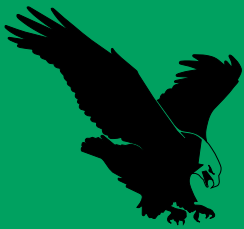
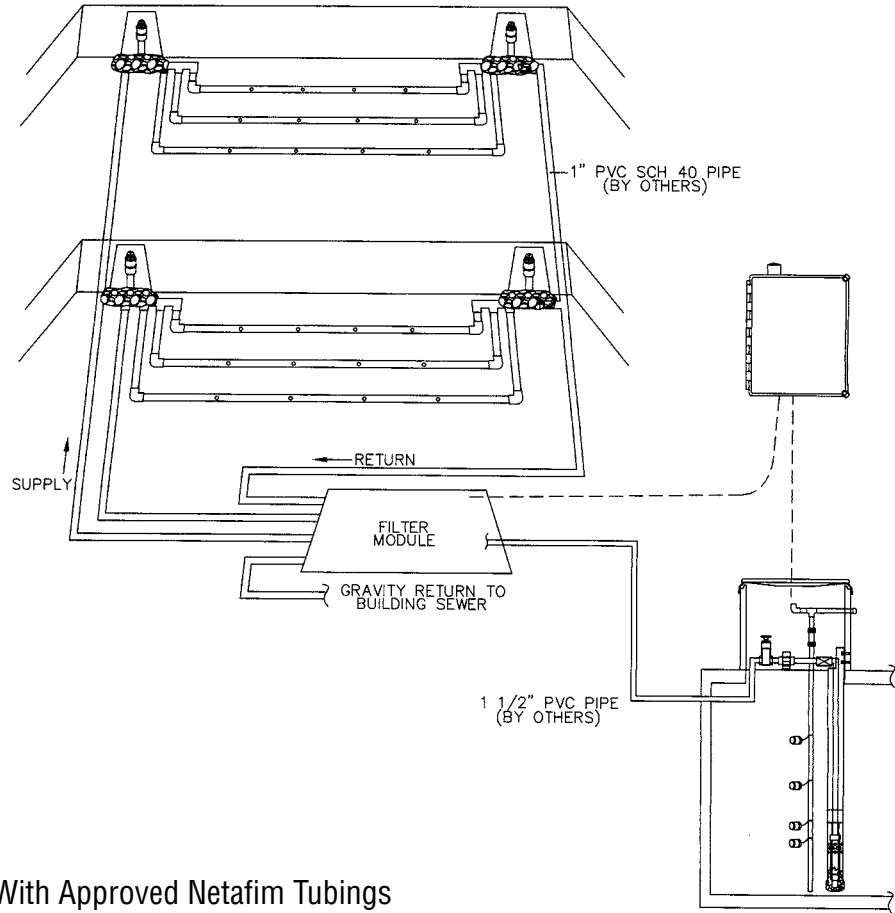


AMERICAN



PERC-RITE® WASTEWATER DRIP DISPERSAL SYSTEMS

DESIGNERS' GUIDE



Use With Approved Netafim Tubings

PATENT NO. 5,200,065

PATENT NO. 5,984.574B

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 and 5,984,574B

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INTRODUCTION

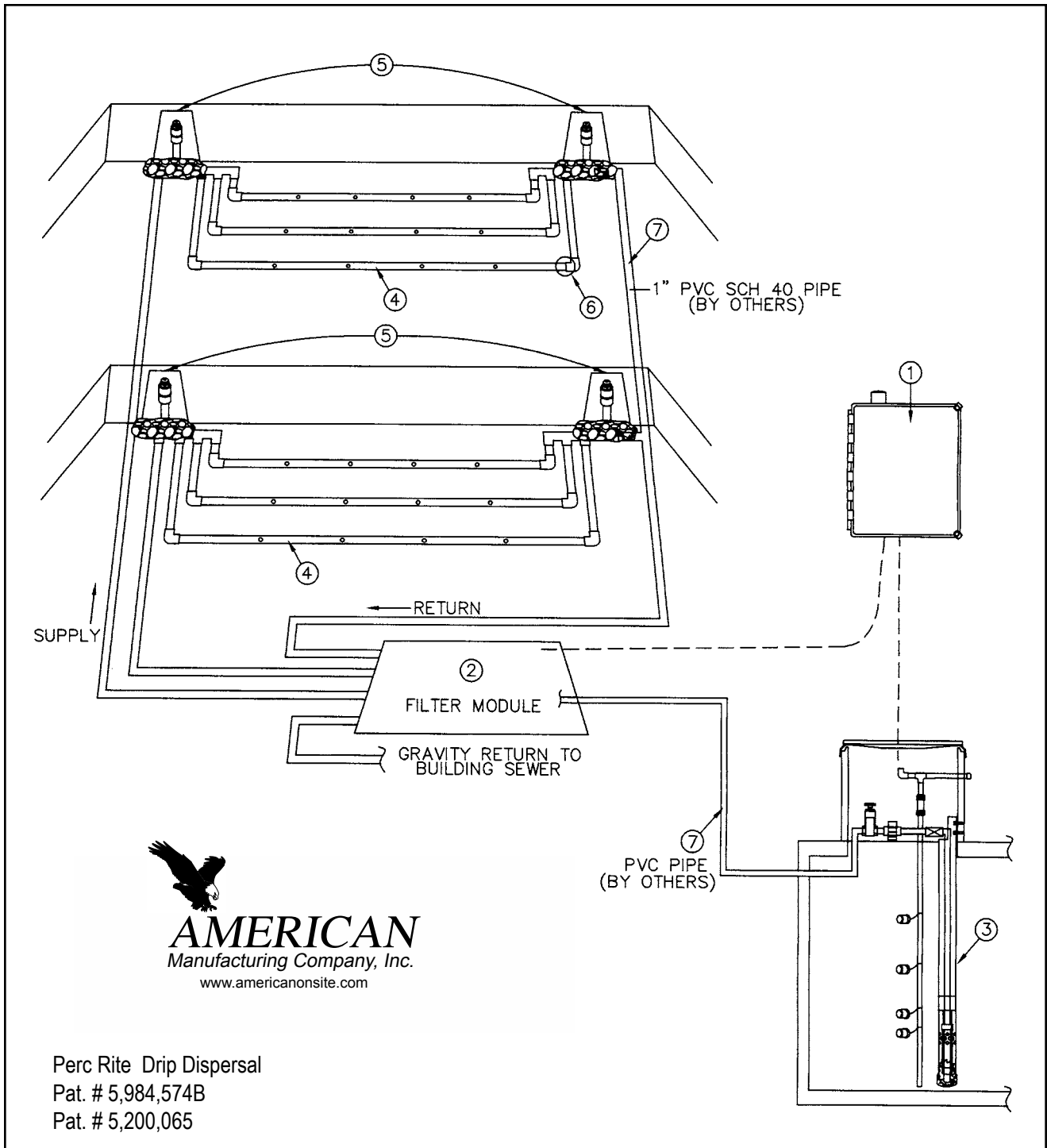
This ***Perc-Rite® Drip System Designers' Guide*** is for the non-engineer designer. Procedures have been developed to size, layout and design a ***Perc-Rite® Drip*** system using tables instead of performing extensive calculations. The tables have conditions which allow the designer considerable flexibility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

