SIMPSON Strong-Tie

CSS-CA and CSS-GA FRP Anchor Installation Instructions

Installation Instructions for CSS-CA and CSS-GA Anchors

Installation Requirements

CSS-CA and CSS-GA (CSS-CA/GA) anchor installation shall be performed only by contractors and personnel who have been properly trained by Simpson Strong-Tie. Manually saturate the anchor to ensure full fiber saturation is achieved. Install the saturated anchor in accordance with the approved project drawings and specifications.

Warning

Always wear respiratory, skin, eye and ear protection. Exposure to respirable crystalline silica dust during construction activities can cause serious or fatal respiratory disease. Use dust collection equipment and/or the appropriate NIOSH-approved respiratory protection to ensure that exposure remains below the current OSHA permissible exposure limit (PEL) for respirable dust containing crystalline silica. Refer to related product use documentation and safety data at **strongtie.com** before use.

Recommended Tools and Supplies

- Rotary hammer drill
- Compressed air wand
- Mixing paddle
- CSS-RB1 router bit
- ¼" (6.35 mm) steel pencil rod
- CSS-BDT-01 loading sleeve
- CSS-BDT-03-RP5 coupler
- Mixing buckets
- ½" (12.7 mm) wood router with minimum 2¼" (57.2 mm) base opening (plunge model preferred)
- ½" (12.7 mm) drill
- Paper towels
- CSS-RB2 router bit
- CSS-BDT bulk dispensing tool
- CSS-BDT-02-RP10 extension tube
- Wire (16 ga. rebar tie wire or similar)
- ETB hole brushes
- Synthetic bristle paint brush
- High-efficiency dust vacuum
- Acetone or approved solvent

Surface Preparation

Prepare all surfaces to receive FRP anchors per ICRI Guideline No. 310.2R. For additional surface preparation related to anchor installation, and for primer requirements pertaining to masonry surfaces, refer to approved project drawings and specifications.

Drilled Hole Preparation

Drill holes to specified diameter, depth, and angle according to approved drawings using a rotary hammer drill and a carbide-tipped drill bit conforming to ANSI B212.15-1994. Drilled hole diameter shall be anchor diameter plus ⅛" (3.18 mm).

Hole Transition Preparation

Folded anchors require the top edge of the drilled holes to be rounded to ensure a smooth transition from the edge of the drilled hole towards the direction of the splayed portion of the anchor. An abrasive tool shall be used to provide a minimum ¾" (19.1 mm) radius at the angle where the axis of the embedded portion of the anchor meets the axis of the splayed fibers of the anchor. The following two profiling tools are recommended for creating the hole transition:

CSS-RB1 Router Bit

CSS-RB2 Router Bit

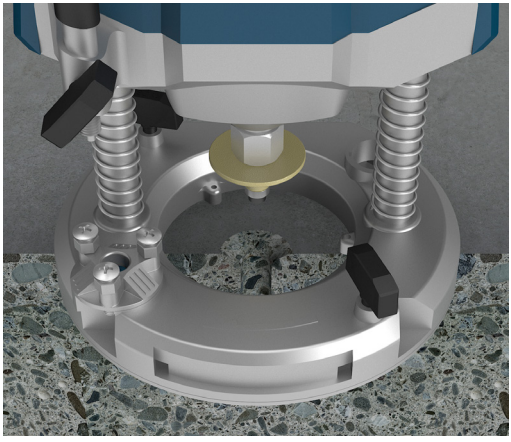
A) Hole Transition for Folded Anchors Using the CSS-RB1 Router Bit

Splay angle and splay size are to be determined per approved drawings and specifications. For drilled-hole sizes of ½" (12.7 mm) diameter and larger, and where space allows, the use of the CSS-RB1 router bit with a ½" (12.7 mm) wood plunge router is recommended to create the hole transition. Insert the shank of the CSS-RB1 into the router and tighten per the router manufacturer's instructions to avoid slippage of the bit.

Center router over the drilled hole.

Center the router over the drilled hole and set the maximum depth so the CSS-RB1 creates the ¾" (19.1 mm) radius transition without over-abrading the top surface of the concrete. Excessive depth or over-abrasion will create a groove which will require additional transitioning. Start the router in the "up" position, allowing the bit to spin.

Slowly plunge the CSS-RB1 into drilled hole.



