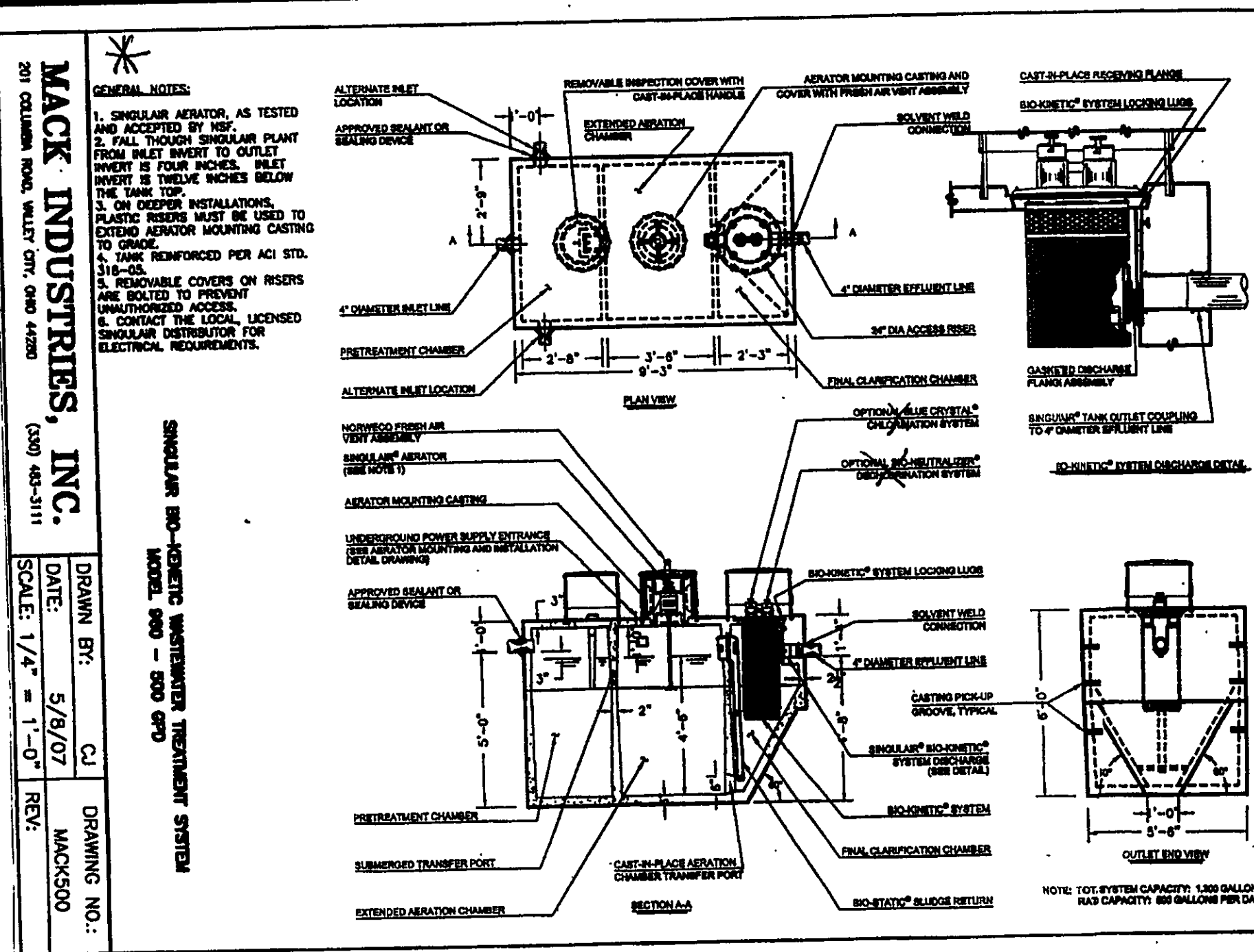
