

Specifications

DISC FILTERS - Disc Filters shall be an oblique filter, entirely of plastic, with two 3/4" male end connections to NPT schedule 40 pressure PVC. The filter elements shall consist of grooved rings, mounted on a spine, forming a cylindrical filter body. The rings are to be kept together by a spring seated at the bottom of the filter cover. The out-in filter shall be of the screw in type with nitrile rubber o-ring seal. The body materials shall be polyester, the spine and rings shall be polypropylene, and the spring shall be stainless steel. The nominal filtration capacity of the filter shall be 115 microns.

DRIPPER TUBING - The dripper tubing shall be Netafim Blioline pressure compensating dripperline for wastewater. The tubing shall be nominal 0.61 gallons per hour (+/- 5% flow rate from 7 to 60 psi). The tubing shall function 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 shall be polyethylene 120 psi rating. Tubing end connections and splice connections shall be manufactured specifically for the tubing and for connection to standard schedule 40 NPT adapters. The drip tubing manufacturer shall provide a head loss chart for various drip tubing lateral lengths to provide for a minimum scouring velocity (2 ft/sec) at the distal end of the drip tubing lateral.

AUTOMATIC CONTROL VALVES - The automatic control valves shall be 1.0" diameter solenoid activated diaphragm valves by Bermad. The body and cover shall be reinforced nylon. The metal parts shall be stainless steel, the diaphragm shall be nylon-fabric reinforced polyisoprene. The seals shall be Buna-N. These valves shall operate electrically using hydraulic pressure to open and to close.

MASTER VALVE - The automatic master control valves shall be 1.5" diameter solenoid activated diaphragm valve by Dorot. The body and cover shall be reinforced nylon. The metal parts shall be stainless steel, the diaphragm shall be nylon-fabric reinforced polyisoprene. These valves shall operate electrically using hydraulic pressure to open and to close.

RETURN PRESSURE ASSEMBLY FOR ZONE RETURN CONTROL VALVE - The automatic zone return valve shall, in the event the drip zones are over 10 feet in vertical elevation above the hydraulic unit, have installed a "return pressure assembly". The assembly is to be used to prevent the line from draining after or during each dose. See standard detail.

GRAVITY PIPING - All gravity piping shall be schedule 40 PVC DWV as a minimum. Fittings shall be Schedule 40 PVC suitable for underground installation. All joints shall be solvent welded with the use of primer and PVC glue.

NON-DRIPPER LINE PRESSURE PIPING - All non-dripper line pressure piping shall be PVC schedule 40 pressure rated. Rigid piping shall be standard ASTM 1120 for use with solvent welded Schedule 40 fittings. Flex piping shall be schedule 40 PVC flex pipe for use with pressure fittings.

FLOAT SWITCHES - The system will operate on four floats. The bottom two floats ("Off" and "Enable") shall be Connelly 10 amp, 115 volt, narrow angle supplied by American Manufacturing. The top two floats ("Peak" and "High Level") shall be Connelly 10 amp, 115 volt wide angle differential microswitches supplied by American Manufacturing.

GENERAL VALVES - All ball valves shall be Schedule 40. Check valves shall be of the swing check design of metallic bronze or brass with corrosion resistant metal hinge pin for use in wastewater. Gate and globe valves shall be of the true-union pvc type with stem adapters for surface operation.

FLOW METER - Flow meter shall be dial-type multi-jet 5/8" to 2" meter with total enclosure and an electrical output register. The meter shall be bronze with externally threaded ends with bronze threaded union end connectors. The meter shall provide contact closure corresponding to defined volume increments. Maximum switch current 500ma and maximum switching voltage 32 volts (AC or DC) for output register.

DISCONNECTS - Piping disconnects shall be PVC schedule 80 unions.

AIR RELEASE VALVES - Air release valves shall be 2" diameter Guardian air release and vacuum valves by Netafim. Body shall be made of fiberglass reinforced U.V. Protected nylon. Maximum working pressure 150 psi.

WIRE SPLICES - Field wire splices shall be installed in suitable wire splice pull boxes with waterproof connections for access to splice connections. The boxes shall have structural capacity for in ground installation and light vehicle yard care traffic.

