CONCRETE CANVAS®

CHANNEL LINING

Project Info

- May 2018
- CC8™ Bulk Rolls
- 120m²
- Transverse layers
- Gilfach Goch, Wales, UK
- Hammond ECS
- CC8™ used to line a formalised drainage channel which runs between a housing estate and busy road to prevent

Completed channel

In May 2018, investigations were carried out to establish the source of land drainage issues on a housing estate adjacent to a busy roundabout in Gilfach Goch, Wales.

Dye investigations determined that the source of the water was an adjacent 40 linear metre runoff stream, which was at risk of compromising local ground stability. The informal stream was heavily overgrown and blocked at points with substantial debris and vegetation within the invert.

Rhondda Cynon Taf County Borough Council commissioned Hammond ECS to clear the vegetation, formalise the channel and line it with Concrete Canvas® (CC) GCCM*.

Prior to installation, the vegetation was mechanically cleared and a formalised trapezoidal channel excavated, including anchor trenches measuring 150x150mm along the shoulders.

The specification of CC over traditional alternatives, such as pre-cast concrete or slabbed alternative solutions, meant the varying profile of the channel, a varying tree and fence line, and restricted access was easily accommodated. CC is also an environmentally friendly concrete alternative due to its low alkaline reserve and washout rate, which allow runoff to be discharged into live water courses without prior treatment.

*Geosynthetic Cementitious Composite Mat

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Site of channel - located at toe of roadside slope

Stream source

Channel following excavation

Excavated channel at headwall end

Channel following creation of anchor trenches

Deployment of CC by hand

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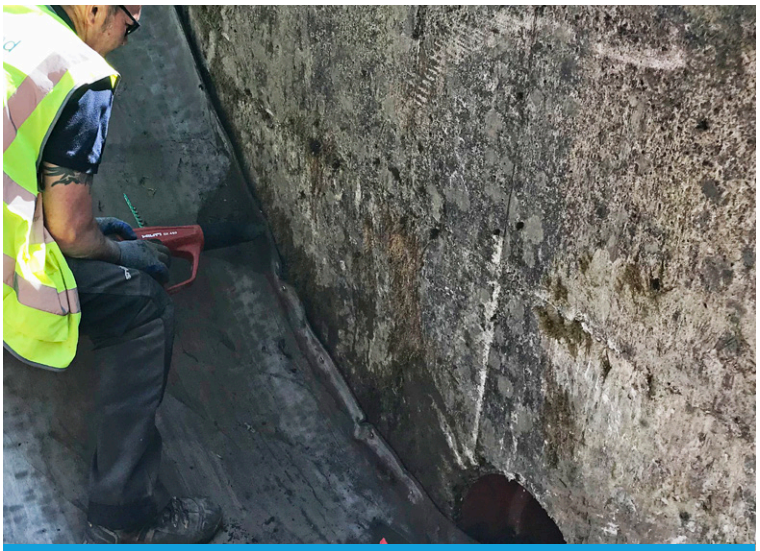
Edges of material marked out for overlap



Securing CC to headwall

Overlaps jointed using screws

Securing CC edges using ground pegs

Hydration

Completed channel following backfilling of anchor trenches

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Profile view of completed channel

Installation was carried out during low flow conditions and the channel dammed and over-pumped to provide a dry workspace. The first layer of CC was mechanically fixed to the downstream culvert headwall using shot-fired masonry fixings, and subsequent layers laid transversely across the channel with layers overlapping by 100mm.

The material was cut to length on site to accommodate variations in channel profile and shape, and ensuring minimal wastage.

Each layer was fixed within the anchor trenches using ground pegs, and overlaps jointed using stainless steel screws at 150mm intervals and placed 30mm from the leading edge.

A small team with minimal plant installed the CC8™ material at a peak rate of over 100m^2 per hour in varying weather conditions, with temperatures reaching around 25°C+.

Hydration of the material was carried out using the over pumped water from the channel. The anchor trenches were later backfilled to prevent water ingress below the CC layers, and to provide a neat termination.

The use of CC to line the channel will greatly increase its operational life, while controlling the water flow and preventing further drainage issues on the housing estate. CC provided a rapidly installed and low carbon solution to provide a robust yet environmentally sensitive protection to the surrounding properties. CC also requires minimal maintenance, which will be of great benefit to the client as a result of a great reduction in the requirement for future maintenance work on this difficult-to-access site.

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Channel revisited 1 year after installation

Downstream view

CC termination at channel source

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