B. K. BARRINGER, JR., P.E.
P.O. Box 293
MOORESVILLE, NORTH CAROLINA 28115

(704) 664-3161

TO JOE INMAN

DATE 7-21-87 | JOB NO.

PROJECT LPP

LOCATION SECT 9 LOT 168

CONTRACTOR PATTERNOTE RD. | OWNER

WEATHER IREDELL | TEMP. 60 ° at AM PM

PRESENT AT SITE

THE FOLLOWING WAS NOTED:

I have inspected this LPP system. It is installed according to plans & specifications & appears to function according to these plans & Spec.

At this time the following work is to be done before completion.

Backfill field with 6" to 10" suitable soil.

Construct surface diversion swale at an elevation above the infiltration field.

COPIES TO

FIELD REPORT

SIGNED

KELLY — SHEETS

PER OUR CONVERSATION - NOPE YOU CAN HAVE AN ANSWER BY WED AM.

THANKS.

JI -

# RECOMMENDED INDIVIDUAL RESIDENCE MODIFIED LOW-PRESSURE PIPING GROUND ABSORPTION, WASTEWATER DISPOSAL SYSTEM

For

Joe Inman

Lake Norman Section 9, Lot 168

Patternote Road (SR 1240)

Iredell County, N. C.

PREPARED BY:

B. K. BARRINGER, JR., P. E.

N. C. Registration No. 3370

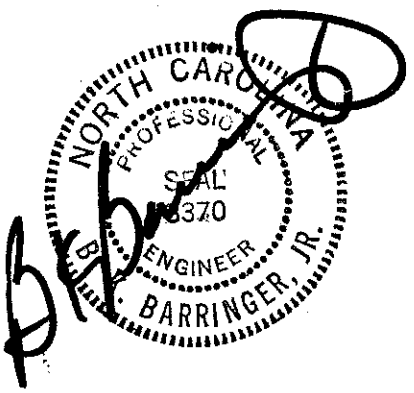
154 East Iredell Avenue

P. O. Box 298

Mooresville, N. C. 28115

(704)663-1859 or NCWats 1-800-222-3600

July 24, 1986



# LOW PRESSURE PIPING SYSTEM

DESIGN CONSIDERATIONS:

PROPOSED THREE BEDROOM HOME with three baths and a washing machine. The unit will be serviced by a water well located a distance greater than 100' from the septic system.

LOCATION: The property is Lake Norman Section 9, Lot 168, located approximately one-half mile from Blume Road (SR 1178) on Patternote Rd. (SR 1240) on the left, fronting onto Lake Norman.

TERRAIN: The lot is steep sloped with grades of 5'/30' to 5'/20' in the area of the drain field. The property has a heavy cover of hardwoods 12" down in size. The suitable soil depth is shallow (less than 3').

REFERENCE MATERIAL:

(1) DESIGN AND INSTALLATION (Manual)
OF LOW PRESSURE PIPE WASTE WATER TREATMENT SYSTEMS
By: Craig Cogger; Bobby L. Carlisle; Dennis Osborne; Ed Holland
Published by: UNC Sea Grant College Publication. UNC-SG-82-03
May, 1982.

(2) LAWS AND RULES FOR GROUND ABSORPTION SEWAGE DISPOSAL SYSTEM
SECTION .1900 of the N. C. Administrative Code
Title 10
Dept. of Human Resources
Chapter 10
Health Services; Environmental Health
Subchapter 10a; Sanitation
Published by: N. C. Dept. of Human Resources
July 1, 1982.

RECOMMENDATIONS: Due to the shallow soil depth and steep slope, a low pressure piping system is recommended for the location. Trees and underbrush shall be removed as called for herein and suitable fill material shall be placed over the field area. Layout of the field and preparation hereafter called for shall be strictly followed to the approval of the Engineer and the Iredell County Sanitarian.

## OWNERSHIP RESPONSIBILITIES FOR A LPP SYSTEM

It must be kept in mind that this system is designed to accept a moderate amount of waste water (which is called the EFFLUENT), in a minimal water absorbing soil.

