



SURFACE WATER MANAGEMENT

Complete Bridgedeck Drainage Systems

ENVIRODECK DRIDECK HONEL



www.pdsenviro.com

ENVIRODECK

COMBINED KERB DRAINAGE SYSTEM FOR BRIDGES



FEATURES & BENEFITS

HEALTH AND SAFETY

Unit weights are reduced by over 50% to comply with the manual handling guidelines and save precious dead weight on both new and refurbishment structures.

ANTI SLIP SURFACE

A new anti-slip pattern is incorporated to comply with anticipated new legislation. The top surface has a "low tendency to slip" reading – impossible to achieve with metallic units and a health & safety benefit on Bridges with pedestrian access where units may be subjected to pedestrian traffic. With growing concerns over the slip resistance of Manhole Covers many manufacturers have investigated how a "low tendency to slip" reading can be achieved.

AESTHETICS

Envirodeck is a composite unit and will not oxidize or corrode, unlike metallic units. Supplied as standard in concrete grey to match kerb lines and provide demarcation. They can be also be manufactured in any RAL/BS colour to complement the bridge design and surroundings.

UNIT QUALITY

Envirodeck is a precision made product. Unit finish, tolerances and aesthetics far exceeds that of metallic systems. Smooth edges make the unit user friendly to handle.

HYDRAULICS

The composite material produces a smooth high quality channel invert. This creates improved co-efficiencies, reduces drag, gives higher flows and increases velocity to enhance the self-cleansing ability of the system. This "glass-like" invert prevents weed growth and silting - saving costs in unscheduled maintenance.

CHEMICAL RESISTANCE

Envirodeck is fully resistant to all types of chemicals in petrol, diesel, oil, etc. In addition, Envirodeck is not effected by UV.

IMPACT RESISTANCE

Envirodeck is highly resistant to side impact. While EN1433 has no side impact test requirements, it is the main cause of failure in many kerbside type installations.

QUALITY ASSURANCE

USL have full ISO9001 Accreditation (Management Systems). In addition and essential for full compliance to the EN1433 standard, our manufacturing facilities have full ISO 9000 series Accreditation and Quality Assurance.

EN1433

Envirodeck is fully compliant to the EN1433 specification (kerbside installations) Group 3 C250 min loading capacity. Envirodeck units are tested to the higher Group D400 loading class.

- Lightweight Non Metallic
- Precision Manufacturing
- Colour Coding Options
- Half Battered And 45 Degree Splayed
- Anti Slip Top Surface
- Surface and Subsurface Drainage Capability
- Wide Range of Widths & Depth Available
- Fully Compliant to BS EN1433



Envirodeck is the number one selling bridge drainage system.

A combination of innovative design and a composite non-metallic material gives a one-piece unit that is lighter and stronger than traditional systems.

Envirodeck provides both surface drainage and sub-surface drainage. As advised by the National Highways this is recommended to prevent serious damage to the waterproof membrane and pavement, and helps you to avoid costly and disruptive repairs.



Combined kerb drainage units are now widely used and specified on bridge decks whether they are new build or part of a refurbishment scheme. Drainage is an essential requirement on all bridges. Deck mounted systems provide continuous surface & sub-surface drainage and easily accessible maintenance.

Alternative systems are traditionally metallic, which are heavy, raising Health & Safety issues for the installers. In addition, metallic units place additional weight on the structure.

Metallic units are prone to oxidization, which can detriment the appearance of the structure, mainly as the system is a highly visible element of the completed project. This results in ongoing expensive maintenance. In addition, the standard black coating (standard in all metallic systems) provides no demarcation between the carriageway and the kerb line.

USL CONTINUES ITS POLICY OF CONTINUAL PRODUCT DEVELOPMENT

As market leaders in the design, manufacture and supply of bridge drainage systems, we champion Envirodeck as a lightweight high quality composite combined deck drainage system, which maintains all the benefits of the continuous combined kerb bridge drainage concept, but also addresses system component quality, aesthetics and Health & Safety issues for the end-user.



ENVIRODECK STANDARDS & SPECIFICATIONS

The Envirodeck units should be strung out along the deck to ease installation. Identify all special units i.e. Expansion Joints (if applicable), Intermediate Rodding Access points and any End or End Outlet Units.