State regulations require varying effluent treatment quality for onsite 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 soil type on **line 2** and selected loading rate area on **line 7** of the worksheet.
- 3. DELINEATE AREA** - On a site plan or a site sketch, the designer should lay out 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 9**.
- 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 6**.
- 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”.

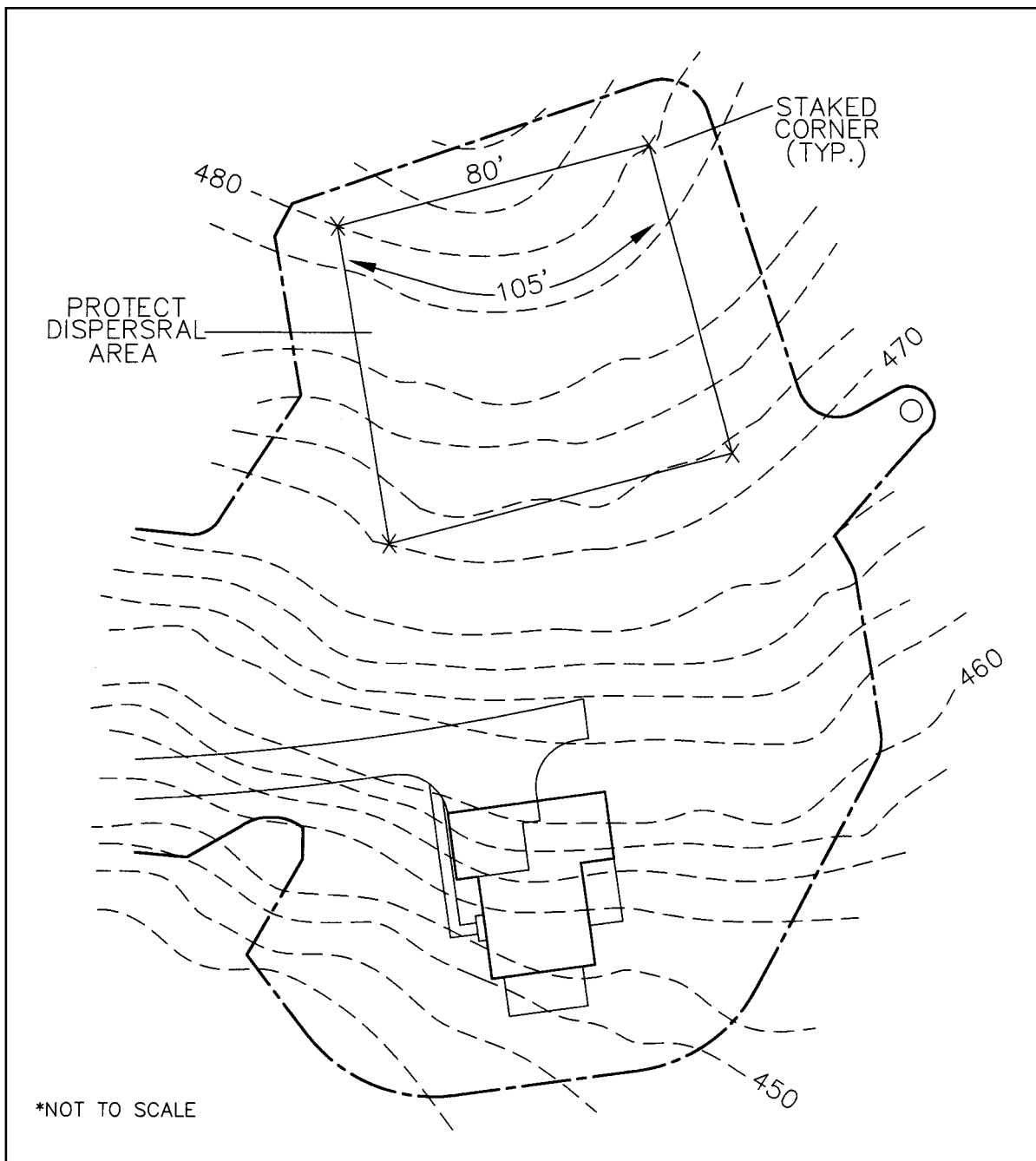
PERC-RITE® WORKSHEET - Dispersal system design worksheet for residential systems.

