CONCRETE CANVAS®

# USER GUIDE: MAINTENANCE

## General information

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In the majority of projects, following installation Concrete Canvas® (CC) GCCM* does not require cleaning or maintenance.

For example, in channel lining applications, CC **encapsulates the invert and slopes** providing effective erosion control preventing the generation and accumulation of silt.

The **low manning's value** of the fibrous top surface of CC assists with the self-cleaning properties of a channel.

CC provides **effective weed suppression**, and prevents root-growing vegetation establishing in the channel, mitigating the risk of blockages and subsequent overspill.

CC **protects against burrowing animal damage** and adds a degree of structural stability to the channel, helping preserve its profile/cross section and hydraulic capability.

However, applications which incorporate silt traps or baffling, will require periodic maintenance to remove the accumulated silt, which by design will collect around these measures.

In cases where CC has been poorly jointed and a void space occurs between the layers, it is possible for wind-blown debris to accumulate which may provide a base for limited vegetation growth.

## Causes of vegetation growth and blockages

In humid environments, and especially in water management applications, the surface of CC provides a favourable base for moss growth. This is not harmful to the material and helps it blend in with the surrounding natural environment.

However, if root growing vegetation does establish behind silt traps or between poorly jointed CC, it is important that these are cleared for two reasons; firstly, to prevent roots from comprising the strength of the joints and secondly to prevent vegetation from forming blockages (from both the vegetation itself or from collected wind-blown or flow carried detritus).

For channels that have a shallow gradient and are occasionally dry, windblown debris such as leaves can accumulate in the invert. For crest drainage applications this debris will wash away during storm events due to the low manning's value and self-cleaning properties of channel. However for low flow channels, this debris may require occasional removal if water flow is not sufficient to provide a cleaning function.

## Levels and methods of maintenance

For all schemes, it is recommended to periodically inspect CC lined assets as part of routine maintenance schedules for any signs of structural or hydraulic compromise.

There are three levels of surface maintenance that can be applied to set CC; manual excavation (brushing and shovelling), assisted excavation (pressure washing and rodding) and plant maintenance (excavators and dredgers).

### 1. Manual maintenance

A plastic yard brush can be used to loosen dirt and sweep debris from the CC surface.

For areas such as silt traps with larger collections of debris, it is recommended to use a shovel.

It is recommended to brush and shovel in the direction of overlaps, to avoid directing debris into the joints.

*Cleaning CC with a shovel*

*Geosynthetic Cementitious Composite Mats



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## Levels and methods of maintenance cont...

### 2. Assisted maintenance

Hosing, vacuuming and mechanical jetting can be used on set CC to remove finer surface residue and unwanted moss growth.

Typical hydration of CC produces a mottled grey, organic rock-like finish which is typically sympathetic to the surrounding environment. Pressure washing the top surface fibres of CC will return the material to a bright white finish.

Please note, scouring of the sacrificial top surface fibres of CC may occur at areas subjected to sustained localised high pressures.

*Set Concrete Canvas material prior to pressure washing*

### 3. Plant maintenance

For larger schemes, and where location, geography and access permit, it may be practical to use plant or machinery to remove debris.

The fibre reinforced concrete layer of CC provides good resistance to low-level mechanical impact; a rubber tipped excavator bucket may be used to dredge the invert of channels. Light plant should be used for CC5 and CC8 channels and it is important that dredging is completed by a skilled operator and only in the direction of overlapped joints, taking care not to damage the integrity of the joints.

CC13 has been tested to ASTM G13 for impact protection and will provide a greater level of impact protection for sections requiring increased plant maintenance such as sump areas.

Ensure that excavator tracks are maintained at a distance of at least 0.5m from the crest of the channel, to avoid damaging buried anchor trenches.

*Concrete Canvas material following pressure washing*

*Sump area lined with CC13 in a CC8 channel*

*Excavator with rubber tipped blade used to clear silt trap*



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