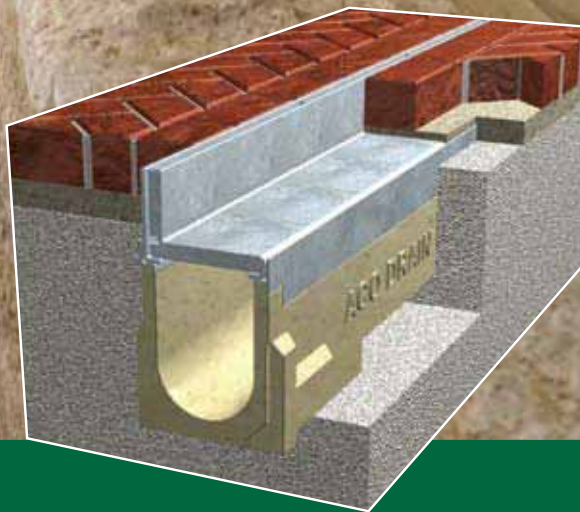


## Discreet drainage for Singapore's Skypark



Marina Bay Sands Casino, Singapore, is punctuated by three, 50 story hotel towers. The tri-structures are crowned by a 2 acre modern park enclosing a spectacular 150 metre long infinity edge swimming pool. Constructed by Venturer Private, the precinct is called Sands Skypark, containing a bar, restaurant, spa, garden and observation deck. It can take a person twenty minutes to walk around its entire ellipse, offering 360° views of the city and the sea.

For such a large outdoor botanical precinct, designers required the surface water drainage to be functional and visually discreet. Peridean Landscape Asia Pte Ltd invited ACO Polycrete Pty Ltd, renowned suppliers of innovative drainage solutions, to provide input into the overall drainage design.

The drainage solution had to cater for a rainfall intensity of 330mm/hr and due to the physical constraints, could not protrude beyond a depth of 266mm. After some consultation and careful analysis by ACO's engineers, a solution was provided, complete with run schedules and hydraulic profiles. This gave designers the confidence to specify **ACO DRAIN's KS100** system as the project's surface drainage solution. In obscured areas, **HEELGUARD™** stainless steel grates were used and stainless **BRICKSLOT™**, in highly visible areas. **BRICKSLOT™**, is a purpose made trench drain which allows designers to preserve the visual continuity of the pavement design whilst allowing drainage through a continuous and discreet slot.

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For more information on ACO's products or services, contact our sales office or visit:

[www.acoaus.com.au](http://www.acoaus.com.au)

# Malaysian Drainage Shipshape - 12 years on!

Port Johor, MALAYSIA

In 1999, the Malaysian Government embarked on the development of some new container docks at Tanjung Pelepas Port (Port Johor), located at the southern tip of Malaysia. This was an initiative for a strategically positioned port location to actively compete with other established south-east Asian ports, particularly Singapore and Hong Kong.

As part of the pavement design for the new facility, engineers required a high performance trench drainage system that would satisfy three main requirements: to keep the overall pavement geometry flat, free from unsafe complex falls; restrain the brick pavers and allow trafficability of heavy loads to F900KN (EN1433).

The **ACO DRAIN 'S'** System (an earlier version to **POWERDRAIN™**), ACO's current heavy duty trench drain) met all three requisites. A total of 1,000 metres was installed in the project and the system will continue to perform to its design requirements for many years to come.

Commercial Wharves & Docks provide the most punishing environments for drainage systems. Busy maritime operations involve the movement of very heavy vehicles as they load and unload containers. The repetitive nature of heavy wheel loads imposes severe stresses on apron areas, whilst the corrosive nature of the marine air environment requires only proven, reliable, quality products to be used.

*A total of 1,000 metres was installed in the project and the system will continue to perform to its design requirements for many years to come*

As an ISO 9001 registered company, ACO has supplied a variety of durable products including heavy duty access covers and trench drains to container and passenger wharves and docks worldwide for over 30 years. ACO also manufactures high performance stainless steel drainage grated troughs, floor gullies and modular pipe systems ideal for use in terminals and other quayside buildings.

