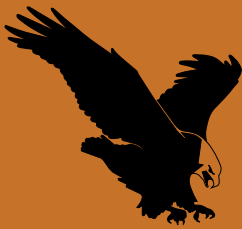
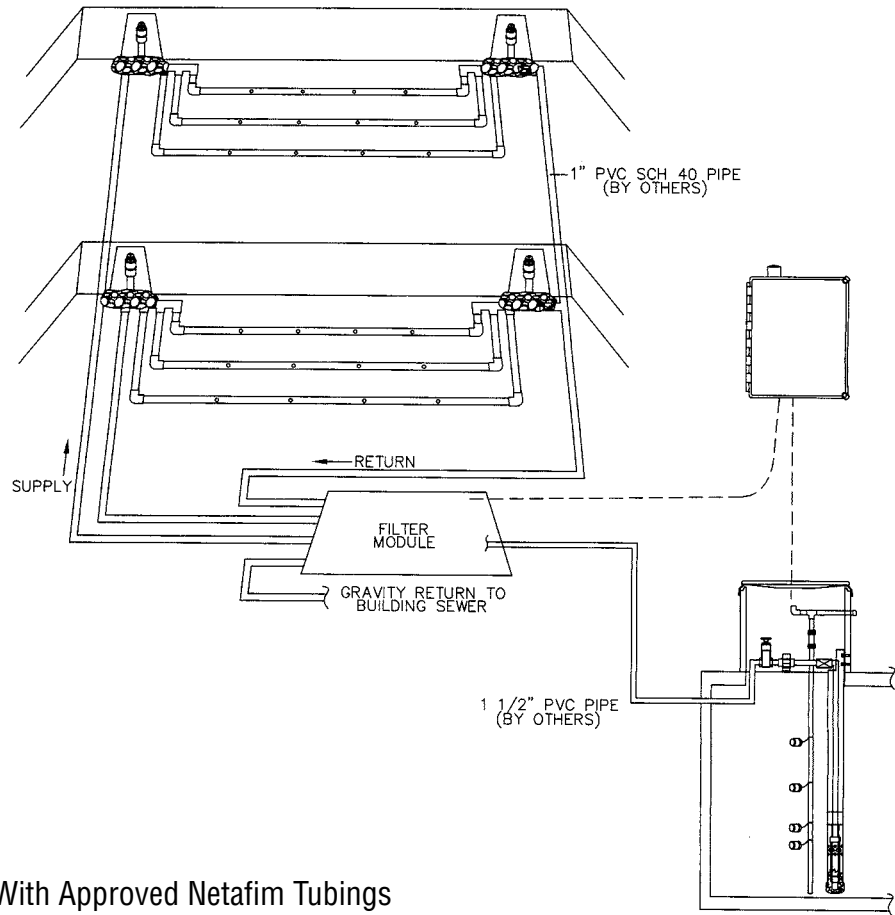


AMERICAN



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

**VIRGINIA
DESIGNERS' GUIDE**



Use With Approved Netafim Tubings

PATENT NO. 5,200,065

PATENT NO. 5,984,574B

**Innovative Technology
for the Environmental Age**

American Manufacturing Company, Inc. 1-800-345-3132
P.O. Box 549 • Manassas, Virginia 20108-0549

Copyright ©2006

www.americanonsite.com



AMERICAN
Manufacturing Company, Inc.
www.americanonsite.com

DESIGNERS' GUIDE

AMERICAN “PERC-RITE®”

WASTEWATER DRIP SYSTEMS

2 ZONE or 4 ZONE — SIMPLEX or DUPLEX

PATENT NO. 5,200,065 and 5,984,574B

<u>CONTENTS</u>	<u>Page</u>
SYSTEM LAYOUT	2
SYSTEM COMPONENTS	3
DESIGN PROCEDURES	4
DESIGNERS' WORKSHEET	5
AREA DELINEATION	6
LOADING RATE TABLE	7
ZONE DETAIL NUMBERING SYSTEM	8
INSTALLATION INSTRUCTIONS	9
15 GPM ZONE DETAIL TABLE	10
12 GPM ZONE DETAIL TABLE	12
RUN TIME TABLES	14
HYDRAULIC PROFILE	16
OPERATION AND MONITORING	19
SYSTEM PACKAGE DETAILS	20
ELECTRICAL AND OPERATIONAL SPECIFICATIONS	22
SUBMITTAL INSTRUCTIONS	23
WARRANTY	24

INTRODUCTION

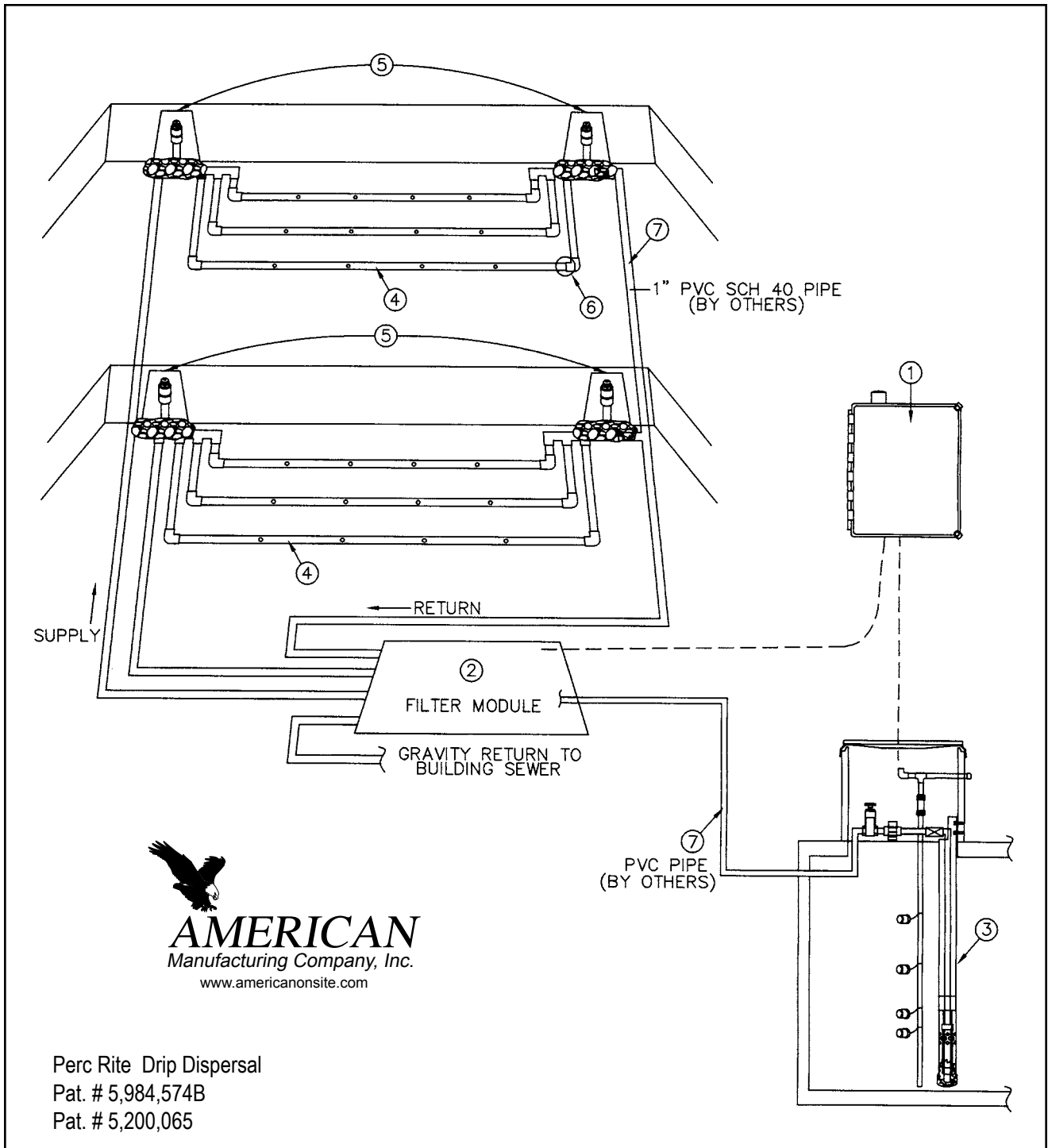
This **Perc-Rite® Drip System Designers' Guide** is for the non-engineer designer. Procedures have been developed to size, layout and design a **Perc-Rite® Drip** system using tables instead of performing extensive calculations. The tables have conditions which allow the designer considerable flexibility 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 “www.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.

