Installer Electrical Training

All electrical components of an onsite wastewater system are subject to the National Electrical code (NEC). The NEC is not updated often however it does get updated, it is your responsibility to stay current (no pun intended). The NEC in AR is enforced through the Labor Board.

The system Main Disconnect (the Disconnect), like an AC Unit disconnect, must be within sight of the external electrical components of any pumped effluent system. The wiring TO the Disconnect must be made by a licensed electrician but the wiring FROM the Disconnect to the system may be made by the Installer.

The Disconnect must be large enough to handle the total ampacity of the system. That is the amperage of the pump circuit (see note #1) plus the amperage of the Alarm circuit. Note #1 in demand dose systems the DR rarely if ever recommends the amperage rating for the pump circuit. In this case the pump circuit must be 125% of the normal load rating this is NOT required for the alarm circuit. When using a control panel this is usually taken into consideration however it would be best to consult the manufacturer.

A minimum of 2 circuits are required (as mentioned above) 1circuit will be for the Alarm and 1 will be for the pump. The pump circuit will usually be the one that is higher in amperage. When wiring these components all pump connections on a wiring diagram will be labeled with a T (motor connection) all incoming power will be listed with an L (for Line) or an N (neutral).

All circuits must be encased in PVC electrical conduit (see note #2) (not PVC water pipe) from the main disconnect to the control panel and anchored for every 3 feet of rise. Note #2 the conduit is required to be buried at least 18inches and once it breaks the plane of natural ground it must be in schedule 80. There seems to be some confusion among inspectors as to how far up and how far below ground this must extend. Some inspectors only require a schedule 80 sweep others are more restrictive you may want to consult with the inspector in your area concerning this matter. The wire inside the conduit must be burial rated.
The Control Panel may be mounted on the side of the structure (NOT mobile homes) or on a post near the system, again within sight of the Disconnect. The minimum elevation of the control panel will be determined by the manufacturer specifications.

The wire gauge will be determined by the distance and the ampacity of the system. Remember to include the pump elevation as part of that distance. *See Chart*

All connections inside the riser must be made in a corrosive proof water tight junction box. The actual connections must be made with either encapsulated wire nuts (not the same as used inside a house) or butt splicers with heat shrink.

The conduit from the junction box to the control panel must be sealed using an electrical seal off kit. This will prevent any gases from getting into the control panel in case the seal around the junction box should fail.

Make sure you use an Effluent quality pump. They are specifically designed to handle anaerobic wastewater. A sump pump will disintegrate over time in this environment.
**WIRE SIZE CHART**

<table>
<thead>
<tr>
<th>WIRE SIZE</th>
<th>LOAD</th>
<th>AMPS --</th>
<th>120 volts</th>
<th>SINGLE</th>
<th>PHASE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10 AMPS</td>
<td>15 AMPS</td>
<td>20 AMPS</td>
<td>25 AMPS</td>
<td></td>
</tr>
<tr>
<td>*AWG</td>
<td>14</td>
<td></td>
<td></td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>12</td>
<td>80</td>
<td>60</td>
<td>45</td>
<td>36</td>
<td>N/A</td>
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<tr>
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<td>150</td>
<td>100</td>
<td>75</td>
<td>60</td>
<td>50</td>
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<td>230</td>
<td>154</td>
<td>115</td>
<td>92</td>
<td>77</td>
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<td>367</td>
<td>245</td>
<td>184</td>
<td>147</td>
<td>123</td>
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<tr>
<td>4</td>
<td>581</td>
<td>387</td>
<td>290</td>
<td>232</td>
<td>194</td>
</tr>
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</table>

*American Wire Gage (DISTANCE IN FEET)*

**Example:** An Onsite Wastewater System’s control panel requiring 30 amps that is 20 feet from the power source will require a minimum 10 gauge wire.

**Important Information:**
Fuses and circuit breakers are needed to protect circuits, power components and loads. Fuses and circuit breakers have one main purpose to break the electrical circuit if the current (amps) flowing in that circuit exceed the rating of the device. Any size fuse may be used safely with the fuse rating being lower than the maximum ampacity of the smallest wire in the circuit. Fuses and circuit breakers are typically able to allow three times their rated current for a few seconds, this is for handling the surge necessary for the starting of motors. In the event of a short circuit, which can cause the sudden draw of hundreds or even thousands of amps through the circuit, the fuse will melt or the circuit breaker will open before the wire catches on fire.
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ADJ. JUMPER WIRE IF REDUNDANT OFF FLOAT IS NOT USED.

MAIN DISCONNECT AND OVERLOAD PROTECTION PROVIDED BY OTHERS AND MUST BE SIZED ACCORDING TO PUMP/MOTOR MANUFACTURING SPECIFICATIONS.

THE USE OF SEPARATE POWER SOURCES FOR PUMP AND ALARM ARE RECOMMENDED.

TEMPERATURE RATING OF FIELD INSTALLED CONDUCTORS MUST BE AT LEAST 140 DEG. F. (60 DEG. C.). TERMINAL STRIPS AND GROUND LUG USE COPPER CONDUCTORS ONLY.

CONNECT GROUND LUG IN PANEL TO A SECURE EARTH GROUND.

DASHED LINES REPRESENT FIELD WIRING.

FIELD WIRING SECTION.
USE 2 FLOATS
HIGH WATER
LOW LEVEL CUTOUT

CONTROL SECTION

10 AMP
20 AMP

ADD WIRE IF REDUNDANT OFF FLOAT IS NOT USED.

FU113
1 AMP
250V
CONTROL FUSE
AGC TYPE

FS113
TB1
REED RELAY
(OPTIONAL)

TB1
7 B
5 W
FS113.1
LOW LEVEL CUTOUT
(VOLTAGE ADJUSTABLE)

TB1
4 B
FS114
TIMER ADJUSTABLE

TM113
3 W
2 S
3 T

EC117
EVENT COUNTER

M119
NOTching CONTACTOR

HGA11
I R
HWD, IFT, AUTO

R1132
1 W
2 B
TB1
1
HIGH LEVEL ALARM

LT132
XI RR
X2
ALARM BEACON
3 WATT MAX

AH134
ALARM HORN

CR138
3 WATT MAX
CR138
4 W

SILENCE RELAY
CR138
7 B
8 T

GND107
Product Performance Chart