. Mr. Brady Freeman, R.S. of the Iredell County Health Department had previously permitted lot 293 on August 20, 1997 for a three-bedroom home. This permit was for a shallow placed, 25% reduction system. No action was taken on the lot, and this permit expired in 2002. The lot was re-evaluated in late 2002, and was still provisionally suitable, but a low pressure pipe system was determined to be the best suited system for the shallow soils and sloping lot. Toney C. Jacobs flagged the proposed system in the field and in 2003 received a site plan from the builder showing the proposed house location. The property was recorded prior to 1982, so the 100% repair is not required. There is very limited repair available on the tract.

The septic area is wooded. Care shall be taken during clearing operations and system installation to ensure minimal soil disturbance. Do not grade septic area. Also the builder shall not install any drain in a retaining wall within 25 ft. of the lowest septic line. Also we recommend limiting any cut downslope of the system to 25 feet from the lowest line. Any variance to this should be addressed in writing by the health department. Damage to the septic area could render the site unsuitable.

The residence will be served by a private well. There are also wells on the adjacent lots close to each property line.

APPLICATION INFORMATION

1. Application for Improvement Permit has been submitted to the Iredell County Health Department by the property owner, Mr. George Church.
2. Property is shown on attached survey.
3. Owner:

   Mr. Trevor P. Ashline
   115 Cloverhill Road
   Mooresville, NC 28117

   Soil Scientists
   and Designers: Mr. Paul G. Penninger, LSS
   Mr. Toney Jacobs, LSS
   Toney C. Jacobs & Associates, Inc.
   168 Broadbill Drive
   Mooresville, NC 28117
   (704) 663-6905 (Office)
   (704) 662-9845 (fax)
   e-mail jacobs@i-america.net

4. Project described herein is a new project.
5. Water supply for the proposed house will be provided by the proposed private well shown on the attached plat.
6. Facility to be served by the proposed system is a 4-bedroom single family residence.
7. Wastewater system components are described herein.

LOCATION

The building lot is on the left of Cloverhill Road, at the cul-de-sac, Mooresville, N. C.

REFERENCES

1. Design and Installation of Low Pressure Pipe Waste Treatment System by: Craig Cogger, Bobby L. Carlile, Dennis Osborne, Ed Holland; published by UNC Sea Grant College Pub. UNC-SC-82-03, May 1982.
2. Law and Rules for Sewage Treatment and Disposal Systems, 15A NCAC 18A, Section .1900, Department of Environment Health and Natural Resources, August 1, 1998.

PLANS AND SPECIFICATIONS FOR SPECIFIC SYSTEM COMPONENTS

Septic Tank

1. The septic tank receives wastewater directly from the house.
2. A septic tank shall be watertight, structurally sound, and not subject to excessive corrosion or decay
3. The 1000 gallon septic tank must be of two compartment design for maximum solids and retention. The inlet compartment of two-compartment tank shall hold between two-thirds and three-fourths of the total tank capacity.
4. Effluent from the two-compartment septic tank flows by gravity through a State approved effluent filter and a four-inch solid PVC pipe to the pumping tank.
5. Both the septic tank and pumping tank must be provided with above ground approved manhole risers to provide easy access for clean-out and pump service.
6. When prefabricated concrete tanks or tanks of other material are used, they shall be constructed in accordance with the plans which have been approved by the State and shall comply with all requirements of Section .1953 of 15A NCAC 18A.
7. On the outlet tee of the septic tank an effluent filter must be installed. This filter should be equivalent to a Zabel Model A1800 or other State approved unit supplied by the tank manufacturer.

Pumping Tank

1. 1000 gallon pumping tank shall have an access manhole extending at least 6 inches above finished grade.
2. Pump and Simplex control circuits shall be provided with manual circuit disconnects within a watertight, corrosion-resistant, outside enclosure (NEMA 4X or equivalent) adjacent to the pump tank, securely mounted at least 12 inches above finished grade. The pump shall be manually operable without requiring the use of special tools or entrance into the tank for testing purposes. Conductors shall be conveyed to the disconnect enclosure through water proof, gas proof, and corrosion-resistant conduits, with no splices or junction boxes provided inside the tank. Wire grips, duct seal or other suitable material shall be used to seal around wire and wire conduit openings inside the pump tank and disconnect enclosure.

3. The pumping tank shall have a properly functioning high-water alarm within the Simplex box. The alarm circuit shall be supplied ahead of any pump overload and short circuit protective devices. The alarm shall be audible and visible by system users and included in the pump and control enclosure (Simplex Panel).
4. Float switch for the high water alarm shall be set no more than 3 inches above the high water level of pump cycle.
5. Pump floats should be set so that level of water at end of pump cycle is above the top of the pump.
6. Float switch tie downs to be made of corrosion resistant material, no tape or metal hose clamps. For maintenance flexibility, tree must be used to set floats.
7. Pump discharge piping shall be of Schedule 40 PVC.
8. Watertight testing per .1900 rules will be required on two piece pump tanks.