	Y () ()	N () ()	Are supply and return pipes 1"?
			Is the lift to the HU <8' and the run to the HU <30' with 1-1/2" pipe?
			Septic () or Secondary () ?
1	Anaerobic Aerobic	() ()	Effluent Quality
2	_____	Soil Texture/ Structure	Found in column 1 on the Loading Rate Chart (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	_____	Area (gal/ ft ² /day) per code	Area loading rate required to treat and disperse wastewater. (See Loading Rate Chart)
8	_____	Min. Area Calculation	Total land area needed to disperse wastewater. (line 3a / line 7)
9	_____	Total LF Tubing	Required total linear feet of tubing to treat and disperse wastewater. (line 8 / 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	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.



AMERICAN MANUFACTURING

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NATIONAL LOADING RATE CHART

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

SOIL LOADING RATE TABLE

This is based on a standard tubing spacing between runs of 2 feet on center. Therefore a typical area-loading rate would be a number that is one half the linear feet loading rate number. For example, for a 1.2 gallons/L.ft./day rate would be equivalent to 0.6 gallons/ft²/day. Spacing may be changed for specific site conditions. For example: a tubing-loading rate of 0.4 is an area load of 0.2. By placing the tubing 1' on center, the resulting area loading would be at 0.4, or 1/2 of the area. This can only be done with proper site and soil evaluation.

Soil Textures	Soil Structure	ANAEROBIC		AEROBIC	
		Maximum Monthly Average BOD ₅ > 30mg/L BOD < 220mg/L		Maximum Monthly Average BOD ₅ < 30mg/L	
		(gal./ft ² /day)	(gal./LF/day)	(gal./ft ² /day)	(gal./LF/day)
Coarse sand or coarser	N/A	.3 - .4	.6 - .8	.3 - 1.6	.6 - 3.2
Loamy coarse sand	N/A	.25 - .3	.5 - .6	.25 - 1.4	.5 - 2.8
Sand	N/A	.25 - .3	.5 - .6	.25 - 1.2	.5 - 2.4
Loamy sand	Weak to strong	.25 - .3	.5 - .6	.25 - 1.4	.5 - 2.4
Loamy sand	Massive	.15 - .2	.3 - .4	.15 - .7	.3 - 1.4
Fine sand	Moderate to strong	.25 - .3	.5 - .6	.25 - .9	.1 - 1.8
Fine sand	Massive or weak	.15 - .2	.3 - .4	.15 - 0.6	.3 - 1.2
Loamy fine sand	Moderate to strong	.2 - .3	.4 - 0.6	.2 - 0.9	.4 - 1.8
Loamy fine sand	Massive or weak	.15 - .2	.3 - .4	.15 - .6	.3 - 1.2
Very fine sand	N/A	.15 - .2	.3 - .4	.15 - .6	.3 - 1.2
Loamy very fine sand	N/A	.15 - 0.2	.3 - .4	.15 - .6	.3 - 1.2
Sandy loam	Moderate to strong	.15 - 0.2	.3 - .4	.15 - 1	.3 - 2
Sandy loam	Weak, weak platy	.15 - 0.2	.3 - .4	.15 - .6	.3 - 1.2
Sandy loam	Massive	< .1	< .2	.1 - .5	.2 - 1
Loam	Moderate to strong	.15 - .2	.3 - .4	.15 - .9	.3 - 1.8
Loam	Weak, weak platy	.1 - 0.2	.2 - .4	.1 - .6	.2 - 1.2
Loam	Massive	< .1	< .2	.1 - .5	.2 - 1
Silt loam	Moderate to strong	.15 - .2	.3 - .4	.15 - .8	.3 - 1.6
Silt loam	Weak, weak platy	< .1	< .2	.1 - .3	.2 - .6
Silt loam	Massive	0	0	.1 - .2	.2 - .4
Sandy clay loam	Moderate to strong	.15 - .2	.3 - .4	.15 - .6	.3 - 1.2
Clay loam	Weak, weak platy	< .1	< .2	.1 - .3	.2 - .6
Clay loam	Moderate to strong	.1 - .2	.2 - .4	.1 - .6	.2 - 1.2
Silty clay loam	Weak, weak platy	< .1	< .2	.1 - .3	.2 - .6
Silty clay loam	Massive	0	0	0	0
Silty clay loam	Moderate to strong	.1 - .2	.2 - .4	.1 - .6	.2 - 1.2
Sandy clay	Moderate to strong	< .1	< .2	.1 - .3	.2 - .6
Sandy clay	Massive to weak	0	0	0	0
Clay	Moderate to strong	< .1	< .2	.1 - .3	.2 - .6
Clay	Massive to weak	0	0	0	0
Silty clay	Moderate to strong	< .1	< .2	.1 - .3	.2 - .6
Silty clay	Massive to weak	0	0	0	0

Site suitability, loading rate, and installation depth determination must be assigned based on thorough site/soil evaluation. The characterization of a soil based receiver site involves a systematic evaluation by trained individuals. Conditions to consider consist of a variety of topographic and soil conditions such as landscape position, slope, soil depth, depth to water table, depth to restriction, soil consistence, clay mineralogy, compaction, density, and site geometry and uniformity.

Drip disposal lends itself to shallow installation. Typical depths are from 6-18", with 8-10" preferred and 18-24" installations infrequent. Separation to limitations should always be maximized while maintaining a consistent depth on contour in a permeable horizon.

Refer to state and local regulatory requirements for appropriate site suitability guidance.

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 1 2 2
 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.

