

Chatham County Public Health Department
Environmental Health Division
80 East Street, P.O. Box 130 Pittsboro, NC 27312
(919) 542-8208 FAX (919) 542-8288

File Name _____
911 Address _____
Parcel Number _____

SEWAGE DISPOSAL CONSTRUCTION AUTHORIZATION

EXPIRATION DATE 4-9-13

New Repair Expansion

Owner Lee Moore Oil Company Bank-Site 1
Directions To Property 15-501 N

- This permit authorizes its permit holder to install the sewage disposal system within five years of the issue date on the Improvement Permit.
- This permit is non-transferable.
- The installer must be registered with the Chatham County Environmental Health Division.
- This authorization is required prior to the issuance of a building permit.
- Before an Operations Permit is issued, all required inspections and conditions of the permit must be completed and verified by this department and payment of applicable fees must be received.

Instructions and Conditions

- Design capacity: Number of bedrooms _____ or GPD 270
- Plans, if required were approved by _____
- Approximate contour in system area is shown on site plan. The installer must flag the system prior to installation to ensure proper grade.
- Approximate system component locations shown on site plan, contractor must verify component locations prior to installation to assure proper fall from house to septic tank and from septic tank to approved system area.
- Approved site plan attached.
- Site plan per Improvement Permit approved.
- System Type* III(b) System types III (b), IV, V and VI require the payment of annual onsite wastewater monitoring fees to the Chatham County Public Health Department. *Payment of the first annual fee is required prior to issuance of the Operation Permit.*

- Accepted 25% reduction with pressure manifold
- 270' x 3' x 18" max
- Tract is to remain as a whole

This Construction Authorization is subject to revocation if the site plan, plat or the intended use changes. This Construction Authorization is subject to compliance with the provisions of the Laws and Rules for Sewage Treatment and Disposal conditions on this permit.

Permit issued by Joni C. Rutter P.S. Date 4-28-08
Environmental Health Specialist

* I understand that the system type specified is different from the type specified on the application and accept the specifications of this permit.

Signature _____ Date _____
Owner/Legal Representative

CHATHAM COUNTY HEALTH DEPARTMENT ENVIRONMENTAL HEALTH DIVISION

80 East Street ▪ P. O. Box 130 ▪ Pittsboro, NC 27312-0130
Phone (919) 542-8208 ▪ Fax (919) 542-8288

OFFICE USE ONLY
 TPN _____
 Permit No. _____
 Date _____
 EHS _____
 System Type _____

Improvement Permit for Wastewater Systems ARTICLE II-CHAPTER 130A OF THE NC GENERAL STATUTES

NEW REPAIR EXPANSION REVISED

An Improvement Permit is issued to Lee Moore Capital Company for
 a 10± acre site located 15-501 N

in Chatham County. It is specifically issued for the following facility:

Facility: Residential () Non-Residential ()
 No. Bedrooms _____ No. Residents/Employees 8; 566 ft² retail
 Type Wastewater: Residential () Commercial ()
 Initial System Type: I () II () III () IV () V () VI ()
 Description pump to 25% accepted reduction with pressure manifold
 Type System: Shallow Conventional () LPP ()
 Other _____
 Design Flow 270 EPGD Application Rate 0.25 GPD/ft²
 Size Tank(s) w/Risers and Effluent Filter ST 1000 Gal PT 1000 Gal
 Nitrification Line (Length/Width/Max Depth) 270' x 3' x 18" max

(On contour in approved septic area; sch. 40 PVC required over step-downs)

Repair System Type: I () II () III () IV () V () VI ()
 Description same

Special Conditions Final recorded map required prior to issuance of CA

A plat with site plan showing specific location of the facility, the site for the proposed wastewater system, existing buildings, property lines, water supplies, surface waters, the conditions for any site modifications; and any other information required by the department must be attached to be valid.

Septic tank riser 6" above grade required over outlet access port as a visible marker for the septic tank. Solid PVC with elbows must be used to construct conveyance over dams or stepdowns.

This permit is valid [] without expiration [] for five years but is subject to revocation if the site is altered, soil disturbed, set-backs violated, or the plans of intended use are changed.

The Improvement Permit shall not be affected by change in ownership.

THIS IS NOT AUTHORIZATION TO INSTALL. An authorization for Wastewater Construction must be obtained from this department before installation.

Issued by Verni C. Ritter R.S.
 Environmental Health Specialist

N.C. Registration Number 1991

Date 4-9-08

Name Lee Moore Capital Company 911 Address 15-501 N



Soil & Environmental Consultants, PA

11010 Raven Ridge Road • Raleigh, North Carolina 27614 • Phone: (919) 846-5900 • Fax: (919) 846-9467
www.SandEC.com

April 7, 2008

Attached is a proposed design for a Pressure Manifold Septic System for a bank located on HWY 15-501, Lot 3 County Line Site, Wake County, NC

<u>Contents:</u>	<u>Page</u>
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S&EC PROJECT #10956.S1
DESIGN – S. Menser
PROJECT MGR – R. Pontello

INFORMATION FOR THE INSTALLER

The permit should be read very carefully prior to bidding. The following are details that must be considered by the installer prior to and during installation:

- Tanks shall be approved by NCDENR, and certification supplied by the manufacturer.
- Tanks shall be water tested prior to installation.
- The installer shall be responsible to the owner for placement of the tanks and to insure that final grades are returned to the original grade, with exception of added structural features.
- The supply trench shall be compacted to eliminate cavities left during initial fill placement without damage or displacement of pipe or fittings.
- Installation of the system shall be during dry conditions in order to protect the soil structure.
- All fittings shall be pressure rated fittings.
- All joints shall be cleaned with PVC pipe cleaner and a heavy-bodied PVC pipe glue applied to weld all joints.
- Where required by Chatham County Environmental Services, post installation inspections by the designer must be scheduled 5 week days in advance.
- Trenches shall be carefully excavated so the bottom is within 2" from the highest to the lowest points of elevation within the trench. If the bottom elevation needs adjusting after it has been trenched, it will be done by removing high points rather than filling low points. It is extremely important to insure that trenches are not over excavated during initial trenching. All fine grading within the trench will be done by hand with a shovel. No loose material will be left in the trench.
- All pipe openings in the tanks shall be properly grouted with waterproof grout. This also applies to the joints around the riser.
- All tanks shall be properly back filled and compacted to prevent settlement.
- Earth dams, constructed of relatively impervious material, shall be installed at the beginning and end of each lateral.
- No heavy equipment shall be used on the field during or after installation. The use of a small loader (i.e. Bobcat) or a trencher (i.e. Ditch Witch 2300/2310) may be used for installation.
- Elevations at pinflag locations should be checked by the installer prior to beginning trench excavation.
- Pump tank riser shall be 6" above grade, control panel shall be 12" above grade.
- System uses EZ-FLOW drain line.
- Repair uses EZ-FLOW drain line.