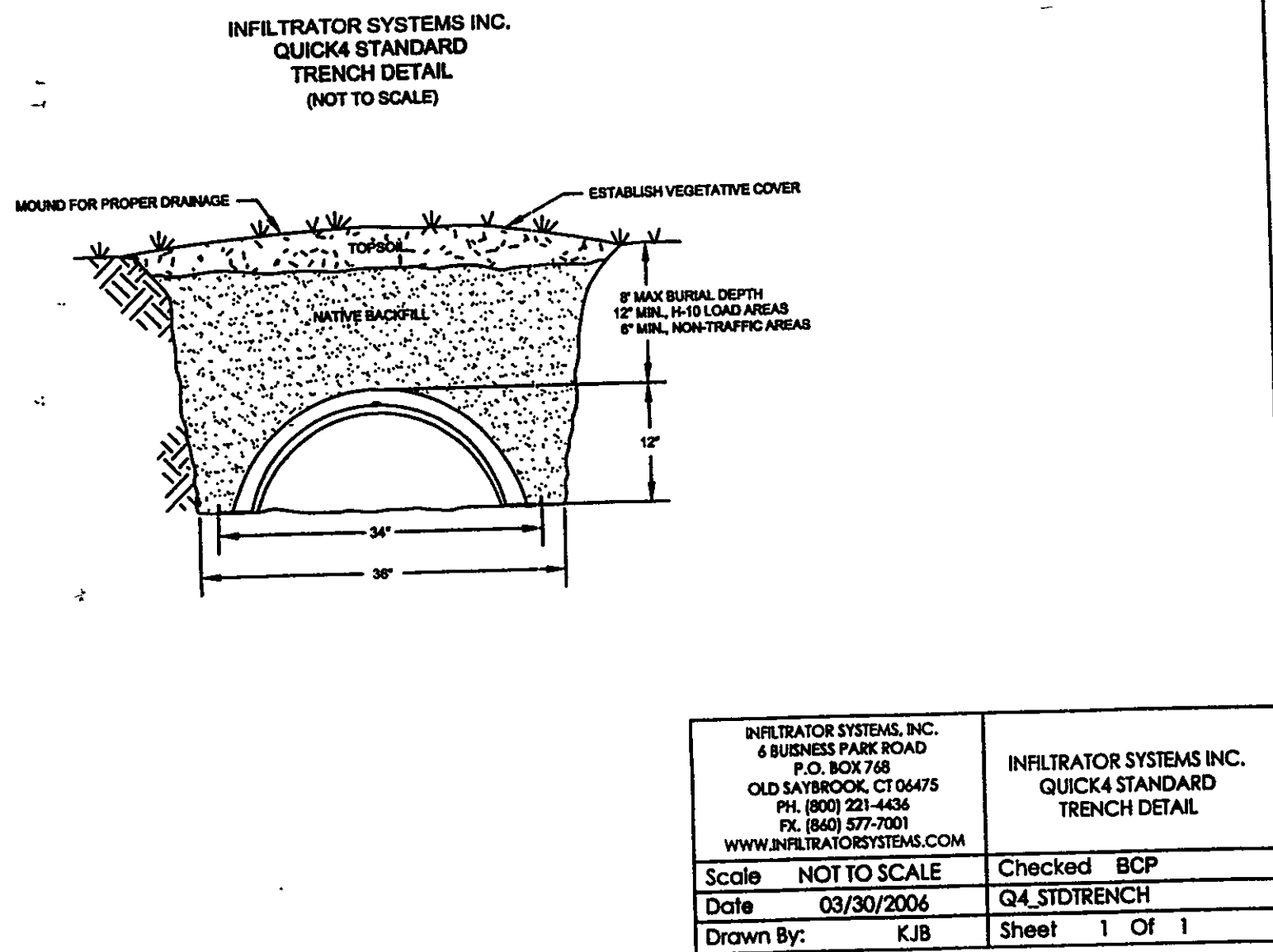
