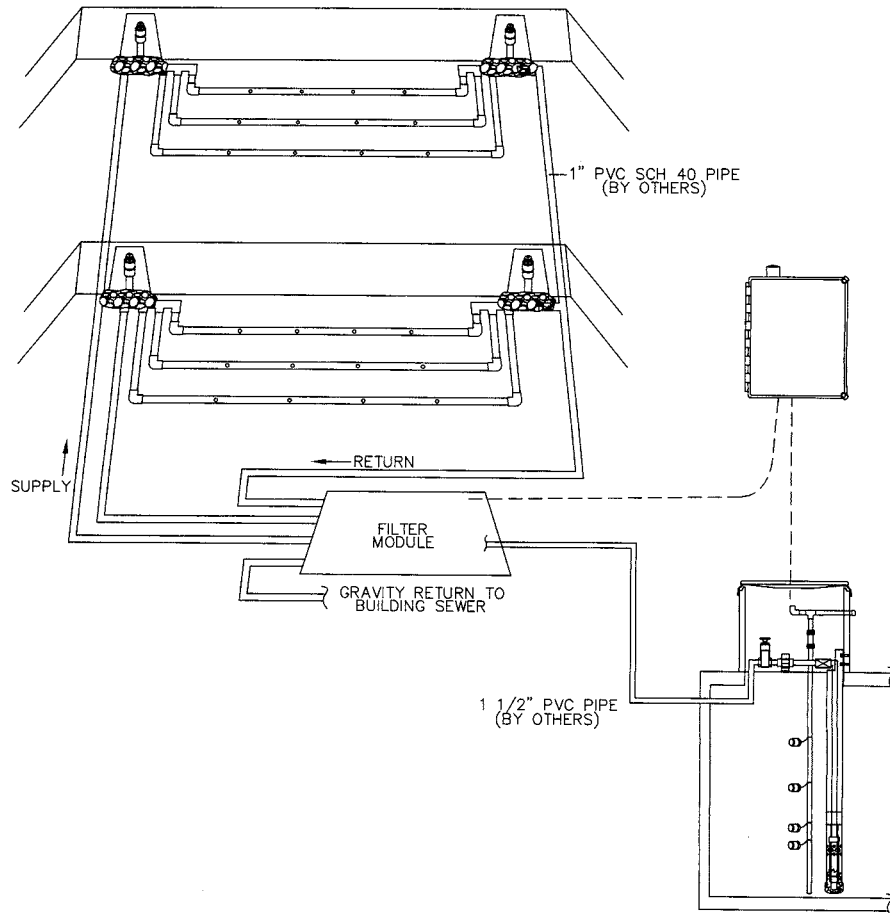


AMERICAN

**PERC-RITE® WASTEWATER  
DRIP DISPERSAL SYSTEMS  
SEPTIC OR SECONDARY EFFLUENT**

**WASHINGTON  
DESIGNERS' GUIDE**



PATENT NO. 5,200,065

PATENT NO. 5,984,574

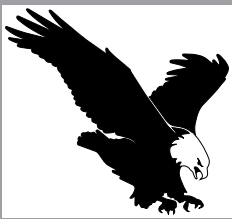
PATENT NO. 6,261,452B1

**Innovative Technology  
for the Environmental Age**

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**DESIGNERS' GUIDE**  
**AMERICAN “PERC-RITE®”**  
**WASTEWATER DRIP SYSTEMS**

2 ZONE or 4 ZONE — SIMPLEX or DUPLEX

PATENT NO. 5,200,065

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## INTRODUCTION

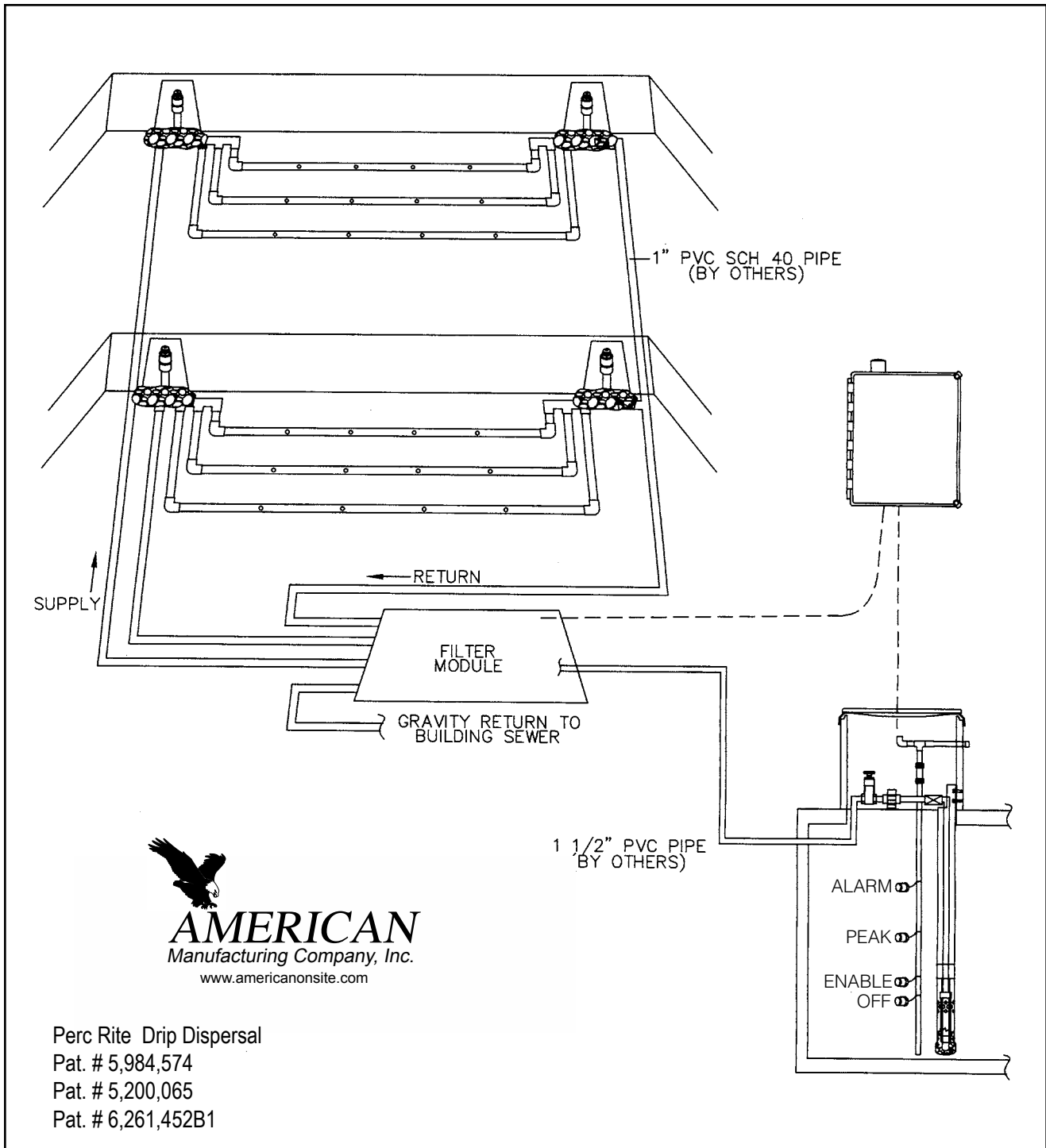
This **Perc-Rite® Drip System Designers' Guide** is for the non-engineer designer. Procedures have been developed to size, layout and design a **Perc-Rite® Drip** system using tables instead of performing extensive calculations. The tables have conditions which allow the designer considerable flexibility to layout systems in a variety of siting conditions without being required to do detailed engineering calculations to determine design suitability. When advanced system design is required, outside the limitations of this design procedure, the designer may reference the design manual located on our web site and complete a detailed calculation sheet to determine suitability. Reference our web site at “**americanonsite.com**”.

The **Perc-Rite® Drip System** is a unique fluid handling system for dispersal of effluent wastewater in soil systems. The system incorporates filtration, time and level controlled application and ultra low rate drip distribution. In conditions where aerobic dispersal, such as “Low Pressure Distribution”, of septic effluent is required or where land application with the use of conventional soil absorption fields are not acceptable, this system offers a unique method for subsurface distribution of the waste water effluent.

**Preconditioning Treatment requirements for Perc-Rite® Drip Systems** are minimum. The process will accommodate virtually any type of pretreatment process, septic tank (anaerobic), aerobic, lagoon, or any type of treatment facility. Only primary treatment (the removal of large settleable solids) of sewage is necessary for the operation of the system. Local soil and site conditions may require additional treatment for excessive organics, oil and grease or other contaminants.

There is virtually *No Site Disturbance during* installation of the field distribution lines. Typical vibratory plow installation causes very little soil disturbance. The effluent discharge volume from each emitter hole is very small. The system has little site impact even in established lawns or park areas. After installation there are no visible indications that the installation site is being used for disposal. The system is especially suited for landscaped or wooded areas near buildings, trailer parks, apartment complexes or residential subdivisions.

**TYPICAL LAYOUT**



## SYSTEM COMPONENTS

1. The **PERC-RITE® DRIP SYSTEM CONTROLLER** is a “state of the art” control panel, activated by level sensing devices (standard mechanical differential float switches) located in a dosing tank downstream from the pretreatment process or processes. When activated by the rising level of effluent in the dosing tank, the controller will enable the disposal cycle. The system controller on a time clock basis will pump the effluent through the filter module and then to final drip dispersal.
2. **FILTER MODULE** - Disc filters, automatic control valves, solenoid activated diaphragm valves, and a flow meter are assembled in an enclosure (with optional heating) and provided with a labeled wire harness for easy connection to the control panel.
3. **PUMP SYSTEM** - The pump, Cool Guide™ and float switches for level indication are provided for installation into the pump tank. The pump is a 15 gpm turbine pump and will be suitable for most residential installations. Reference “lift and distance table” for pumping limits.
4. **DRIPPER TUBING** - The dripper tubing is pressure compensating dripperline for wastewater. The tubing delivers a nominal 0.65 gallons per hour (+/- 5% flow rate from 7 to 60 psi). The tubing functions as a turbulent flow emitter between 0 and 7 psi, ensuring that the nominal design flow is not exceeded at system start-up.
5. **TOP FEED MANIFOLD SYSTEM** - The Top Feed Manifolds are located at the highest point in the drip zone and are provided with air release valves to prevent drain down of upper laterals in the zone to lower laterals in the zone, thus preventing saturation of the lower laterals after the pump shuts off. The system provides for the fastest possible pressurization of the zone and the most efficient method of providing drain down control. If the site is flat, Top Feed Manifolds may not be required.  
Patent No. 5,984,574.
6. **DRIP FIELD MATERIALS** - All special drip fittings and equipment are supplied by American Manufacturing Company, Inc., including the tubing insert fittings, connectors, flex tube and non- schedule 40 PVC standard fittings.
7. **STANDARD FIELD MATERIALS** - All tanks, wire, standard pipe and fittings are provided by the contractor at the local site. The 1” supply and return pipes, the 1/2” pipe for installation between the top feed manifold system and the laterals and other miscellaneous PVC pipe are to be purchased locally.

