Concrete Cloth Ditch Lining

Concrete Cloth (CC) can be rapidly unrolled to form a hardened, water proof concrete ditch. It will conform to a range of ditch profiles and curves and requires no specialist plant equipment for installation. CC has a design life of 25 years and is significantly quicker and less expensive to install compared to conventional concrete ditch lining.

Technical Background

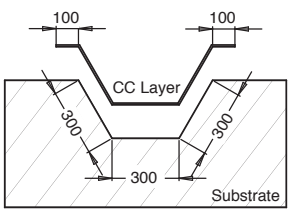
CC consists of a 3-dimensional fibre matrix containing a specially formulated dry concrete mix. A PVC backing on one surface ensures the material is water proof. The material can be hydrated either by spraying or by being fully immersed in water. Once hydrated the material remains flexible and workable for 2 hours (subject to ambient temperatures) and gains 80% of its 28 day strength in the first 24 hours. CC is available in 3 thicknesses, 5, 8 and 13mm. CC8 (8mm) is recommended for most ditching applications.

CC Layup

CC4 comes in a standard roll width of 1.0m and both CC8 and CC13 are supplied in rolls 1.1m wide. The width of the material should be taken into account when determining the number of layers and the best method of laying up lengths of CC to a specific ditch profile. A minimum of 100mm should be allowed at overlaps between layers of CC and at the edge of the ditch. Figures 1-3 show typical ditch profiles using 1, 2 and 3 layers of CC.

Fig. 1

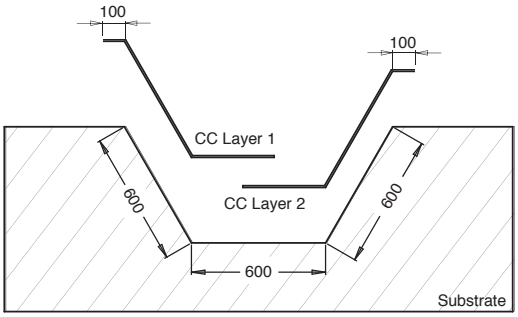
1 Layer CC Layup



300mm x 300mm x 300mm ditch
1 Cloth Layer
100mm edge overlap

Fig. 2

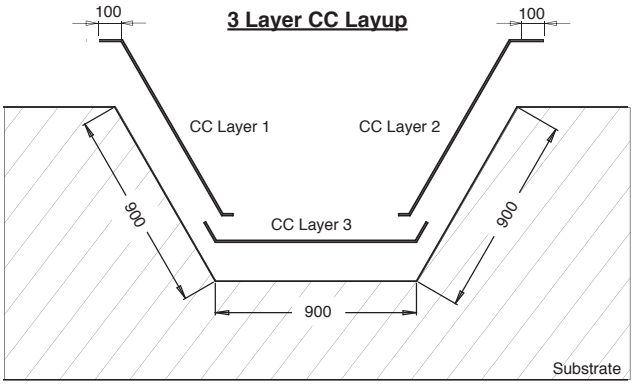
2 Layer CC Layup



600mm x 600mm x 600mm ditch
2 Cloth Layers
130mm edge overlap

Fig. 3

3 Layer CC Layup



900mm x 900mm x 900mm ditch
3 Cloth Layers
150mm edge overlap

CC Ditch Lining Method Statement

1. Ground Preparation

CC will conform closely to the underlying surface contours. The degree of ground preparation needed will depend on the ditch design and surface finish required. It is recommended that loose soil, soft ground, protruding rocks and voids should be minimised as they may result in the CC becoming damaged.

2. Unroll CC

CC can either be supplied in man portable lengths for manual application, or large rolls if plant equipment is available. The application process is the same for either method. Unwrap the CC, taking note of the roll direction as indicated on the packaging. Ensure that the fibrous surface of the CC is facing upwards and the PVC membrane is in contact with the ground. Align the CC roll with the ditch and simply unroll down it's entire length. Manually press and position the material into the ditch starting at the outflow point. Contact Concrete Canvas for details on hiring lifting tines for bulk roll installation.

3.Fix down CC

CC can remain unfixed or can be secured in place with an anchor trench or pegs, depending on the design requirement.

Pegs are driven through the unhydrated CC along its length and at every joint. It is recommended that Ø13mm 250mm pegs are used, which are available from Concrete Canvas.

4. Joining adjacent CC layers

When positioning subsequent CC rolls, ensure that there is at least a 100mm overlap between layers. Also ensure all overlaps are in the direction of water flow to minimise leakage at the joints.

A simple overlap joint with compression is sufficient for the majority of ditching projects. If a more water proof seal is required please see "CC User Guide" or contact Concrete Canvas for a joining method suitable to your project.

CC Ditch Lining Method Statement cont.

FAQS

Q. Can CC be laid in the rain?

A. Yes – however once wet it will only remain workable for 2 hours.

Q. Can CC be laid in very cold conditions?

A. CC can be laid at temperatures below freezing but requires a special method. If the temperature is below or likely to fall below freezing in the first 24 hours please contact Concrete Canvas Ltd. for technical advice.

Q. How should CC be stored prior to use?

CC should be stored in dry conditions away from direct sunlight. Once the packaging has been opened, CC must be kept dry and will gradually lose flexibility and performance if exposed to the air for a number of weeks.

5. Hydration

Once positioned, CC can be hydrated by spraying with water (sea water may be used). Do not jet water directly onto the cloth to avoid washout. An excess of water should be used as CC cannot be over hydrated. Ideally, the ditch outlet should be temporarily blocked and the entire ditch filled so that the water pressure forces the cloth to conform to the ditch profile. If this is not possible the ditch should be re-sprayed after 1 – 2 hours. CC8 requires a minimum of 6 lt/sqm of water.

Sandbags should be placed on top of overlapped joints to ensure good compression between layers during setting.

6. Junctions and Terminals

CC is very easy to shape before setting and can be easily manipulated to form ditch junctions and terminals. It can be cut using a “snap off” type disposable knife.

Please refer to the “CC Health and Safety Data Sheet” for guidance on safe handling of Concrete Cloth.

7. Setting

Once hydrated, CC remains workable for approx. 2 hours. In warm climates, working time may be reduced. CC will harden to 80% of its 28 day strength in 24 hours and is ready for use.

A short demonstration video showing CC ditch lining installation is available on our website at www.kanvasbeton.com

CC has a wide range of other applications within the civil sector including slope stabilisation, dust suppression, erosion control, pipe protection and roofing applications. If you require any further information or have ideas on alternative applications please