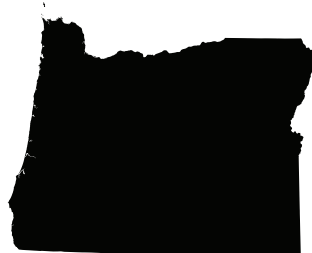


**OREGON. (EZ) DOES IT.**

**Installation Instructions for**  
**EZflow<sup>®</sup>**  
**Systems in Oregon**



**PERFORMANCE. (EZ) DOES IT.<sup>®</sup>**

**RING INDUSTRIAL GROUP, LP<sup>®</sup>**

Under Oregon Administrative Rule (OAR) 340-071-0117, (2005 Revised OAR 340-071-0135), the Performance Evaluation Process, RING Industrial Group (RING) has received approval from the Oregon Department of Environmental Quality (DEQ) to install and evaluate the **EZflow** 1201P configuration in the State of Oregon, for a period of 5 years. The DEQ has also approved various **EZflow** products for use in Standard Disposal Trenches, Capping Fill Systems, Sand Filter Systems, Seepage Trench Systems, Steep Slope Systems, Curtain Drains, Tile Dewatering Systems, and Pressurized Distribution Systems.

### Materials and Equipment needed

- **EZflow** Cylinders
- **EZflow** Barrier Paper or DEQ approved geotextile
- **EZflow** Internal Pipe Couplers
- Pipe for Header and Inlet
- Backhoe or Trackhoe
- Laser or Transit
- Shovel and Rake

### Installation Instructions

The instructions for installation of **EZflow** products are given below. **EZflow** products must be installed in accordance with OAR Chapter 340, Divisions 071 & 073, as well as the DEQ or local unit of government with jurisdiction.

1. After the DEQ or local unit of government with jurisdiction has determined sizing, configuration, and layout for the **EZflow** systems, stake or mark with paint the location of trenches and lines. Be careful to set correct tank, invert pipe, header line or distribution box and trench bottom elevations before installation of pipe cylinders.
2. The proper elevation of solid PVC effluent pipe going to each trench should be determined to ensure compliance with the required maximum trench bottom depth as shown on the approved permit. This height may vary depending on system height and configuration used.
3. Remove plastic **EZflow** shipping bags prior to placing cylinders in the trench(es). Remove any plastic bags in the trench before system is covered.
4. Only the top of the upper cylinder should be covered with 60 lb. untreated building paper available from **EZflow**. Other material such

as DEQ approved geotextile may be used. A geotextile cover is necessary in sandy soils.

5. Place **EZflow** bundle(s) in the **EZflow** configuration approved by system design permit specified for the particular site. The top or center-most cylinders containing pipe are joined end to end with an internal pipe coupler. Any additional aggregate only bundles, should be butted against the other aggregate-only cylinders and do not require any type of connection.
6. Header or lead lines from distribution/drop box or device will be connected to top or center-most pipe cylinder in each trench or inserted into pipe.
7. The **EZflow** drainfield systems should be installed in a level trench in all directions (both across and along the trench bottom) and should follow the contour of the ground surface elevation (uniform depth), with all continuous adjoining 10-foot cylinders placed end to end, with central cylinder distribution pipe interconnected, without any dams, stepdowns or other water stops.
8. **EZflow** EPS cylinders are flexible and can fit in curved trenches as may be necessary to avoid trees, boulders, or other obstacles.
9. Final contours and landscaping should be done in a manner to promote surface water runoff.

Repeat steps 1 thru 9 for each required trench.

As required by state or local regulations, be sure to obtain proper installation inspection from the DEQ or local unit of government with jurisdiction prior to covering the system.

After the system has been completely covered, vehicular traffic across or along the trenches shall be avoided.

As required by DEQ or local unit of government with jurisdiction, sod or seed the drainfield area to control erosion, as may be required by Permit or local policy.

