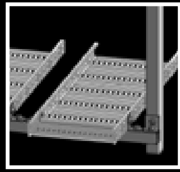
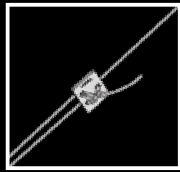
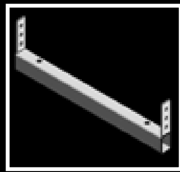
EzyStrut
Cable & Pipe Supports

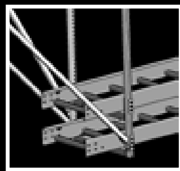


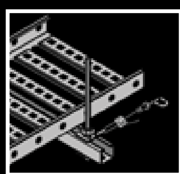
* We manufacture in Australia, and have supported Australian jobs for over 30 years.

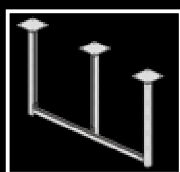


SEISMIC SOLUTIONS









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

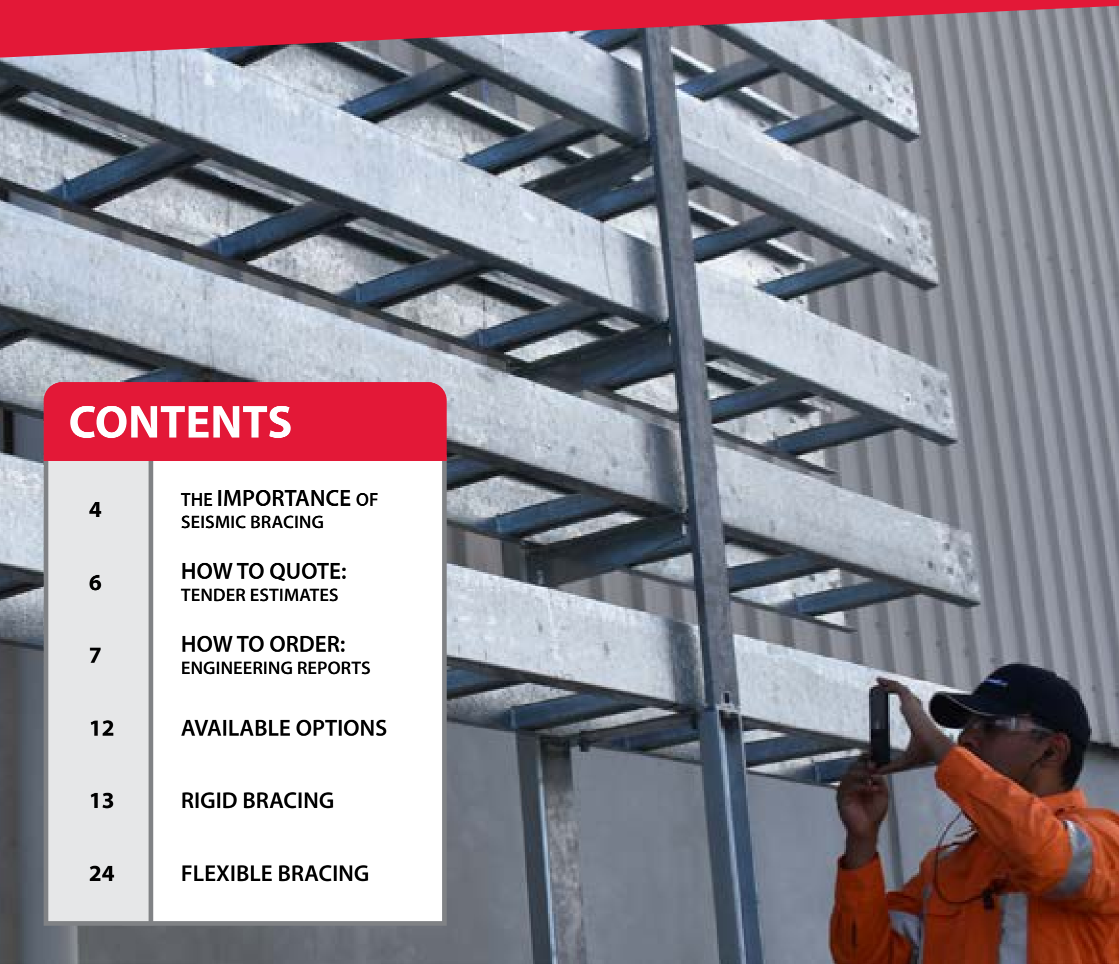
www.ezystrut.com.au

SEISMIC SOLUTIONS

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?



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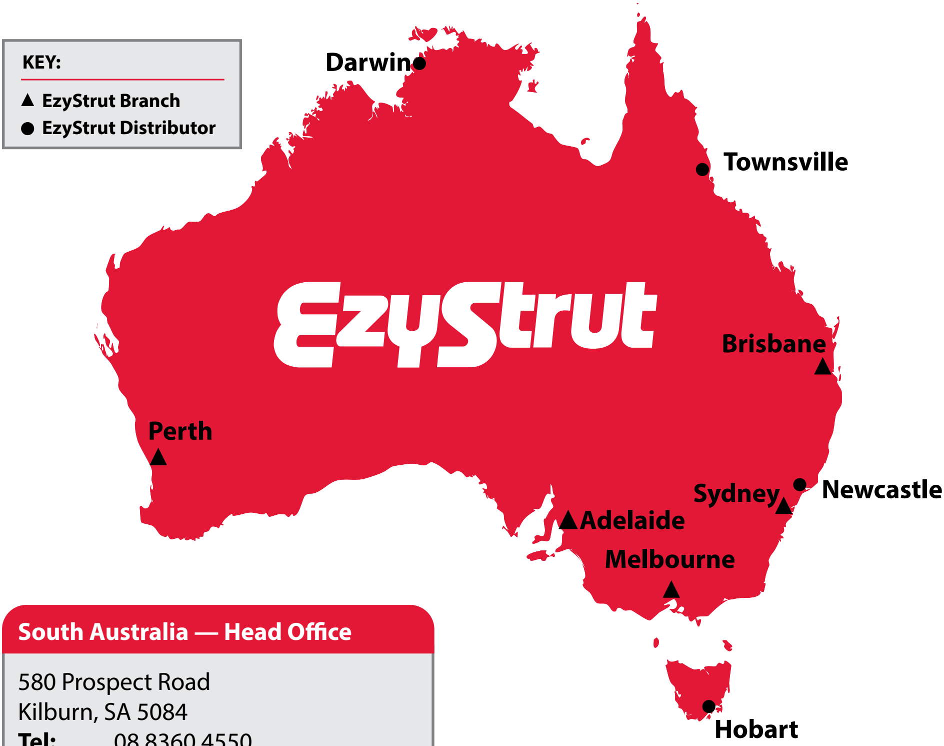

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www.**youtube**.com/@ezystrut

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.