**County Line Bank
Project No. 10956.S1
PRESSURE MANIFOLD SYSTEM
FOR WASTEWATER TREATMENT**

Owner: Lee Moore Capital Company
Attn: Kirk J. Bradley
Address: P.O. Drawer 9
Sanford, NC 27331
Phone: 919-895-6000
County: Chatham
Location: County Line Bank

Source of Wastewater Flow: Bank
Estimated Daily Wastewater Production: 270 gpd
System Flow: 21.3 gpm

Design Specifications

Number of Drain Lines: 3
Drainfield Size: 300 ft
Loading Rate: 0.25 gpd/sq ft
Distribution Method: EZ-Flow
Gravel Size (if applicable): NA
Trench Depth: ~~24~~ 36 in
Trench Width: 36 in
Septic Tank: 1000 gal
Pump Tank: 1000 gal
Grease Trap Size: NA -
Estimated Supply Line Length: 517 ft
Supply Line Diameter: 2 in. SCH 40 PVC
Supply Line Volume: 89.96 gal
Supply Manifold: 4 in. SCH 80 PVC
Supply Manifold Length: 3.0 ft (minimum)
Supply Manifold Volume: NA
Threaded Union: In Tank
Gate Valves: 1 in Tank
1 at Pressure Manifold
Check Valves: In Tank
Anti-Siphon Hole: In Tank
Solenoid Valve: NA
Air Release/Vacuum Break Valve: NA

Recommended Float Controls: SJE Sensor Float Control Switches as Required for Control Panel or County Approved Equivalent
Recommended Control Panel: SJE-Rhombus Model 112 (NEMA 4x) Control Panel or County Approved Control Panel.
Recommended Pump: Zoeller Model 161 or County Approved Equivalent
TDH Capacity: 34.1 ft
Flow Capacity: 21.3 gpm

Additional Comments: Soil suitability was performed by the
Chatham County Health Department.

**County Line Bank
Project No. 10956.S1
DESIGN CALCULATIONS**

Supply line length 517 ft
 2 in. PVC 0.174 gal/ft
Supply line Volume 89.958 gal

Total drain field length 300 ft
 4" pipe 0.65079 gal/ft
 Total drain field volume 195.24 gal
 Percent of dose volume 65%
Dose Volume 126.9 gal

Dose volume 126.90 gal
 Pump tank 20.26 gal/in
Pump tank Drawdown 6.3 in

Pump Tank Elevation 531.0 ft
 Pump elev 5.4 ft
 525.6 ft
 Manifold Elevation 551.5 ft
 25.9 ft
Elevation Head 25.9 ft

System flow 21.33 gal/minute
 Friction factor 1 f/100ft
 Supply Line Length 517 ft
 Friction Adjustment for Fittings 620.4
Friction Head 6.2 ft

Pressure Head 2.0 ft

(TDH) Total Dynamic Head 34.1 ft

Daily flow 270 gal/day
 LTAR 0.25 sqft/day
 Trench width 3 ft
Required drain field length (gravel) 360 ft
Required drain field length (ezflow) 270 ft

County Line Bank
Project No. 10956.S1

Bank (270 gpd)

April 7, 2008

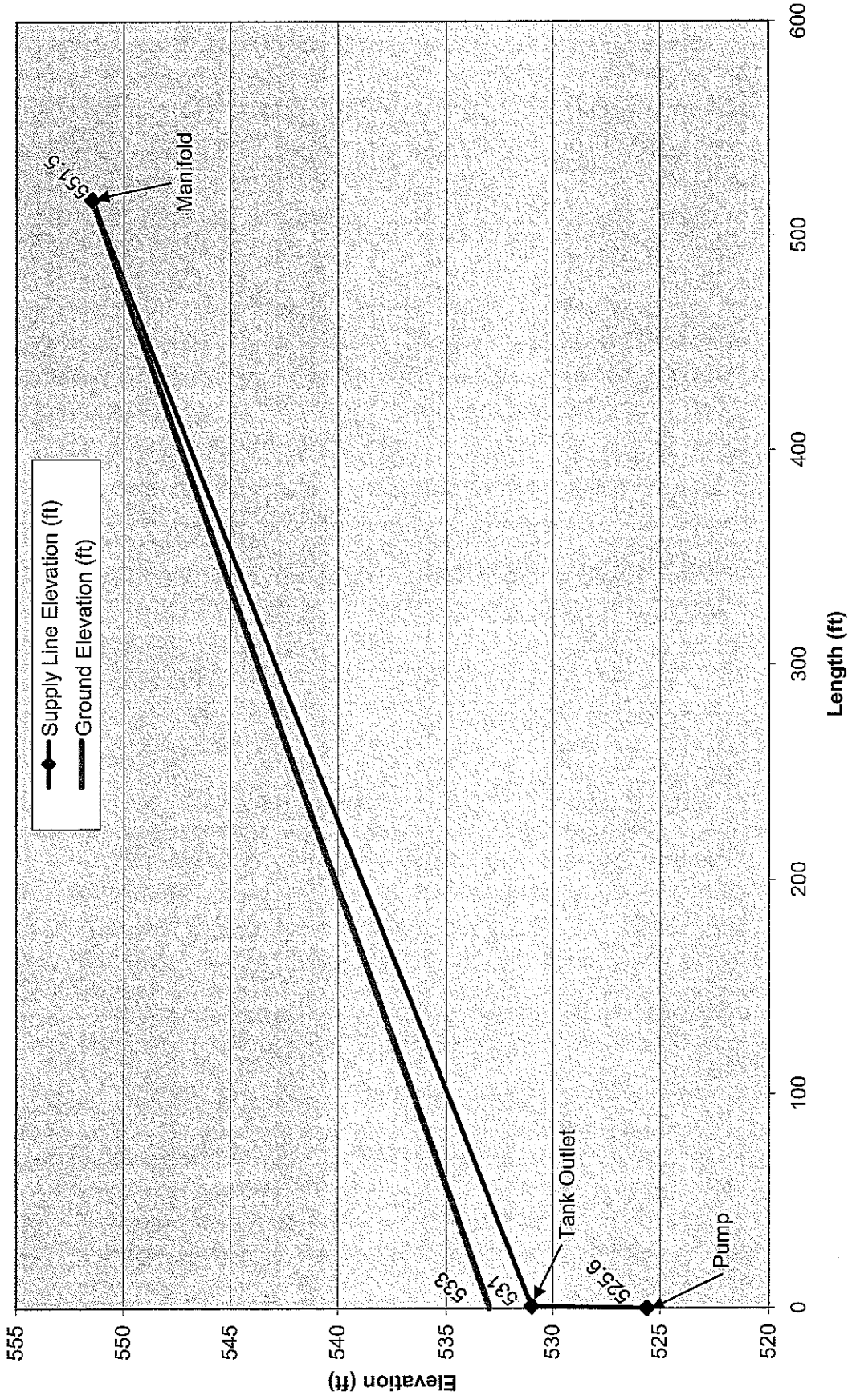
<u>LINE #</u>	<u>FLAG COLOR</u>	<u>BS (ft)</u>	<u>HI (ft)</u>	<u>FS (ft)</u>	<u>ELEVATION (ft)</u>	<u>FLAGGED LINE LENGTH (ft)</u>	<u>DESIGN LINE LENGTH (ft)</u>
TBM		2.0			552.50		
INSTR. 1			554.50				
1	RED			2.00	552.50	50	50
2	ORANGE			2.40	552.10	60	50
3	PINK			2.90	551.60	112	100
4	BLUE			3.40	551.10	130	100
5	PINK			4.00	550.50	160	100
6	RED			4.40	550.10	134	100
7	YELLOW			4.90	549.60	170	100
Total						816	600