Work the router around the hole radius to create a smooth transition.

Slowly plunge the bit into the drilled hole until the plunge bottoms out using appropriate pressure to prevent the router from stalling. In larger-diameter drilled holes, work the router around the hole radius in the direction of the splay portion of the anchor to create a smooth transition. When space is an issue for the use of a router, the CSS-RB1 can also be used in a standard ½" (12.7 mm) drill, although depth control can be challenging.

B) Hole Transition for Folded Anchors Using the CSS-RB2 Router Bit

For drilled hole sizes ½" (12.7 mm) and larger and all angles, the CSS-RB2 can be used to create the hole transition. The CSS-RB2 should be used with a standard ½" (12.7 mm) drill. Install the shank of the CSS-RB2 into the drill and tighten per manufacturer's instructions to avoid slippage of the bit.

Work the CSS-RB2 in and out of the hole to create a smooth transition.

Start the drill and use the bit to shape the ¾" (19.1 mm) radius by moving the bit in and out of the hole until the transition is smooth in the direction of the splay portion of the anchor. For drilled hole sizes smaller than ½" (12.7 mm) diameter, the use of a commercially available abrasive burr is recommended.

Warning

The CSS-RB1 and CSS-RB2 should be used at a maximum speed of 10,000 rpm. The abrasive action generates heat, so avoid touching it after use until it has cooled. Overheating will shorten bit life. Always use eye protection and follow all instructions for complementary products.

Hole Cleaning (Both Folded and Through Configurations)

Proper hole cleaning is essential to the performance of CSS-CA/GA anchors. Blow the dust out of the hole using oil-free compressed air with a minimum pressure of 80 psi. Compressed air nozzle must reach the bottom of the hole. Brush the inside of the hole for a minimum of four cycles. Brush should provide resistance to insertion. If no resistance is felt, it means the brush is either worn out or the wrong size. Simpson Strong-Tie recommends the use of ETB hole-cleaning brushes for most applications. After brushing, blow any remaining dust from the bottom of the hole using compressed air.

CSS-CA and CSS-GA Anchor Installation

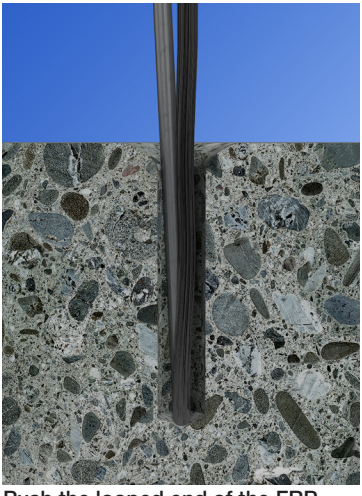
All CSS-CA/GA anchors must be fully saturated with CSS-ES epoxy saturant prior to being inserted into the properly prepared drilled hole. Mix CSS-ES per the product data sheet.

Note: When used in conjunction with multiple layers of fabric, CSS-CA/GA anchors are typically installed over the first layer of fabric. Always refer to approved project drawings and specifications for additional details.

Vertical and Downwardly Folded Anchor Installations

Apply a primer coat of CSS-ES epoxy saturant with a brush at a rate of 200 ft.^{2}/US gal. (4.9 m^2/L) to the surface where the splay portion of the CSS-CA/GA anchor will be placed. Refer to the approved drawings and specification for more detail. While primer is still wet, submerge the embedded portion (looped end) of the CSS-CA/GA anchor into the CSS-ES epoxy saturant using rubber gloves. Manually manipulate the fibers to ensure full fiber saturation. When the fibers are fully saturated, squeeze to remove excess saturant.

Using a ¼" (6.35 mm) diameter commercially available steel pencil rod of sufficient length to reach the bottom of the hole and be removed, push the saturated end of the CSS-CA/GA anchor into the hole by hooking the looped end of the anchor with the pencil rod.



