

# HEIGHT SAFETY



PT. MITRA BUILD SEJAHTERA

## WHO ARE WE

We are determined and passionate in providing a proper solution for fall arrest systems to all our clients. All of our systems are EN 795 certified with a 10-year material warranty as part of our service.

Offering turnkey solutions from budgeting, layout design, installation and training, we provide the most cost effective solution based on your requirements while ensuring safety of the building.

In partnership with Akrobat Ltd., we are able to provide solutions and proposals to our clients within the time frame to meet their project deadline.



## VISION

Our vision is to introduce fall protection systems in Indonesia with various types of requirements for different applications by means of continuous product upgrades and support to our customers.



## MISSION

Our mission is to ensure that every roof has a fall arrest system so that your workers can focus on their work without worrying about their safety and safely return to their home.

Working from height safely and confidently is our top priority!



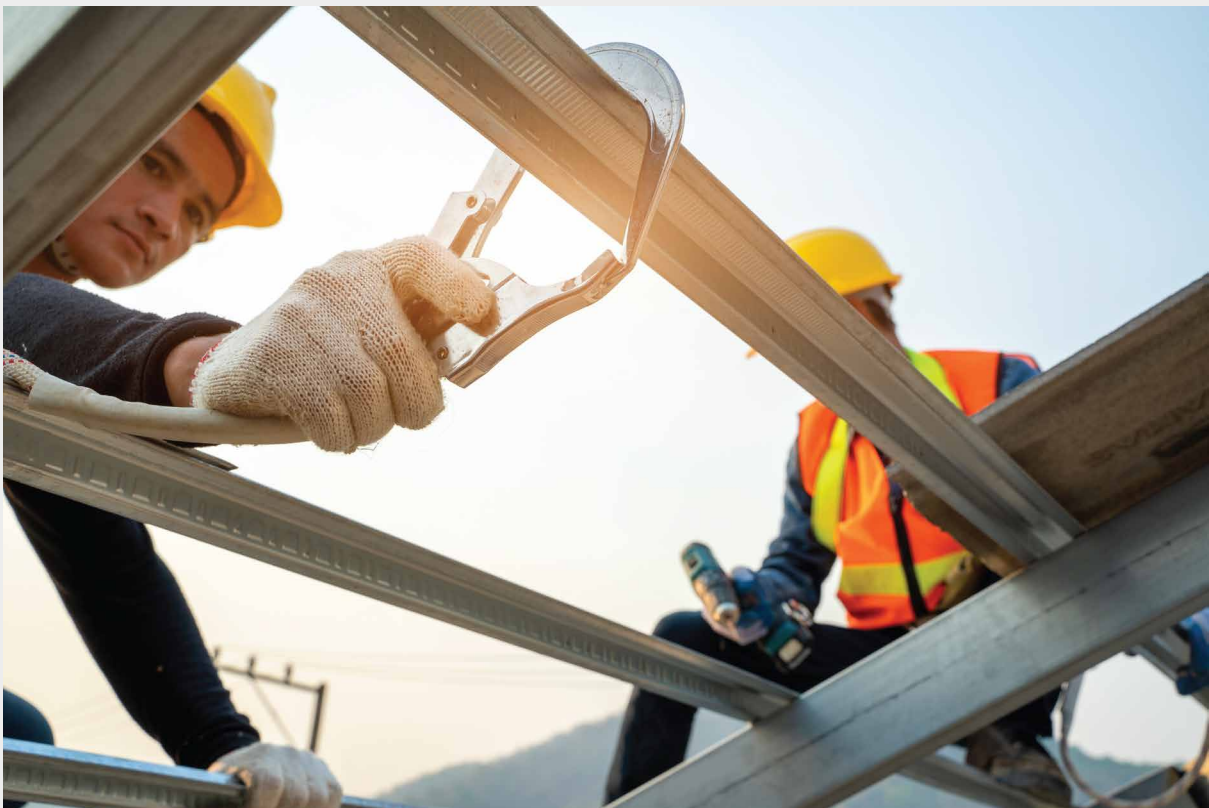
## FACTS

Safety has always been one of our main concerns especially when it comes to constructions due to the dangerous situations/environments that we are dealing with every day.

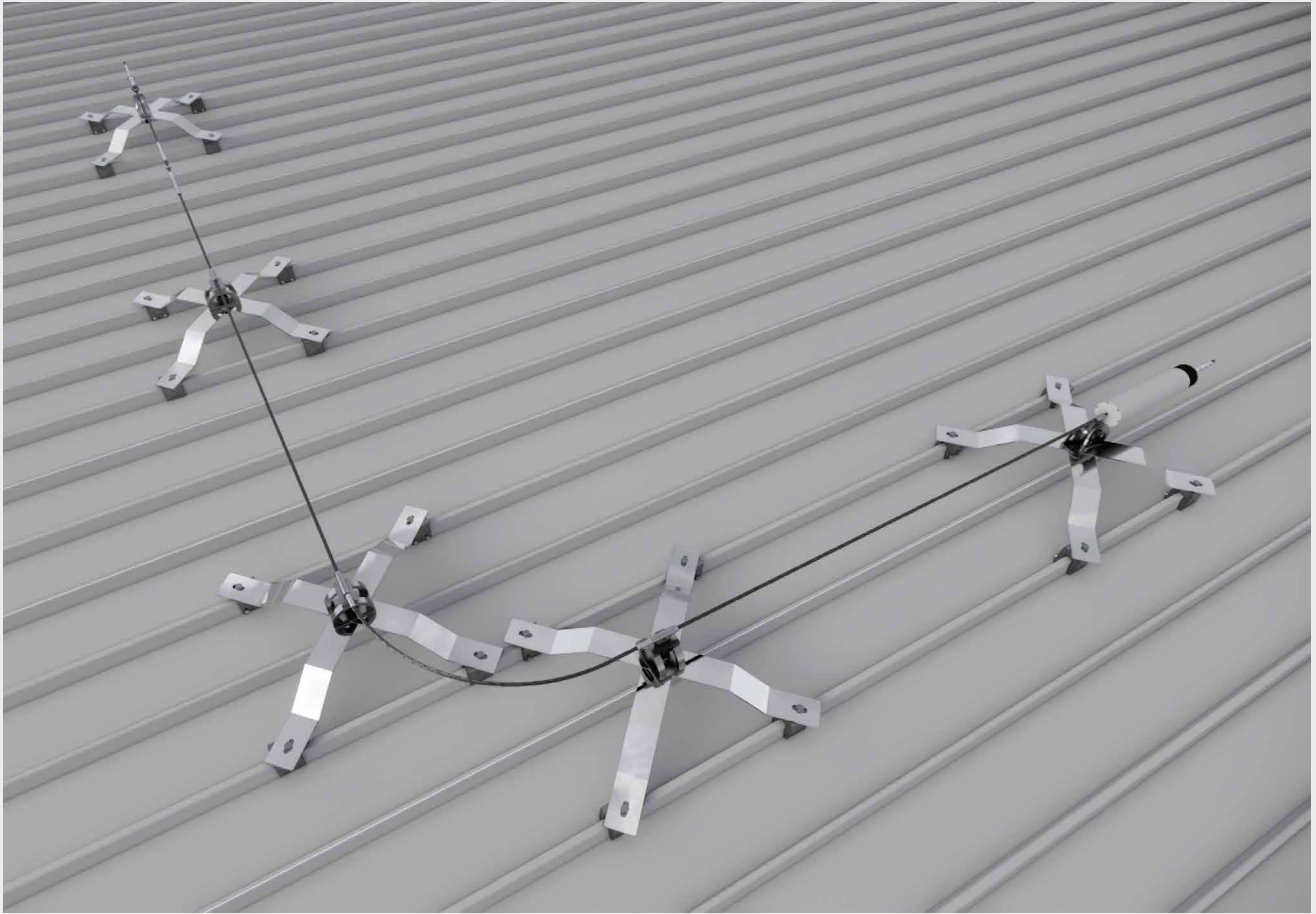
Sadly, it is also one that most people tend to overlook without knowing the real consequences.

- According to statistics, falls are the second leading cause of accidental or unintentional injury death worldwide.
- Each year an estimated of 646.000 individuals die from falls globally.
- 37.3 million falls are severe enough that require medical attention occur each year.

