



| **Tunnelling** |



DSI Underground and our Capabilities

DSI Underground is Australia's leading developer and manufacturer of specialist strata reinforcement and support products to the underground Civil Construction sector (Tunnelling) and Resource Sector (Mining).

500+ Employees



9 Branches
across the
ASIA PACIFIC



75,000+
Tonnes of
Steel per Year



40+ Years
in Operation



450M+
Annual Revenue



Key Brands

- ALWAG Systems
- KINLOC® Mechanically Point Anchored Friction Bolt
- DSI Inject Systems
- AT – Pipe Umbrella Support System
- AT – POWER SET Self-Drilling Anchors
- AT – POWER Set Rock Bolt Automation Unit
- OMEGA-BOLT® Expandable Friction Bolt
- FASLOC® Resin Anchors

Quality Assurance

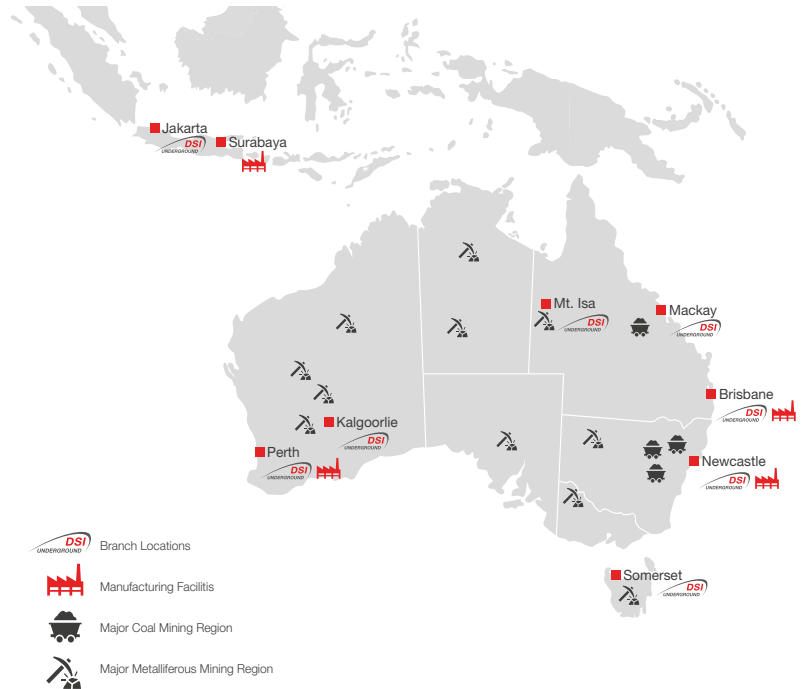
DSI Underground is Quality Assured to ISO 9001:2015, ISO 14001:2015 and AS-NZS 4801:2001 and has numerous products RMS approved.

DSI Underground doesn't simply offer a high quality and innovative product offering, but also the knowledge, skills and expertise of the technical service and support representatives. We pride ourselves on being the leaders and go-to people for technical support in the industry.



About DSI Underground

The world relies on tunnels and infrastructure projects to drive economic growth and progress and to this end tunnelling companies rely on us to drive their progress underground. By reinforcing their tunnels, providing safe work environments and optimising their investment, we keep their tunnels moving forward, opening up new opportunities to advance communities and countries. **We reinforce progress** – for our customers, and for the world.



Main Products

- DSI Drill Hollow Bar System
- Friction Bolts
- Lattice Girders
- Chemical Anchor Bolts
- CT-Bolt
- AT – Casing System
- AT – Pipe Umbrella Support System
- DSI GRIP Fiberglass Bolts
- DSI Strata Injection Chemicals
- Cable Bolts
- Handle Bar Plates



Our Services

DSI Underground is one of Australia's leading innovators and manufacturer of specialist strata reinforcement and support products to the Tunnelling and Mining sectors.

DSI Underground has an exceptionally long history of servicing the markets of Europe in the Civil and Tunnelling space. We have significant experience and expertise in this market segment which when combined with our local expertise we are able to provide a comprehensive service offering.

Strengthening our local footprint, we

have production facilities in Australia (Newcastle, Perth and Brisbane) and Indonesia (Surabaya), we understand and acknowledge the unique difference and pride ourselves on producing locally to guarantee the best service and a short, secure supply chain to benefit our customers. We also have branches strategically placed to service our customers locally. DSI Underground has a proven track record of driving progress and safety in underground operations. Tunnelling presents unique engineering challenges and demand very specific

skills and technical understanding. This expertise runs through our teams. Our team understands your culture and bring the benefit of experience and first-hand insight into your challenges. With significant production capacity and scalable resources, we're able to meet every demand, including urgent and high-volume orders. And as a major global player, we exercise our buying power to deliver competitive pricing in every market we serve.

A Commitment to Problem Solving

Strata conditions at tunnelling sites can be very diverse, varying greatly. The unique nature of many of the support problems experienced underground requires the development of innovative and often specifically tailored solutions. DSI Underground have already developed products and systems to help solve these issues and we are dedicated in continuing with this service and commitment.