SPECIAL DRIP EQUIPMENT - All non-specified drip equipment shall be as supplied by American Manufacturing Company, Inc. including the controls, drip hydraulic unit, pumps, and specialty fittings.

HEATER - The hydraulic unit shall be equipped with a thermostatically controlled heater. The heater shall be 225 watt & 120 volt.

HYDRAULIC UNIT ENCLOSURE - The enclosure shall be made of fiberglass with latching cover.

ENCLOSURE INSULATION - Insulation shall be made with two layers of aluminum separated by 5/16 inch dead air space with a minimum R-value of 8.3.

TOP FEED MANIFOLDS - Top feed supply and return manifolds shall be specified on sites with drainfield slopes greater than 10%. Manifolds shall be made with pressure rated schedule 40 PVC.

ZONE RESTING OPTION - The system controller shall allow for a zone to be rested or taken out of service. The controller shall have the capability to bypass a zone that has been taken out of service and dose the next available zone.

PIPE BEDDING - In ground piping shall be installed according to local codes. Piping shall be installed on original soil or suitably compacted fill or gravel bedded excavations on original soil. Free standing piping shall be schedule 40 PVC and assembled with restrained joints.

HYDRAULIC UNIT - Drip hydraulic unit by American Manufacturing must be mounted on an aluminum skid with an insulated enclosure with a removable lid for maintenance and monitoring purposes.

Three Filter Hydraulic Unit

The submersible pump delivers unfiltered effluent to each filter. The filter backflushing schedule is triggered at the beginning of each dose cycle. One filter valve closes, thus blocking the flow of unfiltered effluent to that filter. After a short delay, the other flushing valves open, thereby backflushing the unused filter. The accumulated impurities discharge back into the pretreatment unit. The closing and opening procedure of the filter and back flush valves causes a change of flow within the unit to provide filtered water from two filters to backflush the other filter. The backflush procedure lasts approximately fifteen seconds then the back flushing valve closes. Only after the first filter has completed its backflushing cycle, will the second filter begin its cycle of backflushing in the same manner as the first. Effluent will then be pumped through clean disc filters, then through the flow meter and finally through the outlet manifold to the drip field supply line. During extended dose times the disc filters are re-backwashed to assure optimum operation.

NOTES - SAND FILL

1.) BASED ON ETI MANUAL PAGE 18, THE DESIGN USED WAS PACKAGE SYSTEM AS SUPPLIED BY ECOLOGICAL TANKS, INC. 0.62 GPH DRIPPER LINE - 1200 LF 1/2 HP PUMP

2.) FLUSH FIELD FREQUENCY: 1 IN 30 DOSES

3.) FILTER FLUSH FREQUENCY: 1/DOSE

4.) AIR RELEASE VALVES ARE TO BE INSTALLED AT THE HIGH POINT OF EACH DRIP ZONE.

5.) THE PROPOSED SITE OF THE INITIAL SEWAGE SYSTEM AND THE REPLACEMENT AREA MUST BE CLEARLY IDENTIFIED, STAKED AND FENCED OFF AS NECESSARY TO ENSURE THAT THESE AREAS ARE PROTECTED DURING THE SITE DEVELOPMENT AND HOME CONSTRUCTION PROCESS. ANY DISTURBANCE OR DAMAGE THAT OCCURS DURING THE SITE DEVELOPMENT AND HOME CONSTRUCTION PROCESS WILL RESULT IN THE FOREFEITURE OF THE SYSTEM DESIGN APPROVAL.

6.) SAND SPECIFICATIONS AS FOLLOWS: CONCRETE SAND MEETING ASTM C 33 FOR FINE AGGREGATE MAY BE USED PROVIDED THE MATERIAL MEETS THE FOLLOWING SPECIFICATIONS:

- AN EFFECTIVE SIZE IN THE RANGE OF 0.15 TO 0.30 MM.
- A UNIFORMITY COEFFICIENT IN THE RANGE OF 4 TO 6.
- NO MORE THAN 20 PERCENT BY WEIGHT IS GRAVEL GREATER THAN 2 MM.
- NO MORE THAN 5 PERCENT BY WEIGHT IS SILT AND CLAY LESS THAN 0.053 MM.

