North Carolina

The North Carolina Department of Health and Human Services Onsite Water Protection Branch approved the use of EZflow by Infiltrator drainfields as a replacement for conventional drain media in a variety of system applications, as described in the EZflow innovative and accepted product approvals.

Materials & Equipment Needed

- EZflow Bundles
- EZflow Barrier Paper
- EZflow Internal Pipe Couplers
- Pipe for Header and Inlet
- Backhoe
- Laser, Transit, or Level
- Shovel and Rake

Trench Systems

Installation Instructions

The instructions for installation of EZflow products are given below. This product must be installed in accordance with these installation instructions, the product approval, and Onsite Water Protection Branch requirements.

NOTE: As is the case with conventional systems, do not install the systems in wet conditions or in overly moist soils, as this causes machinery to smear the soil.

1. Stake or mark the bed location with paint per plan and permit. Set the elevations for the: bed bottom, header pipe or distribution box, invert pipe, and tank excavation.

2. If smearing or glazing of trench sidewalls and bottom has occurred in clay soils, it is recommended that these soil surfaces be raked or scarified.

3. The proper elevation of solid PVC header pipe shall be determined to ensure compliance with the required maximum trench bottom depth as shown on the permit. This height may vary depending on system height and configuration used.

4. Each trench system must have a minimum separation between trench walls as required by 15A NCAC 18A.

5. Remove EZflow stretch wrap prior to placing bundles in the trench(es). Remove all stretch wrap from the trench before the system is covered and dispose of properly.

6. Place EZflow bundle(s) in the configuration shown on the permit specified for the particular site. Join bundles containing pipe end-to-end with an internal pipe coupler. Additional aggregate-only bundles shall be butted against the other aggregate-only bundles and do not require connection.

7. Header lines can be connected to the pipe-containing EZflow bundles with the EZflow Versa Coupler™. The opposite end of the Versa Coupler is designed to connect to either 4” SDR 35 or 4” Schedule 40 pipe with a standard primer and glue connection.

8. The top of each GEO bundle contains an integral filter fabric. The fabric prevents soil intrusion. Place the bundle with fabric in the top position and in contact with the fabric contained in the adjacent

EZflow by INFILTRATOR

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Installation Instructions for EZflow Systems in North Carolina



bundle before backfilling. The end-to-end gap distance between pipe containing GEO bundles, as measured from the straps fixing the netting to the pipe or from the face edges of aggregate on adjoining bundles, shall be no greater than 3 inches.

9. If not using a GEO product, EZflow systems require covering over the top of the system with geotextile

10. Header or lead lines from the distribution box or device shall be connected to the top or center-most pipe bundle in each trench or inserted into the pipe.

11. EZflow trenches shall be installed level in all directions plus or minus one-half-inch tolerance from side-to-side and with a maximum fall in a single trench bottom not exceeding one-fourth inch in 10 feet end-to-end for any continuous contoured segment. Trenches shall follow the contour of the ground surface elevation (uniform depth).

12. When surface slopes are greater than two percent, the bottom of the trenches shall follow the contour of the ground.

13. The soil cover shall be to a depth of at least six inches.

14. The finished grade shall be landscaped to prevent the ponding of surface water.

15. Soil cover above the original grade shall be placed at a uniform depth over the entire nitrification field, except as required to prevent the ponding of surface water.

16. The soil cover shall be placed over the drainfield after proper preparation of the original ground surface.

As required by state or local requirements, be sure to obtain proper installation inspection from the health department prior to covering the system.

After the system has been completely covered, only drive across the trenches when necessary. Never drive parallel to the direction

of the trench. To avoid additional soil compaction, prevent any heavy equipment from driving across or parallel to the direction of the trench.

Sod or seed the drainfield area to control erosion, as may be required by permit of local requirement.