These should be placed in their respective positions first. If required for any non-standard lengths or

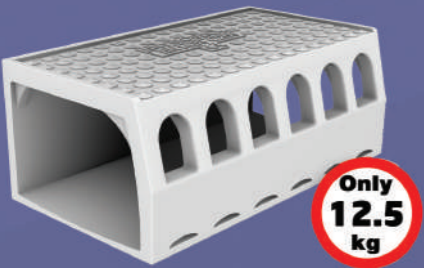
makeup pieces, Envirodeck units may be cut using a Stihl saw.

We recommend that these units maintain full inlet windows in any cut length if possible.

REPUTATION BUILT THROUGH INNOVATION

Composite Technology utilised in the world of Bridge Drainage Systems

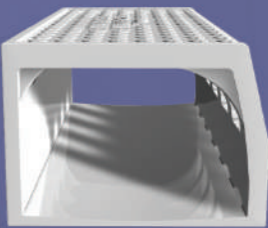
- Lightweight yet strong.
- Manual installation.
- Significant weight savings to structure.
- High quality finish & appearance.
- Non rusting (no oxidization like metallic units).
- "Glass finish" invert for high hydraulic flows, reduction in silting and associated weed growth that causes system blockages, therefore less unscheduled maintenance.
- RAL colour option to compliment bridge construction (supplied as standard in concrete grey).
- Anti slip top surface for additional Pedestrian safety.



Only
12.5
kg

ENVIRODECK STANDARDS & SPECIFICATIONS

- **EN1433** is the new European Standard for all Linear Drainage Systems.
- Published in June 03, mandatory Aug 04.
- Products must be third party accredited.
- Products must carry third party certification (e.g **CE** mark).
- Manufacturers must be ISO accredited (9001).
- Envirodeck is also compliant with Highways Agency specification Appendix 5/5 Clause 516 (Combined Drainage Systems).
- **EN1433** states that kerb units are always group 3 C250 load class
- (min). (Envirodeck is D400KN).



COMBINED KERB DRAINAGE FOR BRIDGES



Standard unit. Low potential slip top surface.
Material - 100% Composite.
Colour - Light Grey as standard (see RAL colour chart for other colour options)

STANDARD UNIT

Design Features

6No Surface Water Windows designed for maximum inlet capacity but also to restrict large debris from entering the drainage channel.

6No Sub - Surface Slots - designed for maximum sub surface water collection but also restricts the asphalt entering the channel during the laying operation.

Length	Width	Weight	Depths	Weir Height
500mm	175mm 275mm 335mm 500mm	9.5-14kg	Subject to Wier Heights & Asphalt Construction	75mm 100mm 125mm



* Cover above the outlet pipe should be checked, where end or rear outlets are proposed.

LH/RH END RODDING ACCESS AND OUTLET UNIT

Design Features

End Outlet Units - Available in Right and Left hand formats but with the system outlet attached to the unit in either BASE, REAR OR END position.

End Units - Available in Right hand or Left hand formats. The units arrive on site with end plates attached (no on site works are required).

Product Code	Length	Width	Additional Features	Weight	Depths	Weir Height	Depths
EN-LHEU EN-RHEU	500mm	As Standard Unit	Removable Lid	9.5-14kg	Subject to Wier Heights & Asphalt Construction	75mm 100mm 125mm	See table



ASPHALT DRAINAGE & BLIND UNITS

Blind Unit Design Features

Blind Units are available. These have no surface water entry points and can be located where exceptionally high flows are anticipated at the low point of the deck.

These can prevent surface water surcharging back onto the carriageway and hold the water within the units prior to discharging at the outlet.


Asphalt Drainage Design Features

As an option, additional drainage holes can be provided to drain the wearing course.

This is particularly useful when porous SMA is used.



COMBINED KERB DRAINAGE FOR BRIDGES



500mm Intermediate Rodding /Access Unit with or without outlet.

RODDING ACCESS AND OUTLET UNIT

Design Features
Inspection/Rodding Units located at 20Mtr centres (minimum) along the drainage run and standard at all End/Outlet and Expansion Joint Locations.

A removable inspection plug secured to the body of the unit by stainless steel cable allows inspection/rodding of the system.