Virginia regulations require at minimum secondary effluent treatment on all systems. **Preconditioning Treatment requirements for Perc-Rite® Drip Systems** are minimum. The process will accommodate virtually any type of pretreatment process, aerobic, lagoon, or any type of approved treatment facility. The removal of large settleable solids in sewage is necessary for the successful 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 dose or dispersal. 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 a 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. The tubing is polyethylene with a 120 psi pressure rating.
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. 5,984,574B.
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 3** 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 perc rate in **line 2** and follow steps 4 through 9 of the worksheet.
- 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. The total linear feet of tubing required is recorded on **line 8d**.
- 4. SELECT ZONE DETAIL** - Once the area and total tubing length is determined, enter the contour 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 (**see Zone Detail Table**). Record the selected zone detail on **line 11**. 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 10b**. 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 10b** under Spec. (Specified) # runs. The zone detail is a **Z243** and the installed spacing between runs will be 1.75’ 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 13**. 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 5**. Determine the lift to the field and record on **line 16**.
- 6. DETERMINE SUITABILITY** – Reference the **Lift and Distance Table** (page 11 or 13) and show the maximum lift on **line 12** (page 5). Using the pipe length to the farthest field (Supply/Return Line column) and the number of laterals, record the maximum static lift suitable for the 1” supply and return pipe on **line 6**. If the maximum lift on **line 12** is greater than the lift recorded in **line 6**, check “Yes” in **line 15** of the worksheet; otherwise, check “No”.

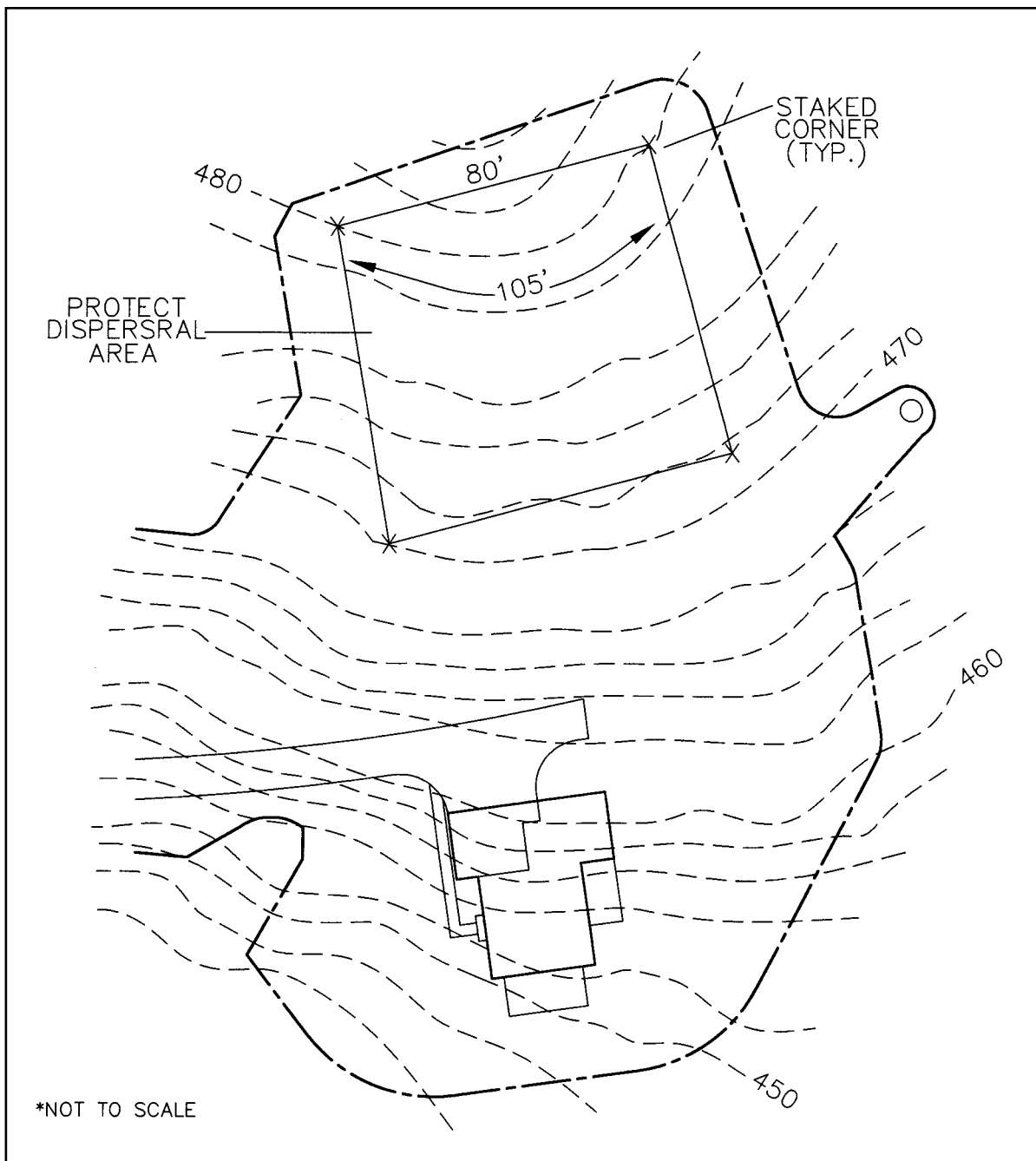
VIRGINIA WORKSHEET - Dispersal system design worksheet for residential systems.

	<p>Y N</p> <p>() ()</p> <p>() ()</p> <p>() ()</p>	<p>Are supply and return pipes 1"?</p> <p>Is the lift to the HU <8' and the run to the HU <30' with 1-1/2" pipe?</p> <p>Septic () or Secondary () ?</p>
1	<p>Anaerobic ()</p> <p>Aerobic ()</p>	Effluent Quality
2	_____ Perc Rate	Found in column on the Loading Rate Chart (Table 5.4 on page 7).
3a	_____ GPD	Design quantity of wastewater to disperse. (150 GPD per bedroom)
3b	_____ # Bedrooms	
4	_____ Contour Run Length	Enter the tubing run length. If run length is not on table, use the actual run length. Example:85 ft.
5	_____ Supply LF	Length of supply line between hydraulic unit and farthest zone.
6	_____ Lift ft.	Vertical lift from off level in the pump chamber and highest zone elevation.
7	_____ Trench Bottom: Area (ft ²) per code	Trench Bottom loading rate required to treat and disperse wastewater. (See Loading Rate Chart)
8a	_____ Min. Area Calculation	Total land area needed to disperse wastewater. (line 3a / line 7)
8b	_____ Slope (percent)	Slope in drip area site. (See Loading Rate Chart for increases required)
8c	_____ Depth to Impervious Strata (inches)	Input required for slopes over 10%. (See Loading Rate Chart for increases required)
8d	_____ Required Total Area	Total area required is based on perc rate and slope. (Slope must be over 10% to be applicable)
9	_____ Total LF Tubing	Required total linear feet of tubing to treat and disperse wastewater. (line 8a / 2)
10a	_____ Calculated Runs	Number of runs (line 9 / line 4).
10b	_____ Min. # Runs	Round up to next whole number to determine Min. # Runs. Reference Zone Detail Table.
11	_____ Zone Detail	Select zone detail from column with next higher Contour Run Length (line 4) and with equal or greater # of Runs (line 10b).
12	_____ Max. Lift Allowed	Found on the Lift & Distance Table. Cross supply/return equal to line 5 with the appropriate number of laterals.
13	_____ LF Provided	Total linear feet of tubing provided to disperse wastewater. (# of zones x laterals per zone x runs per lateral x Contour Run Length)
14	_____ LF/Zone	Total linear feet of tubing per zone. (LF Provided / # of zones)
15	<p>Will zone flush?</p> <p>Y N</p> <p>() ()</p>	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.



