Specifications and Scope of Work

For

INDIVIDUAL RESIDENCE

LOW PRESSURE PIPING

GROUND ABSORPTION, WASTEWATER

DISPOSAL SYSTEM USING EEE-ZZZ LAY DRAIN

For

Jim & Doris Wilson
Lot 8
183 High Lake Dr
Troutman, (Iredell County), NC

May 15, 2002



PREPARED FOR:

Jim & Doris Wilson
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Phone: (704) 528-6141

PREPARED BY:

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WILSON RESIDENCE:

The scope of this project is to install a new drain field using EEE-ZZZ Lay Drain line pressure dosed using LPP distribution.

Attached correspondence, calculations, details and IWWS approval shall be followed.

The existing septic tank, pump tank and pump are to be reused. Repair to the forcemain in the tank shall be made. A 4"Ø slotted filter shall be placed in the tee of the septic tank.

House roof drains, or downspouts, that direct water shall be collected and piped off to prevent flow into the drain field area.

A subsurface curtain drain shall be installed upslope of the top line of the nitrification field. The line should be deeper than the depth of the nitrification lines.

All components of the nitrification field and their installation shall be as called for in 15A NCAC 18A. 1900. and IWWS-95-3R.

To minimize distribution to the disturbed area, the contractor shall use care withal equipment. The disturbed areas shall be sodded and left clear.

Force Main and Manifold: The force main and manifolds from the pump tank to the laterals shall be Schedule 40 PVC sized as shown on the plans. Minimum bury depth shall be 30". All fittings and connections shall be as detailed. All valves within this piping system shall be True Union PVC ball valves capable of sustaining the working pressure and imposed loads. Each valve shall be accessible through a properly sized valve box brought flush with the ground surface.

LPP LATERALS: Prior to installation of PVC, force main, manifold and lateral piping, fabricate 1¼" diameter PR-160 lateral piping with orifices (holes) at scheduled locations along the top of the pipe. (See chart for size and spacing.) LPP lateral shall be 1-1/4" diameter PR 160 PVC pipe encased in 4" diameter corrugated plastic tubing and shall be certified as complying with applicable ASTM standards. The corrugated tubing shall have three rows of holes, each hole between 1/2" and 3/4" 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 tubing, the outside rows being approximately on 120° centers.

CONSTRUCTION SEQUENCE

Rule of Thumb: "If soil is too wet to plow, it is too wet to disturb for LPP system construction."

1. Lay out nitrification field network area with stakes and flagging. As soon as the absorption area is designated, it should be flagged, roped off and isolated from construction traffic. This barrier should be maintained until the system is accepted by the Owner. Refer to site plan for the size of absorption area and field locations. The Engineer has located and flagged the laterals as shown on the site plan.
2. Clear site of any and all man-made debris, construction materials, etc. Dispose of legally. Cut all trees in the area of the nitrification field flush with the ground. Do not remove any stumps. Consult with Owner before cutting any trees.

3. Prior to actually beginning construction of the system, carefully locate, lay out and identify 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. (A 9' minimum trench separation must be maintained centerline to centerline.)

4. Nitrification trench shall be constructed, as level as possible, but in no case shall the fall in a single trench bottom exceed 1/4" in 10' as determined by an Engineer's level. The nitrification trench shall not exceed a width of 36" and be 24" deep, except as approved by the County Health Dept.

5. All joints in lateral and the manifold piping shall be watertight connections to ensure that the only source of the water seepage from the system is through the orifices as designed. See layout, details, and data sheet. Carefully install pressure piping 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 valve box with lid shall be placed over the turned up lateral and positioned level with the ground surface (so as not to be damaged by mowing machine). The lateral shall be positioned for easy removal of the end cap for flushing.

6. Leave absorption area with a raked surface, ready for sod.

7. 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 facility, 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.

8. 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".
(d) Adjust the valves at the manifolds and/or in the pumping tank until the effluent reaches the desired height in the "test tube". Remember to include the distance below the ground surface to the lateral line when measuring the height. Refer to the flow calculation chart relative pressure head (h) for each line. This is the height above the lateral liquid should be in the temporary "test tube".

9. Final Landscaping: After the LPP is installed, the following should be checked to insure that the system will not be overloaded with excess rain water and run off:

a. The distribution field is shaped to shed rainwater and is free of low area.
b. Curtain drains, grassy swales or ditches for diverting ground and surface water are properly installed.
c. Gutter and downspout drains are directed away from the system.

