



Composite Strengthening Systems

www.strongtie.com/rps
800-999-5099

Composite Strengthening Systems™

THE ONE-STOP SOLUTION



WHAT IS CSS?

Simpson Strong-Tie® Composite Strengthening Systems™ (CSS) provide code- and non-code-listed solutions for the structural reinforcement of structures. Developed in-house, our fiber-reinforced polymer (FRP) system is designed to the specific requirements of each jobsite or condition and features the industry's first code-listed laminate. Each FRP solution is designed by Simpson Strong-Tie, provides a high strength/stiffness-to-weight ratio, and is installed by a network of qualified contractors to offer a cost-effective, one-stop alternative to traditional strengthening and retrofit methods.

NO-COST TECHNICAL SERVICES

Investigation

- Feasibility studies Is CSS suitable for your application?
- Budget estimating Local, qualified contractors provide rough order of magnitude (ROM) pricing estimates

Complete Engineering Package

- Specifications Prepared for your unique project requirements
- Drawing details Prepared to include in construction documents
- Calculations Provided for reference during submittal review
- Sealed submittals Stamped and signed by a licensed Simpson Strong-Tie engineer

Support

- One-stop service Your contact for technical, product, and installation support with knowledge of local code and regulatory requirements

WHY SIMPSON STRONG-TIE?

"Our customers look to us to have an understanding of the true strength of systems."
Steve Pryor, P.E., S.E., Simpson Strong-Tie International Director of Building Systems

Simpson Strong-Tie, an established leader in anchoring and fastening systems for concrete and masonry, has expanded our product offering into the repair, protection, and strengthening industry. More than fifty years of demonstrated excellence in structural engineering, product research, development and testing, and manufacture of highest-quality structural construction components position Simpson Strong-Tie as the premier choice for performance-critical strengthening solutions.

We understand that no two jobs are alike, and creating a viable solution requires more than opening a product catalog. Simpson Strong-Tie is uniquely able to combine in-house engineering services with best-in-class components, like our high-modulus fabrics, to allow our team of licensed in-house and field engineers, technical sales representatives, and customer service agents to prepare the appropriate solution to your specific needs. Our goal is to provide you a complete strengthening or retrofit solution at the lowest possible installed cost.

APPLICATIONS



SEISMIC RETROFIT



LOAD UPGRADES/CHANGE OF USE



DAMAGE REPAIR



DEFECT REMEDIATION / BLAST MITIGATION

Cured Composite Properties

	Direction/Orientation	Available yard weight(s) (oz./yd. ²)	Tensile Strength	Tensile Modulus	Elongation at Break	Thickness	Code-Listing
CSS-CUCL	Unidirectional	N/A	232,000 psi ¹	23,000 ksi ¹	1.0% ¹	varies	ICC-ES ESR-3403
			400,000 psi ²	24,000 ksi ²	1.7% ²	varies	—
CSS-CUGF	Unidirectional	27	56,000 psi	3,300 ksi	1.7%	0.05 in.	ICC-ES ESR-3403
CSS-CUCF	Unidirectional	11	128,000 psi	14,200 ksi	0.9%	0.02 in.	ICC-ES ESR-3403
		22				0.04 in.	
		44				0.08 in.	
CSS-UCF	Unidirectional	10	110,000 psi	11,000 ksi	1.0%	0.02 in.	—
		20				0.04 in.	
CSS-BCF	Bidirectional 45°/45°	18	84,000 psi	6,000 ksi	1.4%	0.034 in.	—
	Bidirectional 0°/90°	18	82,000 psi	6,300 ksi	1.3%	0.04 in.	
		6	110,000 psi	8,400 ksi		0.01 in.	
CSS-CBGF	Bidirectional 45°/45°	24	40,000 psi	2,900 ksi	1.4%	0.034 in.	ICC-ES ESR-3403
CSS-BGF	Bidirectional 0°/90°	12	45,000 psi	2,500 ksi	1.8%	0.017 in.	—
		18				0.026 in.	