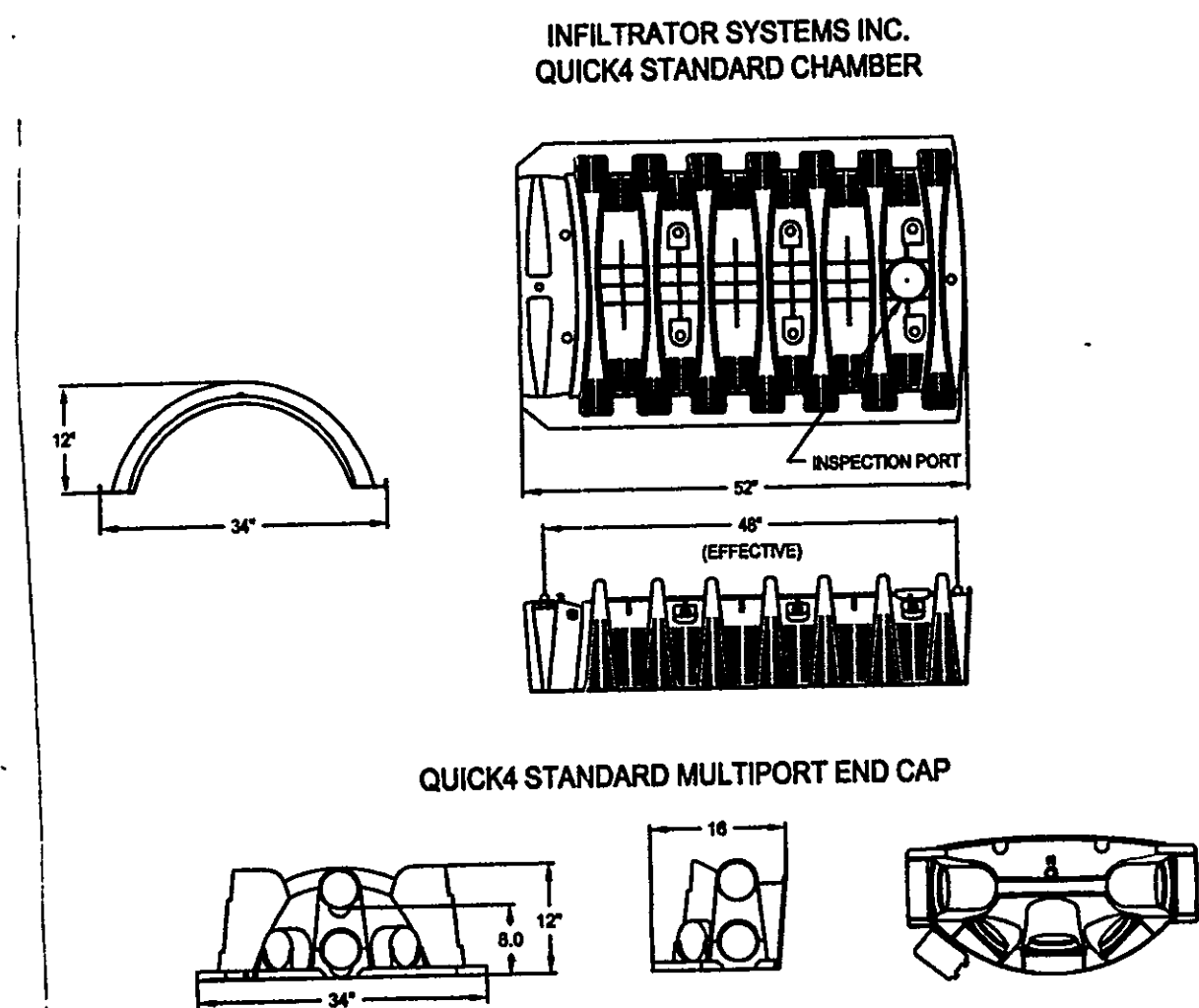




