

RECEIVED

JUL 18 1994

Ans'd.....



FEBRUARY ASSOCIATES, INC.

P.O. Box 5427
Cary, N.C. 27512

Ph: 919/467-5427
Fax: 919/467-5463

Date: July 15, 1994

Mr. Thomas Boyce
Harnett County Health Dept.
PO Box 9
Leellington NC 27546

Attached please find our proposal for a low-pressure-pipe on-site sewage disposal system for:

property on Cokesburg Rd

The proposal includes:

- Plans & specs, including flow chart & calculations
- Plot plan
- Septic tank & pump tank specs
- Pump, controls, & accessory specs
- Other installation info

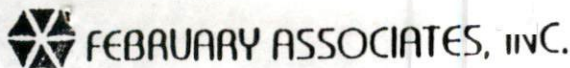
Please note that specific manufacturers mentioned in the proposal are for example: other products that meet or exceed the specifications may be substituted.

When review of plans has been completed, please forward one copy of the plans (and permit, if applicable) to:

Domingo Escamilla Phone: 362-5444
PO Box 1253 Mrs. Escamilla at work
Leellington NC 27526

If you have questions or require additional information, please call.

Katherine H. Tew, R.S., P.G.
President



FEBRUARY ASSOCIATES, INC.

P.O. Box 5427 Cary, N.C. 27511 919/467-5427

LPP system design & specifications
date: 7-14-94

county HARNETT
site location COKEBURY ROAD
JUST PAST MILK CREEK MNP

Owner DOMINGO & BRENDA ESCAMILLA

Address PO BOX 1253
FURQUAY VARINA NC 27526

Phone 362-5444 (MRS. @ WORK)

Tax Map _____ Parcel _____ Twp _____
Soils eval. by BOYCE, HCHD

Application rate .15 gal/ft²/day

Design flow 480 gal/day

Type of structure (check one)

Single family dwelling with 4 bedrooms.

Garbage disposal? NO

Business (describe) _____

No. of employees _____

Other (describe) _____

DESIGN SUMMARY

Drainfield: 3200 sq. ft.

Laterals: (640) 660 linear ft., 1 1/4" diameter 160 psl PVC or better

Configuration: 5 @ 120', 1 @ 60' IN TWO SUBFIELDS

Supply line: ~ 70 feet, 2" diameter Sch. 40 PVC

Manifold: SPLIT ~ 40 feet, 3" diameter Sch. 40 PVC

Manifold placement: CENTER tee: UP

Septic tank: 1200 gallons

Pump tank: 1200 gallons, 28 gallons per inch

Total dosing rate 53.6 gpm

Dosing volume 50' gallons

Drawdown in pump tank 18 inches

Total dynamic head 14.0 feet

Trench depth 12"-14"
Trench width 12"

Depth of gravel in laterals 8"

Size of gravel 3/8" - 1"

with Sch. 40
turnups, in
valve boxes or
6" diameter
sleeves w/ caps

Pump HYDROMATIC SP40M1

Controls PIGGYBACK PLUGS IN 12/12/14

NEMA 4X ENCLOSURE, HIGH WATER

ALARM ON SEPARATE CIRCUIT

(Other equipment which meets or exceeds specifications may be substituted)

Comments _____

Check valve ONE IN P.T., ONE AT FIELD

Gate valve(s) 2 AT FIELD

Anti-siphon hole NO

Curtain drain NO

Rhombus Panel

Escamilla

LATERAL	ELEVATION (FT)	ELEV. DIFF. (FT)	HEAD (FT)	HOLE SIZE (IN)	FLOW PER HOLE (GPM)	LENGTH (FT)	SPACING (FT)	NO. HOLES	FLOW PER LATERAL (GPM)	1ST AND LAST HOLE (FT)	INST FLOW RATE (GPM / FT)
1	100.00	0.00	2.0	5/32	0.407	60	4.0	14	5.70	4.0	0.095
2	100.00	0.00	2.0	5/32	0.407	60	4.0	14	5.70	4.0	0.095
3	99.50	0.50	2.5	5/32	0.455	60	4.5	12	5.46	5.3	0.091
4	99.50	0.50	2.5	5/32	0.455	60	4.5	12	5.46	5.3	0.091
5	98.90	1.10	3.1	5/32	0.507	60	6.0	10	5.07	3.0	0.085
6	98.90	1.10	3.1	5/32	0.507	60	6.0	10	5.07	3.0	0.085
1	98.50	0.00	2.0	5/32	0.407	60	5.0	11	4.48	5.0	0.075
2	98.50	0.00	2.0	5/32	0.407	60	5.0	11	4.48	5.0	0.075
3	97.90	0.60	2.6	5/32	0.464	60	6.0	9	4.18	6.0	0.070
4	97.90	0.60	2.6	5/32	0.464	60	6.0	9	4.18	6.0	0.070
5	97.70	0.80	2.8	5/32	0.482	60	6.5	8	3.86	7.3	0.064