Conservation measures must be undertaken by all members of the household to minimize the volume of waste water entering the disposal system, including but not limited to, the following precautions:

(a) provide water conserving plumbing fixtures within the house;

(b) develop conservative water use habits;

(c) monitor and maintain the system as necessary for proper operation;

(5) Prior to actually beginning construction of the system, carefully locate, lay out and identify the disposal site, manifolds and the lateral piping networks, using a tripod mounted engineer's leveling instrument to accurately establish each lateral along a level contour. Note: Lateral pipe runs which conflict with cut-off-in-place stumps or trees shall "snake" by with a 12" minimum trench clearance and then continue along its projection run. (The 5' minimum trench separation must be maintained.)

(6) Excavate for and construct curtain drain (if shown on plan).

(7) Excavate lateral network trenches 6" wide by 18" deep (see detail). Remove loose soil from bottom of trench. At 20' intervals, leave undisturbed earthen dam in bottom of the trench 6" high and 12" long. Next, excavate for manifold piping.

(8) Install small stone (3/8" to 1" size) in bottom of the lateral trench to the proper depth of approximately 12" below finish ground level. Rake the stone level and smooth in preparation to receive the PVC lateral.

(9) Prior to installation of PVC manifold and lateral piping, fabricate lateral piping with 5/32" orifices (holes) at scheduled locations along the bottom of the pipe. All joints in lateral and the manifold piping shall be water tight connections to insure that the only source of the water seepage from the system is though the orifices as designed. See layout, detail, and data sheet. Carefully install manifold and lateral network according to the attached designed layout using care to insure that holes shall be located at required intervals and as shown on the "typical section through the lateral trench". A larger diameter protective sleeve with cap or approved box with lid shall be placed over the turned up lateral and positioned level with the ground surface.

(10) Carefuly backfill lateral trench with washed stone (size 3/8" to 1") to a depth of 10" below finish grade, avoiding displacement of piping. Then backfill to finish grade with clean (debris free) earth.

(11) Carefully backfill manifold trenches to finish grade with clean (debris free) earth (no stone).

(12) Refer to Imported Soil Requirements and Installation Procedure Specifications (page 7) for procedure for covering nitrification field.

(13) Leave absorption area with a raked surface, ready for grassing.

(14) The installation contractor shall stabilize the area of construction by planting and seeding with Kentucky 31 tall fescue and shall keep the planted area watered and mulched until such time that a hardy stand of grass is established. Prior to seeding, evenly distribute and mix with the soil 8-8-8 commercial fertilizer at the rate of approximately 40 sf per pound (1,000 pounds per acre). For soils with a pH of 6.5 or less, hydrated agricultural lime shall be applied at the rate of 20 sf per pound (2,000 pounds per acre), and at a rate of 40 sf per pound (1,000 pounds per acre) for soils with a pH greater than 6.5 as determined by soil samples tested by the N. C. Agriculture Dept. or as approved by the engineer.

Controls are fastened to the outlet pipe with clamps or brackets supplied by the manufacturer. The lower level control or "pump-off" must be positioned above the pump, so that the pump remains submerged at all times. The upper level control "pump-on" is positioned to pump a specified volume of effluent. The high water control float is then mounted about 3" above the upper pump-on control. (NOTE: Care must be taken to ensure that the floats do not become fouled by other components in the tank such as the electric power cord or the lifting rope.)

The pump outlet pipe should be connected to the supply manifold with a threaded PVC union (or dresser coupling) to allow quick removal. The gate or glove valve must also be installed in the suppply line (within the pump chamber) to allow final adjustment of the pressure. If effluent will be pumped downhill, a 1/4" siphon-breaker hole must be drilled in the bottom of the supply line before it leaves the pump tank. This breaks any vacuum in the system and prevents the inadvertent siphoning of effluent out of the tank. This hole is very important.