## ACO's offshore waste management solution

Throughout the world, ACO's grease separators are typically found in buildings or on marine vessels. However, recently, ACO has sold its first unit on an offshore platform which was recently commissioned for natural gas production.

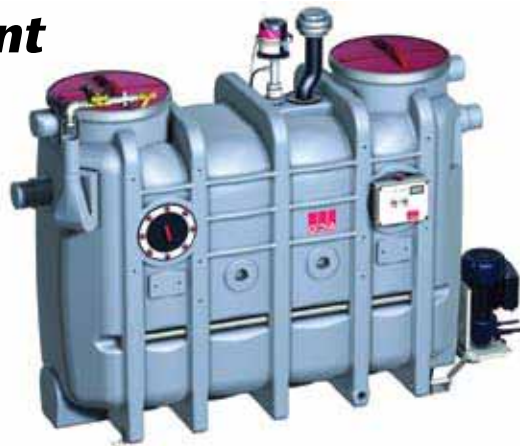
The platform belongs to the Malaysia-Thailand Joint Development Area (JDA), a zone in the Gulf of Thailand which has been designated for use by both countries where energy resources are to be shared equally.

ACO's **HYDROJET™ OS** grease separator was installed in the food preparation area in JDA block B-17 which supports 140 working staff with 3 meals a day. The unit was sized by planners in accordance with the European Standard, EN 1825.

The trend to be green is increasingly important in waste management, particularly for the recycling of fat, oil and grease (FOGs) which are used in food processing. Moreover, proper waste treatment prevents pipe blockages and the unlawful disposal of untreated wastewater.

The **HYDROJET™** range is available in a number of sizes (capacities) and offers an advanced cleaning capability for hassle and stench-free results. Each unit comes with an integrated sludge trap which can be cleaned out easily via a disposal truck.

With a certified life span of 25 years, all ACO's grease separators are durable and manufactured to EN 1825.



### ACO DRAIN up in lights!

ACO has launched a range of illuminated stormwater grated trench drains,

The dual function system allows designers to specify the world famous Australian manufactured ACO DRAIN system for drainage as well as a feature LED lighting system.

ACO's **LIGHTPOINT™** system was installed along the main entrance of Pavilions on the Park, Australand's recently completed first-class residential development on the Lower North Shore of Sydney. Leading designers, Allen Jack+Cottier architects designed the buildings in the complex with the most efficient use of materials, water and energy. ACO's dual function low voltage **LIGHTPOINT™** system was therefore the perfect fit for the application.

ACO's **LIGHTPOINT™** system consists of encapsulated LED lights plugged in series with IP67 weather protection (AS 60529). These lights emit a soft diffuse light in a choice of white or blue. The system is housed in the ACO DRAIN system complete with **HEELGUARD ANTISLIP™** grates, ideal for highly pedestrian trafficked areas. A single low voltage transformer can power up to 18 lights equivalent to 18 lineal metres of a trench drain before another one is required.

## KERBDRAIN™ meets Singapore's PUB approval



The road surface on Henderson Road adjacent to Telok Blangah Road, just minutes from Singapore's bustling CBD, was originally drained with a stormwater system consisting of grated side inlet pits. These structures were connected to the city's main stormwater drainage system by a culvert. Heavy rainfall during storms combined with long, steep road gradients on Henderson Road, meant that large volumes of surface water would often bypass the inlet grates and cause flooding to a property downstream.

The Public Utility Board (PUB), Singapore's national water agency, manages the island state's water supply, catchment and drainage works. During the consultation period, PUB trialled ACO's **KERBDRAIN™** system as a potential solution to the flooding problem. The installation was project managed by Smitech Engineering Pte Ltd and ACO provided site support to the nominated subcontractor during the installation. Finally, testing of the system prior to the handover was done with a water truck discharging water into the drain from the upstream end of Henderson Road. During the evaluation, the performance of **KERBDRAIN™** was assessed and approved by representatives of PUB. Following this success, **KERBDRAIN™** is now being used in Singapore as a solution for problem areas where localised ponding is prevalent.