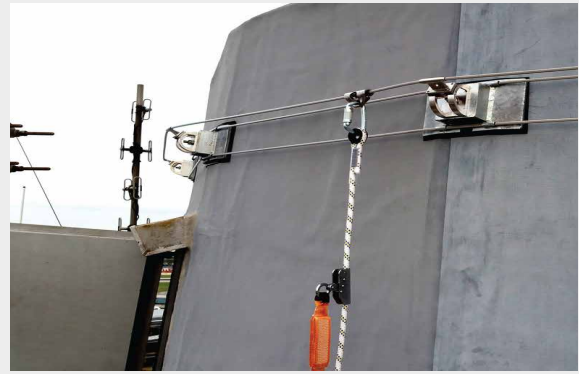
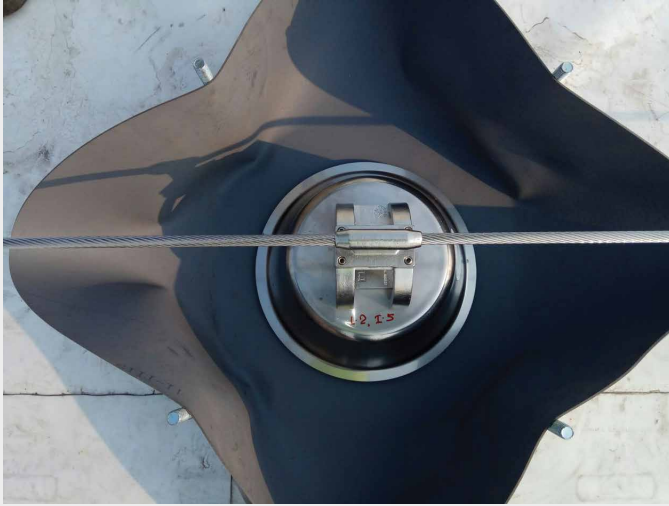
Source: World Health Organization 2018

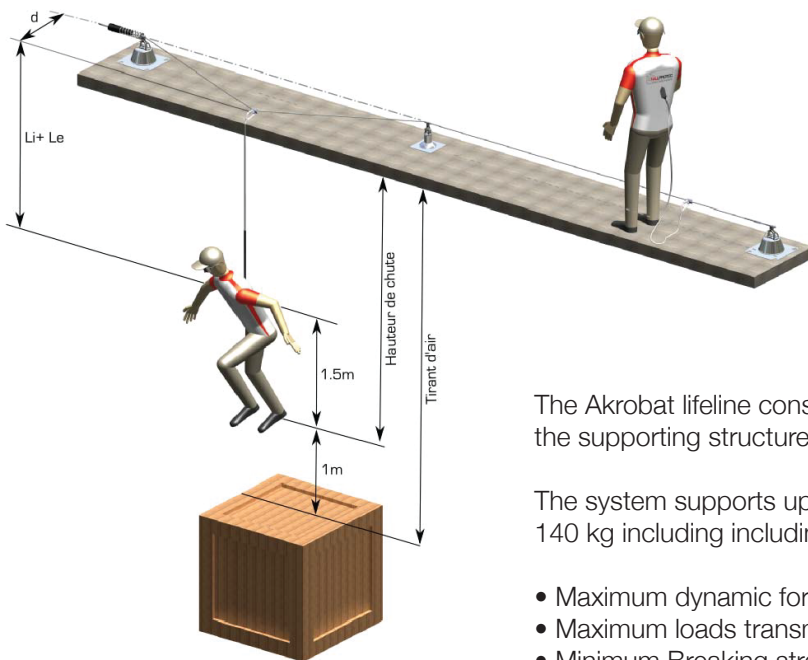
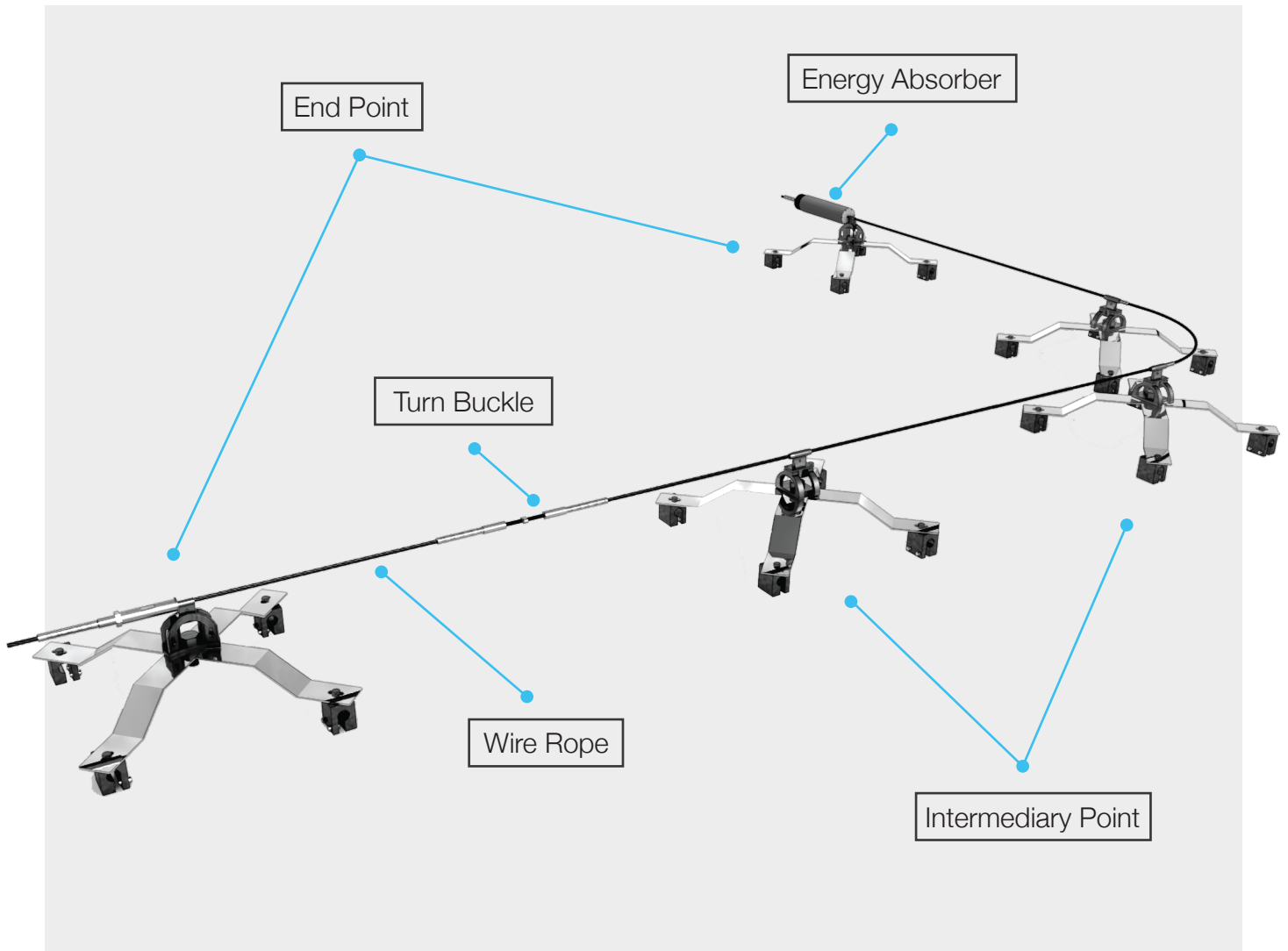


Akroline is a fall arrest/restraint system designed to prevent or stop a person from falling and minimize injuries in case of a fall by means of an integrated absorber system.



Akrobat Lifeline is also a continuous system that allows the worker to go over the full length of the lifeline at each intermediate point. Our intermediary post is the only product in the market today that has an integrated absorber and re-settable after a fall. This patented design allows a more effective safety system while reducing overall cost in the long run.





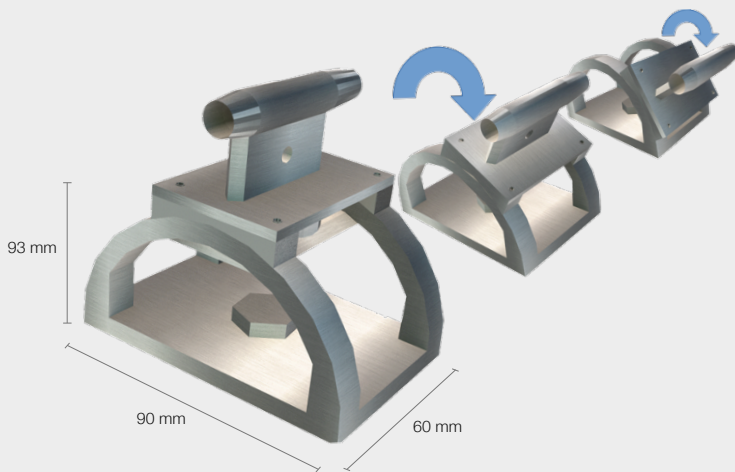
The Akrobat lifeline enables the user to move freely to any point on the lifeline where there is a risk of falling without the need to detach themselves from the cable at any time.

The user wears a harness according to EN 361 fitted with a lanyard and a connector according to EN 362 and is attached to the life line using a glider.

The Akrobat lifeline consists of a stainless steel wire rope fixed onto the supporting structure by anchors placed regularly along the cable

The system supports up to 3 persons, each with a weight of up to 140 kg including including tools or any other carrying items.