	<u>LINE LENGTH (ft)</u>	<u>LTAR GPD/FT²</u>	<u>SYSTEM TYPE</u>	<u>SOIL LTAR GPD/FT²</u>	<u>INNOVATIVE SYSTEM</u>	<u>DISTRIBUTION</u>
System	300	0.25	INNOV.	0.25	EZ-Flow	PRESSURE MANIFOLD
Repair	300	0.25	INNOV.	0.25	EZ-Flow	PRESSURE MANIFOLD

Notes:

- **TBM is assumed to be 552.5'.
- **All measures in feet.
- **Nitrification lines are demonstrated on contour via colored pin flags.
- **BS, FS indicate rod readings.

Supply Line Profile County Line Bank

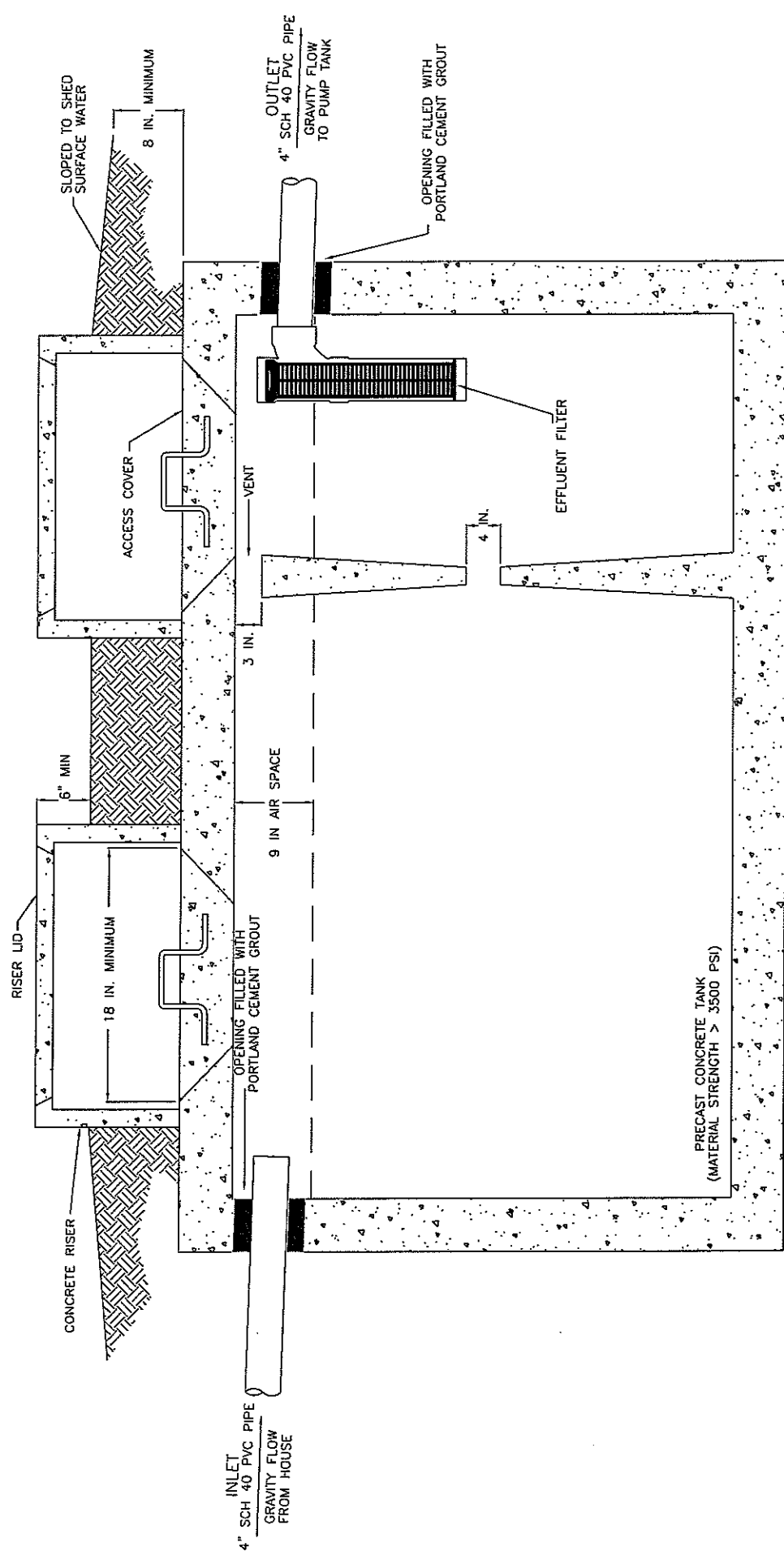


**County Line Bank
Project No. 10956.S1
SYSTEM TAP CHART**

Line #	Color	Field Elev. (ft)	Length (ft)	Hole Size (in)	Flow/Tap (gpm)	gpd	Trench Area (sq ft)	Line LTAR (gpd/sq ft)
5	PINK	550.50	100	1/2" SCH. 40	7.11	90.00	300	0.300