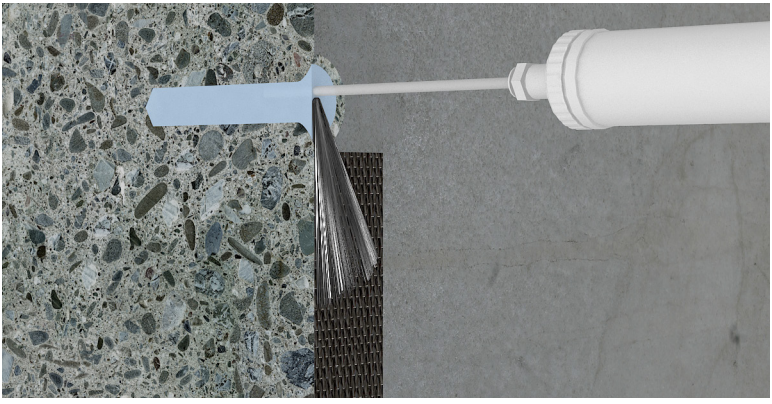
Push the looped end of the FRP anchor to the bottom of the drilled hole.

Holding the pencil rod with one hand to keep the anchor in place, use your other hand to spread out the splay portion of the anchor to the specified width and angle into the wet primed area. Once it is in place, saturate the top of the splay portion of the anchor with a coat of CSS-ES using a synthetic bristle paint brush at the same application rate as for the primer coat. Work the CSS-ES into the fibers to ensure full fiber saturation. Once the anchor splay saturation is complete, slowly remove the pencil rod, taking care not to pull the inserted portion of the anchor out of the hole. Fill the hole to the top with CSS-ES epoxy saturant and allow the installation to cure.

Horizontal to Upwardly Folded Anchor Installations

Apply a primer coat of CSS-ES epoxy saturant with a brush at a rate of 200 ft.^{2}/US gal. (4.9 m^2/L) to the surface where the splay portion of the CSS-CA/GA anchor will be placed. Refer to the approved drawings and specification for more detail. While primer is still wet, submerge the embedded portion (looped end) of the CSS-CA/GA anchor into the CSS-ES epoxy saturant using rubber gloves. Manually manipulate the fibers to ensure full fiber saturation. When the fibers are fully saturated, squeeze to remove excess saturant.

Using a ¼" (6.35 mm) diameter commercially available steel pencil rod of sufficient length to reach the bottom of the hole and be removed, push the saturated end of the CSS-CA/GA anchor to the bottom of the hole by hooking the looped end of the anchor with the pencil rod. Holding the pencil rod with one hand to keep the anchor in place, use your other hand to spread out the splay portion of the anchor to the specified width into the wet primed area. Once it is in place, saturate the top of the splay portion of the anchor with a coat of CSS-ES using a synthetic bristle paint brush at the same application rate as for the primer coat. Work the CSS-ES into the fibers to ensure full fiber saturation. Once the anchor splay saturation is complete, slowly remove the pencil rod, taking care not to pull the inserted portion of the anchor out of the hole.

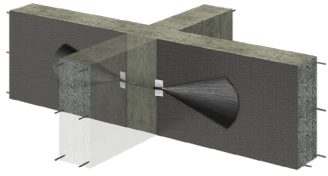


Fill hole with CSS-EP Epoxy Paste using the CSS-BDT Bulk Dispensing Tool.

Using the CSS-BDT bulk dispensing tool (see loading instructions on page 10), push the extension tubing to the bottom of the hole. Fill the hole with CSS-EP epoxy paste from the bottom to the top by squeezing the trigger on the CSS-BDT while slowly withdrawing the tubing, taking care not to pull the anchor out of the hole. Once the hole is completely filled, strike off any extra epoxy and allow the installation to cure. Immediately clean the CSS-BDT to prevent tool seizure.

Through Anchor Installations

When required, create a transition ramp with 3:1 transition from the hole opening to the surface using CSS-EP epoxy paste per the approved drawings and specifications. While epoxy ramp is still wet, submerge the entire CSS-CA/GA anchor into the CSS-ES epoxy saturant using rubber gloves. Manually manipulate the fibers to ensure full fiber saturation. When the fibers are fully saturated, squeeze to remove excess saturant.



Through Anchor Installation with 3:1 Transition Paste Ramps

Using a strong wire (16 ga. rebar tie wire or similar), wrap one end of the anchor sufficiently tight to prevent anchor slippage. Push the wire through the hole to the other side, and then pull the saturated anchor through the hole leaving a splay portion on both sides of the hole per the approved drawings and specifications.

Remove the wire. Splay both ends out and apply a coat of CSS-ES using a synthetic bristle paint brush at a rate of 200 $ft.^2$/US gal. (4.9 m^2/L). Work the CSS-ES into the fibers to ensure full fiber saturation.

