

**JUNE 18, 2003** - Presentation - Improving Plastic and Hardened Concrete Properties Using Blended Fiber Solutions

Speaker: [Mr. Ed McLean](#) of [SI Concrete Systems](#), Belleville, Illinois. Tel. 618-233-3750

*Ed McLean, is the regional civil engineer for SI Concrete Systems, located in Belleville, Illinois. Mr. McLean graduated with a civil engineering degree from Bradley University in 1979 and has worked in the Portland Cement Concrete industry for most of his career, and has been with SI Concrete Systems for the last two years.*

### **PRESENTATION SUMMARY**

Mr. McLean's PowerPoint presentation to a room of about 15 showed how pavement and slabs can be reinforced with steel and synthetic fibers in order to reduce plastic and shrinkage cracks significantly better than concrete reinforced with conventional wire mesh or rebar. He discussed three types of synthetic fiber systems: Polyester, Nylon and Polypropylene, with the latter being the best performer. These are covered in ASTM A544. He also discussed steel fiber reinforcement, covered by ASTM A820. The most ideal fiber reinforcement system is one engineered as a blend of the two, e.g., 23 lbs. steel plus 1 lb polypropylene per cubic yard of concrete.

In the case of the synthetic fibers, smooth hairlike strands are mixed in the truck. In the case of steel fibers, the fiber is made of gage steel and slightly deformed. In both cases, the fibers are about 1.5 inches long and uniformly distributed in the mix.

Mr. McLean pointed out that this type of reinforcement is not meant for large bending moments and is therefore not suitable for beam reinforcement. However, if added to a post-tensioned reinforced foundation, it will greatly reduce shrinkage cracks that occur prior to stressing.

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