## DESIGN PROCEDURES

- 1. DEMAND ANALYSIS** - Local codes determine the amount of wastewater to design for. Many codes have a safety factor or peak flow factor in the prescribed design flow. Others are based on more of an average usage. In either event, the designer must determine what the peak (design) flow is. The **Perc-Rite® Drip System** will disperse the average flow through out each day unless the “Peak “ float is enabled, at which time the system will disperse effluent at an accelerated design daily flow rate. Record the number of bedrooms and the peak design flow on **line 1** of the worksheet.
- 2. SITE AND SOILS EVALUATION** - Soil and site evaluation is required according to state and local criteria (see page 7). The design loading rate shall be expressed as the “area” and the linear feet of tubing required. The delineated area for installation, effluent quality and the installation depth need to be determined. Long and narrow runs along contour are best. The professional judgement of the evaluator and designer should be used in applying the regulation to determine the wastewater application rate for any specific site. Record the determined soil type and selected loading rate area on **line 2** of the worksheet. The total linear feet of tubing required is recorded on **line 3**.
- 3. DELINEATE AREA** - On a site plan or a site sketch, the designer should layout the area of installation on contour. The width along contour should be determined and this distance will determine the necessary down slope distance in order to allocate sufficient total area. The distance down slope will dictate the number of runs which can be installed in the dispersal site. Make sure enough runs can be installed for the total wastewater capacity and the amount of tubing required. Site conditions determine the run separation. Runs can vary from 1 to 3 feet of separation but are more frequently from 1-1/2 to 2 feet on center.
- 4. SELECT ZONE DETAIL** - Once the area and total tubing length is determined, enter the run length in worksheet **line 4**. A standard zone detail is selected based on the width across contour and the total tubing length. Make sure the needed number of runs can be installed in the delineated area. Record the selected zone detail on **line 5**. If there is not a zone detail with the exact run length, select a zone detail from the column with the next larger run length. Determine the minimum number of runs and record in **line 5a**. Select the zone detail with the same or more number of runs. For Example, let's say a zone detail using a 15 GPM Standard Zone Detail Table that has 85' runs needs 1800 LF at 2' OC. The minimum runs = 22 (1800 LF tubing / 85 contour RL = 21.17, rounded up to 22 runs). Since there is no system available for 22, scroll down to 24 and record in line 5a under Spec. (Specified) # runs. The zone detail is a **Z243** and the installed spacing between runs will be 1.6' OC. The total linear feet is the number of runs for the selected zone detail times **line 4**. Record the total linear feet per zone provided on **line 7**. Record the dose gpm and FF gpm provided on **line 8**. See the **Zone Detail Table** (either septic and secondary or secondary only). Also, see the **Dosing & FF Flow Table**.
- 5. LAYOUT SITE** - On a site plan or site sketch show the route for the supply and return pipes. Show the distance the supply and return pipes travel. On a site plan or site sketch show the location of the tanks, filter module and the control panel. Determine the length of supply line run and record on **line 9**. Determine the lift to the field and record on **line 10**.
- 6. DETERMINE SUITABILITY** - Reference the **Lift and Distance Table**, using the length of run to the farthest field and the number of laterals to verify the layout is suitable for 1” supply and return. If the selected zone detail is included in the zone table and the lift is in excess of the required length of run in the pump table, record a “Yes” in **line 11** of the worksheet.

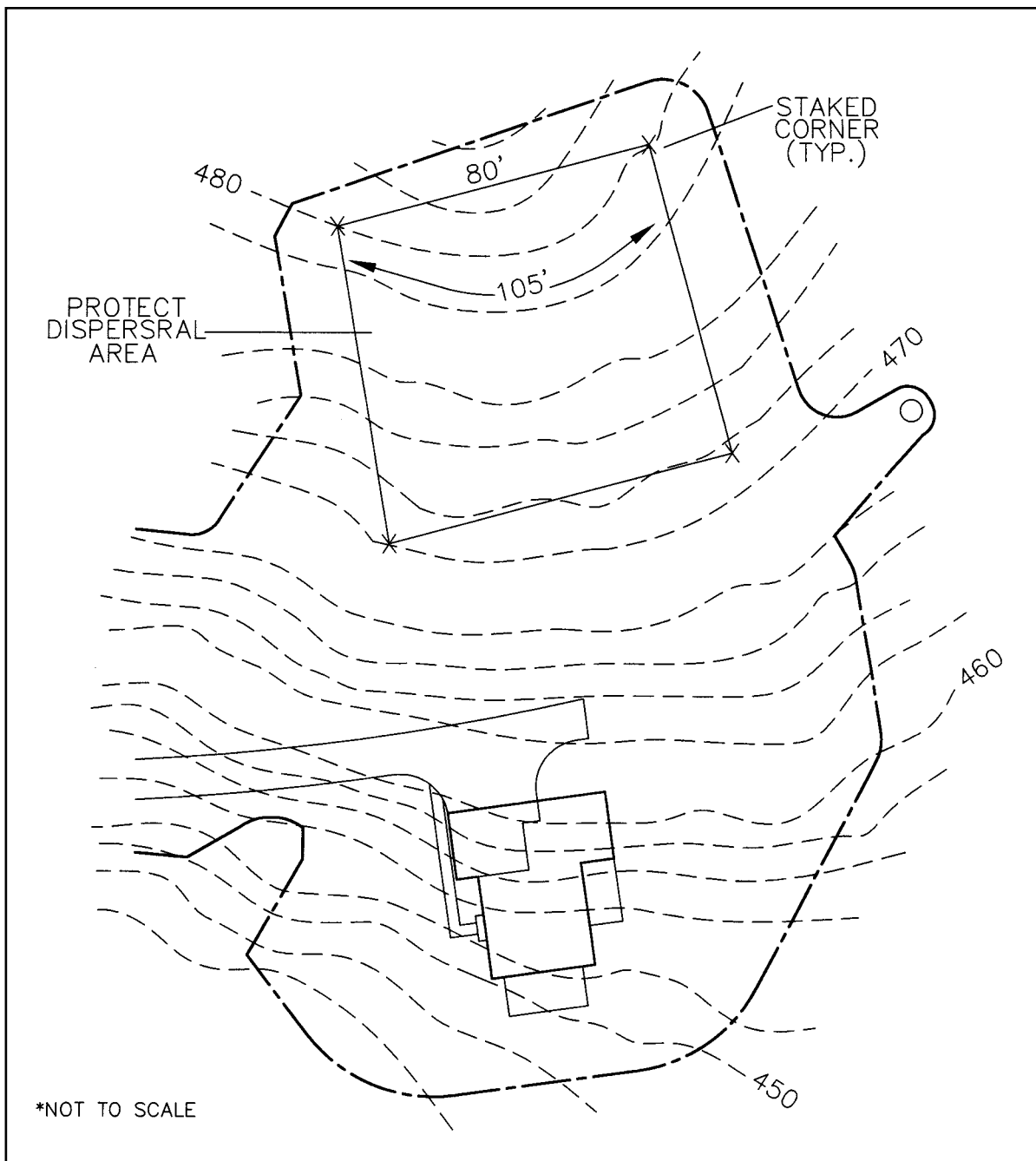
**WASHINGTON WORKSHEET** - Dispersal system design worksheet for residential systems.

	Y    N ( ) ( ) ( ) ( ) ( ) ( )	Are supply and return pipes 1"? Is the lift to the HU <8' and the run <30' with 1-1/2" pipe? Secondary or better Effluent Quality?
1	_____ GPD _____ # Bedrooms	Quantity of wastewater to disperse.
2	_____ Area (ft <sup>2</sup> ) _____ Soil Type	Area required to treat and disperse wastewater. Reference Soil Loading Rate Table. (Page 7)
3	_____ Total LF _____ Tubing	<b>Required</b> total linear feet of tubing to treat and disperse wastewater. <b>( #2 / 2 = #3 )</b>
4	_____ Contour _____ Run Length	Enter the tubing run length. If run length not on table, then use the actual run length. Example: 85 ft.
5	_____ Zone Detail	Standard Zone detail description. <b>*Note:</b> For run lengths not shown on table, reference #5a. Select zone detail from column with higher <b>RUN LENGTH</b> and with #5a or greater number of runs.
5a	_____ Min. # Runs _____ Spec. # Runs	Determine number of runs. #3 / #4 (Total L.F. / Contour R.L.). Round up to next whole #. Example: 1800 / 85 = 21.17 ~ <u>22</u> (Use 24 runs in 15 gpm table)
6	_____ LF Total	Total linear feet of tubing <b>Provided</b> to disperse wastewater. Total number of runs from Standard Detail Zone table times the length of run along contour #4.
7	_____ LF/Zone	Total linear feet per zone. <b>( #6 / Number of Zones )</b>
8	_____ gpm dose _____ gpm FF	Dosing flow rate. See "Dosing & FF Flow Table" on bottom of page 10 & 12. Field flush (FF) flow rate. See "Dosing & FF Flow Table" on bottom of page 10 & 12.
9	_____ Supply LF	Length of run between hydraulic unit and farthest zone.
10	_____ Lift Ft.	Vertical lift from off level in the pump chamber and highest zone elevation.
11	Will zone flush? Y    N ( ) ( )	Reference Lift & Distance Table for pump capacity determined by the length of run to the farthest field and the number of laterals. For 1" supply and return only.

## AREA DELINEATION

A complete site evaluation includes a surface characterization of topographic features and horizontal setbacks, a subsurface (soil) evaluation, and the accurate delineation of the soil absorption area. This delineation is best performed by the site evaluator. The area should be marked and measured in the field to insure protection of the area and a representative final absorption area design. Tools required would include a measuring tape to dimension the site, stakes to delineate the area, and a leveling device such as a builders level, lock level, or clinometer to determine contour.

Care should be exercised to insure accuracy on sites with limited area, and those that are topographically complex. It is important to minimize site skewing, account for topographic contour wrapping, and verify available area. The header ditch(es) area should be as perpendicular to topographic contour as possible.



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# WASHINGTON

## LOADING RATE CHART

For **AMERICAN** Perc-Rite® Drip Systems.  
 1-800-345-3132 www.americanonsite.com

Drip dispersal design in Washington State is regulated by the “Washington State Department of Health” through the “Subsurface Drip Systems - Interim Recommended Standards and Guidance for Performance, Application, Design and Operation & Maintenance” and “Chapter 246-272 WAC, On-Site Sewage Systems”. The following procedure is used to size a Perc-Rite® drip system.

1. Evaluate the site according to the Regulation.
2. Select the system type of pretreatment to be used.
3. Using the submittal form and tables below determine the linear feet of tubing required using both the primary and reserve area.
  - A) Using the soil texture group, number of bedrooms, and pretreatment quality, determine the total square foot required. \_\_\_\_\_ ft<sup>2</sup>
  - B) Determine the total linear feet of tubing required and record in submittal worksheet. \_\_\_\_\_ Linear Feet of Tubing required.
  - C) Fill out the remainder of the worksheet according to the instructions.

### Minimum Pretreatment

### Pretreatment 10/10/ BOD/TSS

Line No.	Bedroom	SOIL TYPE						SOIL TYPE					
		1,2A	2B	3	4	5	6	1,2A	2B	3	4	5	6
		Minimum dripfield area (sq.ft.)						Minimum dripfield area (sq.ft.)					
1	2	240	240	450	600	800	1800	120	120	300	450	600	1800
2	3	300	360	675	900	1200	2700	150	180	450	675	900	2700
3	4	400	480	900	1200	1600	3600	200	240	600	900	1200	3600
4	5	500	600	1125	1500	2000	4500	250	300	750	1125	1500	4500
5		Spacing between runs of tubing						Spacing between runs of tubing					
6		1	1	1	1.5	1.5	2	1	1	1	1.5	1.5	2
7		Minimum total/installed area (includes 100% reserve)						Minimum total/installed area (includes 100% reserve)					
8	2	480	480	900	1200	1600	3600	240	240	600	900	1200	3600
9	3	600	720	1350	1800	2400	5400	300	360	900	1350	1800	5400
10	4	800	960	1800	2400	3200	7200	400	480	1200	1800	2400	7200
11	5	1000	1200	2250	3000	4000	9000	500	600	1500	2250	3000	9000
12		Minimum installed linear feet of tubing (include reserve)						Minimum installed linear feet of tubing (include reserve)					
13	2	480	480	900	800	1067	1800	240	240	600	600	800	1800
14	3	600	720	1350	1200	1600	2700	300	360	900	900	1200	2700
15	4	800	960	1800	1600	2133	3600	400	480	1200	1200	1600	3600
16	5	1000	1200	2250	2000	2667	4500	500	600	1500	1500	2000	4500

## ZONE DETAIL NUMBERING SYSTEM

Each zone is designated by a "Z" indicating it is a Zone Detail Designation followed by three groups of numbers, the first is the number of zones, the second is the number of laterals per zone, the third is the runs per lateral.

$$Z = \text{Zone} \quad \# \text{ Zones} \quad \# \text{ Laterals} \quad \# \text{ Runs/Lat}$$

**EXAMPLE 1**

$$Z = \text{Zone} \quad \underline{1} \quad \underline{2} \quad \underline{2}$$

$$Z = \text{Zone} \quad \# \text{ Zones} \quad \# \text{ Laterals} \quad \# \text{ Runs/Lat}$$

This example shows a one zone detail with two laterals per zone and two runs per lateral.