Pipe and Fittings

1. All pipes and fitting should be made of PVC plastic.
2. All joints must be sealed with an appropriate PVC-solvent cement. The supply pipe from the pumping tank to the LPP distribution field is three-inch Sch 40 PVC.
3. There should be a threaded PVC union above the pump to allow easy removal or replacement. Lateral lines are made of 1¼ inch Sch 40 PVC, sleeved in 4 in. corrugated drain pipe. Holes in the laterals are drilled on site.
4. A gate valve for final pressure adjustment is installed in the supply line inside the pumping tank.
5. Manifold and valve as shown in specifications.
6. The end of each lateral line is equipped with a capped "turn-up" that provides above ground access for clean-out or back flushing. Using 45-degree elbows rather than 90 degree elbows for the turn-ups will make clean-out easier.

Pump, Float Controls and Alarm System

1. A septic tank effluent pump or a submersible sump pump that will not be corroded by sewage should be used in the pumping tank. Goulds WE15HH, or equivalent, should be used to pump 42 gpm at 69 feet of head.
2. The controls for the pumping system include a switching control for turning the pump on and off and a high water alarm to signal pump malfunctions.
3. The controls must also be sealed against entry of corrosive and explosive gases from the effluent and should have NEMA (National Electrical Manufacturing Association) approval.
4. Mercury switches are activated by a sealed float, which contains a tube of mercury in contact with power leads.
5. In addition to the on and off control floats, there must be a separate float control for the high water alarm. This may be a sealed, mercury float switch mounted several inches above the on float. The high water alarm should be located within the house and consist of a light bulb and/or audible signal mounted over a sign marked "wastewater system alarm". It should be on a separate electrical circuit form the pump power line, and be equipped with a test switch. The alarm is activated if the water level in the pumping tank rises above the "pump-on" float control. The tank provides at least one day or more of excess storage capacity (depending on water use in the home) during which time the system must be repaired.

Home Water-Saving Devices

Any home with an LPP system should be equipped with low-flow showerheads and low-flush commodes (1.6 gallons or less per flush) in order to minimize the hydraulic load on the system. Those devices are a simple, low-cost way of reducing consumption with no inconvenience to the homeowner.

CONSTRUCTION INSTALLATION

Site Preparation

1. One of the most important concerns for an LPP system is to protect the site from soil disturbance by heavy equipment.
2. As soon as the absorption area has been designed and flagged, it should be roped off and protected from construction traffic. No site preparation or LPP construction work should occur if the soil is wet.
3. After the location is staked out and the soil is dry enough, the site should be cleared of brush and trees. Any depressions left from tree removal should be filled to the original soil surface with clean, imported, loamy soil material.
4. Provisions must be made for intercepting or diverting surface water away from the absorption area.
5. After the area has been cleared and shaped, the location of the lateral lines and supply manifold should be accurately re-flagged according to design specifications. Each lateral line must be laid out along a level contour using a transit. This step can be completely avoided if flags are protected during clearing.

Tank Installation

1. The two-compartment septic tank is installed.
2. The pumping tank is installed next to the septic tank.
3. The tanks are connected with an appropriate length of solid, four-inch PVC pipe.

Supply Manifold

1. The supply manifold conveys effluent from the pump to the distribution laterals.
2. The manifold joins each lateral through a short riser pipe connecting a reducing tee on the manifold to a 1¼ inch elbow or tee on the lateral. This assembly places each lateral pipe about six inches higher than the supply manifold and helps prevent the back-flow of effluent from a higher lateral to a lower lateral. Use a 2" x 2" x 1¼" tee rather than "bushing down" when connecting laterals to the manifold.
3. After the supply manifold has been placed in its trench and lateral lines connected, it should be backfilled with tightly tamped soil. The supply manifold trench must not be backfilled with gravel, or the trench may become a conduit for downslope flow effluent from the laterals.

Lateral Lines

1. Laterals will be placed at 5' minimum separation. Trenches shall be 18 inches wide and a maximum of 17 inches deep on the high side.
2. The depth of a given lateral trench should be uniform from the manifold to the end of the lateral. In no case should the trench bottom be allowed to slope away from the manifold.
3. Small earthen dams are placed at the beginning of each lateral trench to help maintain uniform distribution of effluent along each trench.
4. Lateral trench bottoms are then lined with five inches of gravel.
5. The 1¼-inch PVC pipes should be laid out and cut to proper lengths for the lateral lines. Holes are drilled (in a straight line) facing upwards (except for a hole 1/3 of the way from beginning and end of each line) after the laterals have been cut to proper length.
6. Holes are only drilled through one side of the pipe.
7. Sleeve laterals in 4" diameter perforated corrugated pipe. The corrugated pipe shall have three rows of holes, each hole between ½" and ¾" in diameter and spaced longitudinally approximately 4" on centers. The rows of holes may be equally spaced 120° on centers around the periphery, or three rows may be located in the lower portion of the pipe, the outside rows being approximately on 120° centers.
8. A short turn-up with a capped end is at the end of each lateral. The capped end must be brought up above or flush with the final grade. Using two 45 degree bends for constructing cleanouts is recommended. A larger diameter sleeve with cap or approved box with lid shall be placed over the turn-up.
9. Rock used in nitrification trench shall be clean, washed gravel or crushed stone and graded or sized between 3/8" to 1". The rock shall be placed a minimum of 9" deep with at least 5" between the pipe and the trench bottom and 2" over the pipe, and distributed uniformly across the trench bottom and over the pipe.
10. There shall be at least 4" of soil cover over the gravel.

