



Rail Products



Innovative products to
accelerate construction of
Rail infrastructure networks



Cubis Systems is a world leading manufacturer and supplier of network access pits and ducting systems, used in the construction of infrastructure networks.

Supplying network access systems across all major Australian industries for more than 30 years. With over three decades of proven product excellence and unmatched industry knowledge, Cubis continues to deliver innovative and reliable project solutions, exporting to over 25 countries worldwide.

Cubis specialises in composite, precast concrete and plastic pit products developed in partnership with leading Australian Rail Authorities. Cubis' innovative product range includes STAKKAbox™ modular and Cubis precast concrete pit systems, RAILduct™, MULTIduct™ and MONObOX™ which are proven to significantly accelerate construction of rail infrastructure networks worldwide. Cubis' dedicated in-house engineering and project management teams provide expert pit customization capabilities, offering a complete network access solution for all Rail projects.

At Cubis we have a strong commitment to quality and customer satisfaction embedded within the culture of the company. Experience, expertise, technical proficiency and extensive product range is the Cubis difference.

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Ultima Connect has been developed to offer the ultimate level of flexibility for access pit system sizing without compromising on strength. Ultima connect can be used anywhere where sidewall loading is a concern, such as along railway tracks or highways.

Ultima Connect features a twinwall, sectional design with rings individually built from combining multiple parts. Cubis manufacture all Ultima Connect parts in GRP.

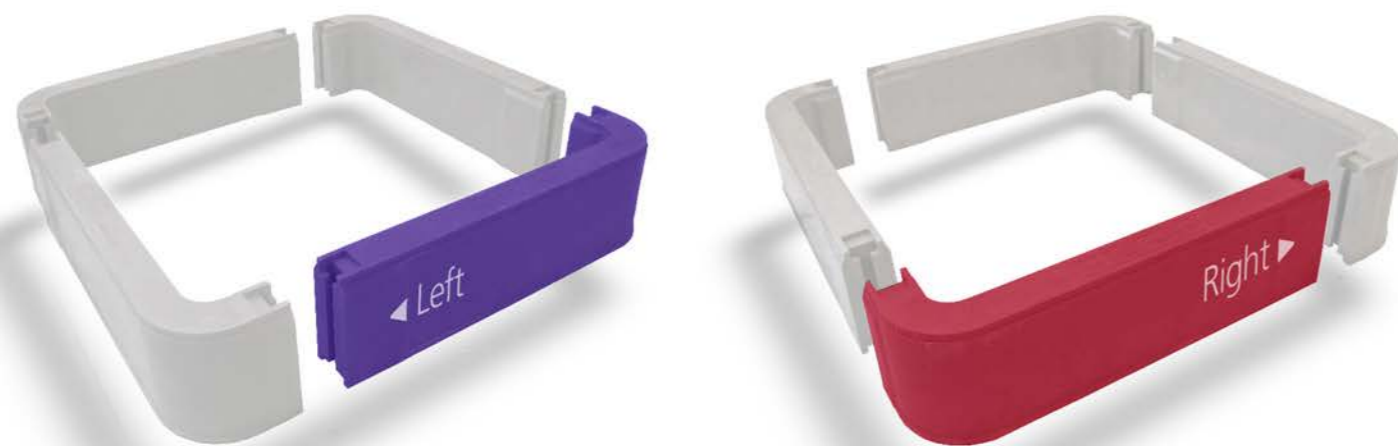
The system comprises of corner pieces ('hockey sticks') and sidewall lengths. There are left and right-handed corner pieces, which offers the ability to offset joints between sections in order to provide a brickwork effect. The corner pieces are referred to by the internal length on the long side.

These parts are connected using a jointing peg to form a variety of clear opening sizes. Sidewall lengths can be used with the corner pieces to provide additional cable pit sizes.



When constructing an Ultima Connect pits you must remember to start with a full ring section of either left or right corner pieces. You can then build up from this using alternative corner pieces per ring section, until the specified height of the chamber is reached.

Jointed Pegs are inserted at each intersection to securely connect each component

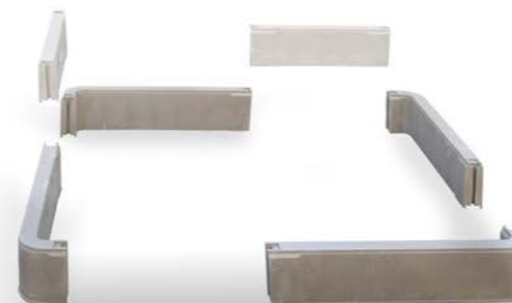


It is possible to differentiate between a left-handed and right handed corner piece when both parts are placed beside each other as the left-handed corner piece looks like an 'L'.

Rapid and Easy Installation

Step 1:

Arrange corner pieces and sidewalls to match the pits clear opening dimensions. Ensure that the lip is on the outside of the pit. The corner pieces should be all 'left' or all 'right' on each section and will alternate between the two as the pit increases in depth.



Step 2:

Lay out the first ring section of Ultima Connect pieces to ensure you have the correct components



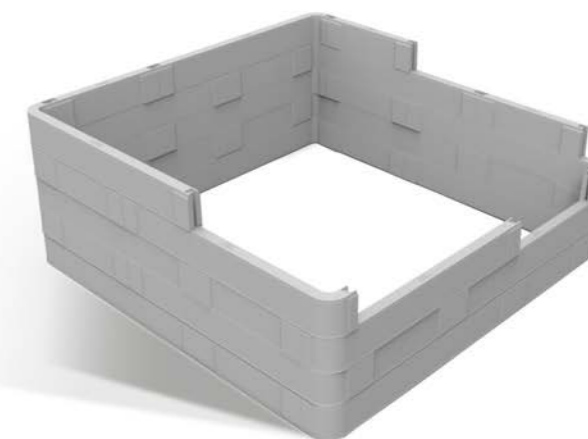
Step 3:

Now connect the sections using the jointing peg, ensuring that the top of the peg is level with the top of the section.



Step 4:

Build the next section on top, using the alternative corner pieces. This will provide a 'brick worked' pit ensuring any joints are not in a vertical line.



Product Profile: 'Hockey Stick Sizes'

Hockey stick sizes (mm):

400, 600, 675, 750, 800, 900, 1000, 1200, 1500, 1900

Sidewall sizes (mm):

500, 600, 1000



How it Works

Ultima Connect is manufactured in 150 mm deep sections that stack one on top of each to reach desired depth. Each ring section is castellated to positively interlock with the unit above and below.

STAKKAbox™ Ultima Connect Product Benefits:

Variability in Size

Ultima offers a huge range of pit dimensions thanks to the large number of standard sections and the variability offered by the Ultima Connect system.

