



DELAWARE COUNTY HEALTH DEPARTMENT Environmental Health Division

Division of Water & Sewage

SPECIFICATIONS FOR PROPOSED ON-LOT DRIP DISTRIBUTION SYSTEM

NAME: _____ APPLICATION #: _____

MUNICIPALITY: _____ DATE: _____

1.) Building Sewer: Type: _____ Diameter: _____

2.) Slope: _____ 0 – 8%
_____ 8.1- 14.9%
_____ 15 – 25%

3.) Primary Treatment: No. of Septic Tanks: _____ Vol.: 1st Compartment _____ gal.
Vol.: 2nd Compartment _____ gal.
No. of Aerobic Tanks: _____

Total Tank Capacity: _____ gal.

4.) Dosing Tank Capacity: _____ gal.

5.) Secondary Treatment:

_____ free access intermittent sand filter No. _____ Size _____
_____ buried intermittent sand filter No. _____ Size _____
_____ aerobic tank (FAST or Chromaglass) Size _____ Model# _____
_____ peat filter Size _____

6.) Drip Zones (minimum of two zones):

_____ number of bedrooms
_____ gpd
_____ soil linear load (max = 0.34 gpd/linear foot)
_____ required drip tubing (gpd/soil linear load)
_____ total drip tubing provided
_____ number of zones
_____ number of laterals
_____ average gpd (gpd x 0.5)
_____ horizontal linear load (average gpd/4.6 (standard))

7.) Hydraulic Unit (check one):

_____ two-disc filter 15 GPM unit
_____ three-disc filter 25 GPM unit

8.) Vertical Lift: _____ ft (from dose enable to base of hydraulic unit)

9.) Drip line spacing: _____ ft

10.) Equivalent Square ft: Zone # _____ Length _____ Width _____
Zone # _____ Length _____ Width _____

TOTAL SQUARE FEET OF ABSORPTION AREA = _____

* FOR ADDITIONAL ZONES, PLEASE ATTACH SPEC SHEETS

11.) Zone ____:

- _____ linear feet of drip tubing (cannot be >300 ft per lateral unless engineer design is approved Amby erican Manufacturing Inc. and is attached)
- _____ length of longest lateral
- _____ number of drip irrigation laterals or number of field flush connections
- _____ distance between drip tubing
- _____ distance between drip emitters (must be 2 feet apart)
- _____ field flush flow rate (1.6 gpm x number of lateral connections)
- _____ dosing rate (linear feet of drip tubing/distance between emitters x 0.61 gph/60 min/hr)
- S) _____ total drip tube forward flush flow rate required (dosing rate + field flush flow rate must meet hydraulic unit specifications)

12.) Zone ____:

- _____ linear feet of drip tubing (cannot be >300 ft per lateral unless engineer design is approved Amby erican Manufacturing Inc. and is attached)
- _____ length of longest lateral
- _____ number of drip irrigation laterals or number of field flush connections
- _____ distance between drip tubing
- _____ distance between drip emitters (must be 2 feet apart)
- _____ field flush flow rate (1.6 gpm x number of lateral connections)
- _____ dosing rate (linear feet of drip tubing/ distance between emitters x 0.61 gph/60 min./hr)
- _____ total drip tube forward flush flow rate required (dosing rate + field flush flow rate must meet hydraulic unit specifications)

13.) Friction Loss for Hydraulic Unit (need to use table 2A & 2B)

- _____ maximum total drip tube forward flush flow required (the largest # from all zones)
- E) _____ feet of head loss from hydraulic unit (from table 2A based on disc filter and maximum design drip tubing forward flushing flow rate)
 - _____ size of supply line (1.5" minimum)
 - _____ supply line equivalent fitting length (50 ft. of pipe)
 - _____ length of supply line (30 ft. max.)
 - _____ total equivalent length of pipe feet of pipe (supply line equivalent fitting length in feet + supply line in feet)
 - _____ supply line friction loss (total pipe x head loss due to friction using Chart 2B/100 feet of pipe (at 15 or 25 gpm)
 - _____ static head loss from the dose enabler (second float) to the hydraulic unit (8 feet max)
- F) _____ total feet of head loss (supply line friction loss + static head loss)

14.) Supply Lines Friction Loss

Zone ____:

- _____ zone total drip tubing forward flush flow rate required
- _____ size of supply line (confirm on spec sheet)
- _____ length of supply line plus 50 feet safety factor
- G) _____ supply line friction loss (total pipe x head loss due to friction using Chart 2B/100 feet of pipe) (round the "A" gpm up to the next gpm on the chart)

Zone ____:

- _____ zone total drip tubing forward flush flow rate required
- _____ size of supply line (confirm on spec sheet)
- _____ length of supply line plus 50 feet safety factor
- H) _____ supply line friction loss (total pipe x head loss due to friction using Chart 2B/100 feet of pipe) (round the gpm up to the next gpm on the chart)

****FOR ADDITIONAL ZONES, PLEASE ATTACH SPEC SHEETS***

15.) Return Lines Friction Loss:

Zone ____:

_____ zone 1 field flush flow rate (take from zone information)

_____ size of return line (confirm on spec sheet)

_____ length of return line (confirm on spec sheet)

I) _____ return line friction loss (total pipe x head loss due to friction using Chart 2B/100 feet of pipe (round the gpm up to the next gpm on the chart)

Zone ____:

_____ zone field flush flow rate (take from zone information)

_____ size of return line (confirm on spec sheet)

_____ length of return line (confirm on spec sheet)

J) _____ return line friction loss (total pipe x head loss due to friction using Chart 2B/100 feet of pipe (round the gpm up to the next gpm on the chart)

16.) Vertical Lift Friction Loss from Hydraulic Unit to the Emitter at the Highest Elevation:

K) _____ total static head (drop between hydraulic unit and the highest drip emitter)

* this elevation change must be shown on the plot plan

** if <0' enter 0 (may need remote zone valve)

17.) Flushing Head Loss (use Table 3A based on the maximum lateral length)

L) _____ zone ____

M) _____ zone ____

18.) Total Head Loss for Zone ____:

Add the following numbers that have already been calculated:

_____ feet of head loss from the hydraulic unit "E"

_____ total feet of head loss (from hydraulic unit pump to hydraulic unit) "F"

_____ supply line friction loss for zone "G"

_____ return line friction loss for zone "I"

_____ total static head loss "K"

_____ flushing head loss for zone "L"

_____ **TOTAL HEAD LOSS FOR ZONE** _____

19.) Total Head Loss for Zone ____:

Add the following numbers that have already been calculated:

_____ feet of head loss from the hydraulic unit "E"

_____ total feet of head loss (from hydraulic unit pump to hydraulic unit) "F"

_____ supply line friction loss for zone "H"

_____ return line friction loss for zone "J"

_____ total static head loss "K"

_____ flushing head loss for zone "M"

_____ **TOTAL HEAD LOSS FOR ZONE** _____

20.) Size of Pump:

A) _____ maximum pressure loss (the single largest total head loss for any zone)

B) _____ disc filter back flush (115 ft + total feet of head loss from hydraulic unit pump to hydraulic unit)

_____ use the larger number of line A or B above to determine the pump size at 15 gpm or 25 gpm

_____ pump selected _____ volts _____ HP _____ phase

21.) Average Gallons per Dose:

_____ number of doses per day per zone
_____ average flow (gpd x 0.6) * use this number for “average flow” here on out

Zone ____:

_____ percentage of total drip tubing in zone (linear feet of tubing for zone/linear feet of tubing in the system)
N.) _____ total average gpd for zone (% of tubing in zone x total average flow)
_____ **gallons per dose** (gallons per day for the total doses in a zone/number of doses)

Zone ____:

_____ percentage of total drip tubing in zone (linear feet of tubing for zone/linear feet of tubing in the system)
O.) _____ total average gpd for zone (% of tubing in zone x total average flow)
_____ **gallons per dose** (gallons per day for the total doses in a zone/number of doses)

22.) Average Flow Minutes Per Dose:

Zone ____:

_____ minutes of total time (gallons per day per Zone N/dosing rate for zone)
_____ **minutes per dose** (minutes of total time/number of doses)

Zone ____:

_____ minutes of total time (gallons per day per Zone O/dosing rate for zone)
_____ **minutes per dose** (minutes of total time/number of doses)

Prepared By: _____ (Designer) Reviewed by: _____ Delaware County Health Department