Using the CSS-BDT bulk dispensing tool (see loading instructions on page 10), push the extension tubing to the opposite end of the hole while holding the anchor in place. Having someone on the other end of the anchor hold it in place, begin filling the hole with CSS-EP by squeezing the trigger on the CSS-BDT while slowly withdrawing the tubing, taking care not to pull the anchor out of the hole. Once the hole is completely filled, strike off any extra epoxy and allow the installation to cure. For holes deeper than 12" (305 mm), the CSS-BDT-02 extension tube can be replaced with commercially available ¼" (6.35 mm) OD polyethylene tubing. Immediately clean the CSS-BDT after use to prevent tool seizure.

Loading the CSS-BDT Bulk Dispensing Tool

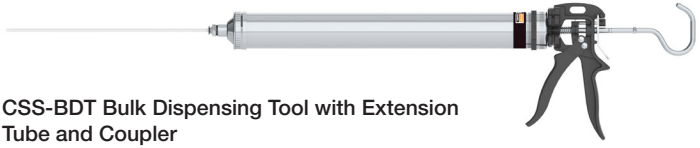
Remove the cap and nozzle assembly from the end of the tool. For less waste and mess, slide the CSS-BDT-01 loading sleeve over the end of the threads.

CSS-BDT Bulk Dispensing Tool with Loading Sleeve

Loading the CSS-BDT using the CSS-BDT-01 Loading Sleeve.

Immerse the end of the tool into the CSS-EP epoxy paste to the depth of an inch or two. Use a circular motion with the end of the barrel to completely cover the end of the barrel and ensure a good air seal. Pull the piston rod back slowly, sucking the epoxy up into the barrel. Pause every few seconds to allow the pressures to equalize. As the level of epoxy in the pail decreases, sink the barrel deeper to avoid drawing air. When the barrel is full, remove the end from the epoxy and remove the loading sleeve. Wipe any epoxy from the threads or barrel.

Replace the end cap. Insert a CSS-BDT-02 extension tube into the coupler nut fitting. Squeeze the tool's trigger a few times to fill the tubing with epoxy. Dispense bulk epoxy into the hole. **Always clean the CSS-BDT before epoxy hardens.**



CSS-BDT Bulk Dispensing Tool with Extension Tube and Coupler

Cleaning the CSS-BDT Bulk Dispensing Tool

Fill a small pail with an approved solvent, such as acetone. Always follow the safety warnings on the solvent and use in adequate ventilation. Using paper towels, wipe off all excess residue from the tool. In a manner similar to filling the tool, slowly pull the solvent into the tool, and then lift the tool slightly out of the solvent to allow the solvent to flow back into the pail. Repeat this process until the tool appears to be clean. Replace solvent, as necessary. Remove piston assembly and clean separately after each use. After reassembling the piston, run a final flush of clean solvent to insure all epoxy has been removed. The CSS-BDT-03 coupler and CSS-BDT-02 extension tube are designed to be single-use products and should be discarded after one use.

Replacement Parts for the CSS-BDT

CSS-BDT-01	Loading sleeve
CSS-BDT-02-RP10	Extension tube 12" (305 mm) (10 per package)
CSS-BDT-03-RP5	Coupler (5 per package)
CSS-BDT-04	Front cap
CSS-BDT-05	Piston replacement kit

WARNING!: KEEP OUT OF REACH OF CHILDREN!
FOR INDUSTRIAL USE ONLY
¡ADVERTENCIA!: MANTÉNGALO FUERA DEL ALCANCE DE LOS NIÑOS: PARA USO INDUSTRIAL SOLAMENTE.
ATTENTION!: GARDER HORS DE LA PORTÉE DES ENFANTS : POUR UTILISATION INDUSTRIELLE SEULEMENT.

Read before use. Use only with Simpson Strong-Tie® products. Refer to product use documentation and safety data sheet at www.strongtie.com.