OR END

FIELD NUMBER = 2

TOTAL LENGTH = 660 FT

TOTAL FLOW = 53.64 GPM

MAXIMUM REDUCTION OF FLOW BETWEEN LATERALS = 32.63%

Press any key to continue...

CALCULATIONS

Total dosing rate: 53.6 gallons per minute

Reduction of flow: 32.6 %

Slope: 9 %

Manifold cross-sectional area: 7.4 in²

Lateral cross-sectional area: 1.8 in² each

3 laterals/manifold, area: 5.4 in²

Ratio: 7.4 / 5.4 = 1.37

Top lateral elevation: 100.0

Pump-off elevation: 92.7

Elevation head: 7.3'

Design head: 2.0'

Friction loss: 3.9' =

supply line: 70' of 2" = 3.6'

manifolds: 40' of 3" = .3'

Fittings loss: .8'
(20% friction loss)

$$= \frac{.00113 LQ^{1.85}}{D^{4.87}}$$

L = length
Q = dosing rate
D = actual inside diameter
(assumes NEW pipe)

TOTAL DYNAMIC HEAD: 14.0'

Draining manifold & supply line: length 25' x 38.4 gal/100' = 9.6 gallons
length — x — gal/100' = — gallons = 9.6

Lateral volume: length 660' x 9 gal/100' = 59.4 gallons

Dosing volume: min: (5lat vol + drain) ~ 307 gallons
max: (10lat vol + drain) ~ 604 gallons USE: 504 gallons

Pump run time: 9.4 minutes Volume to pressurize: 69 gallons
13.7 % dosing volume delivered under gravity

Drawdown:

Interior dimensions of pump tank: length 108 inches X width 60 inches X 1"

