









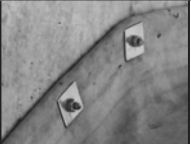

Concrete Canvas® Required Equipment List

Concrete Canvas® GCCM* (CC) does not require specialist contractors for the majority of applications. Installation is quick and easy, provided that **installation guidelines are followed** and **the appropriate equipment is used**. There are four simple steps to all CC installations which must be followed:






1. Deployment - 2. Fixing - 3. Hydration - 4. Jointing


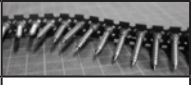




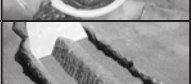
Equipment needs will vary from project to project but the following list is designed to be suitable for the majority of installs. Most of the equipment below is available for hire or purchase from Concrete Canvas Ltd.

1. DEPLOYMENT	<i>Bulk rolls of CC weigh approximately 1.5T. Appropriate plant for handling and deployment of heavy goods is required on site.</i>		REQUIRED EQUIPMENT		
	Delivery 	A suitable means of offloading heavy goods from delivery vehicles is required, unless a hiab or tail-lift is requested in advance.	2T rated forklift (or similar)		<input checked="" type="checkbox"/>
	Deployment 	Bulk rolls of CC are typically deployed via plant mounted spreader beams (rated to 2T SWL) in a similar fashion to conventional geosynthetics.	2T rated spreader beam		<input checked="" type="checkbox"/>
	Cutting (Small Projects < 100sqm) OR	CC can be cut using basic hand tools. The cement dust within the material will blunt blades so replaceable or disposable knives are recommended.	Snap-off-blade utility knife		<input checked="" type="checkbox"/>
	Cutting (Larger Projects > 100sqm)	For larger projects with numerous cuts required, a cutting power tool such as an angle grinder or disc cutter is recommended.	Angle grinder / Disc Cutter (cordless recommended)		<input checked="" type="checkbox"/>

2. FIXING	<i>Following deployment it is required to secure the CC to the substrate to ensure the material is not displaced during use. The following fixings can be used depending on the substrate.</i>		REQUIRED EQUIPMENT		
	Soil Substrates OR	CC should be fixed to the substrate along its length at regular intervals and through any overlaps using J-pegs. The leading edge of the CC (i.e. at the crest of a V-ditch) should be anchor trenched to a project specific depth, the excavation of which should form part of the subgrade preparation prior to install.	Steel J-pegs (Galvanised or stainless steel recommended)		<input checked="" type="checkbox"/>
			Sledge hammer (or similar)		<input checked="" type="checkbox"/>
	Concrete or Rock Substrates	When remediating existing concrete infrastructure, CC should be fixed to the concrete substrate using standard off-the-shelf concrete anchors or shot fired masonry nails in conjunction with a minimum >15mm washer. The frequency and length of fixings is project specific. A means of installing these mechanical fixings is also required.	Fixings (E.g. masonry bolts, nails, anchors or screws with >15mm washer)		<input checked="" type="checkbox"/>
			Powder actuated nail gun (Hilti DX recommended)		<input checked="" type="checkbox"/>

*Geosynthetic Cementitious Composite Mat

3. HYDRATION	<i>Following deployment and fixing, it is required to hydrate CC. This must be proactively done and it is not advised to rely on hydration from rainfall. See the CC Hydration Guide.</i>		REQUIRED EQUIPMENT		
	Mains Water Supply	A minimum volume of water equal to 50% of the material weight is required and an appropriate means of application.	Mains water supply		<input checked="" type="checkbox"/>
			Adequate length hosing <small>(spray nozzle recommended)</small>		<input checked="" type="checkbox"/>
	Water Bowser	A water bowser can be used as an alternative means of hydration if access to a mains water supply is unavailable.	Water bowser <small>(or similar alternative)</small>		<input checked="" type="checkbox"/>
			Petrol/diesel water pump		<input checked="" type="checkbox"/>
Adequate length hosing <small>(spray nozzle recommended)</small>				<input checked="" type="checkbox"/>	

4. JOINTING	<i>Typically CC layers are overlapped by 100mm in the direction of water flow and jointed using any of the following options. Jointing methods are project specific and provide varying mechanical strengths and impermeability.</i>		REQUIRED EQUIPMENT		
	Screws	This joint is suitable for the majority of applications and is fast and simple to apply. It provides good mechanical strength but with limited impermeability. The screws should be applied at 200mm spacing and 30-50mm from the edge of the CC. See the CC <i>Jointing and Fixing Guide</i> .	Auto-fed screwdriver <small>(cordless recommended)</small>		<input checked="" type="checkbox"/>
			Collated screws <small>(stainless steel recommended)</small>		<input checked="" type="checkbox"/>
	Adhesive Sealant	For applications where improved impermeability is required, CC can be jointed using an adhesive sealant. This is either applied as a single 8mm bead in addition to screws to improve joint impermeability or without screws as a double 8mm bead. See the CC <i>Jointing and Fixing Guide</i> .	Caulking gun <small>(powered unit recommended)</small>		<input checked="" type="checkbox"/>
			Adhesive sealant cartridge <small>(600ml Everbuild Clearfix recommended)</small>		<input checked="" type="checkbox"/>
	Grout	For applications where the CC is terminated onto a concrete interface (i.e. headwall) or where a high strength joint is required with good impermeability, a cementitious grout can be applied on the leading top edge of overlapped CC. See the CC <i>Grouting Guide</i> .	Grout compound <small>(CC mix recommended)</small>		<input checked="" type="checkbox"/>
			V-Profile pallet knife <small>(Available from CC)</small>		<input checked="" type="checkbox"/>
	Thermal Welding	For applications where a high degree of impermeability is required. The joint can be formed using hand tools or using an automatic thermal welding machine. The latter allows joints to be formed at a rate of 6m/min. See the CC <i>Thermal Welding Guide</i> .	Leister Twinny S or T <small>(T provides data-logging capability)</small>		<input checked="" type="checkbox"/>