6	RED	550.10	100	1/2" SCH. 40	7.11	90.00	300	0.300
7	YELLOW	549.60	100	1/2" SCH. 40	7.11	90.00	300	0.300

Total Length (ft) = 300 gal/min = 21.33

Design Flow	270	gpd
Total Pump Run	12.66	min
Soil LTAR	0.25	gpd/sq ft
(LTAR +5%)	0.2625	gpd/sq ft
LTAR with INNOV.	0.333333333	gpd/sq ft
LTAR with INNOV. + 5%	0.35	gpd/sq ft
100% Dose Volume	195.23	gal
Percent Dose Volume	65%	
Dose Volume	126.90	gal
Pump Run Time	5.95	min



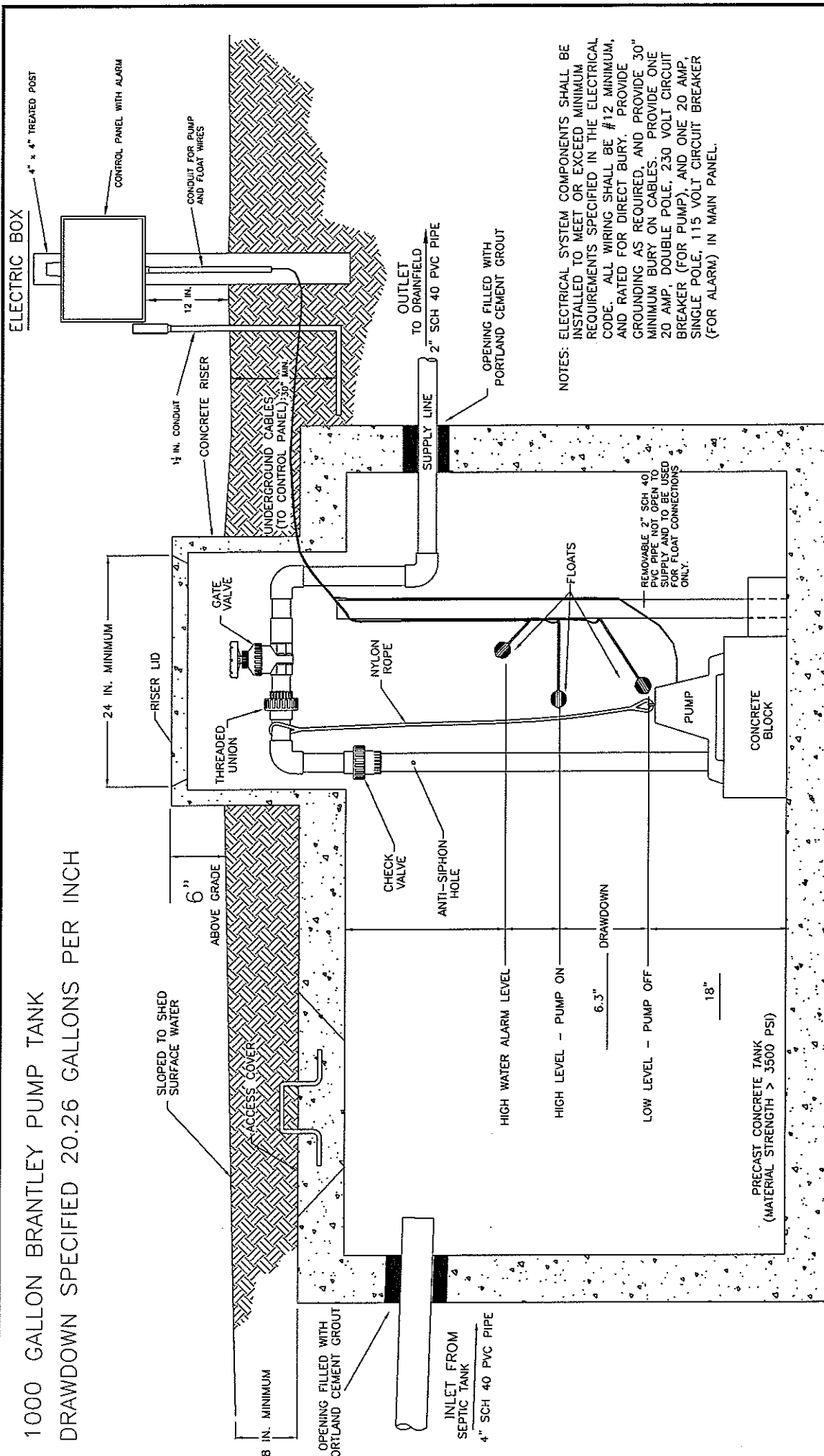
BRANTLEY 1000 GALLON SEPTIC TANK

PROJECT NAME: COUNTY LINE BANK	
SHEET TITLE: SEPTIC TANK DIAGRAM	
JOB NO. 1095651	PROJECT TGR. RP
SCALE NTS	PROJECT NAME: COUNTY LINE BANK



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1000 GALLON BRANTLEY PUMP TANK
 DRAWDOWN SPECIFIED 20.26 GALLONS PER INCH