Product Code	Length	Width	Additional Features	Weight	Depths	Weir Height	Depths
EN-RA	500mm	175mm 275mm 335mm 500mm	Removable Lid	9.5-14kg	Subject to Weir Heights & Asphalt Construction	75mm 100mm 125mm	See Table

UNIT DEPTH TABLE

Examples of Unit Depth 1.

Profile	Weir Height	HB/Splay
Splay	75mm	165mm

Examples of Unit Depth 2.

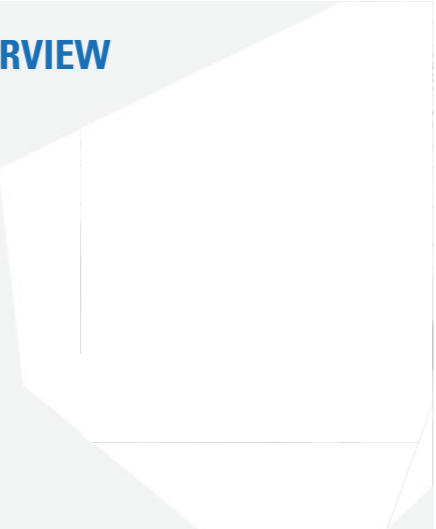
Profile	Weir Height	HB/Splay
HB/ Splay	100mm	190mm

Examples of Unit Depth 3.

Profile	Weir Height	HB/Splay
HB	125mm	210mm

ANTI SLIP SURFACE OVERVIEW

Design Features
All Envirodeck units come as standard with a new Anti-Slip top surface, (*Registered Design). The unique tread pattern design gives a "low tendency to slip" reading when tested in both wet & dry test cycles.



AESTHETICS

Design Features
Selection of RAL colour options

Light Grey RAL 7035

Buff RAL 1014

Oxide Red RAL 3009

Traffic White RAL 9016

Traffic Black RAL 9017

All diagrams are for illustration purposes only, and should not be used as a technical reference.

DRIDECK

SUB SURFACE DRAINAGE ON BRIDGE DECKS IS AN ESSENTIAL PART OF ANY DESIGN

PDS are the market leaders in the design, manufacture and supply of Combined Kerb Bridge Drainage Systems. Our Envirodeck kerb units provide effective surface water drainage and sub surface water collection to the asphalt layers.

Lateral drainage slots in kerb systems do provide relief to the pumping action of wheel loads within the asphalt construction, but all kerb systems are limited in their ability to drain at deck level. This is due to a base thickness of the unit and the mortar bed which can raise the sub surface collection holes further from the deck.

Kerb units are usually laid directly on top of the RSA protection or regulating course. This raises the sub surface slots on the deck units a further 20mm (approx) from the deck.

A secondary system is therefore desirable to pick up any sub surface water at this lower level.

INTRODUCTION

The Dri-deck drainage unit provides sub surface collection at two levels.

Water is collected immediately above the waterproofing membrane and also from any bituminous protection such as Red Sand Asphalt or regulating course.

The Dri-deck channel provides continuous sub surface water collection along kerb lines and/or can be placed transversely along the deck.

T pieces, bends and cross sections allow a number of drainage designs.

THE SYSTEM

Dri-deck channel units 1mtr in length have a number of slots along the length for high water collection, the channels are bonded to the waterproofing using Dri-deck bedding compound. Tee Sections, Bends, Cross pieces and Outlets complete the system and each component is available in two sizes; regular (45mm) and slim-line (25mm).

Manufactured in spheroidal graphite iron they are extremely robust and able to withstand the point loadings placed by tarmacadam rollers. They are also highly resistant to road salts.

Fig 1



DDC

1mtr Linear Section



DDCO

Outlet Section



DDCT

Tee Section



DDCB90

90 Degree Angle



DDCB45

45 Degree Angle



DDCX

Cross Section

Angled Tees and Cross pieces allow numerous channel designs to optimise subsurface water collection.



DDRA - HB or 45 Splay

Rodding Access Unit
(Height Adjustable)

Access to the system for cleaning / maintenance can be achieved by strategic placement of the kerbline rodding access **unit. Ref DDRA.** In instances where a CKD system is in place, a bespoke flush version is available.



Expansion Joints

The base (D6101) unit is recessed to provide a seating for the cover unit and incorporates a flared edge for a smooth transition and termination of the waterproofing membrane.