norweco SINGULAIR®

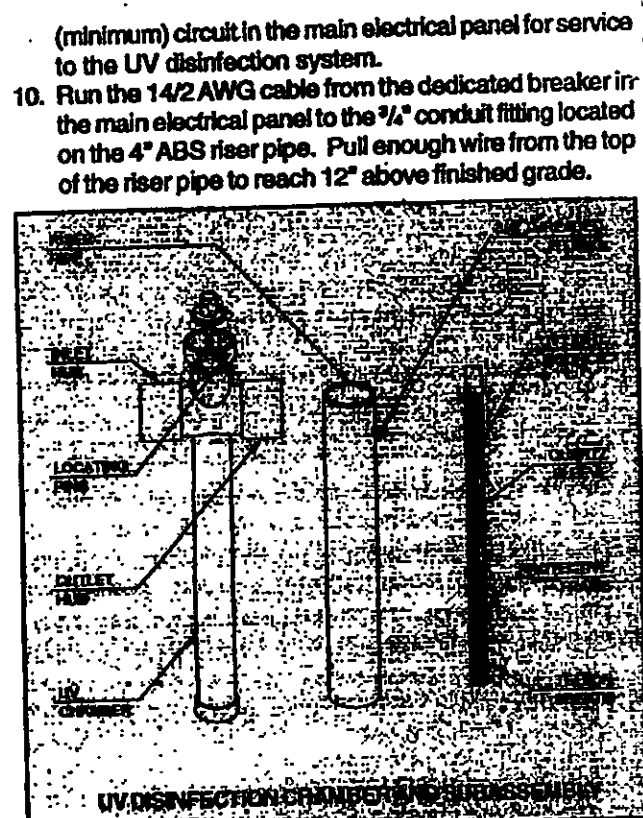
UV DISINFECTION SYSTEM INSTALLATION INSTRUCTIONS

Ultraviolet (UV) disinfection may be used in areas that do not allow chemical disinfection. Even though it is more expensive than chemical disinfection and requires consistent oversight, UV technology can attain results as good as chemical disinfection when used with a high quality effluent as provided by the Singular system. The Norweco UV disinfection system is installed on the 4" diameter effluent line of a Singular wastewater treatment system. The compact design of the Singular UV disinfection system minimizes the amount of excavation required for installation. The underground electrical service cable for the UV system control center should be installed at the same time as the underground electrical service to the aerator.

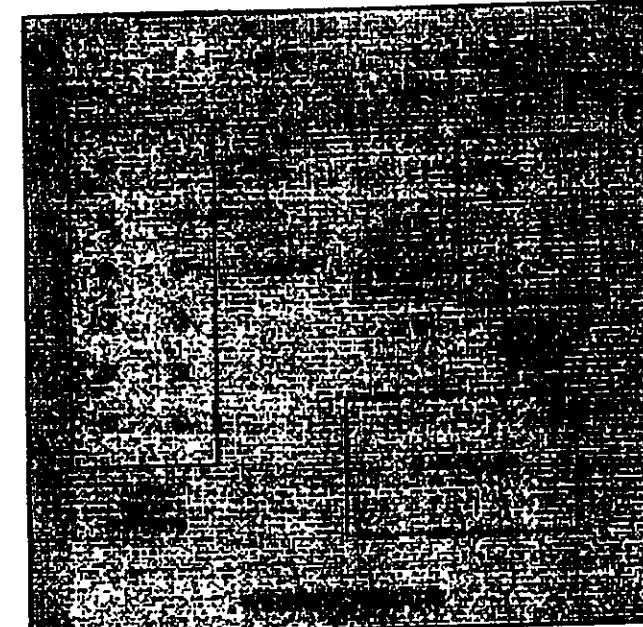
In addition to the Bio-Kinetic Tool Kaddy, the following items will be required for installation: ABS or PVC primer and cement, type UF, #14/2 AWG electrical cable, silicone sealant, teflon tape, electrical cable ties, isopropyl alcohol and glycerin (optional). Note: Inspect the unit upon receipt and check for any concealed damage from shipping. There are eight subassemblies that comprise the UV system: the disinfection chamber, the 4" ABS riser pipe, the UV control center with prewired external ballast, two 3" x 4" ABS expanders, the disinfection subassembly with anodized aluminum frame, a quartz sleeve encapsulated in a teflon sheath, a PVC handle and the UV lamp (packed inside the PVC handle).