Pump and Controls

1. The pump must be placed on two concrete blocks set next to each other on the bottom of the tank. This prevents the pumping of any solid particles which can clog the LPP system.
2. A piece of nylon rope or other non-corrodible material should be attached to the pump and to the outlet pipe for lifting the pump in and out of the chamber.
3. The lower level control or "pump-off" must be positioned above the pump, so that the pump remains submerged at all time.
4. The pump outlet pipe should be connected to the supply manifold with a threaded PVC union to allow quick removal.

Electrical Connections

1. The pump and high water alarm must be placed on separate electrical circuits.
2. All electrical connections must be made outside the pumping tank. Power cords from the pump and controls should be plugged into a NEMA-approved outdoor receptacle mounted outside of the pumping tanks at least 12" above final grade.
3. Wiring between the pumping tank and the house should meet State and local code requirements.

PROPER OPERATION CHECK

1. After all connections have been installed and connected, the system should be checked for proper operation. With electrical power turned off, fill the pumping tank with a garden hose until the liquid rises to the level of the high-water alarm float.
2. Turn on the electrical power. The alarm light should go off when the liquid level falls below the high-water float. The pump should turn off when the liquid reaches the lowest float control. Be sure the pump is still completely submerged.

PRESSURE HEAD ADJUSTMENT

The pressure head must be adjusted to match that specified in the design. The pressure head is measured as the height liquid will rise above the turn-up elbow when the pump is running.

- Glue a four-foot length of pipe (preferable clear) to a threaded adapter that will screw onto the turn-up adapters at the end of each lateral.
- Replace the turn-up cap with the pipe and adapter.
- Turn the power on to allow liquid to rise in the pipe.
- Adjust the gate valves until the effluent reaches the desired height in the pipe. Remember to include the distance below the ground surface to the lateral line when measuring the height.

FINAL LANDSCAPING

1. After the LPP system is installed, the following should be checked to ensure that the system will not be overloaded with excess rainwater and runoff:
   - The distribution field is shaped to shed rainwater and is free of low areas.
   - Grassy swales or ditches for diverting surface water are properly installed.
   - Gutter and downspout drains are directed away from the system.

2. Finally, the entire area should be planted with grass in order to prevent erosion. The soil should be properly tilled, limed (if necessary) and fertilized before planting. After applying an appropriate grass seed, the area should be heavily mulched with straw or other suitable material.

QUALITY ASSURANCE REQUIREMENTS

The LPP system must be installed by a qualified, contractor that is on the Iredell County list of competent contractors. Critical stages of the installation which should be checked are:

1. System layout
2. Septic and pump tank installation prior to backfilling.

3. Manifold and lateral installation prior to backfilling.
4. Final landscaping, operation and pressure head check.

The system design is based on a maximum waste flow of 480 gallons per day. Homeowners should pay particular attention to the section titled Homeowner Suggestions for ways to minimize the burden on the system.

MAINTENANCE

1. Any person owning or controlling the property upon which a ground absorption sewage treatment and disposal system is installed shall be responsible for the following items regarding the maintenance of the system:
   - Ground absorption sewage treatment and disposal systems shall be maintained at all times to prevent seepage or discharge of sewage or effluent to the surface of the ground or to surface water.
   - Ground absorption sewage treatment and disposal systems shall be checked and the contents of the septic tank removed periodically to ensure proper operation of the system.
2. A contract shall be executed between the system owner and a management entity prior to the issuance of an Operation Permit for a system required to be maintained by a public or private management entity. The contract shall include the specific requirements for maintenance and operation, responsibilities of the owner and system operator, provisions that the contract shall be in effect for as long as the system is in use, and other requirements for the continued proper performance of the system. It shall also be a condition of the Operation Permit that subsequent owners of the system execute such a contract.

OPERATION AND MAINTENANCE PROCEDURE

The system is classified as Type IV. The Regulations require that the system be operated by a person certified by the N. C. Division of Environmental Health to operate this type of system.

Operating, Maintenance and Inspection procedures shall include, but not be limited to the following:

- Minimum inspection/maintenance frequency shall be 2 times per year, with reporting frequency every 6 months to the local Health Department.
- Septic system shall be pumped every 4 years or when solids accumulate to 1/3 the volume of the tank.
- At 6 month intervals inspect the effluent filter. When washing the filter, debris must be sprayed directly back into the septic tank and not onto the lawn.
- All laterals shall be checked and if necessary, flushed annually with clean water.
- Pressure head for laterals should be checked and adjusted one month after installation and semi-annually thereafter.
- All piping, fittings, turn-ups and valve boxes shall be checked annually for damage and/or proper operation and corrections made immediately.
- The property should be inspected to insure all surface water is diverted away from the fields and tank. Any ponding of surface water should be corrected.

