

STRUX® 90/40

Performance profile — Applications of STRUX 90/40 in slab-on-ground construction

Made from a unique polymer blend, STRUX® 90/40 synthetic macro fibers are patented, high tenacity synthetic monofilaments, designed to replace steel fibers, welded wire mesh, light rebar and other secondary reinforcement in concrete slab-on-ground applications. Unlike traditional “micro” fiber reinforcement, STRUX 90/40 is specifically engineered to provide high, post crack-control performance in these applications. STRUX 90/40 has been shown to reliably achieve average residual strength values in excess of 150 psi that can easily be batched and finished in the field and is easier and safer to use than these other types of secondary reinforcement.

The following are just a few successful examples where STRUX 90/40 has been used to replace traditional secondary reinforcement throughout North America, dramatically improving performance and uniformity in concrete slab-on-ground applications.

New parking structure passes test at university

In order to deal with an ever growing student population who park on campus every day, one university needed to build a new parking structure, and they held the contractor to very high standards. Any cracking in the concrete would result in a failing grade.

The project originally specified steel reinforcement for the slab-on-ground construction. The specifier suggested a cost-efficient alternative specifically designed to replace steel reinforcement in flooring applications, Grace Construction Products’ STRUX 90/40 synthetic macro fibers.

By replacing the secondary steel reinforcement with synthetic macro fibers, the contractor was able to save both time and money on the project. The STRUX 90/40 eliminated the need to spend an extensive amount of time placing the steel reinforcements before the pouring process began. Also, unlike steel reinforcement, STRUX 90/40 fibers have no corrosive properties, so the team decided to forgo the added expense of using a surface sealer originally specified in the plans.

The ultimate result for the university is a new parking structure, with a synthetic macro fiber reinforced concrete slab-on-ground, designed to

provide exceptional crack control. STRUX 90/40 performed very well and resulted in a good finish with a light broom texture. According to everyone involved in the process, STRUX 90/40 has passed the test.

New plant for an innovative company

To meet the needs of an emerging market need, an inventive technology company required the most innovative products and materials available for the



University parking structure

construction of a new manufacturing plant. The project originally specified welded wire mesh for the concrete slab-on-ground, but the specifier had recently learned about a new product, STRUX 90/40, which could replace this secondary reinforcing steel. Because of STRUX 90/40's unique design, the contractor was able to use a laser screed to provide a better finish. The contractor also used finishing machines to complete the placing process, which laid the fibers down so well, it was difficult to detect them in the mix at all.

Daracem® 100, Grace's high-range water reducing admixture, was also added to the concrete mix improved the workability of the concrete.

By using STRUX 90/40, the final result was a new manufacturing plant, with a crack-free, fiber reinforced concrete slab-on-ground and an excellent finish.

A new solution to concrete paving

The constant pounding of a couple of hundred buses a day, combined with the hot mid-western summers can take its toll on asphalt bus stops. Although the standard practice is to replace the sections full-depth with concrete, the replacement cost was becoming overwhelming. In response to the county's request for a fresh approach, the highway department decided to replace entire bus stops with concrete ultra thin white topping sections. Grace Construction Products' STRUX 90/40 synthetic macro fibers were specified as reinforcement in the concrete pavement.

The results of stress tests showed that the synthetic macro fibers needed to be added at a significantly higher quantity than conventional practice in the use of fibers. This raised concerns with the contractor and the producer, as to the ability to produce, place and finish the concrete. But with STRUX' unique ability to be evenly dispersed and the likelihood of "balling" of the fibers minimized, these concerns were put to rest. With the cost of the concrete pavement sections being just slightly above one-third of that of the full-depth concrete replacement, the county is potentially considering this option for 1,000 more bus pad replacements.



Technology company manufacturing plant



Mid-western county highway department

www.graceconstruction.com

North American Customer Service: 1-877-4AD-MIX1 (1-877-423-6491)

STRUX and Daracem are registered trademarks of W. R. Grace & Co.—Conn.

We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate and is offered for the users' consideration, investigation and verification, but we do not warrant the results to be obtained. Please read all statements, recommendations or suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation or suggestion is intended for any use which would infringe any patent or copyright. W. R. Grace & Co.—Conn., 62 Whittemore Avenue, Cambridge, MA 02140. In Canada, Grace Canada, Inc., 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6.

This product is covered by U.S. Patent Nos.: 6,569,525; 6,569,526; 6,758,897; 6,863,969.
STRUX-23C Printed in U.S.A. 11/07 FA/LI/3.5M

Copyright 2007. W. R. Grace & Co.—Conn.

GRACE