INSTALLATION INSTRUCTIONS

1. The Singular excavation should be made 3' longer to allow the UV disinfection chamber inlet and outlet to be connected to the 4" diameter Singular effluent line.
2. Using ABS or PVC cleaner and cement, solvent weld the UV disinfection chamber inlet hub to the Singular effluent line in the orientation shown. Next, solvent weld the UV effluent line into the UV system discharge hub. The UV disinfection chamber is now installed.
3. Fit the 4" ABS riser pipe into the top of the disinfection chamber and mark the riser pipe at the length required to bring the system to grade. Mark the UV subassembly handle at the same length. Note: Be sure to orient the riser so that the end with the 1/2" threaded fitting is located at the bottom.
4. Cut both the top of the handle and riser pipe to the proper length being sure to retain the end of the riser pipe that has the 1/2" threaded coupling.
5. Thread the handle onto the UV system subassembly.
6. Use water or glycerin to lubricate the rubber gaskets located on both sides of the subassembly. Note: Do not use Bio-Kinetic lubricant, petroleum-based oils or greases to lubricate the gaskets.
7. Be careful not to touch the teflon sheath surrounding the quartz sleeve. Use a clean, soft cloth moistened with isopropyl alcohol to remove any fingerprints or glycerin that contaminates the sheath.
8. Using the handle, insert the subassembly into the disinfection chamber making sure the locating pins in the chamber lock into the corresponding openings on the subassembly. The locating pins insure that the subassembly maintains the proper orientation inside the disinfection chamber.
9. Use a dedicated 115 volt AC single phase 10 amp (minimum) circuit in the main electrical panel for service to the UV disinfection system.
10. Run the 14/2 AWG cable from the dedicated breaker in the main electrical panel to the 1/2" conduit fitting located on the 4" ABS riser pipe. Pull enough wire from the top of the riser pipe to reach 12" above finished grade.
11. Run the wire through the strain relief connector located on the bottom side of the UV control center.
12. Attach the incoming hot (black) lead to the lower left terminal block connection, the common (white) lead to the middle left terminal block connection and the incoming ground (green) lead to the ground lug located above the power terminal block (see wiring schematic).