The unique convoluted cover units are formed from a high strength and resilient thermoplastic material which is heat resistant and proven to resist deformation under surfacing compaction. Inlet holes at the top and bottom of the cover unit allow drainage from above and below the waterproofing protective layer.

The system is supplied with a range of compatible pipework which makes both economic and easy to use.

The 57mm High standard cover unit is suitable for a minimum surfacing depth of 75mm. A special 42mm low profile cover unit is available for shallower depths. All other components are listed.

INSTALLATION OF THE DRI-DECK SYSTEM

Dri-deck Outlets

The base unit is cast in-situ during the deck concreting operation for new works construction or alternatively is set into a core-drilled recess in the deck during refurbishment or maintenance work.

The waterproofing membrane is then laid and lapped over the flared edge of the base unit. A temporary blanking plug is placed into the base unit, allowing unimpeded machine laying of the protective layer.

Finally the plug is removed and the cover unit located prior to completion of the surfacing. For detailed information, please refer to Outlet Components Specification section.

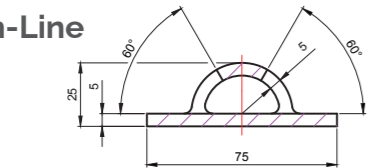
Dri-deck Channels

These should be located along kerb lines and/or transversely accross the deck close to any expansion joints and bonded directly onto the waterproofing using Dri-deck Fixing Compound.

Care should be taken with the bedding material so no voids exist between the channel flange and the deck,where there are outlets, the fittings are fixed into position and the RSA or regulating course is then laid.

