

# Tunnel Drainage

Cavidrain Invert, Albert Street, Cross River Rail, Brisbane, Australia



CASE STUDY



## Project Description

The new Albert Street Cross River Rail underground station in Brisbane's Central Business District will become the main access point for the Queensland University of Technology's Gardens Point campus, the parliamentary precinct, the new Queen's Wharf development, the Eagle Street business district and the Botanical Gardens. It will also provide easy access to Elizabeth Street and Queen Street Mall.

## The Challenge

Delivering conventional tunnel invert drainage relies on importing and placing large volumes of drainage stone. This encompasses a heavy carbon footprint and creates logistical challenges and a longer construction sequence. A more straight-forward and faster to install option was sought to negate these access and delivery factors.

## The Solution

**ABG's Cavidrain® Invert 60** drainage layer is a light-weight and easy to handle 60mm thick preformed cavity drainage system. The sheet is available with an optional large seldge at each end and the layer replaces crushed stone and pipes as the drainage method in the construction of tunnel floor slabs. The high strength drainage composite was infilled with 150mm of blinding concrete to surface the station box floor. The **Cavidrain®** high-strength core withstands the compressive loads associated with wet concrete placement, and once the concrete is poured, it fills up the cusped HDPE cavities, making the final load capacity approximately equivalent to that of the concrete slab.

## Project Information

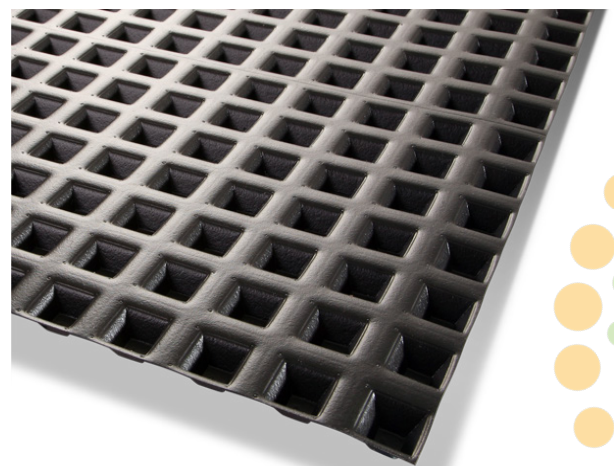
**Client** Cross River Rail - Tunnels & Stations

**Contractor** CBGU D&C JV

**Product** ABG Cavidrain S60

**Quantity** 1,000m<sup>2</sup>

- Benefits**
- Easy to install and space saving solution
  - High flow capacity provided in a 60mm layer to channel away excess water
  - Carbon saving alternative to crushed stone
  - Ideal solution to channel away ingress water from the tunnel base and excavated walls.



ABG Cavidrain® Invert 60 Geocomposite

ABG LTD

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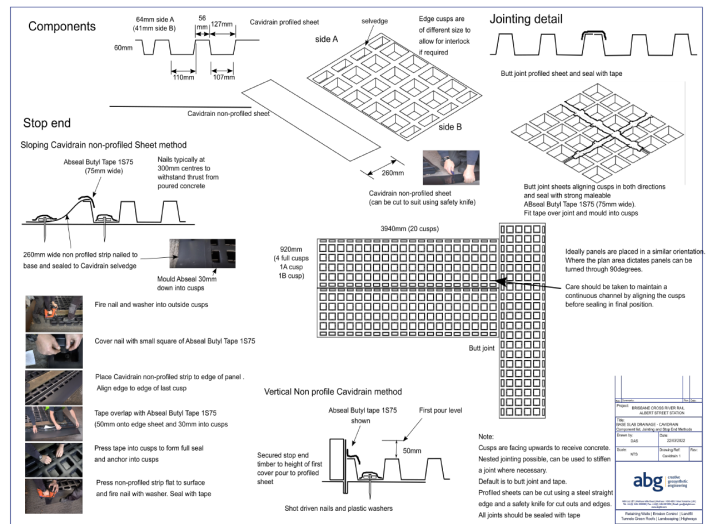
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The edges are tapered using butyl strips around outlet sections in the tunnel cavern. When compared to using traditional crushed stone layers, **Cavidrain** offers significantly increased drainage performance and a reduced construction depth. This in turn delivers large carbon savings, with a reduced number of site vehicle movements and fewer associated transport and removal journeys required. The Albert Street Tunnel project showcases the efficient performance provided by the **Cavidrain® Invert 60** system, ensuring the creation of an effective structural drainage void that is easy to handle, quick to install and sustainable.

## The ABG Service

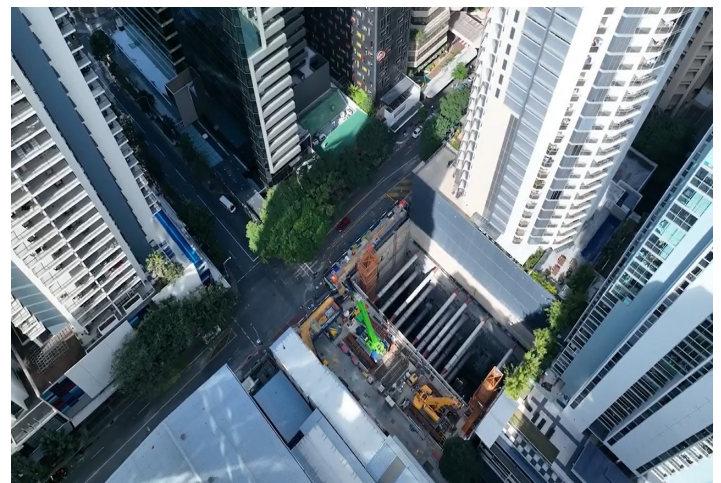
ABG assisted with design details and facilitated a tight construction schedule, with a quick manufacturing turnaround and delivery service.



Cavidrain Invert 60 jointing details provided for the contractors



Route showing the new Cross River Rail station projects



Aerial of the Albert Street Tunnel station box

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