## DEQ Approved Product Descriptions

**EZflow** is approved in Oregon by the DEQ and the Uniform Building Code Division.

DEQ approvals include:

- Standard disposal trenches
- Capping fill systems
- Sandfilter gravel-less absorption trenches
- Seepage trenches
- Steep slope systems
- Curtain drains
- Tile dewatering systems
- Pressure distribution systems

Building Code approvals include:

- Foundation drains
- Roof drain systems

### 1. Standard Disposal Trench

#### A. The 1201P/1201P-GEO Evaluation:

- a. The 1201P drainfield system consists of one, 12-inch diameter cylinder across the bottom of a trench 12 to 24 inches wide. The 1201P cylinder contains aggregate and a four-inch diameter perforated flexible plastic pipe as is typically used in septic system drainlines. The pipe shall be certified as complying with ASTM F 405 Heavy Duty. The netting for central cylinder is tied off at both ends of the pipe. The pipe may be connected by an internal coupling device to allow continuous flow from one section to the next.
- b. The difference between 1201P and 1201P-GEO is the GEO filter fabric. The top of the cylinder contains a filter fabric pre-manufactured in between the netting and aggregate. The fabric is inserted to prevent soil intrusion. The installer shall make sure the fabric is on top before final backfilling.
- c. Site, soil and design requirements of the 1201P system shall be the same as required for the standard stone filled disposal system (containing drain media 12 inches deep) as described in OAR Chapter 340, Divisions 71 & 73.
- d. The **EZflow** brand 1201P will be sized at the same required linear foot siz-

ing for standard 2 foot wide gravel trench. For example, if the sizing for a two foot gravel trench requires 100 linear feet of trench, the 1201P system will be sized at 100 linear feet.

**1201P GEO**

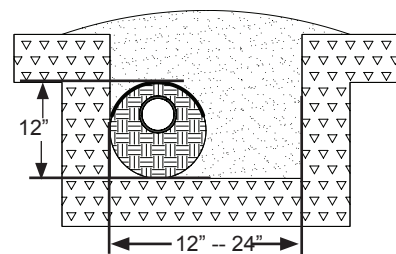


Figure 1.

#### B. The 1202H Evaluation:

The 1202H drainfield system (two, 12 inch diameter cylinders) may be used in a horizontal configuration within a 24 inch wide disposal trench. The cylinders shall be placed side-by-side and in contact with each other. Serial distribution methods limit the maximum effluent depth to no more than 6 inches higher than the invert level of the perforated piping within the higher trenches. The minimum backfill depth is 6 inches when equal distribution methods are used, and 12 inches with serial distribution methods. The **EZflow** brand 1202H will be sized at the same required linear foot sizing for standard 2 foot wide gravel trench. For example, if the sizing for a two foot gravel trench requires 100 linear feet of trench, the 1202H system will be sized at 100 linear feet. The cylinder with pipe may be installed on either side within the trench.

**1202H Horizontal System**

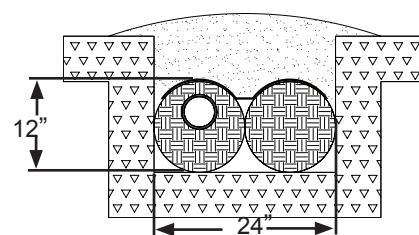


Figure 2.

## Product Descriptions (continued)

### C. The 1003T Evaluation:

The 1003T product (three, 10 inch diameter cylinders) may be used in either a triangular or horizontal configuration at all locations where a gravity-fed disposal trench (containing drain media 12 inches deep) would otherwise be allowed. The cylinders shall be placed in a triangular configuration when installed within a 24 inch wide trench. One cylinder shall contain piping and be centered above and in contact with the other two cylinders. Where used in a horizontal configuration, the cylinders must be placed side-by-side and in contact with each other, within a trench at least 30 inches wide. The center cylinder shall contain piping. Serial distribution methods limit the maximum effluent depth to no more than 6 inches higher than the invert level of the perforated piping within the higher trenches. The minimum backfill depth is 6 inches when equal distribution methods are used, and 12 inches with serial distribution methods. The **EZflow** brand 1003T will be sized at the same required linear foot sizing for standard 2 foot wide gravel trench. For example, if the sizing for a two foot gravel trench requires 100 linear feet of trench, the 1003T system will be sized at 100 linear feet.

