# **EZUSTUT**Cable & Pipe Supports

\*We manufacture in Australia, and have supported Australian jobs for over 30 years.









AUSTRALIA'S LEADING RANGE OF CABLE AND PIPE SUPPORT SYSTEMS.

www.ezystrut.com.au



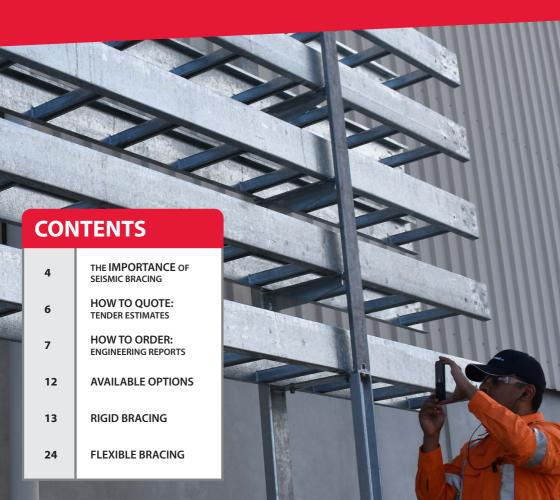




#### LOOK FOR OUR SEISMIC SOLUTIONS LOGO.

It's a sure sign your cable management solution is designed in Australia, rigorously and independently tested to meet Australian standards, and selected from Australia's fastest growing range of seismic products.

#### WHY RISK INSTALLING ANYTHING ELSE?



## **WELCOME**





#### **New South Wales**

480 Marion Street

Bankstown Aerodrome, NSW 2200

**Tel:** 02 8783 7555

Email: nsw.sales@ezystrut.com.au

#### Western Australia

12 Vale Street Malaga, WA 6090

**Tel:** 08 9249 7966

**Email:** wa.sales@ezystrut.com.au



www.ezystrut.com.au



www.linkedin.com/company/ezystrut

#### Victoria

5/131 Calarco Drive Derrimut, VIC 3026 **Tel:** 03 8368 7555

Email: vic.sales@ezystrut.com.au

#### **Queensland**

25 Machinery Street Darra, QLD 4076

**Tel:** 07 3259 6844

**Email:** qld.sales@ezystrut.com.au



www.instagram.com/ezystrut



www.youtube.com/@ezystrut

# THE IMPORTANCE OF SEISMIC BRACING

According to Geoscience Australia, an average of one hundred earthquakes of magnitude greater than 3.0 are recorded across the nation each year. Earthquakes above magnitude 5.0 are detected every two years, whilst the most destructive tremors, measuring over 6.0, shake Australia every ten years.



Australia's most notable destructive episode of seismic activity hit Newcastle on December 28th, 1989. Measuring 5.6 on the Richter Scale, thirteen people were killed, 160 were injured and 1,000 people were left homeless. Up to 50,000 buildings were damaged, many of them requiring complete demolition and rebuild, and the disruption to

everyday life in Newcastle was felt for many years to come.

Fast forward to September 22nd, 2021: Melbourne was shaken by an earthquake larger in magnitude than the Newcastle event all those years ago. Measuring 5.9, Australia's second post populous city was lucky to avoid large scale destruction because the earthquake epicentre was situated in a rural area, 130 kilometres north-east of Melbourne's CBD. Nevertheless, the quake was a reminder that Australia remains susceptible

to damaging seismic activity.

Further abroad, the highly destructive series of earthquakes that rocked Christchurch throughout 2010 and 2011 are testament to the damage that significant tremors can cause in a built up area.





Along with the tragedy of 185 deaths, some 100,000 homes were damaged, schools and universities were closed and 45 percent of the buildings in the central business district were inspected for safety and ruled off limits due to the damage caused.

More than ten years later, both the physical destruction and the long term social and economic impacts remain clearly visible throughout the city of Christchurch.



In the event of a significant earthquake, society's reliance on critical infrastructure is increased. Cities not only need to withstand the initial effects of the earthquake, but they also need to provide uninterrupted services to those affected in the aftermath. For that reason, the resistance of cable and pipe support systems to seismic activity is an important consideration for designers, engineers and builders.