AMERICAN MANUFACTURING

1-800-345-3132 • www.americanonsite.com





VIRGINIA

LOADING RATE CHART

For **AMERICAN** Perc-Rite® Drip Systems.

American Manufacturing Company, Inc.

1-800-345-3132 www.americanonsite.com

May 24, 2004

Table 5.4
Pressure Distribution Abbreviated

Drip dispersal design in Virginia is regulated through the "Sewage Handling and Disposal Regulations" and "GMP 107". The following procedure is used to size a Perc-Rite® drip system.

1. Evaluate the site according to Part III of the Regulation.
2. Select the system type according to Part IV of the Regulation and GMP 107.
3. Determine the area required under Part V of the Regulation. Table 5.4 , Pressure Distribution Abbreviated is used to determine total square footage as follows;
 - A) Using the perc rate, determine the ft²/bedroom. _____ ft²/bedroom
 - B) Multiply the ft²/bedroom by the number of bedrooms. _____ ft² total Interface.
 - C) Multiply the ft² by 3. _____ ft² total area.
 - D) Divide the area by two for Linear Feet of Tubing required and place this value in line 3 of calc sheet on page 5. _____ total Lineal feet tubing.
4. Use the chart below from GMP 107 to correct the area for slope. Additional tubing is **not** required.
5. See page 23 for Standoff Tables.

PERC RATE (MIN/INCH)	Trench Bottom AREA REQUIRED (FT ² /bedroom)	Trench Bottom AREA REQUIRED (FT ² /100 gal.)	Advanced Secondary Trench Bottom AREA REQUIRED (FT ² /bedroom)	Advanced Secondary Trench Bottom AREA REQUIRED (FT ² /100 gal.)
5	165	110		
10	180	120		
15	198	132		
20	218	146	60	40
25	237	158	75	50
30	255	164	91	61
35	260	170	104	69
40	264	176	119	79
45	279	185	135	90
50	293	193	152	101
55	309	206	167	111
60	325	217	179	119
65	342	228	192	128
70	359	240	208	139
75	375	251	227	152
80	394	262	238	159
85	409	273	250	167
90	424	284	263	175
95	431	288	278	185
100	473	316	294	196
105	519	346	313	208
110	569	379	333	222
115	624	416	357	238
120	684	456	357	238

Absorption Area Increase (percent)				
Depth to Impervious Strata	Slope of site (percent)			
	10-19	20-29	30-39	40-50
Drip Tubing <24" off rock, pans, or impervious strata	17%	33%	50%	67%
Drip Tubing 24" or more off rock, or impervious strata	0%	17%	33%	50%

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 = Zone # Zones # Laterals # Runs/Lat

EXAMPLE 1

Z = Zone # Zones # Laterals # Runs/Lat
 Z = Zone # Zones # Laterals # 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.

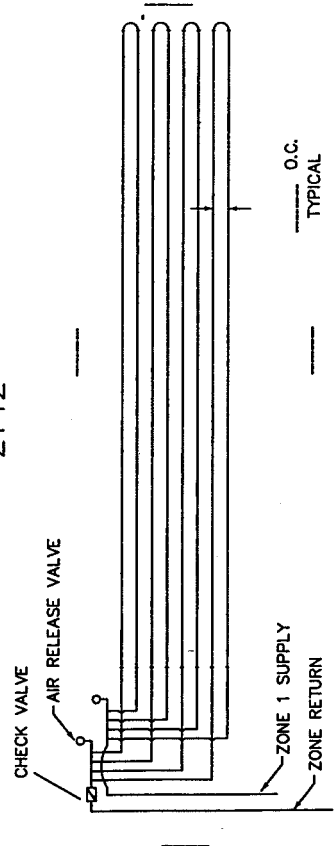
EXAMPLE 2

(Using 12gpm Semi Automatic Zone Detail Table on Page 12)
 This configure does not work for the ASD 15

Contour width = 100 Feet
 Tubing required = 700 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 = Zone # Zones # Laterals # Runs/Lat
 Z = Zone # Zones # Laterals # Runs/Lat
 Z142



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												Z231	1200	Z231	1350	Z231	1500	Z231	1800
6																			1800
7																			
8										Z222	1200	Z241	1600	Z241	1800	Z241	2000	Z241	2400
9												Z331	1800	Z331	2025	Z331	2250	Z331	2700
10								Z251	1250	Z251	1500	Z251	2000	Z251	2250				
11																			
12								Z232	1500	Z232	1800	Z341	2400	Z341	2700	Z341	3000	Z341	3600
13								Z232	1800	Z322	1800	Z431	2400	Z431	2700	Z431	3000	Z431	3600
14																			
15								Z271	1400	Z351	1875	Z351	3000	Z351	3375				
16								Z242	1600	Z242	2000	Z441	3200	Z441	3600	Z441	4000	Z441	4800
17																			
18								Z233	1350	Z233	1800	Z332	2250						
19								Z323	1800	Z323	1800								
20								Z252	1500	Z252	2000	Z451	4000	Z451	4500				
21								Z371	2100	Z371	2100								
22																			
23																			
24			Z226	1200	Z234	1800	Z243	2400	Z342	3000	Z342	3600							
25								Z342	2400	Z432	3000	Z432	3600						
26								Z423	2400										
27								Z333	2700										
28			Z272	1400	Z333	2025	Z471	2800											
29																			
30			Z235	1500	Z253	2250	Z352	3000											
31								Z352	2250										
32			Z244	1600	Z244	2400	Z442	3200	Z442	4000	Z442	4800							
33								Z424	2400										
34																			
35																			
36			Z236	1800	Z334	2700	Z343	3600											
37			Z326	1800	Z433	2700	Z433	3600											
38																			
39																			
40			Z254	2000	Z452	3000	Z452	4000											
41																			
42			Z372	2100															
43																			
44																			
45			Z335	225	Z353	3375													
46																			
47			Z246	2400	Z344	3600	Z443	4800											
48			Z344	2400	Z434	3600	Z443	4800											

**DOSING & FF FLOW TABLE (GPM)
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	
		2	3	4	5	6	7	8	9	10	11
600	3.3	6.5	8.1	9.7	11.3	12.9	14.5	16.1	17.7	19.3	20.9
650	3.5	6.7	8.3	9.9	11.5	13.1	14.7	16.3	17.9	19.5	21.1
700	3.8	7.0	8.6	10.2	11.8	13.4	15.0	16.6	18.2	19.8	21.4
750	4.1	7.3	8.9	10.5	12.1	13.7	15.3	16.9	18.5	20.1	21.7
800	4.3	7.5	9.1	10.7	12.3	13.9	15.5	17.1	18.7	20.3	21.9
850	4.6	7.8	9.4	11.0	12.6	14.2	15.8	17.4	19.0	20.6	22.2
900	4.9	8.1	9.7	11.3	12.9	14.5	16.1	17.7	19.3	20.9	22.5
950	5.1	8.3	9.9	11.5	13.1	14.7	16.3	17.9	19.5	21.1	22.7
1000	5.4	8.6	10.2	11.8	13.4	15.0	16.6	18.2	19.8	21.4	23.0
1050	5.7	8.9	10.5	12.1	13.7	15.3	16.9	18.5	20.1	21.7	23.3
1100	6.0	9.2	10.8	12.4	14.0	15.6	17.2	18.8	20.4	22.0	23.6
1150	6.2	9.4	11.0	12.6	14.2	15.8	17.4	19.0	20.6	22.2	23.8
1200	6.5	9.7	11.3	12.9	14.5	16.1	17.7	19.3	20.9	22.5	24.1

PERC-RITE® LIFT AND DISTANCE TABLE
15 GPM AUTOMATIC DRIP SYSTEMS: 24" EMITTER SPACING

LIFT & DISTANCE TABLE INSTRUCTIONS

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 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 filter valve box is 30' and the vertical lift from the pump chamber to the filter valve box is 8'.
7. These tables may be used with the appropriate Perc-Rite® zone detail table only. An engineering 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. For aid in this application call American Manufacturing.
10. Return pressure assembly is needed when lift from filters to zones is greater than 10'.

