

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

**DATE OF AUTHORIZATION
BMEC AUTHORIZATION
BMEC APPLICATION**

**FEBRUARY 25, 1999
BMEC # 99-03-231
A1998-06**

**FORMADRAIN® INC.
FORMADRAIN® PROCESS**

1. Applicant

FORMADRAIN® INC.
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Anjou, Québec
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Tel: (514) 352-2000
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2. Manufacturing Facilities

FORMADRAIN® INC.
8600 Rue Jarry,
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3. Description

The Formadrain® Process is intended for the rehabilitation of underground pipes other than potable water pipes. The Formadrain® Process repairs pipes of all sizes and shapes using existing access points, so no digging is required. The Formadrain® Process consists of impregnating (wetting) a bidirectional woven fibreglass tissue with a predetermined epoxy resin. The impregnating tissue is rolled on a pneumatic tube (a thermomandrel) corresponding in length with the length of pipe to be repaired. The thermomandrel is slipped inside the pipe needing repair (concrete, clay, brick, PVC, etc.) from a nearby access, generally a manhole.

4. Authorization requested

The applicant seeks a Building Materials Evaluation Commission (BMEC) authorization for the Formadrain® Process as an alternative to repairing existing pipes as required by Article 7.1.2.2. - Alteration or Repair, and Section 7.2. - Materials and Equipment.

5. **Assessment**

Reports and assessments provided by the applicant show that if the Formadrain® Process of underground conduit rehabilitation is designed, performance tested and installed in accordance with the manufacturer's instructions and limitations and the specific terms and conditions stated in this authorization, the level of performance required by the Ontario Building Code will be provided.

Reports submitted and reviewed:

1. Installation procedure, including the Material Safety Data Sheet
2. Typical specifications, including laboratory data
3. Usage and limitation of the Formadrain® Process

6. **Authorization**

Use of the Formadrain® Process of underground conduit rehabilitation in drainage systems is authorized as an alternative to traditional pipe repair and/or replacement, subject to the following:

A. Specific Terms & Conditions

- 1) The Formadrain® underground conduit rehabilitation process shall be performed in accordance with the manufacturer's installation instructions.
- 2) Only manufacturer trained and approved installation personnel shall conduct the work in accordance with the instructions on the proper and safe installation of the Formadrain® Process, having regard to the Material Safety Data Sheets which will be supplied. All work shall be undertaken only in well-ventilated areas where no smoking is permitted while manipulating the resin.
- 3) The manufacturer shall provide field training to all installers and such training will be delivered by an experienced technician approved by Formadrain® Inc.- Drainmar Group Division.
- 4) The Formadrain® Process shall only be used in accordance with the following limitations:

- a) rehabilitation of underground drainage pipes excluding potable water systems,
 - b) maximum diameter of the drainage pipe that can be rehabilitated is 1525 mm (60 inches),
 - c) minimum diameter of the drainage pipe that can be rehabilitated is 75 mm (3 inches),
 - d) maximum angle that can be rehabilitated is 45°,
 - e) major leaks must be sealed before installing the Formadrain® liner,
 - f) flows have to be blocked and pumped.
- 5) All materials used in the Formadrain® Process, including the balanced bidirectionally woven fibreglass tissue, the two-component epoxy resin, polythene and thermomandrel, shall be supplied by Formadrain® Inc. and shall be handled in accordance with the manufacturer's specifications.
 - 6) Before using the Formadrain® Process, the pipes shall be thoroughly cleaned by the removal of roots, protruding laterals and exposed armatures reamed to prevent perforating the insertion kit. Major infiltrations must be grouted.
 - 7) CCTV video inspections by a qualified person, shall be performed before the rehabilitation process starts and after the work is completed.
 - 8) Preparation of the thermomandrel shall be in complete compliance with the specification provided by the manufacturer, and the composite (fibreglass and resins) shall be prepared in a shop under total quality control.
 - 9) The thickness of the impregnating tissue shall be established considering the data supplied for the pipe to be lined and the number of layers shall determine the mechanical capacity. The reduction in pipe diameter from the lining shall be considered minimal and not essential for the flows in the pipes.
 - 10) The pot life (pre-curing time) of the mixed resin is 4 hours at 20° C and it may vary widely depending on ambient temperatures. During the transportation the wetted composite material shall be protected from exposure to sun and/or rain.
 - 11) Each insertion of the insertion kit shall be done in accordance with the manufacturer's recommendation and every insertion shall overlap the previous one by a minimum of 6 inches.

- 12) The curing process shall be supervised at all times by a technician that will maintain the suggested pressure differential at 1 psi. Curing shall be done using a high pressure steam boiler and air compressor to set the impregnated membrane against the conduit wall.
- 13) The curing time is predetermined by the manufacturer based on the diameter and length of pipe being rehabilitated. Actual times shall not exceed by 25%, nor be less than 25% of the predetermined times.

B. General Conditions

1. A copy of this Authorization shall be included with an application for a building permit and shall be maintained on the site of the construction, with the building permit.
2. 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 Section 1 of this Authorization; or,
 - (iii) the ownership of the company specified in Section 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 may be amended or re-enacted from time to time; or
 - (ii) provides an unsatisfactory level of performance, in situ; or

- (c) any Ontario Building Code provision relevant to this Authorization has been amended or remade.

Dated at Toronto this 25th day of February, 1999

BUILDING MATERIALS EVALUATION COMMISSION

per: Scott Richardson, Chair