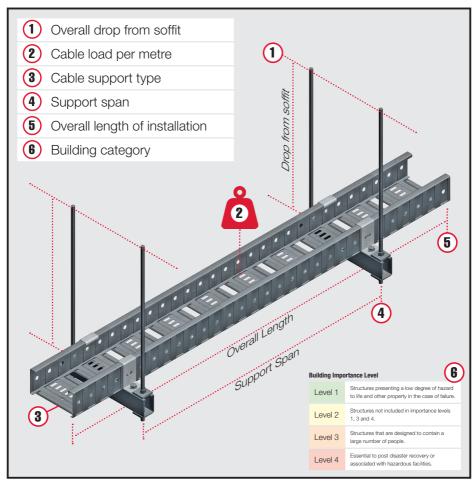
In Australia, seismic compliance is mandated by Section 8 of AS1170.4 (2007). EzyStrut offers a range of seismic solutions that comply with AS1170, and our one-stop range of seismic bracing, cable tray and ladder, pipe hangers, channel and quality fasteners takes the guesswork out of installing seismic compliant support systems.

Our team of experienced sales staff and in-house engineers, is backed by partners who are qualified and recognised industry experts. Together, we will work to recommend the right products at the best cost, ensuring your project will pass inspection.

## HOW TO QUOTE: TENDER ESTIMATES

**EzyStrut** 

If you're looking for a quick turnaround estimate for your latest project tender, please provide the below inputs and EzyStrut's sales team will send you a quote promptly... it's that easy!



#### Notes:

- Rod stiffeners and associated components are typically added for greater than 700mm overall drop.
- All estimation quotes will include flexible bracing products (cable).
- All estimation quotes will assume that the soffit is concrete.

# HOW TO ORDER: ENGINEERING REPORTS

Installing a seismic compliant support system is not as simple as putting together a take-off, opening a catalogue and placing an order for a mixture of products. To achieve seismic compliance, the advice of specialist engineers is required. Each and every project will need to be quoted individually.

Calculation of seismic loads requires information on a number of parameters that are based on site conditions, building design and the support system design. The following data is required to commence design of seismic bracing system:

<u></u>	Importance level of structure
	Annual probability of exceedence or probability factor (K)
	Hazard factor (Z)
	Soil class
I ← → I	Total height of structure
1	Maximum height above ground where system is installed
	Type of tray or ladder used
KG	Applied loading on tray or ladder
	Type of trapeze assembly used
<del>←→</del>	Trapeze span
	Surface to which seismic bracing is fixed

# TYPICAL PROJECT LIFECYCLE AND CERTIFICATION PROCESS

#### **TENDER PHASE**

Seismic design, certification and materials estimates can be provided at tender stage to assist with your quotation.

#### **SERVICES DESIGN & INITIAL INVESTIGATION**

At the beginning of your services design, initial advice will be provided.

This will clarify your seismic loading requirements and reduce the level of additional seismic bracing required.

At this stage:

- Opportunities for prefabricated support systems can be identified.
- Suitable concrete anchors are selected for the project
- · Corrosion requirements are identified.
- Difficult of congested areas are identified, and design install methodology developed to address these whilst meeting the seismic loading requirements.

#### **SEISMIC DESIGN & DESIGN CERTIFICATION**

A structural engineer will complete a detailed seismic design at the final approval process or after services drawings are Issued for Construction (IFC). This design can be documented in the form of two dimensional PDF mark-ups, or by using BIM Revit software.

If available, the three dimensional building model will be used to avoid clashing of braces with other services or the building structure. Alternative brace options can be developed using the model.

Design certification will be provided by the structural engineer when the design is complete. Materials can be ordered from EzyStrut as soon as the seismic design is finalised.





#### **CONSTRUCTION PHASE**

To ensure that all braces are installed correctly, we recommend sending through photos of the first two or three seismic braces you install to ensure that they are installed correctly. Rectifications can be made, and then copied throughout the rest of the project. This prevents possible rework, if all braces are installed incorrectly.