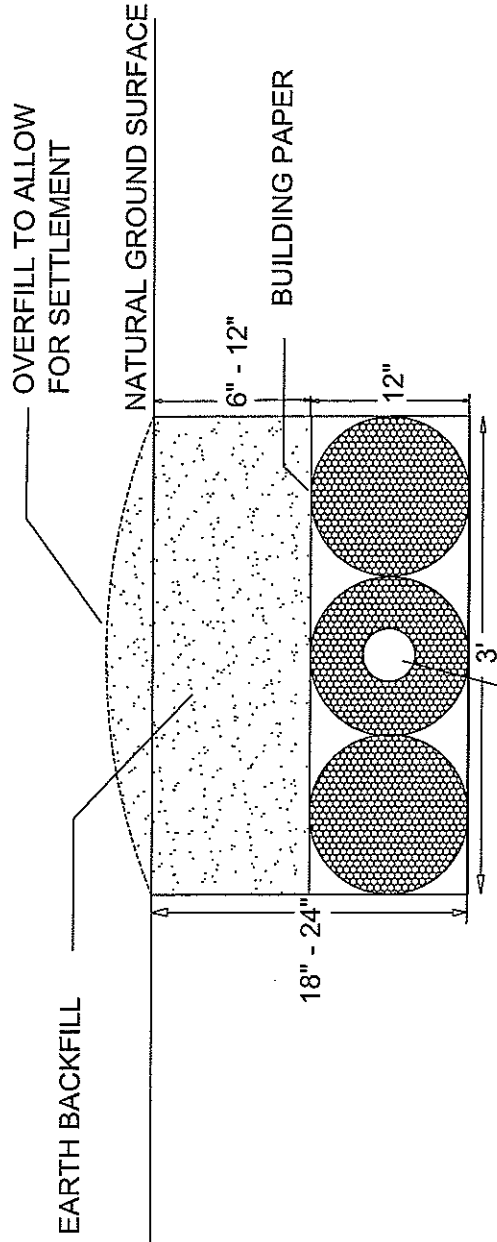


NOTES: ELECTRICAL SYSTEM COMPONENTS SHALL BE INSTALLED TO MEET OR EXCEED MINIMUM REQUIREMENTS SPECIFIED IN THE ELECTRICAL CODE. ALL WIRING SHALL BE #12 MINIMUM, AND RATED FOR DIRECT BURY. PROVIDE 30" GROUNDING AS REQUIRED, AND PROVIDE ONE MINIMUM BURY ON CABLES. PROVIDE ONE 20 AMP, DOUBLE POLE, 230 VOLT CIRCUIT BREAKER (FOR PUMP), AND ONE 20 AMP, SINGLE POLE, 115 VOLT CIRCUIT BREAKER (FOR ALARM) IN MAIN PANEL.

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JOB NO. 10956-51
 PROJECT MGR. RP
 SCALE NTS
 PROJECT NAME: COUNTY LINE BANK
 SHEET TITLE: PUMP TANK DIAGRAM


NITRIFICATION TRENCH DETAIL FOR EZ-FLOW



EZ-FLOW
 4" DIAMETER CORRUGATED
 PLASTIC DRAIN PIPE
 SURROUNDED BY
 POLYSTYRENE BLOCKS
 WRAPPED W/PLASTIC MESH

NOTE :

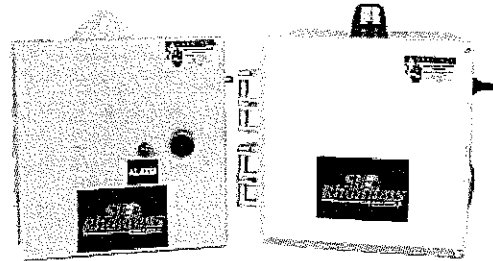
1. PERFORATED CORRUGATED PLASTIC PIPE SHALL MEET REQUIREMENTS OF ASTM D 2729.
2. PIPE SHALL BE LEVEL.
3. END CAP SHALL BE PROVIDED AT END OF ALL CORRUGATED PLASTIC PIPE LINES.
4. TRENCH BOTTOM SHALL BE LEVEL.
4. SEE INFORMATION FOR INSTALLER.

JOB NO. 10888 S1 PROJECT MGR. RP SCALE NTS	PROJECT NAME: COUNTY LINE BANK TRENCH DETAIL	 Soil & Environmental Consultants, PA 11010 Raven Ridge Road • Raleigh, North Carolina 27614 • Phone: (919) 846-5900 • Fax: (919) 846-9467 www.SandEC.com
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MODEL 112 Control Panel

Single phase, simplex motor contactor control.

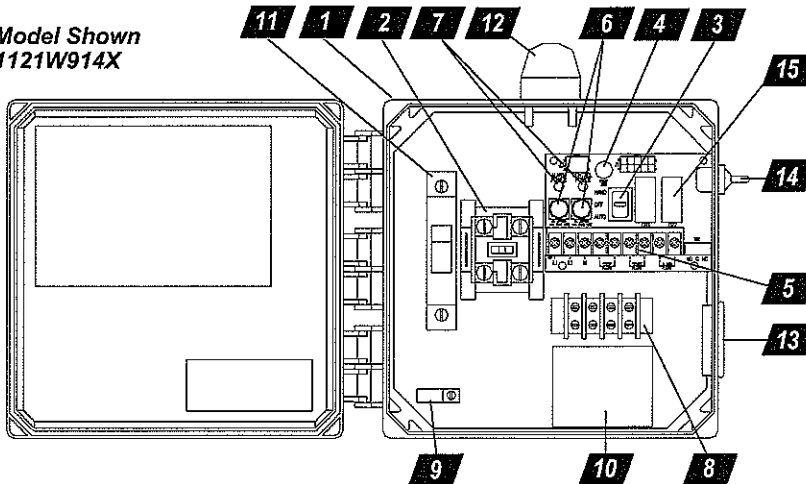
The Model 112 control panel provides a reliable means of controlling one 120, 208, or 240 VAC single-phase pump in pump chambers, sump pump basins, irrigation systems and lift stations. Two control switches activate a magnetic motor contactor to turn the pump on and off. If an alarm condition occurs, an additional alarm switch activates the audio/visual alarm system.



indoor

indoor/outdoor

Model Shown
1121W914X



1. **Enclosure** measures 8 x 8 x 4 inches (20.32 X 20.32 X 10.16 cm). Choice of NEMA 1 (steel for indoor use), or NEMA 4X (ultraviolet stabilized thermoplastic with removable flanges for outdoor or indoor use).
* Options selected may increase enclosure size and change component layout.
2. **Magnetic Motor Contactor** controls pump by switching hot electrical lines.
3. **HOA Switch** for manual pump control (mounted on circuit board).
4. **Green Pump Run Indicator Light** (mounted on circuit board).
5. **Float Switch Terminal Block** (mounted on circuit board).
6. **Alarm and Control Fuses** (mounted on circuit board).
7. **Alarm and Control Power Indicators** (mounted on circuit board).
8. **Pump Input Power and Pump Connection Terminal Block**
9. **Ground Lug**
10. **Terminal Block Installation Label**
11. **Circuit Breaker** (optional) provides pump disconnect and branch circuit protection.

