

# Fabric-Reinforced Cementitious Matrix (FRCM)



Now you can  
repair and  
strengthen in  
one shot.

(800) 999-5099  
[strongtie.com](http://strongtie.com)

## Product information

# Introducing the Next Generation of Composite Strengthening Systems™ for Concrete and Masonry Structures

Repair, protect and strengthen aging, damaged or overloaded concrete and masonry structures in one application while significantly reducing your installed cost. The new FRCM externally bonded Composite Strengthening System™ (CSS™) combines a high-performance sprayable cementitious matrix with a carbon-fiber grid to create a thin structural layer that will not add significant weight or volume to the existing structure.

### Benefits

- Repair and strengthen structures using only a thin layer of material
- Can be applied in multiple grid layers (two maximum) to achieve desired strengthening — ½"–1" (12.7–25.4 mm) thick for one-layer grid applications, adding ½" (12.7 mm) for an additional grid layer
- Lightweight system for vertical surfaces and overhead applications
- Suitable for harsh environments or service conditions, including marine locations, elevated temperatures, humidity, abrasion and UV exposure
- Works on damp substrates
- Installation process is similar to that for wet shotcrete repair mortars
- Quick installation with less preparation than traditional shotcrete repairs with rebar
- Does not create a vapor barrier
- Matches substrate finish
- 100% solids formulation
- Carbon-fiber grid features excellent chemical and corrosion resistance
- Non-hazardous shipping

### System Components

The FRCM system consists of two components: a sprayable, fiber-reinforced cementitious matrix and a carbon-fiber grid.

#### CSS-CM Cementitious Matrix

Bag Size  
55 lb. (24.9 kg)

Model No.  
CSS-CM

#### CSS-BCG Bidirectional Carbon Grid

Roll Size (width x length)  
77 in. (1.95 m) x 164 ft. (50 m)

Model No.  
CSS-BCG19550

#### CSS-HBCG Heavy Bidirectional Carbon Grid

Roll Size (width x length)  
77 in. (1.95 m) x 164 ft. (50 m)

Model No.  
CSS-HBCG19550

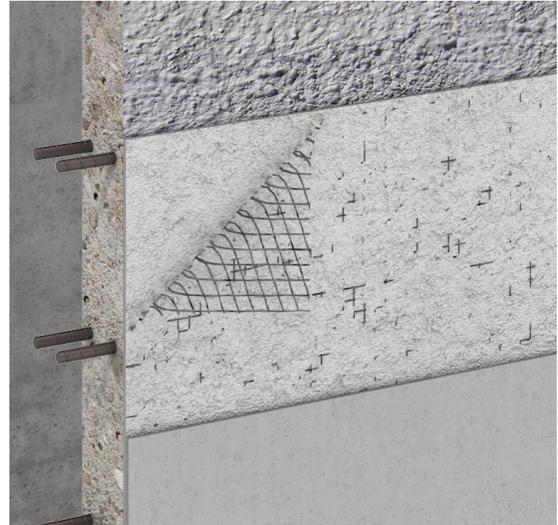
#### CSS-UCG Unidirectional Carbon Grid

Roll Size (width x length)  
77 in. (1.95 m) x 164 ft. (50 m)

Model No.  
CSS-UCG19550



STRUCTURAL CONCRETE FIBER-REINFORCED COMPOSITE SYSTEM FOR USE IN BEAM/SLAB EXTERNAL REINFORCING SYSTEM  
FIRE RESISTANCE CLASSIFICATION  
SEE UL FIRE RESISTANCE DIRECTORY <R37897



The cementitious matrix repairs surface defects and bonds the system to the substrate in one step.



Cementitious matrix and carbon-fiber grid.



Bidirectional (left) and unidirectional grid (right).

# Applications

Significant flexural, axial or shear strength gains can be realized with an easy-to-apply composite that does not add significant weight or mass to the structure. FRCM provides a low-impact, low-weight alternative to traditional concrete strengthening and retrofit methods. Many times, it's the most economical strengthening solution available, given its reduced preparation and installation time.

- Projects that also require a surface repair and leveling in addition to strengthening
- Projects with large, overhead and vertical surface areas where higher production rates are possible with shotcrete material
- Repair applications that cannot afford significant member enlargement
- Composite strengthening applications that require an increased level of abrasion and fire resistance

## Structures

- Tunnels, pipes and mines
- Tanks, silos and chimneys
- Parking garages
- Bridges, piers and wharfs
- Commercial and industrial buildings

## Seismic Retrofit

- Shear strengthening
- Displacement/ductility
- Life safety

## Load Rating Upgrade

- Increased live loads
- Accommodating new equipment
- Change of use



## Damage Repair

- Deterioration/corrosion
- Blast/vehicle impact

## Defect Remediation

- Size/layout errors
- Low concrete strengths

## Blast Mitigation

- Progressive collapse

# A Strong Alliance for Stronger Structures

Through their alliance, Simpson Strong-Tie and Structural Technologies offer one-stop, end-to-end concrete strengthening and repair solutions with the best products, installation and support available.

## Integrated Design-Build Solutions

Simpson Strong-Tie, a leading provider of tested, code-listed, high-performance products and technical services for the construction industry, and Structural Technologies, a renowned provider of state-of-the-art infrastructure strengthening solutions and engineering support services, have formed a strategic alliance within North America.

This new alliance enables both companies to jointly deliver complete end-to-end repair and strengthening solutions to engineering professionals, general contractors and owners across multiple construction and repair markets. The combination of innovative products, design support, engineering partners and contracting services allows us to deliver fully integrated design-build solutions from initial problem investigation through final installation.



Simpson Strong-Tie offers decades of innovative engineer-supported products, cutting-edge testing capabilities, relentless customer service and dedicated field-engineering support.



Structural Technologies brings their deep industry knowledge, solutions, design support and technical services, along with licensed installers, to the alliance.

Together, we offer a uniquely integrated scope of technical knowledge and solutions for concrete and masonry strengthening and repair that ultimately better serves your needs and helps ensure stronger, safer, longer-lasting structures.

## One End-to-End Solution. Twice the Expertise.

- Design, engineering and specification services
- Innovative product solutions
- Advanced testing capabilities
- Expert installation and maintenance service by licensed installers
- Dedicated customer service and onsite field engineers

Let us help you find the right solution for your project and budget. For additional information, visit [strongtie.com/alliance](https://strongtie.com/alliance) or call **(800) 999-5099** to discuss your project with a local field engineer.