## ZONE DETAIL SELECTION PROCEDURE

Reference the site plan layout to determine the width across contour of the delineated area. From the site and soils evaluation determine the total amount of tubing required. The area divided by two is the total linear feet of tubing required. The total linear feet of tubing divided by the length across contour equals the minimum number of runs. The total number of linear feet of tubing and runs will typically be more than the minimum since the preferred layout for flushing the supply and return lines will typically result in more than the minimum tubing.

Increasing the number of runs in order to install a standard zone configuration is encouraged. This provides an additional safety factor to the tubing interface loading rate. Use the following step by step procedure to select a zone detail.

1. Determine width across contour.
2. Determining number of runs that can be installed in area.
3. Select a standard zone detail from under the column for contour with which has enough tubing to satisfy total tubing requirements.
4. In the event more runs are needed to yield enough tubing for the site, the tubing may be placed closer than 2' on center.

### EXAMPLE 2

$$\text{Contour width} = 100 \text{ Feet}$$

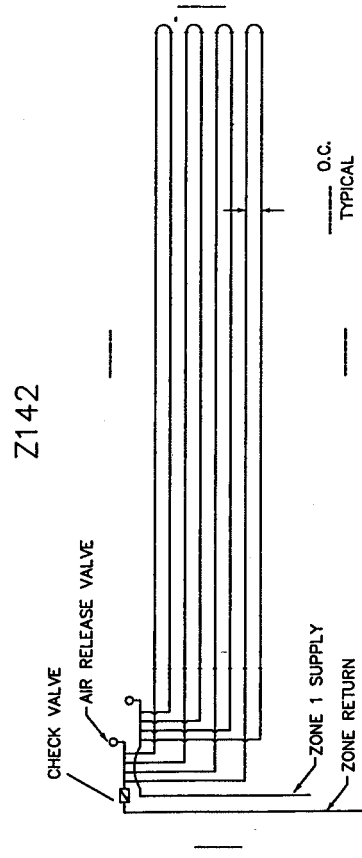
$$\text{Tubing required} = 700 \text{ Linear Feet}$$

From the table, the linear feet of tubing provided in 100 foot runs will be between 600 LF and 800 LF. Therefore select 8 runs for 800 LF. The zone detail could be:

$$Z = \text{Zone} \quad \underline{1} \quad \underline{4} \quad \underline{2}$$

$$Z = \text{Zone} \quad \# \text{ Zones} \quad \# \text{ Laterals} \quad \# \text{ Runs/Lat}$$

Finally confirm that the number of runs can be installed into the delineated area.



## INSTALLATION INSTRUCTIONS

1. Prepare field location for installation. Verify contour and design. No wet weather installation. No activity on drainfield other than minimum to install system. Clearing of vegetation to be performed with minimal site disturbance. Do not park equipment or store materials on drainfield area.
2. Set pretreatment and pump tanks.
3. Dig header ditch for field manifold.
4. Install dripper tubing. Horizontal spacing between dripper lines shall be as specified and installation depth shall be as specified. Install on contour.
5. Install loops (flex tubing) and construct field supply / return manifolds. All PVC pipe and fittings shall be PVC SCH 40 type 1 rated for pressure applications. All glued joints shall be cleaned and primed with purple (dyed) PVC primer prior to being glued. All cutting of PVC pipe, flexible PVC and/or dripper tubing shall be accomplished with pipe cutters. Sawing of PVC pipe, flexible PVC and/or dripper tubing shall be followed by cleaning all shavings or sawing shall not be allowed. All open PVC pipe, flexible PVC and/or dripper tubing in the work area shall have the ends covered with duct tape during construction to prevent construction debris from entering the pipe. Prior to gluing all glue joints shall be inspected for and cleared of construction debris.
6. Dig ditches for conveyance lines, pump supply line, and flush return line. Install. Connect supply / return lines with manifolds.
7. Place Central Unit and mount control panel. Connect conveyance, supply, and flush return lines to hydraulic unit.
8. Set switch tree in pump tank.
9. Install electrical (and phone line if applicable). Check power supply and power up unit.
10. Provide one day volume of clean water for startup. Prior to startup of the drip disposal system the air release valves shall be removed and each zone in the system shall be flushed as follows: a) using an appropriate length of flexible PVC pipe with a male fitting attached to the air release connection to direct the flushing away from the construction area, b) flush the zone with a volume of water (clean water to be provided by contractor) equal to 1.5 times the volume of the pipes from the central unit to the air release valve, c) repeat this procedure for each zone (the flushing of the system is accomplished by manual override of the control panel by the manufacturer or engineer.) Once completed replace and glue air relief valves.  

If existing septic tanks are to be used, they shall be pumped out by a commercial septic tank pumper, checked for leakage or other problems, and replaced if necessary. After the tank is emptied, the tank shall be rinsed, pumped, and refilled with clean water. Debris in septic tank shall be kept to a minimum since it could clog the disk filters during startup. (Disk filters are not backflushed during startup and any clogging could cause incorrect rate of flow readings for the controller.)
11. Pressure check all fittings and lines. Inspect field and loops. Find leaks and repair.
12. Check setup values against calculated values. Set run time for Central Unit.
13. Backfill once lines and fields are determined to have no leaks. Back filling is to be controlled to prevent the damaging of pipes or fittings. Once completed, drainfield area should be graded to shed surface water with additional clean soil as necessary. Establish fescue or other turf cover, cut long (6-8”).
14. In cold weather climates, installer should follow all “cold weather installation” techniques. Refer to local standards.



**15 GPM AUTOMATIC PERC-RITE® DRIP SYSTEMS: ASD SERIES - SEPTIC OR SECONDARY EFFLUENT  
STANDARD ZONE DETAIL TABLE**

Length Across Contour RUN LENGTH #RUN	50'		75'		100'		125'		150'		200'		225'		250'		300'		
	ZD	LF	ZD	LF	ZD	LF	ZD	LF	ZD	LF	ZD	LF	ZD	LF	ZD	LF	ZD	LF	
4																			
5																			
6																			
7																			
8																			
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<b>DOSING &amp; FF FLOW TABLE (GPM)</b>									
15 GPM AUTOMATIC DRIP SYSTEMS: 24" EMITTER SPACING									
LF/ ZONE	GPM DOSE RATE	FF NO. LATS	FF NO. LATS	FF NO. LATS	FF NO. LATS	FF NO. LATS	FF NO. LATS	FF NO. LATS	FF NO. LATS
600	3.3	6.5	8.1	9.7	11.3	12.9	14.5	16.1	17.7
700	3.5	6.7	8.3	9.9	11.5	13.1	14.7	16.3	17.9
800	3.8	7.0	8.6	10.2	11.8	13.4	15.0	16.6	18.2
900	4.1	7.3	8.9	10.5	12.1	13.7	15.3	16.9	18.5
1000	4.3	7.5	9.1	10.7	12.3	13.9	15.5	17.1	18.7
1100	4.6	7.8	9.4	11.0	12.6	14.2	15.8	17.4	19.0
1200	4.9	8.1	9.7	11.3	12.9	14.5	16.1	17.7	19.3
1300	5.1	8.3	9.9	11.5	13.1	14.7	16.3	17.9	19.5
1400	5.4	8.6	10.2	11.8	13.4	15.0	16.6	18.2	19.7
1500	5.7	8.9	10.5	12.1	13.7	15.3	16.9	18.5	20.0
1600	6.0	9.2	10.8	12.4	14.0	15.6	17.2	18.8	20.3
1700	6.2	9.4	11.0	12.6	14.2	15.8	17.4	19.0	20.5
1800	6.5	9.7	11.3	12.9	14.5	16.1	17.7	19.3	20.8

**15 GPM AUTOMATIC PERC-RITE® DRIP SYSTEMS: ASD SERIES - SEPTIC OR SECONDARY EFFLUENT LIFT & DISTANCE TABLE INSTRUCTIONS**

1. The vertical lift is the elevation difference between the “off float” and the highest point in any zone.
2. The diameter of the pipe from the pump tank to the hydraulic unit is 1-1/2” minimum.
3. All supply and return pipes are 1”.
4. The flush return pipe from the hydraulic unit to the pretreatment tank is 1-1/2” gravity.
5. The maximum distance from the pump tank to the hydraulic unit is 30’.
6. The tables may be used with the standard zone detail configuration only. A calculation sheet must be filled out for any other configuration.
7. Top feed manifolds must be used when any discernible slope is encountered.
8. Remote zone valves are needed when pumping downhill from the filter.
9. Return pressure assembly is needed when pumping uphill from the optional valve box.

**LIFT & DISTANCE TABLE**

Maximum Static Lift (“Off Level Float” to Drip Field)							
Supply/ Return Line (feet)	2-Lat 300’	3-Lat 300’	4-Lat 300’	5-Lat 240’	6-Lat 165’	7-Lat 100’	
1							
2							
3	100	98	88	75	74	79	77
4	150	96	84	69	66	70	68
5	200	94	81	63	58	61	59
6	250	92	77	57	51	52	49
7	300	90	73	50	43	44	40
8	350	88	70	44	35	35	31
9	400	86	66	38	27	26	21
10	450	84	63	32	19	17	
11	500	82	59	26	12		
12	550	80	55	20			
13	600	78	52	14			
14	650	76	48	8			
15	700	74	45	2			
16	750	72	41				
17	800	70	37				
18	850	68	34				
19	900	66	30				
20	950	64	27				
21	1000	62	23				

**12 GPM SEMI-AUTOMATIC PERC-RITE® DRIP SYSTEMS: QUALITY MONITORING "QM" SERIES - SECONDARY EFFLUENT  
STANDARD ZONE DETAIL TABLE**