Lightweight

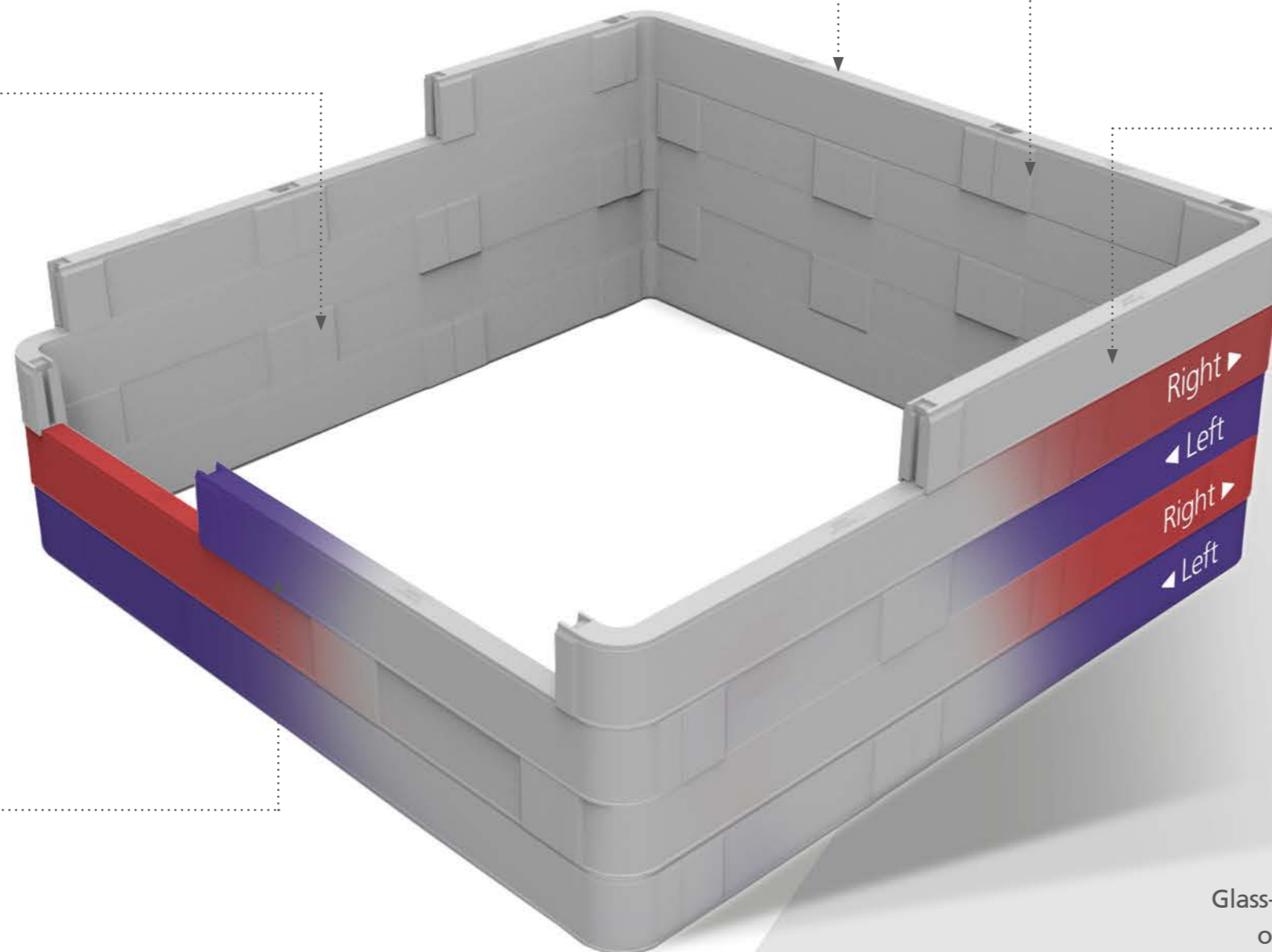
Due to the sectional twinwall design and the GRP material, most Ultima 150mm deep sections fall under 25kg in weight, making it suitable for a single person to lift under manual handling regulations.

Strong

Ultima Connect pits can achieve unsupported 60 tonne vertical load test results. Side loads are comparable to that of concrete pits.

Fast and Easy to Install

STAKKAbox™ pits are significantly faster to install than conventional alternatives, with complete installations typically taking up to one hour. This results in reduced costs for the installer.



Twin Wall

Sections are twin walled and complete pits feature horizontal and vertical ribs.

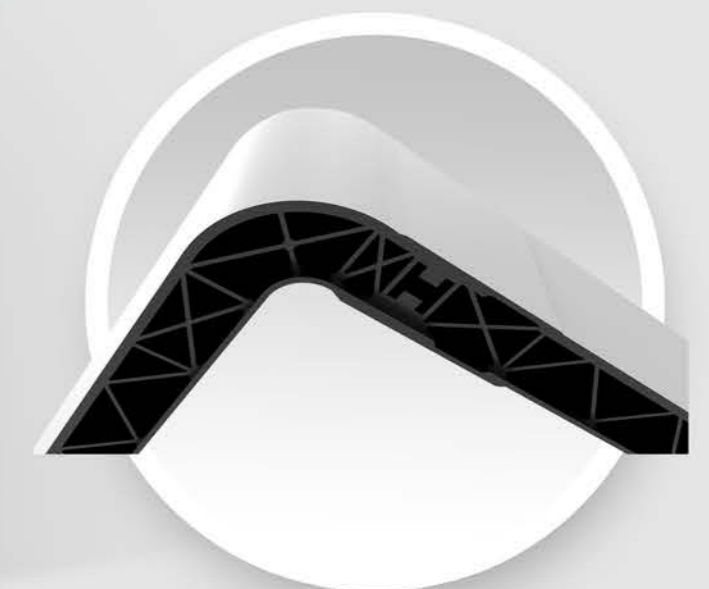
Chemical Resistance

GRP outperforms traditional construction methods for chemical resistance during its buried life, resulting in a product that offers longer installed life.

Smooth Outer Walls with Lip to 'Key In'

Gaps in the outer wall will negatively impact the effectiveness of compaction around the pit. STAKKAbox™ pits have smooth outer walls and an outer lip which keys into the backfill.

GRP material for long lasting toughness and durability



Glass-reinforced plastic (GRP), is a composite material or fibre-reinforced polymer made of a plastic reinforced by fine fibers made of glass.