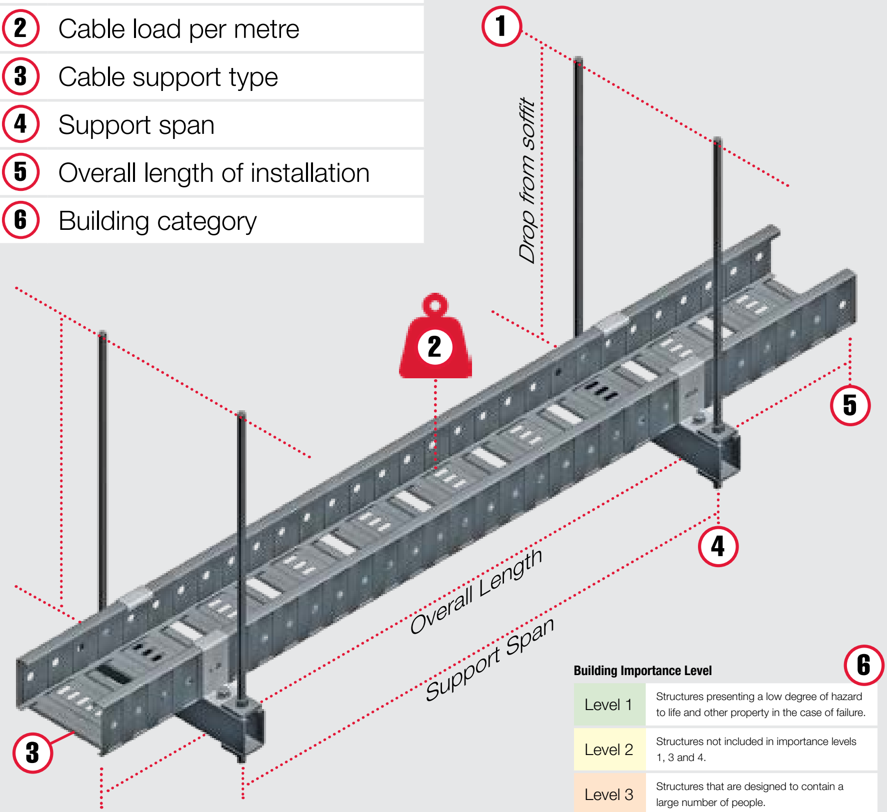
In Australia, seismic compliance is mandated by Section 8 of AS1170.4 (2007). EzyStrut offers a range of seismic solutions that comply with AS1170, and our one-stop range of seismic bracing, cable tray and ladder, pipe hangers, channel and quality fasteners takes the guesswork out of installing seismic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

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!

1. Overall drop from soffit
2. Cable load per metre
3. Cable support type
4. Support span
5. Overall length of installation
6. Building category



Building Importance Level

Level 1	Structures presenting a low degree of hazard to life and other property in the case of failure.
Level 2	Structures not included in importance levels 1, 3 and 4.
Level 3	Structures that are designed to contain a large number of people.
Level 4	Essential to post disaster recovery or associated with hazardous facilities.

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:

	Importance level of structure
	Annual probability of exceedence or probability factor (K)
	Hazard factor (Z)
	Soil class
	Total height of structure
	Maximum height above ground where system is installed
	Type of tray or ladder used
	Applied loading on tray or ladder
	Type of trapeze assembly used
	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?

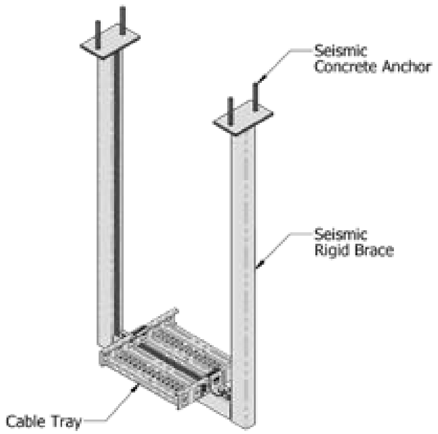
All concrete anchors should be certified for C1 or C2 loading. AS5216:2021 recommends that C2 anchors are used for all fixings in Importance Level 4 structures. For specific concrete anchor assistance for your project, please contact EzyStrut.

RIGID VS FLEXIBLE BRACING

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

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

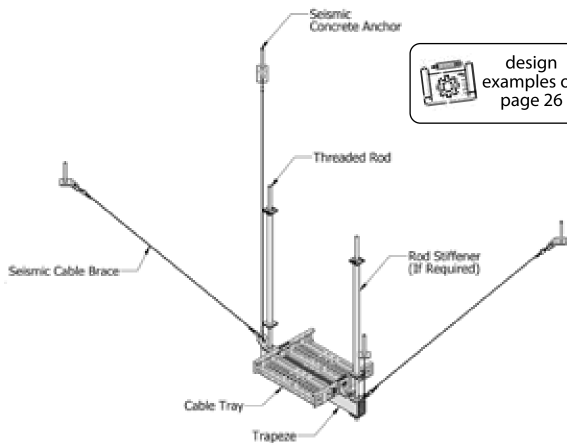
- Rigid bracket assemblies are typically produced with welded strut or hollow sections and are usually able to achieve greater spacing for transverse and logitudinal braces than flexible bracing solutions.
- Each brace resists transverse and longitudinal loads.
- Designs allow for bracing to be contained 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.