Sizing

1. The long-term acceptance rate (LTAR) shall be as shown in the permit for the site.

2. To determine the minimum total trench bottom area (sf) required, divide the design daily sewage flow by the applicable LTAR shown on the permit. The minimum linear footage for EZflow drainfield systems shall be determined by dividing the minimum required trench bottom area by the following equivalency factors:

Model	Equivalency Factor (sf/lf)
1203H/1203H-GEO	4.0
1203T/1203T-GEO	4.0
1003T/1003T-GEO	3.0

Bed-in-Fill Systems

Installation Instructions

1. Stake or mark the bed location with paint per plan and permit. Set the elevations for the: bed bottom, header pipe or distribution box, invert pipe, and tank excavation.

2. Before placing fill, the site shall be void of a vegetative cover, organic litter, and any debris. Do not remove soil.

3. Place Group I soil fill in six-inch lifts with a maximum 3:1 sideslope. Place Group I fill to the lines and elevation specified in the permit.

4. Remove stretch wrap from EZflow bundles and the bed prior to placing bundles in the bed. Dispose of stretch wrap properly.

5. Place EZflow bundles on the Group I fill in the approved configuration. Place bundles edge-to-edge on 3-foot centers.

6. Join bundles containing pipe end-to-end with an internal pipe Versa Coupler. Additional aggregate-only bundles shall be butted against the other aggregate-only bundles and do not require connection.

7. The top of each GEO bundle contains filter fabric. Place the bundle so that the fabric is in the top position and in contact with the fabric contained in the adjacent bundle.

8. If not using a GEO product, cover the EZflow bundles with geotextile.

For gravity distribution:

9. Install the header piping and connect to each pipe-containing EZflow bundle with the EZflow Versa Coupler. The opposite end of the Versa Coupler is designed to connect to either 4-inch SDR 35 or 4-inch Schedule 40 pipe with a primer and glue connection. Alternatively, 3-inch Schedule 40 pipe may be used for the connection between the septic tank and the pipe-containing EZflow bundle and inserted into the 4-inch corrugated pipe in the bundle.

10. Place Group I fill around the perimeter of the bed and directly against the outer bundles of EZflow to the top of the bundles.

11. Place a minimum of six inches of cover (Group II or III soil) over the bed and side slopes.

For low-pressure distribution:

12. Insert low-pressure pipe (LPP) pressure laterals into each pipe-containing bundle.

13. To allow the pressure laterals to drain after each pump cycle, drill the first and last orifices in the bottom of each lateral. All other orifices shall be drilled in the LPP laterals facing upward.

14. Glue the pressure lateral pipe to the header piping.

15. Place Group I fill around the perimeter of the bed and directly against the outer bundles of EZflow to the top of the bundles.

16. Place a minimum of four inches of cover (Group II or III soil) over the bed and side slopes.

Obtain required installation inspections from the health department prior to covering the system.

Sod or seed the cover area to control erosion, as required.

Sizing

1. LTAR shall be shown on the permit.

2. To determine the minimum total bed bottom area (sf) required, divide the daily sewage flow by the applicable LTAR. The resulting area value shall be increased by 50%. The minimum linear footage for EZflow in a bed-in-fill system shall be determined by dividing the total required bed bottom area by a bed equivalency factor of 3.0 sf/lf.

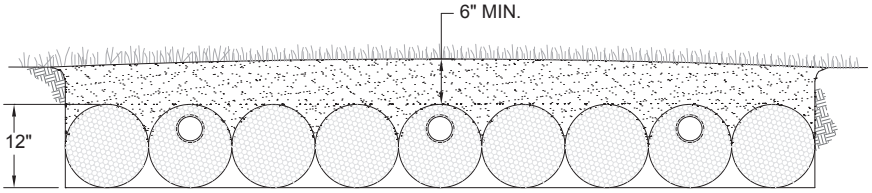
Operation and Maintenance

Operation and maintenance for EZflow 1203H-GEO utilizing an equivalency of 4.0 sf/lf or less shall have a minimum classification of IIa. All other EZflow drainage systems shall have a minimum classification as a Type IIIg system (other non-conventional trench systems) in accordance with Rule 15A NCAC 18A. These recommendations include: avoiding excessive amounts of water, grease or non-biodegradable materials entering the septic tank, promoting even wastewater distribution, avoiding chemical or biological additives, promoting ready access to the septic tank for maintenance and periodic inspection and pumping of the septic tank.