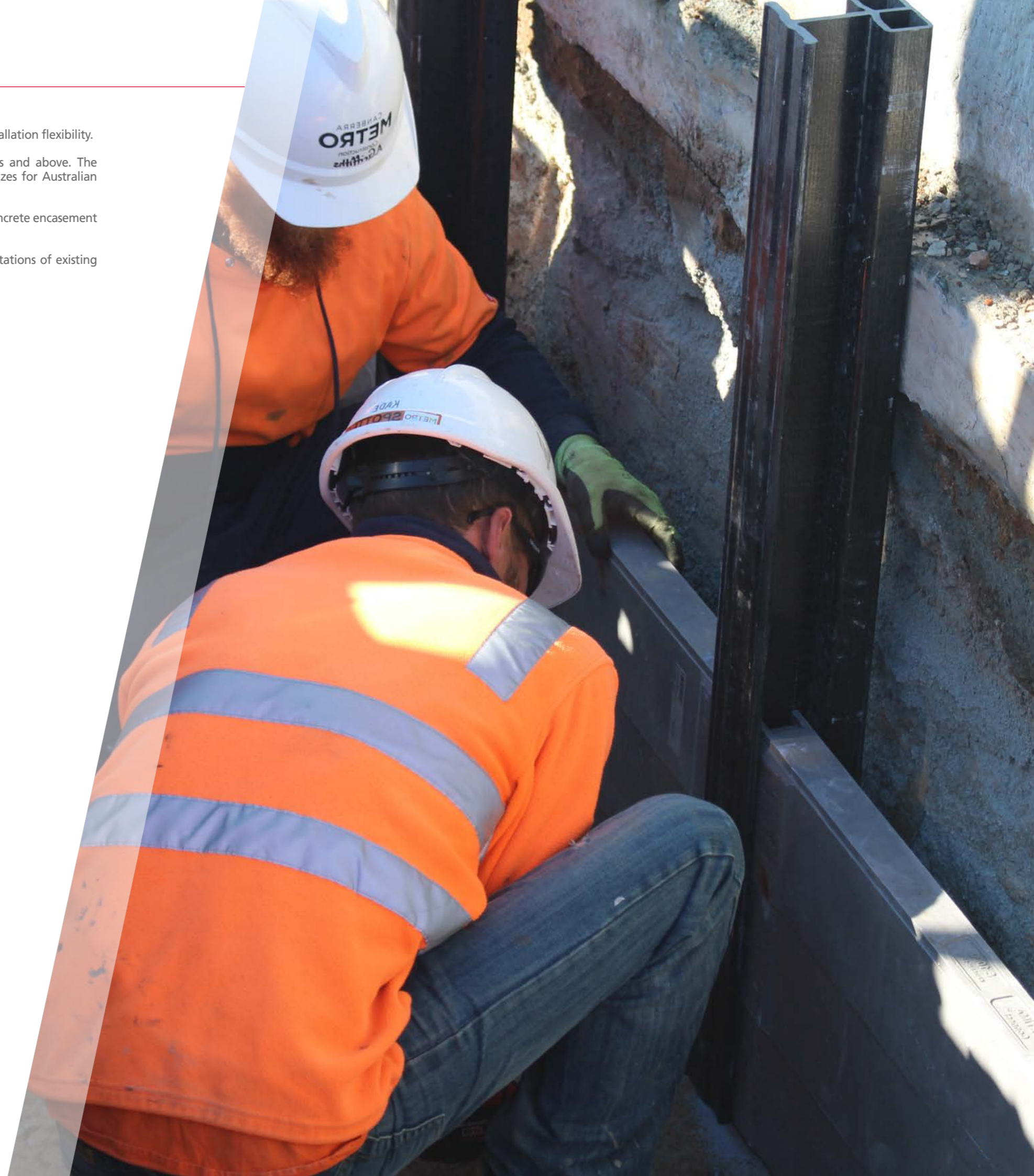
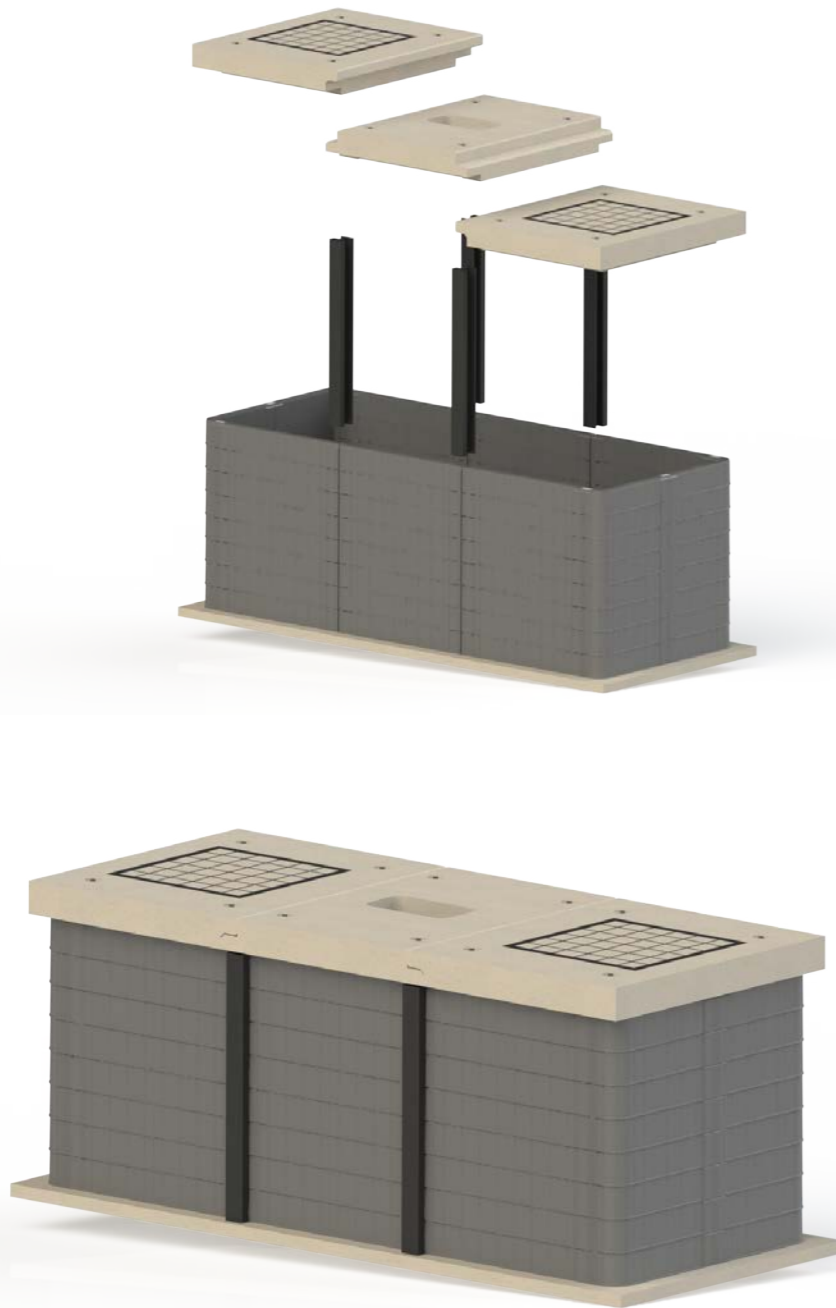
STAKKAbox™ Ultima Hybrid

The Ultima Hybrid utilises the inherent benefits of the Ultima Connect system without compromising on installation flexibility.

The Ultima Hybrid features Pultruded I-beams, developed specifically for large scale chambers 2 meters and above. The Pultruded I-beams provide enhanced lateral strength capabilities and are manufactured to a variety of sizes for Australian transport requirements, with a maximum length of 2.2 meters.

Specially engineered precast slab sections for the top and base complete the Hybrid assembly. The precast concrete encasement has been designed to replicate the modular structure of the Ultima providing ease of installation.

The entire Ultima Hybrid assembly acts as an exoskeleton, providing increased flexibility to overcome limitations of existing underground infrastructure networks with amplified strength capabilities for Australian Rail.



STAKKAbox™ Fortress is a range of modular and structural preformed access pits, suitable for use in multiple environments (in accordance with Cubis' installation guidelines).

The system provides contractors with a means of constructing access pits quickly and inexpensively, whilst offering improved build quality, reduced defects and enhanced site safety performance.

The Fortress system is moulded in HDPE and possesses excellent strength to weight properties. Each section is ribbed internally to improve loading performance.

Using the Fortress system, complete pits can be constructed from excavation to reinstatement in less than one hour.

See our website for the latest case studies, news and technical information on all our products.

www.cubis-systems.com.au



Success Story

Queensland Rail: Corinda and Roma Street Station Signal Upgrade

As part of the Queensland Rail (QR) Signal Upgrade Project taking place between Corinda and Roma Street Station, Cubis Systems were approached to provide an innovative cable pit solution, ensuring reliable long-term protection of underground electrical and communication services.

Located at the Indooroopilly site in Queensland, Australia, the upgrade took place within 4 meters of the live rail network. Challenges presented by the QR project were quickly overcome utilising the versatility of STAKKAbox™ Ultima Connect.

Project Challenges

- Close proximity to a live rail network
- Existing live services to be incorporated within the new pit
- Time restricted site access
- Remote location with no power on site

Of particular significance was the elimination of any WHS risks, a fast, cost-effective installation and minimal use of heavy-lifting machinery.