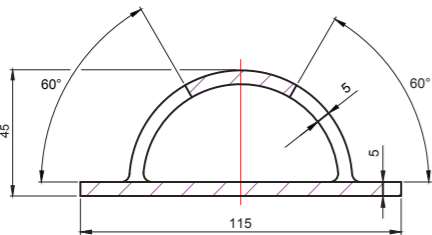
Dri-deck Slim-Line

Cross section

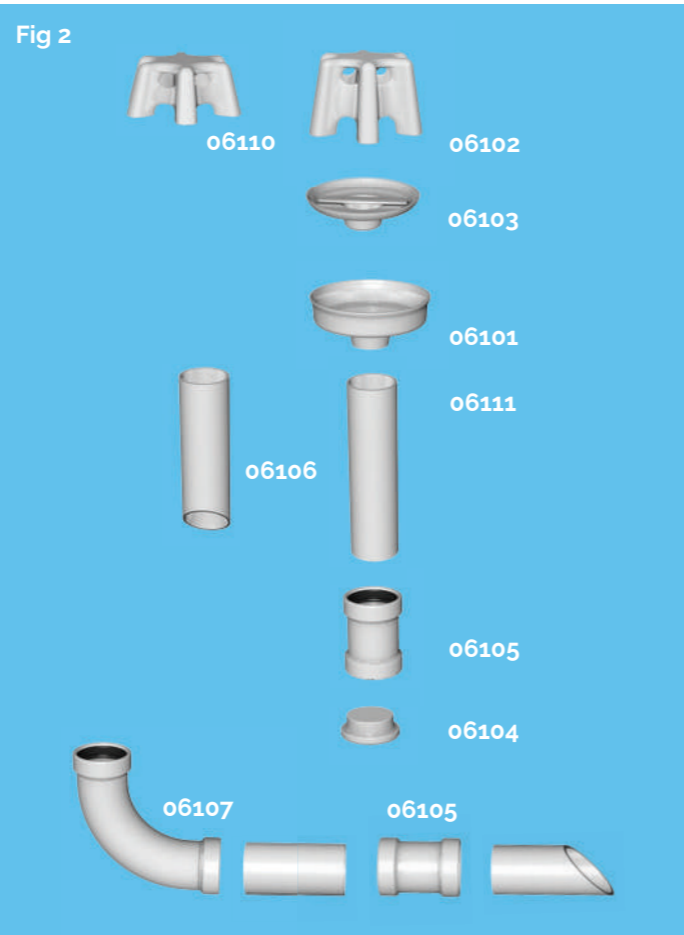


Dri-deck

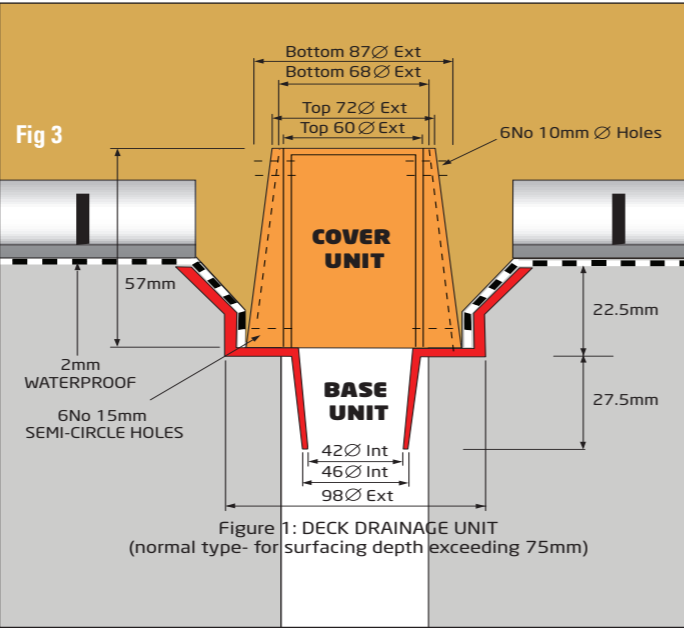
Cross section



OUTLET SPECIFICATION



Stock No	Description	Stock No	Description
06101	Base Units	06106	Drip Pipe