The Research & Development that DSI Underground continually undertakes in both tunnelling and mining works underpins and reinforces our assurance that we can provide innovative and cost-effective solutions for ground control issues pertinent to our customers.

Our belief is that the closer the effective working relationship with our customers, the greater the potential to drive innovation and changed processes.



Multi Project Management

DSI Underground have a proven track record with managing multiple jobs at once.

Previous tunnelling projects we have successfully supplied include:

Parramatta Rail Link, Brisbane Airport Link, Brisbane North-South bypass, St Helena, Sydney Metro, Melbourne Metro, WCX 3A, WCX M4, WCX new M5, WCX 3B, Auckland C3 Rail Link, Brisbane Cross River and North Connex.



Quality Product from Reputable Companies

The majority of the product used in the ground support is supplied from locally sourced raw material – including

InfraBuild for the rebar in the CT-Bolts and local NSW supply points for the plastic sheathing.



Quality Tracking

DSI Underground has developed a Dropbox system to communicate/store mill certificates for the ground support packages submitted by the contract. This Dropbox is updated regularly to match the deliveries and allows the site engineer to track against their order number, receipt numbers, etc. The result is a simple, consistent system for retrieval and storage of the important records.



Product Developments

Examples of New Recent Direct Customer Solution Based Product Line Additions

Cuttable Fibreglass CT-Bolt

DSI Underground understood the need for a one pass, temporary support bolt similar to our existing CT-Bolt that can be installed remotely and allow early access to continue tunnelling development. The Cuttable Fibreglass CT-Bolt was developed and has been proven to not only be simple to install, but also ensure the required safety through consistent anchorage.

To go one step further to this product, two anchor ends have been developed to be used dependant on how the site sees fit. There is the option of a shell anchor end (tensionable) or a fish hook anchor (passive).

Both anchors have, and are currently, been used and proven across all current Sydney and Melbourne tunnel projects.

As well as the two anchor options, there are also two nut end options both of which were developed to overcome issues faced by the customer;

Fibreglass Nut:

- Cuttable nut
- Has breakout pin to show when enough torque/tension has been placed on nut (and bolt) after expansion shell has set.

Steel Nut:

- In case of higher specified terminal loads
- Allows bolt to be pull tested via conventional methods connecting to the external thread on the nut



Blind Nut (for CT-Bolts)

DSI Underground's Blind nut is an option for our CT-Bolts. It can be used to accommodate lower clearance of the bolt head into the tunnel opening.

- No thread protruding below nut
- Reduce bolt tail protruding below roofline
- Existing bolts can be pull tested without need for special pull rings – the pull test coupler threads straight onto the exterior nut thread
- Standard hex nut size – standard bolt dolly's
- Exterior thread exceeds 300[kN]

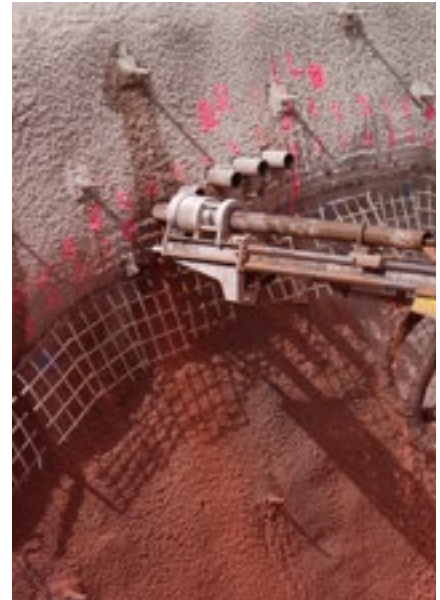


Squeezed Canopy Tubes

A squeezed connection consists of a prefabricated reduced male pipe end which is force-fitted with its female counter piece using a hydraulic clamping cylinder. In the coupling area, the cross section stays constant and the section modulus is decreased. The internal pipe diameter in the connection area is reduced.