Traditional pit options could not successfully meet all QR project objectives. A pre-cast concrete pit would require extensive, costly, and time consuming pit modifications to be performed on site, while pouring an in-situ pit would also take a considerable amount of time, requiring additional machinery and specialist builders. Both options would therefore lead to overall increased installation costs.

Cubis Systems Solution

Product: STAKKAbox™ Ultima Connect

Load Rating: Class D

Internal Dimensions (mm): 1200x1200x1050

Access Cover: pre-cast roof slab with Class B Rail 1000x1000 GMS (Galvanized Mild Steel) lockable cover encased.

The modular structure of the Ultima Connect™ allowed for easy onsite installation around two (2) existing live 100mm conduits and the inclusion of seven (7) new additional 100mm Conduit ducts running directly through the pit, connecting to the existing network system. A pre-cast concrete floor was installed as a base for the Ultima Pit which reduced build time and increased efficiency, avoiding the need to cast a base floor on site.

QR also completed upgrades to a secondary existing cast in-situ pit, which required the installation of a QR approved standard access cover, while also increasing the finished surface level by 200mm to meet changing site conditions. A custom preformed roof encasement and access cover were also provided by Cubis.

Project Outcomes

Successful installation around the existing and new infrastructure networks were carried out in a safe, cost-effective, and timely manner due to the modular structure of the STAKKAbox™ Ultima Connect. Modifications to the pit were conducted using both standard battery powered and hand tools. The Ultima's lightweight properties enabled efficient transportation and assembly on site, with no skilled builders or heavy machinery required to quickly construct the STAKKAbox™ pit.

STAKKAbox™ Ultima Connect's high strength properties ensured Queensland Rail's standard load classification was achieved, eliminating the need for additional deliveries and increased costs associated with concrete or specialised backfill materials.



Lightweight

Due to the sectional twinwall design and the GRP material, most Ultima 150mm deep sections fall under 25kg in weight, making it suitable for a single person lift under manual handling regulations.

Smooth Outer Walls with Lip to 'Key In'

Gaps in the outer wall will negatively impact the effectiveness of compaction around the chamber. STAKKAbox™ access pits have smooth outer walls and an outer lip which keys into the backfill.

Fast and Easy to Install

STAKKAbox™ pits are significantly faster to install than conventional alternatives, with complete installations typically taking up to one hour. This results in reduced costs for the installer.



CUBIS - Precast Concrete Pits

The constant vibration as caused by light and heavy rail traffic creates a unique problem for cable pits installed near rail lines. The design of the Cubis precast concrete range has taken into consideration this unique effect and produced square, rectangular and circular pre-cast concrete cable pits, and heavy duty circular rotational moulded plastic polymer cable pits as used in the Vic Rail network systems.

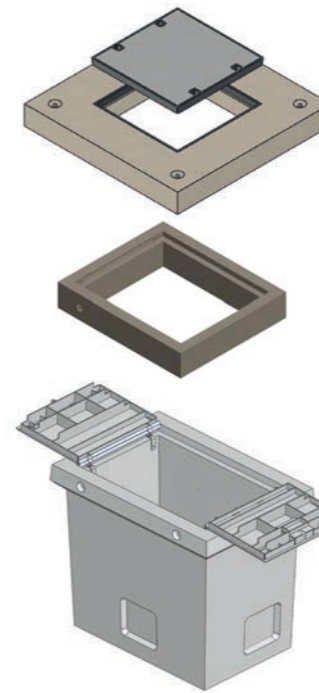
The Cubis precast concrete cable pit range is available with hinged locking or standard galvanised steel, or cast iron encased access covers. Cubis Systems are constantly working with Rail Authorities and Engineers to ensure product supplied meets the specific requirements and importantly the durability for light or heavy duty installations. All pre-cast concrete cable pits incorporate minimum 40Mpa concrete with steel bar and mesh reinforcement.

By utilising our internal research and engineering department, Cubis Systems Australia has the capability to design and manufacture specialised pit and roof assemblies on request.

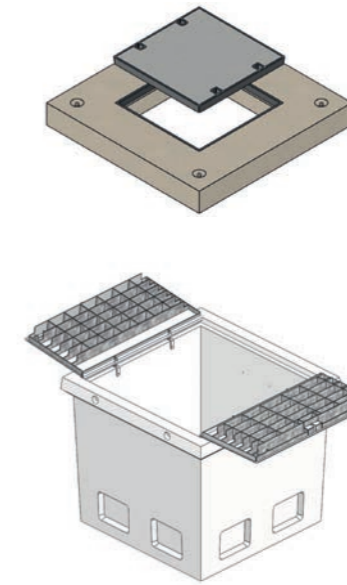
See our website for the latest case studies, news and technical information on all our products.

www.cubis-systems.com.au

CUBIS - RAIL PITS (CONCRETE)



1000 x 600 x 1195
Riser Chamber
Product Code 524112N
RailCorp Design



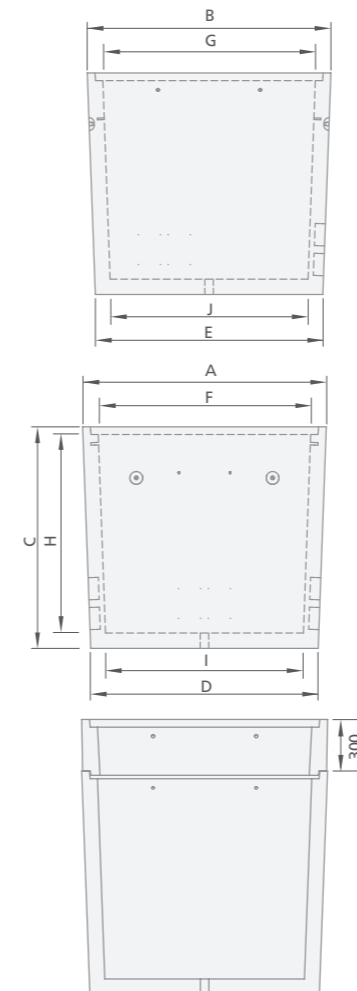
1000 x 1000 x 1195
Product Code 524113N
RailCorp Design



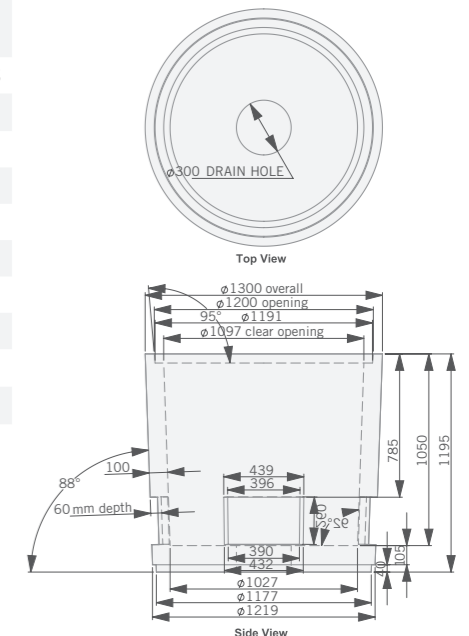
Product Code Riser 524108
1200 x 1050
Circular Pit
Product Code Pit 524109N
RailCorp Design

Note: Designs as shown are to RailCorp specification. Standard Electrical Pits with drop-in GMS covers or cast iron encased covers are also available.