7.) BASAL AREA PREPARATION: ALL VEGETATION SHALL BE CUT CLOSE TO THE GROUND AND REMOVED FROM THE SITE. STUMPS, ROOTS, SOD, TOPSOIL, AND BOULDERS SHALL NOT BE REMOVED. THE FORCE MAIN SHOULD BE INSTALLED FROM THE UPSLOPE SIDE. ALL VEHICLE TRAFFIC ON THE BASAL AREA AND DOWNSLOPE AREA OF THE MOUND SHOULD BE AVOIDED WITH INSTALLATION WORK BEING CONDUCTED FROM THE UPSLOPE SIDE OR END OF THE MOUND BASAL AREA.

8.) THE SOIL SURFACE OF THE BASAL AREA SHALL BE CAREFULLY PREPARED WORKING ALONG THE CONTOUR TO PROVIDE A SAND/SOIL INTERFACE OF ABOUT SIX INCHES. BASAL PREPARATION SHOULD IMPROVE INFILTRATION BUT SHALL NOT DAMAGE THE STRUCTURE OF THE SOIL INFILTRATIVE SURFACE. SAND MAY BE INCORPORATED INTO THE BASAL AREA DURING THE PREPARATION PROCESS. FOLLOWING BASAL PREPARATION, A LAYER OF SAND FILL SHALL BE PLACED ON THE ENTIRE BASAL AREA TO PREVENT DAMAGE FROM PRECIPITATION AND FOOT TRAFFIC.

9.) MINIMIZE COMPACTION BY USING LIGHT-WEIGHT EQUIPMENT AND BY KEEPING EQUIPMENT OFF THE DRIP FIELD AREA.

10.) SURFACE WATER RUNOFF & ROOF DRAINS ARE TO BE DIVERTED AWAY FROM FIELD.

11.) THE DESIGNER AND SYSTEM SUPPLIER WILL BE AVAILABLE FOR ON-SITE CONSULTING AND CONDUCTING A SYSTEM START-UP UPON COMPLETION OF THE INSTALLATION.

AMERICAN MANUFACTURING COMPANY

SEPTIC DRIP CALCULATION SHEET

Job Name:	Sublot 17 Chapin Ledges Subdivision			
Project No.:	S13-0334-W			
Location:	Kirtland, Lake Co., OH			
Date:	5/9/13			
1	480	GALLONS PER DAY	4	NO. OF BEDROOMS
2				
3	180	FT. (Length)	16	FT. (Width) AREA FOR DISPOSAL LAYOUT
4	2	ZONES		2880 Ft ²
5	1440	TOTAL DRIPPER LINE PROVIDED	(Zone 1 + Zone 2)	
6	1500	SEPTIC TANK SIZE (gallons)		
7	1500	DOSING TANK SIZE (gallons)		
8	25	GALLONS PER INCH IN DOSING TANK (Provided From Manufacturer)		
9	ZONE ONE			
10	1440	TOTAL ABSORPTION AREA (FT ²)		
11	720	LINEAR FEET OF DRIP TUBING (FT)	(Total Tubing for Zone 1)	
12	180	LONGEST LATERAL LENGTH (FT)	52.76	Minimum Dose Volume (Gal/Dose)
13	3.66	DOSING FLOW RATE (GPM)	(Length of tubing / 72) x (0.61 Gal/Hr) / (60 Min/Hr)	
14	4	NO. RETURN FIELD FLUSH CONNECTIONS (#/zone)		
15	6.40	FIELD FLUSH FLOW RATE (GPM)	(1.6 gpm/Connection) x (no. of field flush connections)	
16	10.06	TOTAL FLOW REQUIRED (GPM)	(Dosing flow rate + Field flushing flow rate)	
17	ZONE TWO			
18	1440	TOTAL ABSORPTION AREA (FT ²)		
19	720	LINEAR FEET OF DRIP TUBING (FT)	(Total Tubing for Zone 1)	
20	180	LONGEST LATERAL LENGTH (FT)	32.76	Minimum Dose Volume (Gal/Dose)
21	3.66	DOSING FLOW RATE (GPM)	(Length of tubing / 72) x (0.61 Gal/Hr) / (60 Min/Hr)	
22	4	NO. RETURN FIELD FLUSH CONNECTIONS (#/zone)		
23	6.40	FIELD FLUSH FLOW RATE (GPM)	(1.6 gpm/Connection) x (no. of field flush connections)	
24	10.06	TOTAL FLOW REQUIRED (GPM)	(Dosing flow rate + Field flushing flow rate)	
25	11	MAXIMUM DESIGN TOTAL FLUSHING FLOW (GPM)		
26	9	FEET OF HEAD LOSS FROM HYDRAULIC UNIT (TDH) (Based on #26)	(Chart 2A)	
27	HYDRAULIC UNIT SUPPLY LINE			
28	1.5	PIPE DIAMETER (Inches)	(From pump to Hydraulic Unit)	
29	5	LENGTH SUPPLY PIPE (FT)	(From pump to Hydraulic Unit)	
30	5	FEET OF STATIC LIFT	(From pump to Hydraulic Unit)	
31	7	TOTAL FEET HEAD LOSS IN LINE (Dynamic Head Loss + #31)		

