



AMERICAN PERC-RITE®

CALC TOOL WORKSHEET INSTRUCTIONS:

The Perc-Rite® Design system features support and certification from **AMERICAN** for the most **COMPETITIVE** and **EFFICIENT** Code compliant Drip System for reporting and long-term serviceability.

CALC TOOL Worksheet Four Simple Steps:

1. FILL IN THE YELLOW AND GREY CELLS WITH STANDARD SITE EVALUATION INFO.
2. LOOKUP IN TABLES FOR GREEN CELL INFO.
3. AUTO CALCULATION COMPLETES DESIGN
4. SELECT THE COMPETITIVE PACKAGED SYSTEM PRINT OUTS



VIRGINIA PERC-RITE®

DESIGN SUBMITTAL

Perc-Rite® CalcTool version 2.0

American Manufacturing Company, Inc.

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

JOB NAME:

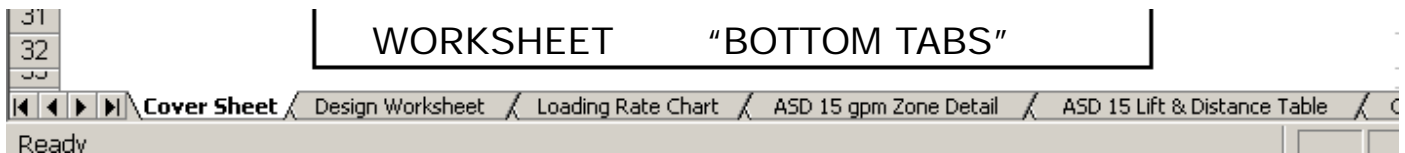
DATE:

OWNER:

DESIGNER:

STEP by STEP PERC-RITE® DRIP DESIGN

The Perc-Rite® Calc Tool guides the designer through a Simple process to determine the suitability of the proposed layout and design. After performing a standard site evaluation and site specific layout, simply input the information in the spreadsheet cells to confirm system design. The bottom tabs of the Calc Tool as shown below provide easy access to the five necessary worksheets and charts for evaluating layout.



PERC-RITE® DRIP DESIGN

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 the "**GREENEST**" method for subsurface distribution of the wastewater effluent.

The **Perc-Rite® Drip Design System** will accommodate virtually any type of pretreatment process, whether septic tank (anaerobic), aerobic, lagoon, or any type of treatment facility. The "Calc-Tool" is an easy to use .XLS spread sheet that guides the designer through a **Perc-Rite® Design** and is located on our web page;

<http://www.americanonsite.com/american/dg-promo1.html>

To Order Call: (800) 345-3132

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VIRGINIA WORKSHEET - Dispersal system design worksheet for residential systems.

line #	INPUTS	Select One		You must be able to answer YES to both questions in order to continue.			
		no		Are supply and return pipes 1"?			
		no		Is the lift to the HU <8' and the run to the HU <30' with 1-1/2" pipe?			
1	Septic	Select a design basis.		ASD15 Units are septic or secondary. Washdown units are secondary or better.			
2	60	Perc Rate		Found in column 1 on the Loading Rate Chart. (given by site evaluator)			
3	450	Select One		Design quantity of wastewater to disperse.			
		GPD					
4	80	Contour Run Length		Enter the tubing length along contour. If run length is not on table, use the actual run length. Example: 85 ft.			
5	100	Supply LF		Length of supply line between hydraulic unit and farthest zone.			
6	15	Lift Ft.		Vertical lift from off level in the pump chamber and highest zone elevation.			
7	0.461	Area (gpd/ft ²) per code	Tab over from Perc Rate	Trench Bottom loading rate required to treat and disperse wastewater. This line is to be input from Loading Rate Chart.			
			60 on Loading Rate Chart				
8	1464	Minimum LF of Tubing		Minimum tubing needed to disperse wastewater based on perc rate.			
9	18.30	Calculated Runs		Determines number of runs (Total LF / Contour RL). Rounds up to the next whole number. Reference Zone Detail Table.			
	19	Min. # Runs					
10	Z	L	R	Zone Detail	ASD 15: 252	On Zone Detail Table, cross the next highest Run Length (ft) from 80 with the row for at least 19 runs	Use the ASD 15 Zone Detail Table. Select zone detail from column with next higher Contour Run Length and with equal or greater # Runs. You may input your Zone Detail # in the indicated cell next to the chart. It will then appear in the second column to the left on this worksheet.
	Z	2	5				
11	20	Actual # Runs		Determined from selected Zone Detail.			
12	24	Proposed Spacing (inches)		Based on available area and site condition.			
13	40	Down Slop Width (ft)		Calculated from runs and run spacing.			
14	3200	Area Calculated (ft ²)		Calculated from runs, run spacing, and contour run length.			
15	74	Max. Lift Allowed	ASD 15: 74	On Lift & Distance Table, cross the Supply/Return 100 with the column for 5 laterals	Use the ASD 15 Lift & Distance Table. You may input your Lift in the indicated cell next to the chart. It will then appear in the second column to the left on this worksheet.		
			Select which Lift & Distance table you used in the box to the left.				
16	1600	LF Provided		Total linear feet of tubing Provided to disperse wastewater.			
17	800	LF/Zone		Total linear feet per zone.			
18	NO	Will zone flush?		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.			

