



FREQUENTLY ASKED QUESTIONS

Why do we install joints in concrete driveways and interior slabs?

All concrete shrinks during the drying process. This drying shrinkage can lead to the formation of cracks if the tensile strength of the concrete is exceeded by the tensile stress caused by the shrinkage. These are called drying shrinkage cracks. Control joints are installed in specific locations so that when the concrete does shrink, a weakened plane is created so that the crack occurs inside/below the joint, thereby avoiding a random crack on the surface of the concrete.



How do I minimize concrete cracking?

The occurrence of random cracking can be greatly minimized by following guidelines established by the American Concrete Institute (ACI) for concrete slab installation which includes:

- Proper subgrade preparation
- Mixture selection
- Installation practices, including control joint installation and by properly curing the concrete after final finishing.

What is the purpose of reinforcing in a concrete driveway or interior slab?

Reinforcing for concrete driveways and interior slabs is used to keep control joints/saw cuts and random cracks, should they occur, tight so that both sides of the joint or crack act together when a vehicle drives over the joint or crack. Reinforcing is also used to control joint and random crack widths due to thermal changes.



Reinforcing, whether that be rebar, welded wire mesh (WWM) or fibers, is only effective after the concrete has cracked. Ideally, these cracks should occur within a properly installed joint in the concrete. When used to control cracks caused by drying shrinkage and thermal changes of the concrete, rebar and WWM need to be positioned within the upper portion of the driveway/interior slab cross-section for the rebar/WWM to perform as intended.

Does reinforcing make a concrete driveway or interior slab stronger?

No. The purpose of reinforcing is to maintain tight control joints and cracks, should they occur, due to drying shrinkage and thermal changes. In addition, the use of reinforcing does not prevent concrete cracking.



RESCLVE BER REINFORCEMENT MATE

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How do synthetic concrete fibers work?

The American Concrete Institute (ACI) recognizes the use of macro-synthetic fibers as a suitable replacement for reinforcing bars and welded wire mesh when used to control drying shrinkage cracking and thermal changes (ACI 544.4R).

There are two types of synthetic fibers, "micro" and "macro" fibers.

Micro-synthetic fibers, along with proper curing after finishing, are used to reduce the effects of plastic shrinkage cracking. Plastic shrinkage cracking occurs when the surface of the concrete dries out during finishing operations.

Macro-synthetic fibers can be used as a replacement for rebar and welded wire mesh when used to control cracking caused by drying shrinkage cracking and thermal changes in driveways and interior slabs on ground.

Why should I use macro-synthetic fibers?

Unlike rebar and welded wire mesh, fibers provide three-dimensional reinforcement so that when a crack forms, ideally in a control joint, there are numerous fibers bridging the crack/joint, thereby minimizing the width and length of the crack.

In addition, macro-synthetic fibers increase the toughness of the concrete, which aids in limiting deterioration due to impact, abrasion and fatigue.

Will I see the fibers on the surface?

The appearance of fibers on the surface is greatly minimized with proper concrete mixture selection and installation practices. For more information, please see Cemstone's Fiber Finishing Guide which can be found at cemstone.com.





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