SAFETY.
OUR WAY OF LIFE.

HSE Management Conference
June 2017 Romania

BRANACH
SAFETY. OUR WAY OF LIFE

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World-leading height safety solutions provider

Over 20 years expert design of innovative products

Industries: Construction, Telecommunication Oil & Gas, Aviation, Transport, Power Distribution, Maintenance, Solar and Wind Power.

One goal: Global Leader providing unparalleled safety for workers.

In the past safety was an after thought

Whatever it took to get the job done.

Until we started to count the cost.

Broken Hill workers memorial, Australia

Work doesn’t mean risking your life anymore.

So why are we still using ladders like this?

Falls from ladders. How big is the problem? At work

2015

Deaths from Falls **61**

Injuries from falls 44,739

OHS Canada 2015

2011

523 workers
with permanent disability
following a fall from height.

Eurogip, EU

From 2001 -2010
Deaths from Falls on or

from a ladder **317**

International Statistical classification of Diseases and related problems 2010.

*"….. **135,000** people are treated in US emergency hospital for ladder related injuries*

*In 2007 more than **400 people died** as a result of falls on or from ladders or scaffolding".*

American Journal of Preventive Medicine (Vol. 32, No. 5, 2007)

In the eight years from
1 July 2003 to 30 June 2015,

54 workers died
following a fall from a ladder.

work-related injuries and fatalities involving a fall from height, Safe Work Australia October 2015

Electrocutions while working with metal ladders, cause one of every ten Construction worker deaths, with nearly **70 deaths in 2011**.

Electrocution: Work Safely with Ladders Near Power Lines I Transcript US Dept of Labour

2013-2014

Worker fatalities fall from heights

19

HSE statistics of workplace fatalities and injuries- fall from height

Direct WorkCover costs (est)
from falls from ladders
Australia wide:
$50M

Workcover Australia

Why people fall off ladders -Modes of failure

Source
Liberty Mutual Research Institute for Safety
Center for Injury Epidemiology (CIE)
From Research to Reality - Volume 15 I Number 3 I Winter 2012

Figure 1

Activity and task at the time of ladder fall	Step/Trestle (N=156)		Extension/Straight (N=123)		Rolling/Wheeled (N=27)		Total (N=306)	
	N	%	N	%	N	%	N	%
Standing/sitting and working from ladder	90	57.69	64	52.03	3	11.11	157	51.31
Climbing down ladder	42	26.92	29	23.58	14	51.85	85	27.78
Climbing up ladder	12	7.69	19	15.45	4	14.81	35	11.44
Getting on/off ladder	9	5.77	7	5.69	5	18.52	21	6.86
Other	3	1.92	4	3.25	0	0.00	7	2.29
Don't know	0	0.00	0	0.00	1	3.70	1	0.33