Length Across Contour

RUN LENGTH # RUNS	50'		75'		100'		125'		150'		200'		225'		250'		300'		
	ZD	LF	ZD	LF	ZD	LF	ZD	LF	ZD	LF	ZD	LF	ZD	LF	ZD	LF	ZD	LF	
2																			
3									Z131	450				Z121	450				
4								Z122	500	Z122	500	Z141	800	Z141	800	Z141	1000	Z221	1000
5								Z141	400	Z141	400	Z151	625	Z151	625	Z151	750	Z151	750
6								Z151	500	Z151	500	Z132	750	Z132	750	Z132	900	Z132	900
7								Z123	450	Z123	450	Z132	600	Z132	600	Z132	900	Z132	900
8								Z132	450	Z132	450	Z142	800	Z142	800	Z142	1200	Z142	1200
9								Z142	600	Z142	600	Z222	1000	Z222	1000	Z222	1200	Z222	1200
10								Z222	800	Z222	800	Z241	800	Z241	800	Z241	1000	Z241	1000
11								Z241	800	Z241	800	Z133	900	Z133	900	Z133	1250	Z133	1250
12								Z251	1000	Z251	1000	Z251	1000	Z251	1000	Z251	1500	Z251	1500
13								Z134	900	Z134	900	Z223	1200	Z223	1200	Z223	1800	Z223	1800
14								Z143	900	Z143	900	Z232	1200	Z232	1200	Z232	1800	Z232	1800
15								Z223	900	Z223	900	Z232	900	Z232	900	Z232	900	Z232	900
16								Z232	900	Z232	900	Z242	2000	Z242	2000	Z242	2000	Z242	2000
17								Z242	800	Z242	800	Z224	1200	Z224	1200	Z224	1600	Z224	1600
18								Z224	1200	Z224	1200	Z233	1800	Z233	1800	Z233	1800	Z233	1800
19								Z233	900	Z233	900	Z252	1500	Z252	1500	Z252	1500	Z252	1500
20								Z252	1000	Z252	1000	Z224	1200	Z224	1200	Z224	1600	Z224	1600
21								Z224	1200	Z224	1200	Z242	1200	Z242	1200	Z242	1200	Z242	1200
22								Z242	800	Z242	800	Z233	1350	Z233	1350	Z233	1800	Z233	1800
23								Z233	900	Z233	900	Z234	1800	Z234	1800	Z234	1800	Z234	1800
24								Z234	1800	Z234	1800	Z243	1200	Z243	1200	Z243	1200	Z243	1200
25								Z243	1200	Z243	1200	Z235	1500	Z235	1500	Z235	1500	Z235	1500
26								Z235	1500	Z235	1500	Z253	1500	Z253	1500	Z253	1500	Z253	1500
27								Z253	1500	Z253	1500	Z244	1600	Z244	1600	Z244	1600	Z244	1600
28								Z244	1600	Z244	1600	Z236	1800	Z236	1800	Z236	1800	Z236	1800
29								Z236	1800	Z236	1800	Z245	2000	Z245	2000	Z245	2000	Z245	2000
30								Z245	2000	Z245	2000	Z237	1800	Z237	1800	Z237	1800	Z237	1800
31								Z237	1800	Z237	1800	Z246	2000	Z246	2000	Z246	2000	Z246	2000
32								Z246	2000	Z246	2000	Z238	1800	Z238	1800	Z238	1800	Z238	1800
33								Z238	1800	Z238	1800	Z247	2000	Z247	2000	Z247	2000	Z247	2000
34								Z247	2000	Z247	2000	Z239	1800	Z239	1800	Z239	1800	Z239	1800
35								Z239	1800	Z239	1800	Z248	2000	Z248	2000	Z248	2000	Z248	2000
36								Z248	2000	Z248	2000	Z240	1800	Z240	1800	Z240	1800	Z240	1800
37								Z240	1800	Z240	1800	Z249	2000	Z249	2000	Z249	2000	Z249	2000
38								Z249	2000	Z249	2000	Z241	1800	Z241	1800	Z241	1800	Z241	1800
39								Z241	1800	Z241	1800	Z250	2000	Z250	2000	Z250	2000	Z250	2000
40								Z250	2000	Z250	2000	Z242	2000	Z242	2000	Z242	2000	Z242	2000

12 GPM SEMI-AUTOMATIC DRIP SYSTEMS: 24" EMITTER SPACING					
LF/ZONE	DOSE RATE	FF		FF	
		NO. LATS.	NO. LATS.	NO. LATS.	NO. LATS.
400	2.2	2	3	4	5
450	2.4	5.4	7.0	8.6	10.2
500	2.7	5.6	7.2	8.8	10.4
550	3.0	5.9	7.5	9.1	10.7
600	3.3	6.2	7.8	9.4	11.0
625	3.4	6.5	8.1	9.7	11.3
650	3.5	6.6	8.2	9.8	11.4
675	3.7	6.7	8.3	9.9	11.5
700	3.8	6.9	8.5	10.1	11.7
750	4.1	7.0	8.6	10.2	11.8
800	4.3	7.3	8.9	10.5	12.1
850	4.6	7.5	9.1	10.7	12.3
900	4.9	7.8	9.4	11.0	12.6
950	5.1	8.1	9.7	11.3	12.9
1000	5.4	8.3	9.9	11.5	13.1
		8.6	10.2	11.8	13.4

**12 GPM SEMI-AUTOMATIC PERC-RITE® DRIP SYSTEMS: QUALITY MONITORING “QM” SERIES - SECONDARY EFFLUENT LIFT & DISTANCE TABLE QUALIFICATIONS**

1. The vertical lift is the elevation difference between the “Off Level Float” and the highest point in any drip zone.
2. The supply/return line column is the distance from the filter to the farthest drip zone.
3. The diameter of the pipe from the pump tank to the optional filter unit is 1-1/2” minimum.
4. All zone supply and return pipes are 1”.
5. The flush return pipe from the filter box to the pretreatment tank is 1-1/2” gravity.
6. The maximum distance from the pump tank to the optional filter valve box is 30’ and the vertical lift from the pump chamber to the optional filter valve box is 8’.
7. These tables may be used with the standard zone detail configuration only. A calculation sheet (not included herein) must be filled out for any other configuration.
8. Top feed manifolds must be used when any discernible slope is encountered.
9. Remote zone valves are needed when pumping downhill from the filter.
10. Return pressure assembly is needed when pumping uphill from the optional valve box.

**LIFT & DISTANCE TABLE QM UNIT - 12 GPM, 1000 L.F. / ZONE MAX. Maximum Static Lift (“Off Level Float” to Drip Field)**

**Table A:**

STANDARD QM LIFT & DISTANCE TABLE					
	Supply/ Return Line (feet)	2-Lat 300'	3-Lat 300'	4-Lat 250'	5-Lat 150'
1					
2					
3	100	100	83	78	86
4	150	98	80	73	80
5	200	96	76	68	74
6	250	94	72	62	68
7	300	92	69	57	63
8	350	90	65	52	57
9	400	88	62	46	51
10	450	86	58	41	45
11	500	84	54	36	39
12	550	82	51	30	
13	600	80	57	25	
14	650	78	44	20	
15	700	76	40	15	
16	750	74	36	9	
17	800	72	33		
18	850	70	29		
19	900	68	26		
20	950	66	22		
21	1000	64	18		
				<b>Note:</b>	
				<b>Use Table B</b>	
				<b>when using</b>	
				<b>Hydro Seq</b>	
				<b>Valve</b>	

**Table B:**

QM w/ HYDRO SEQ DISTRIBUTING VALVE					
	Supply/ Return Line (feet)	2-Lat 300'	3-Lat 300'	4-Lat 250'	5-Lat 150'
1					
2					
3	100	61	61	61	61
4	150	58	58	58	58
5	200	56	56	56	56
6	250	53	53	53	53
7	300	50	50	50	50
8	350	47	47	47	47
9	400	44	44	44	44
10	450	42	42	36	42
11	500	39	39	31	39
12	550	36	36	25	
13	600	33	33	20	
14	650	30	30	15	
15	700	28	28	10	
16	750	25	25	4	
17	800	22	22		
18	850	19	19		
19	900	16	16		
20	950	14	14		
21	1000	11	11		
				<b>Note:</b>	
				<b>Use this table</b>	
				<b>when using</b>	
				<b>Hydro Seq</b>	
				<b>Valve</b>	

**RUN TIME TABLES: 15 GPM AUTOMATIC PERC-RITE® DRIP SYSTEMS**

The run time tables are based on the gallons per day the system is designed for. The run time numbers are based on the **average daily flow rate**. Selecting the run time is the last design step that is performed. Based on the number of zones and the number of laterals per zone, the run time is selected based on the average gallons per day. For even distribution and minimizing draindown events, the run time is calculated to provide from **3 to 5 times the volume of drip tubing plus the top feed manifolds**. Therefore, the number of doses per day per zone will vary in order to maintain optimum dispersal.

	American Manufacturing 2-Zone										3-Zone										4-Zone									
	2-Lat	3-Lat	4-Lat	5-Lat	6-Lat	7-Lat	2-Lat	3-Lat	4-Lat	5-Lat	6-Lat	7-Lat	2-Lat	3-Lat	4-Lat	5-Lat	6-Lat	7-Lat	2-Lat	3-Lat	4-Lat	5-Lat	6-Lat	7-Lat						
Design	300'	300'	300'	240'	165'	100'	300'	300'	300'	165'	100'	300'	300'	300'	165'	100'	300'	300'	300'	240'	165'	100'	300'	300'	300'	240'	165'	100'		
GPD	3.25	4.875	6.5	6.5	5.4	3.8	3.25	4.875	6.5	6.5	5.4	3.8	3.25	4.875	6.5	6.5	5.4	3.8	3.25	4.875	6.5	6.5	5.4	3.8	3.25	4.875	6.5	6.5	5.4	3.8
	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose	Min/Dose
<b>300</b>	7.48	7.69	5.53	5.41	6.51	5.35	7.48	10.76	7.84	7.72	9.30	5.35	12.10	7.69	5.33	5.41	6.51	9.31	12.10	7.69	5.33	5.41	6.51	9.31	12.10	7.69	5.33	5.41	6.51	9.31
<b>320</b>	5.64	8.30	6.00	5.87	7.07	5.88	8.10	11.58	8.46	8.33	10.05	5.88	5.64	8.30	6.00	5.87	7.07	10.10	5.64	8.30	6.00	5.87	7.07	10.10	5.64	8.30	6.00	5.87	7.07	10.10
<b>340</b>	6.10	8.92	6.46	6.33	7.63	6.41	8.71	12.40	9.07	8.95	10.80	6.41	6.10	8.92	6.46	6.33	7.63	10.89	6.10	8.92	6.46	6.33	7.63	10.89	6.10	8.92	6.46	6.33	7.63	10.89
<b>360</b>	6.56	5.84	6.92	6.79	8.18	4.56	5.64	5.84	9.69	9.56	11.54	6.93	6.56	9.53	6.92	6.79	8.18	4.56	6.56	9.53	6.92	6.79	8.18	4.56	6.56	9.53	6.92	6.79	8.18	4.56
<b>380</b>	7.02	6.25	7.38	7.25	5.20	4.96	6.05	6.25	10.30	10.18	5.20	7.46	7.02	10.15	7.38	7.25	5.20	4.96	7.02	10.15	7.38	7.25	5.20	4.96	7.02	10.15	7.38	7.25	5.20	4.96
<b>400</b>	7.48	6.66	7.84	7.72	5.57	5.35	6.46	6.66	10.92	10.79	5.57	7.99	7.48	10.76	7.84	7.72	5.57	5.35	7.48	10.76	7.84	7.72	5.57	5.35	7.48	10.76	7.84	7.72	5.57	5.35
<b>420</b>	7.95	7.07	8.30	8.18	5.95	5.75	6.87	7.07	11.53	11.41	5.95	4.82	7.95	11.38	8.30	8.18	5.95	5.75	7.95	11.38	8.30	8.18	5.95	5.75	7.95	11.38	8.30	8.18	5.95	5.75
<b>440</b>	8.41	7.48	8.76	8.64	6.32	6.14	7.28	7.48	12.15	12.02	6.32	5.18	8.41	11.99	8.76	8.64	6.32	6.14	8.41	11.99	8.76	8.64	6.32	6.14	8.41	11.99	8.76	8.64	6.32	6.14
<b>450</b>	8.64	7.69	9.00	8.87	6.51	6.34	7.48	7.69	12.46	12.33	6.51	5.35	8.64	12.30	9.00	8.87	6.51	6.34	8.64	12.30	9.00	8.87	6.51	6.34	8.64	12.30	9.00	8.87	6.51	6.34
<b>460</b>	8.87	7.89	5.69	9.10	6.69	6.54	7.69	7.89	12.76	12.64	6.69	5.53	8.87	12.61	9.23	9.10	6.69	6.54	8.87	12.61	9.23	9.10	6.69	6.54	8.87	12.61	9.23	9.10	6.69	6.54
<b>480</b>	9.33	5.84	6.00	5.87	7.07	6.93	5.64	8.30	6.00	5.87	7.07	5.88	5.64	8.30	6.00	5.87	7.07	6.93	5.64	8.30	6.00	5.87	7.07	6.93	5.64	8.30	6.00	5.87	7.07	6.93
<b>500</b>	9.79	6.15	6.30	6.18	7.44	7.33	5.95	8.71	6.30	6.18	7.44	6.23	5.95	8.71	6.30	6.18	7.44	7.33	5.95	8.71	6.30	6.18	7.44	7.33	5.95	8.71	6.30	6.18	7.44	7.33
<b>520</b>	10.25	6.46	6.61	6.48	5.39	7.73	6.25	5.57	6.61	6.48	7.81	6.58	6.25	6.46	6.61	6.48	7.81	6.58	6.25	6.46	6.61	6.48	7.81	6.58	6.25	6.46	6.61	6.48	7.81	6.58
<b>540</b>	10.71	6.76	6.92	6.79	5.67	8.12	6.56	5.84	6.92	6.79	8.18	4.56	6.56	6.76	6.92	6.79	8.18	4.56	6.56	6.76	6.92	6.79	8.18	4.56	6.56	6.76	6.92	6.79	8.18	4.56
<b>560</b>	11.18	7.07	7.23	7.10	5.95	8.52	6.87	6.11	7.23	7.10	8.56	4.82	6.87	7.07	7.23	7.10	8.56	4.82	6.87	7.07	7.23	7.10	8.56	4.82	6.87	7.07	7.23	7.10	8.56	4.82
<b>580</b>	11.64	7.38	7.53	7.41	6.23	8.91	7.18	6.39	7.53	7.41	5.33	5.09	7.18	7.38	7.53	7.41	5.33	5.09	7.18	7.38	7.53	7.41	5.33	5.09	7.18	7.38	7.53	7.41	5.33	5.09
<b>600</b>	12.10	7.69	7.84	7.72	6.51	9.31	7.48	6.66	7.84	7.72	5.57	5.35	7.48	6.66	7.84	7.72	5.57	5.35	7.48	6.66	7.84	7.72	5.57	5.35	7.48	6.66	7.84	7.72	5.57	5.35
<b>620</b>	12.56	7.99	5.76	5.64	6.79	9.70	7.79	6.93	8.15	8.02	5.82	5.62	7.79	6.93	8.15	8.02	5.82	5.62	7.79	6.93	8.15	8.02	5.82	5.62	7.79	6.93	8.15	8.02	5.82	5.62
<b>640</b>	13.02	8.30	6.00	5.87	7.07	10.10	8.10	7.21	8.46	8.33	6.07	5.88	8.10	7.21	8.46	8.33	6.07	5.88	8.10	7.21	8.46	8.33	6.07	5.88	8.10	7.21	8.46	8.33	6.07	5.88
<b>660</b>	13.48	8.61	6.23	6.10	7.35	10.49	8.41	7.48	8.76	8.64	6.32	6.14	8.41	7.48	8.76	8.64	6.32	6.14	8.41	7.48	8.76	8.64	6.32	6.14	8.41	7.48	8.76	8.64	6.32	6.14
<b>680</b>	13.95	8.92	6.46	6.33	7.63	10.89	8.71	7.75	9.07	8.95	6.57	6.41	8.71	7.75	9.07	8.95	6.57	6.41	8.71	7.75	9.07	8.95	6.57	6.41	8.71	7.75	9.07	8.95	6.57	6.41
<b>700</b>	14.41	9.22	6.69	6.56	7.90	11.29	9.02	5.63	5.79	5.66	6.82	6.67	9.02	5.63	5.79	5.66	6.82	6.67	9.02	5.63	5.79	5.66	6.82	6.67	9.02	5.63	5.79	5.66	6.82	6.67
<b>720</b>	14.87	9.53	6.92	6.79	8.18	11.68	9.33	5.84	6.00	5.87	7.07	6.93	9.33	5.84	6.00	5.87	7.07	6.93	9.33	5.84	6.00	5.87	7.07	6.93	9.33	5.84	6.00	5.87	7.07	6.93
<b>750</b>	15.56	9.99	7.26	7.14	8.60	12.28	9.79	6.15	6.30	6.18	7.44	7.33	9.79	6.15	6.30	6.18	7.44	7.33	9.79	6.15	6.30	6.18	7.44	7.33	9.79	6.15	6.30	6.18	7.44	7.33
<b>Total L.F in</b>	1200	1200	1200	1200	990	700	1200	1200	1200	1200	990	700	1200	1200	1200	1200	990	700	1200	1200	1200	1200	990	700	1200	1200	1200	1200	1200	990