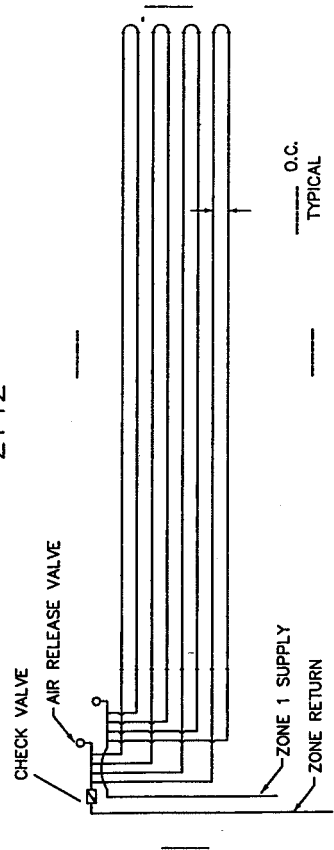
EXAMPLE 2

(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 1 4 2
 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							Z223	1200	Z232	1800		Z341	2400	Z341	2700	Z341	3000	Z341	3600
13							Z232	1200	Z322	1800		Z431	2400	Z431	2700	Z431	3000	Z431	3600
14							Z271	1400											
15									Z351	1875		Z351	3000	Z351	3375				
16							Z224	1200	Z242	1600		Z441	3200	Z441	3600	Z441	4000	Z441	4800
17																			
18							Z233	1350	Z332	2250									
19																			
20							Z252	1500	Z451	2500		Z451	4000	Z451	4500				
21							Z371	2100											
22																			
23																			
24		Z226	1200	Z234	1800	Z243	2400	Z342	3000	Z342	3600								
25				Z324	1800	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	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
650	3.5	6.7	8.3	9.9	11.5	13.1	14.7	16.3	17.9
700	3.8	7.0	8.6	10.2	11.8	13.4	15.0	16.6	18.2
750	4.1	7.3	8.9	10.5	12.1	13.7	15.3	16.9	18.5
800	4.3	7.5	9.1	10.7	12.3	13.9	15.5	17.1	18.7
850	4.6	7.8	9.4	11.0	12.6	14.2	15.8	17.4	19.0
900	4.9	8.1	9.7	11.3	12.9	14.5	16.1	17.7	19.3
950	5.1	8.3	9.9	11.5	13.1	14.7	16.3	17.9	19.5
1000	5.4	8.6	10.2	11.8	13.4	15.0	16.6	18.2	19.7
1050	5.7	8.9	10.5	12.1	13.7	15.3	16.9	18.5	20.0
1100	6.0	9.2	10.8	12.4	14.0	15.6	17.2	18.8	20.3
1150	6.2	9.4	11.0	12.6	14.2	15.8	17.4	19.0	20.5
1200	6.5	9.7	11.3	12.9	14.5	16.1	17.7	19.3	20.7

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	98	88	75	74	79	77			
4	96	84	69	66	70	68			
5	94	81	63	58	61	59			
6	92	77	57	51	52	49			
7	90	73	50	43	44	40			
8	88	70	44	35	35	31			
9	86	66	38	27	26	21			
10	84	63	32	19	17				
11	82	59	26	12					
12	80	55	20						
13	78	52	14						
14	76	48	8						
15	74	45	2						
16	72	41							
17	70	37							
18	68	34							
19	66	30							
20	64	27							
21	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	400	Z122	500	Z122	500	Z141	800	Z141	800	Z141	800	Z141	1000	Z221	1000
5					Z141	400	Z141	500	Z141	500	Z151	625	Z151	625	Z151	625	Z151	625	Z151	625
6					Z151	500	Z151	625	Z151	625	Z132	750	Z132	750	Z132	750	Z132	750	Z132	750
7					Z123	450	Z123	600	Z123	600	Z132	750	Z132	750	Z132	750	Z132	750	Z132	750
8					Z132	450	Z132	600	Z132	600	Z142	1000	Z142	1000	Z142	1000	Z142	1000	Z142	1000
9					Z142	400	Z142	600	Z142	600	Z222	1000	Z222	1000	Z222	1000	Z222	1000	Z222	1000
10					Z142	400	Z142	600	Z142	600	Z241	800	Z241	800	Z241	800	Z241	800	Z241	800
11					Z133	450	Z133	675	Z133	900	Z133	900	Z133	900	Z133	900	Z133	900	Z133	900
12					Z125	500	Z125	750	Z125	1000	Z251	1250	Z251	1250	Z251	1250	Z251	1250	Z251	1250
13					Z152	500	Z152	750	Z152	1000	Z251	1250	Z251	1250	Z251	1250	Z251	1250	Z251	1250
14					Z126	600	Z126	900	Z126	1200	Z223	1500	Z223	1500	Z223	1500	Z223	1500	Z223	1500
15					Z134	600	Z134	900	Z134	1200	Z223	1500	Z223	1500	Z223	1500	Z223	1500	Z223	1500
16					Z143	600	Z143	900	Z143	1200	Z223	1500	Z223	1500	Z223	1500	Z223	1500	Z223	1500
17					Z144	800	Z144	1200	Z144	1600	Z242	2000	Z242	2000	Z242	2000	Z242	2000	Z242	2000
18					Z224	800	Z224	1200	Z224	1600	Z242	2000	Z242	2000	Z242	2000	Z242	2000	Z242	2000
19					Z242	800	Z242	1200	Z242	1600	Z242	2000	Z242	2000	Z242	2000	Z242	2000	Z242	2000
20					Z136	900	Z136	1350	Z136	1800	Z233	1800	Z233	1800	Z233	1800	Z233	1800	Z233	1800
21					Z233	900	Z233	1350	Z233	1800	Z233	1800	Z233	1800	Z233	1800	Z233	1800	Z233	1800
22					Z145	1000	Z145	1500	Z145	2000	Z242	2000	Z242	2000	Z242	2000	Z242	2000	Z242	2000
23					Z225	1000	Z225	1500	Z225	2000	Z242	2000	Z242	2000	Z242	2000	Z242	2000	Z242	2000
24					Z252	1000	Z252	1500	Z252	2000	Z242	2000	Z242	2000	Z242	2000	Z242	2000	Z242	2000
25					Z226	1200	Z226	1800	Z226	2400	Z234	1800	Z234	1800	Z234	1800	Z234	1800	Z234	1800
26					Z234	1200	Z234	1800	Z234	2400	Z243	1800	Z243	1800	Z243	1800	Z243	1800	Z243	1800
27					Z243	1200	Z243	1800	Z243	2400	Z243	1800	Z243	1800	Z243	1800	Z243	1800	Z243	1800
28					Z235	1500	Z235	2250	Z235	3000	Z243	1800	Z243	1800	Z243	1800	Z243	1800	Z243	1800
29					Z253	1500	Z253	2250	Z253	3000	Z243	1800	Z243	1800	Z243	1800	Z243	1800	Z243	1800
30					Z244	1600	Z244	2400	Z244	3200	Z244	1600	Z244	1600	Z244	1600	Z244	1600	Z244	1600
31					Z236	1800	Z236	2700	Z236	3600	Z244	1600	Z244	1600	Z244	1600	Z244	1600	Z244	1600
32					Z244	1600	Z244	2400	Z244	3200	Z244	1600	Z244	1600	Z244	1600	Z244	1600	Z244	1600
33					Z236	1800	Z236	2700	Z236	3600	Z244	1600	Z244	1600	Z244	1600	Z244	1600	Z244	1600
34					Z245	2000	Z245	3000	Z245	4000	Z245	2000	Z245	2000	Z245	2000	Z245	2000	Z245	2000
35					Z245	2000	Z245	3000	Z245	4000	Z245	2000	Z245	2000	Z245	2000	Z245	2000	Z245	2000
36					Z245	2000	Z245	3000	Z245	4000	Z245	2000	Z245	2000	Z245	2000	Z245	2000	Z245	2000
37					Z245	2000	Z245	3000	Z245	4000	Z245	2000	Z245	2000	Z245	2000	Z245	2000	Z245	2000
38					Z245	2000	Z245	3000	Z245	4000	Z245	2000	Z245	2000	Z245	2000	Z245	2000	Z245	2000
39					Z245	2000	Z245	3000	Z245	4000	Z245	2000	Z245	2000	Z245	2000	Z245	2000	Z245	2000
40					Z245	2000	Z245	3000	Z245	4000	Z245	2000	Z245	2000	Z245	2000	Z245	2000	Z245	2000

