

CONCRETE CANVAS®

Concrete on a Roll

INSTALLATION GUIDE: WEED SUPPRESSION



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Winner
Technical Innovation Award



Innovation Award
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1.0 Introduction

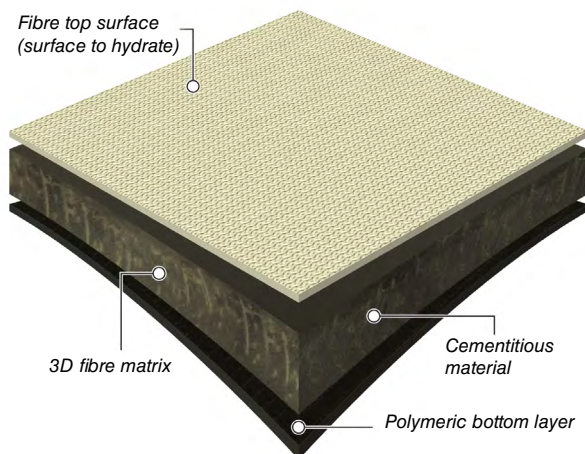
1.1 Background

Concrete Canvas® (CC) is the original Geosynthetic Cementitious Composite Mat (GCCM) and the first product to declare conformance to ASTM D8364 'Standard Specification for GCCMs'.

CC is a flexible, concrete filled geotextile that hardens on hydration to form a thin, durable and waterproof concrete layer. Essentially, it can be described as *Concrete on a Roll™* and is used for a wide variety of applications including the rapid lining of drainage channels, providing slope protection, weed suppression, culvert repair and general concrete remediation.

The information contained in the document is provided subject to the General Disclaimer on the last page of this document. A printable copy of the current version of our General Disclaimer is maintained at the following link [here](#). Subject to the above, this document provides general guidance procedures for the installation of CC for weed suppression, However:

- This installation guidance should be read in conjunction with the construction drawings taking account of the designer's project specifications. Consult the [CC Specification Guide: Weed Suppression](#) for standardised design and installation advice.
- The versatile nature of CC means that this document is not exhaustive and is intended for guidance purposes only. Exceptions to this guideline may be required to address site- specific conditions.
- The performance of the CC is wholly dependent on the quality of its design and installation. It is the installer's responsibility to adhere to these guidelines where applicable and to the project specification and construction drawings.



Typical CC cross section

2.0 Equipment Required

- Sufficient CC to complete the project including allowance for edge fixings and overlaps
- Suitable lifting equipment to dispense CC Bulk or Wide Rolls
- Safety mask and gloves
- Cutting equipment, utility knife or disc cutter
- Metal or plastic fixing pins
- Lump hammer
- Screwdriver and stainless steel screws or alternative approved method to join the CC layers
- Water supply
- See the [CC Equipment List](#) for full details
- For ordering, offloading and storage information, see the [CC Logistics Guide](#) for full details
- Dust hazard. Wear appropriate PPE. Consult the [CC SDS](#) document



Equipment required

3.0 Substrate Preparation

Remove all vegetation and grade surface to a uniform profile to suit the design dimensions. If required, the surface can be smoothed with a sand layer.

Remove sharp or protruding rocks >25mm and fill large voids >50mm.

Apply herbicidal treatment (if specified by the project engineer).

If the perimeter edge of the CC is terminating in a soil substrate (i.e. it is not going to be connected to existing infrastructure), excavate perimeter anchor trenches/benches to capture all CC edges.

Consult the construction drawings to verify if special substrate preparation measures such as minimum bearing capacity requirements, installation of a non-woven geotextile, or if substrate drainage details are needed. It may be necessary to form perimeter drainage channels or introduce a shallow fall to prevent pooling of water, consult the project engineer.

4.0 Deployment

CC must be placed to ensure direct contact with the surface to prevent void space. If the coverage area has a fall for drainage, begin at the lowest level and work up gradient.

Remove packaging (making sure to note the Roll ID) and unroll CC across the coverage area to suit the specified layup (longitudinal or transverse layup as specified on the design drawings), ensuring the fibrous top surface faces upwards, with the PVC membrane in contact with the ground. This is best achieved by dispensing the roll by naturally unrolling along the ground rather than pulling material from the top. Avoid snagging the CC on the substrate.

Where access is restricted by obstructions such as pipelines, low profile deployment frames (see image opposite) can be winched under the infrastructure to reduce manual handling requirements.