(24) ELECTRICAL CONNECTIONS: The pump and high water alarm must be placed on separate electrical circuits. (If the pump circuit fails, the alarm must still be able to operate.) Follow the manufacturer's recommendations for proper fuses or circuit-breakers. All electrical connections must be made outside the pumping chamber. Power cords from the pump and controls should be plugged into a NEMA-approved outdoor receptacle mounted outside of the pumping chamber. The receptacle must not be located inside the pumping chamber due to the corrosive and explosive gases that may form from the sewage.

Electrical connections may be made inside the pumping tank only if wired inside a sealed, water-tight box. Some level-control switches have a box built into the housing but are more expensive than the plug-in devices.

Wiring between the pumping chamber and the house should meet state and local code requirements. A lightning arrestor is recommended to protect the pump and controls from electrical surges.

(25) Proper operation check: After all components have been installed and connected, the system should be checked for proper operation. With electrical power turned off, fill the pumping chamber with water from a garden hose (or allow effluent to accumulate) until the liquid rises to the level of the high-water alarm float. Turn on the electrical power. The alarm light should go on in the house, and the pump should start operating. 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.

(26) 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. To adjust the head:

(a) Glue a 4' length of pipe (preferably clear) to a threaded adapter that will screw onto the turn-up adapters. (Call this the "test tube").

(b) Replace the turn-up cap with the "test tube".

(c) Turn the power on to allow liquid to rise in the "test tube".

IMPORTED SOIL REQUIREMENTS AND INSTALLATION PROCEDURE SPECIFICATIONS:

Rule of thumb: Work soil only when dry. "If soil is too wet to plow, it is too wet to disturb for LPP System construction."

Imported soil shall be of suitable or of provisionally suitable texture, structure and permeability: See reference material (3) Laws & Rules for Ground Absorption Sewage Disposal Systems, ---and refer to Section 1941, Soil Characteristics. All imported soil shall be acceptable to the Engineer. This Contractor shall provide soil samples and/or data, prior to actual soil importation, as may be required by the Engineer in order to determine "acceptable status".

Preliminary requirements prior to beginning filling operations: Barriers in place at perimeter of area to be filled to protect area from traffic. (Maintain.) Clearing and removal of all vegetation and all debris.

Installation: Make two passes, at right angles to each other, to loosen existing soil surface 3" to 4" deep using a cultivator or a garden plow to provide a suitable mix at the interface of the existing and fill soils. Import fill dirt and stock pile on the building site away from the area to be filled. Using a small crawler type front end loader, transport fill dirt onto the fill area and place in 6" maximum lifts, with each load being pushed into place ahead of the tracking of the loader to avoid driving on the prepared plowed area. Place the fill dirt by straight runs of the loader, without maneuvering or turning except at a minimum to avoid over-compaction of the fill dirt. Carefully till this fill dirt into the top 3" to 4" of the natural soil creating a blended, gradual boundary between the two soils. Subsequent lifts of fill dirt shall be placed in this same manner and tilled in place until the desired height is attained.