STANDARD & PEAK REST TIMES TO BE SET AT SYSTEM START-UP

	2 ZONE		3 ZONES		4 ZONES	
	Rest Time	Standard Peak (min)	Rest Time	Standard Peak (min)	Rest Time	Standard Peak (min)
4	180	108	120	72	90	54
3	240	144	160	96	120	72
2	360	216	240	144	180	108
1	720	432	480	288	360	216



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**RUN TIME TABLES: 12 GPM SEMI-AUTOMATIC PERC-RITE® DRIP SYSTEMS**

The run time tables are calculated for achieving the best distribution of the **average daily flow** in gallons per day the system is designed for. Selecting the run time is the last design step that is performed and is based on the number of zones and the number of laterals per zone. The run time should result in even distribution and minimizing draindown events. The run time is calculated to provide from **3 to 7 times the volume of drip tubing** plus the top feed manifolds. Therefore, the number of doses per day per zone will vary in order to maintain optimum dispersal.

AMERICAN MANUFACTURING - "QM" SERIES 1-ZONE											
Laterals/Zone:		2-Lat	3-Lat	4-Lat	5-Lat	Laterals/Zone:		2-Lat	3-Lat	4-Lat	5-Lat
Lateral Length:		300'	300'	250'	150'	Lateral Length:		300'	300'	250'	150'
Design GPD	Avg. GPD	GPM: 3.25		4.875		5.417		4.875		5.417	
		Min./dose	Min./dose	Min./dose	Min./dose	Min./dose	Min./dose	Min./dose	Min./dose	Min./dose	Min./dose
300	180	7.48	5.84	6.73	6.84	7.48	5.84	6.73	6.73	6.73	5.36
320	192	8.10	6.33	7.29	7.43	8.10	6.33	7.29	8.30	7.29	5.85
340	204	8.71	6.82	7.84	8.02	8.71	6.82	7.84	8.92	7.84	6.34
360	216	9.33	7.31	8.40	8.61	9.33	7.31	8.40	9.54	8.40	6.84
380	228	9.95	7.80	8.95	9.20	9.95	7.80	8.95	10.06	8.95	7.33
400	240	10.56	8.29	9.50	9.79	10.56	8.29	9.50	10.67	9.50	7.82
420	252	11.18	8.78	10.06	10.31	11.18	8.78	10.06	11.18	10.67	8.31
440	264	11.79	9.27	10.61	10.86	11.79	9.27	10.61	11.79	11.18	8.80
450	270	12.10	9.59	10.93	11.13	12.10	9.59	10.93	12.10	11.79	9.05
460	276	12.41	9.90	11.20	11.40	12.41	9.90	11.20	12.41	12.41	9.30
480	288	13.02	10.39	11.69	11.89	13.02	10.39	11.69	13.02	12.41	9.79
500	300	13.63	10.88	12.18	12.38	13.63	10.88	12.18	13.63	13.02	10.28
520	312	14.24	11.37	12.67	12.87	14.24	11.37	12.67	14.24	13.63	10.77
540	324	14.85	11.86	13.16	13.36	14.85	11.86	13.16	14.85	14.24	11.26
560	336	15.46	12.35	13.65	13.85	15.46	12.35	13.65	15.46	14.85	11.75
580	348	16.07	12.84	14.14	14.34	16.07	12.84	14.14	16.07	15.46	12.24
600	360	16.68	13.33	14.63	14.83	16.68	13.33	14.63	16.68	16.07	12.73
620	372	17.29	13.82	15.12	15.32	17.29	13.82	15.12	17.29	16.68	13.22
640	384	17.90	14.31	15.61	15.81	17.90	14.31	15.61	17.90	17.29	13.71
660	396	18.51	14.80	16.10	16.31	18.51	14.80	16.10	18.51	17.90	14.20
680	408	19.12	15.29	16.59	16.80	19.12	15.29	16.59	19.12	18.51	14.69
700	420	19.73	15.78	17.08	17.30	19.73	15.78	17.08	19.73	19.12	15.18
720	432	20.34	16.27	17.57	17.80	20.34	16.27	17.57	20.34	19.73	15.67
750	450	21.27	17.00	18.30	18.53	21.27	17.00	18.30	21.27	20.34	16.16
TOTAL L.F. IN ZONE=		600	900	1000	1000	600	900	1000	1000	1000	750

AMERICAN MANUFACTURING - "QM" SERIES 2-ZONE											
Laterals/Zone:		2-Lat	3-Lat	4-Lat	5-Lat	Laterals/Zone:		2-Lat	3-Lat	4-Lat	5-Lat
Lateral Length:		300'	300'	250'	150'	Lateral Length:		300'	300'	250'	150'
Design GPD	Avg. GPD	GPM: 3.25		4.875		5.417		4.875		5.417	
		Min./dose	Min./dose	Min./dose	Min./dose	Min./dose	Min./dose	Min./dose	Min./dose	Min./dose	Min./dose
300	180	7.48	5.84	6.73	6.84	7.48	5.84	6.73	7.48	6.73	5.36
320	192	8.10	6.33	7.29	7.43	8.10	6.33	7.29	8.30	7.29	5.85
340	204	8.71	6.82	7.84	8.02	8.71	6.82	7.84	8.92	7.84	6.34
360	216	9.33	7.31	8.40	8.61	9.33	7.31	8.40	9.54	8.40	6.84
380	228	9.95	7.80	8.95	9.20	9.95	7.80	8.95	10.06	8.95	7.33
400	240	10.56	8.29	9.50	9.79	10.56	8.29	9.50	10.67	9.50	7.82
420	252	11.18	8.78	10.06	10.31	11.18	8.78	10.06	11.18	10.67	8.31
440	264	11.79	9.27	10.61	10.86	11.79	9.27	10.61	11.79	11.18	8.80
450	270	12.10	9.59	10.93	11.13	12.10	9.59	10.93	12.10	11.79	9.05
460	276	12.41	9.90	11.20	11.40	12.41	9.90	11.20	12.41	12.41	9.30
480	288	13.02	10.39	11.69	11.89	13.02	10.39	11.69	13.02	12.41	9.79
500	300	13.63	10.88	12.18	12.38	13.63	10.88	12.18	13.63	13.02	10.28
520	312	14.24	11.37	12.67	12.87	14.24	11.37	12.67	14.24	13.63	10.77
540	324	14.85	11.86	13.16	13.36	14.85	11.86	13.16	14.85	14.24	11.26
560	336	15.46	12.35	13.65	13.85	15.46	12.35	13.65	15.46	14.85	11.75
580	348	16.07	12.84	14.14	14.34	16.07	12.84	14.14	16.07	15.46	12.24
600	360	16.68	13.33	14.63	14.83	16.68	13.33	14.63	16.68	16.07	12.73
620	372	17.29	13.82	15.12	15.32	17.29	13.82	15.12	17.29	16.68	13.22
640	384	17.90	14.31	15.61	15.81	17.90	14.31	15.61	17.90	17.29	13.71
660	396	18.51	14.80	16.10	16.31	18.51	14.80	16.10	18.51	17.90	14.20
680	408	19.12	15.29	16.59	16.80	19.12	15.29	16.59	19.12	18.51	14.69
700	420	19.73	15.78	17.08	17.30	19.73	15.78	17.08	19.73	19.12	15.18
720	432	20.34	16.27	17.57	17.80	20.34	16.27	17.57	20.34	19.73	15.67
750	450	21.27	17.00	18.30	18.53	21.27	17.00	18.30	21.27	20.34	16.16
TOTAL L.F. IN ZONE=		600	900	1000	1000	600	900	1000	1000	1000	750

STANDARD & PEAK REST TIMES TO BE SET AT SYSTEM START-UP

**ONE ZONE LEGEND:**

	Doses/day/zone	REST TIMES	
		Standard (min)	Peak (min)
4	4	360	216
5	5	288	173
6	6	240	144
7	7	206	123
8	8	180	108