It is important to relax the material to relieve any tension generated in deployment. This can be achieved by lifting the CC layer by hand and repositioning. The installer can adjust the material to remove any wrinkles and ensure the CC conforms to the substrate when hand repositioning.



Prepare anchor trenches around perimeter edge for CC termination



Smoothing of substrate with sand layer



CC deployed using a low profile deployment frame



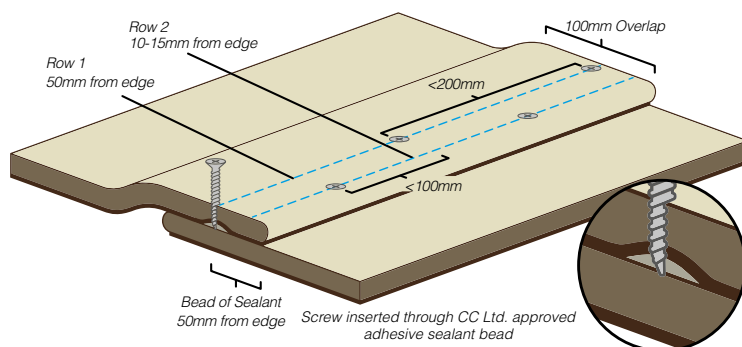
CC cut to required length

5.0 Jointing

Verify the specified joint method to be installed. For Screwed and Sealed joints:

Fold back top layer and hydrate the material under the overlapped sections of the CC. Once hydrated, the material remains workable for 1 to 2 hours. It is important to hydrate under the overlap prior to applying the adhesive sealant in order to remove excess dust, ensuring adhesive sealant contact with the fibrous top surface of the bottom CC layer and to provide moisture for curing. Surfaces should be damp during caulking but have no standing water.

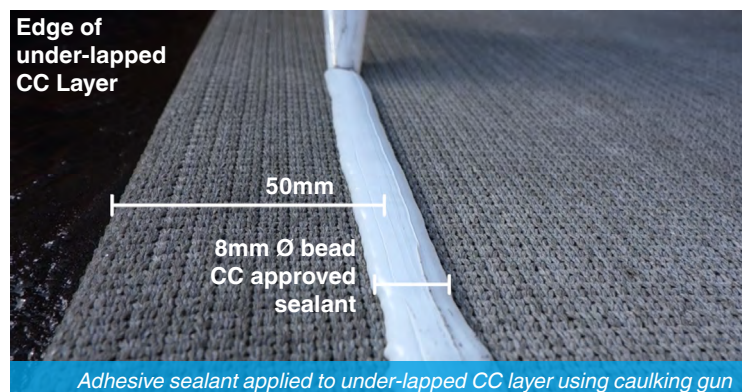
- Apply a CC approved sealant as an 8mm diameter continuous bead 50mm from the edge of the underlapped layer. An 8mm bead is equivalent to a coverage of 50g/m which is equivalent to 5.8m of joint for a 290ml cartridge or 12m of joint from a 600ml foil.
- Fold the top layer back into position and insert stainless screws in a 'zigzag' pattern. The first row of screws should be at 50mm from the edge of the top CC layer (through the sealant bead) and the second row of should be 10-15mm from the edge. The maximum screw spacing on each row should be 200mm, so that the maximum staggered screw spacing along the CC edge is 100mm. The screws should be applied immediately after hydration of under the overlap, but prior to setting so the concrete within CC will then set around the thread of the screws. For this reason, it is important that the screws have a fully threaded shank.
- Extra care should be taken to the location, frequency and spacings of the fixings to prevent rucking and to provide intimate contact between overlapped layers, ensuring accumulation of wind blown debris at joints is minimised.



Sealed and screwed zigzag joint



Subsequent lengths of CC overlapped by at least 100mm



Adhesive sealant applied to under-lapped CC layer using caulking gun

Note: A 'zigzag' screwed and sealed joint creates a physical barrier to sunlight, water and horizontal weed growth as well as ensuring intimate contact between layers. A screwed only joint will mitigate weed growth, not eliminate it entirely.

For weed suppression of invasive species, please consult the designer or contact Concrete Canvas Ltd for specific jointing advice.

