CONCRETE CANVAS®
Concrete on a Roll

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MADE IN UK

CONCRETE CANVAS®

Concrete on a Roll

The Queen's Awards for Enterprise: International Trade 2019

Board of Trade Winner 2018

Ground Engineering Awards 2017 — Winner Technical Innovation Award

ice award winner 2017 — ICE Wales Cymru Project Awards — Innovation Award ICE Wales Cymru Awards 2017

BBA Approval Inspection Testing Certification — Certificate 19/5685 — British Board of Agrément Certified

CPD Certified — The CPD Certification Service — Certified CPD Provider

IGS — Corporate Member

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CONCRETE CANVAS®

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Concrete Canvas® GCCM

What is it?

Concrete Canvas® is part of a revolutionary new class of construction materials called Geosynthetic Cementitious Composite Mats (GCCMs). It is a flexible, concrete filled geotextile that hardens on hydration to form a thin, durable and water proof concrete layer. Essentially, it's *Concrete on a Roll*™. Concrete Canvas® GCCM (CC) allows concrete construction without the need for plant or mixing equipment: just add water.

CC consists of a 3-dimensional fibre matrix containing a specially formulated dry concrete mix. A PVC backing on one surface of the CC ensures the material has excellent impermeability. CC can be hydrated either by spraying or by being fully immersed in water. Once set, the fibres reinforce the concrete, preventing crack propagation and providing a safe plastic failure mode. Concrete Canvas® GCCM is available in 3 thicknesses: CC5™, CC8™ and CC13™, which are 5, 8 and 13mm thick respectively.

Concrete Canvas® GCCM User Benefits

Rapid Install

CC can be laid at a rate of 200m²/hour, up to 10 times faster than conventional concrete solutions.

Easy to Use

The concrete is pre-mixed so there is no need for mixing, measuring or compacting. CC is also available in hand portable rolls for applications with limited access.

Lower Project Costs

The speed and ease of installation mean Concrete Canvas® GCCM is more cost-effective than conventional concrete, with less logistical complexity.

Eco-friendly

CC is a low mass, low carbon technology which uses up to 95% less material than conventional concrete for many applications.

Concrete Canvas® GCCM Key Properties

Water Proof

The PVC backing on one surface of the CC ensures that the material has excellent impermeability.

Strong

The fibre reinforcement prevents cracking, absorbs energy from impacts and provides a stable failure mode.

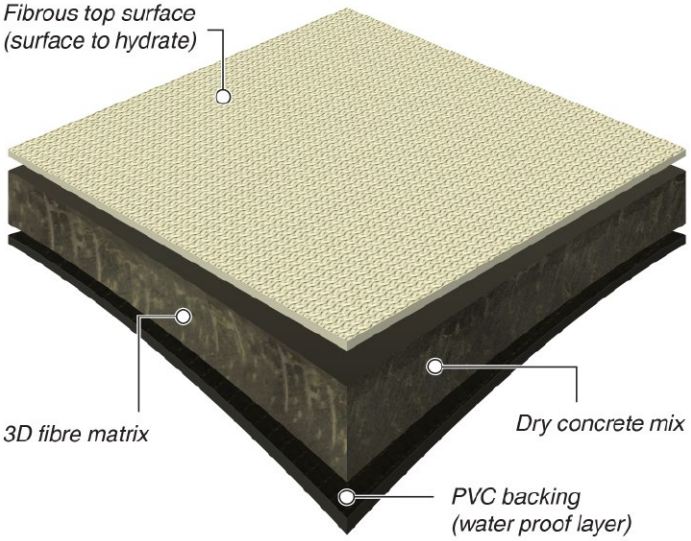
Durable

CC is 5 times as abrasion resistant as standard OPC concrete▲, has excellent chemical resistance, weathering performance and UV resistance. CC is BBA certified with a durability in excess of 120 years when used in erosion control applications.

Flexible

CC has good drape characteristics and will closely follow the ground profile and fit around existing infrastructure. Unset CC can be cut or tailored using basic hand tools.

Concrete Canvas® GCCM section



Batched rolls

Bulk roll

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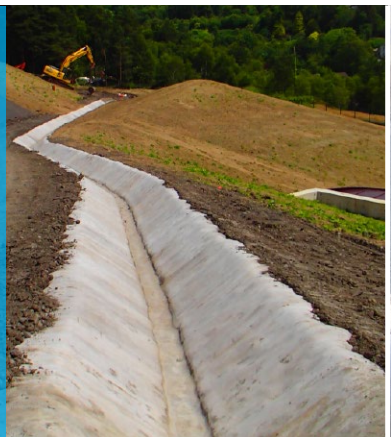
Concrete Canvas® GCCM Applications

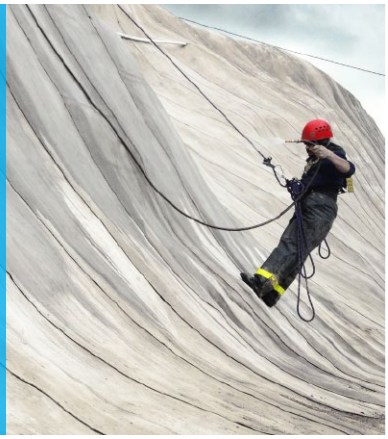
Channel Lining

CC can be rapidly unrolled to form a ditch or channel lining. It is significantly faster, easier and less expensive to install than conventional concrete channel lining and requires no specialist equipment. The matting can be laid at a rate of 200m^2 per hour by a 3 person team.