**TWO ZONE LEGEND:**

	Doses/day/zone	REST TIMES	
		Standard (min)	Peak (min)
2	2	360	216
3	3	240	144
4	4	180	108
5	5	144	86
6	6	120	72



# AMERICAN MANUFACTURING

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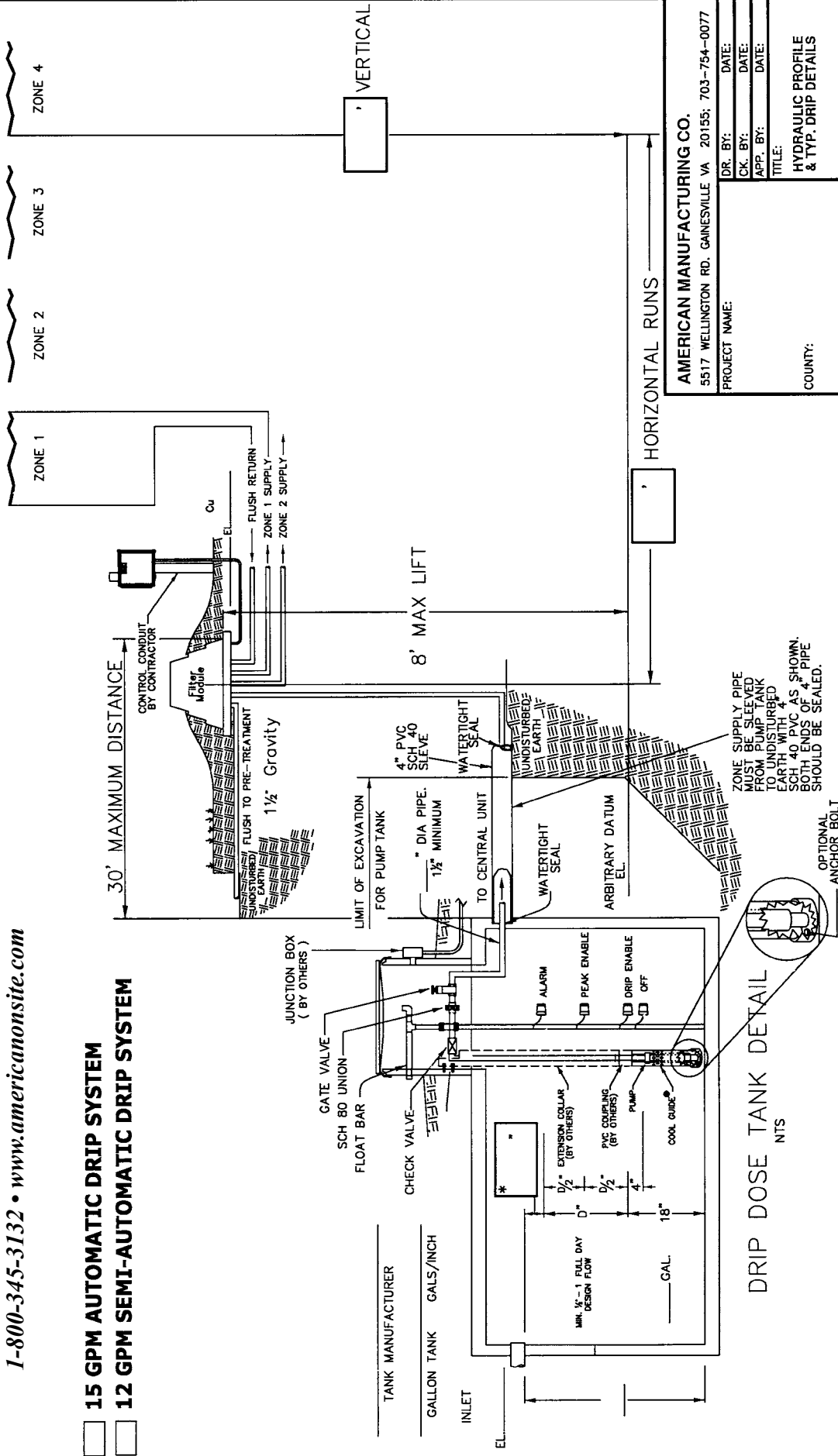
- 15 GPM AUTOMATIC DRIP SYSTEM
- 12 GPM SEMI-AUTOMATIC DRIP SYSTEM

ZONE 1 HIGHEST EL. \_\_\_\_\_

ZONE 2 HIGHEST EL. \_\_\_\_\_

ZONE 3 HIGHEST EL. \_\_\_\_\_

ZONE 4 HIGHEST EL. \_\_\_\_\_



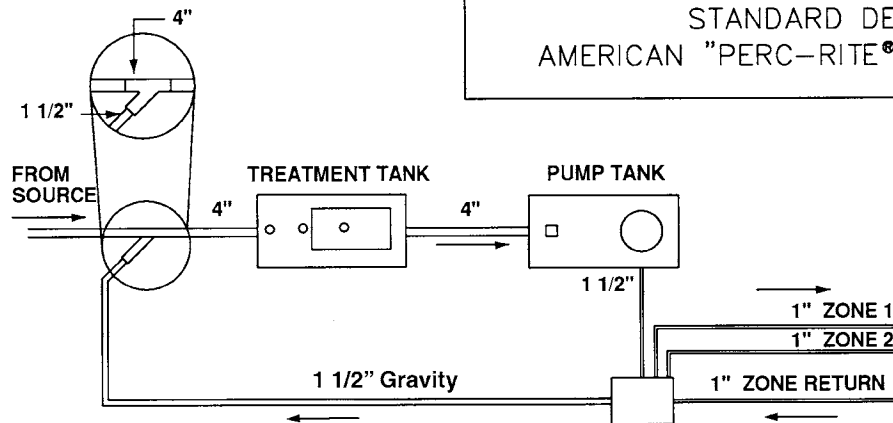
DRIP DOSE TANK DETAIL  
NTS

ZONE SUPPLY PIPE  
MUST BE SLEEVED  
FROM PUMP TANK  
TO UNDISTURBED  
EARTH WITH 4  
SCH. 40 PVC AS SHOWN.  
SCH. 40 PVC 1/2" PIPE  
SHOULD BE SEALED.

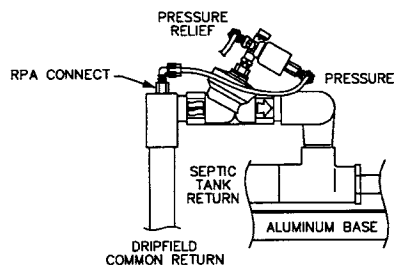
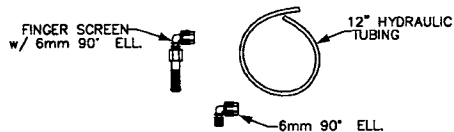
OPTIONAL  
ANCHOR BOLT  
THRU END CAP

AMERICAN MANUFACTURING CO.	
5517 WELLINGTON RD. GAINESVILLE VA 20155; 703-754-0077	
PROJECT NAME:	
DR. BY:	DATE:
CK. BY:	DATE:
APP. BY:	DATE:
TITLE:	HYDRAULIC PROFILE & TYP. DRIP DETAILS
COUNTY:	
FILE: S:\ Staff\Kevin\AUTOCAD\CATALOGS\Designer_Guide\11 Driphydrof pg 11.dwg	SCALE:
SHEET	OF

STANDARD DETAILS  
AMERICAN "PERC-RITE®" DRIP SYSTEM

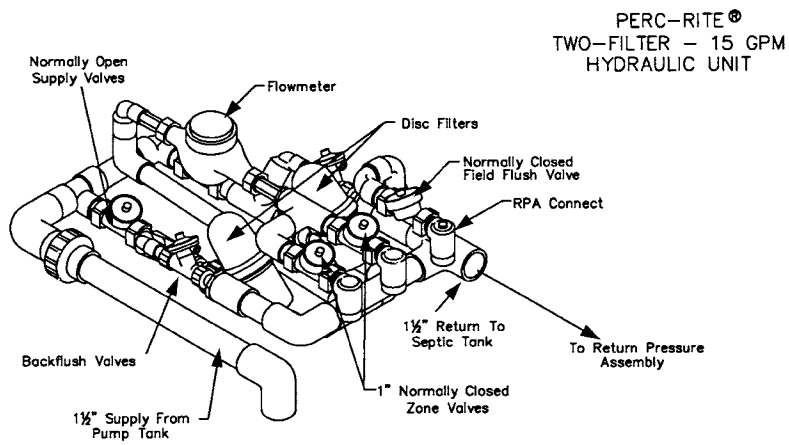


TANK EQUIPMENT AREA  
SCHEMATIC PLAN

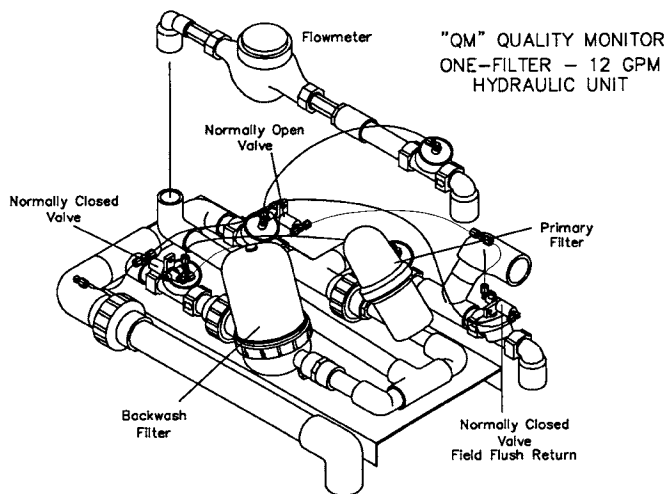


RETURN PRESSURE ASSEMBLY (RPA)  
NTS

NOTE:  
 IN THE EVENT THE DRIP ZONES ARE OVER 10 FEET IN VERTICAL ELEVATION ABOVE THE HYDRAULIC UNIT, INSTALL A "RETURN PRESSURE ASSEMBLY." THE ASSEMBLY IS TO BE USED TO PREVENT THE RETURN LINE FROM DRAINING AFTER OR DURING A DOSE. REMOVE THE ZONE RETURN CONNECTION AND REINSTALL A SHORT 1" NIPPLE IN THE RETURN VALVE. INSTALL ASSEMBLY AS SHOWN TO THE LEFT. THE HYDRAULIC TUBING PROVIDING PRESSURE FOR THE REST OF THE UNIT MUST BE PLUGGED AND THE NEW TUBING FROM THE ASSEMBLY CONNECTED TO THE PRESSURE SIDE OF THE SELENOID.