Inspections are required for a structural engineer to certify the seismic installation of your project and a minimum of two weeks' notice is required for on-site inspections. For large projects these are completed periodically throughout the project and for small projects, these are completed when all seismic bracing has been installed.

If access to a zone within a project is due to be closed, an inspection is required. This enables you to rectify bracing if required.

Defects will be raised during the inspection and a report provided. These highlighted issues can be closed out via another inspection, or a photo review at the structural engineer's discretion.

#### **INSTALLATION CERTIFICATION**

When the installation is complete and all defects resolved, a seismic installation certificate will be provided by the structural engineer.

### FREQUENTLY ASKED QUESTIONS

#### WHO COMPLETES MY SEISMIC DESIGN?

The seismic design must be completed by a registered structural engineer specialised in the design of building services.

EzyStrut has a team of in-house engineers and partners with external engineering consultants to deliver your seismic design.

#### WHO DO I TALK TO FOR ASSISTANCE WITH MY SEISMIC DESIGN?

EzyStrut's knowledgeable sales staff will be able to assist you in sourcing the required data for seismic design (see page 6) and submit a request to our team of engineers.

#### **HOW DO I ARRANGE AN INSPECTION FOR MY PROJECTS?**

Given that EzyStrut's sales and engineering staff will be closely involved in the design of your project, arranging an inspection is as simple as making contact with the staff members who have assisted throughout the project.



#### **HOW DO YOUR SEISMIC DESIGNS COMPLY WITH THE NCC?**

EzyStrut seismic designs resist the seismic design loading specified in **AS1170.4:2007 Section 8.** 

This standard is required in NCC Volume 1 Part B1: Structural Provisions.



## WHAT SPECIAL REGISTRATIONS DO THE CERTIFYING STRUCTURAL ENGINEERS REQUIRE?

Engineers must be resgistered for practice in accordance with the individual state's requirements. EzyStrut works with engineers qualified to practice in every Australian state and territory, as well as New Zealand. These registrations include RPEQ, PER and NER.

#### WHAT DOES THE "BUILDING IMPORTANCE LEVEL" MEAN?

The Building Importance Level indicates the seriousness of consequences and hazard to life should the building fail.

Importance Level 2 buildings, for example, have lower consequences than an Importance Level 4 structure and therefore, they have a lower seismic design loading and design requirements.

## WHAT ARE THE SPECIAL REQUIREMENTS FOR IMPORTANCE LEVEL 4 BUILDINGS?

Importance Level 4 buildings are essential to post-disaster recovery or hazardous material facilities. AS1170.4 requires that a special study is completed for these buildings, to demonstrate how they can remain serviceable for immediate use following a serious seismic event.

#### WHAT IS THE DIFFERENCE BETWEEN C1 AND C2 ANCHORS?

Fasteners are evaluated for performance under two seismic categories.

**C1** anchors are tested under pulsating tension and shear loads, with a maximum crack width of 0.5mm.

**C2** anchors are tested under a more severe test involving pulsating tension and shear loads with a maximum crack width of 0.8mm.

#### WHICH CONCRETE ANCHORS ARE REQUIRED FOR MY PROJECT?

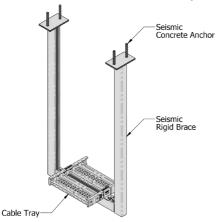
All concrete anchors should be certified for C1 or C2 loading. AS5216:2021 recommends that C2 anchors are used for all fixings in Importance Level 4 structures. For specific concrete anchor assistance for your project, please contact EzyStrut.

## RIGID VS FLEXIBLE BRACING

There are two main types of seismic bracing - rigid and flexible.

#### RIGID BRACING: MADE-TO-ORDER OR CONSTRUCTED ON-SITE

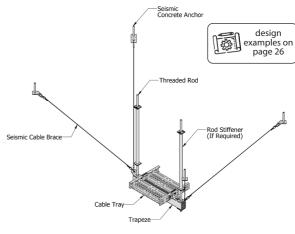
 Rigid bracket assemblies are typically produced with welded strut or hollow sections and are usually able to achieve greater spacing for



- transverse and logitudinal braces than flexible bracing solutions.
- Each brace resists transverse and longitudinal loads.
- Designs allow for bracing to be contained within the envelope of the run.
- Rigid seismic bracing is preferred on sites with high density services which interfere with seismic bracing.
- Ideal for high seismic loads and important infastructure projects.