- Grasses shall be mowed and maintained and any erosion shall be corrected promptly.
- The nitrification field area shall be checked for leakages, blowouts or malfunction, indications of damp or mushy areas compared to surrounding area or evidence of noticeable odor of sewage. Repairs shall be made immediately.
- The pump electrical should be checked to insure tight, clean connections with no corrosion and proper operation.
- Pump switches shall be checked for free operation and proper level set.
- Pump draw down depth and delivery rate shall be checked twice a year.
- Check septic tank and pump tank for evidence of damage or leakage. Check the quality of effluent including grease and sludge accumulation.

The system operator in conjunction with the local Health Department shall establish an operation and maintenance program and procedure based on experience obtained from similar installations.

HOMEOWNER SUGGESTION

Most low pressure pipe systems do not require much effort to operate and maintain. Even though the effort is small, the system must be maintained properly so that it operates reliably and at a minimum cost. Following are suggestions for the home owner to minimize the burden on a low pressure pipe system.

1. Garbage disposals should not be used in on-site systems. The ground garbage adds large amounts of solids to a septic tank, causing sludge to build up at a quicker rate than without.
2. Grease, cooking oils and coffee grounds should never be put into a septic tank.
3. Items such as disposable diapers, cigarettes, facial tissues and other solid or paper wastes should not be flushed into the on-site system.
4. Used motor oil and other such oily liquids should not be put into a septic tank.
5. Using less water can reduce the amount of water flowing to the treatment and disposal field.
6. Water-saving fixtures and devices can be installed on sinks, toilets and showers to reduce the rate at which the water flows from the fixture.
7. Dishwashers and washing machines should only be run with full loads.
8. Leaky faucets and toilets can add large volumes of water to the daily flow of water into the on-site system. Repair the leaks to save water and give the treatment and disposal field a rest.
9. Roof drains, basement sump pumps, foundation drains, and other such drains should not empty into or onto the surface above the on-site system. These drains should be directed to another part of the lot away from the treatment and disposal field.

DESIGN SPECIFICATIONS

Cloverhill Road Lot 293

Daily design flow:	480 gpd - 4 bedroom home
Septic tank size:	1000 gal (2 compartments)
Pumping tank size	1000 gal
Effluent loading rate:	design 0.138 gpd/ft^2
Total length and diameter of supply line:	approx. 180' of 3" SCH 40 PVC Approx. 220' of 2" SCH 40 PVC
Number and length of laterals:	6 @ 96'centerfed, 1 @ 70', and 1 @ 50' 1¼" SCH 40 PVC sleeved in 4" corrugated pipe
Hole size:	5/32"
Hole spacing:	See table
Total number of holes	See table
Flow rate through the system	41.1 gpm
Elevation head:	approx. 42'
Pressure head:	2.0' – 3.9'
Friction head:	approx. 11'
20% contingency:	11.4'
Total head:	68.3'
Pump requirements:	42 gpm at 69' of head; use Goulds WE15HH 1½ hp high head pump or equivalent with compatible electrical with Simplex control
Dosing volume:	275 gal. – 1.7 dose/day at design flow
Depth of water pumped per dose:	calculated to specific tank by measure or dealer engineered specifications (1 cubic ft. of water equals 7.5 gal)
Pump run dose:	approx. 6.5 min.
Check valve:	Yes
Siphon break hole:	No

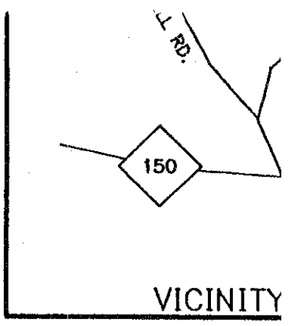
APPENDIX

1. Design specifications table
2. Site plan showing primary system layout
3. LPP trench detail
4. Manifold lateral detail
5. Gate valve box detail
6. Pump tank diagram
7. Pump Curve
8. 1997 Improvement Permit

Trevor Ashline ---Cloverhill Road lot 293 design specifications.

Line	Color	Length (ft)	Rod Reading (ft)	Design Head (ft)	Hole Size (in)	# Holes	Hole Spacing (ft)	Flow per Hole (gpm)	Flow per Line (gpm)
1	blue	96	14.8	2	5/32	12	8	0.409	4.91
2	white	96	12.1	2.2	5/32	12	8	0.429	5.15
3	red	96	10	2.4	5/32	12	8	0.448	5.38
4	blue	96	8.5	2.6	5/32	12	8	0.466	5.59
5	yellow	96	7.3	2.8	5/32	12	8	0.484	5.81
6	white	96	5.8	3	5/32	12	8	0.501	6.01
7	red	70	4.5	3.9	5/32	9	7.7	0.571	5.14
8	yellow	50	3.1	2.5	5/32	7	7.1	0.457	3.20
	Total	696						Total	41.18

C2	383.46'	S 65° 26' 44" W	143.65'	144.50'



AS FIELD LOCATED ON 8/14/02.
LAKE NORMAN WAS 754.80.
E IS PARTIALLY IMPROVED WITH

PIER #8157

L1 L2 L3 L4 L5 L6 L7 L8 L9 L10 L11 L12 L13 L14 L15

5/8" REBAR SET

EXISTING 1/2" REBAR

EXISTING 5/8" REBAR

50'

15'

51.7'

58.1'

136.06'

S 14° 11' 00" E

N 4° 15' 56" W

230.50'

FUTURE HOUSE

PT ST

15.7'