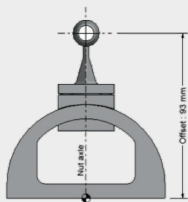
- Maximum dynamic forces exerted on the user during a fall : 6 kN
- Maximum loads transmitted to the structure : 10 kN
- Minimum Breaking strength : 23 kN



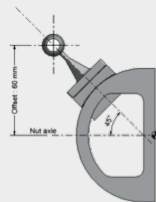
The intermediate bracket has an adjustable absorber (top part) which can be readjusted back to its normal position after the fall. Conventional systems require the absorber to be replaced after usage which causes unexpected cost and downtime.

**KN** 6 kN

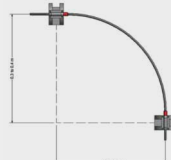
~~KN~~ 15 kN



1. Ground (Vertical)



2. Wall (45°)

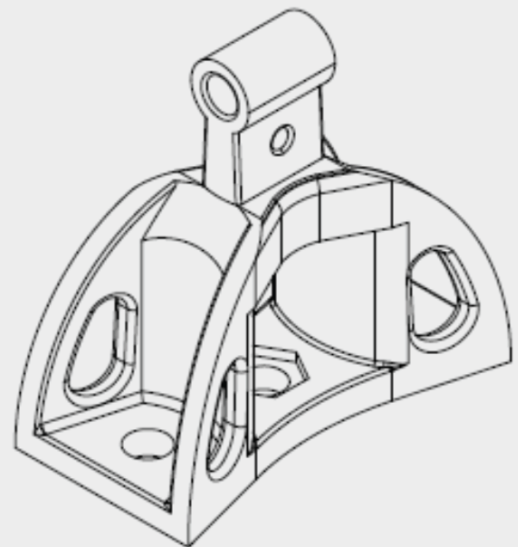


Curve on ground (LDV004)

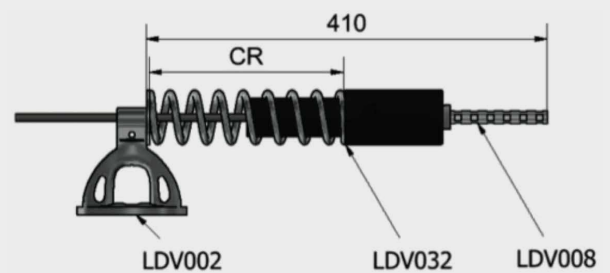
The end anchor is equipped with an energy absorber which reduces the force transmitted to the host structure in case a fall. The spring prevents an overloading in case of large temperature variation.

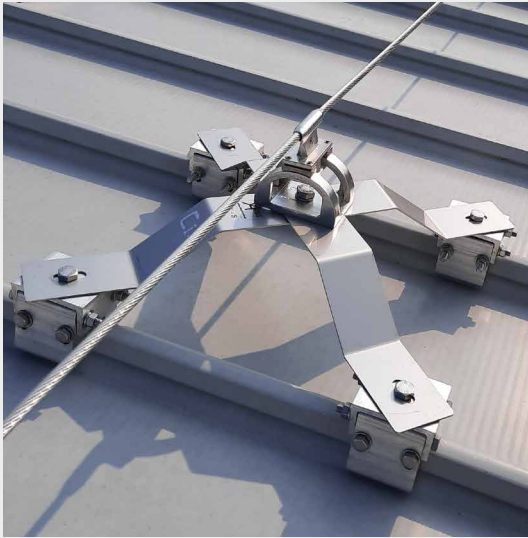
**KN** 18.5 kN

~~KN~~ > 50 kN



Load : length of spring	Compression
0 kg: 115mm	0 mm
50 kg: 106 mm	9 mm
100 kg: 101 mm	14 mm
150 kg: 094 mm	21 mm
200 kg: 087 mm	28 mm
220 kg: 082 mm	33 mm





Clamp



Rivet



Chemical Fixing



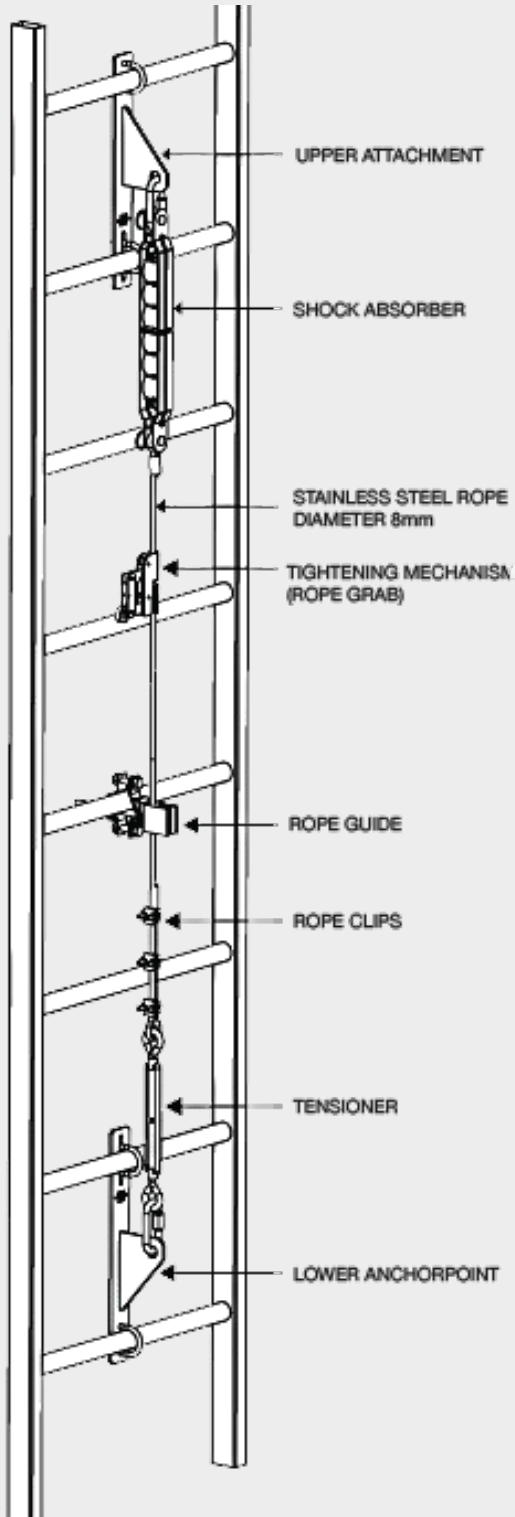
Membrane



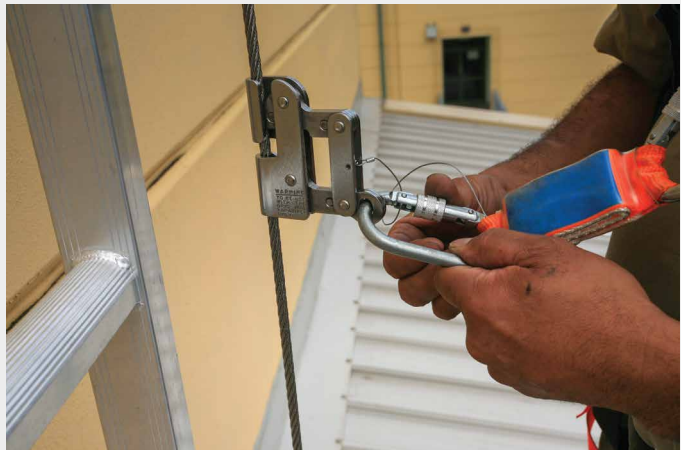
Bracket Support



The vertical lifeline provides convenience and reliable fall protection for workers when they use the vertical façade ladders and masts.



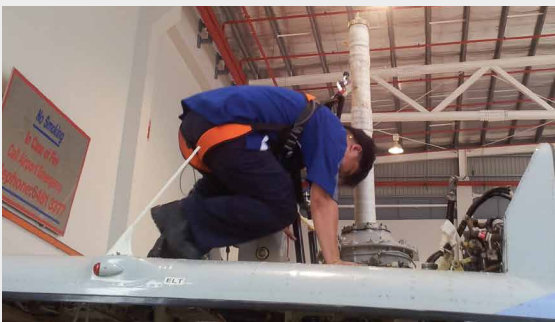
The vertical climbing system can be permanently installed to a ladder or other vertical structure that requires frequent access. It provides a safe, functional and practical means of access and egress.



A removable fall traveller is coupled to an 8 mm Stainless Steel cable and terminated at the top by a cable ferrule and cable clamps at the bottom.

There is an energy absorber fitted to eliminate the shock in the event of a fall.





**SPECIAL FEATURES:**

- Non-deformable absorbers that would limit the load brought to the structure in case of fall.
- 8 mm stainless steel wire rope with higher tension capability to minimize the deflection in case of a fall.
- Retractable blocks are installed on pulleys and follow the workers' movements even at a height of more than 20 m.