*In line # 11, Z = # of zones, L = laterals per zone, R = runs per lateral

PERC-RITE® DESIGN PROCEDURES - for ENGINEERS & DESIGNER'S

line **SIZE PIPE** — Confirm the the pipe size is 1" by clicking the grey cells under "Select One" and say "Yes" to confirm. If you cannot say yes the spreadsheet will not calculate the suitability and you must do manual calculations (Contact our staff engineers)

1. **TREATMENT TYPE** — Determine the type of treatment, anaerobic, TL-2 or TL-3, fill in **Line 1**.
2. **PERC RATE** — Fill in the soil type in **Line 2**. This will highlight the appropriate soil class on the "Bottom Tab" Labeled "Loading Rate Chart". Go to the chart, select the appropriate rate and fill it in on that chart's highlighted box.
3. **DEMAND ANALYSIS** — Determine the gallons per day the system needs to disperse, fill in **Line 3**.
4. **Contour Run Length** — Determine the length across contour and fill in **Line 4**, this will highlight the appropriate "run lgth" and highlighted on the "ASD 15 gpm Zone Detail" "Bottom Tab".
5. **Supply LF** — Determine the length of the supply pipe between the filter unit and the farthest Zone. Fill in **Line 5**.
6. **Lift Ft.** — Determine the vertical lift (also called Static Lift) from the off float to the field, Fill in **Line 6**.
7. **Loading Rate Chart** — Click on the "Bottom Tab" and determine the loading rate, the highlighted cell help guide the appropriate selection. Fill in **Line 7**.
8. **CALCULATED FIELDS 8- 9** — These cells calculate the "Area", the "Linear feet of tubing" and "Runs" necessary for a suitable design. Review the information in the cell to make sure they make sense for the specific site.
9. **Zone Detail** — Go to the "Bottom Tab" to determine the appropriate Zone Detail form the highlighted "run lgth" column and the minimum number of runs. Enter the selected zone detail designation (such as "Z123") in the upper right input cell and return to the worksheet. This will memo the detail in the third column in this row. Then click on and change each number to reflect the appropriate number of zones, laterals and runs per lateral.
10. **Actual Runs** — Based on the Zone Detail the actual number of runs required is calculated in **Line 11**.
11. **Proposed Spacing** — Spacing from 12" to 24" may be used based on site conditions and if the number of runs can be installed. **Down Slope Width** and **Area Calculated** are displayed in **Line 13** and **Line 14**.
12. **ASD 15 Lift & Distance Table** — Go to the "Bottom Tab" to select the "Maximum Lift" for the layout. This value is determined by referencing the highlighted "Length of Run" and the "Number of Laterals" as shown below. The selected value must be input into the input box then return to worksheet.
13. **"Yes" or "No"** — Cells **16** and **17** show the Total linear feet provided and the linear feet per zone. The value in the last line, **Line 18** states if the layout is suitable.