LIFT AND DISTANCE TABLE
15 GPM AUTOMATIC DRIP SYSTEMS: 24" EMITTER SPACING

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										
4					Z122	400	Z122	500	Z122	600	Z122	800	Z122	900	Z122	1000	Z122	1200	
5					Z141	400	Z141	500	Z141	600	Z141	800	Z141	900	Z141	1000	Z141	1200	
6					Z151	500	Z151	625	Z151	750	Z151	1000	Z151	1350	Z151	1500	Z151	1800	
7					Z123	450	Z123	750	Z123	900	Z123	1200	Z123	1500	Z123	1800	Z123	2000	
8					Z132	450	Z132	600	Z132	750	Z132	1000	Z132	1350	Z132	1500	Z132	1800	
9					Z142	600	Z142	800	Z142	1000	Z142	1200	Z142	1500	Z142	1800	Z142	2000	
10					Z142	400	Z142	600	Z142	800	Z142	1000	Z142	1200	Z142	1500	Z142	1800	
11					Z142	400	Z142	600	Z142	800	Z142	1000	Z142	1200	Z142	1500	Z142	1800	
12					Z143	600	Z143	900	Z143	1200	Z143	1500	Z143	1800	Z143	2000	Z143	2200	
13					Z223	900	Z223	900	Z223	900	Z223	900	Z223	900	Z223	900	Z223	900	
14					Z232	900	Z232	900	Z232	900	Z232	900	Z232	900	Z232	900	Z232	900	
15					Z242	800	Z242	800	Z242	800	Z242	800	Z242	800	Z242	800	Z242	800	
16					Z242	800	Z242	1200	Z242	1500	Z242	1800	Z242	2000	Z242	2200	Z242	2400	
17					Z242	800	Z242	1200	Z242	1500	Z242	1800	Z242	2000	Z242	2200	Z242	2400	
18					Z242	800	Z242	1200	Z242	1500	Z242	1800	Z242	2000	Z242	2200	Z242	2400	
19					Z242	800	Z242	1200	Z242	1500	Z242	1800	Z242	2000	Z242	2200	Z242	2400	
20					Z242	800	Z242	1200	Z242	1500	Z242	1800	Z242	2000	Z242	2200	Z242	2400	
22					Z242	800	Z242	1200	Z242	1500	Z242	1800	Z242	2000	Z242	2200	Z242	2400	
24					Z242	800	Z242	1200	Z242	1500	Z242	1800	Z242	2000	Z242	2200	Z242	2400	
26					Z242	800	Z242	1200	Z242	1500	Z242	1800	Z242	2000	Z242	2200	Z242	2400	
28					Z242	800	Z242	1200	Z242	1500	Z242	1800	Z242	2000	Z242	2200	Z242	2400	
30					Z242	800	Z242	1200	Z242	1500	Z242	1800	Z242	2000	Z242	2200	Z242	2400	
32					Z242	800	Z242	1200	Z242	1500	Z242	1800	Z242	2000	Z242	2200	Z242	2400	
34					Z242	800	Z242	1200	Z242	1500	Z242	1800	Z242	2000	Z242	2200	Z242	2400	
36					Z242	800	Z242	1200	Z242	1500	Z242	1800	Z242	2000	Z242	2200	Z242	2400	
38					Z242	800	Z242	1200	Z242	1500	Z242	1800	Z242	2000	Z242	2200	Z242	2400	
40					Z242	800	Z242	1200	Z242	1500	Z242	1800	Z242	2000	Z242	2200	Z242	2400	

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

s:\data\sales\catalog\literature\zonetable. c:\data\msword\manual\zonetable-qm-master

PERC-RITE® LIFT AND DISTANCE TABLE
12 GPM SEMI-AUTOMATIC DRIP SYSTEMS: 24" EMITTER SPACING

LIFT & DISTANCE TABLE INSTRUCTIONS

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 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 filter valve box is 30' and the vertical lift from the pump chamber to the filter valve box is 8'.
7. These tables may be used with the appropriate Perc-Rite® zone detail table only. An engineering 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. For aid in this application call American Manufacturing.
10. Return pressure assembly is needed when lift from filters to zones is greater than 10'.

LIFT AND DISTANCE TABLE
12 GPM SEMI-AUTOMATIC PERC-RITE® DRIP SYSTEMS: 24" EMITTER SPACING
Maximum Static Lift ("Off Level Float" to Drip Field)

Table A:

STANDARD 12 GPM 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		
				Note:	
				Use Table B	
				when using	
				Hydro Seq	
				Valve	

Table B:

12 GPM 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		
				Note:	
				Use this table	
				when using	
				Hydro Seq	
				Valve	

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.

Laterals/Zone: Lateral Length: Design GPD	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						
	300'	300'	300'	240'	165'	100'	300'	300'	300'	240'	165'	100'	300'	300'	300'	240'	165'	100'	300'	300'	300'	240'	165'	100'						
Avg. 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	7.48	7.69	5.53	5.41	6.51	5.35	7.48	10.76	7.84	7.72	9.30	5.35	7.48	10.76	7.84	7.72	9.30	5.35	7.48	10.76	7.84	7.72	9.30	5.35	7.48	10.76	7.84	7.72	9.30	5.35
Min/ Dose	8.30	8.30	6.00	5.87	7.07	5.88	8.10	11.58	8.46	8.33	10.05	5.88	8.10	11.58	8.46	8.33	10.05	5.88	8.10	11.58	8.46	8.33	10.05	5.88	8.10	11.58	8.46	8.33	10.05	5.88
Min/ Dose	6.10	8.92	6.46	6.33	7.63	6.41	8.71	12.40	9.07	8.95	10.80	6.41	8.71	12.40	9.07	8.95	10.80	6.41	8.71	12.40	9.07	8.95	10.80	6.41	8.71	12.40	9.07	8.95	10.80	6.41
Min/ Dose	6.56	5.84	6.92	6.79	8.18	4.56	5.64	5.84	6.99	9.56	11.54	6.93	5.64	5.84	6.99	9.56	11.54	6.93	5.64	5.84	6.99	9.56	11.54	6.93	5.64	5.84	6.99	9.56	11.54	6.93
Min/ Dose	7.02	6.25	7.38	7.25	5.20	4.96	6.05	6.25	10.30	10.18	5.20	7.46	6.05	6.25	10.30	10.18	5.20	7.46	6.05	6.25	10.30	10.18	5.20	7.46	6.05	6.25	10.30	10.18	5.20	7.46
Min/ Dose	7.48	6.66	7.84	7.72	5.57	5.35	6.46	6.66	10.92	10.79	5.57	7.99	6.46	6.66	10.92	10.79	5.57	7.99	6.46	6.66	10.92	10.79	5.57	7.99	6.46	6.66	10.92	10.79	5.57	7.99
Min/ Dose	7.95	7.07	8.30	8.18	5.95	5.75	6.87	7.07	11.53	11.41	5.95	4.82	6.87	7.07	11.53	11.41	5.95	4.82	6.87	7.07	11.53	11.41	5.95	4.82	6.87	7.07	11.53	11.41	5.95	4.82
Min/ Dose	8.41	7.48	8.76	8.64	6.32	6.14	7.28	7.48	12.15	12.02	6.32	5.18	7.28	7.48	12.15	12.02	6.32	5.18	7.28	7.48	12.15	12.02	6.32	5.18	7.28	7.48	12.15	12.02	6.32	5.18
Min/ Dose	8.64	7.69	9.00	8.87	6.51	6.34	7.48	7.69	12.46	12.33	6.51	5.35	7.48	7.69	12.46	12.33	6.51	5.35	7.48	7.69	12.46	12.33	6.51	5.35	7.48	7.69	12.46	12.33	6.51	5.35
Min/ Dose	8.87	7.89	5.69	9.10	6.69	6.54	7.69	7.89	12.76	12.64	6.69	5.53	7.69	7.89	12.76	12.64	6.69	5.53	7.69	7.89	12.76	12.64	6.69	5.53	7.69	7.89	12.76	12.64	6.69	5.53
Min/ Dose	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	5.88	5.64	8.30	6.00	5.87	7.07	5.88	5.64	8.30	6.00	5.87	7.07	5.88
Min/ Dose	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	6.23	5.95	8.71	6.30	6.18	7.44	6.23	5.95	8.71	6.30	6.18	7.44	6.23
Min/ Dose	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	5.57	6.61	6.48	7.81	6.58	6.25	5.57	6.61	6.48	7.81	6.58	6.25	5.57	6.61	6.48	7.81	6.58
Min/ Dose	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	5.84	6.92	6.79	8.18	4.56	6.56	5.84	6.92	6.79	8.18	4.56	6.56	5.84	6.92	6.79	8.18	4.56
Min/ Dose	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	6.11	7.23	7.10	8.56	4.82	6.87	6.11	7.23	7.10	8.56	4.82	6.87	6.11	7.23	7.10	8.56	4.82
Min/ Dose	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	6.39	7.53	7.41	5.33	5.09	7.18	6.39	7.53	7.41	5.33	5.09	7.18	6.39	7.53	7.41	5.33	5.09
Min/ Dose	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
Min/ Dose	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
Min/ Dose	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
Min/ Dose	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
Min/ Dose	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
Min/ Dose	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
Min/ Dose	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
Min/ Dose	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
Min/ Dose	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	990	700
Total LF in	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	990	700