Product Code (Pit only)	524112	524113
Dimensions	1000 x 600 x 1195	1000 x 1000 x 1195
A	1180	1180
B	780	1180
C	1090	1300
D	1090	1090
E	720	1090
F	996	997
G	597	997
H	1160	1160
I	917	916
J	545	916



MANHOLE AND RISER ASSEMBLY CUT VIEW

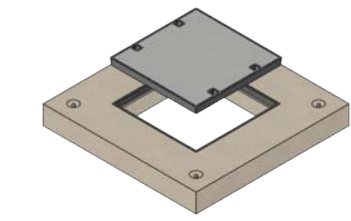


Please note: All pits designed and constructed using steel bar and mesh reinforcement with minimum 40Mpa concrete to ensure integrity and strength of construction as required in rail and mining installations. All precast concrete pits are structurally certified and available with GMS hinged locking cover assemblies in Class B or with concrete roof encasements incorporating cast iron access covers in Class D. Riser extensions are available for all pits – 300mm in height. GMS covers for circular rail pit and 2 part non-hinged assemblies.



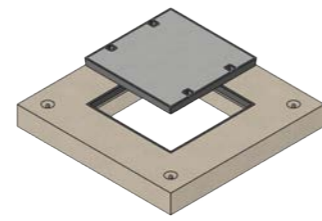
CUBIS - RAIL PITS (CONCRETE)

Full Elec/Comms Design

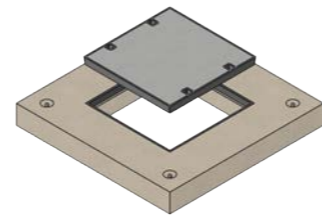


1200 x 1200 x 1195
Product Code 524118NS

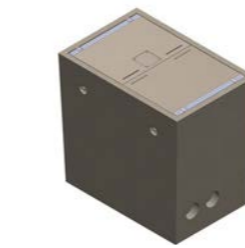
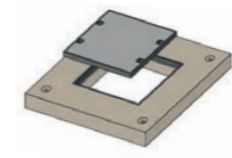
Full Elec/Comms Design



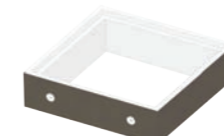
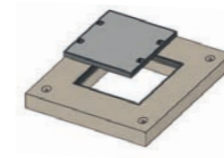
1500 x 1500 x 1500
Product Code 524114NS



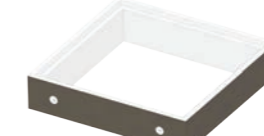
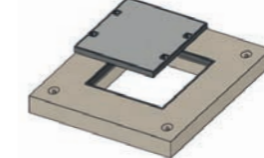
1100 x 900 x 1050
Belltop 911
SCEC SL1
Product Code 591065



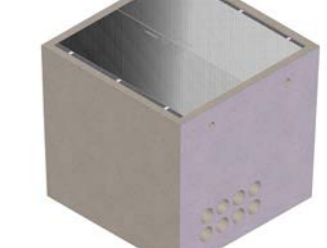
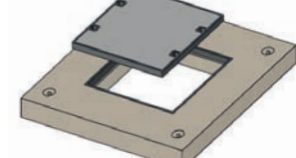
1000 x 600 x 1000
Product Code 524112



1000 x 1000 x 1200
Product Code 524113



1200 x 1200 x 1200
Product Code 524118



1500 x 1500 x 1500
Product Code 524114

Note: Designs as shown are to RailCorp specification. Standard Electrical Pits with drop-in GMS covers or cast iron encased covers are also available.

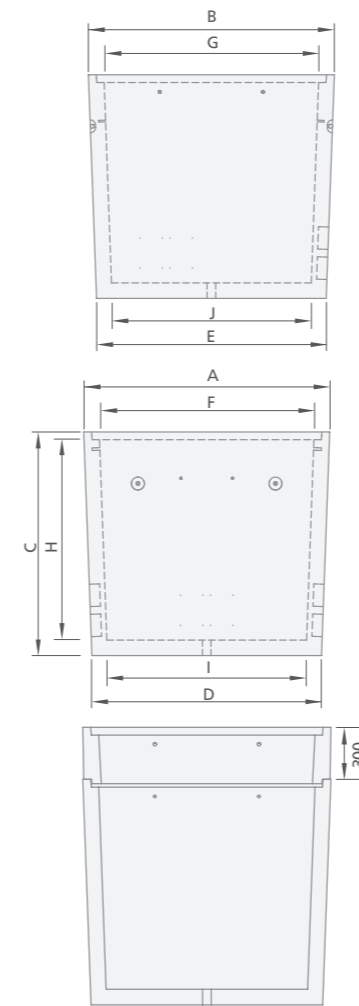
Product Code (Pit only)	524118	524114	591065
Dimensions	1200 x 1200 x 1195	1500 x 1500 x 1500	911 Bell Top
A	1430	1750	1410
B	1430	1750	1210
C	1300	1625	1135
D	1335	1660	1157
E	1335	1660	957
F	1247	1497	1100
G	1247	1497	900
H	1160	1455	995
I	1162	1417	995
J	1162	1417	795

Please note: All pits designed and constructed using steel bar and mesh reinforcement with minimum 40Mpa concrete to ensure integrity and strength of construction as required in rail and mining installations. All precast concrete pits are structurally certified and available with GMS hinged locking cover assemblies in Class B, C or with concrete roof encasements incorporating cast iron access covers in Class D. Riser extensions available for all pits – 300mm in height. GMS covers for circular rail pit and 2 part non-hinged assemblies.

Note: Pits shown to Queensland Rail specification. Also used in standard Electrical cable installations with hinged GMS covers or concrete encased cast iron Class D access covers.

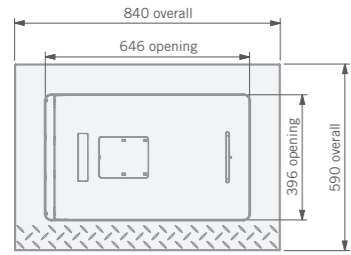
Product Code (Pit only)	524112	524113	524118	524114
Dimensions	1000 x 600 x 1000	1000 x 1000 x 1195	1200 x 1200 x 1195	1500 x 1500 x 1500
A	1180	1180	1430	1750
B	780	1180	1430	1750
C	1090	1300	1300	1625
D	1090	1090	1335	1660
E	720	1090	1335	1660
F	996	997	1247	1497
G	597	997	1247	1497
H	955	1160	1165	1455
I	917	916	1162	1417
J	545	916	1162	1417

Please note: All pits designed and constructed using steel bar and mesh reinforcement with minimum 40Mpa concrete to ensure integrity and strength of construction as required in rail and mining installations. All precast concrete pits are structurally certified and available with GMS hinged locking cover assemblies in Class B or with concrete roof encasements incorporating cast iron access covers in Class D. Riser extensions available for all pits – 300mm in height.