System Inspection

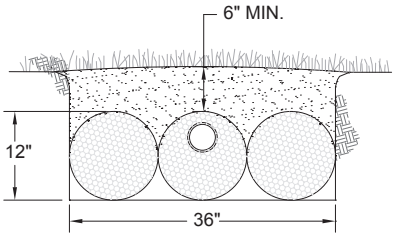
Provisions of the NC Rules apply, except as modified by the applicable innovative wastewater approval. Inspection is significantly easier due to the pre-assembly of the components. Levelness of the trench bottom may be checked by inserting a rod between the aggregate bundles down to the trench bottom.

EZflow Bed System



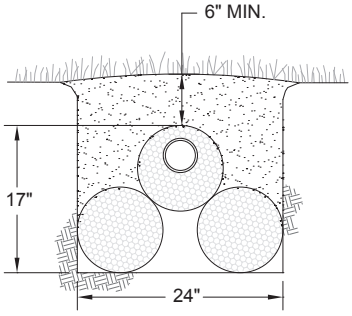
The EZflow Drainage system 1203H and 1203H-GEO configurations may be used in a bed system with the three cylindrical bundles placed in adjacent rows. The minimum area (without reduction or equivalency factor) for a bed system shall be determined as required in 15A NCAC 18A.1955(d). This configuration is installed foot-for-foot with a conventional gravel and pipe bed system.

EZflow 1203H/1203H-GEO Trench



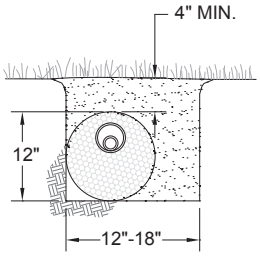
EZflow 1203H/1203H-GEO Approved at 4.0 sf/lf
EXAMPLE: 300 sf required.
300 sf ÷ 4.0 sf/lf = 75 lf required

EZflow 1003T/1003T-GEO Trench



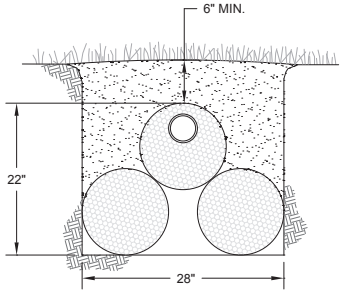
EZflow 1003T/1003T-GEO Approved at 3.0 sf/lf
EXAMPLE: 300 sf required.
300 sf ÷ 3.0 sf/lf = 100 lf required

EZflow 1201P/1201P-GEO Trench



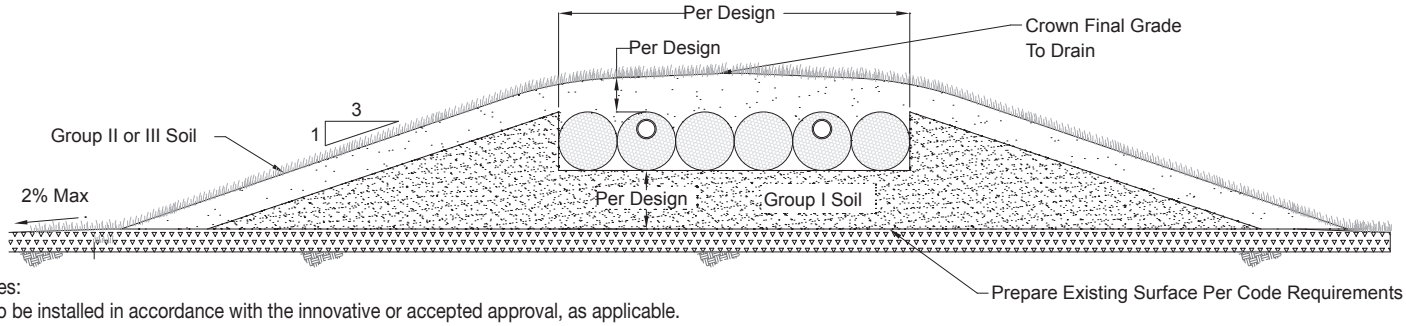
The central bundle of the EZflow 1203H or 1203H-GEO containing the offset four-inch pipe may be used as an alternative to gravel in a low-pressure pipe (LPP) system, sized equivalent to LPP systems as required in 15A NCAC 18A and as described in the EZflow innovative and accepted approvals.