DOSING & FF FLOW TABLE (GPM)
12 GPM SEMI-AUTOMATIC DRIP SYSTEMS: 24" EMITTER SPACING

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

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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.	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						
GPD	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						
300	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						
320	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	5.88	5.64	8.30	6.00	5.87	7.07	5.88						
340	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	6.41	6.10	8.92	6.46	6.33	7.63	6.41						
360	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						
380	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						
400	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						
420	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						
440	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						
450	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						
460	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						
480	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	5.84	9.69	9.56	11.54	6.93	5.64	5.84	9.69	9.56	11.54	6.93						
500	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	6.15	10.15	10.02	12.10	7.33	5.95	6.15	10.15	10.02	12.10	7.33						
520	10.25	6.46	6.61	6.48	5.39	7.73	6.25	5.57	6.61	6.48	5.39	6.58	6.25	6.46	10.61	10.48	5.39	7.73	6.25	6.46	10.61	10.48	5.39	7.73						
540	10.71	6.76	6.92	6.79	5.67	8.12	6.56	5.84	6.92	6.79	5.67	4.56	6.56	6.76	11.07	10.95	5.67	4.56	6.56	6.76	11.07	10.95	5.67	4.56						
560	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	11.53	11.41	5.95	4.82	6.87	7.07	11.53	11.41	5.95	4.82						
580	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	12.00	11.87	6.23	5.09	7.18	7.38	12.00	11.87	6.23	5.09						
600	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	7.69	12.46	12.33	6.51	5.35	7.48	7.69	12.46	12.33	6.51	5.35						
620	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	5.41	7.99	5.64	6.79	5.62	7.79	6.93	5.41	7.99	5.64	6.79					
640	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	8.30	6.00	5.87	7.07	5.88	8.10	8.30	6.00	5.87	7.07	5.88						
660	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	8.61	8.61	6.32	6.14	8.41	7.48	8.61	8.61	6.32	6.14						
680	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	8.92	8.92	6.57	6.41	8.71	7.75	8.92	8.92	6.57	6.41						
700	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	6.33	5.63	6.82	6.67	9.02	5.63	6.33	5.63	6.82	6.67						
720	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	6.56	5.84	7.07	6.93	9.33	5.84	6.56	5.84	7.07	6.93						
750	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	7.26	7.14	8.60	7.33	9.79	6.15	7.26	7.14	8.60	7.33						
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	1200	990						