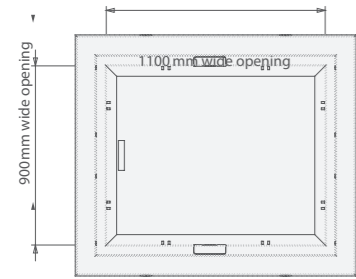
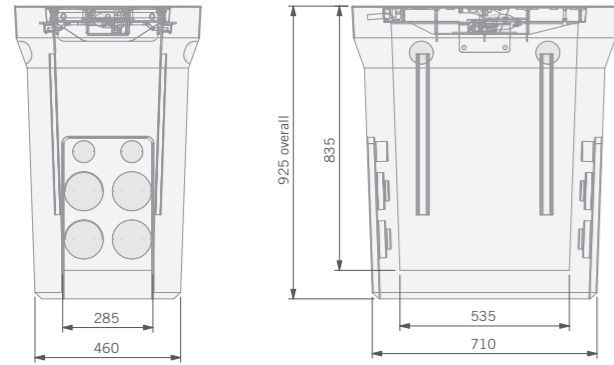
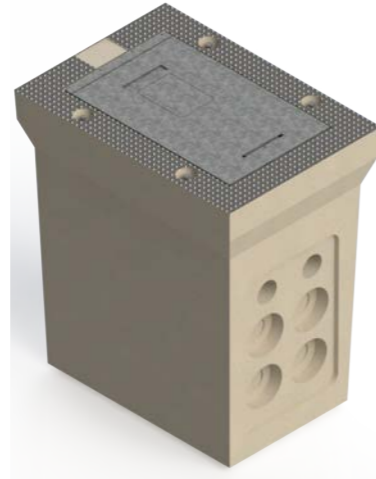
MANHOLE AND RISER ASSEMBLY CUT VIEW

CUBIS - RAIL PITS (CONCRETE)

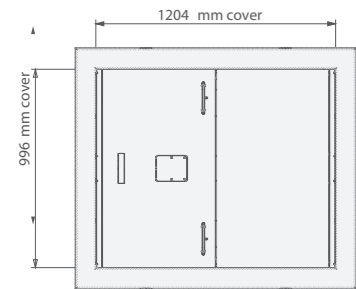


C5 Concrete Pit
SCEC SL1
Heavy Duty Class D Load Rated
Product Code 522378

Hinged Class D SCEC Cover
(designed for higher security installations)
Product code 330130



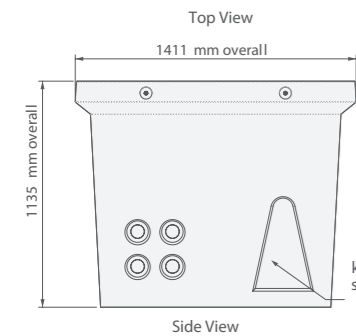
Top View of Concrete Pit



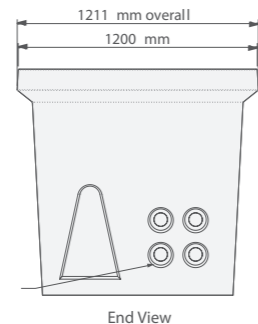
1100 x 900 x 1050
Belltop 911
SCEC SL1
Hinged GMS SCEC Class D Cover for higher security installations
Product Code 591065

Product Code (Pit only)	591065
Dimensions	911 Bell Top
A	1410
B	1210
C	1135
D	1157
E	957
F	1100
G	900
H	995
I	995
J	795

Please note: All pits designed and constructed using steel bar and mesh reinforcement with 40Mpa concrete to ensure integrity and strength of construction as required in general rail or high security installations. Access cover options include GMS hinged locking as shown, full SCEC security locking cover options (Class D load rating), or cast iron covers in concrete roof encasements in Class B or D load ratings.



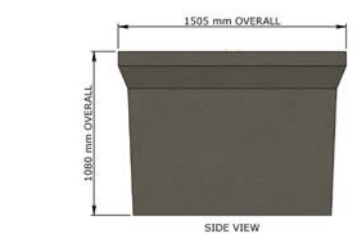
Side View



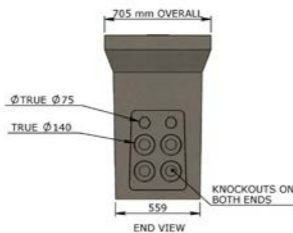
End View



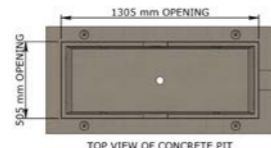
C2 Concrete Pit
SCEC SL1
Hinged Class D SCEC Cover
(designed for higher security installations)
Product code 524170



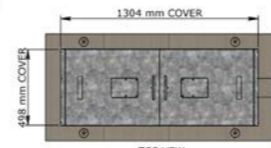
SIDE VIEW



END VIEW



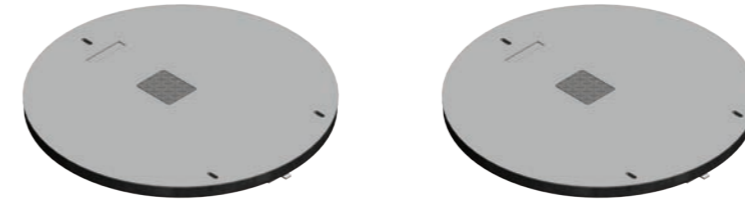
TOP VIEW OF CONCRETE PIT



TOP VIEW

MONObox™

MONObox™ is Cubis' range of single piece, structural preformed cable pits. Each pit is produced as a single piece, allowing customers to quickly and easily install the cable pit, connect ducts and backfill. We specialise in the development, manufacture and distribution of plastic polymer cable jointing pits and pit access covers. The MONObox™ range does not require a frame to keep the cover in place as all are designed to fit the cover directly.

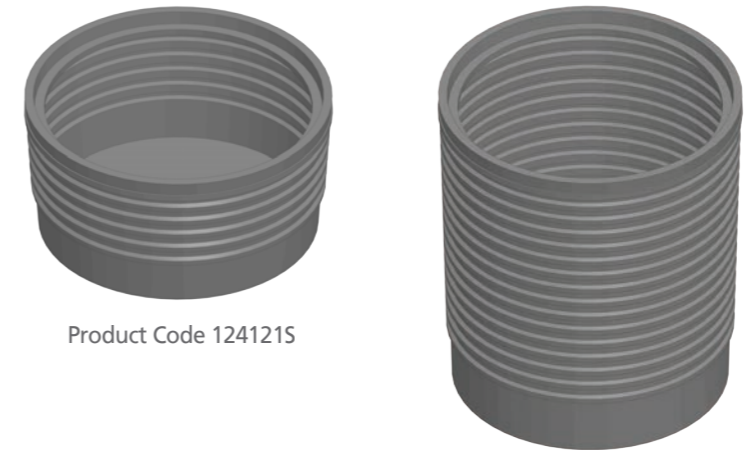


1050 dia Secure Cover
Product Code 321090 (locking lid)
Product Code 321100 (non-locking lid)



1050 dia Secure Ring
Product Code 323100

Pit - 1050 diam HD 1200



Product Code 1241215

Product Code 124121

Product Code (pit only)	124121
Pit Dimensions	1050 x 1200
Diameter (Clear Opening)	975
Depth (Internal)	1170

Note: Pits displayed are to Vic Rail specification.