Any drain in RETAINING WALL must be 25' from lowest line

33.0'

15'

METER POLE

3" SCH 40 PVC

LOT 293

8 LINES

CENTRAL VALVE BOX (SEE DETAIL)

1 96' blue
2 96' white
3 96' red
4 96' blue
5 96' yellow SETBACK LINES
BUILDING
96' white 6
Cleanout
70' red 7
58' yellow 8

2" SCH 40 PVC

50' min

C1

C2

TIE LINE

5/8" REBAR SET

Proposed Well site

Turn-up

GRAVEL DRIVE

WELL

11.8'

5/8" REBAR SET

EXISTING BENT 1" REBAR

1¼" SCH 40 PVC SLEEVED IN 4" CORRUGATED DRAIN PIPE

CLOVERHILL ROAD

60'

(a) Trench for supply lines packed w/ Bentonite

(b) Supply line beside house damaged during drilling by Park Co.

(c) Valve Box mound down slope to flush up with ground surface

1" = 30'

LOT 291
GLEN L. RHOI
wife JEANNE P.
DEED BK. 1120

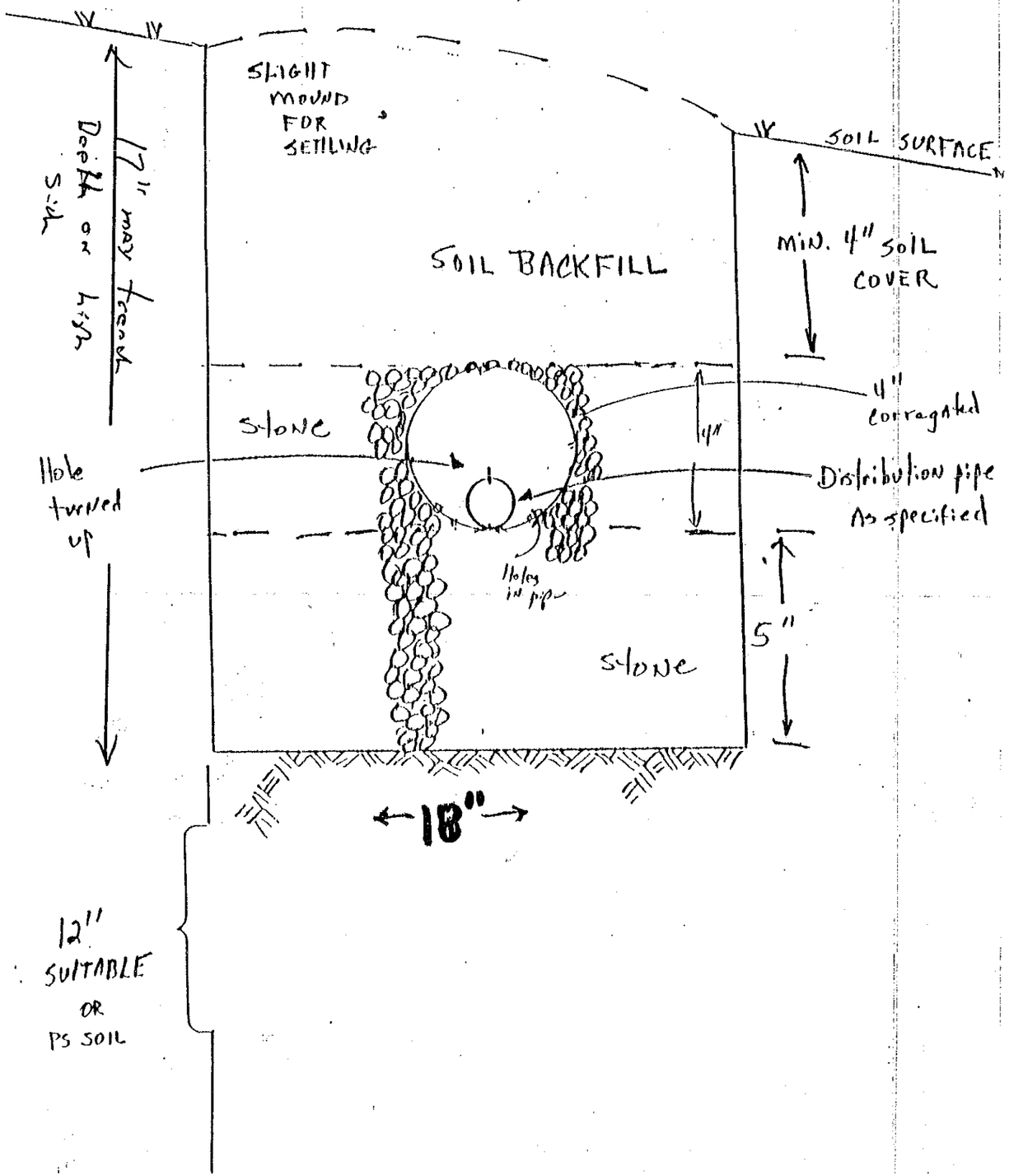
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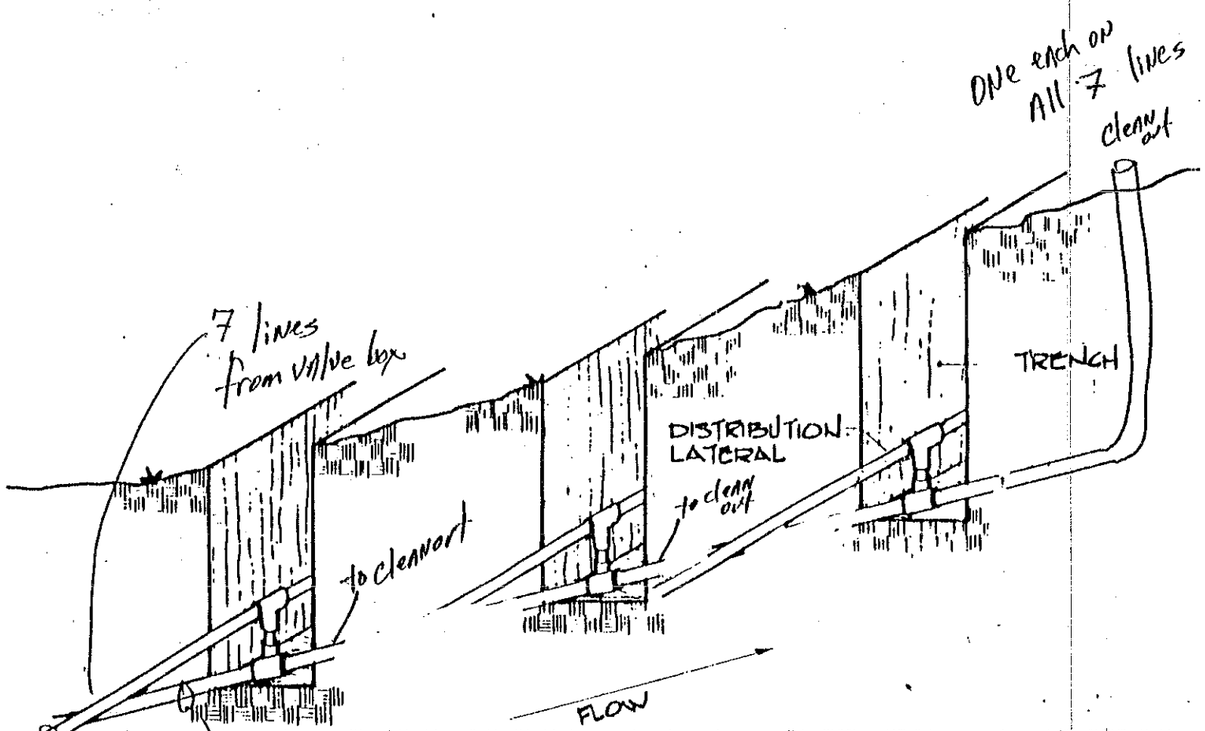
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PROFESSIONAL