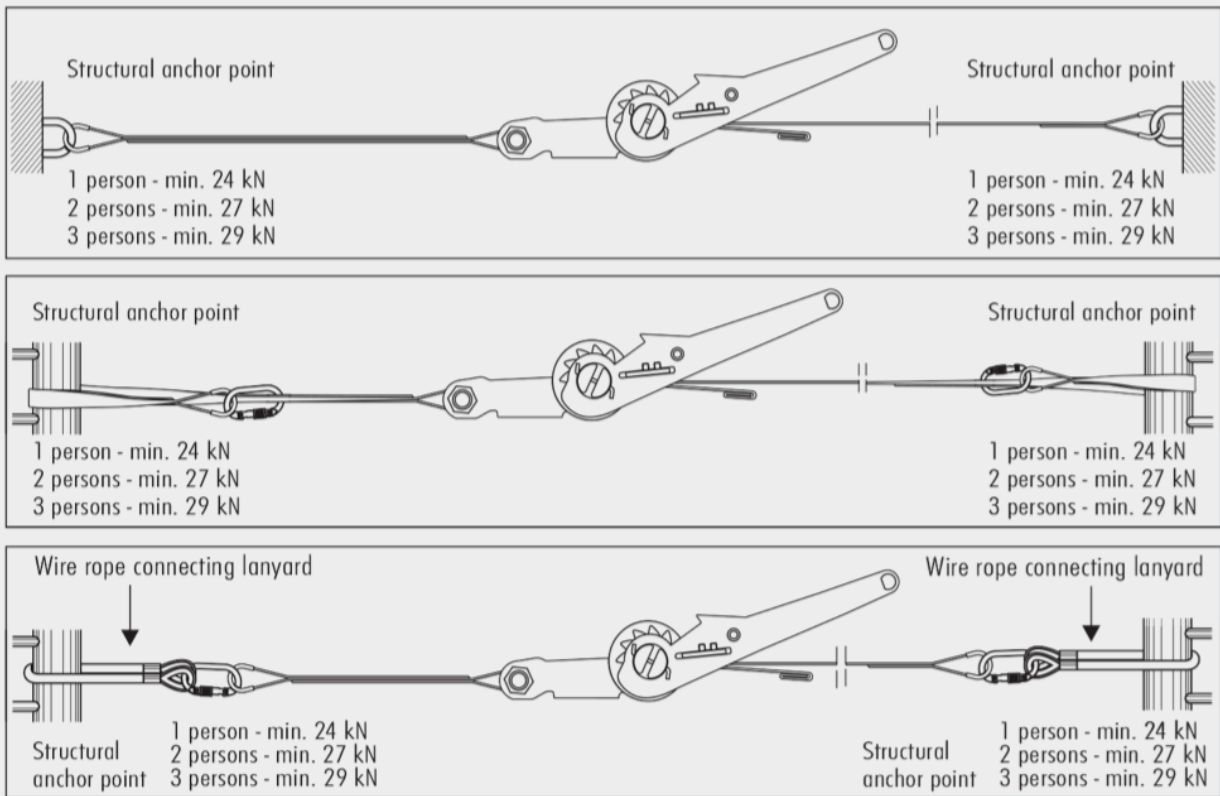


Akrobat Temporary Lifeline can be used during construction. It is normally attached to vertical structures or pre-installed anchor points.

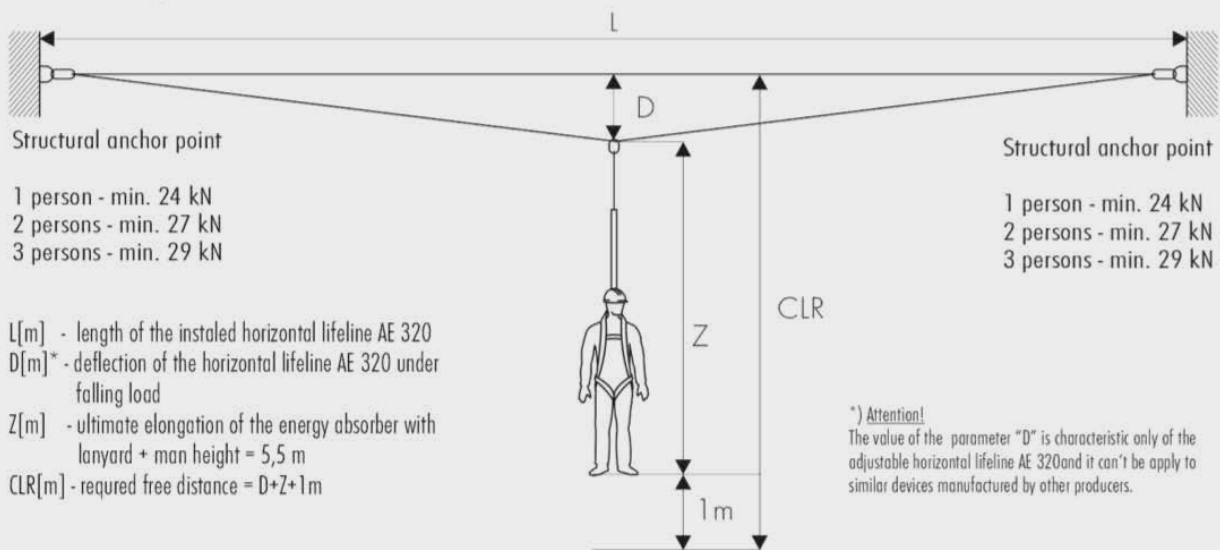
#### FEATURES:

- Polyester webbing diameter 16 mm.
- Tensioner galvanized steel.
- Two steel snap hooks AZ060 and transport bag.
- Made in Europe



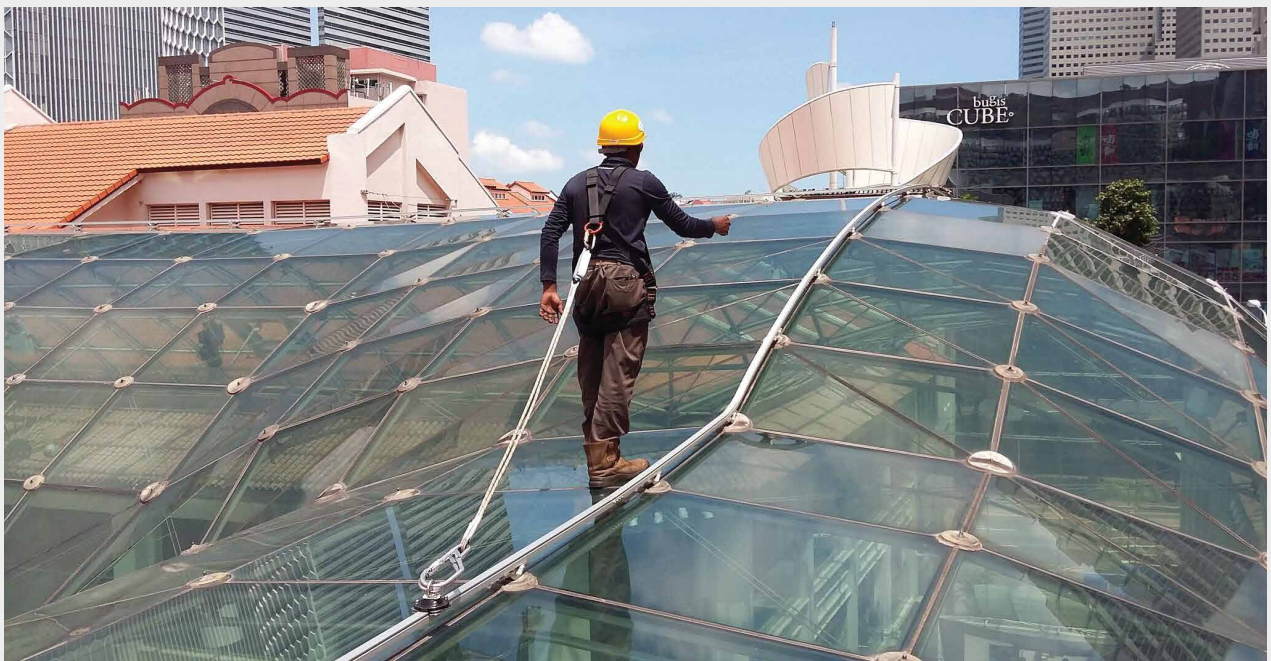


Two anchors are required for this system



Number of persons	L									
	5 m		7 m		10 m		15 m		20 m	
	D [m]	F [kN]	D [m]	F [kN]	D [m]	F [kN]	D [m]	F [kN]	D [m]	F [kN]
1	0,65	24,00	0,91	24,00	1,30	18,00	1,94	24,00	2,59	24,00
2	0,68	27,00	0,96	27,00	1,37	20,00	2,05	27,00	2,73	27,00
3	0,72	29,00	1,00	29,00	1,43	29,00	2,15	29,00	2,86	29,00

Akrorail, an abseiling (repelling) system, is a system where a person descends in a controlled manner vertically by way of a rope. It can be also be used as just a fall arrest system. The main component is made from anodized aluminum alloy (Al Mg Si 0.5) that is capable of withstanding a harsh marine environment without rusting.



Glider

Carabiner

Akrorail can be installed on contoured roofs with different elevations especially over skylights with a height extended bracket. Coloured rails are also available to match the façade of the building.