32	FORCE MAIN SUPPLY LINE PIPE SIZE & LENGTH:					
33	1"	ZONE 1 SIZE	50	ZONE 1 LENGTH	4	FT. HEAD LOSS
34	1"	ZONE 2 SIZE	50	ZONE 2 LENGTH	4	FT. HEAD LOSS
(Friction losses through supply piping at the specific size, distance and flow, as listed above)						
35	RETURN FLUSH LINE SIZE & RETURN:					
36	1"	ZONE 1 SIZE	50	ZONE 1 LENGTH	2	FT. HEAD LOSS
37	1"	ZONE 2 SIZE	50	ZONE 2 LENGTH	2	FT. HEAD LOSS
(Friction losses through return piping at the specific size, distance and flow, as listed above)						
STATIC HEAD:						
38	2	FEET OF TOTAL STATIC HEAD LOSS (Vertical Lift)	(From the base of the Hydraulic Unit to the highest run of dripper tubing)			
39	TOTAL PRESSURE LOSS (Add Items 27, 32, 34/35, 37/38, 39 + Flushing):					
40	40	ZONE 1 HEAD LOSS, INCLUDES	16	FEET FLUSHING	(Chart 3A)	
41	40	ZONE 2 HEAD LOSS, INCLUDES	16	FEET FLUSHING	(Chart 3A)	
(Total head loss includes friction from pump to HU, through HU, supply piping, return piping, Chart 2A, and Chart 3A)						
42	PUMP SIZING:					
43	40	MAXIMUM TOTAL PRESSURE LOSS (Highest #1 or #2)				
44	124	DISC FILTER BACKFLUSH (#32 + 115ft. @ 15 GPM)				
45	15	GPM @	124	FEET	115	VOLTS
46	TIMED DOSING PER ZONE:					
47	ZONE ONE:					
48	3.66	Dosing GPM	8.95	Min/Dose	32.8	Gallons Per Dose
49	4.40	Ave. Cycles	7.33	Peak Cycles	(Minimum Fill Ratio 3.5)	(Run Frequencies)
50	ZONE TWO:					
51	3.66	Dosing GPM	8.95	Min/Dose	32.8	Gallons Per Dose
52	4.40	Ave. Cycles	7.33	Peak Cycles	(Minimum Fill Ratio 3.5)	(Run Frequencies)
53	AVERAGE DOSING REST TIMES:					
54	PEAK DOSING REST TIMES:					
55	LANDSCAPE LINEAR LOADING RATE:					
56	SOIL LOADING RATE:					

Site and Soil Evaluation for Sewage Treatment and Dispersal

County:	Lake	Land Use / Vegetation:	Orchard/Trees & Brush
Township:	Sec. 1	Landform:	Upland
Property Address/Location:	South of 7720 Stranberry Glen	Position on Landform:	Flat
	Kirtland, Ohio 44094	Percent Slope:	3-5
Applicant Name:	Gutoskey & Associates	Shape of Slope:	Linear, Linear
Address:	10135 Gotschalk Parkway Unit 4	Date:	December 19, 2012
	Chagrin Falls, Ohio 44023	Evaluator:	Phyllis E. McCleary & Ray Burns
Phone #:	SL 17, PW 20-A-022-E-00-017-0		McCreary Soil Investigations, Inc.
Test Hole #:	3		106 Eastwind Drive NE
Latitude/Longitude:	41°35'45.3" N, 81°22'00.1" W		Warren, Ohio 44484
Method:	Pt X Auger Probe		Phone #: 330-393-7645

