

## DEMO:



*PROOF: 10 cement blocks held together with only one Fortress carbon fiber strip (on bottom side only).*

TEST 1-08.01

### FORTRESS STABILIZATION SYSTEM IN ACTION

Ford F-350 Extended Cab ramped up onto a row of cement blocks. There is no mortar between the blocks—only one strip of carbon fiber on lower side. This is a serious and accurate demonstration of the amazing strength of carbon fiber.

# FORTRESS

STABILIZATION SYSTEMS



PATENT #6846537

# CARBON FIBER COUNTERSUNK STAPLE

THE BEST FOUNDATION CRACK REPAIR AND STABILIZATION SYSTEM

### THE CARBON FIBER COUNTERSUNK STAPLE

- Fast & easy installation
- Will not rust or deteriorate
- Flat, paintable finish
- Adds little cost to overall crack repair



**FIX CRACKED CONCRETE PERMANENTLY!**

# FORTRESS

STABILIZATION SYSTEMS

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# CARBON FIBER COUNTERSUNK STAPLES

STRONGER THAN STEEL, WALL REINFORCEMENT

## Why use Fortress Carbon Fiber Countersunk Staples for stitching concrete cracks?

Crack injection became less expensive with the introduction of dual cartridge tube sets, dual dispensing guns, etc. However it also became too easy. Everyone with a pulse began shooting cracks with some kind of sealant.

Poured wall companies, when they are slow, will pull a guy off a crew and send them out for warranty repairs. Find a contractor today that doesn't offer a warranty, but are they still in business 2 or 3 years later when the repair fails.

Very few crack repairs fail immediately. It is long-term creep and fatigue of material injected with the movement of foundation that can fail over time. By cross-stitching crack repair with staples this creep is eliminated and improves long-term performance of repair material. Think in terms of 3 roof repair options giving a 10 yr, 20 yr or 30 yr warranty vs. the cost for quality.

## Crack repair materials

One of the longest and ongoing debates in the concrete repair industry is which type of material should be used to repair cracks in concrete. The number of choices are numerous ranging from cementitious products, mortars with polymer base, methacrylate, epoxies, asphalt based, etc.

Understanding the type of cracking and the cause of cracking is crucial in a successful repair of concrete.

For instance: if a control joint is designed, you must honor the control joint as such. In this case you will likely choose a high elongation material. One common misconception is that all cracks are moving, so we should allow for that movement. This of course is only half right.

All cracks do move because they are allowed to move, but not necessarily because they need to move for concrete to function as designed.

Whether you allow for a given movement or structurally bond, the biggest enemy is too much movement or movement that compounds and fatigues repair material. Hundreds of material companies now manufacture 1 and 2 component injection systems epoxy based, polyurethane grout, etc. Yet they all depend on a single plane and are subject to many different forces.

The use of cross-stitching or stitching dogs has always made sense allowing the transference of load from crack and crack material. However it is still not widely used unless an engineer specified it in on large structural cracks.

Repairing a crack in concrete and not reinforcing for tensile capacity is the same as pouring residential foundations without steel. The steel gives the foundation tensile that the concrete lacks.

## The Fortress Carbon Fiber Countersunk Staples

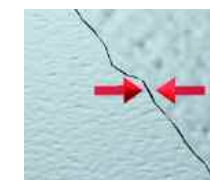
There are many reasons a concrete foundation wall will crack, some of the most common reasons are:

- Soil pressure on the wall
- Thermal changes in soil and concrete
- Settling of footing
- Uneven loading of structure
- Drying and shrinkage
- Soil shrinkage in the dry season

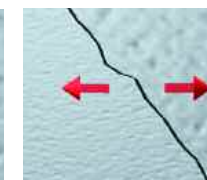
Epoxies alone can not guarantee that further movement of the wall is arrested. The crack may recur in the same area without further stabilization. Flexible repair materials must not exceed elongation.



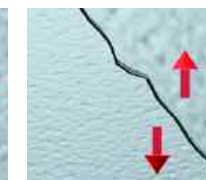
## 6 directions of wall movement



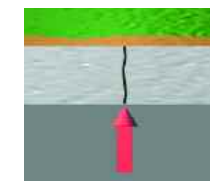
Closing thermal changes



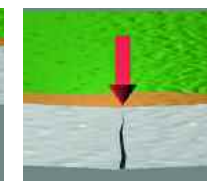
Opening thermal changes



Uneven loading & settling of footing



Soil shrinkage



Soil pressure

The 6th direction of movements is a combination of all the other 5 wall movements.

Understanding this Fortress Stabilization has researched, developed and patented a unique carbon fiber countersunk staple that will help stabilize the wall in all 6 directions of movement.

By applying the Fortress carbon fiber countersunk staples across the face of the crack, the load is distributed away from the glue line to the portion of the substrate that is not cracked, preventing fatigue and re-cracking at the injection glue line.

Every crack injection repair is improved by reinforcement. Previous methods such as drilling dowels or saw-cutting are labor intensive. Fortress countersunk staples take only minutes to apply and deliver a superior result.

With the Fortress carbon fiber countersunk staples installed you can be confident the crack will not reoccur and the repair will last the life of your home, the wall is permanently stabilized in the area of the crack.

Carbon fiber has a tensile strength 10 times stronger than steel and has proven to be a safer and more effective product for structural reinforcement. The Fortress carbon fiber countersunk staples when



Fortress Stabilization Carbon Fiber Countersunk Staple

installed lay flat against the wall leaving the wall with no obstruction and ready to paint. Fortress carbon fiber countersunk staples will not rust or deteriorate.

## The Fortress Carbon Fiber Countersunk Staple advantages

- Fast & easy installation
- Adds little cost to entire crack repair
- Will not rust
- No obstructions, flat, paintable finish
- Protects the value of your home



Before

Pictures to the left is a typical foundation crack. Below is after Fortress Stabilization carbon fiber countersunk staples are installed and the wall is ready to be painted.



Fortress Carbon Fiber Countersunk Staples installed