#### **FLEXIBLE BRACING: CABLE & WIRE SOLUTIONS**

- Steel cable used as braces, typically 45 degrees to the cable tray or ladder, used to restrain both the transverse and longitudinal loads.
- As a guide, maximum allowable spacing for transverse and longitudinal braces are 9m and 18m respectively.
- Opposing pairs are required to resist seismic loads from both directions, this is known as a "two way brace."
- An alternative to using "two way" transverse and longitudinal braces, is to use a "four way" brace at each seismic restraint for uniformity.
- Threaded rod stiffeners may be required.
- Flexible bracing is a light duty, economical solution.



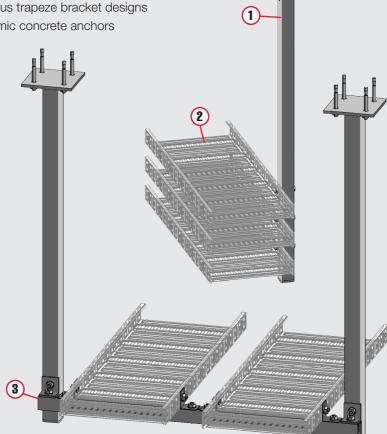
## **RIGID BRACING**

#### **DESIGN EXAMPLES**



#### **KEY ELEMENTS:**

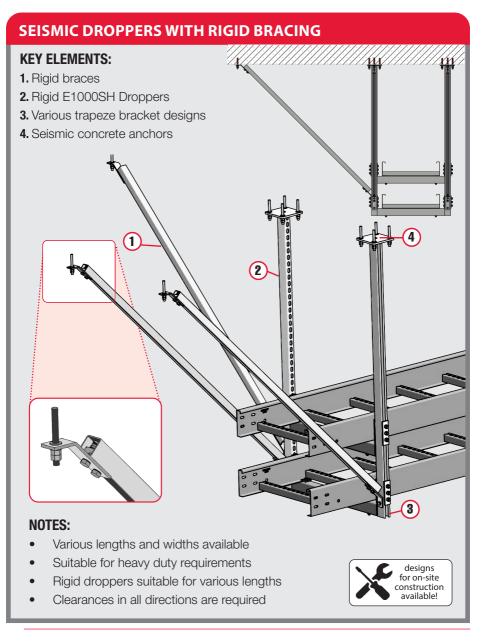
- 1. Rigid RHS Droppers
- 2. Multi-Tier and Multi-Run options
- 3. Various trapeze bracket designs
- 4. Seismic concrete anchors



- **NOTES:**
- Various lengths and widths available
- Suitable for medium duty requirements
- Rigid droppers suitable for various lengths

## **RIGID BRACING**

#### **DESIGN EXAMPLES**

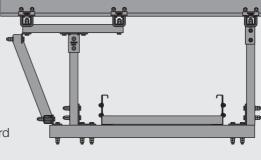


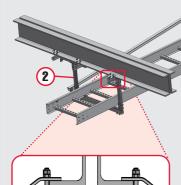




#### **KEY ELEMENTS:**

- 1. Rigid E1000H bracing
- 2. Rigid E1000SH Droppers
- **3.** E1000 or E5500 Trapeze Brackets
- **4.** Beam clamps, angle brackets and associated fasteners are available from EzyStrut's standard range of products