design examples on page 26



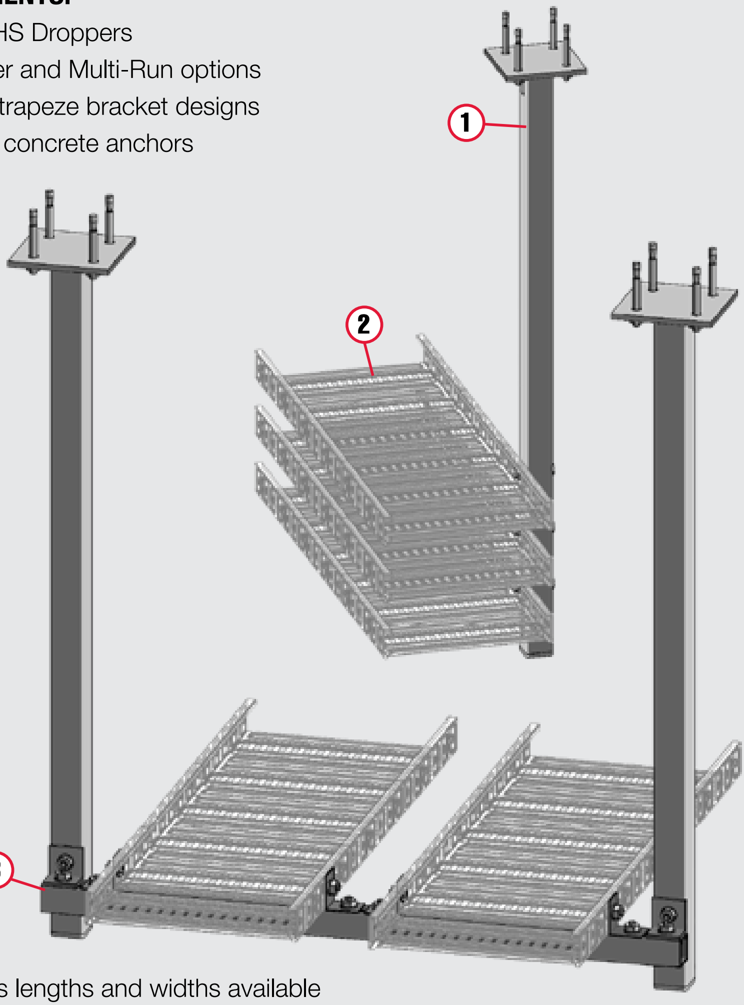
RIGID BRACING

DESIGN EXAMPLES

CABLE TRAY WITH RIGID DROPPERS

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

SEISMIC DROPPERS WITH RIGID BRACING

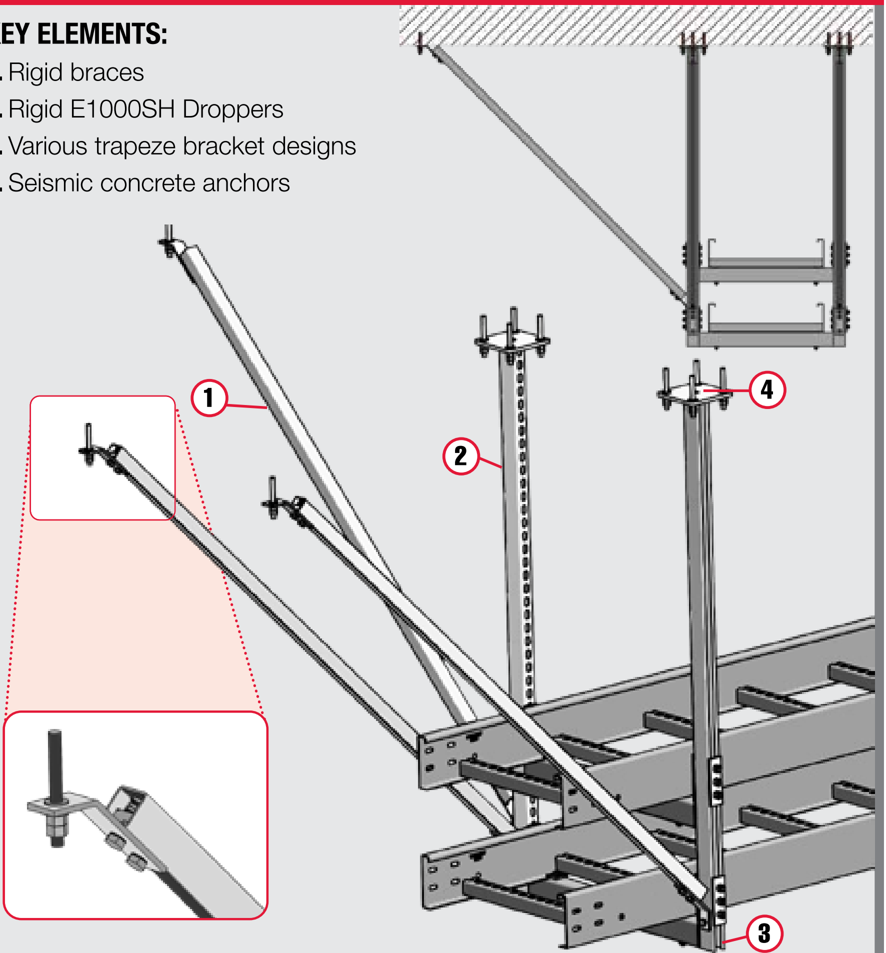
KEY ELEMENTS:

1. Rigid braces

2. Rigid E1000SH Droppers

3. Various trapeze bracket designs

4. Seismic concrete anchors



NOTES:

- Various lengths and widths available
- Suitable for heavy duty requirements
- Rigid droppers suitable for various lengths
- Clearances in all directions are required

SEISMIC TRAPEZE WITH SINGLE PURLIN BRACES

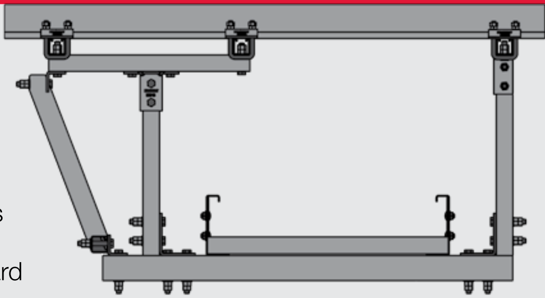
KEY ELEMENTS:

