

GEOCOMPOSITE FIN DRAINS

1. INTRODUCTION

Pavement drains are provided to remove infiltration water from the pavement layers, and to prevent infiltration of water from the shoulders, verges and medians into the pavement.

Geocomposite fin drains, also known as geocomposite edge drains or prefabricated drains, are proprietary products which can be used for pavement drainage purposes. They normally comprise a plastic core and are wrapped in geotextile filter material. The thickness ranges from 25 mm to 40 mm and vary from 200 mm to 900 mm high. Because the product is narrow, the trench width can be narrowed to 150 mm wide resulting in considerable saving in the quantity of permeable backfill required. In some cases, geocomposite fin drains can be more economical than the Vic Roads standard pavement drainage systems.

Because fin drains have a large surface area they generally collect infiltrating water more quickly, however the flow rate on discharge is generally lower than the 100 mm round pipe. If the same flow capacity is required of fin drains, then outlets theoretically need to be spaced more frequently than for standard 100 mm pipe drains.

2. USE OF FIN DRAINS

Discussion with site personnel indicate that pavement drains located above the natural surface level do not, as a rule, collect large quantities of water. It is most unlikely that a 100 mm drain would ever flow full in this situation. However, in situations where drains are below natural surface level, much larger volumes of water have been observed (i.e. subsurface and formation drains).

There are some concerns that geocomposite fin drains could become blocked more readily because of lower flow velocities and may be more difficult to flush out due to the elongated shape.

3. FUTURE ACTION PROPOSED

A subsurface drainage review committee comprising members from GeoPave, Principal Road Design Engineer's

Department and Regional Services Division has been set up to review the performance of various forms of subsurface drain.

Trials of geocomposite fin drains against standard drainage systems under identical circumstances should continue to be undertaken and monitored so that the Standard Specification, Standard Drawings and Technical Bulletin No. 32 - "Drainage of Sub-surface Water from Roads" can be reviewed and updated as required.

Where a Region or Project proposes to undertake such trials, GeoPave should be contacted to assist in the monitoring and review program.

4. INTERIM GUIDELINES FOR USE OF GEOCOMPOSITE FIN DRAINS

Until conclusions can be reached from further trials, geocomposite fin drains may be considered for use on an interim basis as follows:

- (a) As a pavement drain on the low side of pavement where the subgrade is above natural surface level.
- (b) As a pavement drain at the interface between two pavement types having significant difference in permeability or depths, in locations where ground water could be trapped between the two types of pavement.

In the absence of detailed design standards for geocomposite fin drains, it is recommended that the interim general requirements for their use be as follows:

- The cross-sectional area of the drain should not be less than 7500 mm² with a vertical dimension of not less than 200 mm.
- The fin drain core must be covered with filter fabric complying with the requirements of Vic Roads Standard Specification Section 702Q for a first stage filter material.
- The minimum trench width should not be less than 150 mm.

Technical Note 2

- The depth of trench below the permeable sub base layer should be not less than 425 mm, in accordance with Standard Drawing No. SD1601 and unless otherwise specified, the cover for construction traffic should be not less than 250 mm.
- In clay and silt subgrades where the fabric surrounding the drain may become blocked with fine soil particles the geocomposite fin drain should be located in the centre of the trench using special locating forks or pins to hold the drain in a vertical position during backfilling. Where the drain is located in a granular subgrade or within the pavement layers it may be placed to one side of the trench.
- The filter material should be filter sand capable of being “watered in” around the drain and compacted from the top.
- Where geocomposite fin drains are installed under existing pavements, they should be backfilled with Size 14 no-fines concrete having a B2 or B3 grading. It is preferable that filter sand be “watered in” around the drain prior to placement of no fines concrete.
- The spacing of outlets should be the same as those for conventional pipe pavement drains.

5. CONTACT OFFICERS

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