STANDARD ALARM PACKAGE (other options available)

12. **Red Alarm Beacon** provides 360° visual check of alarm condition.
Note: NEMA 1 style utilizes a door mounted indicator in lieu of a beacon.
13. **Alarm Horn** provides audio warning of alarm condition (83 to 85 decibel rating).
Note: NEMA 1 style utilizes an internally mounted buzzer (83 to 85 decibel) in lieu of horn.
14. **Exterior Horn Test/Normal/Silence Switch** allows alarm horn to be silenced and testing of horn and light to ensure proper operation of alarm system.
15. **Horn Silence Relay** automatically resets alarm after alarm condition has been resolved (mounted on circuit board).

FEATURES

- Entire control system (panel and switches) is UL Listed to meet and/or exceed industry safety standards
- Dual safety certification for the United States and Canada
- Standard package includes three 20' Sensor Float® control switches
- Complete with step-by-step installation instructions
- Three-year limited warranty



SJE rhombus
SJ ELECTRO SYSTEMS, INC.

PO Box 1708, Detroit Lakes, MN 56502
1-888-DIAL-SJE • 1-218-847-1317
1-218-847-4617 Fax
email: sje@sjerhombus.com
www.sjerhombus.com

112 1 W 9 0 4 L 3A,8A,8L

MODEL 112

- ALARM PACKAGE**
- 0 = select options or no alarm package
 - 1 = alarm package (includes test/normal/silence switch, fuse, red light, horn & float)
- ENCLOSURE RATING**
- 1 = Indoor, NEMA 1 (metal)
 - W = Weatherproof, NEMA 4X (engineered thermoplastic)
- STARTING DEVICE**
- 1 = magnetic motor contactor 120/208/240V
 - 9 = magnetic motor contactor 120V only
- PUMP FULL LOAD AMPS**
- 0 = 0-7 FLA
 - 1 = 8-15 FLA
 - 2 = 16-20 FLA
 - 3 = 21-30 FLA
- PUMP DISCONNECTS**
- 0 = no pump disconnect
 - 1 = pull-out with safety deadfront in a 10"x8" enclosure
 - 4 = circuit breaker
- FLOAT SWITCH APPLICATION**
- H or L = pump down or pump up
 - X = no floats

OPTIONS *Listed below*

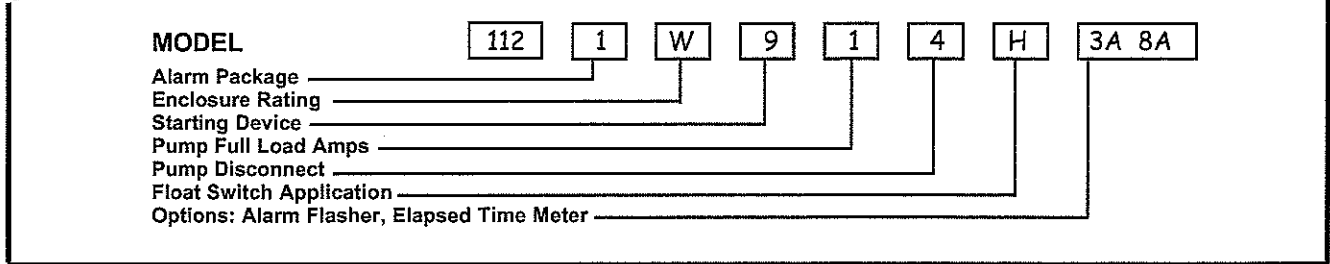
★ Options selected may increase enclosure size and change component layout.

If additional features are required, call the factory for a quote on either a Pro-Line or Engineered Custom control panel system.

CODE	DESCRIPTION	CODE	DESCRIPTION
<input type="checkbox"/>	1A Red beacon only / no audio <i>must select 1E if floats included</i>	<input type="checkbox"/>	11C NEMA 1 alarm panel <i>must select option 6A</i>
<input type="checkbox"/>	1C Horn only / no visual <i>must select 1E if floats included</i>	<input type="checkbox"/>	11D NEMA 4X alarm panel <i>must select option 6A</i>
<input type="checkbox"/>	1E Alarm float	<input type="checkbox"/>	15A Control / alarm circuit breaker <i>Does not include the circuit board as in standard.</i>
<input checked="" type="checkbox"/>	3A Alarm flasher	<input type="checkbox"/>	16A 10' cord in lieu of 20'
<input checked="" type="checkbox"/>	★ 4A Low level cutout <i>select option 4D if floats included</i>	<input type="checkbox"/>	16B 15' cord in lieu of 20'
<input type="checkbox"/>	★ 4B Red low-level indicator & alarm <i>must select 4A also</i>	<input type="checkbox"/>	16C 30' cord in lieu of 20'
<input type="checkbox"/>	4D Low-level float	<input type="checkbox"/>	16D 40' cord in lieu of 20'
<input type="checkbox"/>	6A Auxiliary alarm contact, form C type	<input type="checkbox"/>	17A SJE SignalMaster® / mounting strap ●
<input checked="" type="checkbox"/>	★ 8A Elapsed time meter	<input type="checkbox"/>	17B SJE SignalMaster® / externally weighted ●
<input checked="" type="checkbox"/>	★ 8C Event (cycle) counter	<input type="checkbox"/>	17C Sensor Float® / internally weighted ▲
<input type="checkbox"/>	10E Lockable latch - NEMA 4X	<input type="checkbox"/>	17D Sensor Float® / externally weighted ▲
<input type="checkbox"/>	10E Lockable latch - NEMA 1	<input type="checkbox"/>	17E Sensor Float® Mini / pipe clamp ▲
<input type="checkbox"/>	★ 10F Lightning arrester	<input type="checkbox"/>	17F Sensor Float® Mini / externally weighted ▲
<input type="checkbox"/>	★ 10K Anti-condensation heater	<input type="checkbox"/>	19X Door mounted pump run indicator
		<input type="checkbox"/>	21A Pumpmaster® in lieu of on/off switches ●
		<input type="checkbox"/>	21B PumpMaster® Plus in lieu of on/off switches ●
		<input type="checkbox"/>	21C Super Single® in lieu of on/off switches ▲
		<input type="checkbox"/>	21D Double Float™ in lieu of on/off switches ▲

● Mechanically-activated ▲ Mercury-activated

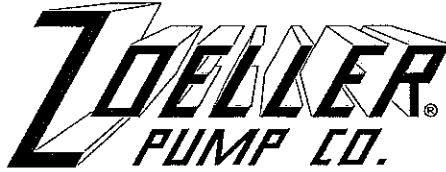
SAMPLE



13

"QUALITY PUMPS SINCE 1939"

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.