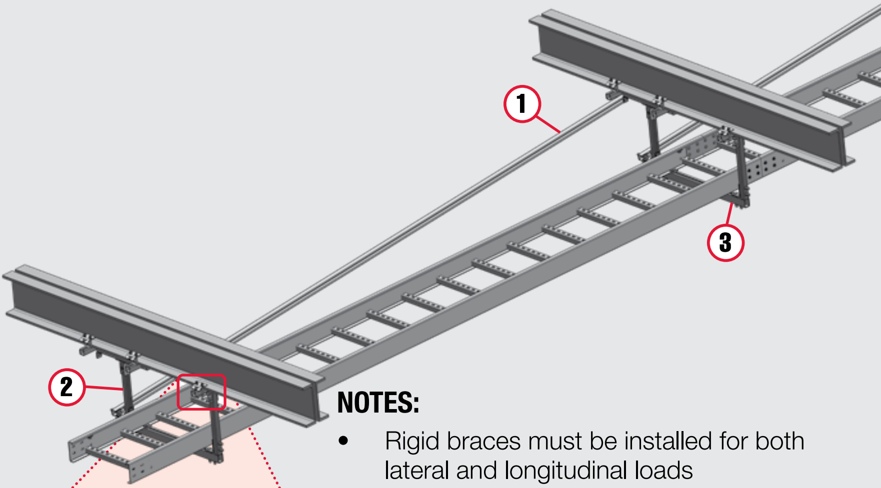
1. Rigid E1000H bracing

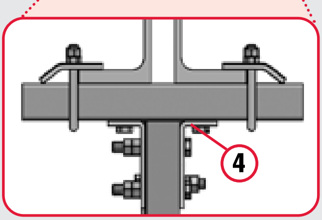
2. Rigid E1000SH Droppers

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

RIGID BRACING

DESIGN EXAMPLES

SEISMIC TRAPEZE WITH DOUBLE PURLIN BRACES

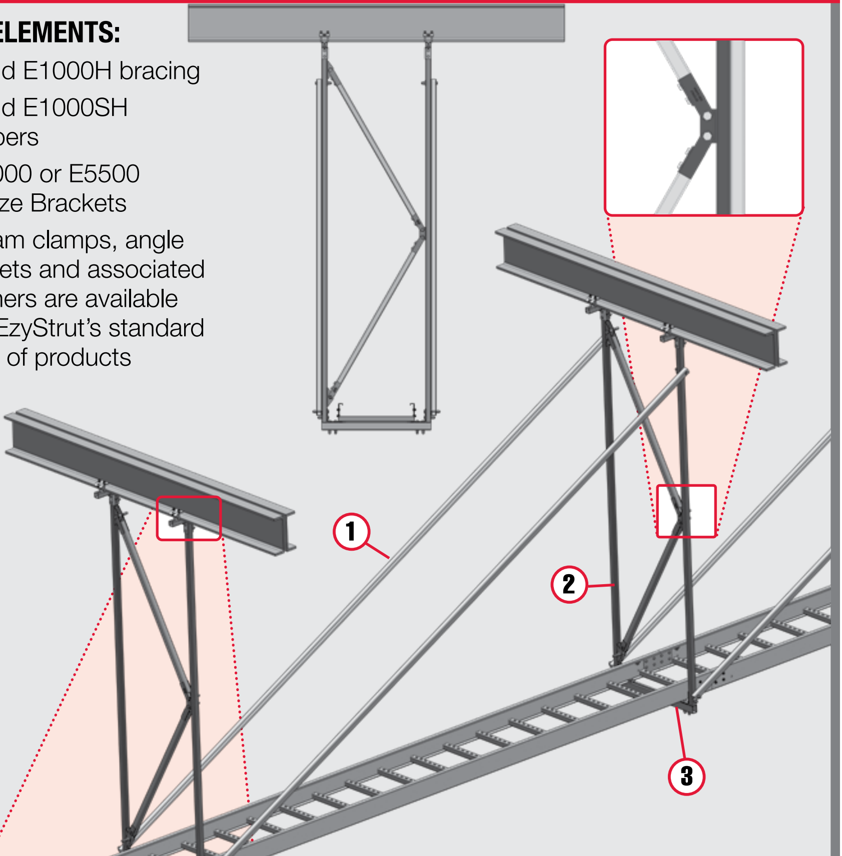
KEY ELEMENTS:

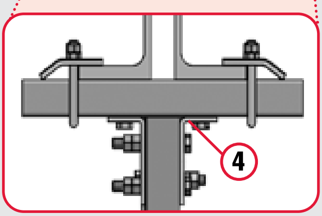
1. Rigid E1000H bracing

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:

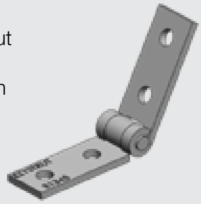
- Rigid braces must be installed for the longitudinal and transverse loads
- Bracing is installed within the footprint of the run, meaning it is less intrusive to other infrastructure and services
- Various ladder lengths and widths available
- Suits heavy duty requirements

RIGID BRACING ACCESSORIES

E1345 HINGE BRACKET

For use with EzyStrut channel bracing

Hole Diameter: 14mm

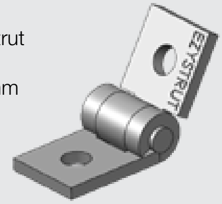


Finish	Ordering Code
HDG	E1345H
SS	E1345S

E1843 HINGE BRACKET

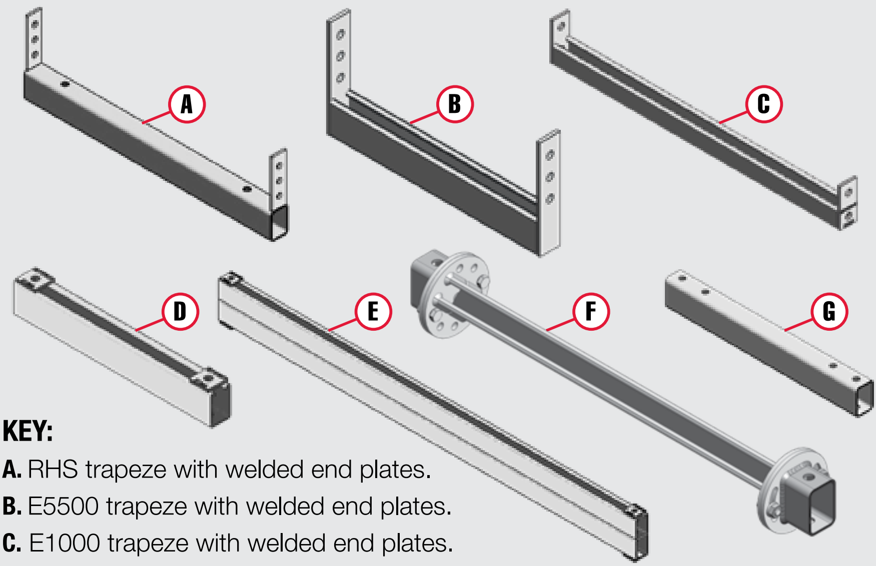
For use with EzyStrut channel bracing

Hole Diameter: 14mm



Finish	Ordering Code
HDG	E1843H
SS	E1843S

TRAPEZE BRACKETS & BRACES



KEY:

A. RHS trapeze with welded end plates.

B. E5500 trapeze with welded end plates.

C. E1000 trapeze with welded end plates.

D. E5500 trapeze with welded flat fittings.

E. E5501 back-to-back channel trapeze with with welded flat fittings.

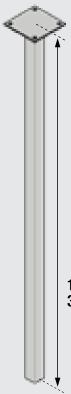
F. NEW multi-setting rotational trapeze bracket.

