

**BUILDING MATERIALS EVALUATION COMMISSION
(BMEC)
AUTHORIZATION REPORT**

DATE OF AUTHORIZATION
BMEC REFERENCE
BMEC APPLICATION #

NOVEMBER 29, 2001
BMEC # 01-19-271
BMEC # A2001- 11

BMEC AMENDMENT
BMEC APPLICATION #

MARCH 25, 2004
BMEC # A2004- 01

* denotes draft changes

EZ Flow Drainage System

1. Applicant

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2. Manufacturing Facilities

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USA, 28712

EZ Flow
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USA, 75236

EZ Flow
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St. Augustine, Florida
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3. Description

The EZ Flow Drainage System is a subsurface drainage product which may replace stone, with a geo-synthetic aggregate. The EZ Flow Drainage System consists of a basic EZ Flow drain cylindrical bundle with 100 mm (4") pipe plus one or more cylindrical bundles of aggregate tubes (without pipe). The EZ Flow Drainage System is provided in prefabricated 3.0 m (10 foot) pipe and aggregate bundle lengths. The EZ Flow Drainage System is intended for use in a sewage system in lieu of the stone / distribution pipe arrangements within an absorption trench or filter bed.

4. Authorization Requested

The applicant sought authorization for use of the EZ Flow Drainage System as an alternative to the construction of absorption trenches as required by Section 8.7 of the Ontario Building Code. The applicant requested that the EZ Flow Drainage System be used to replace stone and distribution pipe in absorption trenches and filter beds that are:

- (a) gravity fed, and
- (b) "dosed" (non-pressurized distribution system)

Note: For the purposes of this authorization, "dosed" means a system in which effluent is pumped to the leaching bed either by pump or siphon, but the effluent is not pressurized within the leaching bed.

5. Assessment

Reports, assessments and information provided by the applicant indicate that if the EZ Flow Drainage System is designed and installed in accordance with the manufacturer's instructions and limitations, and the specific terms and conditions stated in this authorization, it will provide a level of performance that would be achieved by the conformance with the OBC.

Reports, assessments and information reviewed included the following:

1. Technical Background Information (TBI) Memo relating to EZ Flow Drainage System, dated 27 June 2001.
2. Video Tape: "EZ Flow : Generic Drainage Systems."
3. Alternative to gravel approval letter from the Ministry of Health and Ministry Responsible for Seniors in the Province of British Columbia, dated 24 April 1998.
4. Alternative to gravel approval letter from the Department of Insurance in the State of North Carolina, dated 17 February 1988.
5. Compliance Report Listing, Southern Building Code Congress International, Inc., No. 8971, date issued 12 January 2001.
6. Limited Usage approval letter, State of North Carolina, Department of Transportation, dated 23 May 1990.

7. Approval Letter, United States Department of Agriculture, State of Georgia.
8. Alternative to gravel approval letter from the Department of Insurance in the State of North Carolina, dated 21 January 1994.
9. "Building Codes Division Ruling on Acceptability of Material, Design or Method of Construction", Ruling No. 94-31, Oregon State Plumbing Speciality Code (OSPSC).
10. Instructions for the installation of EZ Flow Drainage System 1203H, 1006H, 1003H, 1006V, 1006T, 1003T, 1003V, and 1002V in the State of Alabama.
11. Instructions for Sizing EZ Flow Drainage Systems in the State of Alabama.
12. Technical Article "Comparison of EZ Flow Installations to a 3' Gravel Trench", dated 18 January 2001.
13. Instructions for the installation of EZ Flow Drainage Systems 1203H, and 1003H in the State of Florida.
14. Product specifications for geo-foam particles.
15. Product specifications for polystyrene aggregate.
16. Polyethylene drain pipe specifications.
17. Manufacturer's Information: Product Note 3.106, "Standard Pipe Perforations", dated January 2000.
18. Manufacturer's study "Report on Evaluation of Seven Year Old Eee Zzz Lay Effluent Drainfield Systems Installed in Two Feet Wide Trenches in Clay Soils (Class IV) in The State of Texas."
19. American Society of Agricultural Engineers, Paper No. 91-2578, "Sediment Retention Efficiencies of Sediment Basin Filtered Outlets.", dated 1991.
20. Retrospective Study "Survey and Study of Installed Expanded Polystyrene (Esp) Aggregate Onsite Sewage Treatment and Disposal Systems in Georgia: 1998 Thur 1998."
21. "Hydraulic Conductivity: an Evaluation of Drainage Media in Controlled Conditions" delivered 17 July 2001, prepared Donald Oderkirk, P.Eng, BPI, pllc, Memphis Tennessee.

22. "Determination of Hydraulic Conductivity of a Gravel System at the Trench Bottom", dated October 08, 2001.
- * 23. BMEC Application A2004-01 "Amendment to BMEC #01-19-271 to Include EZ 1401P for Standard and Shallow Buried Trenches in Septic Fields."
- * 24. "In-Ground Dispersal of Wastewater Effluent: The Science of Getting Water into the Ground" Kevin White, February 23, 2003.
- * 25. Survey and Study of Installed Expanded Polystyrene (EPS) Aggregate Onsite Sewage Treatment and Disposal Systems in Georgia: 1989 thru 1998" presented by Sam Robertson 2000.
- * 26. Assessment of Hardened EPS, Geosynthetic Systems Under Various Soil Conditions in Alabama" Kevin White, June 28, 2001.