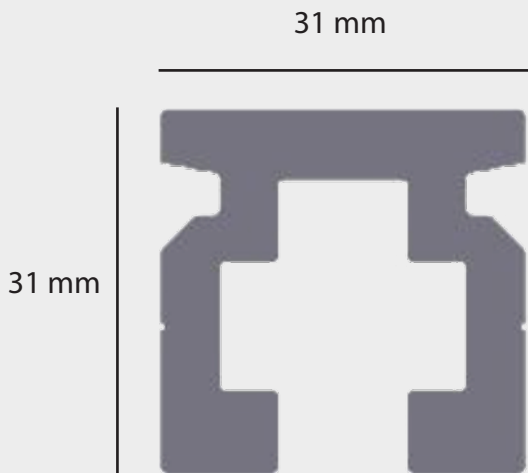


### TECHNICAL SPECIFICATIONS

- Length of each rail: 3 m
- Maximum deflection: 30 cm
- Minimum thickness of the fixing structure: 8 mm
- Maximum angle: 15°

**KN** 7 kN

**KN** > 15 kN

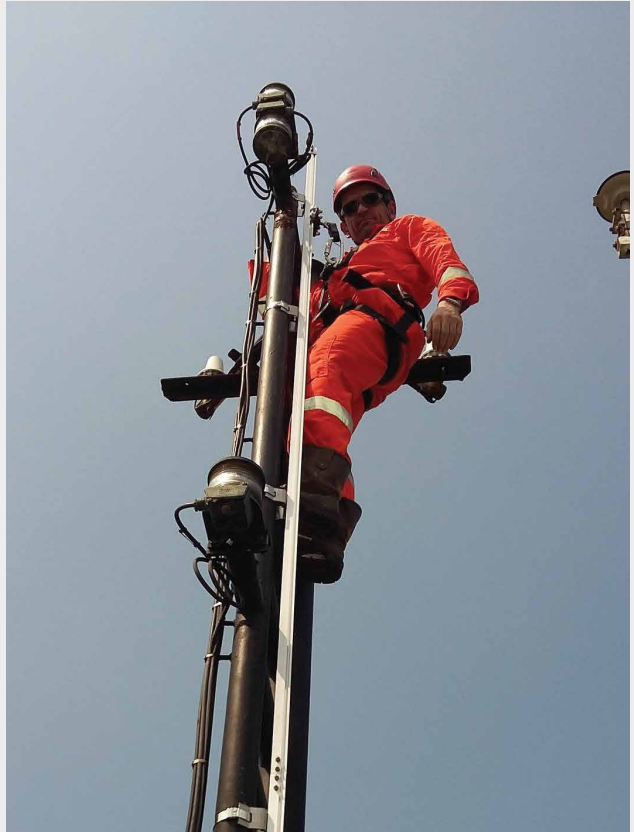


Its small rectangular shape of 31 by 31 mm makes it versatile and lightweight to be installed on all types of roofs such as metal, glass, and sandwich panel.

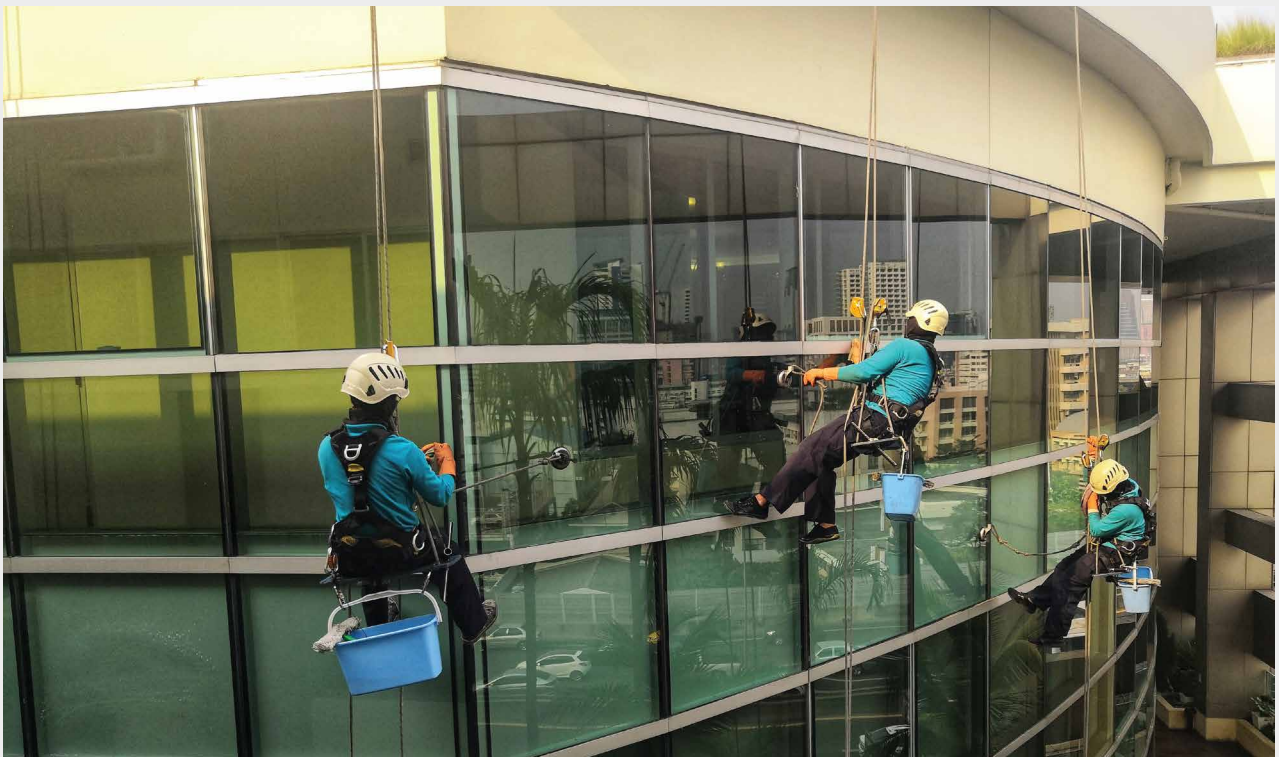
A range of different types of trolleys can be used in conjunction with Akrorail depending on the requirement and budget, with unique functions that makes it a perfect solution for abseiling applications



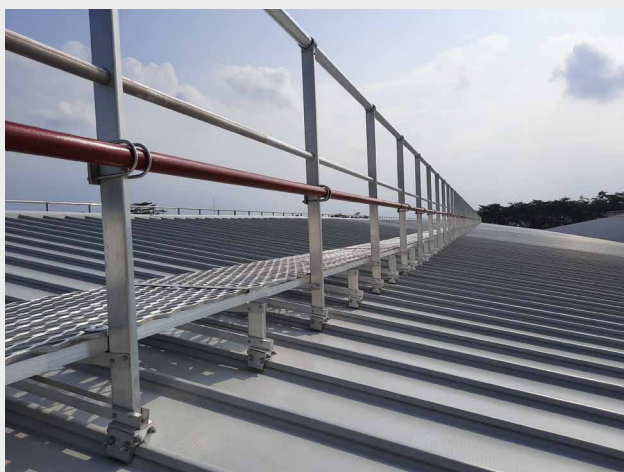
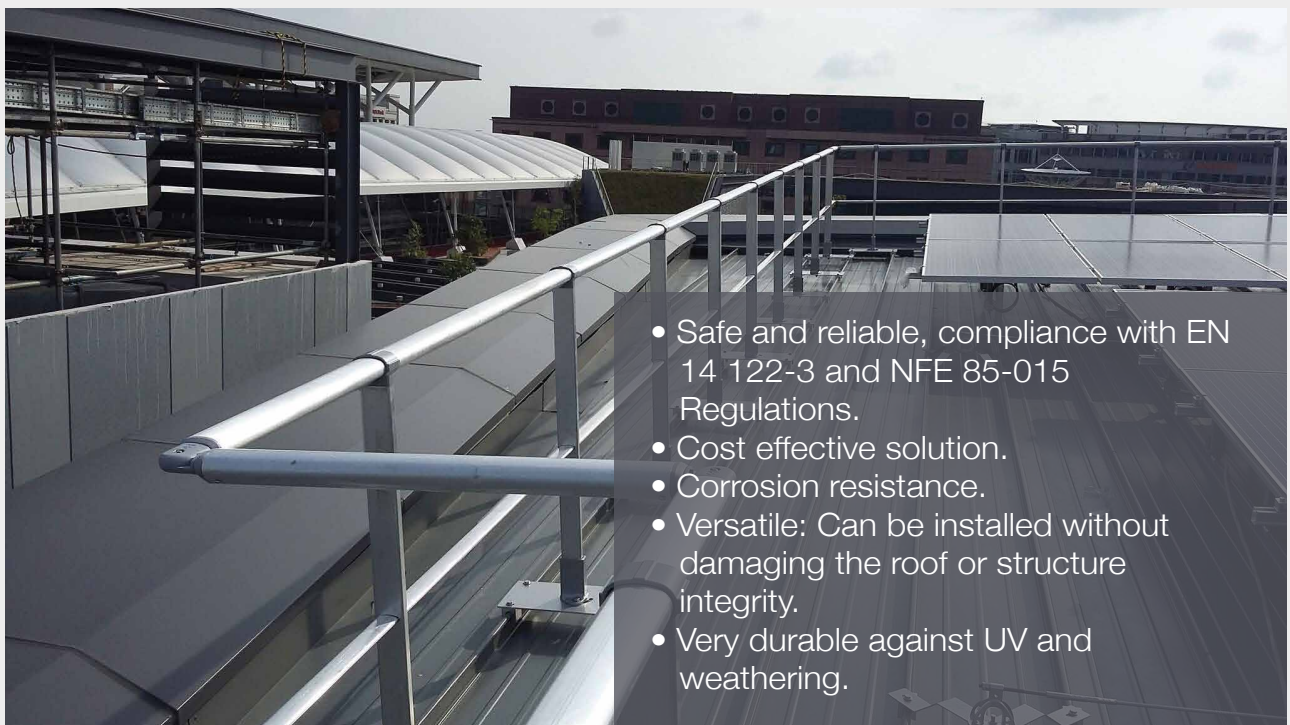
On an existing ladder it allows the worker to climb safely and even more so compared to any other vertical lifelines thanks to its curvature on top: the worker can stay attached to while standing at the top of the platform.