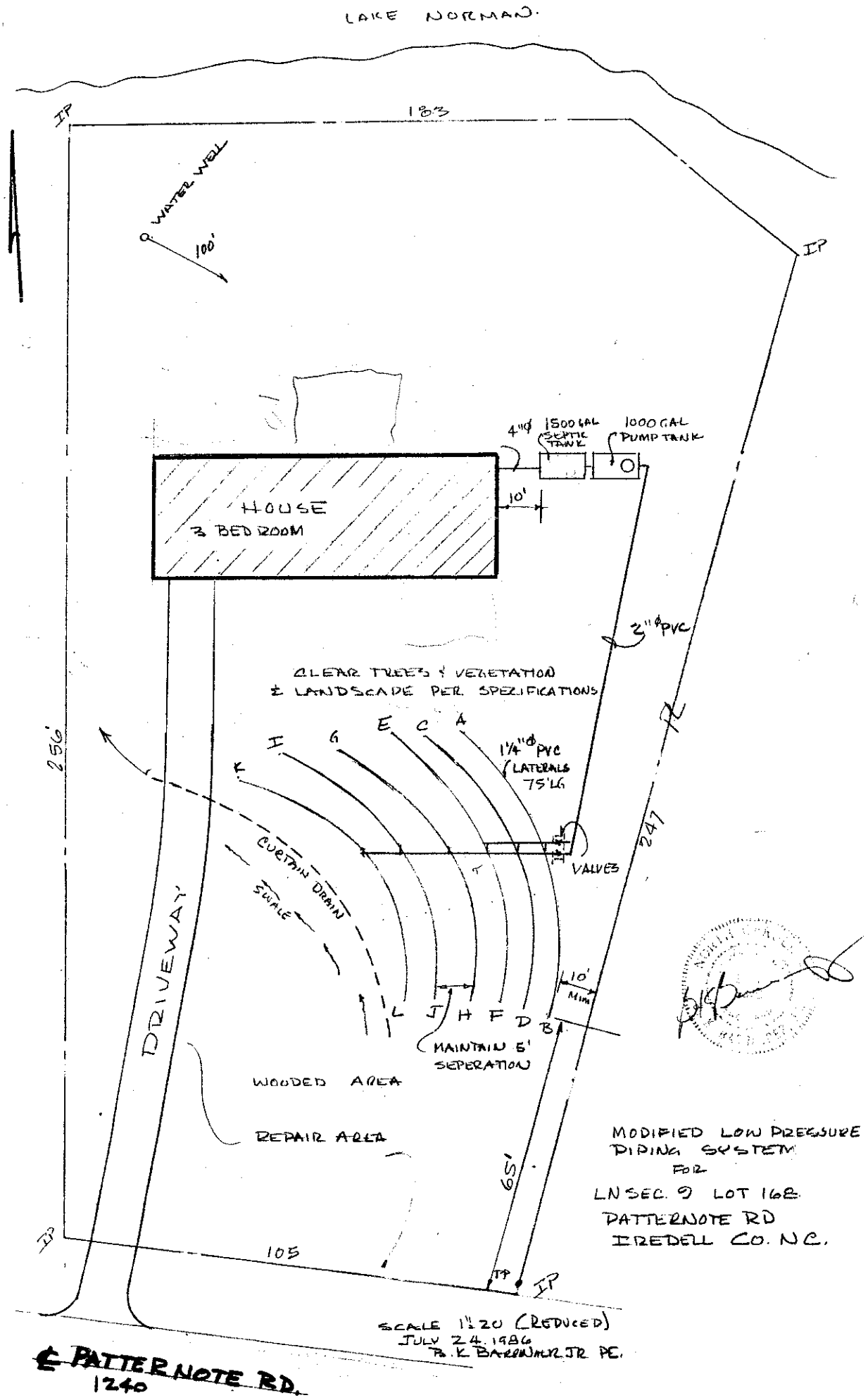
Compaction shall be similar to the compaction of the existing soil of the disposal area, thereby providing stability of trench walls after excavation and during the installation of the disposal field components.

Do not layer or laminate soils, blend them. Do not work with overly damp or wet soil as this will cause over-compaction and sealing, leading to failure of the system.

Just prior to layout of the system the completed fill area shall be fine graded with a rubber tire tractor with box blade.

After the system has been installed and tested satisfactorily, the finish grade shall be reworked very carefully with a rubber tired tractor, leaving it ready for the grassing operation.

This contractor shall re-check and repair as necessary all traffic barriers to the disposal area and leave them in place. The general contractor shall remove these barriers just prior to owner's taking possession of the new residence and site.


LAKE NORMAN.
IP
183
WATER WELL
100'
IP
4" ϕ
1500 GAL SEPTIC TANK
1000 GAL PUMP TANK
HOUSE
3 BED ROOM
10'
3" ϕ PVC
CLEAR TREES & VEGETATION & LANDSCAPE PER SPECIFICATIONS
256'
I
G
E
C
A
K
1¼" ϕ PVC LATERALS 75' LG
VALVES
CURTAIN DRAIN
SWALE
DRIVEWAY
247'
L
J
H
F
D
B
10' Min
MAINTAIN 5' SEPERATION
WOODED AREA
REPAIR AREA
65'
IP
105
IP
IP
SCALE 1"=20 (REDUCED)
JULY 24, 1986
B. K. BARRINGER JR PE.
MODIFIED LOW PRESSURE PIPING SYSTEM FOR
LN SEC. 9 LOT 16B
PATTERNOTE RD
IREDELL CO. N.C.
℄ PATTERNOTE RD.
1240

