

Sika Sarnafil

World Class Roofing and Waterproofing

WATERPROOFING TECHNICAL BULLETIN

#02-12

To: Authorized Roofing Applicators
Sika Sarnafil Sales Staff & Sales Representatives
Sika Sarnafil Regional Technical Staff
Sika Sarnafil Customer Service Staff
Sika Sarnafil Services Staff

From: Technical Service Department

Date: 05-31-12

Subject: Concrete Topping Slab Overburdens

Electronic Leak Detection (ELD) can be used in most situations to locate leaks after the overburden has been installed over the waterproofing system. The ability to use ELD to troubleshoot after the project has been completed is dependent upon whether the layers placed above the waterproofing membrane and the overburden itself will cause interference. Ideally, the materials used allow water to flow in a straight path to the membrane so the ELD reading will be directly above the breach. Having impermeable layers such as extruded polystyrene insulation, solid core drainage panels, and PVC protection layer will interfere with the ability of the ELD test to pinpoint the location of the leaks.

Pervious overburdens such as vegetative cover growth media, shallow soil, and loose-laid pavers are the most compatible with ELD. Impervious overburdens such as asphalt paving, pavers set in mortar, deep soils/growth media, and fiber concrete topping slabs present more of a challenge but in most cases are compatible with ELD.

Overburdens of particular concern are concrete topping slabs (including pavers set in mortar) due to the difficulty associated with removal and replacement in order to access the waterproofing membrane in the event of a leak. Concrete topping slabs reinforced with steel bar or wire fabric will scatter the ELD readings making the test ineffective.

For this reason, Sika Sarnafil will only allow the use of concrete topping slabs reinforced with synthetic fibers over the waterproofing system. Synthetic micro- and macro- fiber reinforcement is commonly used and can replace steel except in cases where heavy steel reinforcement is required. Steel and synthetic fiber reinforcement are easily interchanged when designing a concrete topping slab. Knowing what the steel reinforcing requirement is, the synthetic fiber quantity/volume can be calculated.



Sika Sarnafil, A Division of Sika Corporation, 100 Dan Road, Canton, MA 02021
Tel. 800-451-2504, Fax: 781-828-5365, www.sikacorp.com

Sarnafil®

Sika Sarnafil

World Class Roofing and Waterproofing

The following is an excerpt from the American Concrete Institute Guide to Design of Slabs-on-Ground (ACI 360R-10 section 11.2.1 and 11.2.2):

ground in the hardened state. Use macrosynthetic fibers in the range of 0.20 to 1.0% by volume, which equates to 3.0 to 15 lb/yd³ (1.8 to 8.9 kg/m³). Macrosynthetic fibers provide increased post-cracking residual strength to slabs-on-ground.

Adding macrosynthetic fibers at quantities between 0.20 to 1.0% by volume significantly increases the flexural toughness of concrete. ASTM C1399, C1550, and C1609/1609M provide quantitative measures that are useful in evaluating performance of synthetic FRC in the hardened state. The results of these test methods can be used to optimize the proportions of FRC, to determine compliance with construction specifications, and to evaluate existing FRC.

11.2.2 Design principles—

Macrosynthetic fibers provide increased post-cracking residual strength to concrete slabs-on-ground. The same design principles for steel FRC in Section 11.3.3 can be used for macrosynthetic FRC.

The use of synthetic fiber in a concrete topping slab overburden is a viable alternative to steel reinforcement. As this is the only method to reinforce a concrete slab that still allows for ELD testing, this is the only form of concrete overburden acceptable by Sika Sarnafil for a warranty. Only the designer can determine the specific design for using synthetic fiber reinforcement based on the performance requirements of the concrete topping. Beyond the fact that the use of such products is our requirement, we need to impress upon designers and owners that the use of ELD to locate a leak through concrete overburden can make troubleshooting the waterproofing system faster, easier, and significantly less expensive and ultimately minimize the amount of disruptive and costly overburden removal in the event of a repair.



Sarnafil®

Sika Sarnafil

World Class Roofing and Waterproofing

For additional information concerning the substitution of steel reinforcement with synthetic fibers please contact:

Ketan Sompura, Ph.D
Product Manager
Sika Corporation - Business Unit Concrete
201 Polito Avenue
Lyndhurst, NJ, 07071, USA
Tel: 201-508-6698
Fax: 201-933-6225
Email: sompura.ketan@us.sika.com



Sarnafil®