PERC-RITE®  
TWO-FILTER - 15 GPM  
HYDRAULIC UNIT

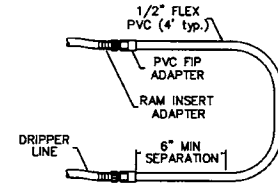


"QM" QUALITY MONITOR  
ONE-FILTER - 12 GPM  
HYDRAULIC UNIT

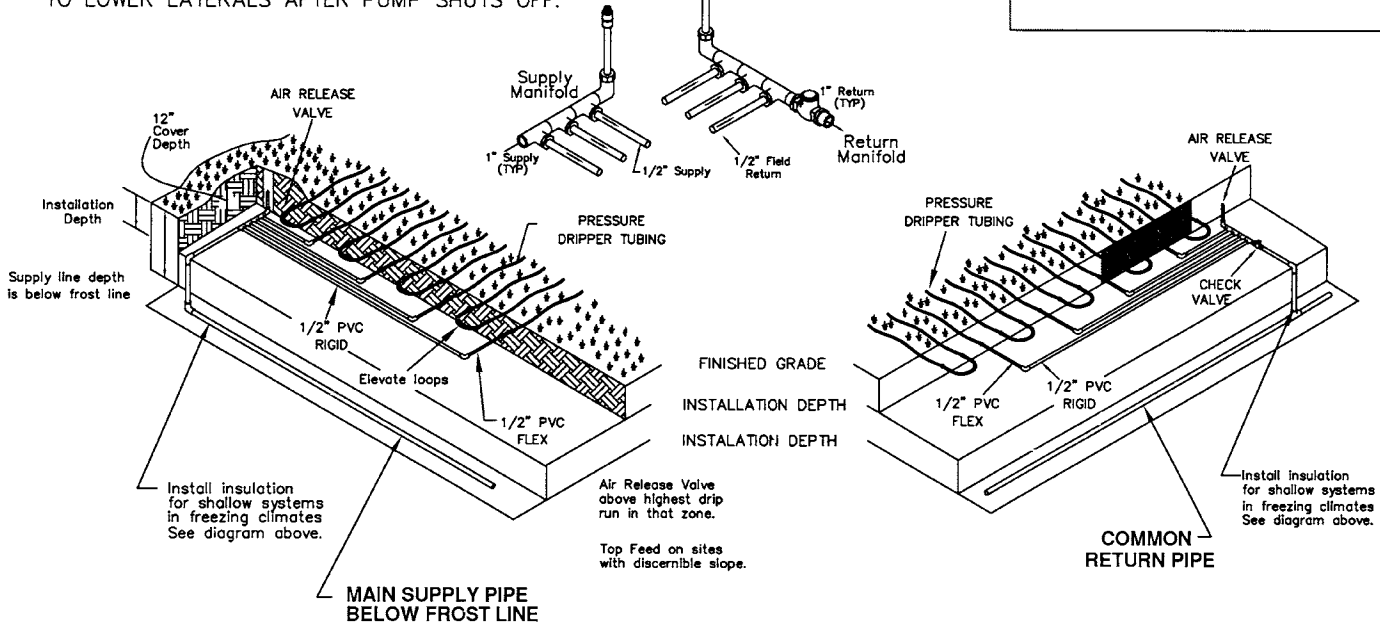
## STANDARD DETAILS AMERICAN "PERC-RITE®" DRIP SYSTEM

### TOP FEED MANIFOLDS

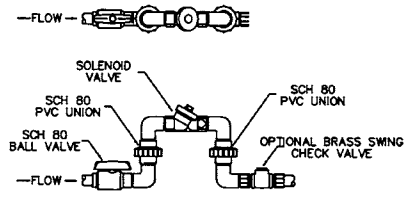
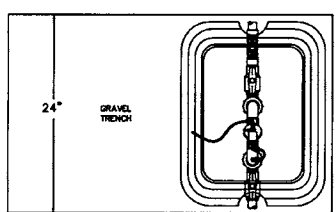
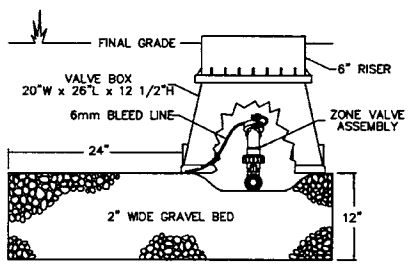
USE ON ALL SITES WITH A DISCERNIBLE SLOPE TO CONTROL DRAIN DOWN FROM UPPER LATERALS TO LOWER LATERALS AFTER PUMP SHUTS OFF.



BURIED DRIP LOOP CONNECTION  
NTS



### RESIDENTIAL Patent No. 5,984,574



OPTIONAL  
TYPICAL REMOTE ZONE VALVE  
NTS

### REMOTE ZONE VALVE

Typically used on drip systems when zones or portions of zones are located at a lower elevation than the "Redundant Off" level float in the pump tank. 24v is required at each "remote zone valve."

## **OPERATION AND MAINTENANCE FOR PERC-RITE® DRIP SYSTEM**

The **PERC-RITE® DRIP SYSTEM** has been developed to automatically monitor operational functions. The system is designed to be easily fixed after it breaks, in other words periodic monitoring can confirm good operating conditions but there are no maintenance procedures necessary until a mechanical component needs repair. Furthermore, any malfunction or breakage of a mechanical component will result in a failure similar to any traditional system, including a wet spot in the field, a backup or a high level alarm.

The **MONITORING FREQUENCY** should be no more than traditional systems. The most important component for the operational success is owner awareness. All onsite systems have a finite hydraulic capacity. Drip systems have no storage capacity in the soil system so storage or flow equalization must be provided in the pump tank. The owner must be aware system exists and their limitations for usage.

After a successful installation and startup the system should be inspected from one to three months after the owner takes occupancy to confirm operational compliance and to inform the owner of the operational characteristics of the system. The system should then go on a schedule of annual inspections to monitor usage and inspect system for wear in order to minimize emergency service requirements. Each system is provided with an owners manual. The local dealer has a more detailed installation and maintenance supplement manual. If more than septic pretreatment is provided, more frequent monitoring may be required. Provide monitoring frequency at the rate determined by the most sensitive component.

An **OPERATIONAL CHECKLIST** is provided in the dealer's supplement manual for determining satisfactory operation of the system. The following topics are covered;

1. Field Conditions
2. Check septic tank and pump tank condition
3. Check operation of pump, control and valves.
4. Check zone dose rates.
5. Evaluate and record meter for usage.

# 15 GPM AUTOMATIC PERC-RITE® DRIP SYSTEMS

## ASD 15 SERIES - SECONDARY EFFLUENT

<p><b>ASD152-S122</b></p> <p><b>2 ZONE DRIP W/ SIMPLEX 2 FILTER, 2-ZONE CONTROL PANEL</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">LINE#</th> <th style="text-align: left;">COMPONENT</th> <th style="text-align: left;">DESCRIPTION</th> <th style="text-align: right;">QUANTITY</th> </tr> </thead> <tbody> <tr> <td colspan="4"><b>CENTRAL UNIT EQUIP PACKAGES</b></td> </tr> <tr> <td>1</td> <td>DH2-22KIT</td> <td>2 ZONE DRIP SYSTEM KIT</td> <td style="text-align: right;">1</td> </tr> <tr> <td>2</td> <td>DP1-B9140P</td> <td>SIMPLEX 2 ZONE CONTROL</td> <td style="text-align: right;">1</td> </tr> <tr> <td>3</td> <td>PUTURB1512112W</td> <td>15 GPM TURBINE</td> <td style="text-align: right;">1</td> </tr> <tr> <td>4</td> <td>COOLGUIDE 15</td> <td>LAMINAR FLOW COLLAR, 6", 15 GPM</td> <td style="text-align: right;">1</td> </tr> <tr> <td>5</td> <td>PUMPKITDRIP</td> <td>DRIP PUMP KIT 1 1/2"</td> <td style="text-align: right;">1</td> </tr> <tr> <td>6</td> <td>BIOLINE 1000</td> <td>DRIP TUBING PER 1000 FT ROLLS</td> <td style="text-align: right;">2</td> </tr> <tr> <td>7</td> <td>PVC12FLEX</td> <td>1/2" FLEX PVC 100'</td> <td style="text-align: right;">1</td> </tr> <tr> <td>8</td> <td>BIOINSERT12X34</td> <td>BIOLINE INSERT ADAPTER 1/2" X 3/4"</td> <td style="text-align: right;">50</td> </tr> <tr> <td>9</td> <td>PVCPRFIP12X34</td> <td>FEMALE ADAPTER 12X34 SXT SCH 40</td> <td style="text-align: right;">50</td> </tr> <tr> <td>10</td> <td>BIOCOUP</td> <td>BIOLINE REPAIR COUPLING 1/2"</td> <td style="text-align: right;">6</td> </tr> <tr> <td>11</td> <td>DH-TOPFEEDKIT</td> <td>TOP FEED MANIFOLD KIT 1"</td> <td style="text-align: right;">2</td> </tr> </tbody> </table>	LINE#	COMPONENT	DESCRIPTION	QUANTITY	<b>CENTRAL UNIT EQUIP PACKAGES</b>				1	DH2-22KIT	2 ZONE DRIP SYSTEM KIT	1	2	DP1-B9140P	SIMPLEX 2 ZONE CONTROL	1	3	PUTURB1512112W	15 GPM TURBINE	1	4	COOLGUIDE 15	LAMINAR FLOW COLLAR, 6", 15 GPM	1	5	PUMPKITDRIP	DRIP PUMP KIT 1 1/2"	1	6	BIOLINE 1000	DRIP TUBING PER 1000 FT ROLLS	2	7	PVC12FLEX	1/2" FLEX PVC 100'	1	8	BIOINSERT12X34	BIOLINE INSERT ADAPTER 1/2" X 3/4"	50	9	PVCPRFIP12X34	FEMALE ADAPTER 12X34 SXT SCH 40	50	10	BIOCOUP	BIOLINE REPAIR COUPLING 1/2"	6	11	DH-TOPFEEDKIT	TOP FEED MANIFOLD KIT 1"	2	<p><b>ASD153-S124</b></p> <p><b>3 ZONE DRIP W/ SIMPLEX 2 FILTER, 4-ZONE CONTROL PANEL</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">LINE#</th> <th style="text-align: left;">COMPONENT</th> <th style="text-align: left;">DESCRIPTION</th> <th style="text-align: right;">QUANTITY</th> </tr> </thead> <tbody> <tr> <td colspan="4"><b>CENTRAL UNIT EQUIP PACKAGES</b></td> </tr> <tr> <td>1</td> <td>DH2-23KIT</td> <td>3 ZONE DRIP SYSTEM KIT</td> <td style="text-align: right;">1</td> </tr> <tr> <td>2</td> <td>DP1-B9141P</td> <td>SIMPLEX 4 ZONE CONTROL</td> <td style="text-align: right;">1</td> </tr> <tr> <td>3</td> <td>PUTURB1512112W</td> <td>15 GPM TURBINE</td> <td style="text-align: right;">1</td> </tr> <tr> <td>4</td> <td>COOLGUIDE15</td> <td>LAMINAR FLOW COLLAR, 6", 15 GPM</td> <td style="text-align: right;">1</td> </tr> <tr> <td>5</td> <td>PUMPKITDRIP</td> <td>DRIP PUMP KIT 1 1/2"</td> <td style="text-align: right;">1</td> </tr> <tr> <td>6</td> <td>BIOLINE 1000</td> <td>DRIP TUBING PER 1000 FT ROLL</td> <td style="text-align: right;">3</td> </tr> <tr> <td>7</td> <td>PVC12FLEX</td> <td>1/2" FLEX PVC 100'</td> <td style="text-align: right;">2</td> </tr> <tr> <td>8</td> <td>BIOINSERT12X34</td> <td>BIOLINE INSERT ADAPTER 1/2" X 3/4"</td> <td style="text-align: right;">75</td> </tr> <tr> <td>9</td> <td>PVCPRFIP12X34</td> <td>FEMALE ADAPTER 12X34 SXT SCH 40</td> <td style="text-align: right;">75</td> </tr> <tr> <td>10</td> <td>BIOCOUP</td> <td>BIOLINE REPAIR COUPLING 1/2"</td> <td style="text-align: right;">6</td> </tr> <tr> <td>11</td> <td>DH-TOPFEEDKIT</td> <td>TOP FEED MANIFOLD KIT 1"</td> <td style="text-align: right;">3</td> </tr> </tbody> </table>	LINE#	COMPONENT	DESCRIPTION	QUANTITY	<b>CENTRAL UNIT EQUIP PACKAGES</b>				1	DH2-23KIT	3 ZONE DRIP SYSTEM KIT	1	2	DP1-B9141P	SIMPLEX 4 ZONE CONTROL	1	3	PUTURB1512112W	15 GPM TURBINE	1	4	COOLGUIDE15	LAMINAR FLOW COLLAR, 6", 15 GPM	1	5	PUMPKITDRIP	DRIP PUMP KIT 1 1/2"	1	6	BIOLINE 1000	DRIP TUBING PER 1000 FT ROLL	3	7	PVC12FLEX	1/2" FLEX PVC 100'	2	8	BIOINSERT12X34	BIOLINE INSERT ADAPTER 1/2" X 3/4"	75	9	PVCPRFIP12X34	FEMALE ADAPTER 12X34 SXT SCH 40	75	10	BIOCOUP	BIOLINE REPAIR COUPLING 1/2"	6	11	DH-TOPFEEDKIT	TOP FEED MANIFOLD KIT 1"	3				
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**12 GPM AUTOMATIC SEMI-AUTOMATIC PERC-RITE® DRIP SYSTEMS**  
**QUALITY MONITOR "QM" SERIES - SECONDARY EFFLUENT**