Soil Profile		Estimating Soil Saturation			Estimating Soil Permeability							Other Soil Features
		Munsell Color (hue, value, chroma)										
		Redoximorphic Features			Texture			Structure				
Horizon	Depth (inches)	Matrix Color	Concentrations	Depletions	Class	Approx. % Clay	Approx. % Fragments	Grade	Size	Type (shape)	Consistence	
A	0-9	10YR 4/3	-	-	sil	15-20	-	2	f	gr	fr	
Bt1	9-22	10YR 5/6	10YR 6/8	10YR 6/1	sic1	30-35	2-4	2	m	sbk	fi	
Bt2	22-35	10YR 5/4	10YR 6/6	10YR 6/1	cl	30-35	8-10	2	m	sbk	fi	
2BC	35-42	10YR 4/4	-	-	GR1	15-20	30-35	2	m	sbk	fr	

NOTES

- PACKAGE SYSTEM SUPPLIED BY AMERICAN MANUFACTURING CO. AS DISTRIBUTED BY STREAMKEY, INC. 0.61 GPH DRIPPER LINE - 1000 LF, 1/2 HP PUMP. APPROXIMATE ABSORPTION AREA/EMITTER=4 SQ. FT.
- FLUSH FIELD FREQUENCY: 1 IN 25 DOSES
- FILTER FLUSH FREQUENCY: 1/DOSE
- AIR RELEASE VALVES ARE TO BE INSTALLED AT THE HIGH POINT OF EACH DRIP ZONE.
- THE PROPOSED SITE OF THE INITIAL SEWAGE SYSTEM AND THE REPLACEMENT AREA MUST BE CLEARLY IDENTIFIED, STAKED AND FENCED OFF AS NECESSARY TO ENSURE THAT THESE AREAS ARE PROTECTED DURING THE SITE DEVELOPMENT AND CONSTRUCTION PROCESS. ANY DISTURBANCE OR DAMAGE THAT OCCURS DURING THE SITE DEVELOPMENT AND HOME CONSTRUCTION PROCESS WILL RESULT IN THE FOREFEITURE OF THE SYSTEM DESIGN APPROVAL.
- THE FORCE MAIN SHOULD BE INSTALLED FROM THE UPSLOPE SIDE. ALL VEHICLE TRAFFIC ON THE BASAL AREA AND DOWNSLOPE AREA OF THE MOUND SHOULD BE AVOIDED WITH INSTALLATION WORK BEING CONDUCTED FROM THE UPSLOPE SIDE OR END OF THE MOUND BASAL AREA.
- MINIMIZE COMPACTION BY USING LIGHT-WEIGHT EQUIPMENT AND BY KEEPING EQUIPMENT OFF THE DRIP FIELD AREA.
- SURFACE WATER RUNOFF & ROOF DRAINS ARE TO BE DIVERTED AWAY FROM FIELD.
- DURING START UP INSTALLER SHALL RECORD FLOW RATE AND FLUSH RATE FOR EACH ZONE AND THE WATER METER READING.
- ALL ELECTRICAL WORK SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE.
- INSTALLATION AND O&M MANUALS SHALL BE PROVIDED BY SUPPLIER.
- THE BUILDING OWNER IS REQUIRED TO ENTER INTO A SERVICE CONTRACT FOR SYSTEM MAINTENANCE. ALL SERVICE SHALL BE PERFORMED BY A CERTIFIED SERVICE PROVIDER.
- THE DESIGNER AND SYSTEM SUPPLIER WILL BE AVAILABLE FOR ON-SITE CONSULTING AND CONDUCTING A SYSTEM START-UP UPON COMPLETION OF THE INSTALLATION.