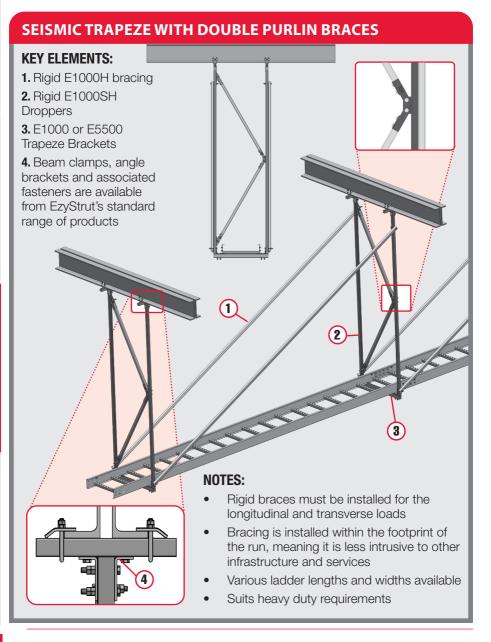


#### **NOTES:**

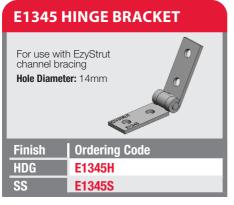
- Rigid braces must be installed for both lateral and longitudinal loads
- Bracing is installed within the footprint of the run, meaning it is less intrusive to other infrastructure and services
- Rigid E1000SH droppers are suitable for short lengths (as per image above). For a longer drop, please see page over
- Various ladder lengths and widths available
- Suits medium to heavy duty requirements

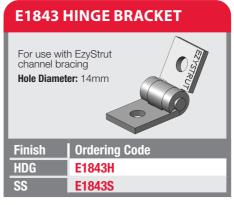
# EzyStrut RIGID BRACING

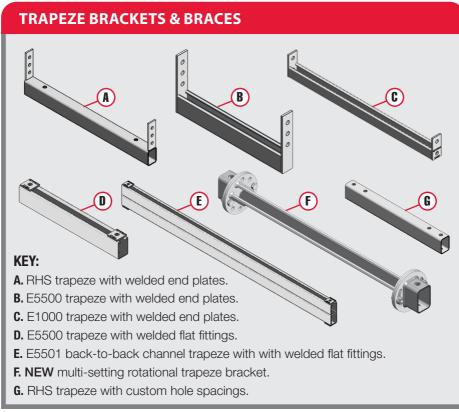
#### **DESIGN EXAMPLES**



## RIGID BRACING ACCESSORIES

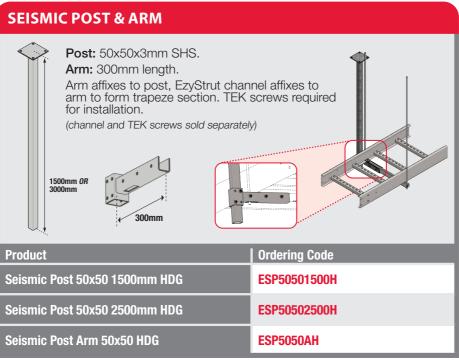


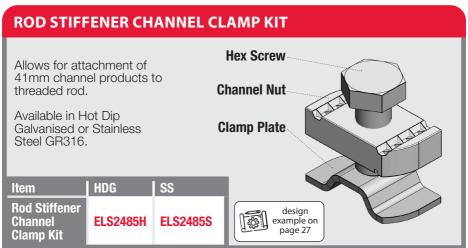




## RIGID BRACING ACCESSORIES

#### **DESIGN EXAMPLES**



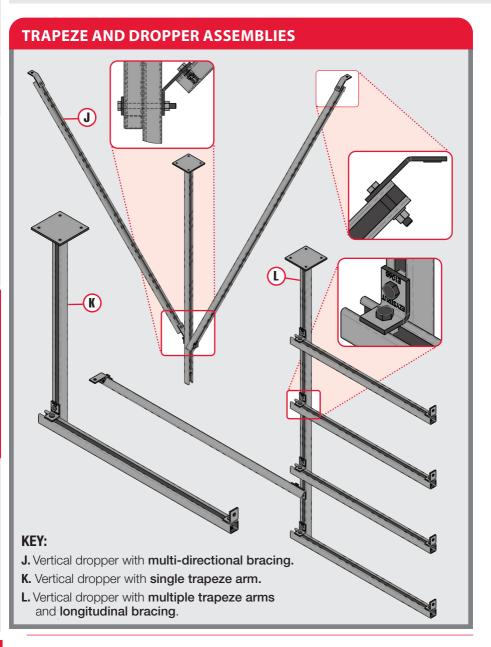


# TRAPEZE AND DROPPER ASSEMBLIES H KEY: **H.** Rigid trapeze with **twin** vertical droppers. I. Rigid trapeze with triple vertical droppers.