06102	Cover Unit (Standard Profile)	06107	90° Bend
06103	Blanking Plug	06108	45° Bend
06104	Soffit Unit	06110	Cover Unit (Low Profile)
06105	Pipe Connector	06111	1m Polyethylene Pipe



HONEL

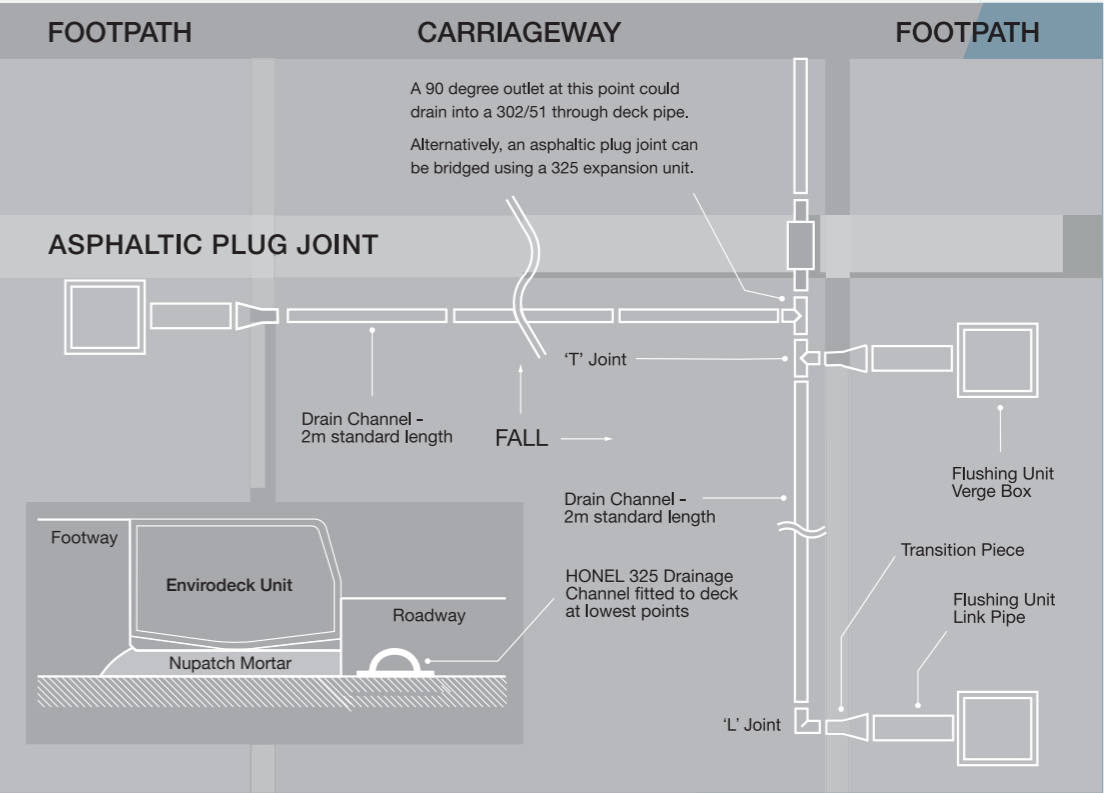
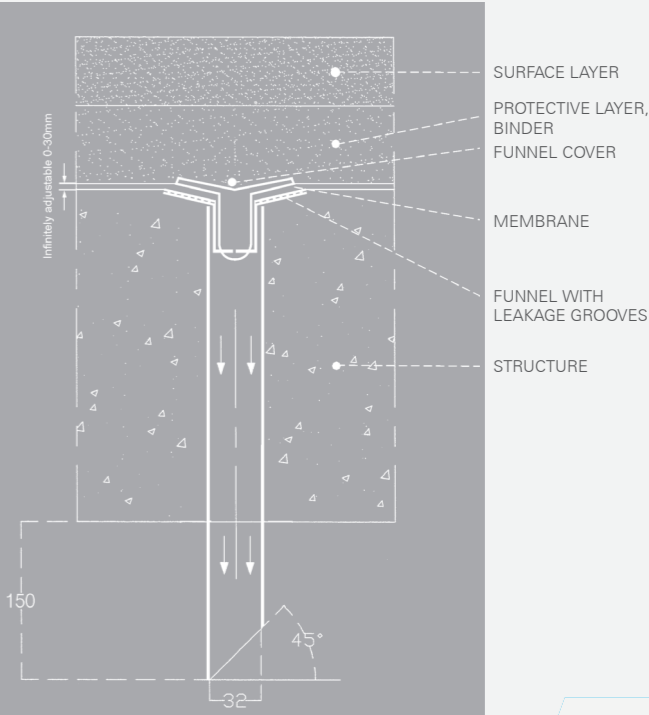
THE SOLUTION