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

	2 ZONE		3 ZONES		4 ZONES	
	Rest Time (min)	Standard Peak (min)	Rest Time (min)	Standard Peak (min)	Rest Time (min)	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



AMERICAN

1-800-345-3132 • www.americanonsite.com

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
Lateral Length:		300'	300'	250'	150'
Design GPD	Avg.	GPM: 3.25	4.875	5.417	4.063
	GPD	Min./dose	Min./dose	Min./dose	Min./dose
300	180	7.48	5.84	6.73	6.84
320	192	8.10	6.33	7.29	7.43
340	204	8.71	6.82	7.84	8.02
360	216	9.33	7.31	8.40	8.61
380	228	9.95	7.80	8.95	9.20
400	240	10.56	8.29	9.50	9.79
420	252	11.18	8.78	10.06	10.38
440	264	11.79	9.27	10.61	10.97
450	270	12.10	9.59	10.84	11.12
460	276	12.41	9.91	11.07	11.27
480	288	13.33	10.83	12.06	12.26
500	300	14.25	11.75	13.05	13.25
520	312	15.17	12.67	14.04	14.24
540	324	16.09	13.59	15.03	15.23
560	336	17.01	14.51	16.02	16.22
580	348	17.93	15.43	17.01	17.21
600	360	18.85	16.35	18.00	18.20
620	372	19.77	17.27	19.00	19.19
640	384	20.69	18.19	20.00	20.18
660	396	21.61	19.11	21.00	21.17
680	408	22.53	20.03	22.00	22.16
700	420	23.45	20.95	23.00	23.15
720	432	24.37	21.87	24.00	24.14
750	450	25.75	23.25	25.50	25.62
TOTAL L.F. IN ZONE=		600	900	1000	750

AMERICAN MANUFACTURING - "QM" SERIES 2-ZONE

Laterals/Zone:		2-Lat	3-Lat	4-Lat	5-Lat
Lateral Length:		300'	300'	250'	150'
Design GPD	Avg.	GPM: 3.25	4.875	5.417	4.063
	GPD	Min./dose	Min./dose	Min./dose	Min./dose
300	180	7.48	7.69	6.73	5.36
320	192	8.10	8.30	7.29	5.85
340	204	8.71	8.92	7.84	6.34
360	216	9.33	9.54	8.40	6.84
380	228	9.95	10.15	8.95	7.33
400	240	10.56	10.76	9.50	7.82
420	252	11.18	11.37	10.06	8.31
440	264	11.79	11.98	10.61	8.80
450	270	12.10	12.30	10.84	9.05
460	276	12.41	12.61	11.07	9.30
480	288	13.33	13.53	12.06	10.29
500	300	14.25	14.45	13.05	11.28
520	312	15.17	15.37	14.04	12.27
540	324	16.09	16.29	15.03	13.26
560	336	17.01	17.21	16.02	14.25
580	348	17.93	18.13	17.01	15.24
600	360	18.85	19.05	18.00	16.23
620	372	19.77	19.97	19.00	17.22
640	384	20.69	20.89	20.00	18.21
660	396	21.61	21.81	21.00	19.20
680	408	22.53	22.73	22.00	20.19
700	420	23.45	23.65	23.00	21.18
720	432	24.37	24.57	24.00	22.17
750	450	25.75	25.95	25.50	23.65
TOTAL L.F. IN ZONE=		600	900	1000	750

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

ONE ZONE LEGEND:

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

TWO ZONE LEGEND:

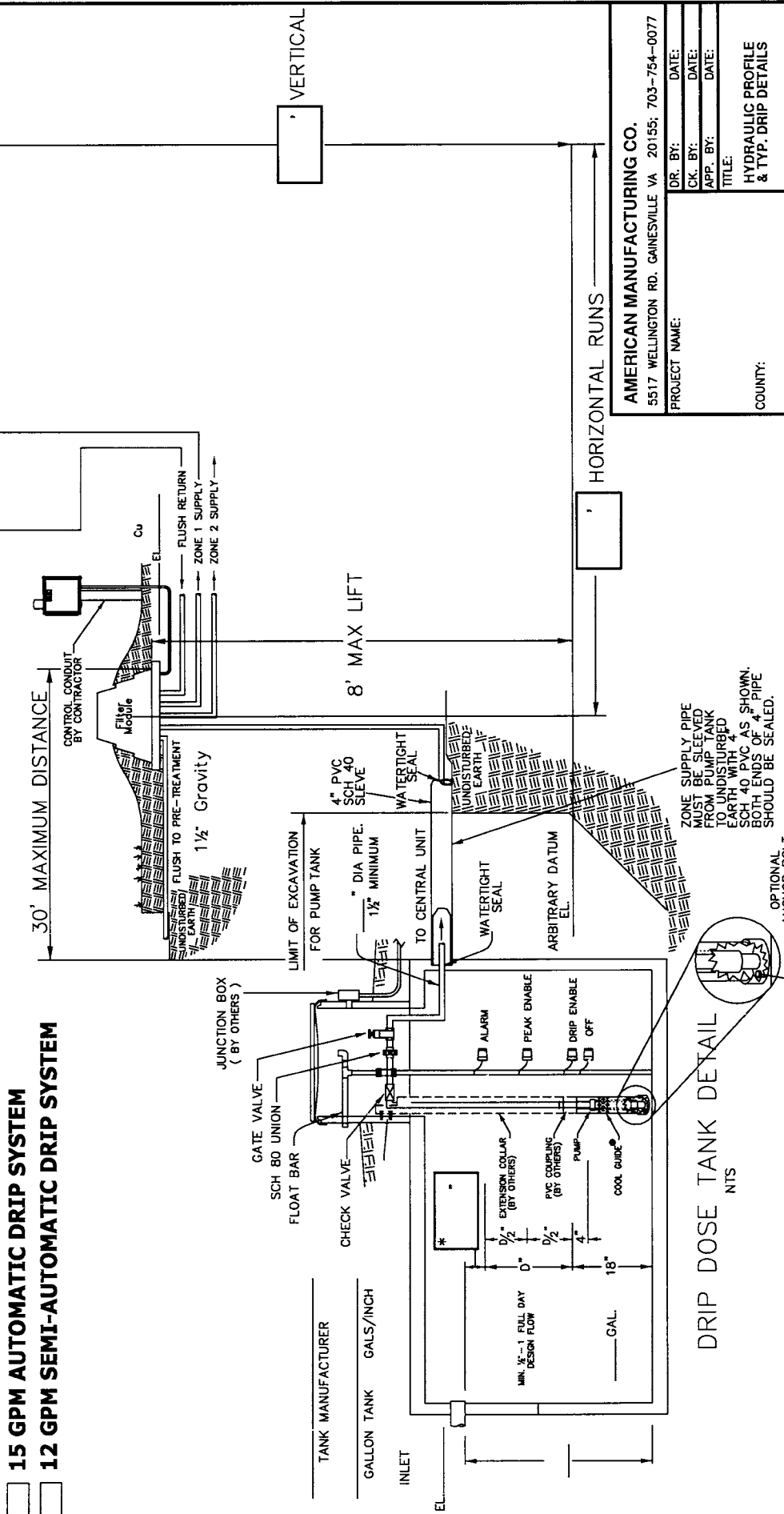
	REST TIMES	
	Standard (min)	Peak (min)
2 Doses/day/zone	360	216
3 Doses/day/zone	240	144
4 Doses/day/zone	180	108
5 Doses/day/zone	144	86
6 Doses/day/zone	120	72