3 LPP Trench Design

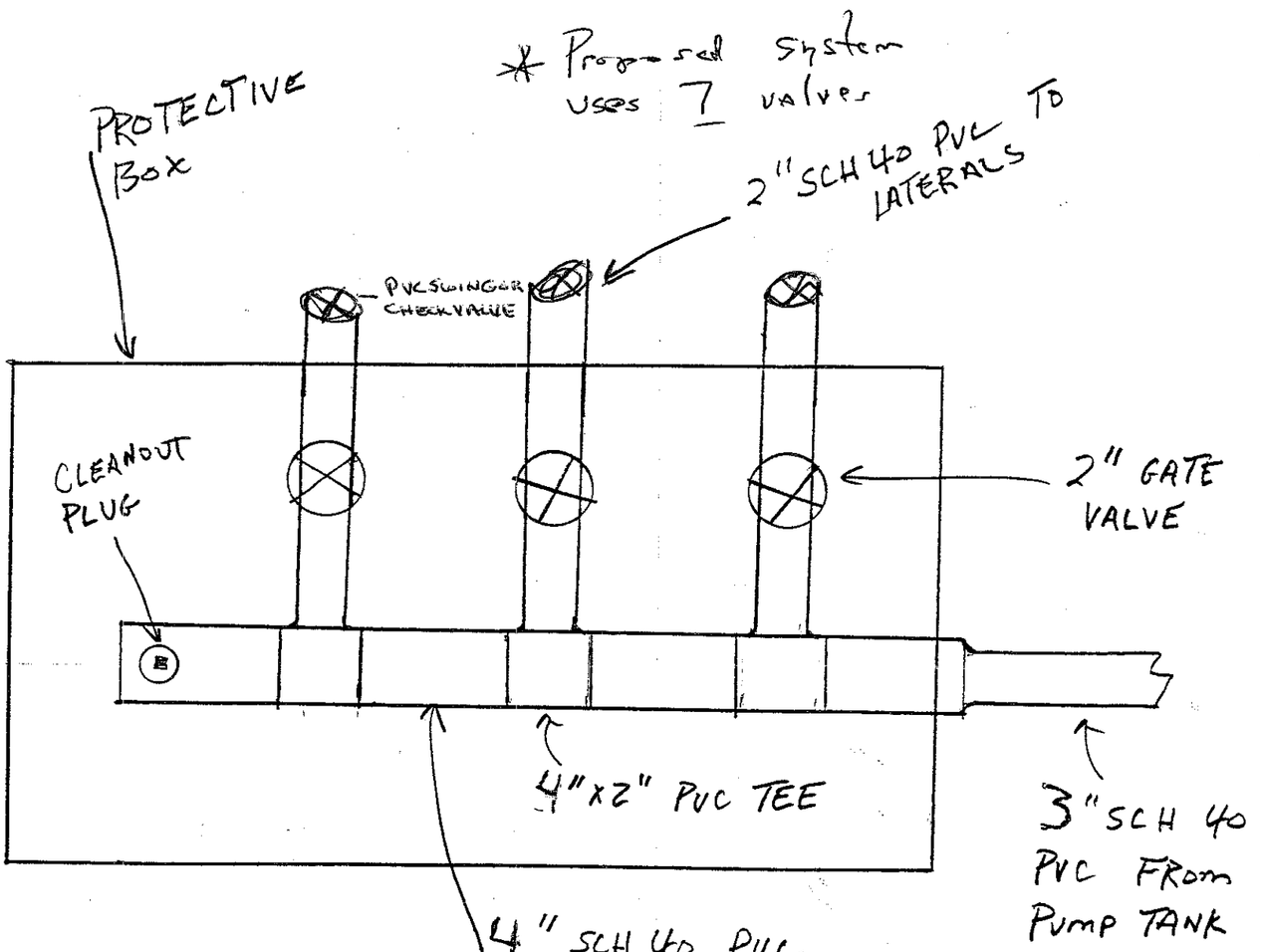
typical



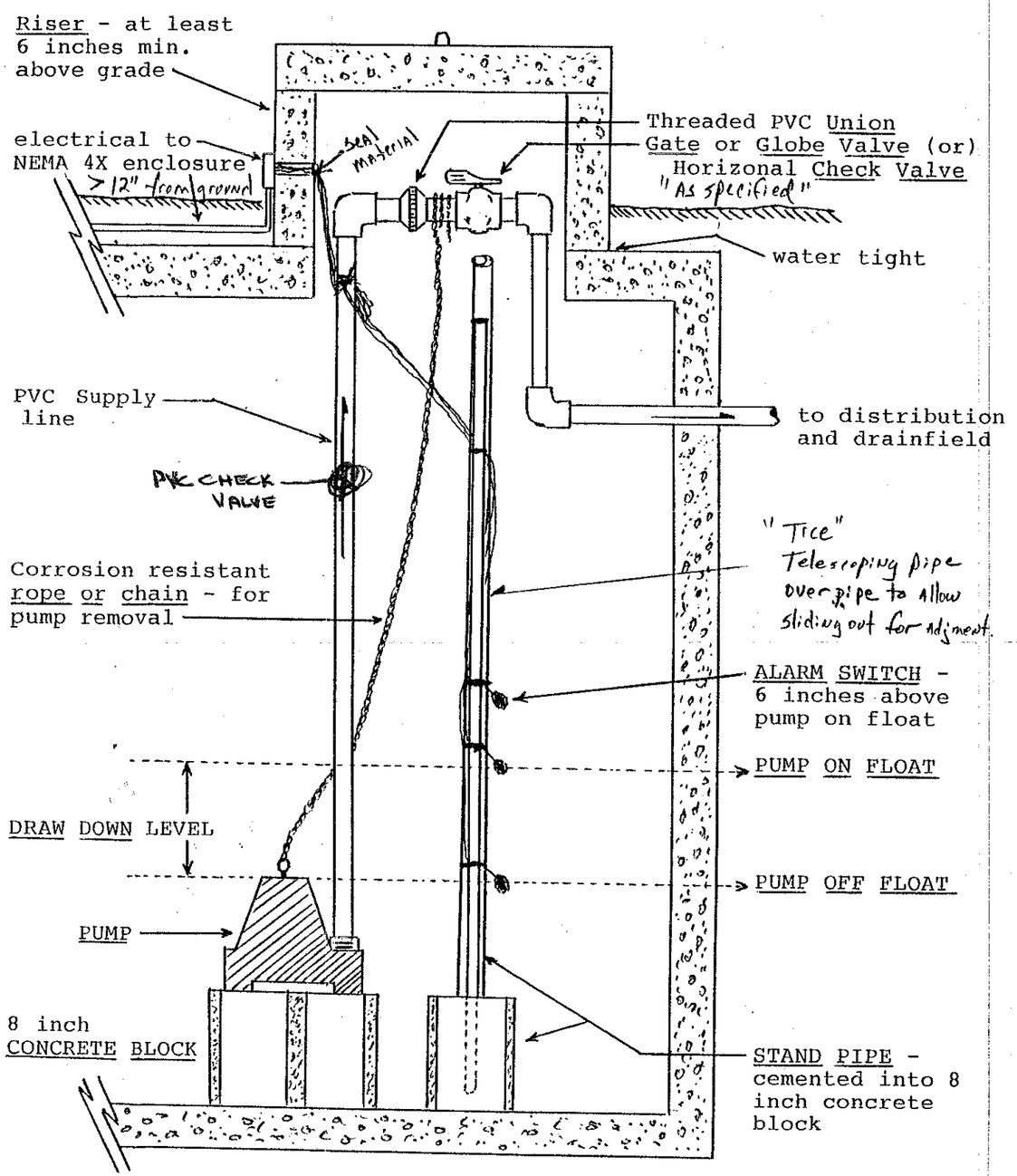


from Cooper et al, 1982

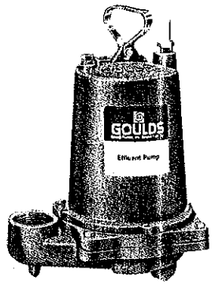
5. CENTRAL VALVE BOX DETAIL



6. PUMP DIAGRAM



GOULDS PUMPS



Submersible Effluent Pump

MODEL

3885

PROSURANCE AVAILABLE FOR RESIDENTIAL APPLICATIONS.

APPLICATIONS

Specifically designed for the following uses:
- Homes
- Farms
- Trailer courts
- Motels
- Schools
- Hospitals
- Industry
- Effluent systems

SPECIFICATIONS

Pump
- Solids handling capabilities: ¾" maximum.
- Discharge size: 2" NPT.
- Capacities: up to 140 GPM.
- Total heads: up to 128 feet TDH.
- Temperature: 104°F (40°C) continuous 140°F (60°C) intermittent.
- See order numbers on reverse side for specific HP, voltage, phase and RPM's available.

FEATURES

■ **Impeller:** Cast iron, semi-open, non-clog with pump-out vanes for mechanical seal protection. Balanced for smooth operation. Silicon bronze impeller available as an option.

■ **Casing:** Cast iron volute type for maximum efficiency. 2" NPT discharge.

■ **Mechanical Seal: SILICON CARBIDE VS. SILICON CARBIDE** sealing faces. Stainless steel metal parts, BUNA-N elastomers.

■ **Shaft:** Corrosion-resistant, stainless steel. Threaded design. Locknut on three phase models to guard against component damage on accidental reverse rotation.

■ **Fasteners:** 300 series stainless steel.

■ Capable of running dry without damage to components.

■ Designed for continuous operation when fully submerged.

MOTORS

■ Fully submerged in high-grade turbine oil for lubrication and efficient heat transfer.

■ **Class B insulation.**

Single phase:
- Built-in overload with automatic reset.