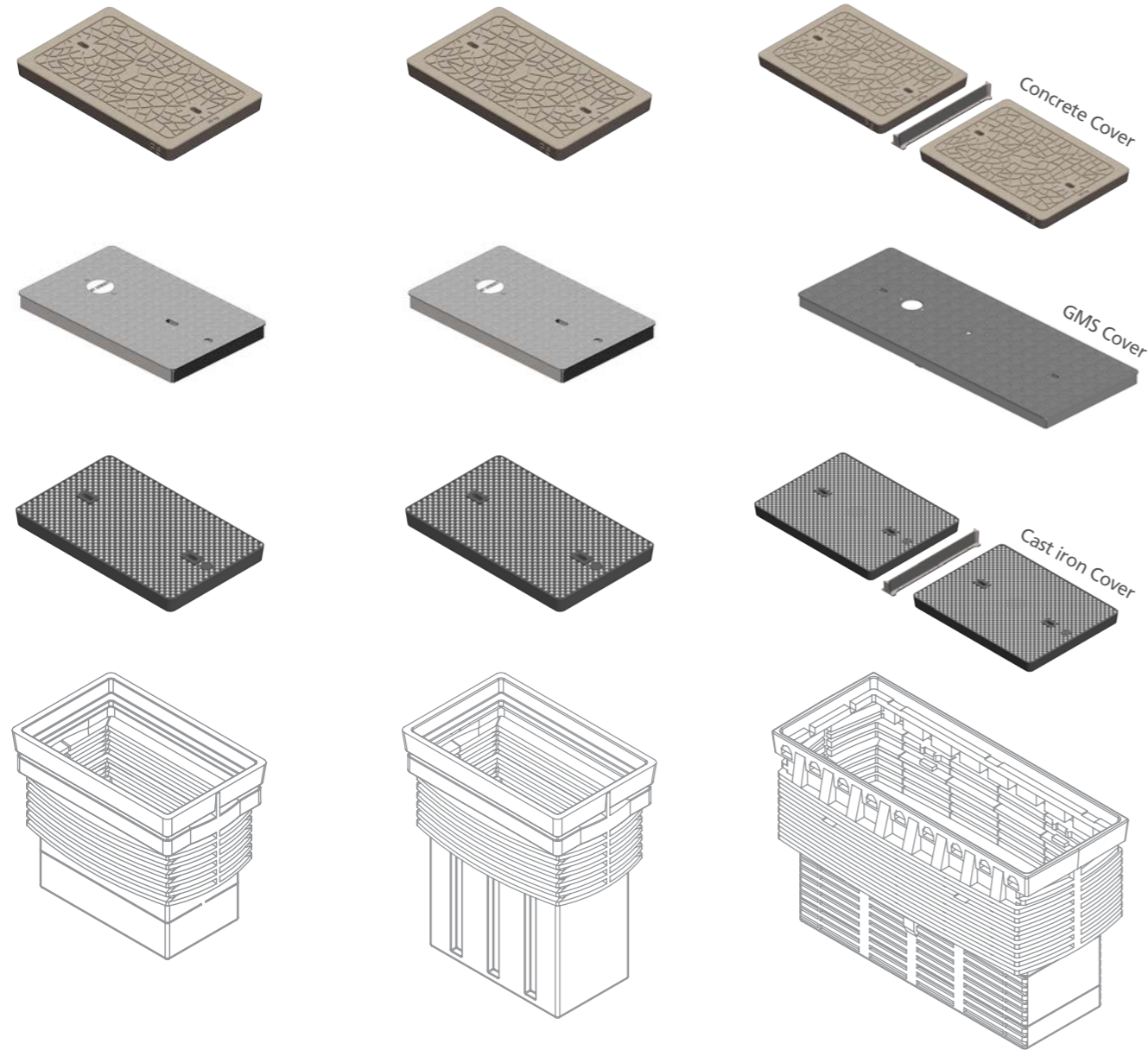
Service Pit Gal Locking Cover
Product Code 124116

Service Pit (STD)
Product Code 124115

Service Pit Large
Product Code 124117

Product Code (pit only)	124115	124117	1241215
Pit Dimensions	dia 500 x 600	dia 500 x 830	1050 x 500
Diameter (Clear Opening)	480	480	975
Depth (Internal)	535	837	493

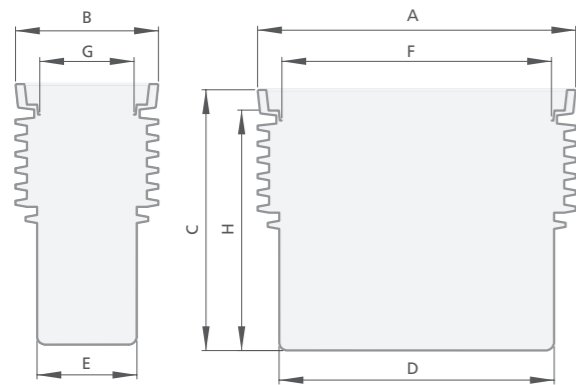
Note: Pits displayed are to Vic Rail specification.



P5 Pit
Product Code 124030

P5-800 Pit
Product Code 124031

P8 Pit
Product Code 124045



A x B x C x D x E - Overall Dimensions
F x G x H - Clear Opening Size

	P5 Dimensions	P5-800Dimensions	P8 Dimensions
A	700	700	1364
B	450	450	610
C	605	830	880
D	570	570	1200
E	320	320	410
F	580	580	1241
G	330	330	431
H	549	774	820

Please note: Plastic riser extensions available for each pit shown. Other plastic pit sizes available. Non-slip GMS cover options available.

Cubis RAILduct™ is an HDPE moulded cable trough system. Weighing under 15kg but capable of taking loads imparted by vehicular traffic, RAILduct™ offers significant advantages in health and safety, speed of installation and flexibility.

Most importantly, laying RAILduct™ is typically faster than traditional concrete units, reducing the total cost of installation.

1 metre long sections are connected using the unique Twist and Lock jointing mechanism which allows a small amount of movement to follow gentle curves in the track.

RAILDuct™ has been installed in many rail applications throughout the world and in different extremes of temperatures. It has also been adapted for projects in power and highways applications.



Features & Benefits

Lightweight

Faster to install than concrete alternatives as the complete units can be lifted into place by one person, easier to handle on site with reduced health and safety issues

Strong, structural design

Robust during the installation process and in service: Can be hinged and locked on both sides, Covers can be opened where convenient to the operator

Base embeds in ballast

The unit is secured into the surrounding material due to the tapered base, meaning units are not displaced by the velocity of passing trains

High UV Stability

Longer life due to high UV rating

Tamper proof lock and keys

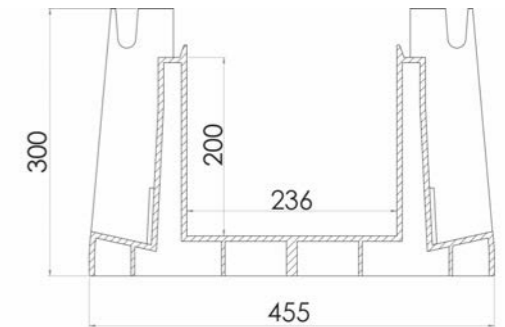
Units can be secured against threat of vandalism or theft of cables. Specialist security bolts can be provided on request

Can be divided

A cable divider panel enables multiple services to be contained and run alongside one another

Product Profile

Weight: 9.9kg (body), 4.3kg (cover), 14.2kg (total)
Length: 1020mm
Material: High Density Polyethylene



Twist Lock Assembly

RAILDuct™ uses a unique twist and lock together system for joining each length of unit with its neighbour, this gives it extra strength and stability. The movement in the RAILduct™ allows for natural curve in the line of the track. Once locked together the units can be embed in the ballast.





Cable Troughing - Rail

RAILduct™ is the modern lightweight alternative to concrete cable troughing.