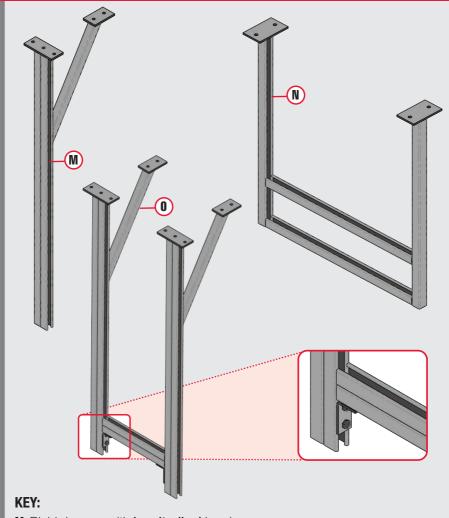
## RIGID BRACING ACCESSORIES

**DESIGN EXAMPLES** 

EzyStrut



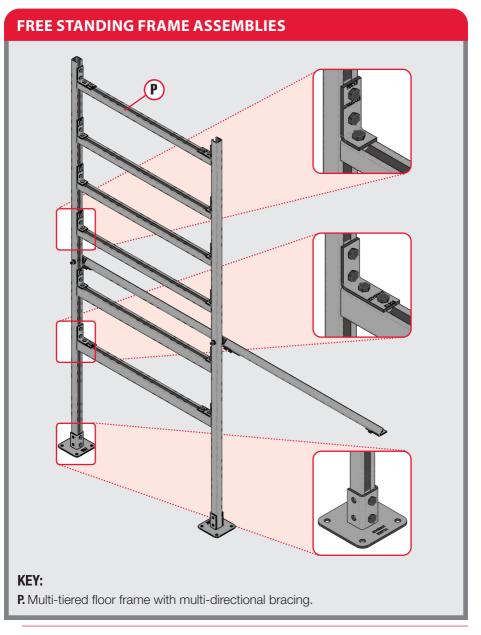




- M. Rigid dropper with longitudinal bracing.
- N. Rigid multi-tiered trapeze.
- $\textbf{0.} \ \mathsf{Rigid} \ \mathsf{trapeze} \ \mathsf{with} \ \textbf{longitudinal} \ \mathsf{bracing}.$

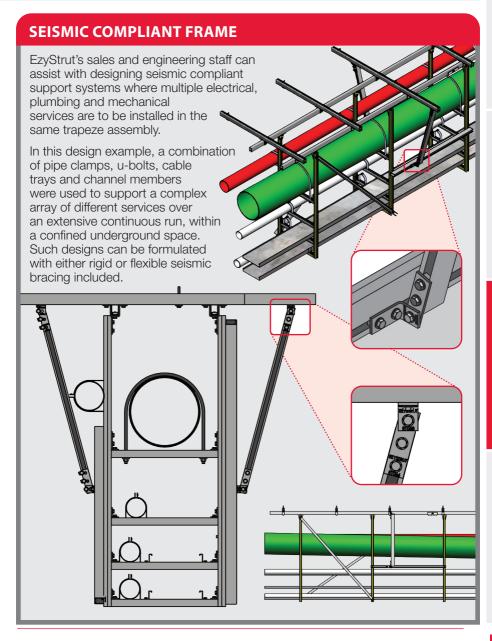
## RIGID BRACING ACCESSORIES

**DESIGN EXAMPLE** 



## **MULTIPLE SERVICES**

#### **DESIGN EXAMPLES**



### FLEXIBLE BRACING



#### INTRODUCING THE VAICO V.LOCK SYSTEM

Since the Christchurch earthquakes of 2010 and 2011, **Vaico** has endeavoured to develop cost-effective and user-friendly solutions for seismic bracing and suspension of building services. The culmination of those endeavours is the V.LOCK seismic brace, which has proven popular amongst contractors not only in New Zealand, but all over the world.