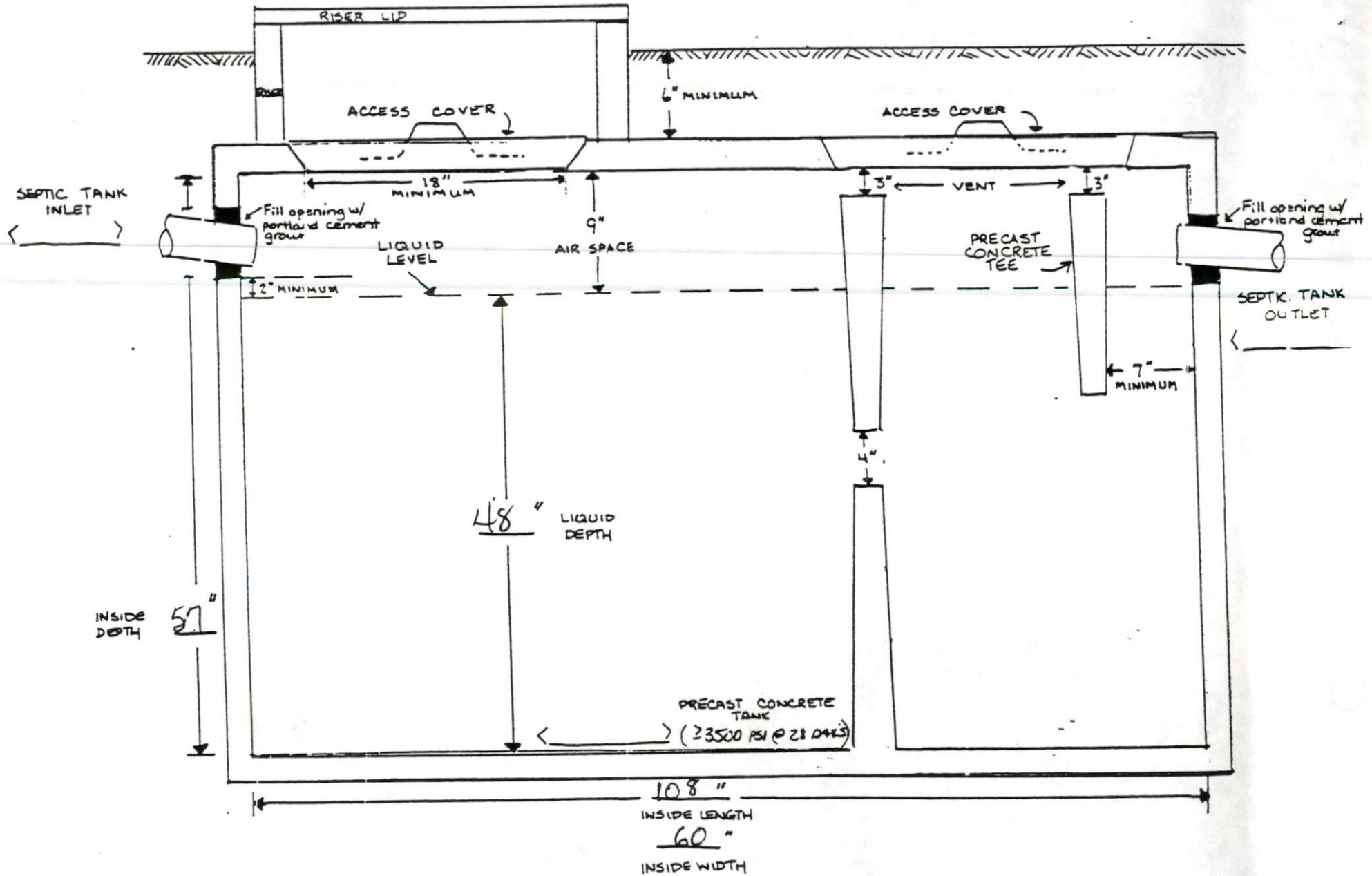
$$\frac{230 \text{ cubic inches per gallon}}{= \underline{28} \text{ gallons per inch}}$$

Drawdown = dosing volume ÷ gallons per inch = 18 inches

NOTE: Pump tank dimensions vary by manufacturer. Drawdown should be recalculated using dimensions of specific tank selected. A minor adjustment in the dosing volume to achieve a whole number of inches is acceptable.

DOSE CHECK: APPROX 2" PER MINUTE

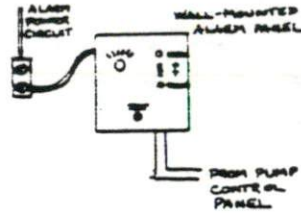
NOTE: ALTHOUGH HARVETT COUNTY DOES NOT REQUIRE RISER ON SEPTIC TANK, WE RECOMMEND IT FOR THE CONVENIENCE OF THE OPERATOR.