Slope Protection

CC can be used to protect slopes from surface erosion. Compared to shotcrete it is typically faster to install, more cost effective, requires less specialist plant equipment, and eliminates the risks associated with rebound and debris.



Bund Lining

CC provides a cost-effective alternative for lining secondary containment bunds. It acts as an effective weed suppressant, reducing maintenance costs as well as providing additional levels of impermeability.

Its ability to be installed quickly reduces time on site, whilst the availability of man-portable rolls allows for installation in areas with reduced access.

Weed Suppression

CC is used to provide effective, durable and long-term weed suppression, reducing de-vegetation requirements and associated maintenance costs.

CC can be used where de-vegetation is required to maintain operational and health and safety requirements, or where limited access and sensitive infrastructure prevents the use of traditional methods.

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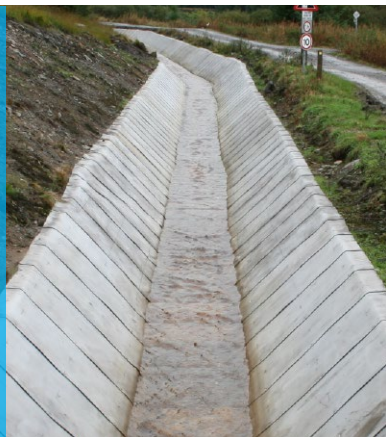
Remediation

CC can be used to rapidly re-line and refurbish existing infrastructure suffering from environmental degradation and cracking. CC lined structures can be returned to operation in 24hrs from installation.

Unlike structures re-lined with traditional concrete, the internal volume of CC lined structures is maintained ensuring that the channel design flow capacity is preserved.



Culvert Lining

CC can be used to extend the durability of new build culverts and to upgrade existing structures, preventing the need for asset replacement.

The speed, ease and flexibility of CC offers significant technical and financial advantages, whilst offering a durable means of providing erosion protection. CC is used to replace, poured or sprayed concrete and bitumen coatings.

CC Properties (Pre-set)

	Test Method	Unit	Typical Values		
			CC5™	CC8™	CC13™
GCCM Classification	ASTM D8364	Type	I	II	III
Thickness	BS EN 1849-2	mm	5	8	13
Roll Width		m	1.0	1.1	1.1
Area of CC per Batched Roll		m^2	10	5	N/A
Area of CC per Bulk Roll		m^2	200	125	80
Mass per Unit Area	BS EN 1849-2	kg/m^2	7	12	19
Density Increase on Curing		% Increase	30-35		
Working Time from Hydration (refer to the CC Hydration Guide)		Hours	1 to 2		

CC Properties (Post-set)

(Hydrated by full immersion in accordance with ASTM D8030)

	Test Method	Unit	Typical Values		
			CC5™	CC8™	CC13™
Compressive Strength of Cementitious Mix - 28 Day (water/cementitious materials ratio to ASTM D8329)	ASTM D8329	MPa	80		
Flexural Strength - 1 Day - Initial Flexural Strength (MD)	ASTM D8058	MPa	>4.0		
Flexural Strength - 1 Day - Final Flexural Strength (MD)	ASTM D8058	MPa	>10	>6	>6
Freeze - Thaw Resistance (retained Initial Flexural Strength after 250 cycles)	BS EN 12467	%	95		
Weathering Resistance (refer to CC Weather Resistance)	BS EN 12467	-	Passed		
Chemical Resistance (refer to CC Chemical Resistance)	BS EN 14414	-	Passed		
Abrasion Resistance (cementitious barrier depth of wear)	ASTM C1353	mm/1000 Cycles	0.2		
Recommended Permissible Velocity (intermediate fixings may be required - contact CC Ltd)		m/s	Application Dependent	<8.6	>8.6

Please refer to Concrete Canvas® Data Sheet for additional information on testing and data.

[a] High slump ST4 (C20) concrete mix.

Information is provided based on current test data and may be subject to change as new information becomes available. The versatile nature of Concrete Canvas® means that all application conditions cannot be anticipated. Concrete Canvas Ltd makes no warranties and assumes no liability in connection with this information. Project specific testing may be required to determine the suitability for Concrete Canvas® material use in a particular application.

BBA APPROVAL INSPECTION TESTING CERTIFICATION CERTIFICATE 19/5685

ISO 9001 CERTIFIED British Assessment Bureau

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