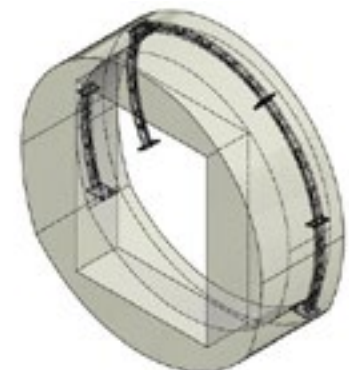
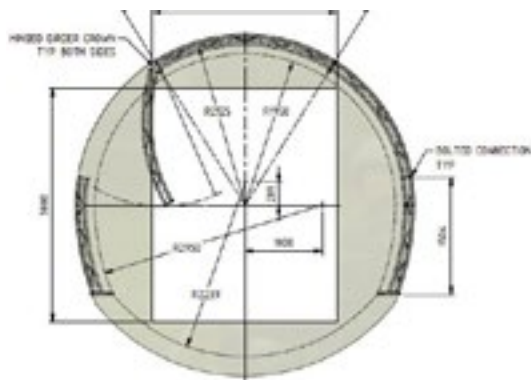
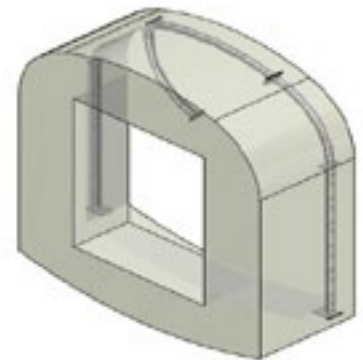
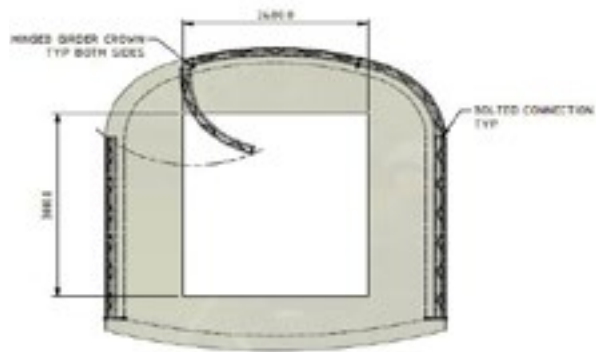
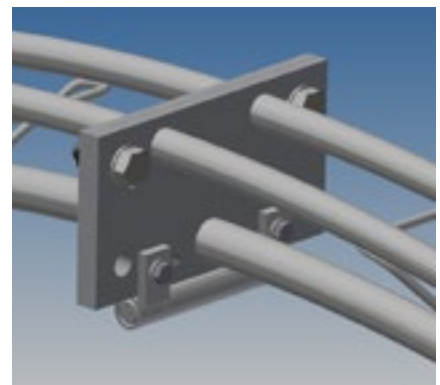
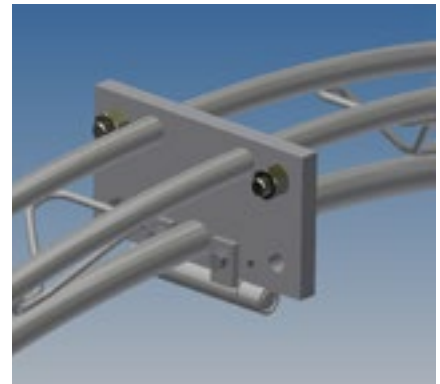
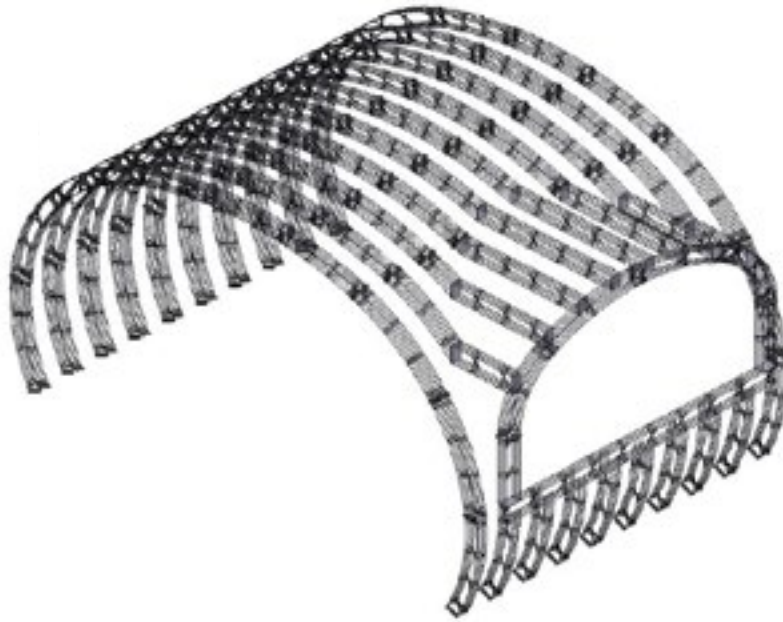
This pipe connection type can be recommended where a pipe umbrella is installed because of its static load-bearing capacity.

- Supreme safety due to fully mechanized installation
- Efficient self-drilling installation technology
- The fastest pipe umbrella system on the market
- Installation with conventional drilling machines
- Reliable and robust system components
- Piecewise pipe installation allows flexible lengths
- Simple application in confined space
- Superior load-bearing capacity of innovative pipe couplings
- Proven in numerous recent projects in Australia



Lattice Girder Solutions

Custom lattice girder profiles and joints for safety and ease of handling in tight access areas - made local in Newcastle.





Please note:

This brochure serves basic information purposes only. Technical data and information provided herein shall be considered non-binding and may be subject to change without notice. We do not assume any liability for losses or damages attributed to the use of this technical data and any improper use of our products. Should you require further information on particular products, please do not hesitate to contact us.

DSI Underground
25 Pacific Highway
Bennetts Green NSW 2290
Australia

Phone +61 2 49489099
E-mail sales@dsiunderground.com.au

www.dsiunderground.com.au