

Manufacturing Facility Completed on Time and on Budget

STRUX® 90/40 synthetic macro fibers used to meet construction specifications for manufacturing facility.



Project	Cedar Grove Composting Facility
Owner	Emerald Services, Inc., Seattle, WA
General Contractor	Bayley Construction, Mercer Island, WA
Engineer	Earth Tech, Vancouver, BC
Concrete Producer	Concrete NorWest, Burlington, WA
Concrete Contractor	Olympic Concrete Finishing, Inc., Auburn, WA
GCP Solutions	STRUX® 90/40 synthetic macro fibers, Eclipse® Plus shrinkage reducing admixture

Project

Cedar Grove Composting facility

As a provider of compost for agricultural purposes, Cedar Grove Composting is in the business of helping things grow. And with an increasing demand for compost, the company needed to help itself grow by building a new composting facility in Everett, Washington. Construction of the manufacturing facility involved some challenges.

"Schedule advances and labor savings made it easier to stay on track with STRUX® 90/40 versus having to install conventional steel reinforcement."

Jeff Toles, Bayley Construction

Challenge

Meeting slab loading and durability requirements

A critical component of the Cedar Grove manufacturing facility was the ability of the eight-inch thick slab-on-grade floor to provide the high performance needed for a busy composting operation. During the composting process, the compost sits directly on the slab which generates heat that can cause cracking. In addition, the slabs needed to withstand the stress of constant scraping and scooping from front-end loaders, along with the stress of the heavy machinery's weight

Fortunately, Mateo Ocejo, the project's Structural Engineer from Earth Tech, already had a solution. During a previous expansion of one of Cedar Grove's existing plants, Ocejo had evaluated different fiber reinforcement options and found the hard data and performance results made STRUX®90/40 synthetic macro fiber reinforcement his choice. Not only did STRUX®90/40 deliver fatigue resistance but also structural fibers to provide the necessary toughness to the concrete. The success of Cedar Grove's first expansion project confirmed his decision.



"I am very impressed with how well STRUX® dispersed itself into our concrete mix. We did not see any balling of fibers."

Jerry Simmons, Concrete Nor'West

Solution

High performance slabs

The slabs were confidently designed with STRUX® synthetic macro fibers to meet the loading and durability requirements – while still providing the equivalent residual flexural strength to steel. This was vital since the rising cost of steel, issues over its availability, and the added time required to place secondary reinforcement bars, would put the job's schedule and budget in jeopardy.

STRUX® provided a high-performance solution that enabled the manufacturing facility to be completed on time and on budget. In addition, Eclipse® Plus Shrinkage Reducing Admixture was added to reduce cracking from drying shrinkage and to minimize curling.

Because STRUX® is dispersed throughout the concrete mix, it provides uniform performance and strength, without the clumping and balling associated with steel fibers. A total of 4,000 cubic yards of concrete were treated to produce a high-performance slab-on-grade floor — with STRUX® 90/40 added at 6 lbs. per cubic yard. The completed high performance slabs revealed no drying shrinkage cracks and are expected to deliver years of service under hard use.

The owner, contractor and structural engineer are all very pleased with the completed slabs. In fact, they're already looking at future manufacturing projects to incorporate STRUX® 90/40 technology.

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"The use of STRUX® 90/40 and Eclipse® Plus for our slab-on-grade applications allowed us to maintain adequate integrity, toughness and crack control while optimizing our installation schedule. These products were cost-competitive when compared to a traditional reinforcing bar installation."

Mateo Ocejo, Structural Engineer, Earth Tech

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