AMERICAN MANUFACTURING

1-800-345-3132 • www.americanonsite.com

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



DRIP DOSE TANK DETAIL

NTS

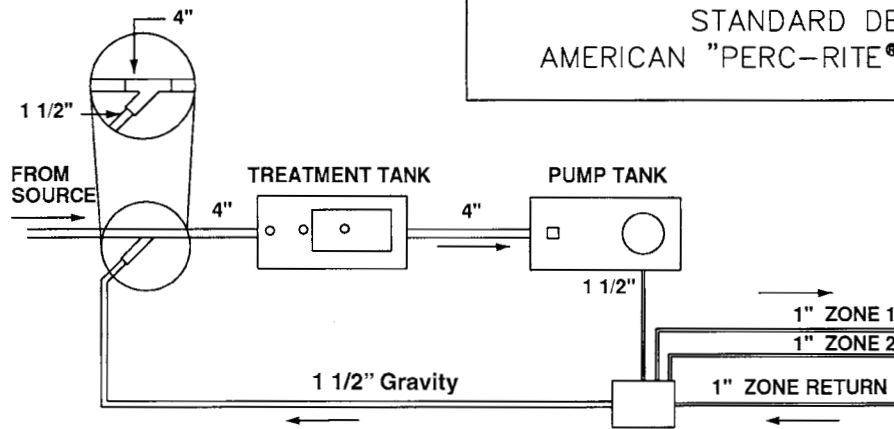
AMERICAN MANUFACTURING CO.	
5517 WELLINGTON RD. GAINESVILLE VA 20155; 703-754-0077	
PROJECT NAME:	
DR. BY:	DATE:
CK. BY:	DATE:
APP. BY:	DATE:
TITLE:	
COUNTY:	

FILE: S:\Staff\KevinU\AUTOCAD\CATALOGS\Designer Guide\11 Driphydrof pg 11.dwg SCALE:

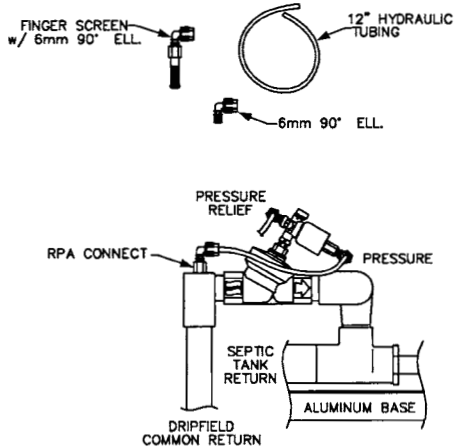
S:\Staff\KevinU\AUTOCAD\HYD&DRIP\11 Driphydrof pg 11.dwg

SHEET OF

STANDARD DETAILS
AMERICAN "PERC-RITE®" DRIP SYSTEM

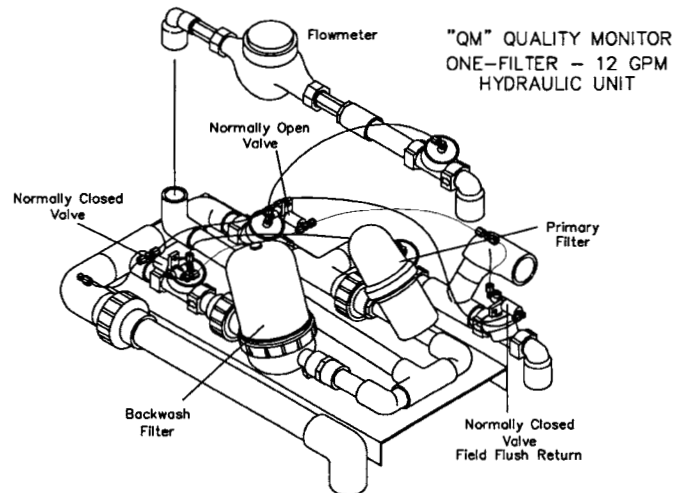
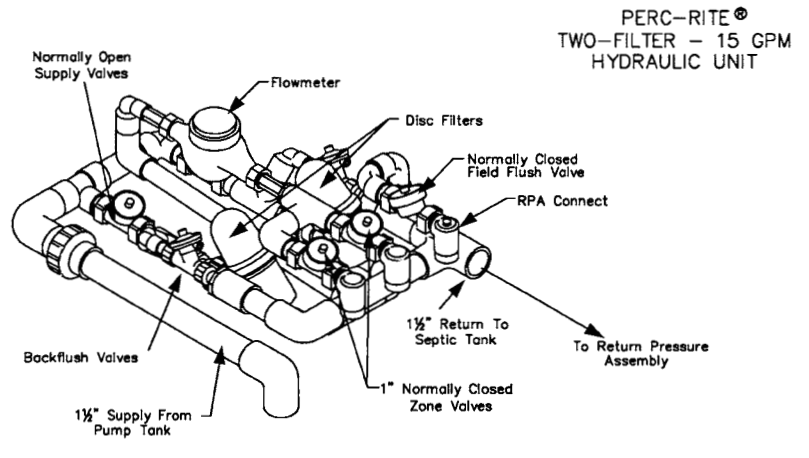


TANK EQUIPMENT AREA
SCHEMATIC PLAN



RETURN PRESSURE ASSEMBLY (RPA)
NTS

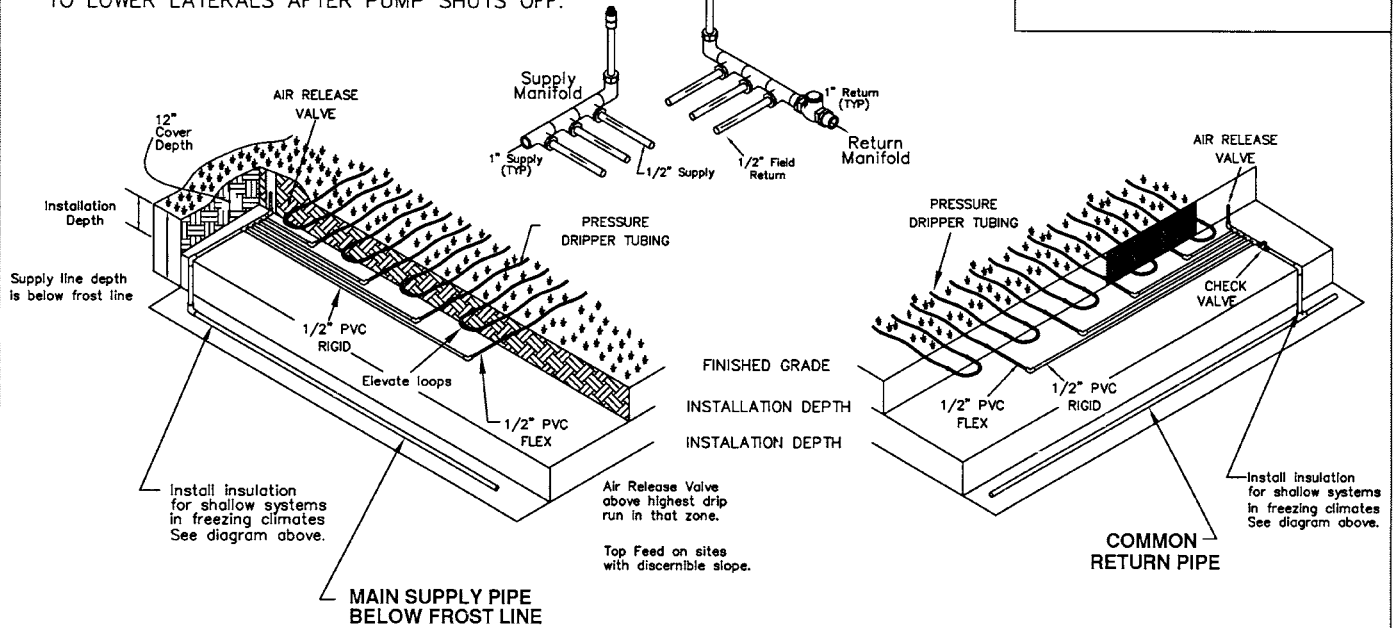
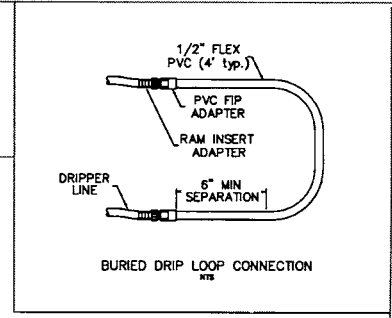
NOTE:
IN THE EVENT THE DRIP ZONES ARE OVER 10 FEET IN VERTICAL ELEVATION ABOVE THE HYDRAULIC UNIT, INSTALL A "RETURN PRESSURE ASSEMBLY." THE ASSEMBLY IS TO BE USED TO PREVENT THE RETURN LINE FROM DRAINING AFTER OR DURING A DOSE. REMOVE THE ZONE RETURN CONNECTION AND REINSTALL A SHORT 1" NIPPLE IN THE 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.