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

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

4	3 ZONES		4 ZONES	
	Doses/day/zone	Standard Peak	Doses/day/zone	Standard Peak
3	240	144	120	72
2	360	216	160	96
1	720	432	240	144
			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	9.33	8.40	6.84
380	228	9.95	7.80	8.95	9.20	9.95	7.80	8.95	10.66	8.95	7.33
400	240	10.56	8.29	9.50	9.79	10.56	8.29	9.50	11.27	9.50	7.82
420	252	11.18	8.78	10.06	10.31	11.18	8.78	10.06	11.88	10.31	8.31
440	264	11.79	9.27	10.61	10.86	11.79	9.27	10.61	12.49	10.86	8.80
450	270	12.10	9.59	10.93	11.13	12.10	9.59	10.93	12.80	11.13	9.05
460	276	12.41	9.91	11.20	11.40	12.41	9.91	11.20	13.11	11.40	9.30
480	288	13.02	10.40	11.69	11.89	13.02	10.40	11.69	13.72	11.89	9.79
500	300	13.63	10.89	12.18	12.38	13.63	10.89	12.18	14.33	12.38	10.28
520	312	14.24	11.38	12.67	12.87	14.24	11.38	12.67	14.94	12.87	10.77
540	324	14.85	11.87	13.16	13.36	14.85	11.87	13.16	15.55	13.36	11.26
560	336	15.46	12.36	13.65	13.85	15.46	12.36	13.65	16.16	13.85	11.75
580	348	16.07	12.85	14.14	14.34	16.07	12.85	14.14	16.77	14.34	12.24
600	360	16.68	13.34	14.63	14.83	16.68	13.34	14.63	17.38	14.83	12.73
620	372	17.29	13.83	15.12	15.32	17.29	13.83	15.12	17.99	15.32	13.22
640	384	17.90	14.32	15.61	15.81	17.90	14.32	15.61	18.60	15.81	13.71
660	396	18.51	14.81	16.10	16.30	18.51	14.81	16.10	19.21	16.30	14.20
680	408	19.12	15.30	16.59	16.79	19.12	15.30	16.59	19.82	16.79	14.69
700	420	19.73	15.79	17.08	17.28	19.73	15.79	17.08	20.43	17.28	15.18
720	432	20.34	16.28	17.57	17.77	20.34	16.28	17.57	21.04	17.77	15.67
750	450	21.27	17.21	18.50	18.70	21.27	17.21	18.50	22.00	18.70	16.64
TOTAL L.F. IN ZONE=		600	900	1000	750	600	900	1000	900	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	7.69	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	9.33	8.40	6.84
380	228	9.95	7.80	8.95	9.20	9.95	7.80	8.95	10.66	8.95	7.33
400	240	10.56	8.29	9.50	9.79	10.56	8.29	9.50	11.27	9.50	7.82
420	252	11.18	8.78	10.06	10.31	11.18	8.78	10.06	11.88	10.31	8.31
440	264	11.79	9.27	10.61	10.86	11.79	9.27	10.61	12.49	10.86	8.80
450	270	12.10	9.59	10.93	11.13	12.10	9.59	10.93	12.80	11.13	9.05
460	276	12.41	9.91	11.20	11.40	12.41	9.91	11.20	13.11	11.40	9.30
480	288	13.02	10.40	11.69	11.89	13.02	10.40	11.69	13.72	11.89	9.79
500	300	13.63	10.89	12.18	12.38	13.63	10.89	12.18	14.33	12.38	10.28
520	312	14.24	11.38	12.67	12.87	14.24	11.38	12.67	14.94	12.87	10.77
540	324	14.85	11.87	13.16	13.36	14.85	11.87	13.16	15.55	13.36	11.26
560	336	15.46	12.36	13.65	13.85	15.46	12.36	13.65	16.16	13.85	11.75
580	348	16.07	12.85	14.14	14.34	16.07	12.85	14.14	16.77	14.34	12.24
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750	450	21.27	17.21	18.50	18.70	21.27	17.21	18.50	22.00	18.70	16.64
TOTAL L.F. IN ZONE=		600	900	1000	750	600	900	1000	900	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:

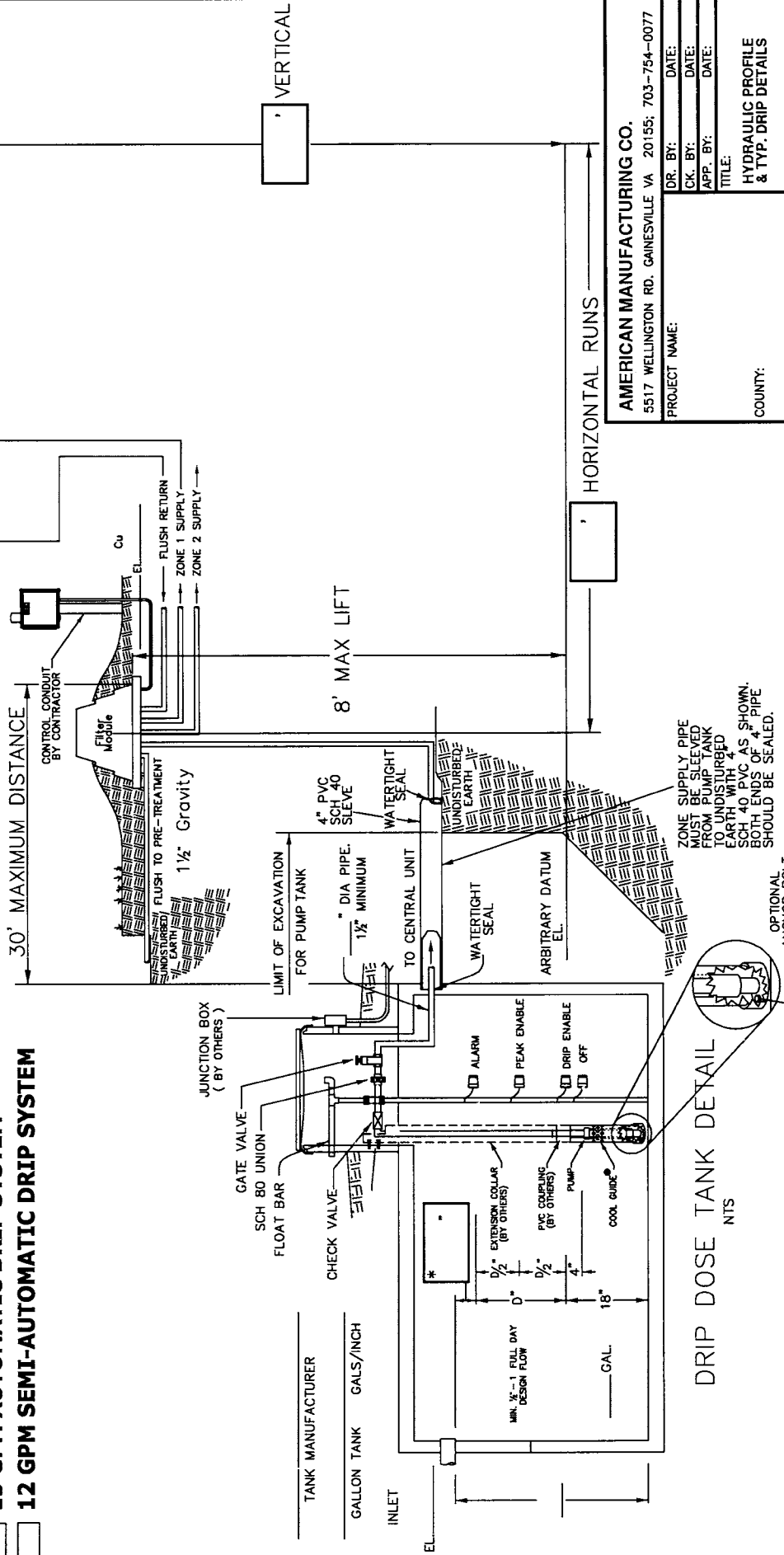
	Doses/day/zone	REST TIMES	
		Standard (min)	Peak (min)
2	2	360	216
3	3	240	144
4	4	180	108
5	5	144	86
6	6	120	72