For Thermal Bond joints:

- Ensure CC remains dry and unhydrated before jointing
- Follow section 5.2.3 of the [CC Specification Guide: Weed Suppression](#)

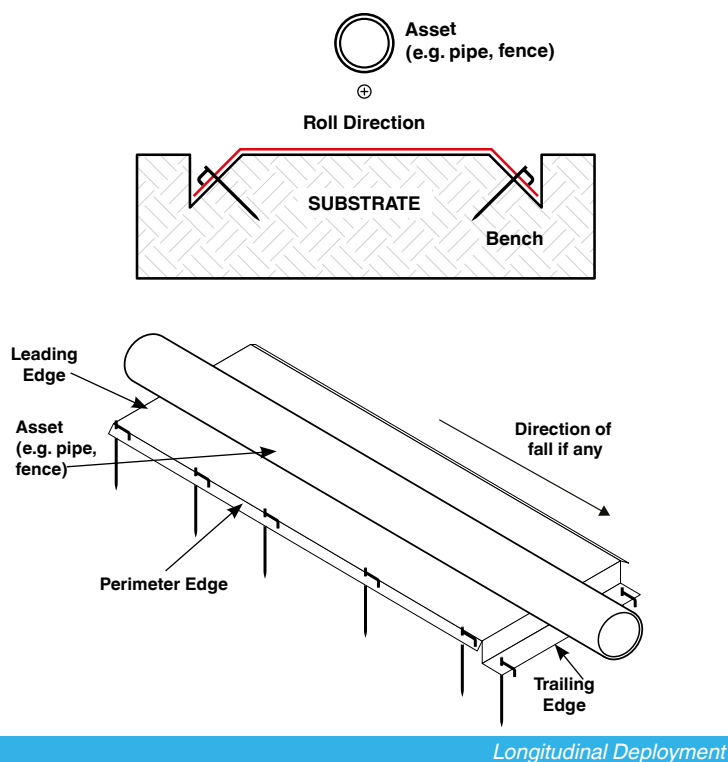
Ensure there is no rucking at the joint and both layers are in contact with each other. Care shall be taken during installation to avoid damage occurring to the CC. Should the CC be damaged during installation and before hydration, the layer should be removed and replaced.

6.0 Perimeter Edge Fixing

It is essential that all exposed (i.e. unjointed) edges of the CC are secured during the installation to prevent wind uplift and potential scour from water ingress.

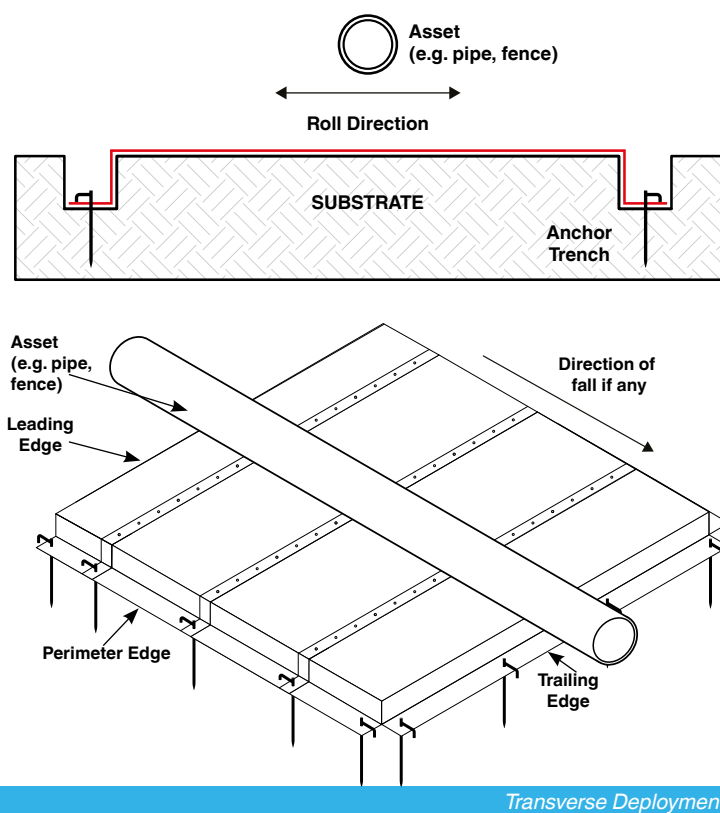
When fixing to Soil (i.e. using anchor trenches or benches):

- Position the CC into the excavated anchor trench/bench (as specified by the project engineer). Fixing to the substrate is typically achieved using appropriate pegs to suit the substrate and any penetration depth limitations. In granular or compacted substrates, 12-16mm diameter galvanised steel ground pegs with a sharpened point are often specified. In clay/soil substrates, pegs or high load ground anchoring fixings (for example, Gripple TL-TA) may be suitable, check the designer requirements
- Fix the CC in the anchor trench/bench by inserting fixing pegs through each overlap or at a minimum of 2m intervals for longitudinal installations.
- The CC should be hydrated before backfilling with non-erodible fill. This may be soil or concrete depending on the design. Consult the construction drawings.