#### **HOW DOES IT WORK?**

EzyStrut

Each V.LOCK flexible seismic brace consists of three components: a pre-fixed ceiling attachment, a 3mm, 5mm or 6mm diameter wire, and the intuitive and innovative V.LOCK plate, which allows for looping and attaching of the wire to the building services without the need for swaging, crimping or bringing along any extra tools.



The brace is available with hooks, making them ideal for retrofitting to building services, or alternatively, traditional angle brackets for applications where a more heavy duty solution is required.

Unlike other products on the market, the V.LOCK plate allows for easy inspection of both the wire and connectors following a seismic incident or during regular maintenance regimes.

#### **CONTACT US FOR A QUOTE**

Drawing upon their experience from more than 1,500 projects, Vaico has developed a system that estimates the cost of flexible bracing projects and associated engineering calculations **within minutes**. After a short conversation with a member of the EzyStrut sales team, we can provide an indicative quote for both the bracing and the engineering.

The quick turnaround in providing these quotes has made V.LOCK the first choice for domestic, commercial and light industrial projects. If you're submitting a tender, or giving clients an estimation for an urgent job with seismic requirements, simply contact EzyStrut via phone or email to source indicative pricing for your project immediately.

#### STEP-BY-STEP: USING THE V.LOCK PLATE



- 1. Thread wire through the rear of the top hole, down through the hole on the right hand side.
- 2. Loop the wire back up through the hole on the left hand side and thread it under the loop created at Step 1.
- **3.** Adjust wire tightness or loop size as required by your application.

#### **Seismic Support Systems**



#### **V.LOCK BRACE WITH RETROFIT HOOK**

- Fast, easy, tool-free installation
- Versatile retro-fit hook
- 3mm wire suits most applications



Wire Size	Length	Description	Part Number
	1m	V.Lock Seismic Brace 3mm x 1m w/retrofit hook ZP	V31HZ
3mm	2m	V.Lock Seismic Brace 3mm x 2m w/retrofit hook ZP	V32HZ
	3m	V.Lock Seismic Brace 3mm x 3m w/retrofit hook ZP	V33HZ
ULS:	4m	V.Lock Seismic Brace 3mm x 4m w/retrofit hook ZP	V34HZ
485kg	6m	V.Lock Seismic Brace 3mm x 6m w/retrofit hook ZP	V36HZ
	10m	V.Lock Seismic Brace 3mm x 10m w/retrofit hook ZP	V310HZ

#### **V.LOCK BRACE WITH RETROFIT ANGLE BRACKET**

- Fast, easy, tool-free installation
- Secure retro-fit angle-bracket
- 3mm wire suits most applications



Wire Size	Length		Part Number
	1m	V.Lock Seismic Brace 3mm x 1m w/retro angle bracket ZP	V31RAB45
3mm	2m	V.Lock Seismic Brace 3mm x 2m w/retro angle bracket ZP	V32RAB45
	3m	V.Lock Seismic Brace 3mm x 3m w/retro angle bracket ZP	V33RAB45
ULS:	4m	V.Lock Seismic Brace 3mm x 4m w/retro angle bracket ZP	V34RAB45
485kg	6m	V.Lock Seismic Brace 3mm x 6m w/retro angle bracket ZP	V36RAB45
	10m	V.Lock Seismic Brace 3mm x 10m w/retro angle bracket ZP	V310RAB45

#### **V.LOCK BRACE WITH ANGLE BRACKET**

- Fast, easy, tool-free installation
- Secure, closed angle-bracket
- 5mm or 6mm wire suits heavy duty applications