10. Any problems should be corrected before approving the system.

11. Finally, the entire area should be planted with grass according to specifications.

OPERATION AND MAINTENANCE PROCEDURE:

The system is classified as a Type IV. The Regulations require that a person be certified by the N.C. Department of Environmental Health to operate this type of system. Operation, Maintenance and Inspection procedures shall be submitted to the County Health Department for approval. Procedures shall include but not be limited to the following:

- Minimum inspection/maintenance frequency shall be 2 times/year, with reporting frequency of 1 time/year to the local Health Department.
- Septic system shall be pumped every 4 years or when solids accumulate to the volume of the tank.
- On a scheduled basis, clean and inspect Biofilter in the septic tank and the sock filter in the pump tank. When washing the filter, debris must be sprayed directly back into the septic tank and not onto the lawn.
- The LPP system should be observed by the regulatory agency one, three, six and nine months after initial installation, and then every 3 years. An inspection report should be completed and filed each time the system is checked.
- All laterals shall be pressure flushed annually with clean water.
- Pressure head for laterals should be checked and adjusted one month after installation and 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 deflected 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 management entity in conjunction with the local Health Department shall establish an operation and maintenance program and procedure based on experience obtained from similar installations.

JIM WILSON | 103 HIGH LAKE DR | HARBOR WATCH | 4-26-04

FREDERICA DE

REPAIR (REPLACE) EXIST LPP. SYSTEM

3 BR. LTAR 0.3 G/SF/D.

REUSE EXIST SEPTIC TANK & PUMP & PUMP TANK

$\frac{1200\ GPM \times 3 = 360\ GPM}{0.3\ G/SF/D} = 1200\ SF$

USE EEEZZZ LAY 2012 H (12"H) ∴ FROM INNUS-9J-3R

$\frac{1200\ SF}{4'} = 300\ LF\ REQ'D$

LPP PRESSURE, DOSE

WITH 1¼"Ø LATERALS W/ ORFICE / TABLE

USE EXIST PUMP

DOSE VOL = LATERALS $(312\ LF)\left(\frac{9.0}{100}\right)(5) = 140\ GAL$

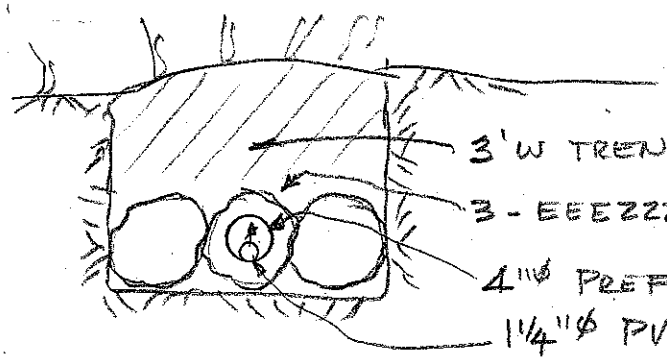
2" FORCE MAIN: $70'\left(\frac{174}{100}\right) = 12.1$

DOSE VOL 152 GAL/DOSE

DRAW DOWN (VARIFY TANK SIZE) $\frac{60 \times 98 \times 1}{1728} \times 7.48 = 25.45\ G/in.$

$\frac{152\ GAL}{25.45\ gal/in} =$ 6" DRAW DOWN

DETERMINE PUMP RUN TIME BY MEASURING DRAW DOWN



SECTION THRU LATERAL

312' TOTAL / SITE PLAN.