Unlike conventional side inlet systems, **KERBDRAIN™** transforms kerbs into continuous inlet structures with minimal excavation. Manufactured from durable, polymer concrete, **KERBDRAIN™** consists of 500mm long pre-cast modular units each comprising an integrally cast channel and batter with inlets for continuous drainage. The underlying channel then transfers captured flow to the stormwater often eliminating the need for multiple pits.

**Following this success, KERBDRAIN™ is now being used in Singapore as a solution for problem areas where localised ponding is prevalent.**

ACO's **KERBDRAIN™** has been used exclusively throughout Europe, the UK, the US and Australia as a continuous lateral collection drainage solution. It keeps water away from traffic lanes by effectively reducing the width of gutter flow. This provides an efficient water management solution to roads with steep gradients and flat cross flows typical of some intersections, roundabouts and a wide range of kerb line applications with depth restrictions.

## ACO's solution to 'greener' wastewater management

The trend to be green is increasingly important in waste management, particularly for the recycling of fat, oil and grease (FOGs) which are used in food processing. Moreover, proper waste treatment prevents pipe blockages and a potential overload of downstream sewerage treatment infrastructure.

ACO's grease separation units retain FOGs for regular disposal. The **ECO-JET™** Separator range is compact and therefore easy to position and install.

The **HYDROJET™** system, part of the **ECO-JET™** Separator Series is available in a number of sizes (capacities) and offers an advanced cleaning capability for hassle and stench-free results. Each unit comes with an integrated sludge trap which can be cleaned out easily via a disposal truck.

With a certified life span of 25 years, all ACO's grease separators are durable and manufactured to EN 1825.

### Typical Applications

- BBQ / Grill kitchens
- Butcheries
- Canteens
- Hotels
- Margarine factories
- Oil mills
- Restaurants (e.g. McDonalds, Westfields)
- Sausages production
- Slaughterhouses & Abattoirs
- Students' refectories



## New era for racing track drainage

The Sepang International Circuit (SIC) is the venue used for the Malaysian Formula One Grand Prix, and the Malaysian Motorcycle Grand Prix. It is also used as a venue for many other major motorsport events.

Since construction in 1997, the circuit has undergone a number of upgrades where improvements have been made to the surface track drainage. Main contractor, Nippon Road, evaluated ACO's **POWERDRAIN™** system against a traditional cast in situ drainage design comprising mild steel grates bolted down into frames encased in the pavement. For many years, cast in situ drainage had been standard practice on Formula 1 tracks. Recently, however, findings by a research group carried out at Paul Ricard HTTT (High Tech Test Track) indicated that in time, bolts would cause potential issues with safety, were unsightly, and would oxidize resulting in maintenance issues. Over the next 5 years, over 800 metres of **POWERDRAIN™**, S200K (200mm wide) system would be installed along the bends of the track for the efficient removal of surface stormwater and for the safe transit of race cars.

Asphalted pavements designed for racing circuits differs from that of normal roads. A racing circuit's pavement and its drainage elements require very high quality control with respect to stability, surface regularity and durability. ACO's **POWERDRAIN™** grated trench drains are available with 90 tonne capacity ductile iron grates locked with boltless mechanisms into integrally cast ductile iron edge rails with anti shunt mechanisms. The underlying trench comprises interlocking precast channels made from polymer concrete, a durable resin composite with excellent strength properties.

Numerous racing tracks around the world, such as the Nürburgring and Hockenheimring; Europe; Formula 1 track in Shanghai, China and Albert Park Australia, are drained with ACO's world famous trench drains.