1200 GALLON SEPTIC TANK

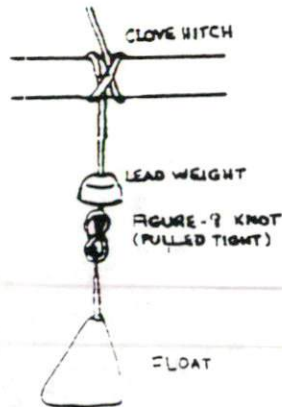
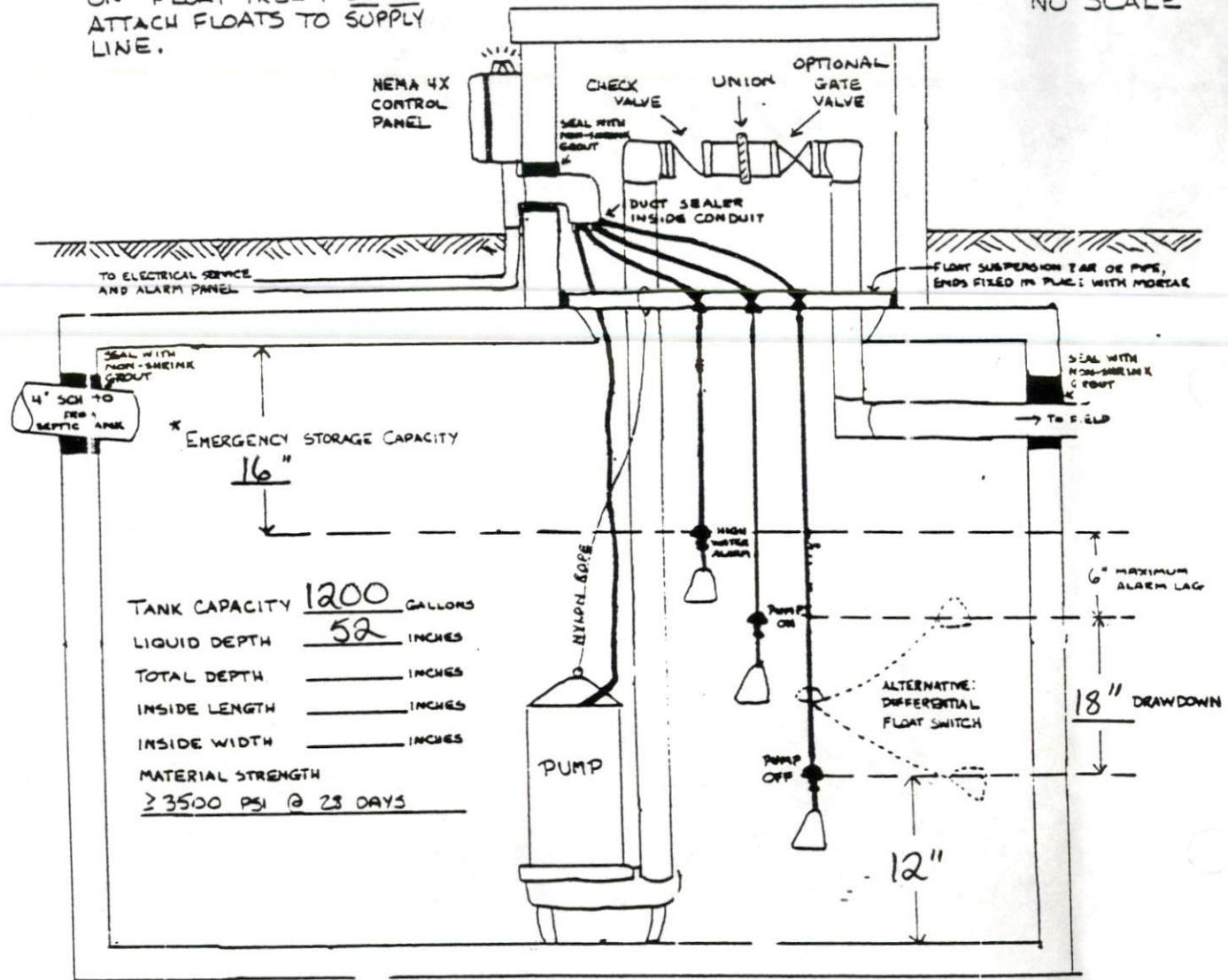
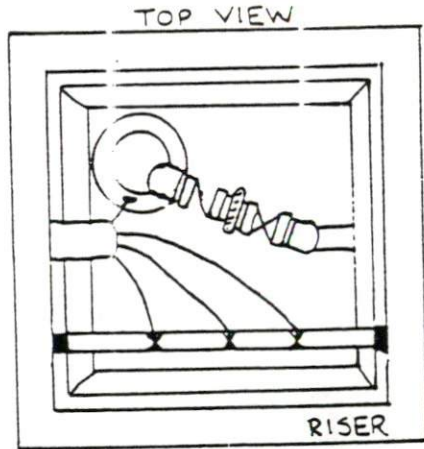
SCALE: NONE

OPTIONAL INTERIOR-MOUNT ALARM



OPTIONAL: MOUNT FLOATS ON "FLOAT TREE". DO NOT ATTACH FLOATS TO SUPPLY LINE.