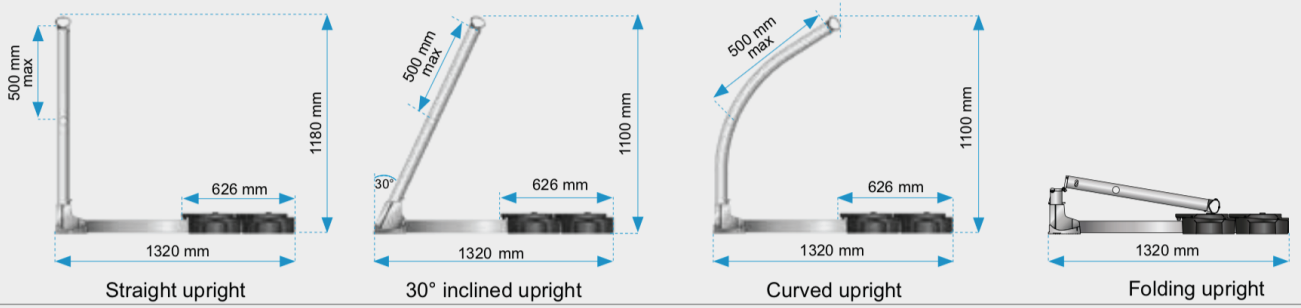


The overhang system can be mounted in an overhead configuration for industrial areas that have a low fall clearance or that need a perfect traveling of the SRL (Self Retractable Lifeline).





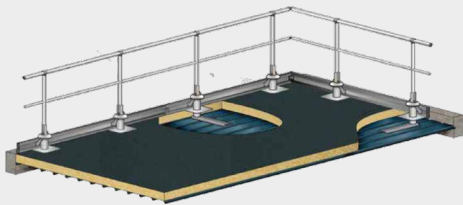




Folding System



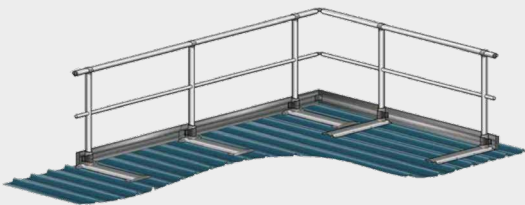
Free Standing Guard Rail



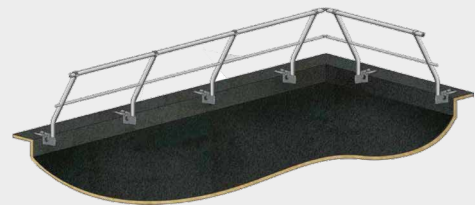
Guard Rail on Metal Deck (to be sealed)



Guard Rail for Roof Slab (to be sealed)



Guard Rail on Dry Metal Deck



Guard Rail under Covering Fixture System`



Guard Rail with Floor Fixture System`



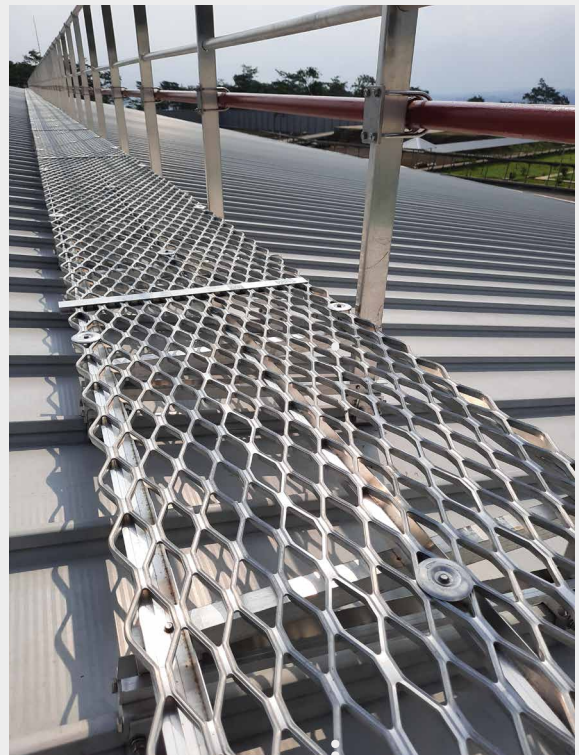
Guard Rail with Wall Fixture System`

Akrobat Walkway System provides a safe, stable, anti-slip, level working surface to anyone working or accessing the roof. It is recommended when the roof inclination exceeds  $5^{\circ}$  or more. It provides a clear defined route protecting users against hazards.



### WHY INSTALL WALKWAY?

- Eliminates damage to the roof surface caused by frequent use.
- Lightweight and easy to install.
- Fire-retardant (class 1) and UV-resistant.
- An Advanced, multi-directional, anti-slip walking surface that maximises friction in harsh weather conditions.
- Designated walkways effectively define restricted routes and limit access to unauthorised zones.
- Users can walk on the roof safely and confidently due to the increased level of grip.





ALUMINIUM

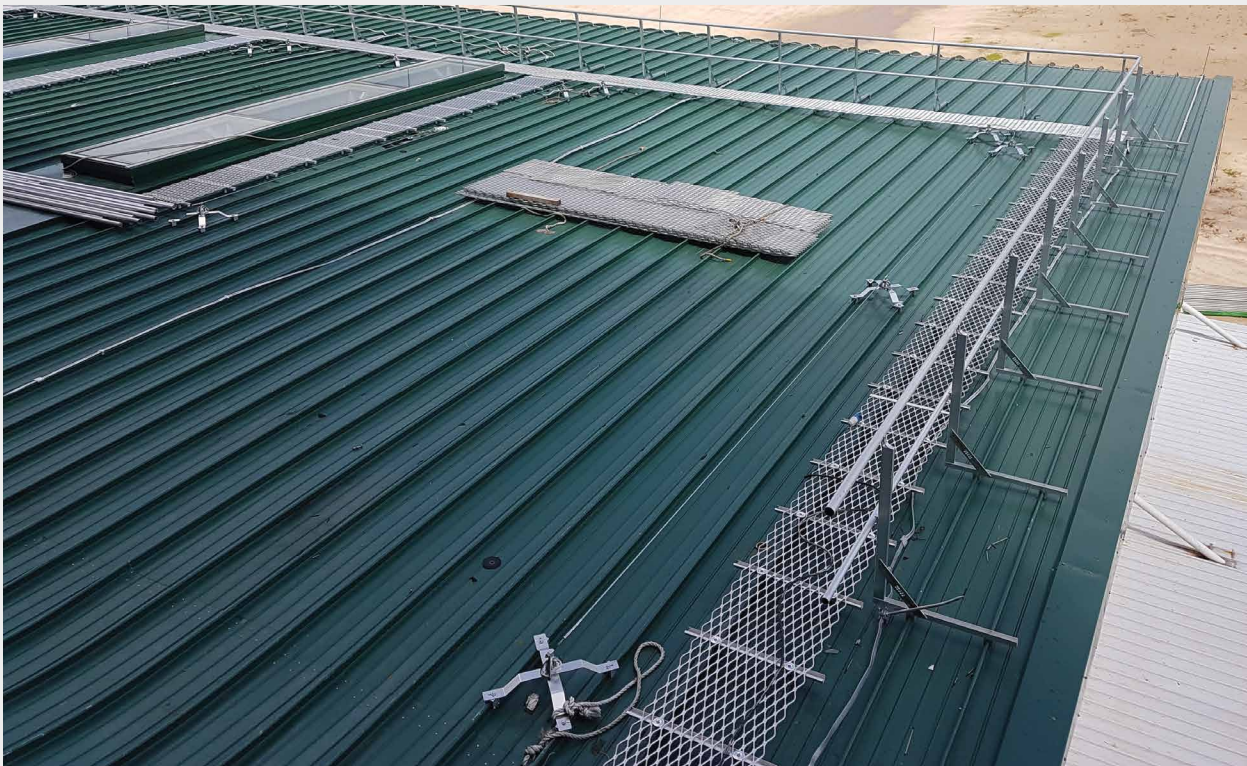
- Durable and non-corrosive system.
- Lightweight and easy to install over new or existing structures – no welding required.
- The aluminium 6063 mill finishing ensures an outstanding aesthetic.
- Many options of anchoring walkways to the roof through non-penetration fixing systems are available.