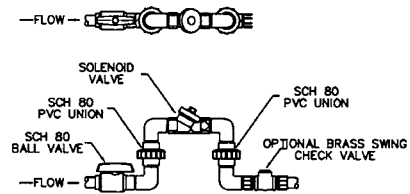
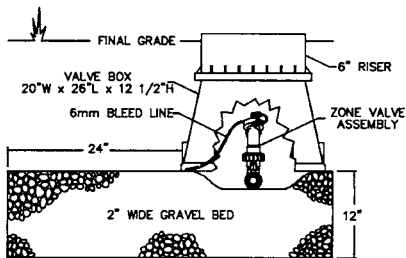
STANDARD DETAILS
AMERICAN "PERC-RITE®" DRIP SYSTEM

TOP FEED MANIFOLDS

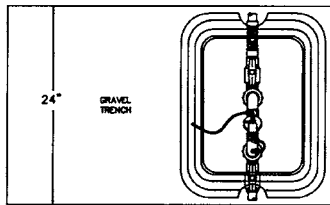
USE ON ALL SITES WITH A DISCERNIBLE SLOPE TO CONTROL DRAIN DOWN FROM UPPER LATERALS TO LOWER LATERALS AFTER PUMP SHUTS OFF.



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 MONITORING 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

ASD152-S122	ASD153-S124
2 ZONE DRIP W/ SIMPLEX 2 FILTER, 2-ZONE CONTROL PANEL	3 ZONE DRIP W/ SIMPLEX 2 FILTER, 4-ZONE CONTROL PANEL
LINE# COMPONENT DESCRIPTION QUANTITY	LINE# COMPONENT DESCRIPTION QUANTITY
CENTRAL UNIT EQUIP PACKAGES	
1 DH2-22KIT 2 ZONE DRIP SYSTEM KIT 1	1 DH2-23KIT 3 ZONE DRIP SYSTEM KIT 1
2 DP1-B9140 SIMPLEX 2 ZONE CONTROL 1	2 DP1-B9141 SIMPLEX 4 ZONE CONTROL 1
3 PUTURB1512112W 15 GPM TURBINE 1	3 PUTURB1512112W 15 GPM TURBINE 1
4 COOLGUIDE 15 LAMINAR FLOW COLLAR, 6", 15 GPM 1	4 COOLGUIDE15 LAMINAR FLOW COLLAR, 6", 15 GPM 1
5 PUMPKITDRIP DRIP PUMP KIT 1 1/2" 1	5 PUMPKITDRIP DRIP PUMP KIT 1 1/2" 1
6 BIOLINE 1000 DRIP TUBING PER 1000 FT ROLLS 2	6 BIOLINE 1000 DRIP TUBING PER 1000 FT ROLL 3
7 PVC12FLEX 1/2" FLEX PVC 100' 1	7 PVC12FLEX 1/2" FLEX PVC 100' 2
8 BIOINSERT12X34 BIOLINE INSERT ADAPTER 1/2" X 3/4" 50	8 BIOINSERT12X34 BIOLINE INSERT ADAPTER 1/2" X 3/4" 75
9 PVCPRFIP12X34 FEMALE ADAPTER 12X34 SXT SCH 40 50	9 PVCPRFIP12X34 FEMALE ADAPTER 12X34 SXT SCH 40 75
10 BIOCOUP BIOLINE REPAIR COUPLING 1/2" 6	10 BIOCOUP BIOLINE REPAIR COUPLING 1/2" 6
11 DH-TOPFEEDKIT TOP FEED MANIFOLD KIT 1" 2	11 DH-TOPFEEDKIT TOP FEED MANIFOLD KIT 1" 3
ASD154-S124	
4 ZONE DRIP W/ SIMPLEX 2 FILTER, 4-ZONE CONTROL PANEL	
CENTRAL UNIT EQUIP PACKAGES	
1 DH2-24KIT 4 ZONE DRIP SYSTEM KIT 1	1 DH2-23KIT 3 ZONE DRIP SYSTEM KIT 1
2 DP1-B9141 SIMPLEX 4 ZONE CONTROL 1	2 DP1-B9146 DUPLEX 4 ZONE CONTROL PANEL 1
3 PUTURB1512112W 15 GPM TURBINE 1	3 PUTURB1512112W 15 GPM TURBINE 2
4 COOLGUIDE15 LAMINAR FLOW COLLAR, 6", 15 GPM 1	4 COOLGUIDE15 LAMINAR FLOW COLLAR, 6", 15 GPM 2
5 PUMPKITDRIP DRIP PUMP KIT 1 1/2" 1	5 PUMPKITDRIPDX DRIP PUMP KIT 1 1/2" DUPLEX 1
6 BIOLINE 1000 DRIP TUBING PER 1000 FT ROLL 4	6 BIOLINE1000 DRIP TUBING PER 1000 FT ROLL 3
7 PVC12FLEX 1/2" FLEX PVC 100' 2	7 PVC12FLEX 1/2" FLEX PVC 100' 2
8 BIOINSERT12X34 BIOLINE INSERT ADAPTER 1/2" X 3/4" 100	8 BIOINSERT12X34 BIOLINE INSERT ADAPTER 1/2" X 3/4" 75
9 PVCPRFIP12X34 FEMALE ADAPTER 12X34 SXT SCH 40 100	9 PVCPRFIP12X34 FEMALE ADAPTER 12X34 SXT SCH 40 75
10 BIOCOUP BIOLINE REPAIR COUPLING 1/2" 6	10 BIOCOUP BIOLINE REPAIR COUPLING, 1/2" 6
11 DH-TOPFEEDKIT TOP FEED MANIFOLD KIT 1" 4	11 DH-TOPFEEDKIT TOP FEED MANIFOLD KIT 1" 3
ASD153-D124	
3 ZONE DRIP W/ DUPLEX 2 FILTER, 4-ZONE CONTROL PANEL	
CENTRAL UNIT EQUIP PACKAGES	
1 DH2-23KIT 3 ZONE DRIP SYSTEM KIT 1	1 DH2-23KIT 3 ZONE DRIP SYSTEM KIT 1
2 DP1-B9146 DUPLEX 4 ZONE CONTROL PANEL 1	2 DP1-B9146 DUPLEX 4 ZONE CONTROL PANEL 1
3 PUTURB1512112W 15 GPM TURBINE 2	3 PUTURB1512112W 15 GPM TURBINE 2
4 COOLGUIDE15 LAMINAR FLOW COLLAR, 6", 15 GPM 2	4 COOLGUIDE15 LAMINAR FLOW COLLAR, 6", 15 GPM 2
5 PUMPKITDRIPDX DRIP PUMP KIT 1 1/2" DUPLEX 1	5 PUMPKITDRIPDX DRIP PUMP KIT 1 1/2" DUPLEX 1
6 BIOLINE1000 DRIP TUBING PER 1000 FT ROLL 3	6 BIOLINE1000 DRIP TUBING PER 1000 FT ROLL 3
7 PVC12FLEX 1/2" FLEX PVC 100' 2	7 PVC12FLEX 1/2" FLEX PVC 100' 2
8 BIOINSERT12X34 BIOLINE INSERT ADAPTER 1/2" X 3/4" 75	8 BIOINSERT12X34 BIOLINE INSERT ADAPTER 1/2" X 3/4" 75
9 PVCPRFIP12X34 FEMALE ADAPTER 12X34 SXT SCH 40 75	9 PVCPRFIP12X34 FEMALE ADAPTER 12X34 SXT SCH 40 75
10 BIOCOUP BIOLINE REPAIR COUPLING, 1/2" 6	10 BIOCOUP BIOLINE REPAIR COUPLING, 1/2" 6
11 DH-TOPFEEDKIT TOP FEED MANIFOLD KIT 1" 3	11 DH-TOPFEEDKIT TOP FEED MANIFOLD KIT 1" 3
ASD154-D124	
4 ZONE DRIP W/ DUPLEX 2 FILTER, 4-ZONE CONTROL PANEL	
CENTRAL UNIT EQUIP PACKAGES	
1 DH2-24KIT 4 ZONE DRIP SYSTEM KIT 1	1 DH2-21KIT MASTER VALVE DRIP SYSTEM KIT 1
2 DP1-B9146 DUPLEX 4 ZONE CONTROL PANEL 1	2 DP1-B9157 SIMPLEX 4 ZONE W/MASTER VALVE 1
3 PUTURB1512112W 15 GPM TURBINE 2	3 PUTURB1512112W 15 GPM TURBINE 1
4 COOLGUIDE15 LAMINAR FLOW COLLAR, 6", 15 GPM 2	4 COOLGUIDE15 LAMINAR FLOW COLLAR, 6", 15 GPM 1
5 PUMPKITDRIPDX DRIP PUMP KIT 1 1/2" DUPLEX 1	5 PUMPKITDRIP DRIP PUMP KIT 1 1/2" 1
6 BIOLINE 1000 DRIP TUBING PER 1000 FT ROLL 4	6 ZONEVALVE 1 REMOTE ZONE VALVE 1" VLV X 1" PIPE 2
7 PVC12FLEX 1/2" FLEX PVC 100' 2	7 BIOLINE1000 DRIP TUBING PER 1000 FT ROLL 2
8 BIOINSERT12X34 BIOLINE INSERT ADAPTER 1/2" X 3/4" 100	8 PVC12FLEX 1/2" FLEX PVC 100' 1
9 PVCPRFIP12X34 FEMALE ADAPTER 12X34 SXT SCH 40 100	9 BIOINSERT12X34 BIOLINE INSERT ADAPTER 1/2" X 3/4" 50
10 BIOCOUP BIOLINE REPAIR COUPLING, 1/2" 6	10 PVCPRFIP12X34 FEMALE ADAPTER 12X34 SXT SCH 40 50
11 DH-TOPFEEDKIT TOP FEED MANIFOLD KIT 1" 4	11 BIOCOUP BIOLINE REPAIR COUPLING, 1/2" 6
	12 DH-TOPFEEDKIT TOP FEED MANIFOLD KIT 1" 2
ASD151-S124	
2 REMOTE ZONE DRIP W/ SIMPLEX 2 FILTER, 4-ZONE CONTROL	
CENTRAL UNIT EQUIP PACKAGES	
1 DH2-21KIT MASTER VALVE DRIP SYSTEM KIT 1	
2 DP1-B9157 SIMPLEX 4 ZONE W/MASTER VALVE 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 ZONEVALVE 1 REMOTE ZONE VALVE 1" VLV X 1" PIPE 2	
7 BIOLINE1000 DRIP TUBING PER 1000 FT ROLL 2	
8 PVC12FLEX 1/2" FLEX PVC 100' 1	
9 BIOINSERT12X34 BIOLINE INSERT ADAPTER 1/2" X 3/4" 50	
10 PVCPRFIP12X34 FEMALE ADAPTER 12X34 SXT SCH 40 50	
11 BIOCOUP BIOLINE REPAIR COUPLING, 1/2" 6	
12 DH-TOPFEEDKIT TOP FEED MANIFOLD KIT 1" 2	