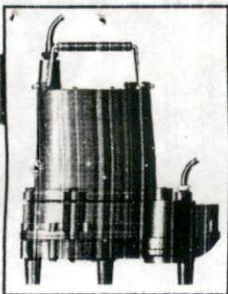
NO SCALE



* EMERGENCY STORAGE CAPACITY: $\frac{16}{9}$ INCHES @ $\frac{28}{28}$ GALLONS PER INCH = $\frac{448}{28}$ GALLONS

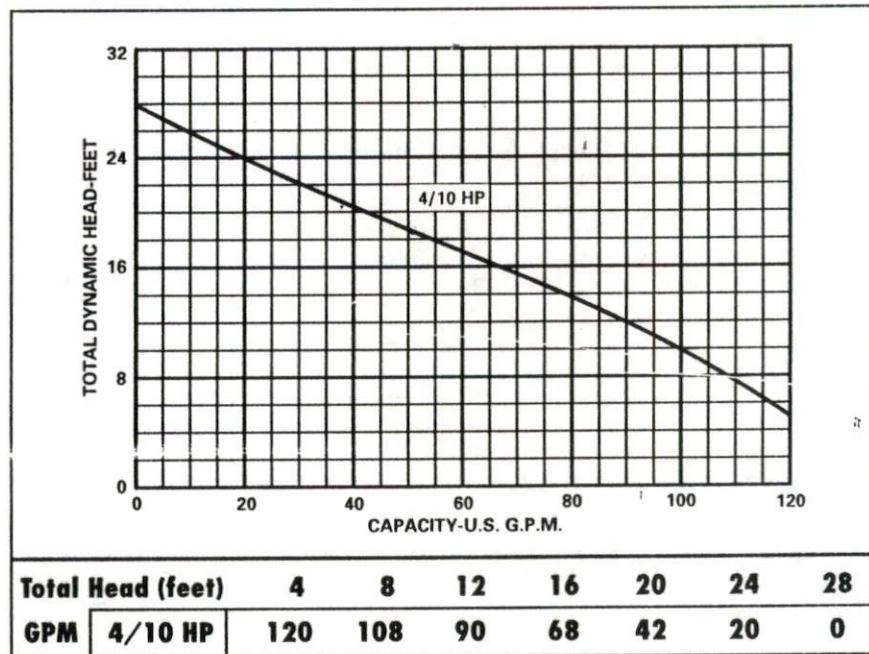
PLUS SEPTIC TANK FREEBOARD: $\frac{252}{28}$

TOTAL 700



ENGINEERING DETAILS - SP40

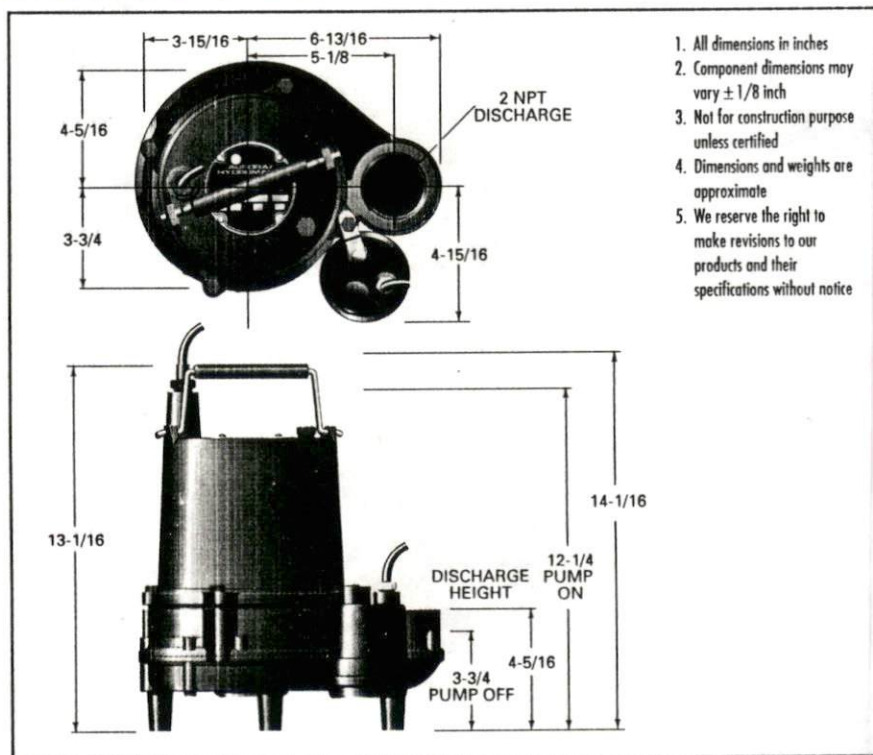
Performance Data



Pump Characteristics

Pump/Motor Unit	Submersible	
Manual Models	SP40M1	SP40M2
Automatic Models	SP40A1	SP40A2
Horsepower	4/10	
Full Load Amps	9.4	4.7
Motor Type	Split-Phase	
R.P.M.	1750	
Phase Ø	1	
Voltage	115	230
Hertz	60	
Operation	Intermittent	
Temperature	140°F Ambient	
NEMA Design	A	
Insulation	Class A	
Discharge Size	2" NPT	
Solids Handling	1-1/4"	
Unit Weight	60 lbs.	
Power Cord	18/3, SJTW, 115V = 10' std. (20' opt.) 230V = 20' std.	