### **EZflow** 1003T

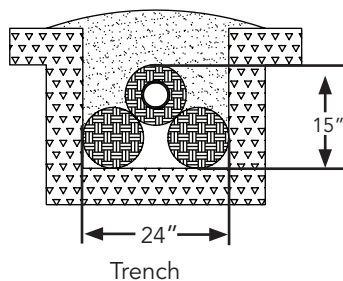


Figure 3.

## 2. The Capping Fill System:

### A. The 1201P/1201P-GEO Evaluation:

The 1201P-GEO drainfield system consists of one, 12-inch diameter cylinder across the bottom of a trench 12 inches wide. See Figure 1 for example configuration.

### B. The 1202H Evaluation:

The 1202H drainfield system may also be used in a horizontal configuration in a

capping fill system, within a 24 inch wide trench that is a minimum of 12 inches deep. See Figure 2 for example configuration.

### C. The 1003T Evaluation:

The 1003T drainfield system may also be used in a capping fill system. The 1003T in the horizontal configuration would be used in a 30 inch wide trench that is a minimum of 12 inches deep, and the 1003T in the triangular configuration would be used in a 24 inch wide trench that is a minimum of 17 inches deep, with the cap placed in accordance with the requirements of OAR Chapter 340 Division 71. See Figure 3 for example configuration.

## 3. Conventional Sand Filter System using Gravel-Less Absorption Trenches:

### The 1001P/1001P-GEO Evaluation:

The 1001P/1001P-GEO drainfield system (10 inch diameter cylinders containing four inch diameter perforated polyethylene piping, placed end to end within the trench) may be used following a sand filter in lieu of the chamber described in OAR Chapter 340 Division 71. Construction shall conform to all requirements described within Chapter 340 Division 71 with the following modifications:

- The perforated pressure piping shall be placed within the four inch diameter perforated polyethylene piping with orifices at the 12 o'clock position.
- Because the top of the cylinder will be at the natural ground surface, a capping fill shall be used to cover the installation. Soil texture from the surface to the trench bottom shall not be finer than silty clay loam.

### Gravel-less Absorption System 1001P/1001P-GEO

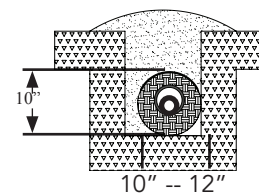


Figure 4.

## Product Descriptions (continued)

### 4. Seepage Trench System -- 1201A/1201A-GEO, 1201P/1201P-GEO, 1001A/1001A-GEO, 1001P/1001P-GEO:

Both the 10-inch and 12-inch diameter cylinders may be used within seepage trenches in lieu of drain media. Four or more cylinders can be placed in a 24-inch wide trench. At least one of the top cylinders shall contain perforated piping. Serial distribution methods limit the maximum effluent depth to no more than 6 inches higher than the invert level of the perforated piping within the higher trenches. The minimum back-fill depth is 6 inches when equal distribution methods are used, and 12 inches with serial distribution methods. GEO product can only be used at the top of the configuration. See Figure 5 for example configuration.

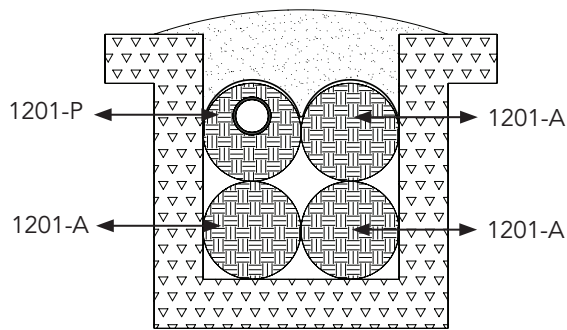


Figure 5.