Erosion and Sediment Control Schedule

Ingress-Egress
A stone access drive complete with under lying geo-textile fabric (20 feet wide and 50 feet long) for ingress and egress at the site shall be installed. This drive shall be the only entrance and exit to the site.

Silt Fence
All silt fence shall be installed prior to any earthwork activities at the site in the locations shown on the site plan as well as along the front of any lot that slopes towards the street.

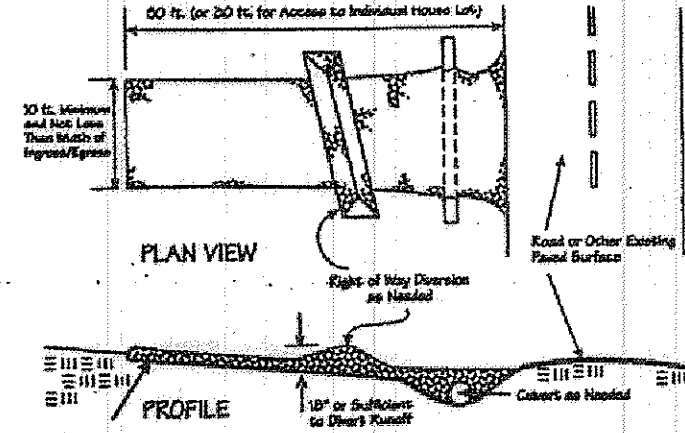
Temporary Seeding
Disturbed areas of the site that are to remain idle for more than Twenty-one (21) days shall be properly seeded and straw mulched within seven (7) days of completion of initial grading. Temporary seeding and mulching of a thirty (30) foot strip of the entire front of the lot shall be maintained on the site once initial grading is complete.

Stabilization of critical areas within fifty (50) feet of any stream or wetland shall be complete within two (2) days of the disturbance if the site is to remain inactive for longer than fourteen (14) days.

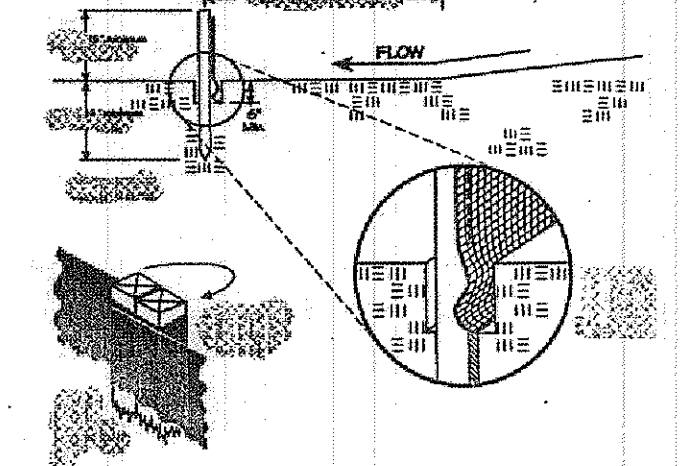
Mulching
Straw-mulch shall be applied at a rate of 1 bale per every ten (10) feet of curb, at a width of thirty (30) feet of the entire length of the lot. Wood chips may also be used but must be spread at a minimum depth of four inches over the thirty-foot width and must be accompanied by a properly installed silt fence.

Maintenance
Erosion and sediment controls shall be inspected every seven (7) days or within 24 hours of a 0.5" or greater rainfall event. Necessary repairs shall be made at this time.

Construction Entrance Detail



Silt Fence Detail



Revisions:

1
2
3
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6
7

LARRY BLOCH BUILDERS
S/L 17
CHAPIN LEDGES SUBDIVISION
KIRTLAND - COUNTY OF LAKE, OHIO

GUTOSKEY & ASSOCIATES INC.
Civil Engineers, Surveyors and Land Planners
10135 GOTSCHALK PARKWAY, STE 4
CHAGRIN FALLS, OHIO 44023
Tel (440) 543-9900
Fax (440) 543-7176

NOTES

Date:	DEC. 2012
Scale:	Hor. N/A
Vert. N/A	
Drawn By:	G.A.
Checked By:	J.G.
F.B. #:	
Sheet	Of
3	3
CONTRACT No. 12-2759	