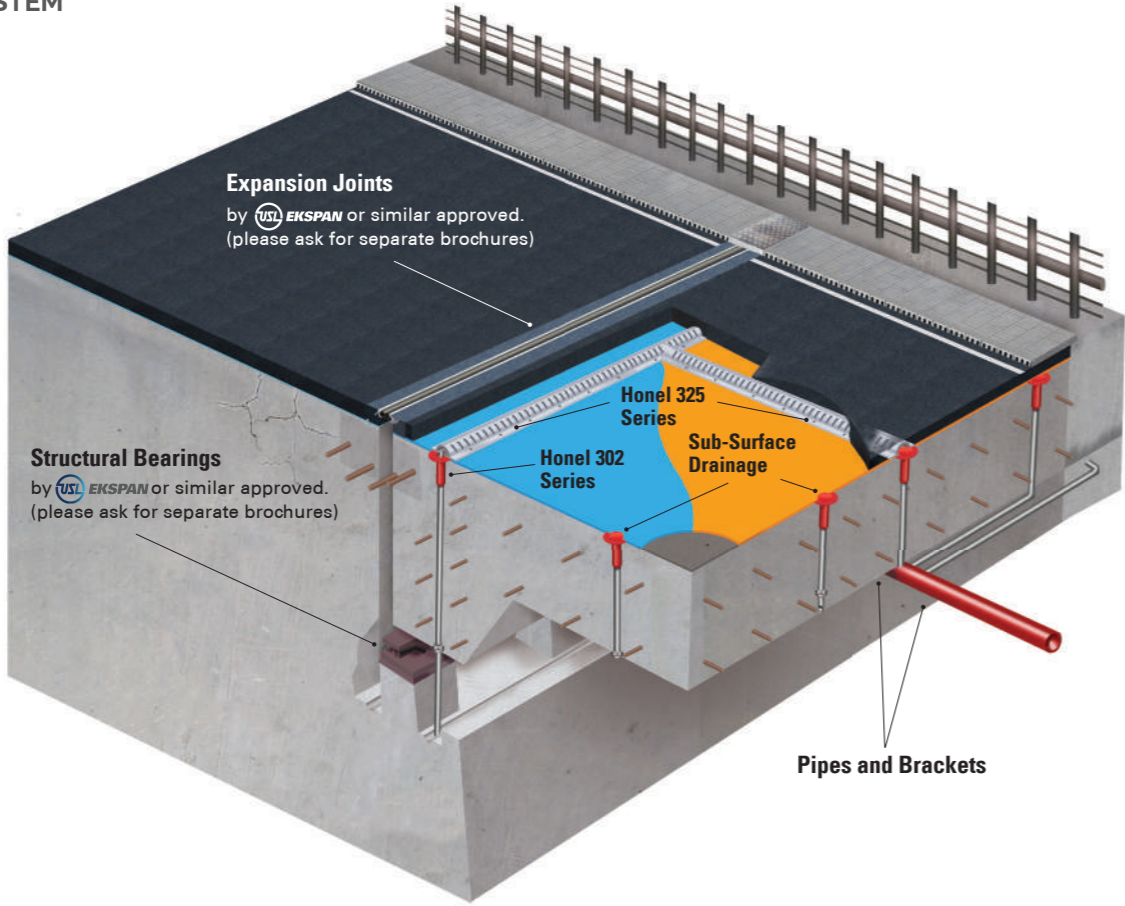
HONEL 302

The Honel 302 Series Sub-Surface Drainage System is designed to prevent the common issues caused by sub-surface water ingress, hence reducing the requirement for costly repairs.

HONEL 325

Use of Honel 325 system enables collection and direction of water flow at the membrane surface. This minimizes the need for through deck drain points and subsequent collection pipes.





ABOUT

The 302/51 and 302/2 through deck drain units are designed to provide 'spot drainage' points wherever needed or to be used in conjunction with Honel 325 channel system to provide a wider area of water collection. Corresponding 325 straight outlets will fit into the 302/51 or 302/2 funnels to create a comprehensive sub surface drainage solution.

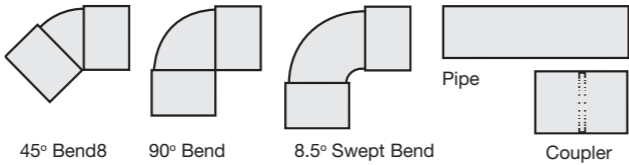
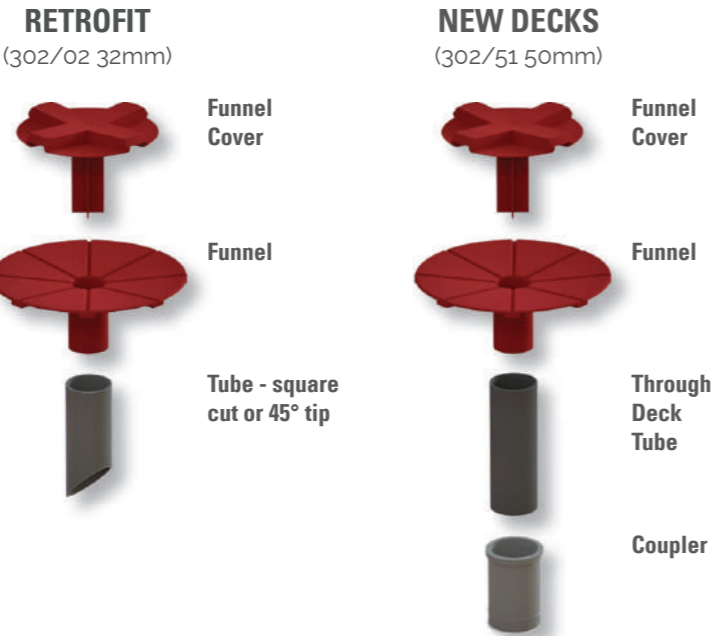
The through deck system is provided in two sizes, 50mm and 32mm diameter. The 32mm 302/02 system is ideal for retrofit applications to overcome ponding or to drain a bridge deck between pre-stressed beams.

Most highways applications favour the 50mm diameter 302/51 system due to its increased discharge capacity.

HONEL 302/2 & 302/51 PIPE COMPONENT AND ACCESSORIES

A number of component uPVC bends and fittings are available for use with the Honel 302 through deck system.

Please contact us for further information.