Step/Trestle Ladders N=156

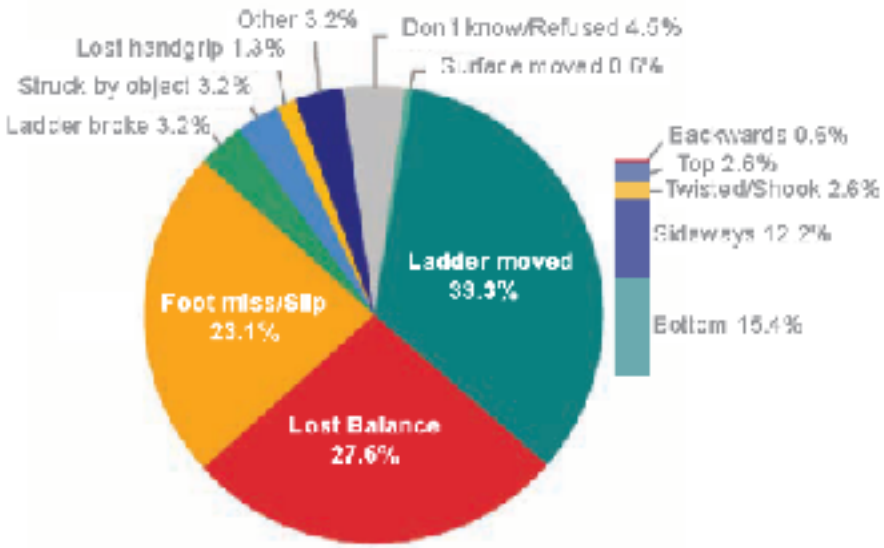


Figure 2

Extension/Straight Ladders N=123

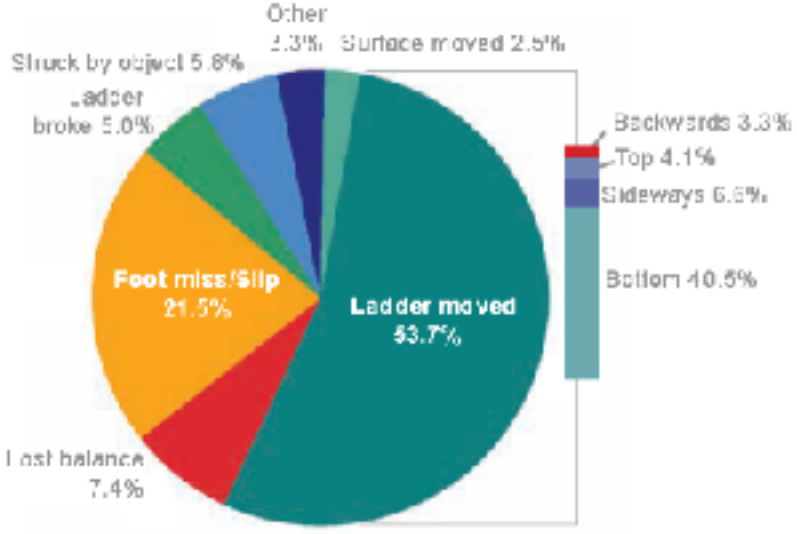


Figure 3

Modes of failure - Electrical hazards

material of choice should be fiberglass

stats 89 deaths from **metal** ladders USA in five years

Of the 89 deaths, 81 (91%) were caused when workers working near an overhead power line moved portable metal extension ladders that contacted the line. The remaining eight (9%) deaths involved workers who touched an energized apparatus or power line while standing on metal ladders.

1984-1988 CDC's National Institute for Occupational Safety and Health (NIOSH)

Man electrocuted, killed while painting Salem fire station

Victim made contact with primary power line

By Dustin Luca Staff Writer Mar 21, 2017

2 tree trimmers shocked by power lines in Tampa

WFLA Web Staff

Published: July 12, 2016, 2:05 pm | Updated: July 12, 2016, 4:34 pm

coming in direct

firmed

Henrico Worker Electrocuted

By Editors (http://wric.com/author/editors/)

Published: June 20, 2008, 1:11 pm

RICHMOND, Va. (AP) – A house painter was electrocuted when his ladder hit power lines as he was working at a residence in Henrico County.

Henrico County police say 46-year-old Thomas Michael Morrissey dead at the scene of Thursday's accident.

By Web Staff | Posted: Sat 5:35 PM, Oct 15, 2016 | Updated: Sun 11:24 AM, Oct 16, 2016

DANVILLE, Va. (WDBJ7) Three people were injured from an electric shock in Danville, according to Battalion Chief Brian Alderson.

Three people were shocked while moving a ladder against a house on North Main Street in Danville. The ladder slipped and struck and electric high voltage line that runs parallel to the house.

Branach works with many organisations who are world leading in terms of Safety at height.

Common threads show they have a systematic approach to height safety with a focus on increasing risk perception by all workers and then supporting them.

RISK PERCEPTION

SITUATIONAL AWARENESS

TRAINING

PROCESS/WORK DESIGN

EQUIPMENT

HSE SYSTEM

COMMUNICATION

SUPERVISION

COMMERCIAL PRESSURE

CULTURE

REGULATION COMPLIANCE


European Standards

EN131 (2007 + A1:2011) changing to EN131 (2015)

The European Committee for Standardisation (CEN) approved a revised EN131 Standard for Ladders on Sep 11, 2015.

The standard will have two classifications : Professional and non-professional ladder use.

The main change fromEN131(2007) is the addition of Stabilisers/Wider bases to improve ladder stability.