G. RHS trapeze with custom hole spacings.

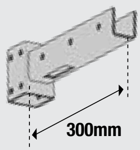
RIGID BRACING ACCESSORIES

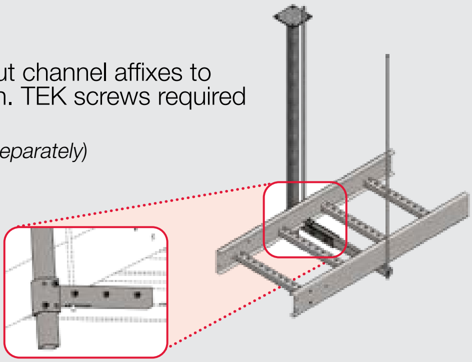
DESIGN EXAMPLES

SEISMIC POST & ARM



Post: 50x50x3mm SHS.
Arm: 300mm length.
Arm affixes to post, EzyStrut channel affixes to arm to form trapeze section. TEK screws required for installation.
(channel and TEK screws sold separately)



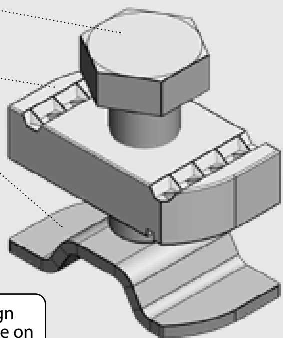


Product	Ordering Code
Seismic Post 50x50 1500mm HDG	ESP50501500H
Seismic Post 50x50 2500mm HDG	ESP50502500H
Seismic Post Arm 50x50 HDG	ESP5050AH

ROD STIFFENER CHANNEL CLAMP KIT

Allows for attachment of 41mm channel products to threaded rod.

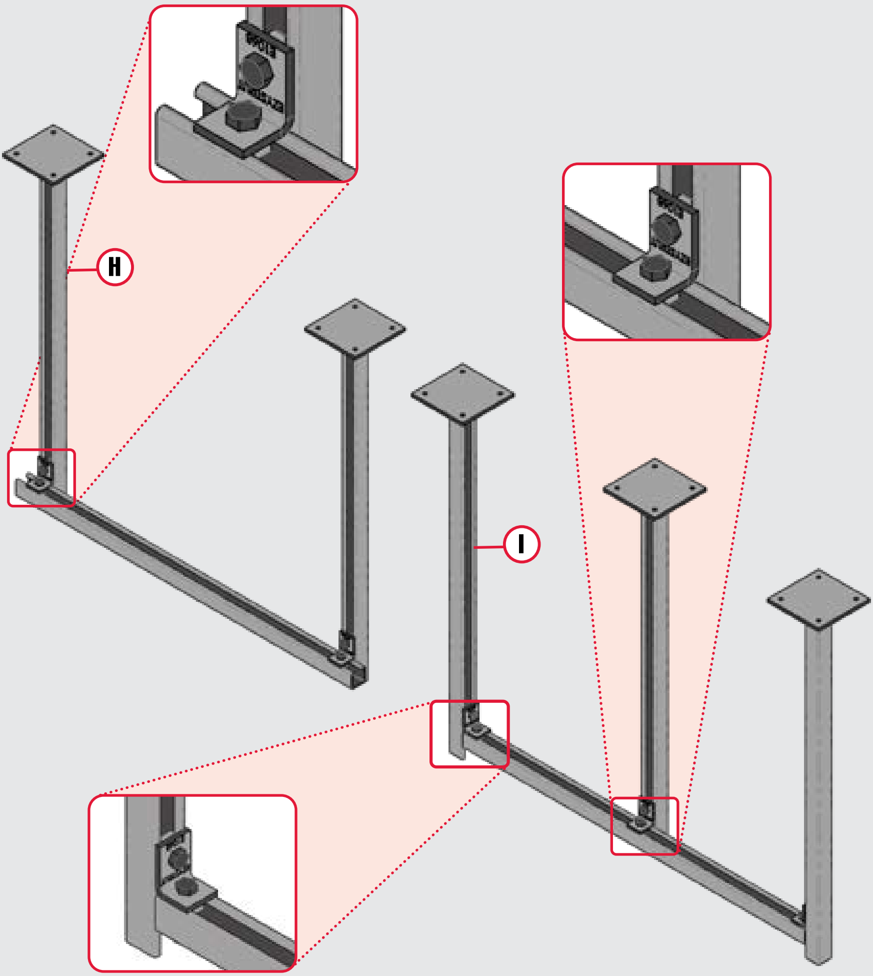
Available in Hot Dip Galvanised or Stainless Steel GR316.



Item	HDG	SS
Rod Stiffener Channel Clamp Kit	ELS2485H	ELS2485S

design example on page 27

TRAPEZE AND DROPPER ASSEMBLIES



KEY:

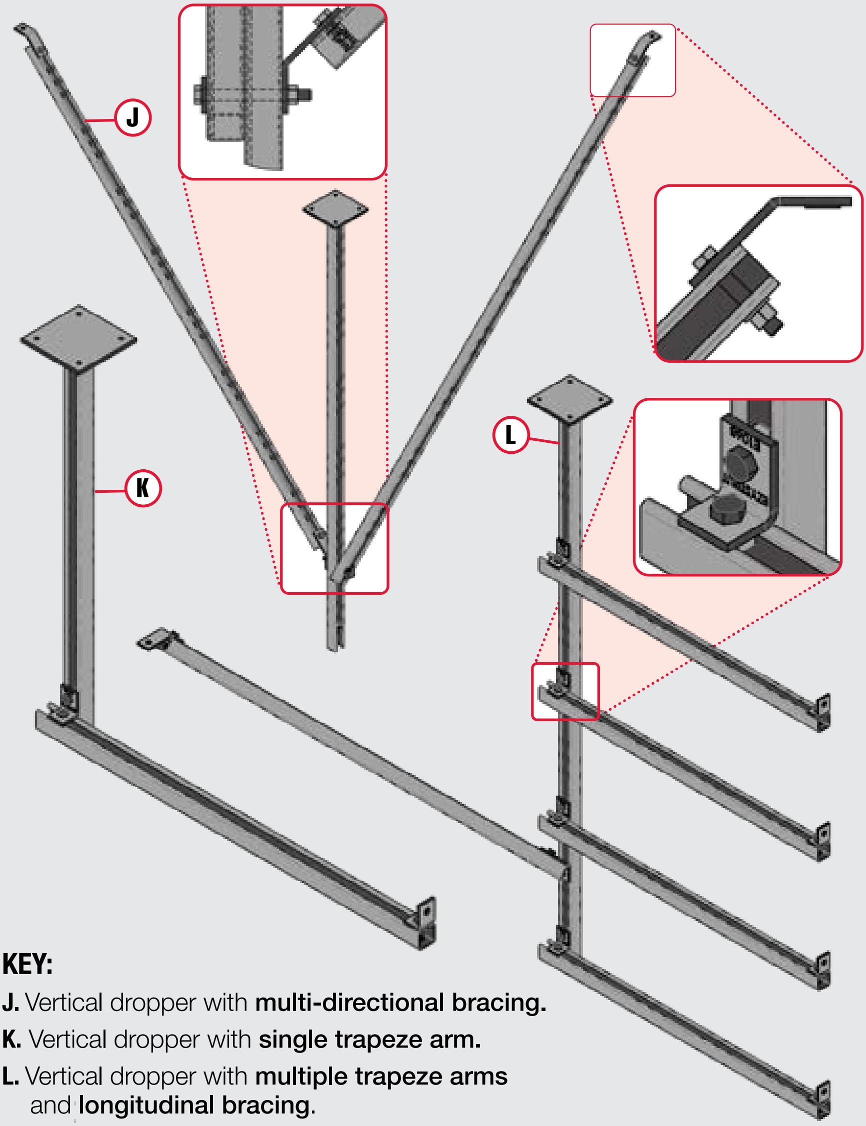
H. Rigid trapeze with **twin** vertical droppers.