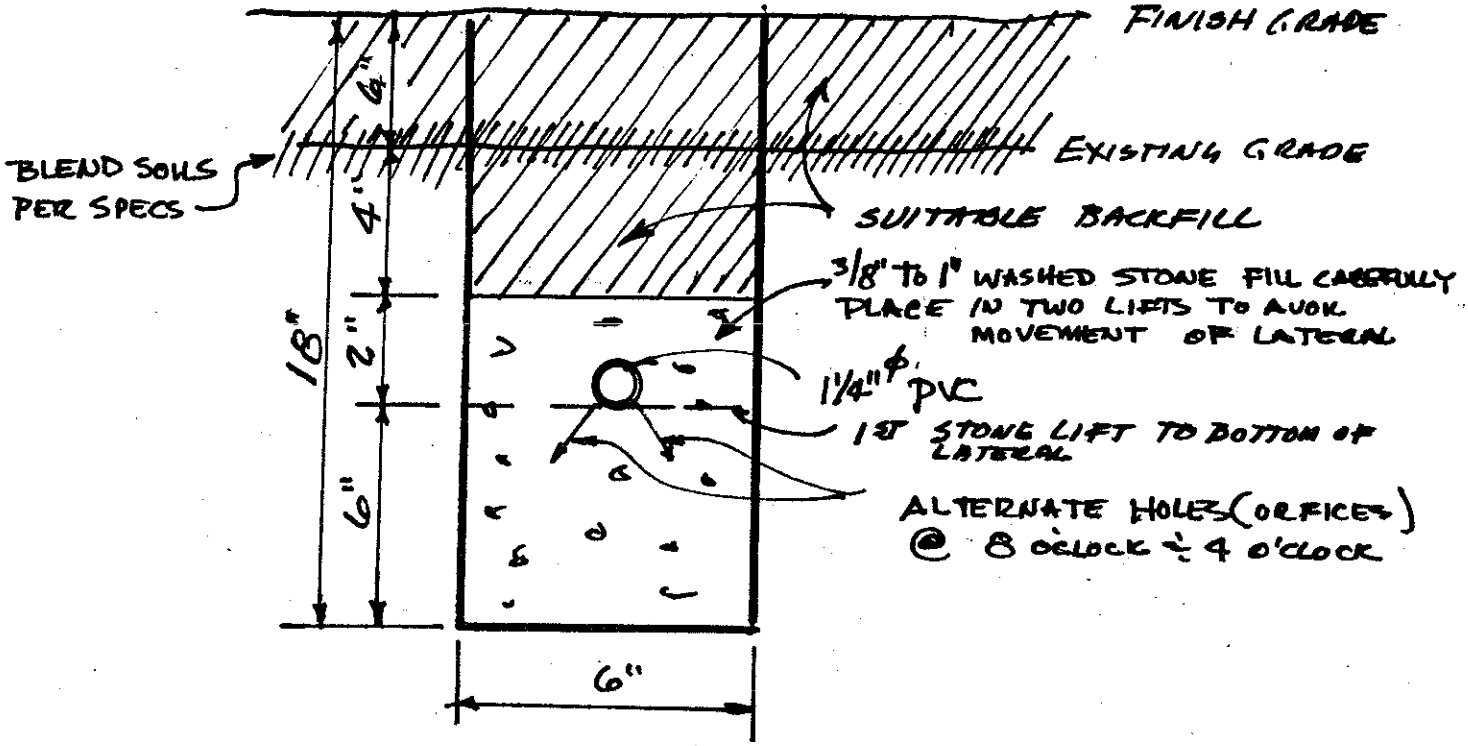
# LINE, ORIFICE SIZE & SPACING

| LATERAL | LENGTH | ORIFICE SIZE | DIST FROM MANIFOLD TO FIRST ORFEE | ORIFICE SPACING | DIST FROM LAST ORIFICE TO END OF LATERAL | NUMBER OF ORIFICES PER LINE |
|---|---|---|---|---|---|---|
| A | 37'-6" | 5/32" ϕ | 9'-6 | 10'-0" | 8'-0" | 3 |
| B | | | 8'-0" | 10-0" | 9'-6 | 3 |
| C | | | 5'-6 | 8-0" | 8'-0" | 4 |
| D | | | 7' | 8'-0" | 6'-6" | 4 |
| E | | | 7'-0" | 8'-0" | 6'-6" | 4 |
| F | | | 5-6 | 8'-0" | 8'-0" | 4 |