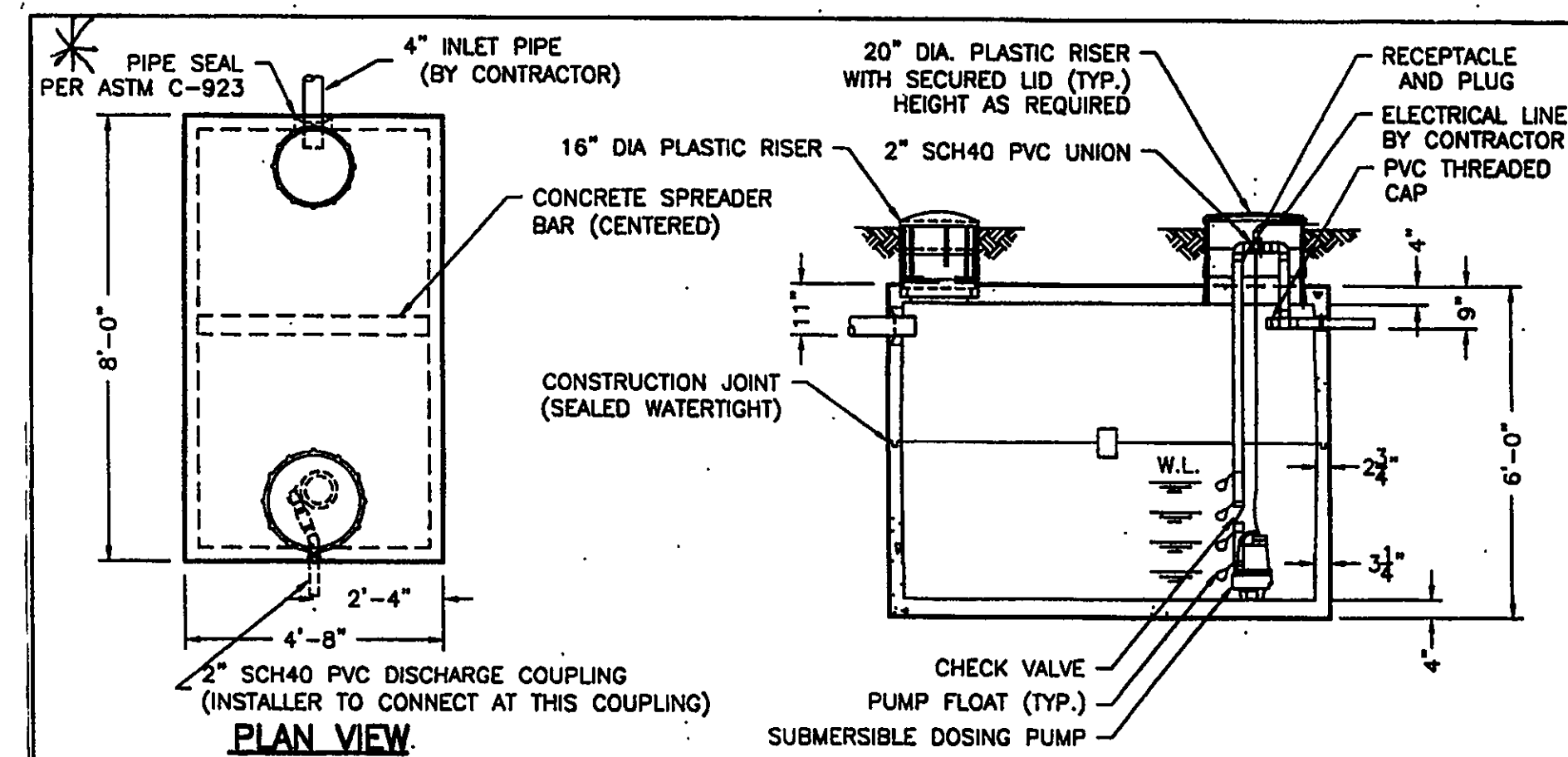


13. (Optional) If the auxiliary alarm output is being used, connect one lead to either the upper right normally closed (N/C) terminal or the middle right normally open (N/O) terminal of the alarm relay contacts as shown on the wiring schematic. Choose the relay contacts that agree with the alarm inputs on the receiving alarm panel. Connect the other lead to the third contact from top right (common) terminal as shown on the wiring schematic. Run the leads out through the strain relief.



connector located on the bottom side of the control center. The alarm leads should be run in conduit to the alarm panel that will be receiving the alarm signal. If this system is being used in conjunction with a Service Pro Control Center please refer to the Service Pro Control Center Installation and Operation Instructions for proper wiring.

14. Tighten the strain relief and set aside the control center.
15. Attach the four pin connector from the control center to the UV lamp and carefully lower it completely into the subassembly. When inserting the lamp, be careful not to damage the quartz sleeve inside the subassembly.
16. Lower the ballast hanging from the bottom of the control center into the riser pipe by threading the subassembly handle through the tie wraps that are attached to the through the top of the riser.
17. Insert the plastic pipe section on the back side of the control center enclosure into the top of the riser pipe.
18. Secure the control center cover plate in place on the top of the box using the four cover plate screws.
19. Turn on the UV system breaker in the main electrical service panel.
20. The LED light on the side of the control center enclosure should now be "on" indicating that the Singular UV disinfection system is operational.



