



ACO's Bespoke TrackDrain Solution for Coventry's VLR Project

CASE STUDY

With space at a premium in the revolutionary VLR track slab, Coventry required drainage that was both compact and robust. ACO's custom stainless steel TrackDrain meets the geometry and load demands while keeping maintenance straightforward.



A New Route: ACO's Bespoke TrackDrain Solution for Coventry's VLR Project

THE PROJECT

Coventry Very Light Rail Network

THE BRIEF

Provide an ultra-shallow, robust drainage system compatible with the new VLR track slab.

THE SOLUTION

A bespoke stainless-steel ACO TrackDrain channel engineered to the VLR's specific geometry and load requirements.

In May 2025, Coventry's Very Light Rail (CVLR) demonstrator opened to the public as a 220-metre pilot test track, marking a key milestone in creating a next-generation, low-carbon urban transit network. Designed to reduce construction costs, accelerate installation, and minimise disruption compared with traditional tramways, the CVLR prototype centred around a radically new track slab system. Innovation in this core structural element required equally revolutionary drainage solutions tailored to the system's geometry and installation constraints.

ACO was first approached by Dr Christopher Micallef, CVLR Track Programme's Lead at Coventry City Council. They began collaborating on the development of a custom track-edge drainage solution. The system had to meet strict geometric and structural criteria, including a maximum vertical depth of 152.5 mm and delivery aligned with an accelerated schedule.

Through internal research and development, ACO undertook the full development process of the drainage solution, from bespoke design to structural and hydraulic testing.

Challenging conventional excavation

Typical UK tram infrastructure involves excavation depths of up to 1.2 metres and costly utility diversions, contributing to installation costs of £72.4m to £87m per mile. With the aim of dramatically lowering these costs and avoiding the need to re-route existing utility networks, the CVLR deploys a radically shallower system, embedded within existing road structures. To achieve this, the drainage system had to meet these specific demands:

- Function at shallow depth without concrete surround
- Manage surface and track runoff
- Maintain low visual impact in urban streetscapes
- Compliance with EN1433 E600, withstanding heavy vehicular loads up to 600 kN

These requirements meant off-the-shelf solutions were ruled out entirely, and so ACO responded with a bespoke system.

Early trials and iterations

In late 2023, ACO's standard TramDrain and V100G units were trialled during pilot works at the University of Warwick. These trials assessed fitment with the rail, the connection options and performance.

ACO's units consistently outperformed competitor products in build quality and ease of installation, though they did not meet the unique geometrical and functional requirements of the CVLR system. This led directly into a co-engineered design phase to produce a bespoke drainage solution.





Enter TrackDrain: A new era in tramway drainage

Recognising that a custom drainage solution would be needed to interface with the 41GPU (54G1) rail, the CVLR slab, and the asphalt pavement system, ACO worked closely with Dr Micallef to design a bespoke unit. The results of which saw the creation of ACO's latest tram drainage solution, the TrackDrain.

Manufactured from marine-grade stainless steel, each TrackDrain unit features ribbed sidewalls for rigidity and slots that direct water into an internal trough. With a 1:200 gradient and 110 mm outlet, units accommodate peak flows up to 10 l/s. Installed anywhere between 30 and 100 m intervals based on route geometry, each unit is bedded onto the CVLR slab using a specialised bedding mortar. This design eliminates the need for concrete encasement.

Once the CAD model was finalised, ACO produced the first stainless-steel TrackDrain samples within six weeks. A little over two months later, the demo track received its first delivery, and installation crews completed the 220-metre loop in under two weeks.

System integration and environmental gains

To create a unified drainage network across pedestrianised areas and road junctions, ACO also supplied KerbDrain units, gullies, and MultiDrain channels. The system connects seamlessly into Coventry's existing highway drainage infrastructure.

By enabling shallow installation and reducing excavation, the ACO drainage system contributes to CVLR's carbon-reduction and low disruption goals. Its rapid deployment and efficient use of materials support sustainable, scalable urban rail delivery.

Dr Micallef said: "ACO understood from day one the unique set of system requirements imposed by the nature of the novel CVLR track system. Their TrackDrain units not only met our geometry and flow requirements but arrived on site in time for our tight demo schedule."



Roger Hewitt, Regional Specification Manager at ACO, said: "From initial sketch on a whiteboard to tested stainless-steel prototypes in just six weeks — that pace demonstrates ACO's ability to create bespoke solutions for unique applications. We're really pleased with the success seen so far and are looking forward to being part of the CVLR project as it progresses."

Rapid prototyping, precise hydraulic modelling and robust load testing resulted in ACO being able to deliver a bespoke TrackDrain system that underpins Coventry's goal for cost-effective, low-impact urban rail. By 2027, the project will reach the final stage of the CVLR R&D program, consisting of a full-system demonstrator pilot installation of about 1700m of track.

On successful delivery, subject to securing funding, the city aspires to deliver a commercial route, followed by a full network serving the population of Coventry and beyond.

For more on ACO's tailored solutions for infrastructure and civil engineering projects, see www.aco.co.uk/civils-infrastructure

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