ZONE DETAIL TABLE

The zone detail table below highlights the length of run on the top line and the minimum number of runs under the first column. In the event, for example, 85' contour length is laid out, then the 100 foot zone detail will be highlighted and should be used. The worksheet will however calculate using the 85' run.

15 GPM AUTOMATIC DRIP SYSTEMS: 24" EMITTER SPACING									
RUN LGTH	50	75	100	125	150	200	225	250	300
#RUN	ZD LF	ZD LF	ZD LF	ZD LF	ZD LF	ZD LF	ZD LF	ZD LF	ZD LF
2						Z121 400	Z121 450	Z121 500	Z121 600
3					Z131 450	Z131 600	Z131 675	Z131 750	Z131 900
4			Z122 400	Z122 500	Z122 600	Z141 800	Z141 900	Z141 1000	Z141 1200
			Z14 400	Z141 500	Z141 600	Z221 800	Z221 900	Z221 1000	Z221 1200

LIFT & DISTANCE TABLE

The American Calc Tool aids the designer in selecting the appropriate zone detail for typical sites. Once the area and contour length is determined the designer connects components with 1" pipe and with the lift and distance information, determines suitability.

Longest supply Manifold Length	LATERALS						
	2	3	4	5	6	7	
1 (feet)	300'	300'	300'	240'	165'	100'	
2							
3 100	98	88	75	74	79	77	
4 150	96	84	69	66	70	68	

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*PERC-RITE® DRIP -
The "GREENEST"
ALTERNATIVE*

OPERATING PARAMETERS

19	450	Peak Gallons per day	Maximum or design gallons per day.
20	270	Average Gallons per day	Average gallons per day. (calculated as 60% of Peak)
21	4.07	Dosing Flow (gpm)	Based on .61 gph per emitter.
22	12.07	Flushing Flow (gpm)	Flow to generate 2 fps at the distal end of each lateral.
23	36.4	Gallons per dose	The zone dose volume is 3.5 - 5 times the volume of the pipe.
24	12.36	Peak Design Doses per day	The total number of zone doses. Individual zone doses is this number divided by the number of zones.
25	431.5	Run Time (Seconds)	Estimated run time for dose gallons based on filtration capacity, flushing flow, and dosing rate
26	Zone	min	Default Standard Rest Time This is the rest time at average flow. The rest time is independent of run time. (60 min. rest = 24 doses per day)
	2	180	
27	Zone	min	Default Peak Rest Time This is the rest time at peak flow. The rest time is independent of run time. (60 min. rest = 24 doses per day)
	2	108	
28	Zone	min	(Recommended) Calculated Standard Rest Time This is the rest time at average flow. The rest time is independent of run time. (60 min. rest = 24 doses per day)
	2	194.13	
29	Zone	min	(Recommended) Calculated Peak Rest Time This is the rest time at peak flow. The rest time is independent of run time. (60 min. rest = 24 doses per day)
	2	116.48	
30	Zone	doses/day	(Recommended) Calculated Standard doses per day This is the total number of doses per day independent of the number of zones. The rest time is independent of run time. (450 gal. per day / 50 gal per dose = 9 doses per day) for a 2, 3, or 4 zone system.
	2	7.4	
31	Zone	doses/day	(Recommended) Calculated Peak doses per day This is the total number of doses per day independent of the number of zones. The rest time is independent of run time. (450 gal. per day / 50 gal per dose = 9 doses per day) for a 2, 3, or 4 zone system.
	2	12.4	
32	59	Available Excess TDH in Feet of Head	The minimum Total Dynamic Head (TDH) necessary to flush the zone is equal to the point on the pump curve at the flushing gpm minus the available excess TDH shown here.

INPUTS KEY

	given by engineer
	auto-computed
	looked up on tables
	user select

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AUTOMATIC OPERATING PARAMETERS

The above operating parameters are automatically calculated for your convenience. The recommended run times and rest times will operate the system at the most efficient point for a "fully loaded" system. The rest values may be lengthened for under used systems. The run times should remain the same since they are based on "equal" distribution calculations.

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