AMERICAN MANUFACTURING

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

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



DRIP DOSE TANK DETAIL
NTS

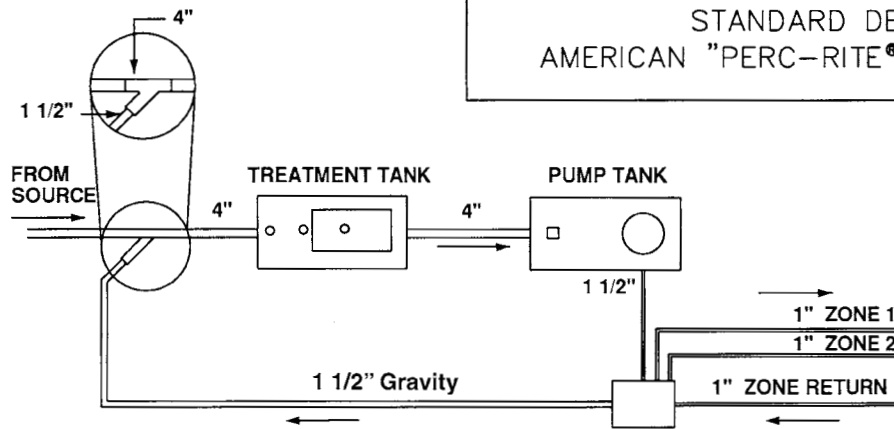
AMERICAN MANUFACTURING CO.	
5517 WELLINGTON RD. GAINESVILLE VA 20155; 703-754-0077	
PROJECT NAME:	
DR. BY:	DATE:
CK. BY:	DATE:
APP. BY:	DATE:
TITLE:	
COUNTY:	

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

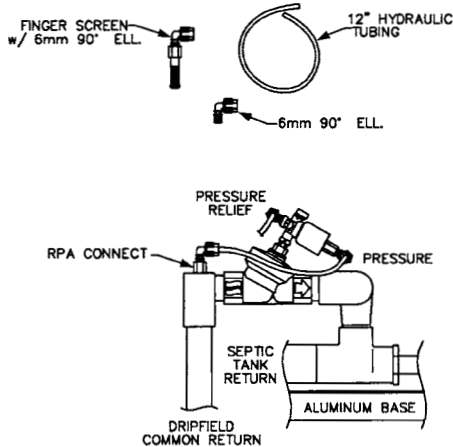
S:\Staff\KevinU\AUTOCAD\HYD&DRIP\11 Driphydrof pg 11.dwg

SHEET OF

STANDARD DETAILS
AMERICAN "PERC-RITE®" DRIP SYSTEM

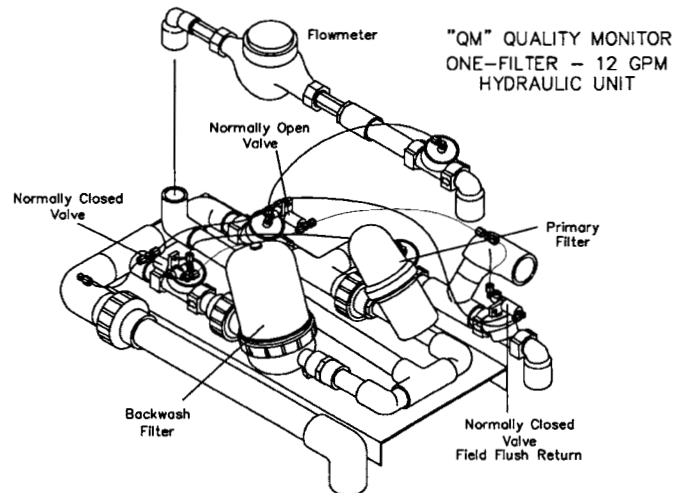
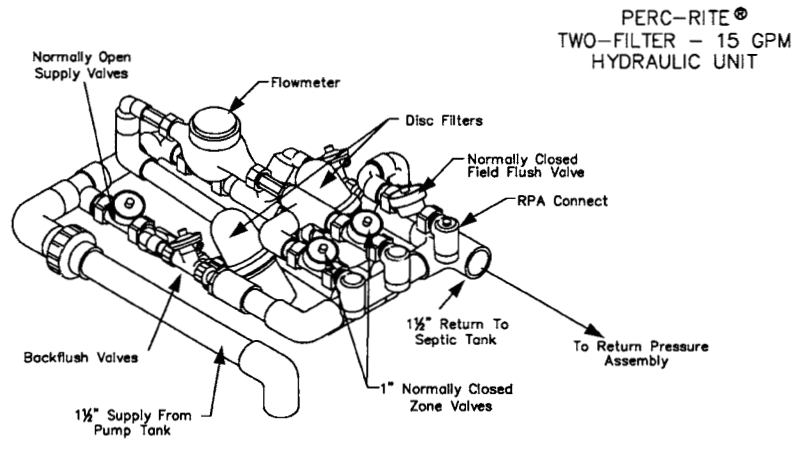