EZflow 1203T/1203T-GEO Trench



EZflow 1203T Approved at 4.0 sf/lf
EXAMPLE: 300 sf required.
300 sf ÷ 4.0 sf/lf = 75 lf required

EZflow Bed-in-Fill System



Notes:
1. To be installed in accordance with the innovative or accepted approval, as applicable.
2. All approved separation distances must be met.
3. Bed width must be no more than 24 feet and be a multiple of three feet.
4. Maximum eight lines on each side of the distribution device.
5. The maximum spacing between opposing EZflow bundles adjacent to the distribution device shall be six feet.

Table 1. Trench and Bed Specifications

Product Specifications	EZflow Configurations					
	1003T/1003T-GEO TRENCH	1203H/1203H-GEO TRENCH	1203T/1203T-GEO TRENCH	1201P LPP TRENCH	1203H BED /1203H-GEO	1203H/1203H-GEO BED-IN-FILL
Overall System Height (in)	17	12	19	12	12	12
Trench Width (in)	24	36	30	12 - 18	-	-
Equivalency Factor* (sf/lf)	3.0	4.0	4.0	-	-	3.0
Min. Cover (in)	6	6	6	4	6	6/4****
Min. Trench Spacing (ft)	7.5	9.0	9.0	-	-	-
Min. Trench Depth Below Finished Grade** (in)	23	18	25	18	18	18/16****
Max. Trench Depth Below Finished Grade (in)	36	60***	36	36	36	-
Nominal Pipe Height Above Trench Bottom (in)	10	6	11	6	6	6

* The design (equivalent) trench width and equivalency factor shall not exceed the excavated trench width for systems installed in fill or food service facilities, meat markets, and other places of business where accumulation of grease can cause premature failure of soil absorption systems. Reductions in trench bottom area up to those allowed by applying Design (equivalent) trench width and equivalency factors may be permitted for facilities where data from comparable facilities indicate that fats, oil, and grease content of the effluent will be less than 30 mg/l and the chemical oxygen demand (COD) will be less than 500 mg/l.

** Note that on sloping lots, minimum required trench depths shall be greater.

*** EZflow 1203H-GEO systems installed at depths greater than 36 inches shall be sized with an equivalency factor of 3.0 sf/lf.

**** Variation in bed-in-fill cover and trench depth below finished grade requirements is due to the LPP distribution requiring 2 inches less cover than gravity distribution.

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The top of configurations with the suffix **"GEO"** contain a filter fabric pre-manufactured in between the netting and aggregate. The fabric is inserted to prevent soil intrusion. The installer shall make sure that the fabric is on top and is in contact with the fabric contained in the adjacent cylinder before backfilling. If not utilizing a **GEO** product, installer should use untreated building paper. Other barrier material may be used as approved by the state's DEC and manufacturer.

ISO 9001 Registered.

U.S. Patents: 8322948; 8337119; 8297880; 7914230; 7008138. Other patents pending. Infiltrator, Quick4 and EZflow are registered trademarks of Infiltrator Water Technologies. Infiltrator Water Technologies is a wholly-owned subsidiary of, Advanced Drainage Systems, Inc. (ADS).

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