AMERICAN
Manufacturing Company, Inc.
www.americanonsite.com

12 GPM AUTOMATIC SEMI-AUTOMATIC PERC-RITE® DRIP SYSTEMS
QUALITY MONITOR "QM" SERIES - SECONDARY EFFLUENT

AMD151-S121 1 ZONE SIMPLEX MANUAL CLEAN INSERT & LCD CONTROL			ABD121-S121 1 ZONE QM SKID MOUNT WITH LCD CONTROL		
CONTENT	DESCRIPTION	QUANTITY	CONTENT	DESCRIPTION	QUANTITY
DPO-B9114	1 ZONE SIMPLEX LCD CONTROL	1	DPO-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
ABD121-S122 2 ZONE QM SKID MOUNT WITH PLC PANEL			ABD121-S121SV2 2 ZONE QM SKID WITH SEQUENCER & LCD CONTROL		
CONTENT	DESCRIPTION	QUANTITY	CONTENT	DESCRIPTION	QUANTITY
DPI-B9158	2 ZONE, SIMPLEX PLC CONTROL	1	DPO-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



AMERICAN
 Manufacturing Company, Inc.
 www.americanonsite.com

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.

Table 4.3
Summary of Separation Distances between Systems Using Naturally Occurring Undisturbed Soils and Limiting Site Factors.

Site Factor	In-Ground System ¹		Shallow-placed System ²	
	Septic Tank Effluent	Secondary Effluent	Septic Tank Effluent	Secondary Effluent
Bed Rock	18"	12"	n/a	18" ²
Restriction	18"	12"	n/a	18"
Shrink-Swell Soil	18"	12"	n/a	18"
Slope	50%	50%	n/a	50%
Perc Rate	5-120 mpi	5-120 mpi	n/a	5-45mpi ³
Water Table	18"	12"	n/a	12"

¹ The separation distances for in-ground and shallow-placed systems are measured from the trench bottom or other infiltrative interface vertically down to listed site factor.

² See also 12 VAC 5-610-596.C.2

³ See also 12 VAC 5-610-596.C.1

Table 4.4
Summary of Separation Distances between Fill Systems and Limiting Site Factors.

Site Factor	Elevated Sand Mound		Sand-on-Sand System ^x		Noncarbonaceous Mountain Colluvium	
	Septic Tank Effluent	Secondary Effluent	Septic Tank Effluent	Secondary Effluent	Septic Tank Effluent	Secondary Effluent
Bed Rock	24"	24"	18"	12"	18"	12"
Restriction	24"	12"	30"	24"	18"	12"
Shrink-Swell Soil	24"	12"	40"	30"	18"	12"
Slope	25%	25%	5%	5%	50%	50%
Perc Rate	5-120 mpi	5-120 mpi	5-30 mpi	5-30mpl	5-120 mpi	5-120 mpi
Water Table	24"	10"	18"	12"	18"	12"

¹ 24 inches refers to creviced bedrock. The distance may be reduced to 12 inches when noncreviced bedrock is encountered. See the Wisconsin Mound Soil Absorption System Siting, Design, and Construction Manual, January 1990.

² The separation distance for sand-on-sand systems is measured from the ground surface vertically down to the listed site factor.

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.americanonsite.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.

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.



AMERICAN
Manufacturing Company, Inc.
www.americanonsite.com



AMERICAN MANUFACTURING Company, Inc.

www.americanonsite.com

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.



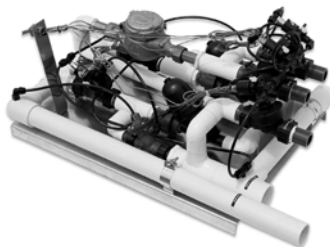
Cool Guide™



Bull Run™ Valve



Control Panels



Hydraulic Unit



Dial-A-Flow™



Drip Tubing

Toll Free: 1-800-345-3132

P.O. Box 549, Manassas, VA 20180