\*Can be equipped with guardrails upon request.

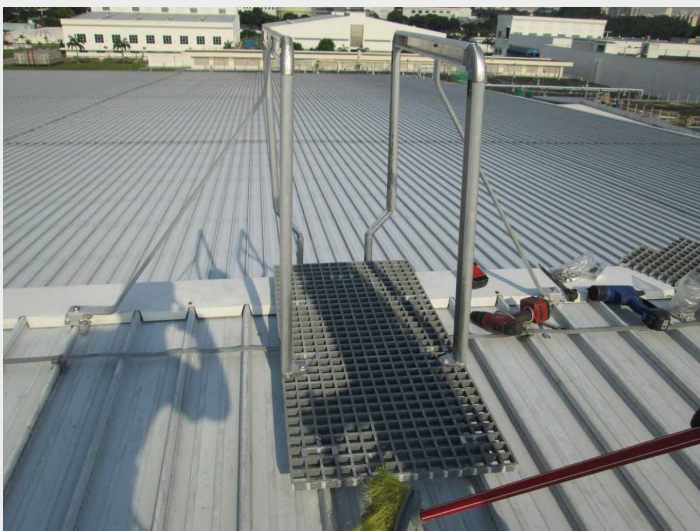
- Non-corrosive fiberglass – ideal for corrosive environments such as petrochemical industries, water treatment facilities, marine vessels, and others.
- Heavier than aluminium but very strong.
- Quick and easy to install as no welding is required.
- Fire retardant (class 1).
- High visibility with colour of choices.



\*If required, handrails can be easily installed to either one or both sides of the anti slip walkway.



Each year, there are cases of serious incidents where workers have fallen from ladders. Most of these incidents involve a ladder being used wrongly or misuse. Employers are to provide a safe means for people to get to and move around the work area. The planning for the provision of suitable access and egress should take into account the tools and equipment that people will be required to carry.



- Made from aluminium, suitable for internal and external use
- Comply with EN ISO 14122-4 and NF E 85.
- Quick and easy to install
- Ergonomic and user-friendly design, with an overall ladder width of 600 mm.
- Lockable door can be provided to restrict unauthorised access.
- Anodized or Powder coating colours of your choice upon request.



### NORMAL FIXED LADDER


- Mechanical fixing by clamp makes it possible to avoid unnecessary damages to the roof or wall.



### CAGE FIXED LADDER

- Fixing by chemical/adhesive, normally suited for masonry or concrete.
- Generally combined with our walkway system for a better and safer system.





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17, Boulevard Paul  
Langereur  
38000 FONTAINE - France  
Tel. +33 (0)4 76 53 32 40  
www.apave.com

**CERTIFICATE OF CONFORMITY**  
**N° 19.0720/A**

**1. Applicant**  
 Applicant: Mr Leonard Arnold  
 Manufacturer: AKROBAT Pte Ltd - 53 Ubi Avenue 1 #05-13 - Paya Ubi Industrial Park - SINGAPORE 408934

**2. Equipment**  
 Type of equipment: anchor device Type C EN 795:2012 and TS16415:2013  
 Manufacturer and Trademark: **AKROBAT** Model: **AKROLINE**

**3. Description**

Main characteristics	Components	References
Span: single and multi span, mini.2m and max. 12m	Flexible anchor: - Cable 7x7 Ø 8mm in stainless steel AISI 316 - Cable 1x19 Ø 8mm in stainless steel AISI 316	LDV006 LDV005
User : 4 person (*)	Energy absorber + Crimping ring	LDV032 + LDV008
Cable tension : 70 daN	Terminal anchor	LDV002
Direction of use: wall and floor	Intermediate anchor	LDV004
Angle of use: max. 15°	Mobile anchor: can be used with the 3 following anchors	LDV001 LDV060 LDV111
Energy absorber: at one end	Junction ring of cable	LDV010
This device has no: entry/exit line fitting, flexible support fixed on anchor, no metallic material without evidence of durability	Tensioner	LDV137
This device cannot be used with EN 360 and EN 353-2	Tensioner on middle line	LDV138

(\*) Equipment also assessed according to requirement of Technical Specification CEN/TS 16415 of January 2013, for use by 4 people.

**4. Technical referential**  
 The Anchor device Type C was assessed taking into account the provisions of technical specification TS 16415:2013 on anchor device type conforms to EN 795 of July 2012 to the exclusion of any other standard.


**5. Conclusion**  
 The Anchor device Type C, of trademark "AKROBAT", model "AKROLINE", presented by AKROBAT, conforms to the requirements EN 795:2012 and technical specification TS 16415:2013.

27/01/2020  
The PPE Technical Manager

*(Signature)*

This certificate includes one page. This certificate is edited in two original copies. No duplicate will be issued.  
 This certificate cancels and replaces the one edited the 23/05/2019 under the same number.  
 This type of equipment is not a Personal Protective Equipment against falls from height, the present certificate of conformity is not an EC type examination certificate delivered by a notified body.  
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**APAVE SUDEUROPE SAS** Siège social : 8 rue Jean-Jacques Vermezza - Z.A.C. Saumathy-Séon - CS 60193 - 13322 MARSEILLE CEDEX 16  
 Tél. : 04 96 15 22 60 - Fax : 04 96 15 22 61 - Site Internet : www.apave.com  
 Société par Actions Simplifiée au Capital de 6 648 544 € - N° SIREN : 518 720 925



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**CONFORMITY CERTIFICATE**  
**N° 2716318**

**I. APPLICANT**  
 Applicant: Monsieur Francis TIMMERMANS  
 Company: FALLPROTEC SA - 4, rue des Etangs L-7303 Steinsel.

**II. EQUIPMENT**  
 Manufacturer: FALLPROTEC SA - 4, rue des Etangs L-7303 Steinsel  
 Trademark: SecuRail Horizontal  
 Category of equipment: Anchorage device - Class D.

**III. CONDITIONS FOR USE OF THE EQUIPMENT**  
 This anchorage device is intended to be used, together with other components, as personal protective equipment against falls from a height.  
 This anchorage device can be used by two persons at the same time.  
 Span (way between structural anchors) - Minimal 2m  
 - Maximal 5m with reinforcement ; 2m without reinforcement


Configuration : wall and roof  
 Curve : with

**IV. DESCRIPTION OF THE EQUIPMENT**  
 This anchorage device is made up of the following components:  
 Rigid rail : reference RHF011  
 Junction : reference RHF 008  
 Screw for fixing on support : reference RHF015  
 Wall support: reference RHF020  
 Roof support reference RHF017  
 Retractable end : Reference RHF013  
 Fix end: Reference RHF024  
 Curve  
 Slide :  
 - Reference VIA 1 : ground configuration  
 - Reference VIA 2 : roof configuration  
 - Reference VIA 3 : wall configuration

Detailed description in test report n°2716318

**V. REFERENCE SPECIFICATION**  
 SECURAIL HORIZONTAL was tested taking into account the provisions of European standard EN 795 of September 1996 "Anchorage devices - class D"



**VI. CONCLUSION**  
 The anchorage device "SecuRail Horizontal" presented by FALLPROTEC, detailed in the test report n°2716318, is in conformity with the provisions of European standard EN 795 of September 1996.

APAVE Stamp  10th April 2007

Test technician *(Signature)* Vincent MAILLOCHEAU  
 The Fontaine Testing centre Manager

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 Cette attestation ne constitue pas le justificatif prévu par le code de la consommation ( article L-115-27 ) par lequel un organisme distinct du fabricant atteste à des fins commerciales qu'un produit est conforme à des caractéristiques dans un référentiel déposé auprès des autorités administratives

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 Société par Actions Simplifiée au Capital de 3 040 000 € - N° SIREN : 775 011 012 - Site Internet : www.apave.com  
 Localisation du fonds de commerce de CETE APAVE Lyonaise  
 Siège social : MARSEILLE BORDEAUX

**CERTIFICATE OF PRODUCT CONFORMITY**

**To whom it may concern** DATE: 01/01/2020

**Akrobat Pte Ltd** declare that the Personal Protective Equipment (PPE) described hereafter:

Product : **Vertical Lifeline AC 360**  
 Reference : **AC 360**

AC 360 - Guided type fall arresters including a rigid anchor line List of the components used;  
 -connectors: ref. No AZ 090 material - stainless steel;  
 -clamp-slide mechanism ref. No AC 360, material - stainless steel;  
 -working lanyard guide ref. No AC 921, material - stainless steel;  
 -working lanyard ref. No AC 850, material - stainless steel lanyard;  
 -screw clamps ref. No HL 504, size 8, material - stainless steel;  
 -tensioner ref. No AC910 material - stainless steel;  
 -shock absorber ref. No AC 361 or AC 362 material - stainless steel.

is in conformity with the provisions of the Council Directive 89/686/EEC and, where such is the case, with the standard:

**EN 353-1 - Personal protective equipment against falls from a height - Guided type fall arresters on a rigid anchorage line and recommendation for use: CNB/P/11.073**

*(Signature)*

**Akrobat Pte Ltd**  
 Date: 01/01/2020

We certify that the fall protection equipment listed above have been inspected and tested and comply in all respect with the requirement of the above Standard.



