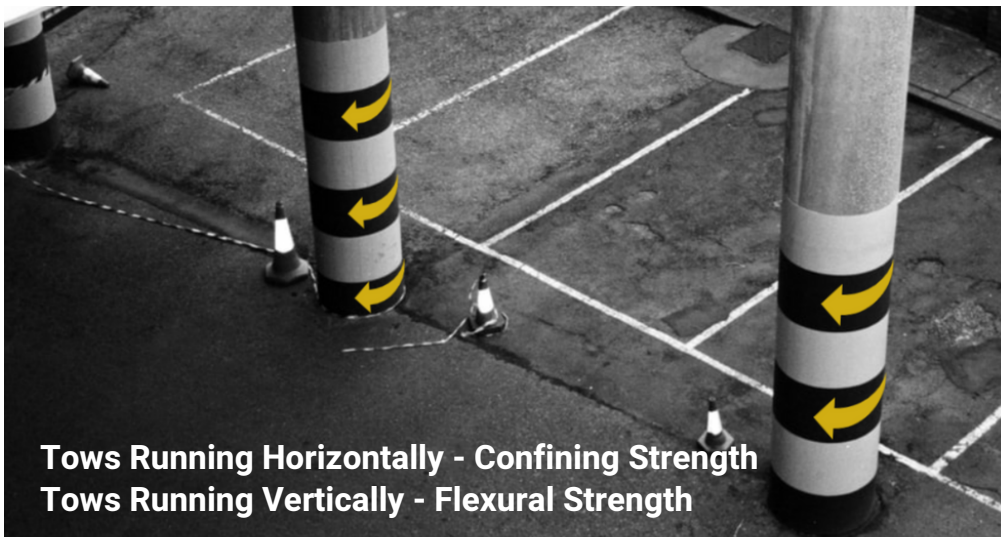
CARBON FIBER COLUMN STRENGTHENING

Carbon fiber is a popular method of repair for concrete columns and other structural components. These components are constructed with rebar to provide the necessary tensile capacity for the intended loads.

Wrapping columns horizontally with the SRS-600UNI will provide additional confining strength and therefore an added load carrying capacity. SRS-660BI can also be used but a single layer will provide less confining strength since only half of the weight of fabric is wrapping the column. The UNI only needs to be lapped back onto itself where each wrap meets. When the BI is used and vertical strengthening is required, each horizontal joint also needs to be lapped.

Structural Column Failures

When components have begun to deteriorate or when increased load carrying capacities are required, carbon fiber can be used to add additional tensile capacity to these components allowing them to carry greater loads.



Tows Running Horizontally - Confining Strength
Tows Running Vertically - Flexural Strength

Increased Load Capacity

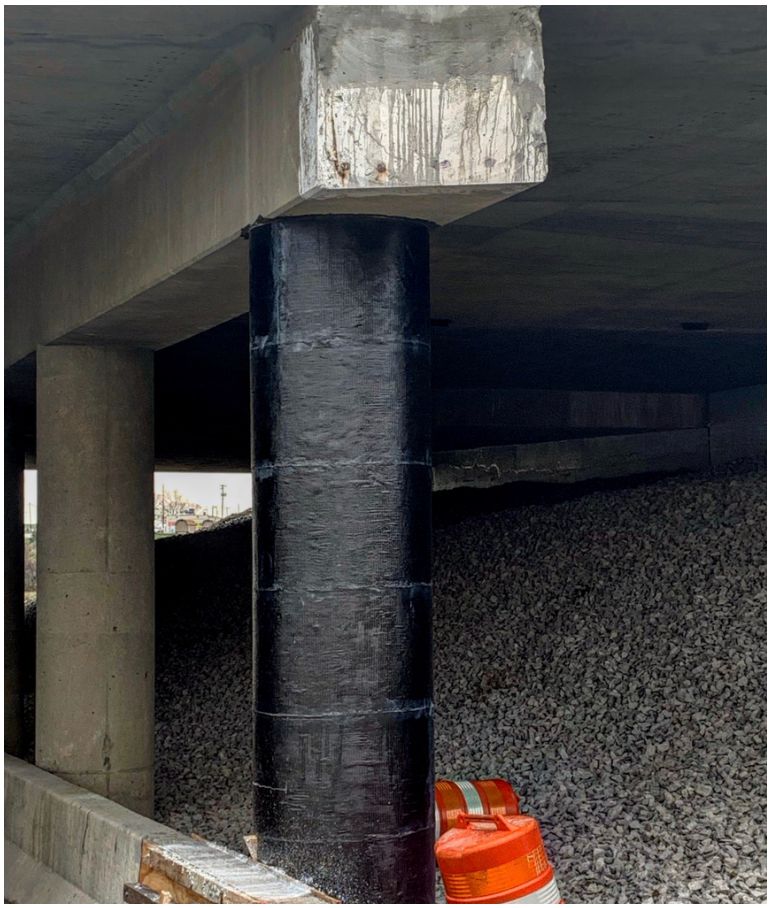
On columns where both vertical and horizontal strengthening is required but the bidirectional does not provide a sufficient increase in the capacity, two layers of the SRS-600UNI can also be used and will provide increased capacities for the component.

CARBON FIBER COLUMN STRENGTHENING

With the increased demand to sustainably rehabilitate concrete infrastructure, carbon fiber has become the preferred method to strengthen damaged or deteriorated reinforced concrete columns. It can also be applied to enhance the structural performance of columns to meet required design codes. This un-invasive and sustainable approach helps avoid costly demolition and reconstruction of reinforced concrete columns.

Most concrete construction prior to 1977 is generally non-ductile concrete construction, meaning it lacks sufficient structural reinforcement to withstand lateral forces and sustain gravity loads during a seismic event. “Non-ductile” means brittle or inflexible; in other words, non-ductile concrete buildings are more likely to crumble or collapse in an earthquake, posing greater financial liability and life-safety risk. Carbon fiber has been proven to meet the needs of seismic retrofitting and strengthening of reinforced concrete columns and has become a preferred solution for this type of work.

When looking at unidirectional fabrics, the carbon fiber layout is usually going to follow the same layout as the rebar for the intended application. The tensile strength added by applying a 6" wide SRS-600 Unidirectional carbon fiber strap is 1.5x greater than that of a #6 rebar.



On columns where both flexural and confinement strengthening is required, an applicable design with either unidirectional or bidirectional fabric can be applied to provide increased capacities for the component.

CFRP confinement of concrete columns and deteriorated structural components can dramatically increase their performance and lifespan.

CARBON FIBER STRENGTHENING SYSTEMS

10X STRONGER THAN STEEL

25 YEAR WARRANTY

100% MADE IN THE USA

CARBON FIBER COLUMN STRENGTHENING

Concrete is great in compression but lacks the tensile properties necessary so is usually poured with steel rebar embedded in it. This rebar provides the necessary tensile requirements so that the concrete can perform for the intended application. If this rebar is missing, damaged, or deteriorated, carbon fiber can be added to an existing structure in order to increase the tensile capacities related to a specific load pattern.

BENEFITS

- **Non - invasive**
- **Non - corrosive**
- **Light weight**
- **Cost effective**
- **High durability**
- **Easily conforms**
- **High tensile strength**
- **Meets seismic requirements**

When load bearing components have begun to deteriorate or when increased load carrying capacities are required, carbon fiber can be used to add additional tensile capacity to these components allowing them to carry greater loads.

Tows running horizontally
Confining Strength

Tows running vertically
Flexural Strength