| G | | | 4'-0" | 7'-0" | 5'-6" | 5 |
| H | | | 3'-0" | 7'-0" | 6'-5" | 5 |
| I | | | 4'-0" | 6'-0" | 3'-6" | 6 |
| J | | | 2'-0" | 6'-0" | 5'-6" | 6 |
| K | | | 3'-6" | 5'-0" | 4'-0" | 7 |
| L | | | 3'-6" | 5'-0" | 4'-0" | 7 |
| | | | | | | 58 HOLES |
| | | | | | | |
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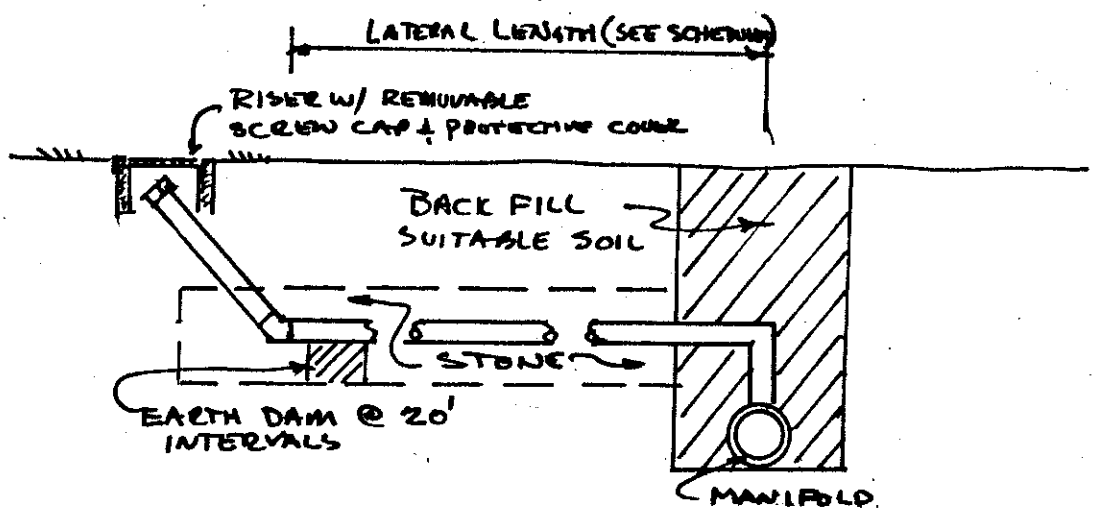
**B.K. Barringer** / Associates
154 East Iredell Avenue
Mooresville North Carolina 28115
704 / 663 - 1859

NORTH CAROLINA PROFESSIONAL SEAL 3370 ENGINEER B. K. BARRINGER JR.