ABOUT

Honel 325 is a durable galvanised mild steel section designed to efficiently remove water away from the bridge deck. The channel is supplied in two-metre lengths for ease of installation and is compliant with the National Highways requirements.

The 325 channel is installed directly onto the waterproofing layer. The channel is Tarmac heat proof and we recommend coverage of a minimum of 80mm.

A compatible flushing box is also available to ensure that the 325 channel is easily maintainable, ensuring the system's integrity and life time operation.

DRAIN SECTION

Can be fitted to any required length. The standard unit is 2m long. Channel end caps are used at all open ends to prevent ingress of blacktop and debris.



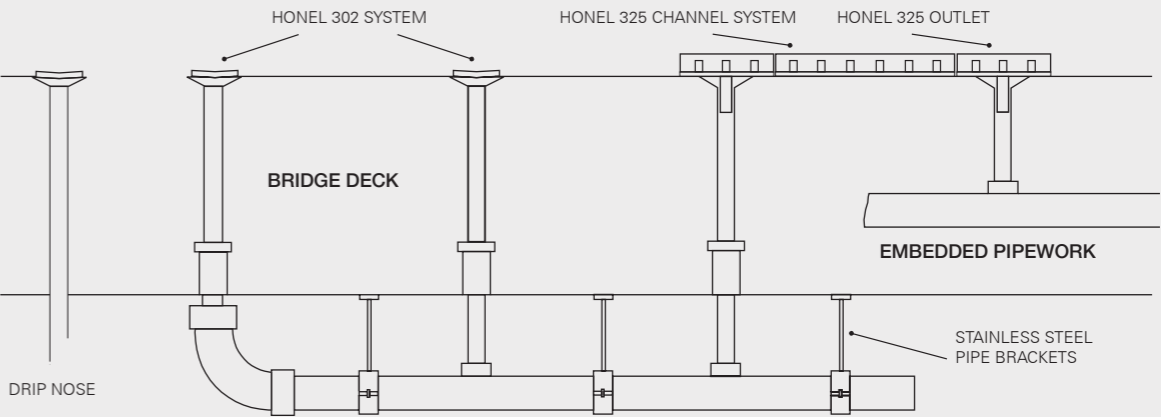
OUTLETS

All of our outlets are designed to be compatible with the 325 sub-surface channel and the 302 through decks. They are available in a straight outlet format as shown, or at a 90 degree crank as well as a four-way X piece.



OUTLETS ARRANGEMENTS

Below the bridge deck the drain units can be linked to water collection pipes or allowed to drain free below via the drip nose attachment. e.g. over non navigable rivers and streams.



JOINTS

We provide a number of different joints to enable interconnectivity of the channel throughout the deck surface. Joints available are the T joints as shown, as well as left and right hand 90 degree cranked, and left hand and right hand 45 degree Y joints.



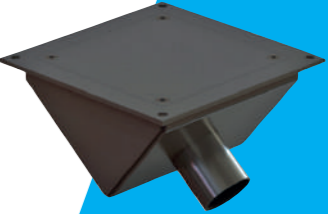
TRANSITION PIECES

The transition piece as shown connects the 325 channel to the flushing unit.



FLUSHING UNIT VERGE BOX

The flushing box allows access to the installed 325 sub-surface drainage system to enable jetting equipment to remove any silt build-up. This ensures that the system is working to its full capacity throughout its service life.





About

USL Speciality Products

USL Speciality Products manufacture and supply specialist construction products to support, preserve and enhance critical Infrastructure assets, specifically in the Bridge, Rail, Utilities, Offshore, Power and General Construction market spaces.

Our products are supplied to fully trained specialist contractors who deliver complex infrastructure projects to strict quality, budget and time constraints.



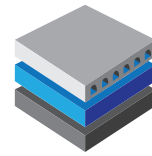
Our Product Categories

- | | |
|--|--|
|  Structural Waterproofing |  GRP Grating, Access Platforms and fencing |
|  Mechanical Expansion Joints |  Surface Mounted Tactile Paving |
|  Structural Bearings |  Resin Injection |
|  Bridge Deck Drainage |  Ironwork Reinstatement Products |
|  Line Markings |  Pipe Rehabilitation |
|  Concrete Repairs | |

Our Brands

Trusted to Deliver Excellence





PDS

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