FM0919
1004
Supersedes
0194

MAIL TO: P.O. BOX 16347 • Louisville, KY 40256-0347
SHIP TO: 3649 Cane Run Road • Louisville, KY 40211-1961
(502) 778-2731 • 1 (800) 928-PUMP • FAX (502) 774-3624

visit our web site:
www.zoeller.com



ENGINEERING SPECIFICATIONS SHEET

SUBMERSIBLE EFFLUENT & DEWATERING PUMP

161/163 SINGLE SEAL SERIES



MATERIAL SPECIFICATIONS:

- Durable cast iron switch case, base, and pump housing.
- Non-clogging bronze vortex impeller design.
- Motor - 60 cycle, 3450 RPM, oil filled, hermetically sealed, automatic reset thermal overload protected (1 PH).
- 20' Cord - UL listed 3-wire neoprene cord and plug.
- Shaft seal - Stainless steel, carbon stationary & ceramic rotary.
- Stainless steel screws, bolts, handle, guard, and arm and seal assembly.
- Square Ring & Gasket - Neoprene.
- Bearings - Upper sleeve and lower ball bearing running in bath of oil.
- Corrosion resistant powder coated epoxy finish.

ENGINEERING FEATURES:

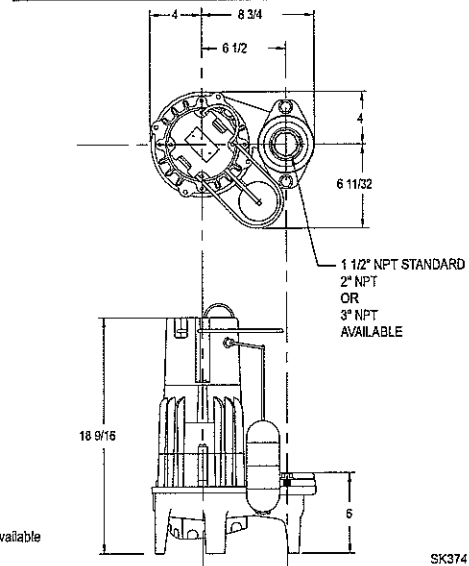
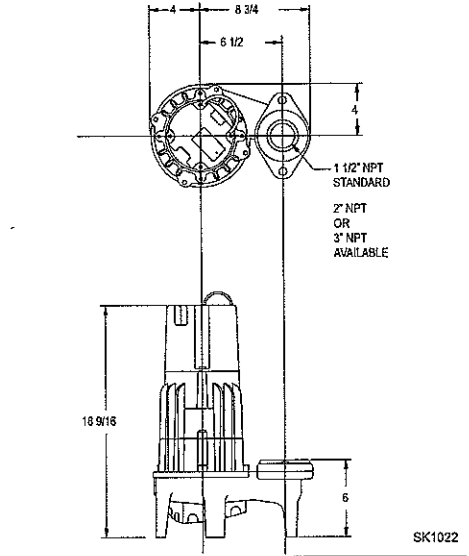
- Passes 3/4-inch spherical solids.
- 1-1/2" NPT discharge with 2" or 3" flange available.
- Not effected by materials normally found in drainage and sewage sumps.
- Temperature to 130° F (54° C).
- Available in single or double seal designs.
- No screens to clog.



Certified to CSA
Standard C22.2 No.108



Tested to UL
Standard UL778



* No Molded Plug
UL Listed unit available with 20 Amp plug.

161 MODELS		4161 MODELS		Control Section				Listings	
Single Seal	Double Seal	Volts	Ph	Mode	Amps	Simplex	Duplex	CSA	UL
M161	---	115	1	Auto	15.5	1	---	Y	Y
N161	N4161	115	1	Non	15.5	2 or 3 & 5	4 & 5	Y	Y ⁽¹⁾
D161	---	230	1	Auto	7.5	1	---	Y	Y
E161	E4161	230	1	Non	7.5	2 or 3 & 5	4 & 5	Y	Y
H161*	---	200-208	1	Auto	8.5	1	---	Y	N
I161*	I4161*	200-208	1	Non	8.5	2 or 3 & 5	4 & 5	Y	N
J161*	J4161*	200-208	3	Non	6.0	3 & 5	4 & 5	Y	Y
F161*	F4161*	230	3	Non	4.8	3 & 5	4 & 5	Y	Y
G161*	G4161*	460	3	Non	2.9	3 & 5	4 & 5	Y	Y

163 MODELS		4163 MODELS		Control Section				Listings	
Single Seal	Double Seal	Volts	Ph	Mode	Amps	Simplex	Duplex	CSA	UL
M163	---	115	1	Auto	15.0	1	---	Y	Y
N163	N4163	115	1	Non	15.0	2 or 3 & 5	4 & 5	Y	Y ⁽¹⁾
D163	---	230	1	Auto	7.5	1	---	Y	Y
E163	E4163	230	1	Non	7.5	2 or 3 & 5	4 & 5	Y	Y
H163*	---	200-208	1	Auto	8.5	1	---	Y	N
I163*	I4163*	200-208	1	Non	8.5	2 or 3 & 5	4 & 5	Y	N
J163*	J4163*	200-208	3	Non	6.0	3 & 5	4 & 5	Y	Y
F163*	F4163*	230	3	Non	4.8	3 & 5	4 & 5	Y	Y
G163*	G4163*	460	3	Non	2.9	3 & 5	4 & 5	Y	Y

SELECTION GUIDE

1. Integral float operated mechanical switch, no external control required.
2. For automatic use single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0477.
3. See FM1228 for correct model of simplex control panel.
4. See FM0712 for correct model of duplex control panel.
5. Variable level control switch 10-0225 used as control activator, specify simplex (3) float or duplex (3) or (4) float system.