<b>AMD151-S121</b> <b>1 ZONE SIMPLEX MANUAL CLEAN INSERT &amp; LCD CONTROL</b>			<b>ABD121-S121</b> <b>1 ZONE QM SKID MOUNT WITH LCD CONTROL</b>		
<b>CONTENT</b>	<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>CONTENT</b>	<b>DESCRIPTION</b>	<b>QUANTITY</b>
DP0-B9114	1 ZONE SIMPLEX LCD CONTROL	1	DP0-B9114	1 ZONE SIMPLEX LCD CONTROL	1
DH0-1MKIT	1-1/2" MANUAL FILTER ASSY W/PUMP DISC.	1	DH0-2BKIT	2 FILTER, 1 ZONE QM KIT	1
DH-FLOWFLUSHKIT	FIELD FLUSH & FLOW METER KIT W/VB	1	DH-TOPFEEDKIT1	TOP FEED MANIFOLD KIT SUPPLY & RETURN	1
DH-TOPFEEDKIT1	TOP FEED MANIFOLD KIT SUPPLY & RETURN	1	BIOLINE 1000	DRIP TUBING PER 1000 FT ROLL	1
BIOLINE 1000	DRIP TUBING PER 1000 FT ROLL	1	PVC12FLEX	1/2 X 100 PVC FLEX TUBE/DRIP	1
PVC12FLEX	1/2 X 100 PVC FLEX TUBE/DRIP	1	PVCPRFIP12X34	1/2 X 3/4 PVC PRESS S X FIP AD	25
PVCPRFIP12X34	1/2 X 3/4 PVC PRESS S X FIP AD	25	BIOINSERT12X34	1/2 BIOLINE X 3/4 MIP DRIP ADAPTER	25
BIOINSERT12X34	1/2 BIOLINE X 3/4 MIP DRIP ADAPTER	25	BIOCOUP	BIOLINE REPAIR COUPLING	3
BIOCOUP	BIOLINE REPAIR COUPLING 1/2 IN	3	COOLGUIDE15	LAMINAR FLOW COOLING GUIDE	1
COOLGUIDE15	LAMINAR FLOW COOLING GUIDE	1	PUTURB1512112W	15 GPM TURBINE PUMP 1/2HP, 115V, 2 WIRE	1
PUTURB1512112W	15 GPM TURBINE PUMP 1/2HP, 115V, 2 WIRE	1	PUMPKITDRIP	1-1/2 IN DRIP PUMP KIT	1
<b>ABD121-S122</b> <b>2 ZONE QM SKID MOUNT WITH PLC PANEL</b>			<b>ABD121-S121SV2</b> <b>2 ZONE QM SKID WITH SEQUENCER &amp; LCD CONTROL</b>		
<b>CONTENT</b>	<b>DESCRIPTION</b>	<b>QUANTITY</b>	<b>CONTENT</b>	<b>DESCRIPTION</b>	<b>QUANTITY</b>
DP1-B9158	2 ZONE, SIMPLEX PLC CONTROL	1	DP0-B9114	1 ZONE SIMPLEX LCD CONTROL	1
DH0-2BKIT	2 FILTER, 2 ZONE QM KIT	1	DH0-2RKIT	2 FILTER, 1 ZONE QM INSERT KIT	1
DH-TOPFEEDKIT1	TOP FEED MINIFOLD KIT SUPPLY & RETURN	2	DH-TOPFEEDKIT1	TOP FEED MANIFOLD KIT SUPPLY & RETURN	2
BIOLINE 1000	DRIP TUBING PER 1000 FT ROLL	2	BIOLINE 1000	DRIP TUBING PER 1000 FT ROLL	2
PVC12FLEX	1/2 X 100 PVC FLEX TUBE/DRIP	1	PVC12FLEX	1/2 X 100 PVC FLEX TUBE/DRIP	1
PVCPRFIP12X34	1/2 X 3/4 PVC PRESS S X FIP AD	50	PVCPRFIP12X34	1/2 X 3/4 PVC PRESS S X FIP AD	50
BIOINSERT12X34	1/2 BIOLINE X 3/4 MIP DRIP ADAPTER	50	BIOINSERT12X34	1/2 BIOLINE X 3/4 MIP DRIP ADAPTER	50
BIOCOUP	BIOLINE REPAIR COUPLING 1/2 IN	3	BIOCOUP	BIOLINE REPAIR COUPLING 1/2 IN	3
COOLGUIDE15	LAMINAR FLOW COOLING GUIDE	1	COOLGUIDE15	LAMINAR FLOW COOLING GUIDE	1
PUTURB1512112W	15 GPM TURBINE PUMP 1/2HP, 115V, 2 WIRE	1	PUTURB1512112W	15 GPM TURBINE PUMP 1/2HP, 115V, 2 WIRE	1
PUMPKITDRIP	1-1/2 IN DRIP PUMP KIT	1	SEQUENCEVLV2	TWO ZONE SEQUENCE VALVE	1
DH-SOLVLV1KIT	1" SOLINOID VALVE WITH VALVE BOX	2	PUMPKITDRIP	1-1/2 IN DRIP PUMP KIT	1



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**ELECTRICAL AND OPERATIONAL SPECIFICATIONS**

CUST. NAME: \_\_\_\_\_  
 JOB NAME: \_\_\_\_\_  
 JOB NUMBER: \_\_\_\_\_  
 PERMIT INFO: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 DESIGNER NAME: \_\_\_\_\_

**OPTIONS**  
 Return Pressure Assembly \_\_\_\_\_ (Y)  
 Use pressure assembly anytime the lift from filter unit to drip field is discernable and using a valve box model.  
 Sequence Valve \_\_\_\_\_ (Y)  
 Drain Down Assembly \_\_\_\_\_ (Y)  
 Blower Cut-out \_\_\_\_\_ (Y)  
 Heater 225w \_\_\_\_\_ (Y)  
 Valve Box (insulated) \_\_\_\_\_ (Y)  
 Tubing Rolls (500') \_\_\_\_\_  
 Tubing Rolls (1000') \_\_\_\_\_

**SYSTEM INFORMATION**

GPD \_\_\_\_\_  
 MAX GPM \_\_\_\_\_  
 NO. ZONES \_\_\_\_\_  
 ZONE DETAIL NO. \_\_\_\_\_  
 DOSES PER DAY \_\_\_\_\_

**MODEL NUMBER**

**RUN TIME**

**SECONDARY EFFLUENT**

- |                   |       |       |
|-------------------|-------|-------|
| 1. AMD151-S121    | _____ | _____ |
| 2. ABD121-S121    | _____ | _____ |
| 3. ABD122-S122    | _____ | _____ |
| 4. ABD121-S121SV2 | _____ | _____ |
| 5. ASD152-S122    | _____ | _____ |
| 6. ASD153-S124    | _____ | _____ |
| 7. ASD154-S124    | _____ | _____ |
| 8. ASD153-D124    | _____ | _____ |
| 9. ASD154-D124    | _____ | _____ |
| 10. ASD151-S124   | _____ | _____ |

**SPECIAL INSTRUCTIONS**

(use back if necessary)  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Check the model number which has the number of zones per the zone detail. Record the run Time from the Run Time Table.

**AUTHORIZED SIGNATURE**

\_\_\_\_\_ Date: \_\_\_\_\_  
 ( )Owner ( )Agent

**SPECIAL SPECIFICATIONS**

(use back if necessary)  
 \_\_\_\_\_  
 \_\_\_\_\_

**NOTE: ATTACHED SHOULD BE A ZONE DETAIL AND SITE PLAN.**

**ELECTRICAL CIRCUIT REQUIREMENTS**

- |            |                       |
|------------|-----------------------|
| 1. PUMP    | 1/2 HP, 115V, 1 PHASE |
| 2. CONTROL | 15 AMP, 115V, 1 PHASE |
| 3. OTHER   | _____                 |

**AMERICAN USE ONLY**

Sales Order Number \_\_\_\_\_  
 File No. \_\_\_\_\_  
 SBT Input BY \_\_\_\_\_



# DESIGN SUBMITTAL PROCEDURES

Design and submittal of a Perc-Rite® system is very simple using the following procedures;

1. Fill out design submittal form for jurisdiction. The form may be generic, state adjusted, or locally required.
2. Provide a separate site plan or sketch.
3. Print out determined zone detail.
4. Submit the proper number of copies to the jurisdiction of authority.

## AMERICAN MANUFACTURING COMPANY - DATA CENTER

### ONLINE WARRANTY REGISTRATION

American provides online warranty tracking and regulatory reporting. You must be an authorized user to access this feature. Go to [www.americansite.com](http://www.americansite.com), then click on Data Center at the bottom of the menu on the left. The Data Center can be used by service providers to keep up-to-date information on all systems. It is user friendly and easily accessible anywhere an internet connection is available.

### REQUIRED FIELDS FOR WARRANTY REGISTRATION

1. COUNTY
2. SYSTEM TRACKING NUMBER (SAME AS SERIAL NUMBER)
3. NAME
4. PHONE NUMBER
5. ADDRESS
6. CITY
7. STATE
8. ZIP CODE
9. LOCALE
10. TYPE OF PERMIT
11. SYSTEM COMPONENTS
12. FINAL INSPECTION DATE
13. SERVICE PROVIDER
14. FLOW METER READING

## WARRANTY

**AMERICAN MANUFACTURING LIMITED WARRANTY** For one year (12 months) after the date of purchase, American Manufacturing Company, Inc. will repair or replace any product or portion thereof which proves to be defective due to materials or workmanship of American Manufacturing. We reserve the right to repair or replace defective materials at our discretion. This warranty does not cover the following conditions:

1. Defects or problems caused by improper installation or maintenance of materials.
2. Abuse, neglect or accidental damage of products.
3. Normal maintenance or upkeep of products.
4. Lightning, war, floods, or other acts beyond our control.
5. Misapplication of our products for their designed purpose, or misapplication according to local, state or national codes when in effect.

Defective or warranted materials must be returned to us or a place designated by American Manufacturing. All returns must be accompanied by a return authorization number supplied by American Manufacturing.

American Manufacturing will in no way be responsible for any losses or damages incurred by failure of equipment, parts or service. NOTE: Some states do not allow exclusion of damages so this may not apply to you. There are no other warranties written or implied.



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# **AMERICAN MANUFACTURING Company, Inc.**

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## **American Manufacturing Company, Inc.**

manufactures many specialty Onsite Wastewater products including the **Cool Guide™**, **Bull Run™ Valve**, **Dial-A-Flow™**, **Distribution Boxes**, **Perc-Rite™** drip equipment, **Timer Controls**, **Accessories**, etc. American also supplies as an Original Equipment Manufacturer (OEM) with many other products unique to the Onsite Industry.



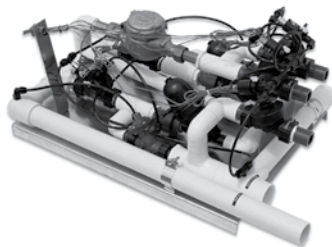
**Cool Guide™**



**Bull Run™ Valve**



**Control Panels**



**Hydraulic Unit**



**Dial-A-Flow™**



**Drip Tubing**

**Toll Free: 1-800-345-3132**

P.O. Box 549, Manassas, VA 20108