Date of issue: 11/12/2020



**CERTIFICATE**

The Workplace Safety and Health Council is pleased to certify that

**AKROBAT PTE. LTD.**

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has fulfilled the requirements to attain bizSAFE Level Star

This certificate is valid till 17/08/2023

*(Signature)*

**Patrick Han**  
 General Manager  
 Workplace Safety and Health Council

Certificate No. E01191

**TEST REPORT**

(This Report is issued subject to the terms & conditions set out below)

Your Ref: PO-SET-14Q3-001      Our Ref: MM-43305/TKC/1      Date: 19 September 2014  
 Dated 26 August 2014

Page 1 of 13

**Subject :** Witness test of Fall Arrest System (End Spider) with 8 pieces of AK Clamps Installed on KlipLok 406 roof profile seam requested by Akrobat Pte Ltd on 01 September 2014.

**Tested For :** AKROBAT PTE LTD  
 Block 3015 Ubi Road 1,  
 #04-226/230  
 Singapore 408704

**Attn:** Mr. Philippe Girardot

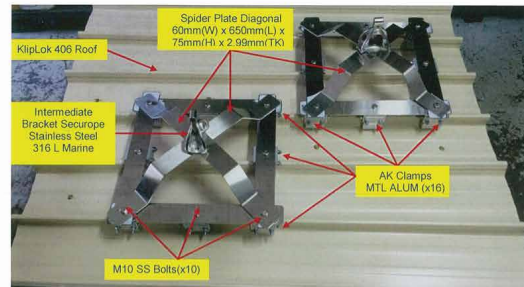
**Date and Place of Test :** 01 September 2014 at premises of Akrobat Pte Ltd, Blk 3015 #04-226 Ubi Road

**Method of Test :** Static Load Test  
 The test sample was mounted on the mock-up roof (KlipLok 406) by means of clamps (AK clamps). Tension load was applied gradually in the vertical / horizontal position by means of a chain block until the required force. The reading was then taken from the calibrated dynamometer and visual inspection conducted (Refer to photograph 1, 2, 3, 11 & 12). The test was then repeated at the next design load and reading recorded.

**Description of Sample :** List of the accessories used for test set-up and Appendix A and B as follows:-

S/No	Sample Reference	Qty
1	KlipLok 406 Roof - (Nominal size) 1500mm(W) x 1210mm(L) x 0.57mm(t)	01
2	AK Clamps - (MTL-ALUM)	08
3	Spider Plate Diagonal - (Nominal size) 60mm(W) x 650mm(L) x 75mm(H) x 2.98mm(TK)	02
4	Spider Plate 1 60mm(W) x 590mm(L) x 2.98mm(TK)	02
5	Spider Plate 2 60mm(W) x 473mm(L) x 2.98mm(TK)	02
6	S/S M10	08
7	Ø10mm S/S Wire Rope	01
8	Chain Block with 2.5TON Digital Dynamometer	01

**Terms & conditions:**  
 (1) This Report is prepared for the sole use of the Client and is prepared based upon the items submitted, the services required by the Client and the conditions under which the Services are performed by SETSCO. The Report is not intended to be representative of similar or equivalent Services on similar or equivalent items. The Report does not constitute an endorsement by SETSCO of the item.  
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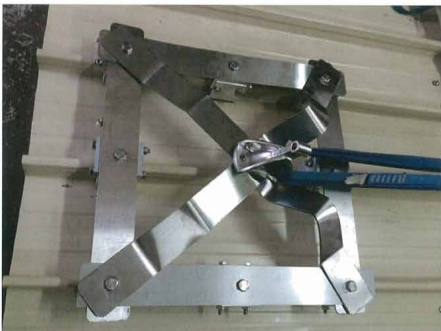
Photograph 1: Shows test set-up of the Fall Arrest System (End Spider) with AK Clamps (X8) MTL ALUM installed Perpendicular & Parallel to the roof seam - (Plan View)



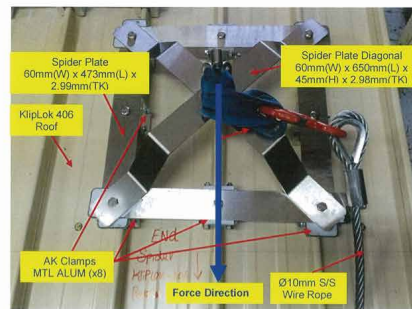
Photograph 2: Shows test bed of the Fall Arrest System (End Spider) with AK Clamps (X8) MTL ALUM installed Perpendicular & Parallel to the roof seam - (Front View)



Photograph 5: Shows the Fall Arrest System (End Spider) with AK Clamps (X8) MTL ALUM pulled Parallel to the roof seam at force of 1219kg



Photograph 6: Shows the Fall Arrest System (End Spider) with AK Clamps (X8) MTL ALUM pulled Parallel to the roof seam at force of 1219kg



Photograph 3: Shows test set-up of the Fall Arrest System (End Spider) with AK Clamps (X8) MTL ALUM installed Parallel to the KlipLok 406 roof seam - (Plan View)



Photograph 4: Shows direction of pulling & the Force of the Fall Arrest System with AK Clamps MTL ALUM Parallel to the roof seam



Regulations, Codes of Practice, Standards and Manufacturers recommendations require that all height safety equipment and PPE must be inspected by a competent person at least once a year.

Regular Inspection and maintenance are essential to ensure that each part of the system is in good working condition and can extend its service life.

Companies are legally required to provide a safe working environment, which means that once a fall arrest system has been installed, it should be inspected and maintained regularly at least once a year, to ensure it is safe to use at all times and manufacturer's warranties are upheld.

If an accident does occur and the equipment is found to be faulty and or not certified, then you could find yourself accountable.

Akrobat Pte Ltd has a dedicated Inspection & Maintenance Department that helps you manage both aspects by providing:

1. Nationwide and off-shore inspection & testing.
2. Comprehensive & detailed reporting on the current conditions of your system and equipment.
3. Inspection & Re-certification of your PPE (Personal Protective Equipment).
4. Preventive maintenance.
5. Repair for damaged items and/or replacement.
6. Signage and timely reminder service.



### AKROBAT (INDONESIA)

- Coca Cola Cibitung (2200m)
- Aqua Danone (1500m)
- LRT (LP1, LP2, LP3) (6300m)
- Djarum Blibli Temanggung (6000m)
- Djarum Vila Colo, Kudus
- Microsoft Data Centre JKT-02 (1000m)
- Cargill, Bromo (500m)
- Dhoho Airport, Kediri (3000m)

### AKROBAT (SINGAPORE)

- 50 Train stations & 5 Depots Singapore (over 50,000m)
- Changi International Airport Singapore (over 10,000m)
- Marina Bay Sands Singapore (over 5,000m)
- Sentosa Resorts World Singapore (over 2,500m)
- Port Authority Singapore (PSA) (10,000m)
- Pharmaceutical Factories Singapore (Abbott, Genetech, Lonza, Schering Plough, roche, Dupont, GSK)
- Aeronautics (ST Aerospace, SIA, Hawker, Bombardier, Pratt & Whitney)
- Oil & Gas (Lanxes, Total, Petroleum, SPC, Exxon, Oil Tanking)
- Commercial (Shopping Centers, Condominium, Entertainment)
- Government Buildings (3 Hospitals, over 20 Schools, Offices)

### AKROBAT (WORLDWIDE)

- Dubai: Jebel Ali Airport, Sport Complex
- Philippines: TOTAL
- Vietnam: Nestle TAL
- Taiwan: Imperial Tobacco
- Abu Dhabi: ADNEC Exposition Center
- Malaysia: Technip, Samsung

### CHANGI INTERNATIONAL AIRPORT

- Roof : Terminal 1, 2, 3, and 4
- Sky Bridge – Gangway: ALL terminals
- Planters: ALL terminals
- Safety Rail: Changi VIP Complex, Butterfly Garden, T3, T4
- Anchor points: pipe strapping
- Control Towers: Lifeline
- Gondola Track: T4

### SELETAR AIRPORT

- Overhang Lifeline for airplane maintenance

### DUBAI AL MAKTOUM INTERNATIONAL AIRPORT

- Roof Lifeline

### DUQM OMAN AIRPORT

- Roof Lifeline



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# THANK YOU

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