ENGINEERING SPECIFICATIONS SHEET

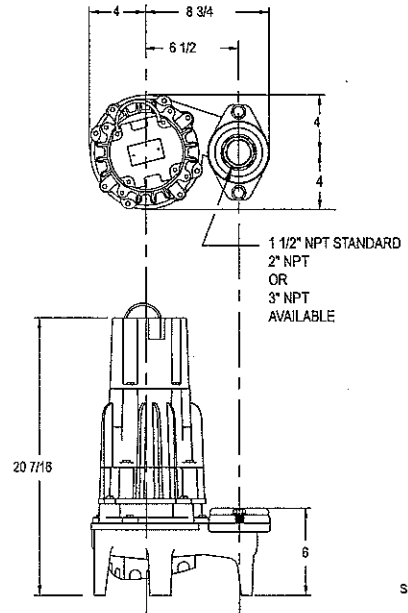
SUBMERSIBLE EFFLUENT & DEWATERING PUMP

4161/4163 DOUBLE SEAL SERIES



MATERIAL SPECIFICATIONS:

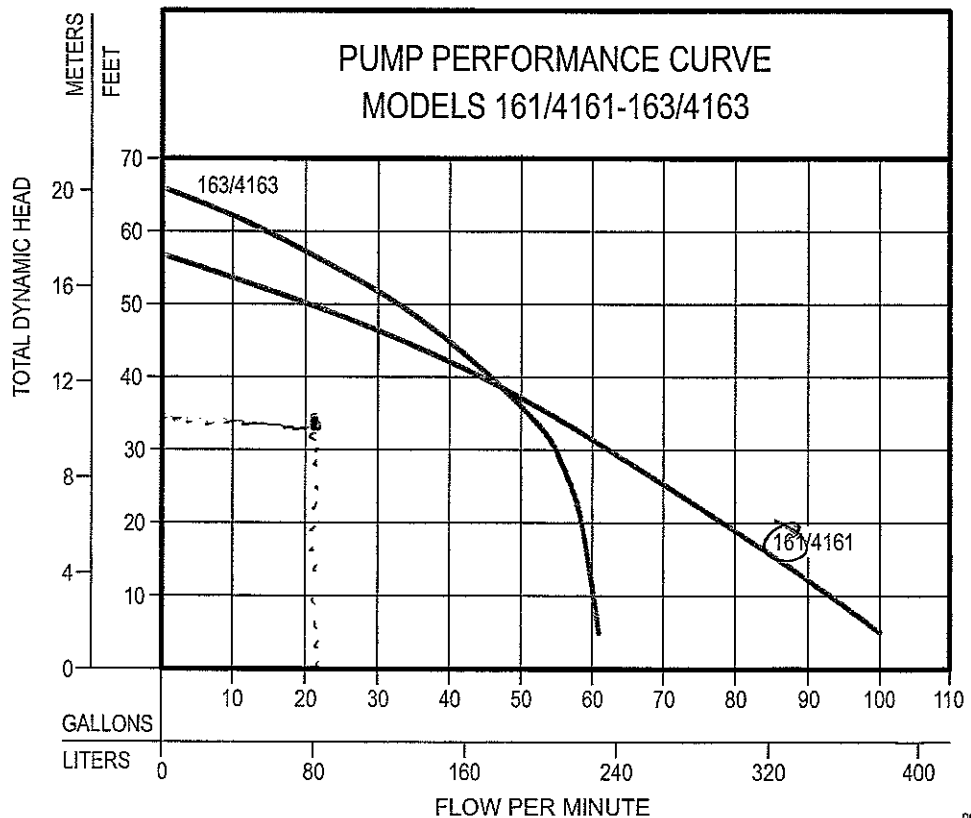
- Durable cast iron cover, base, and pump housing.
- Non-clogging bronze vortex impeller design.
- Motor - 60 cycle, 3450 RPM, oil filled, hermetically sealed, automatic reset thermal overload protected (1 PH).
- 20' Cord - UL listed 3-wire neoprene cord and plug.
- Shaft seal - Stainless steel, carbon stationary & ceramic rotary.
- Stainless steel screws, bolts and handle.
- Square Ring & Gasket - Neoprene.
- Bearings - Upper sleeve and lower ball bearing running in bath of oil.
- Corrosion resistant powder coated epoxy finish.



SK1413

ENGINEERING FEATURES FOR DOUBLE SEAL:

- Protects motor from seal leaks.
- Improved bearing lubrication.
- Helps eliminate seal and bearing damage from dry runs.
- Major width 12-3/4", Height 20-7/16".
- Passes 3/4-inch spherical solids.
- 1-1/2" NPT discharge with 2" or 3" flange available.
- Not effected by materials normally found in drainage and sewage sumps.
- Temperature to 130° F (54° C).
- No screens to clog.



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**County Line Bank
Project No. 10956.S1
REPAIR TAP CHART**

Line #	Color	Field Elev. (ft)	Length (ft)	Hole Size (in)	Flow/Tap (gpm)	gpd	Trench Area (sq ft)	Line LTAR (gpd/sq ft)
1	RED	552.50	50	1/2" SCH. 80	5.48	69.37	150	0.317
2	ORANGE	552.10	50	1/2" SCH. 80	5.48	69.37	150	0.317
3	PINK	551.60	100	3/4" SCH. 80	10.1	127.85	300	0.292
4	BLUE	551.10	100	3/4" SCH. 80	10.1	127.85	300	0.292

total feet = 300 gal/min = 31.16

Des. Flow 270 gpd
Pump Run= 8.66 min
soil LTAR 0.25 gpd/sq ft
(Itar +5%) 0.2625 gpd/sq ft
LTAR with INNOV. 0.333333333 gpd/sq ft
LTAR with INNOV. + 5% 0.35 gpd/sq ft

100% Dose Volume 195.23 gal
Percent Dose Volume 80%
Total 156.18 gal

Pump Run Time 5.01 min