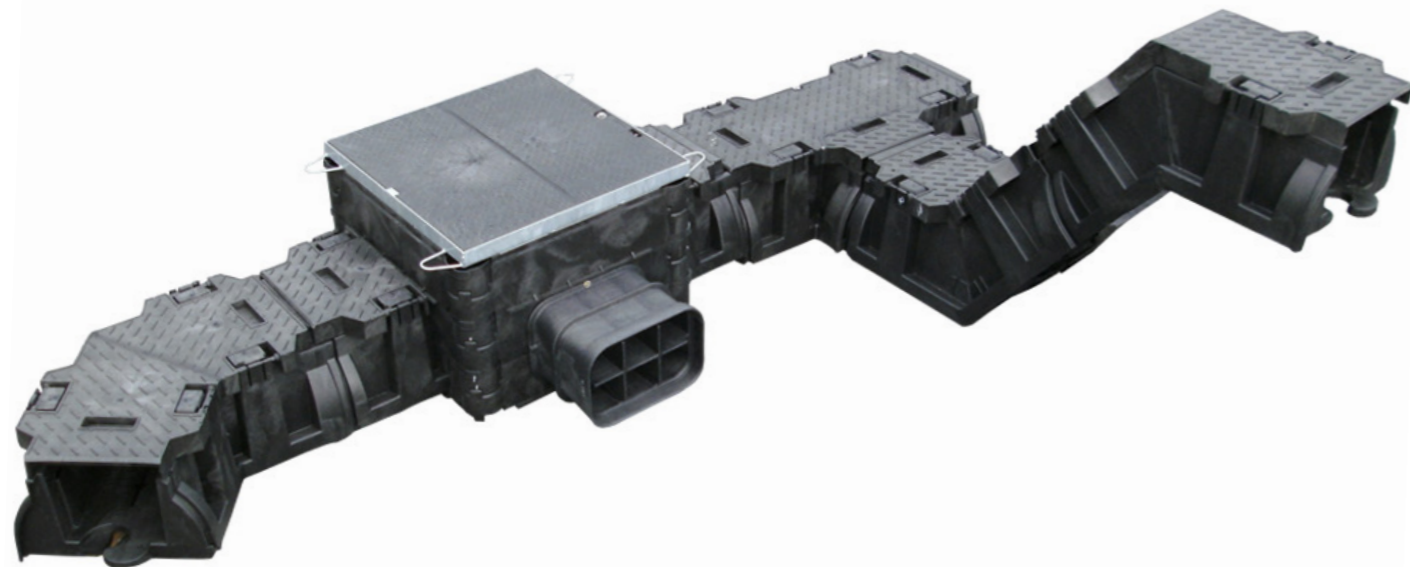
Cable Troughing - Power & Energy

High / Low Voltage power cabling can be distributed through RAILduct™.

Options & Accessories

Bends & T-Junctions

RAILduct™ has 3 degrees of flexibility built into every unit due to the twist and lock mechanism. For more extreme bends, units can be supplied that meet the exact requirements of the track design. T-Junction units can also be supplied for breaking away from an able through run.



MULTIduct™ is a multiple duct system, used for constructing under track or road crossings (UTX/URX), bridge crossings and linear routes.

Duct banks are built by connecting nominal 1 metre long sections, by a push-fit system. The MULTIduct™ sections come in 4 sizes: 4 Way, 6 Way, 9 Way and 4 XL way. There is also a range of accessories for each size that offers flexibility in construction.

MULTIduct™ is manufactured from Nitrogen foamed-High Density Polyethylene, which offers high strength-to-weight properties, resulting in a product that has high crush resistance but can be lifted by a single person (all parts are below 25kg).

MULTIduct™ has held long-standing approvals from international rail operators and has been installed in other applications across the world for more than 30 years.

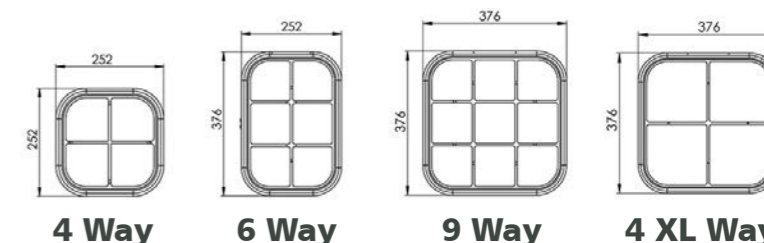
Push-Fit Assembly

MULTIduct™ may be pre-assembled in multiple lengths to the side of the excavated trench if site conditions allow. Pre-assembly is accomplished in the same manner as in the trench. Once assembled the whole unit can be lowered in as one.



Product Profile

Weight: All parts under 25kg
 Lay length: 1065mm
 Material: Nitrogen- Foamed High Density Polyethylene



Features & Benefits

Strong

MULTIduct™ has a high crush strength making it more robust with no breakages. The high strength enables it to be buried at a much shallower depth compared to conventional ducting.

Environmental

HDPE material consists of 70% recycled content and is completely recyclable at the end of its life.

Lightweight

All MULTIduct™ parts are under 25 kg this makes them easier to handle, install on site, transport and reduces health and safety issues.

Fast Installation

Rapid installation for every application resulting in more work completed during track possessions or road closures.

Flexible

A full range of accessories to overcome bends, break out of runs and interface with standard ducting is available. MULTIduct™ can also be cut onsite for termination.

Economical

MULTIduct™ can be installed with less excavation needed due to shallower burial, no special plant required for lifting and no concrete surround, specialist backfill or spacers required.

MULTIduct™ Applications



Buried Cable Routes

MULTIduct™ is used to bury trackside cables (power, telecommunications and signalling). Cables are carried in units, which join together to form long duct runs (100m typically).



Under Track Crossing (UTX)

Under track crossings can be quickly and safely constructed. MULTIduct™ has a very high crush resistance so it can be buried shallower and without concrete surround, offering substantial time and cost savings.



Multiple Banks

MULTIduct™ can be installed in single formations or stacked to provide multiple duct banks. This can provide greater flexibility when the need for high volumes of cabling is needed.



Under Road Crossing (URX) / Bridge Crossing

Under road and bridge crossings can be quickly and safely constructed using MULTIduct™. MULTIduct™ offers a light weight flexible unit that is fast and easy to install.

Options & Accessories

MULTIduct™ duct systems can be fitted with the following accessories for 4 Way, 6 Way, 9 Way and 4XL Way.



Spigot End Cap

Used to terminate entry points and can be pre-fitted for simpler construction



Socket End Cap

Used to terminate entry points and can be pre-fitted for simpler construction



Double Spigot

Double bells to join female to female (spigot to spigot). Lay length 0.305 mm



Double Socket

Double bells to join male to male (spigot to spigot). Lay length 0.305 mm



Single Duct Adapters

Connects many single ducts from standard conduit sections. adapts to standard PVC duct.



Flexible Duct Bends

Allows flexible connection between conduit sections. Up to 90° bend

Breakout Adapters

Allows removal of one or more cable(s) from an individual bore in the 4, 6 or 8 way MULTIduct™

- 4 Way (160 mm) 45 Degree Y-Lateral
- 4 Way (160 mm) 22.5 Degree Y-Lateral



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Driven by Innovation

Cubis Systems is a world leading manufacturer of network access chamber and ducting systems, used in the construction of infrastructure networks for rail, telecoms, water, construction and power markets.

Cubis has developed an innovative approach in an old-fashioned industry. This has been achieved by developing quality products which replace traditional construction materials, like bricks and concrete, with lightweight plastics incorporating intelligent design features. These can then be installed faster and ultimately save our customers both time and money.

Cubis manufactures preformed network access pit systems STAKKABox™ modular and precast concrete, AX-S™ access covers, MULTIduct™ multiple duct system and RAILduct™ cable trough at its manufacturing sites throughout Australia the UK and Ireland. These products are exported to more than 25 countries throughout the World.

At Cubis we pride ourselves on delivering technical customer support, new innovation, product quality and the highest levels of customer satisfaction.