CONTENTS: Carbon Fiber, Sizing **HAZARDS:** May cause mild skin irritation. May cause eye irritation. May cause an allergic skin reaction. May cause respiratory irritation. **PRECAUTIONS:** Observe good industrial hygiene practices. Wear protective gloves/clothing/eye protection/face protection. Wash thoroughly after handling. Avoid breathing dust. Contaminated clothing should not be allowed out of the workplace. **FIRST AID: EYE CONTACT:** Hold open eyes under running water for 15 minutes. Seek medical attention. **SKIN CONTACT:** Wash skin with soap and water. Seek medical attention if irritation develops. **INGESTION:** If product is swallowed, call physician or poison control center. Do not induce vomiting, or give diluents to someone who is unconscious, having convulsions, or who cannot swallow. Seek medical advice. **INHALATION:** Remove victim to fresh air. If necessary, use artificial respiration. Seek medical attention. **STORAGE:** Store material in a dry area with no exposure to moisture. **CA Proposition 65:** WARNING! This product contains chemicals listed by the State of California as known to cause cancer or reproductive harm.

Leer la etiqueta antes de usar. Consulte la fcha de datos de seguridad en el www.strongtie.com/sds. CONTENIDO: Fibra de carbono, encolado **PELIGROS:** Puede causar irritación de la piel. Puede ocasionar irritación en los ojos. Puede causar reacción alérgica en la piel. Puede causar irritación de las vías respiratorias. **PRECAUCIONES:** Sigua buenas prácticas de higiene industrial. Porte guantes protectores / ropa protectora / protección ocular / protección de cara. Lávese exhaustivamente después de manipularlo. Evite respirar el polvo. No debe permitirse que la ropa que haya sido contaminada se use fuera del lugar de trabajo. **PRIMEROS AUXILIOS: CONTACTO CON LOS OJOS:** Mantenga los ojos abiertos bajo agua corriente durante 15 minutos. Busque atención médica. **CONTACTO CON LA PIEL:** Lave la piel con agua y jabón. En caso de que la irritación persista, busque atención médica. **INGESTIÓN:** En caso de ingerir el producto, llame al médico o al centro de control de intoxicaciones. No induzca el vómito ni le brinde diluyentes a alguien que está inconsciente, teniendo convulsiones o que no puede tragar. Busque asesoramiento médico. **INHALACIÓN:** Saque a la víctima al aire fresco. Si fuera necesario, aplique respiración artifcial. Busque atención médica. **ALMACENAMIENTO:** Almacene el material en un lugar seco, sin exposición a la humedad. **CA Proposición 65:** ADVERTENCIA! Este producto contiene químicos listados por el Estado de California como saber que causan cáncer, defectos de nacimiento u otros daños reproductivos.

Lire l'étiquette avant utilisation. Reportez-vous à la fche de données de sécurité au www.strongtie.com/sds. CONTENU: Dimensionnement des fbres de carbone **DANGERS:** Peut provoquer une irritation de la peau. Peut provoquer une irritation des yeux. Peut provoquer une réaction allergique de la peau. Peut provoquer une irritation respiratoire. **PRÉCAUTIONS:** Respecter les bonnes pratiques d'hygiène industrielle. Porter des gants, des vêtements de protection, une protection pour les yeux et une protection pour le visage. Se laver soigneusement après la manutention. Éviter de respirer les vapeurs. Les vêtements contaminés ne devraient pas être autorisés à quitter le lieu de travail. **PREMIERS SOINS: CONTACT AVEC LES YEUX:** Garder les yeux ouverts sous l'eau courante pendant 15 minutes. Obtenir des soins médicaux. **CONTACT AVEC LA PEAU:** Laver la peau à l'eau et au savon. Obtenir des soins médicaux en cas d'irritation. **INGESTION:** Si le produit est ingéré, communiquer avec un médecin ou le centre antipoison. Ne pas faire vomir ou donner des diluants à une personne inconsciente, souffrant de convulsions ou ne pouvant pas avaler. Demander un avis médical. **INHALATION:** Amener la victime à l'air frais. Au besoin, pratiquer la respiration artifcielle. Obtenir des soins médicaux. **STOCKAGE:** Entreposer le produit dans un endroit sec, sans exposition à l'humidité. **CA Proposition 65:** ATTENTION! Ce produit contient des produits chimiques reconnus par l'état de la Californie comme savoir pour causer le cancer, des malformations congénitales ou des malformations congénitales.

LIMITED WARRANTY

This product is covered by the Simpson Strong-Tie® RPS Product One-Year Limited Warranty, which is available at **strongtie.com/limitedwarranties** or by calling **Simpson Strong-Tie at (800) 999-5099.**

T-R-CSSANCHOR20 6/20 exp. 12/23