NOTES:

1. REINFORCED PRECAST CONCRETE TO HAVE A COMPRESSIVE STRENGTH OF 5000 PSI @ 28 DAYS.
2. PRECAST CONCRETE TANK SHALL MEET OR EXCEED SPECIFICATIONS AS SET BY O.A.C. RULE 3701-293-11.
3. CONCRETE JOINT SEALANT CONFORMS TO ASTM C-990.
4. INLET AND DISCHARGE PIPE SEALS CONFORM TO ASTM C-923.
5. LABEL TOP OF TANK AS FOLLOWS:
MACK INDUSTRIES LOGO
500 GAL. TANK DOSING CAPACITY
DATE OF MANUFACTURE
MAXIMUM BURIAL DEPTH OF 2'-0"

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RESIDENTIAL DOSING TANK

DRAWN BY: DWH	SCALE: 3/8"=1'-0"	DRAWING NO.: RESDOSING
DATE: 3-10-07	REV: 2) 6/26/07 CJ	
REV: 1.) O.D.H. 2007 COMPLIANCE, O.A.C. RULE 3701-29-11		

MACK INDUSTRIES, INC.
201 COLUMBIA ROAD, VALLEY CITY, OHIO 44280
(216) 483-3111

MAINTENANCE AND SERVICE

The Singular UV disinfection system is designed to provide long service life. It is recommended that the UV lamp be replaced every two years to insure proper disinfection of the Singular effluent. To replace the bulb:

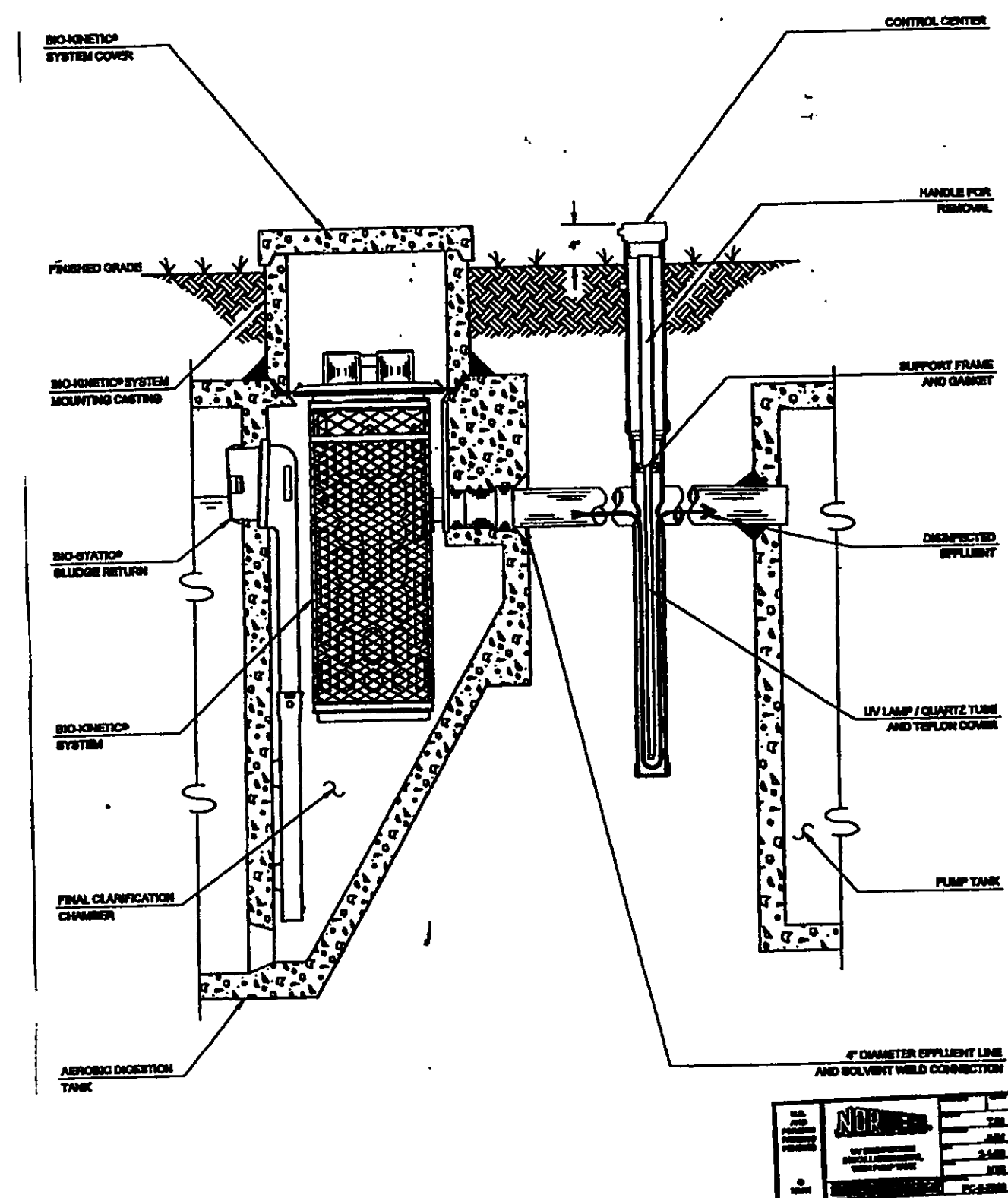
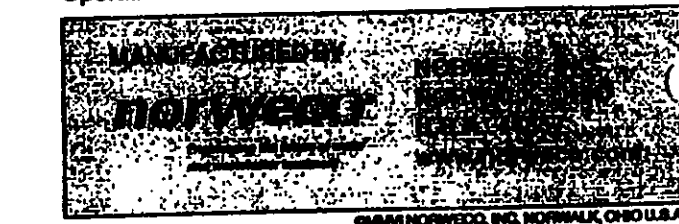
1. Turn off the dedicated breaker located in the main electrical panel that supplies power to the UV system.
2. Remove the control center enclosure and ballast from the UV disinfection chamber and carefully set it aside.
3. Using the power line connected to the UV lamp, lift the lamp out of the disinfection subassembly.
4. Disconnect the four pin connector attaching the power line to the UV lamp.
5. Connect the new lamp to the four pin connector and completely lower the new lamp into the UV subassembly.
6. Tuck the remaining power line into the riser pipe.
7. Make sure the ballast is still in position on the subassembly handle and insert the plastic section on the back side of the control center enclosure into the top of the riser pipe.
8. Turn on the dedicated breaker located in the main electrical panel that supplies power to the UV system.