I. Rigid trapeze with **triple** vertical droppers.

RIGID BRACING ACCESSORIES

DESIGN EXAMPLES

TRAPEZE AND DROPPER ASSEMBLIES



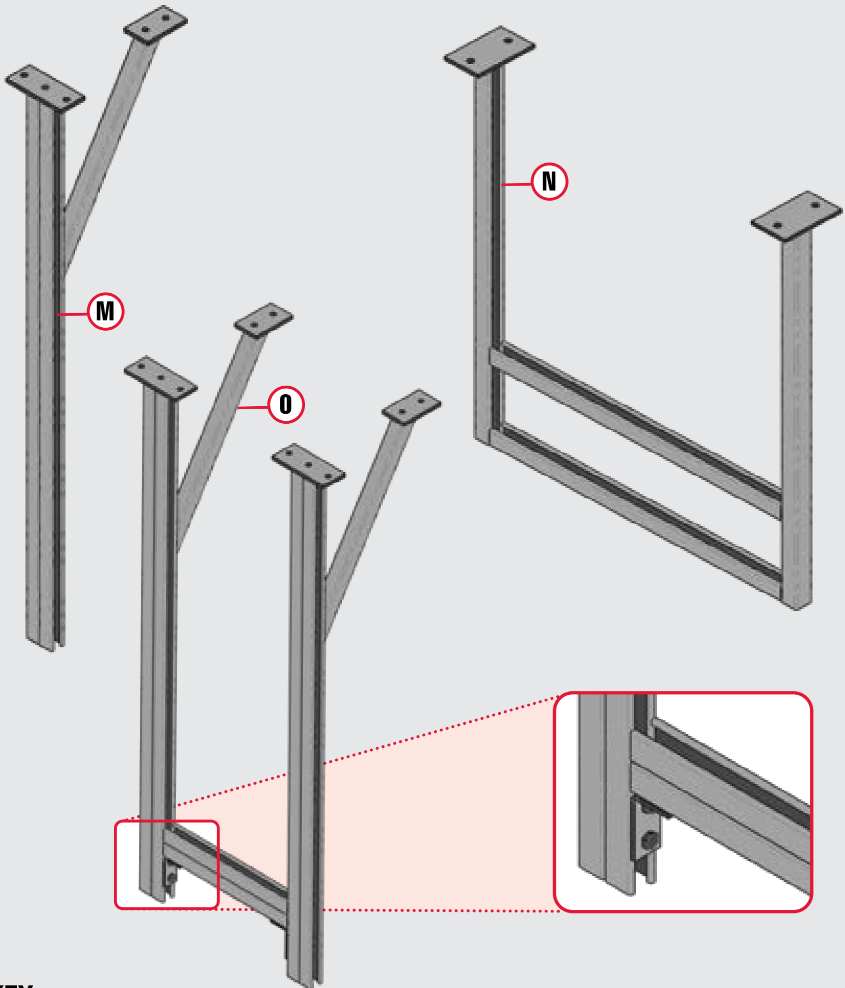
KEY:

J. Vertical dropper with **multi-directional bracing.**

K. Vertical dropper with **single trapeze arm.**

L. Vertical dropper with **multiple trapeze arms** and **longitudinal bracing**.

TRAPEZE AND DROPPER ASSEMBLIES



KEY:

M. Rigid dropper with **longitudinal** bracing.

N. Rigid **multi-tiered** trapeze.

O. Rigid trapeze with **longitudinal** bracing.

RIGID BRACING ACCESSORIES

DESIGN EXAMPLE

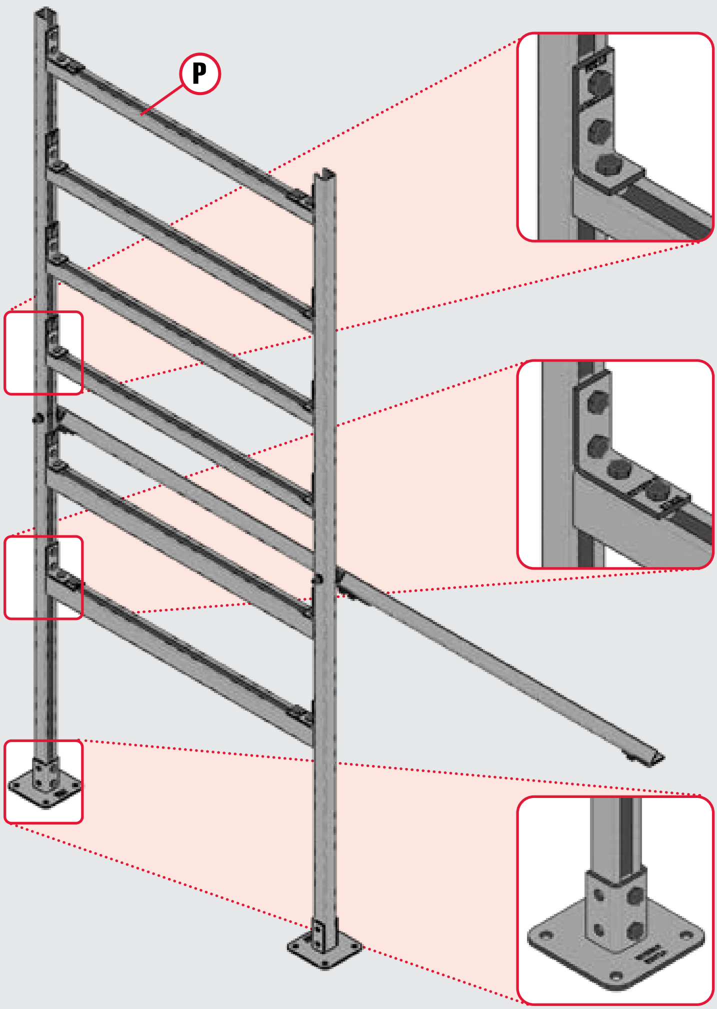
INTRODUCTION

TECHNICAL

RIGID

FLEXIBLE

FREE STANDING FRAME ASSEMBLIES



KEY:

P. Multi-tiered floor frame with multi-directional bracing.

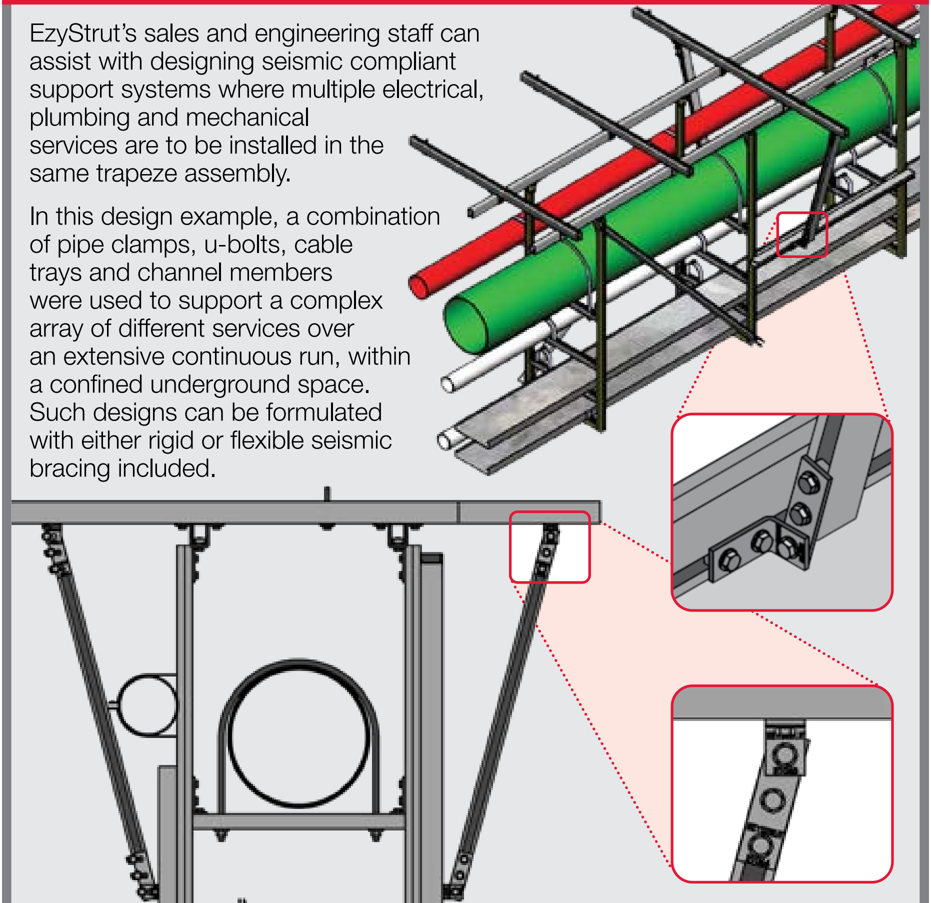
MULTIPLE SERVICES

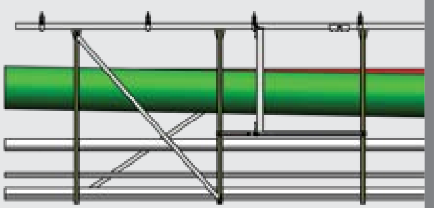
DESIGN EXAMPLES

SEISMIC COMPLIANT FRAME

EzyStrut's sales and engineering staff can assist with designing seismic compliant support systems where multiple electrical, plumbing and mechanical services are to be installed in the same trapeze assembly.

In this design example, a combination of pipe clamps, u-bolts, cable trays and channel members were used to support a complex array of different services over an extensive continuous run, within a confined underground space. Such designs can be formulated with either rigid or flexible seismic bracing included.





INTRODUCTION

TECHNICAL

RIGID

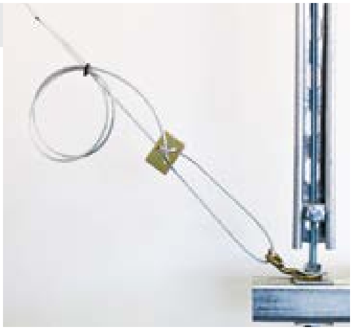
FLEXIBLE

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?



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.

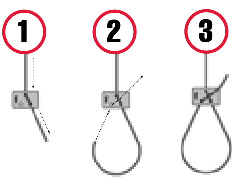
Unlike other products on the market, the V.LOCK plate allows for easy inspection of both the wire and connectors following a seismic incident or during regular maintenance regimes.

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



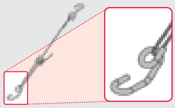
1. Thread wire through the rear of the top hole, down through the hole on the right hand side.

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.

V.LOCK BRACE WITH RETROFIT HOOK

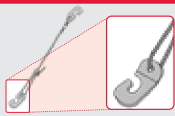
- Fast, easy, tool-free installation
- Versatile retro-fit hook
- 3mm wire suits most applications



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

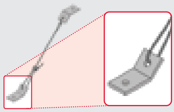
- Fast, easy, tool-free installation
- Secure retro-fit angle-bracket
- 3mm wire suits most applications



Wire Size	Length	Description	Part Number
3mm ULS: 485kg	1m	V.Lock Seismic Brace 3mm x 1m w/retro angle bracket ZP	V31RAB45
	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
	4m	V.Lock Seismic Brace 3mm x 4m w/retro angle bracket ZP	V34RAB45
	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
5mm ULS: 1046kg	1m	V.Lock Seismic Brace 5mm x 1m w/angle bracket ZP	V51AB45
	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
	4m	V.Lock Seismic Brace 5mm x 4m w/angle bracket ZP	V54AB45
	6m	V.Lock Seismic Brace 5mm x 6m w/angle bracket ZP	V56AB45
	10m	V.Lock Seismic Brace 5mm x 10m w/angle bracket ZP	V510AB45