### 5. Steep Slope Systems -- 1201A/1201A-GEO, 1201P/1201P-GEO, 1001A/1001A-GEO, 1001P/1001P-GEO:

Both the 10-inch and 12-inch diameter cylinders may be used within seepage trenches in a steep slope system in lieu of drain media. Four cylinders can be placed in a 24-inch wide trench. At least one of the top cylinders shall contain the perforated piping. Serial distribution methods limit the maximum effluent depth to no more than 6 inches higher than the invert level of the perforated piping with the higher trenches. GEO product can only be used at the top of the configuration. See Figure 5 for example configuration.

### 6. Curtain Drains -- 1001A/1001A-GEO, 1001P/1001P-GEO:

The 10-inch diameter cylinders can be used in a 12-inch minimum width trench in lieu of pipe and drain media in curtain drains. Pipe-

containing cylinders shall be on the bottom, and additional cylinder may be stacked so as to provide the equivalent media depth required. GEO product can only be used at the top of the configuration. See Figure 6 for example configuration.

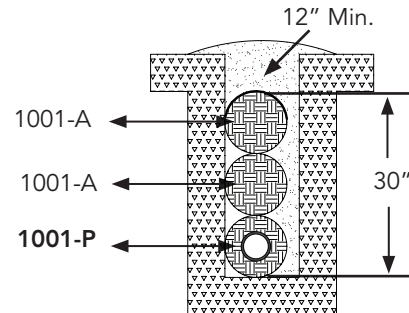


Figure 6.

### 7. Tile Dewatering Systems:

The 10-inch diameter cylinders can be used in a 12-inch minimum width trench in lieu of pipe and drain media within field collection drainage tile trenches. If there is a concern that the volume of groundwater to be collected and drained exceeds the carrying capacity of the four inch diameter corrugated pipe in the bottom cylinder, then two stacks of cylinders (containing piping in both of the base cylinders) may be placed, provided the trench is not less than 20 inches wide. See Figure 6 for example configuration.

### 8. Pressurized Distribution:

Disposal systems using 10-inch or 12-inch diameter cylinders in lieu of drain media can utilize pressurized distribution. The perforated pressure piping shall be placed within the 4-inch diameter pipe with orifices at the 12 o'clock position. Orifice shields shall not be required.

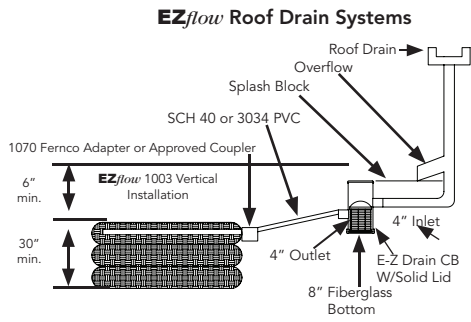
**Non-DEQ Regulated Systems  
Other Applications**

**1. Roof Run-off Drain Systems:**

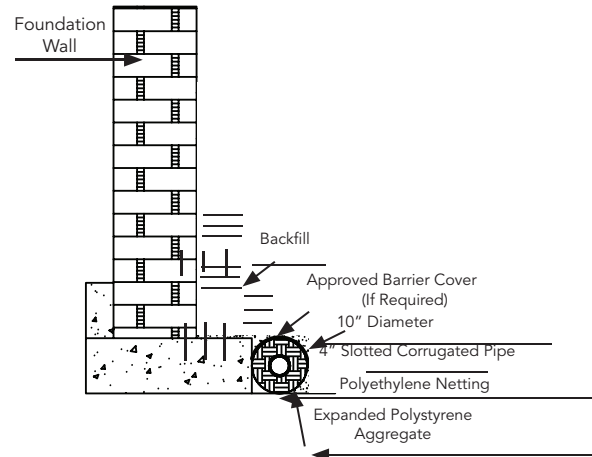
The 10-inch or 12-inch diameter cylinders can be used in

**2. Foundation Drain Systems:**

The 10-inch or 12-inch diameter cylinders can be used in



**Foundation Drain Detail**



Foundation Drain can be 7" diameter with 3" pipe; or 10" or 12" diameter with 4" pipe.



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