- All single phase models feature capacitor start motors for maximum starting torque.
- ⅓ and ½ HP – 16/3 SJTOW with 115 V or 230 V three prong plug.
- ¾-2 HP – 14/3 STOW with bare leads.

Three phase:
- Overload protection must be provided in starter unit.
- ½-2 HP – 14/4 STOW with bare leads.

■ **Designed for Continuous Operation:** Pump ratings are within the motor manufacturer's recommended working limits, can be operated continuously without damage.

■ **Bearings:** Upper and lower heavy duty ball bearing construction.

■ **Power Cable:** Severe duty rated, oil and water resistant. Epoxy seal on motor end provides secondary moisture barrier in case of outer jacket damage and to prevent oil wicking. 20 foot standard with optional lengths available.

■ **O-ring:** Assures positive sealing against contaminants and oil leakage.

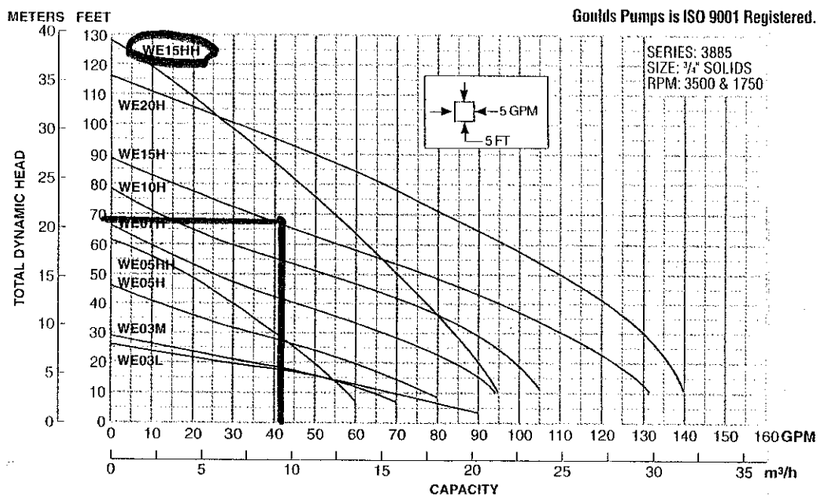
■ Consult factory for information on CSA listed models.

AGENCY LISTINGS

Canadian Standards Association File #LR38549

Underwriters Laboratories File #83318

Goulds Pumps is ISO 9001 Registered.



Goulds Pumps

ITT Industries

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Effective January, 1999
B3885

TONEY C. JACOBS & ASSOCIATES, INC.

Consulting Soil Scientists

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February 6, 2004

To: Mr. Wesley Sparks, R.S.
Iredell County Health Dept.
Mooresville, NC 28115

From: Toney C. Jacobs, LSS

Ref: Permit 109051 Ashline

After a short conversation with David Hinson, we are requesting to route 2 short sections of solid pipe around specimen Oaks. Lost line sections (approx. 8') will be added to the end of each line.