Wire Size	Length	Description	Part Number
6mm ULS: 1489kg	1m	V.Lock Seismic Brace 6mm x 1m w/angle bracket ZP	V61AB45
	2m	V.Lock Seismic Brace 6mm x 2m w/angle bracket ZP	V62AB45
	3m	V.Lock Seismic Brace 6mm x 3m w/angle bracket ZP	V63AB45
	4m	V.Lock Seismic Brace 6mm x 4m w/angle bracket ZP	V64AB45
	6m	V.Lock Seismic Brace 6mm x 6m w/angle bracket ZP	V66AB45
	10m	V.Lock Seismic Brace 6mm x 10m w/angle bracket ZP	V610AB45

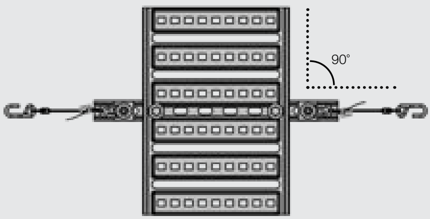
Note: Hot Dip Galvanised and Stainless Steel options are available by made-to-order special request

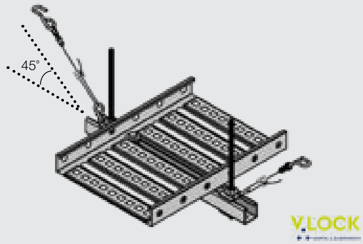
FLEXIBLE BRACING

DESIGN EXAMPLES

CABLE TRAY WITH TWO-WAY BRACING

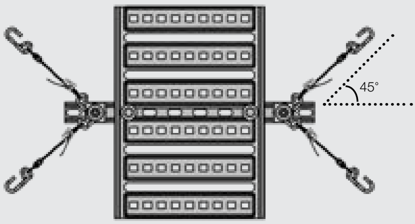
Suitable for installations where transverse bracing is required.

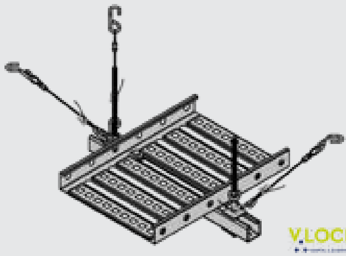




CABLE TRAY WITH FOUR-WAY BRACING

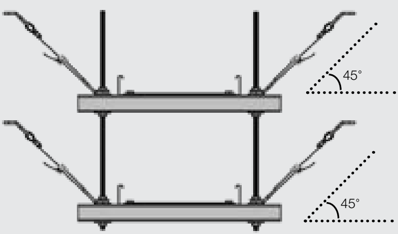
Suitable for installations where transverse and longitudinal bracing is required.

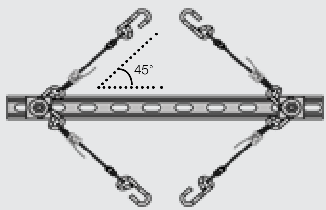




OTHER BRACING CONFIGURATION EXAMPLES

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

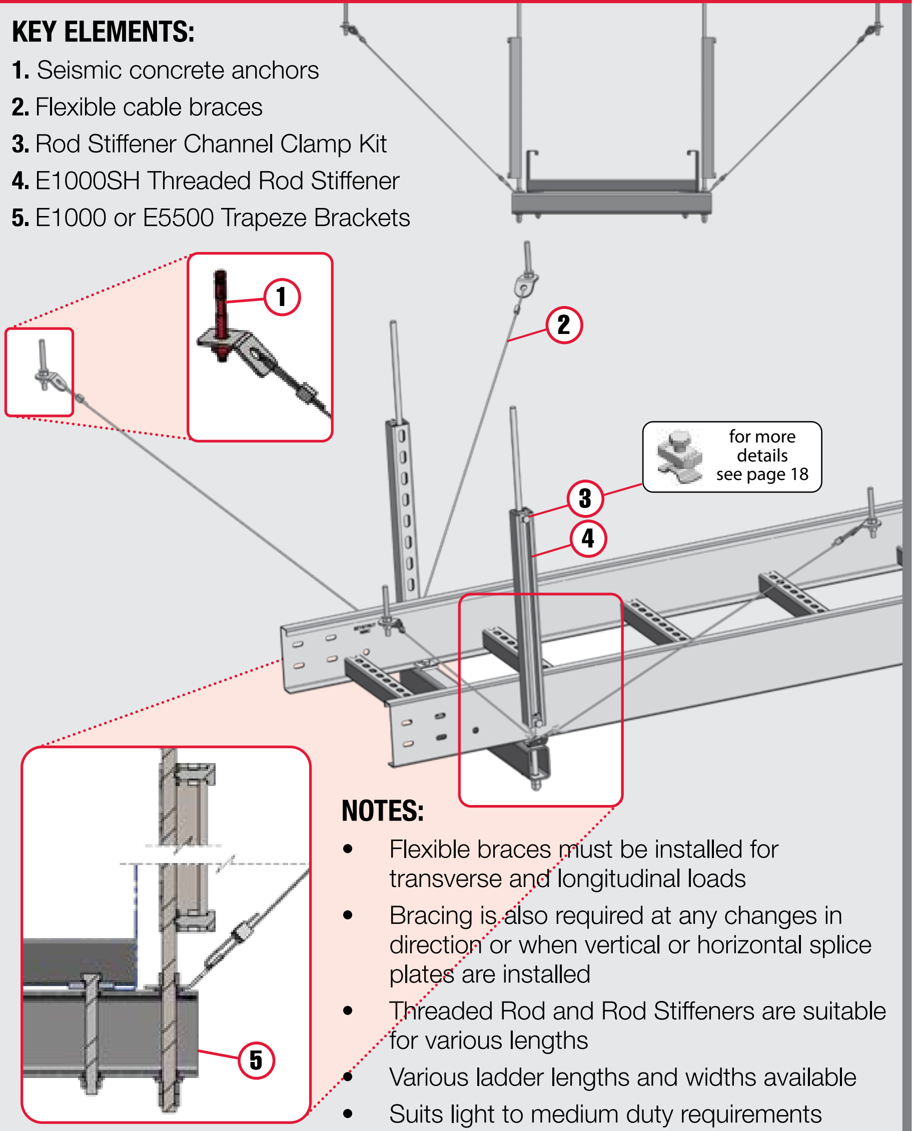




CABLE LADDER WITH FLEXIBLE BRACING

KEY ELEMENTS:

1. Seismic concrete anchors
2. Flexible cable braces
3. Rod Stiffener Channel Clamp Kit
4. E1000SH Threaded Rod Stiffener
5. E1000 or E5500 Trapeze Brackets



NOTES:

- Flexible braces must be installed for transverse and longitudinal loads
- Bracing is also required at any changes in direction or when vertical or horizontal splice plates are installed
- Threaded Rod and Rod Stiffeners are suitable for various lengths
- Various ladder lengths and widths available
- Suits light to medium duty requirements

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