TANK EQUIPMENT AREA
SCHEMATIC PLAN



RETURN PRESSURE ASSEMBLY (RPA)
NTS

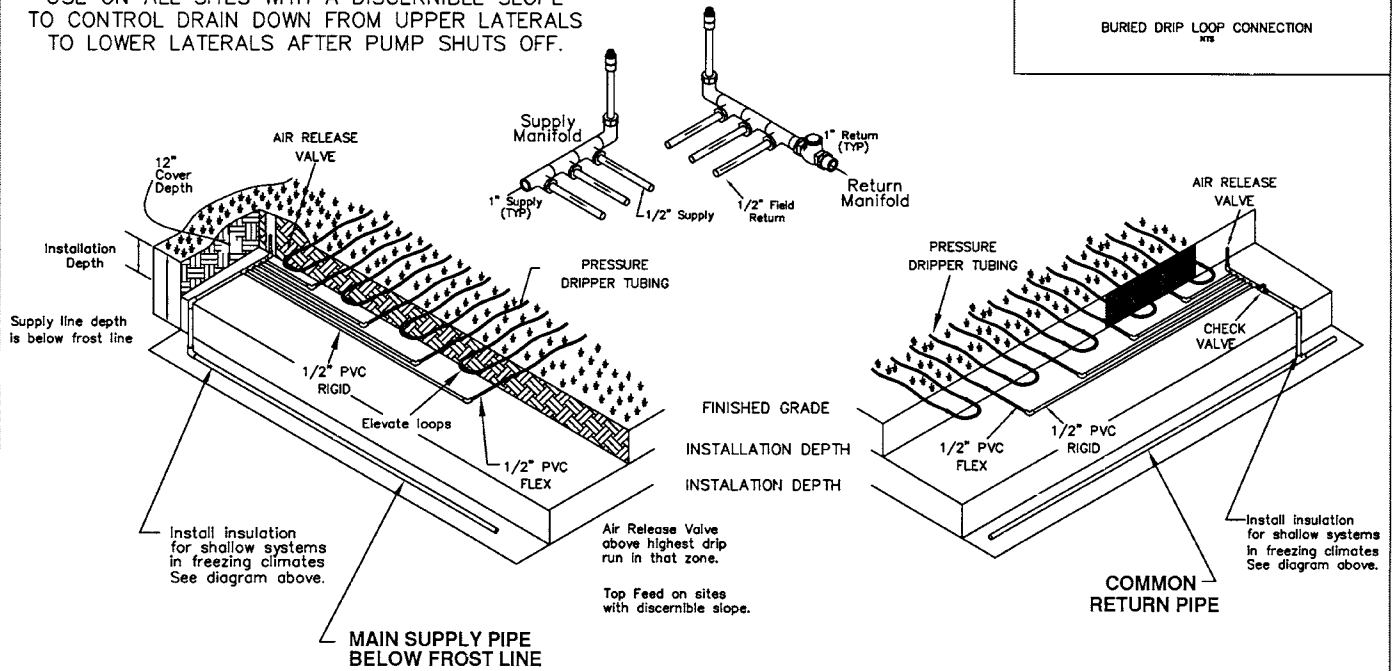
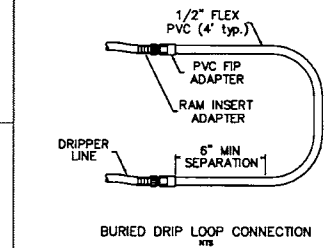
NOTE:
IN THE EVENT THE DRIP ZONES ARE OVER 10 FEET IN VERTICAL ELEVATION ABOVE THE HYDRAULIC UNIT, INSTALL A "RETURN PRESSURE ASSEMBLY." THE ASSEMBLY IS TO BE USED TO PREVENT THE RETURN LINE FROM DRAINING AFTER OR DURING A DOSE. REMOVE THE ZONE RETURN CONNECTION AND REINSTALL A SHORT 1" NIPPLE IN THE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



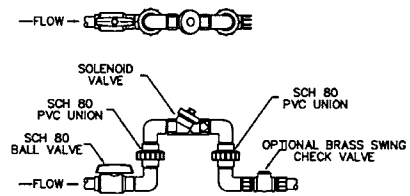
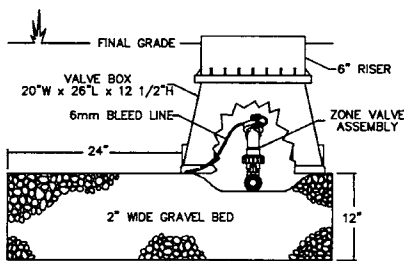
STANDARD DETAILS AMERICAN "PERC-RITE®" DRIP SYSTEM

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.



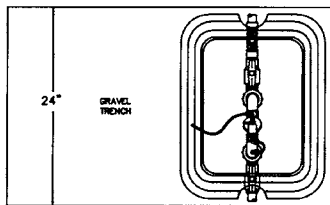
RESIDENTIAL Patent No. 5,984,574



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

<p>ASD152-S122</p> <p>2 ZONE DRIP W/ SIMPLEX 2 FILTER, 2-ZONE CONTROL PANEL</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">CENTRAL UNIT EQUIP PACKAGES</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	CENTRAL UNIT EQUIP PACKAGES				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>ASD153-S124</p> <p>3 ZONE DRIP W/ SIMPLEX 2 FILTER, 4-ZONE CONTROL PANEL</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">CENTRAL UNIT EQUIP PACKAGES</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	CENTRAL UNIT EQUIP PACKAGES				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

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
DP1-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



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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 | _____ | _____ |
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| 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, 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.



AMERICAN
Manufacturing Company, Inc.
www.americanonsite.com



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.



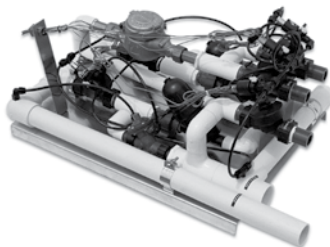
Cool Guide™



Bull Run™ Valve



Control Panels



Hydraulic Unit



Dial-A-Flow™



Drip Tubing

Toll Free: 1-800-345-3132

P.O. Box 549, Manassas, VA 20180