Epoxies

CSS-ES	Epoxy Primer and Saturant
CSS-EP	Epoxy Paste and Filler

1. Design value per ICC-ES AC125 durability testing.

2. Design value per ISO 527 tensile testing.

STRUCTURES



BUILDINGS



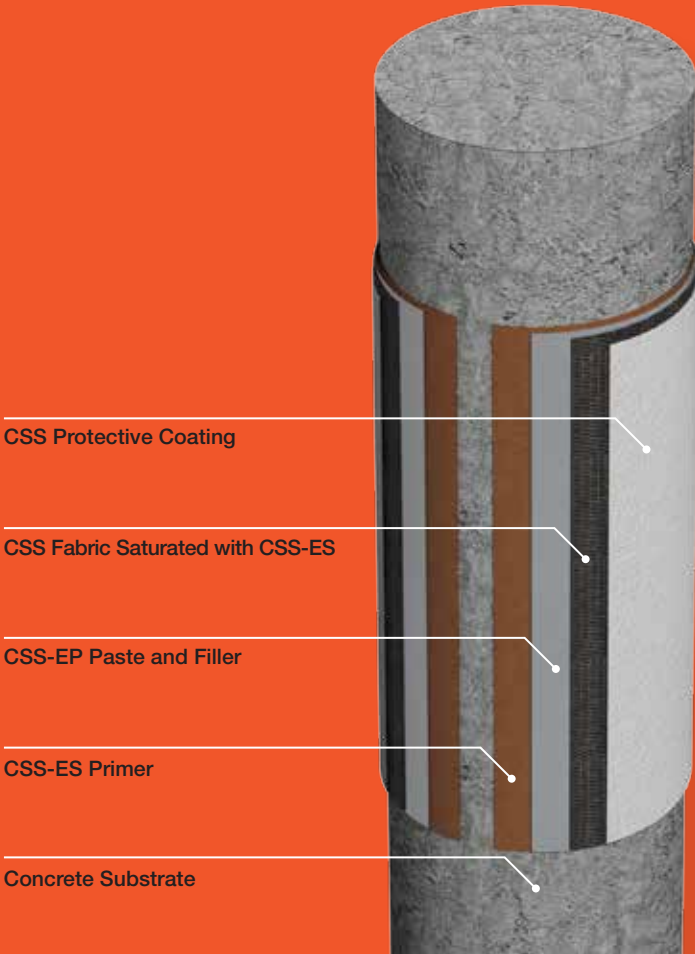
BRIDGES



PARKING STRUCTURES



TANKS/SILOS



Call 800-999-5099
to add **Simpson Strong-Tie**
to your design team!



Simpson Strong-Tie completed a full-scale pile repair test program of the FX-70® structural repair and protection system, an industry first. To learn more, please visit www.strongtie.com/fx70test.

THE TYRELL T. GILB LABORATORY

Opened in July of 2003, the \$10 million Tyrell Gilb Research Lab is the hub of Simpson Strong-Tie research and development activities. Named in memory of Tyrell (Tye) T. Gilb, a former professor of architecture and head of the Simpson Strong-Tie research and development department for 35 years, the 24,000-square-foot research facility is one of the largest privately operated labs in the United States. Constructed of heavy-duty concrete slabs and support walls one-foot thick, the facility can withstand full-scale seismic test scenarios while insulating neighboring buildings from noise and ground vibration. Accredited by IAS for various ICC-ES acceptance criteria (AC) and ASTM test standards, the Tye Gilb lab is equipped with a seismic shake table, two cyclic/static test rigs, and a 3D-testing area. The facility also features a three-foot-thick, 10,000,000-pound-capacity, perforated “strong-floor” that has anchor locations every two feet, enabling technicians to attach experiments and loading fixtures directly to the floor.

SIMPSON

Strong-Tie

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