# SHOWERDRAIN Lightline™ – water activated illumination for wet areas

ACO Polycrete, innovator and manufacturer of ACO STAINLESS, the world's most popular building drainage range has adapted its renowned **SHOWERDRAIN™** to contain **LIGHTLINE™**, a water activation lighting system. This is an industry first innovation, purpose built to suit ACO's bathroom grates so that the drain can illuminate during showers and for several minutes thereafter.

The **LIGHTLINE™** LED units are waterproof and available in blue, red, green and rainbow colours. They are easily removable for recharging and fit neatly beneath each end of the grate in the **SHOWERDRAIN™** system. The LED units do not require any wiring and on average will only need to be recharged every 3 months.

## *Drain can illuminate during showers and for several minutes thereafter*

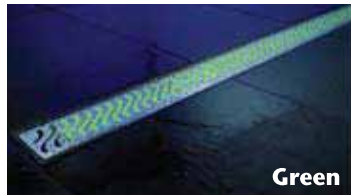
ACO's **SHOWERDRAIN™** is manufactured from 100% stainless steel and available in 900mm, 1200mm or built to custom lengths and can easily be secured into the topping screed, ideal for existing (retrofit) or new bathrooms. **SHOWERDRAIN™** is available with the industry's widest choice of grates allowing designers to adapt them to any bathroom design.

**SHOWERDRAIN™** is fully accredited to the strictest regulatory requirements and can be installed adjacent to walls, shower hobs and even in hobless applications for uninterrupted safety of passage.

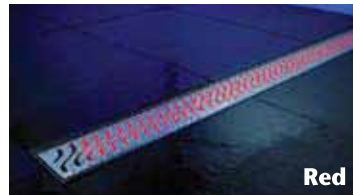
For more information, visit [www.acoaus.com.au/stainless](http://www.acoaus.com.au/stainless)



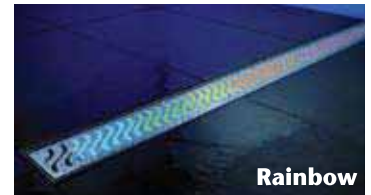
Blue



Green



Red



Rainbow

## ACO Access Website - the definitive guide

ACO Polycrete has upgraded its website to include a new section detailing its range of access covers, the widest range of cover and frame systems in Australia.

The website provides useful information to assist specifiers in selecting the right product for the project application so that potential problems are eliminated such as failures during service. A number of key factors to consider are explored in detail.

Over 100 product thumbnails can be downloaded for specification as well as over 70 installation drawings incorporating all systems for various load classes and pavement types. For installers, a comprehensive installation guide is available.

During recent years, the ACO Group has expanded its access cover business to become a world leader. As part of its growth, ACO has placed particular emphasis in the area of single and multiple manhole covers and recessed steel covers. This is supported by its Sydney based Technical Services department with many years experience advising on access covers.

*"Over 100 product thumbnails can be downloaded for specification as well as over 70 installation drawings"*

A request sheet is available online for customers requesting a custom design. ACO's engineers will design an optimal multipart solution based on specific design criteria. This is a free service offered without obligation.



**Adrian Goves**  
South East Asian Sales Manager

**For further information, visit our website:**

[www.acoaus.com.au](http://www.acoaus.com.au)

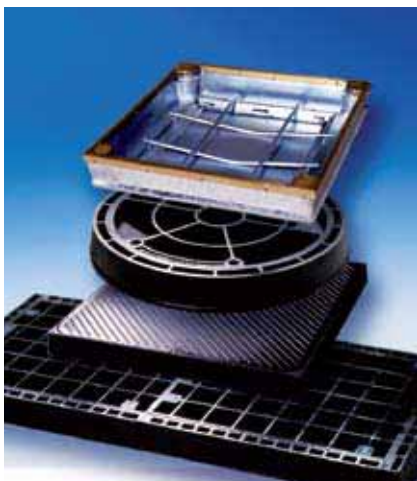
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