

Wal-Mart Supercenter Utilises Advanced Synthetic Macro Structural Fibres

Using advanced STRUX® 90/40 synthetic macro fibres to develop hard-wearing, crack-resistant surfaces at a high-traffic facility.



Owner

Wal-Mart Concrete Supplier: Jack B. Parson Companies, Inc. Engineer: Carl Walker, Inc.

GCP Solution

STRUX® 90/40 synthetic macro fibres, ADVA® 100 Superplasticiser

The Overview

The Project

Shopping structures in urban areas may attract more customers, but have less space for parking. Such was the case with the Wal-Mart Salt Lake City Supercenter at 1300 South 300 West. As a structural solution, they decided to double their parking capacity with a one-level parking terrace.



"When STRUX® was first introduced, we jumped on the bandwagon for slab-on-ground applications. One of the reasons we like STRUX® so much is that it reduces the possibility of corrosion that would result from use of welded wire mesh (WWM) or other secondary steel reinforcement in the concrete. Additionally, we have gotten feedback that STRUX® is easier to work with from the contractor's perspective, since it eliminates the issues surrounding proper placement of WWM."

Robert McConnell, Vice President Regional Manager, Carl Walker Denver Office

The Challenge



Carl Walker, Inc., the structural engineers for the project, were given the task of rapidly installing hard-wearing, crack-resistant concrete in high-traffic areas such as the slab-on-ground concrete, the pedestrian ramp and the loading docks. As the designers of over 1,000 multi-level parking facilities, they have successfully used STRUX®90/40 synthetic macro fibres in a number of previous jobs requiring fatigue resistance and high strength.

The Solution

Working with representatives from Jack B. Parson Companies, GCP developed a concrete mix incorporating STRUX®macro fibres. The team created a 611 lb. (277 kilo) mix, consisting of 490 lb. (222 kilos) of cement and 120 lb. (54 kilos) of fly ash. STRUX®90/40 was added at a rate of 4.5 lbs. per cubic yard (2.9 k/cubic metre) to provide the residual strength required for the project.

The mix also incorporated ADVA®100 superplasticiser. This high range water-reducing admixture produces a low water/cement ratio and promotes high slump, extremely flowable concrete that achieves high strengths while providing superior workability.

Tested and Proven

Rod Higley, the Quality Control and Technical Sales Representative from Jack Parsons, reported on a 13-yard test pour. "It worked beautifully", he says. "We ended up pouring 3400 yds [3108 m] of concrete. The concrete was 6" [15 cm] thick in the parking terrace, and 8"-10" [20-22 cm] thick in the loading docks to accommodate the heavy trucks. We found that STRUX®90/40 worked very well. STRUX 90/40 prevented cracking and really enhanced the performance of the concrete", says Higley.

Higley also commented on other benefits of using STRUX® macro fibres. “STRUX® comes in a concrete-ready bag, so it is easy to handle, and it disperses evenly throughout the concrete matrix. By using STRUX®, we also saved on time and labour, because we could drive our trucks directly on grade to pour the concrete. In all, STRUX®90/40 passed the test with flying colours”.

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