It is recommended that the disinfection subassembly be removed and serviced every six months to insure proper effluent disinfection. To clean the Teflon sheath and disinfection sub-assembly:

1. Use a soft damp towel to carefully wipe down the sheath.
2. Use isopropyl alcohol on a soft cloth to remove difficult stains like finger prints and other items.

ALARM CIRCUIT

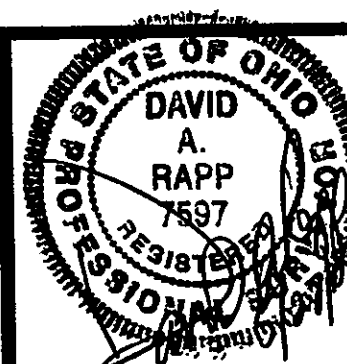
The Norweco Singular UV disinfection system is equipped with an internal current sensing circuit that continuously monitors the performance of the UV lamp. This self diagnostic technology monitors the current that is used by the UV lamp. If the Ultraviolet lamp output drops below an acceptable level for proper disinfection, the alarm circuit will turn "off" the green LED located on the outside of the control center. This will also generate an alarm condition and activate signal will be sent to the Service Pro control center or Fail Safe Integrated System Controls. For more information regarding connecting a Singular UV disinfection system to a Service Pro Control Center, please refer to the Service Pro Control Center with MCD Technology Installation and Operation Instructions.



* OR EQUAL

DAVID RAPP SERVICES

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440-983-1607



DATE: May, 2008
DRAWN BY: DAR
CHECKED BY:
APPROVED BY:
PE No. P.E. NO. 62081

LN WAKKILA
PF7A-014-0-00-001-0
LEY TOWNSHIP, OHIO

**SITE PLAN AND
SEPTIC SYSTEM IMPROVEMENTS**

Hor. Scale 1" = 40'	Vert. Scale 1" = 5'
CONTRACT NO. 28027	
SHEET No. 2	OF 2