Dimensional Data



Materials of Construction

Handle	Steel
Lubricating Oil	Dielectric Oil
Motor Housing	Cast Iron
Pump Casing	Cast Iron
Shaft	Stainless Steel
Mechanical Shaft Seal	Seal Faces: Carbon/Ceramic Seal Body: Brass Spring: Stainless Steel Bellows: Buna-N
Impeller	Thermoplastic
Upper Bearing	Single Row Ball Bearing
Lower Bearing	Single Row Ball Bearing
Fasteners	Stainless Steel

AURORA/HYDROMATIC Pumps, Inc.
 1840 Baney Road, Ashland, Ohio 44805
 (419) 289-3042

LPP Installation Instructions

TANKS: The contractor shall install precast septic tank and pump tank in the configuration shown on the plans. All tank components, risers, and connections to tanks shall be waterproofed with mastic joint sealer or concrete mortar on both sides of all joints. Prior to backfilling, pump tank should be filled with water and allowed to stand for at least 24 hours to determine that there is no leakage.

SITE PREPARATION: The designated field area and repair area MUST be left in an undisturbed state prior to installation. NO traffic, parking, heavy equipment, material stockpiles, or grading is permitted on field areas. On wooded sites, clear only those trees, shrubs, or brush necessary to provide clearance for a small trenching tractor to install lateral lines. All trees to be removed shall be cut off flush with the ground and treated with stump killer. No stumps or roots are to be removed unless otherwise specified.

TRENCHES: Trenches of the specified width and depth shall be dug ONLY when the soil is dry or slightly moist. Trench bottoms shall be levelled by hand so that the difference in bottom elevation from trench to trench is as shown on the plans. If required by the Health Department, compacted earth dams shall be placed in the trenches at the specified intervals. There must also be a solid earth barrier at least two feet wide between the manifold trench and the gravel in the lateral trenches. Place quarry gravel (3/8" to 1" in diameter) in the trench to a depth of 6". Then, install the PVC lateral (with holes already drilled and turnups in place - see below) on top of the gravel so that the holes are DOWN and the turnups are UP. Add another 2" of gravel on top of the pipe. The gravel should stop at least 2' short of the turnup at the end of each lateral. Install the manifold pipe in the manifold trench, and install the manifold tees as specified in the plans. Tee UP from the manifold, and connect the laterals to the manifold. Install gate valves and check valves as specified, with valve boxes so that valves are protected but accessible from the surface. DO NOT put gravel in the manifold trench. Dig the supply line trench from the pump tank to the field. Install the supply line in the trench, taking care to maintain a constant gradient.

LATERAL PIPES: PVC laterals shall be of the specified diameter and material strength, and all joints and fittings shall be primed and glued according to manufacturer's recommendations. Lay out and glue each lateral, including the elbow but not the turnup at the end. Then, placing the open end of the elbow over a peg in the ground so that the bottom of the lateral is up, measure and drill the holes as specified in the plans. "Spacing" is the distance between the holes; "1st & last" is the distance from the manifold to the first hole. Wrongly-drilled holes can be sealed with duct tape. After the holes are drilled, glue the turnup pipe into the open end of the elbow. REMEMBER: The holes are drilled only in the bottom of the pipe, not all the way through it!! Glue the male adapter on the turnup, and screw the cap on (don't glue the cap). The turnup on the top lateral of each subfield should measure exactly 2.0 feet (or whatever is specified as the design head) from the bottom of the lateral to the lip of the opening. Turnups must be sleeved in capped 6" diameter pipe OR valve boxes.

BACKFILL AND LANDSCAPING: Install any curtain drains, swales, or other water diversion devices specified in the plans. Fill the trenches with topsoil packed and mounded over the trenches to a height of at least 4 inches to allow for settling. The drainfield area should be seeded as soon as possible to prevent erosion.

Revised 7/94

February Associates, Inc.