LOT 168




SECTION OF LATERAL TRENCH - NO SCALE



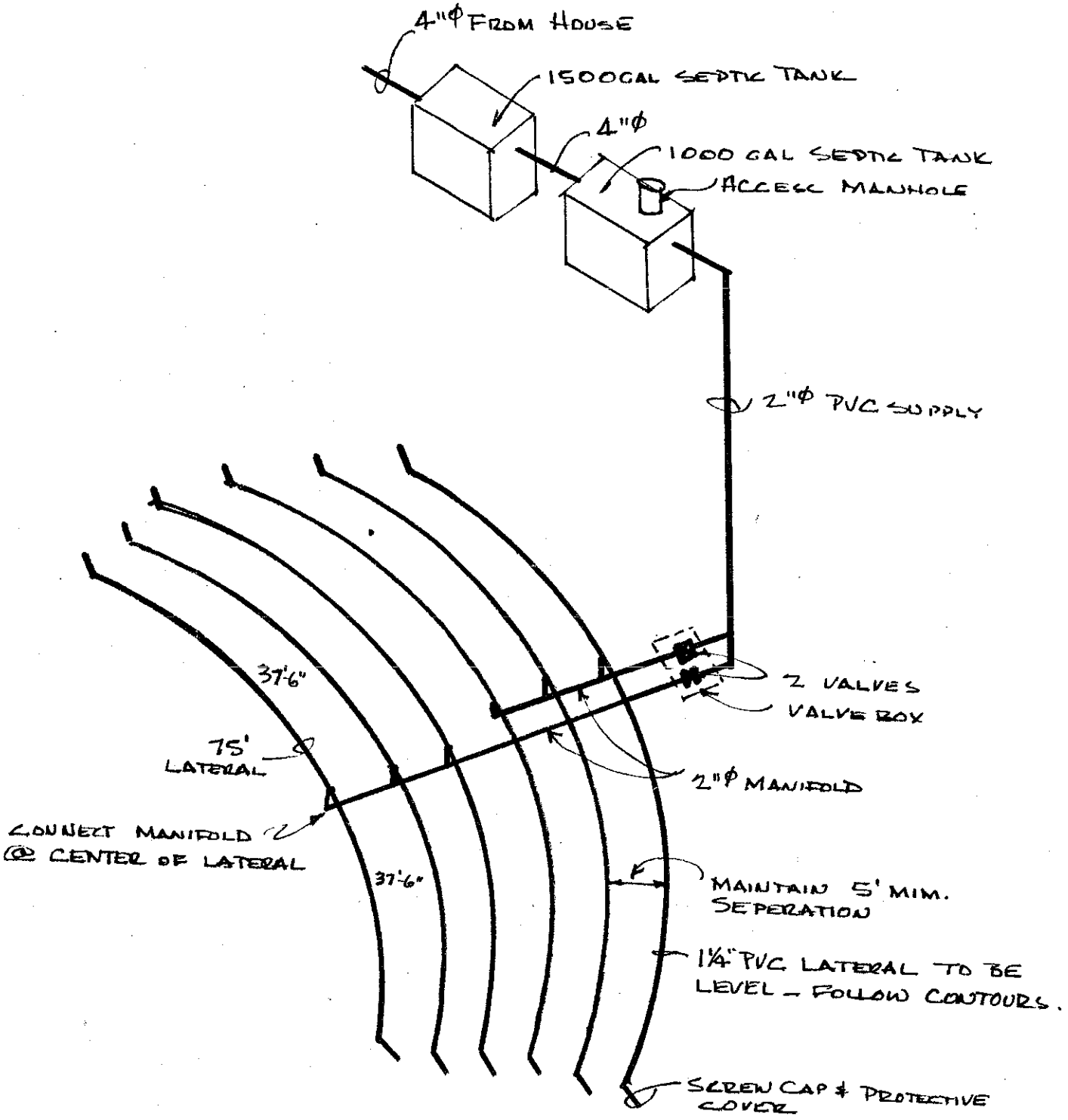

SECTION OF MANIFOLD & ELEVATION OF LATERAL & TRENCH

NO SCALE

LOT 168
PATTERNOTE

TYPICAL DETAILS FOR LOW PRESSURE PIPING SYSTEM
B K BARRINGER JR PE.

NORTH CAROLINA PROFESSIONAL SEAL 3370 ENGINEER B. K. BARRINGER, JR.




NO SCALE

NORTH CAROLINA PROFESSIONAL SEAL 13370 ENGINEER K. BARRINGER, JR.

SCHEMATIC MANIFOLD & LATERIAL LAYOUT

LOT 168 LN SECT 9
PATTERNOTE RD
IREDELL CO. N.C.