When fixing to Concrete/Masonry/Rock:

- Consult the construction drawings for the mechanical fixing specifications and fixing spacings.
- Position the CC against the structure and drill a pilot hole through the CC and the structure before inserting the mechanical fixing.
- Use appropriate sealant/gasket and washers/clamping bar as specified by the designer to ensure a suitable seal.
- Ensure the edges of all CC layers is either suitably terminated into existing infrastructure or tucked into an anchor trench/bench prior to hydration.



7.0 Intermediate Fixings

Additional intermediate fixings may be necessary to profile CC on uneven substrates to ensure it conforms to the underlying surface and remove voids, or for Warmer Climate Detailing: e.g. where CC profile lengths exceed 3m.

The intermediate fixing type, performance requirements and installation locations should be specified by the designer to suit the anticipated load conditions. 'Round Head' fixing pegs are typically used. Consult the construction drawings.

8.0 Bespoke Detailing

Consult the construction drawings for bespoke detailing such as specific measures for accommodating penetrations, junctions or interface details.

Concrete Canvas Ltd can provide advice on unforeseen bespoke details.

9.0 Hydration

If necessary, to prevent wind uplift and prevent voids from forming underneath the material, the Installer should place temporary ballast, such as sandbags, on top of the laid CC to ensure that it lies flat to the substrate prior to hydration.

After fixing and jointing, the surface of the CC can be brushed clean to remove marks and debris before spraying with water to hydrate.

Spray the fibre surface multiple times until the CC is fully saturated. The wet CC will first darken and then become lighter as it absorbs the water.

Do not spray high pressure water directly onto the CC as this may wash a channel in the material.

CC can be hydrated using fresh water or salt water, it is not possible to over hydrate CC and it will hydrate and set underwater.

A minimum volume of water equal to 40% of the material weight is required. For example, CCT2™ requires 5 litres of water per square meter.

To check proper hydration, the CC should feel wet to the touch several minutes after hydration. Press your thumb into the CC and release. If water is present in the depression in the CC, it has been sufficiently hydrated. If no water is observed, then more water must be applied.

Specific hydration methods are required in drying conditions (installing in high air temperatures (>22°C), wind (>12km/h), strong direct sunlight or low humidity (<70%)) and in low temperature conditions. Please consult the [CC User Guide: Hydration](#) which is also attached on all CC Bulk Rolls.

It is not recommended to rely on rainfall to provide hydration.



CC cut to fit around existing upstands



Anchor trenches should be a minimum of 100mm



Backfill anchor trench



Secure all perimeter edges

10.0 Setting

There is a working time of 1-2 hours after hydration.

Backfill anchor trenches/benches with non-erodible fill as specified in the construction drawings to create a neat termination and encourage surface water runoff to flow over the anchor trench prevent undermining.

CC hardens to strength in 24 hours and is then ready for use.

If the weed suppression area is intended for pedestrian trafficking, then it is advised to apply a textured coating to provide an anti-slip high friction surface and prevent non-root organic growth to the top fibrous surface of the CC.

Allow the CC to cure for at least 48 hours before applying any post installation surface treatments such as jet washing or painting.

11.0 Installation Sequence

Planning of CC installations is necessary to ensure tools and materials (e.g. hydration water) are available when required.

Only install what can be fully jointed, fixed and hydrated before the end of construction day to minimise any adverse effect on the installation and/or performance capabilities of the product.

If installation continues the following working day, protect the edge of the last layer of CC overnight with waterproof sheeting to enable jointing on return to work.

An example install sequence is described below:

- Morning - Deploy CC panels and secure along the perimeter edges.
- Early afternoon - Jointing of panels (e.g. hydrate underlap, apply sealant, screw joints), install intermediate fixings.
- Late afternoon - Hydration (following drying/low temperature condition guidance as required).

12.0 Inspection Maintenance and Repair

CC lined structures should be inspected 24hours after hydration and at regular intervals thereafter. Consult the [CC User Guide: Inspection, Cleaning and Maintenance](#) for more details. For the majority of projects, CC does not require cleaning or maintenance. If damage is found during a periodic inspection, contact Concrete Canvas Ltd for repair advice.



Clamping bar perimeter fixing



Mechanical fixing to concrete



Hydration

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