6. Authorization

The use of the EZ Flow Drainage System is authorized in sewage systems within the scope of Part 8 of the Ontario Building Code 1997, as an alternative to stone and distribution pipes in absorption trenches and in filter beds, when installed in accordance with the manufacturer's recommendations and the Specific Terms and Conditions of this Authorization.

A. Specific Terms and Conditions

1. This authorization is valid only for EZ Flow Drainage System produced by Ring Industrial Group.
2. This authorization is valid only for the EZ Flow Drainage Product designated:
 - (a) 1202H, 300 mm (12") diameter, where two cylindrical bundles of the product shall be installed side by side, in a 600 mm (24") wide trench, one cylindrical bundle shall be of solid aggregate fill (without pipe) and the other cylindrical bundle (with pipe) shall be of aggregate and drainage tile, or
 - (b) 1003T, 250 mm (10") diameter, where three cylindrical bundles are installed in a triangular configuration, with two solid aggregate fill cylindrical bundles (without pipe) side by side on the bottom, and an aggregate and drainage tile cylindrical bundle (with pipe) which shall be placed on top of the two cylindrical aggregate bundles to form a triangle, in a 600 mm (24") wide trench.

- * (c) 1401P, 350 mm (14") diameter, where one cylindrical bundle is installed in trench not more than 600 mm (24") wide.
- 3. The drainage tile shall comply with ASTM F405.
- 4. The EZ Flow Drainage System shall be stored in UV protective plastic film bags, and the UVI (Ultra Violet Inhibitor) treated shipping bags shall serve to protect the product from UV degradation prior to installation.
- 5. The EZ Flow Drainage System shall be covered by a two (2) year manufacturer warranty.
- 6. When the EZ Flow Drainage System is installed in lieu of distribution piping and stone, the length of this installation shall equal the required lengths of distribution pipe specified in Article 8.7.3.1.
- 7. A barrier cover shall be placed over the top of the EZ Flow Drainage System prior to backfilling, and the barrier cover shall be a permeable filtration fabric of the type recommended by the manufacturer.
- 8. The EZ Flow Drainage System shall be covered with a minimum of 150 mm (6") of backfill as per Sentence 8.7.2.1(2) of the OBC.
- * 8.1. The EZ Flow 1401P may be used in shallow buried trench installations provided that the total trench depth to the finished grade is not greater than 600 mm (24").
- 9. When the EZ Flow Drainage System is installed in lieu of distribution piping and stone, the leaching beds shall satisfy the general construction requirements specified in Section 8.7. of the OBC.
- 10. The minimum clearance distances required by Article 8.2.1.6. for distribution piping shall be met by the EZ Flow Drainage System.
- 11. When installed in lieu of distribution piping and stone in filter beds, the cylindrical bundles of the EZ Flow Drainage System shall be placed side by side to cover the surface of the filter medium to which the sewage effluent is applied, and the maximum spacing between the cylindrical bundles (with pipe) shall not be greater than 1.2 m (3.9').
- 12. When used in gravity fed conditions, the EZ Flow Drainage System shall be:

- (a) installed such that all joints between EZ Flow components and where the EZ Flow product joins other pipes are to be securely connected, and
 - (b) free of structural damage and used full length (not cut),
13. Where the sewage effluent is “dosed” to the leaching bed by pumps or a siphon, the EZ Flow Drainage System shall:
- (a) pump the effluent into a header line or distribution box to achieve uniform distribution over the entire absorption bed or trenches and,
 - (b) comply with the requirements of Sentence 8.6.1.3.(4) of the OBC.

B. GENERAL CONDITIONS

- 1. The use of the EZ Flow Drainage System must comply with the *Building Code Act, 1992* as amended or re-enacted from time to time and except as specifically authorized herein, with the OBC as amended or remade from time to time.
- 2. A copy of this Authorization shall accompany each application for a building permit and shall be maintained on the site of the construction with the building permit.
- 3. The Applicant named in Part 1 hereof shall promptly notify the BMEC of:
 - (a) the failure of the applicant, or of the material, system or building design that is the subject matter of this authorization, to comply with any of the Specific Terms and Conditions set out in 6. A. above; or
 - (b) the occurrence of any of the events described in Specific Terms and Conditions 6. B. 4. (a) and (b) (ii) below.
- 4. The BMEC may amend or revoke this Authorization where it determines that:
 - (a) any change has been made to:
 - (i) the material, system or building design that is the subject matter of this authorization;
 - (ii) the address of the applicant specified in Part 1 of this authorization; or,

- (iii) the ownership of the applicant specified in Part 1 of this authorization.
- (b) the use of the material, system or building design authorized herein;
 - (i) does not comply with the *Building Code Act, 1992* or any relevant legislation as they may be amended or re-enacted from time to time; or
 - (ii) provides an unsatisfactory level of performance, in situ.
- (c) the applicant, or the material, system or building design that is the subject matter of this authorization, has failed to comply with any of the Specific Terms and Conditions set out in this Authorization; or
- (d) any Ontario Building Code provision relevant to this Authorization has been amended or remade.

Dated at Toronto this 25th day of March 2004.

BUILDING MATERIALS EVALUATION COMMISSION

Rashmi Nathwani, Chair