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

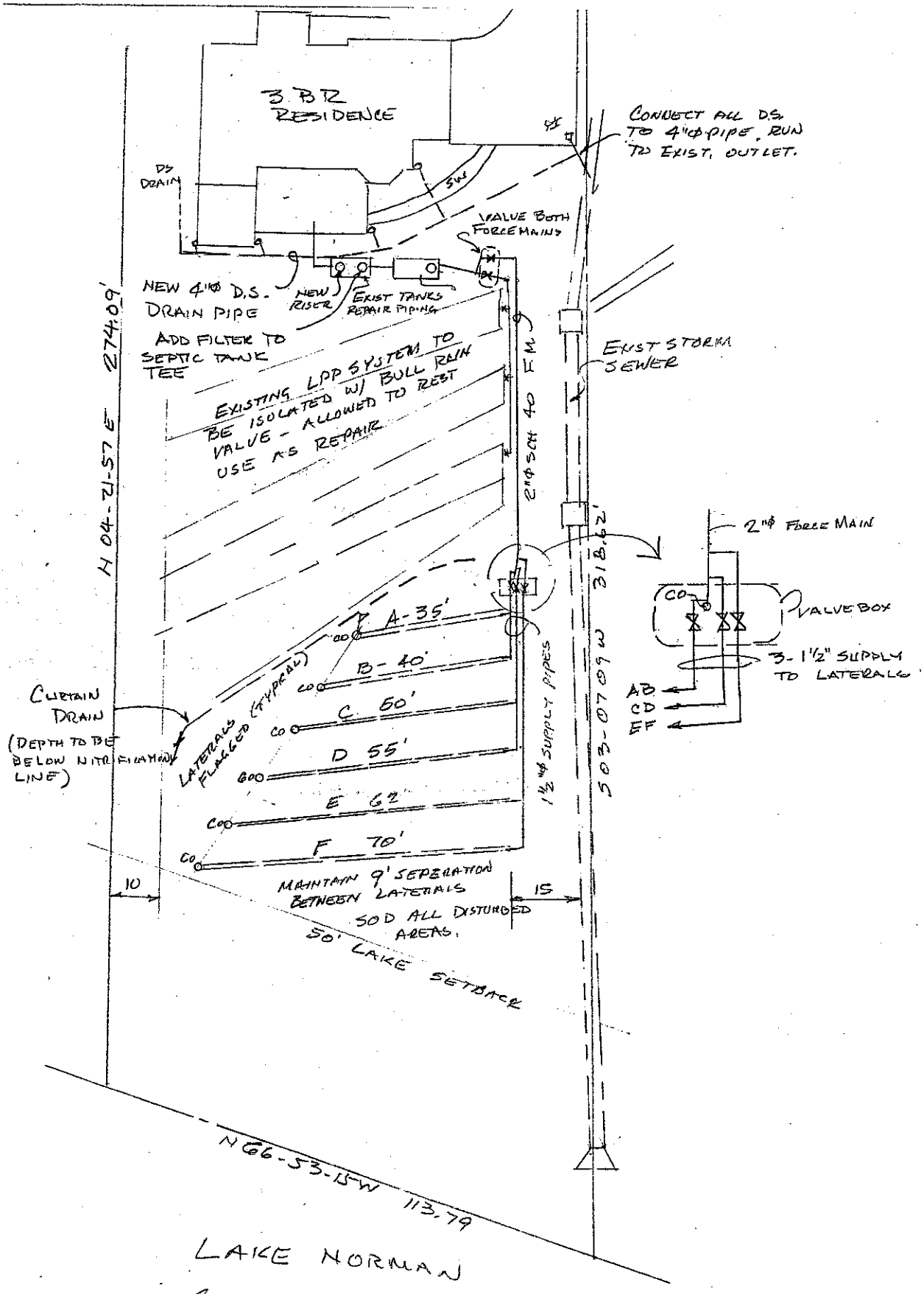
AMPAD 22-141 50 SHEETS 22-142 100 SHEETS 22-144 200 SHEETS

LATERAL ORFICE SPACING

LATERAL	MANIFOLD	LGTH	ELEV	Rel (H)	ORF	G/M/ ORF	No OF ORF	G/M/ LINE	ORFICE SPACING	DIST TO 1ST	DIST TO LAST	GLK
A	①	35'	780	2.0	5/32" ϕ	0.41	6	2.46	6'-0"	2'-6"	2'-6'	0.07
B		40'	779	3.0		0.5	5	2.5	7'-0"	2'-6	2'-6	
C	②	50'	778	2.0		0.41	7	2.87	6'-0"	4'-0	4'-0"	
D		55'	777	3.0		0.5	7	3.5	7'-6"	5'-0"	5'-0"	
E	③	62'	776	2.0		0.41	7	2.87	8'-0"	7'-0"	7'-0"	
F		70	775	3.0		0.5	6	3.0	10'-0"	10'-0"	10'-0"	

312 LF

HOLES 38 17.2 GPM



5-14-02

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

PIEDMONT DESIGN ASSOCIATES, P.A.
SUITE 104 WESTFIELD CENTER
125 EAST PLAZA DRIVE
MOORESVILLE, NC 28115

SEPTIC SYSTEM REPAIR

JIM WILSON RESIDENCE
183 HIGH LAKE DR
TROUTMAN, IREDELL CO NC
MAY 14 02 SCALE 1" = 20', BKB