Wire Size	Length	Description	Part Number
	1m	V.Lock Seismic Brace 5mm x 1m w/angle bracket ZP	V51AB45
5mm	2m	V.Lock Seismic Brace 5mm x 2m w/angle bracket ZP	V52AB45
	3m	V.Lock Seismic Brace 5mm x 3m w/angle bracket ZP	V53AB45
ULS:	4m	V.Lock Seismic Brace 5mm x 4m w/angle bracket ZP	V54AB45
1046kg	6m	V.Lock Seismic Brace 5mm x 6m w/angle bracket ZP	V55AB45
	10m	V.Lock Seismic Brace 5mm x 10m w/angle bracket ZP	V510AB45
Wire Size	Length	Description	Part Number
Wire Size	Length 1m	Description   V.Lock Seismic Brace 6mm x 1m w/angle bracket ZP	Part Number   V61AB45
Wire Size 6mm			:
	1m	V.Lock Seismic Brace 6mm x 1m w/angle bracket ZP	V61AB45
6mm ULS:	1m 2m	V.Lock Seismic Brace 6mm x 1m w/angle bracket ZP V.Lock Seismic Brace 6mm x 2m w/angle bracket ZP	V61AB45 V62AB45
6mm	1m 2m 3m	V.Lock Seismic Brace 6mm x 1m w/angle bracket ZP V.Lock Seismic Brace 6mm x 2m w/angle bracket ZP V.Lock Seismic Brace 6mm x 3m w/angle bracket ZP	V61AB45 V62AB45 V63AB45

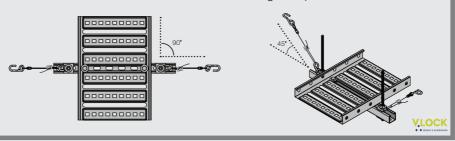
Note: Hot Dip Galvanised and Stainless Steel options are available by made-to-order special request

## **FLEXIBLE BRACING**

#### **DESIGN EXAMPLES**

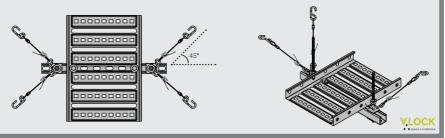
#### **CABLE TRAY WITH TWO-WAY BRACING**

Suitable for installations where transverse bracing is required.



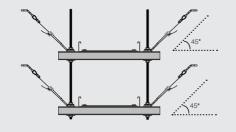
#### **CABLE TRAY WITH FOUR-WAY BRACING**

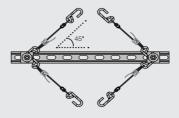
Suitable for installations where transverse and longitudinal bracing is required.

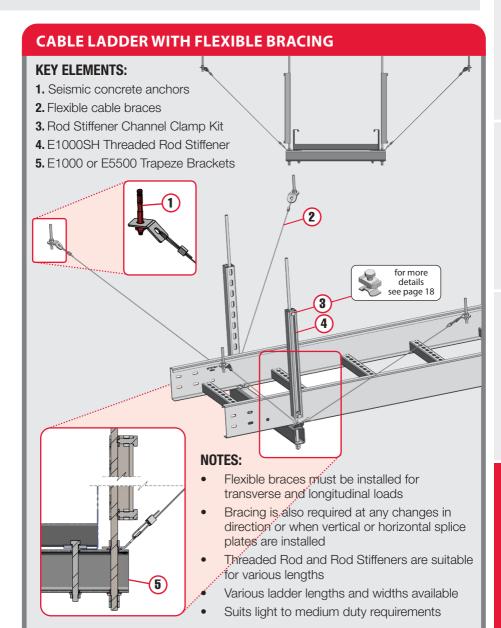


#### OTHER BRACING CONFIGURATION EXAMPLES

Bracing options are available for multi-tiered installations, or applications where other services are within close proximity.









www.ezystrut.com.au

#### South Australia (Head Office)

580 Prospect Road Kilburn SA 5084

**Tel:** 08 8360 4550

Email: sa.sales@ezystrut.com.au

#### **New South Wales**

480 Marion Street

Bankstown Aerodrome NSW 2200

**Tel:** 02 8783 7555

Email: nsw.sales@ezystrut.com.au

#### Western Australia

12 Vale Street Malaga WA 6090

**Tel:** 08 9249 7966

**Email:** wa.sales@ezystrut.com.au

Victoria

5/131 Calarco Drive

Derrimut VIC 3026

**Tel:** 03 8368 7555

Email: vic.sales@ezystrut.com.au

February 2024

#### **Oueensland**

25 Machinery Street Darra OLD 4076

**Tel:** 07 3259 6844

**Email:** qld.sales@ezystrut.com.au