The structure of the standard is as follows:

- EN131 -1 Terms, Ladder types, function sizes.
- EN131 -2 Requirements, Testing, Marking
- EN131 -3 User Instructions
- EN131 -4 Single or multiple hinge ladders
- EN131 -6 Telescopic ladders
- EN131 -7 Mobile ladders with platforms

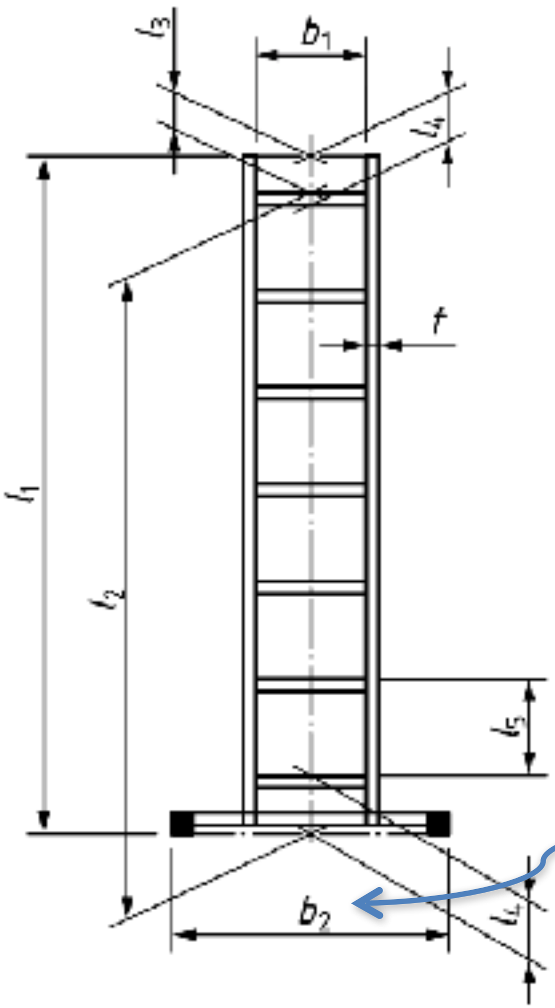
The parts 1 and 2 have to be aligned before the standard can be enforced and this is expected by end of 2017.

At that time ladder manufactures typically get between 12 to 24months to implement the change.

Ladders in use complying to EN131(2007) will not be required to be replaced.

Increased Stability required (EN131-1:2015).

European standards (EN131-1:2015) now require extra stability



BS EN 131-1:2015
EN 131-1:2015 (E)

Table 2 — Functional sizes of leaning rung ladders

Dimensions in millimetres

	[illegible]	[illegible] where $l_1 \le 3\,000$	[illegible] where $l_1 > 3\,000$	[illegible]	[illegible]	[illegible]	[illegible]
min.	[illegible]	340	[illegible]	—	0,5 [illegible]	250	[illegible]
max.		[illegible]	[illegible]	[illegible]	[illegible] + 15	300	[illegible]

Base width increases by 1/10 of the height increase

Increased Stability required (EN131-1:2015).

European standards (EN131-1:2015) now require extra stability

Table 4 — Functional sizes of two-piece combination ladders

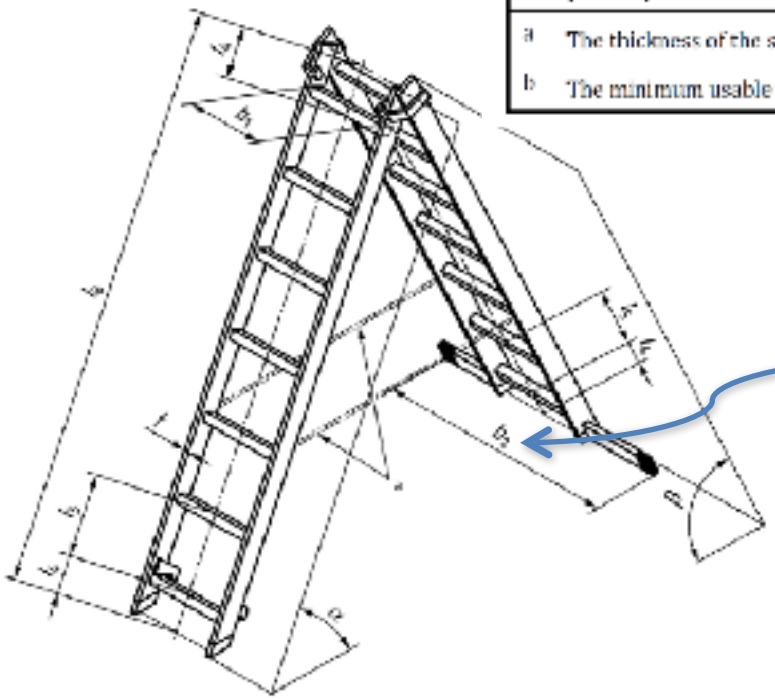
Dimensions in millimetres

	b_1[b]	b_2	l_3	l_4	l_5	α	β
min.	280	$b_1 + 0{,}15\ l_3 + 2\ t$[a]	$0{,}5\ l_5$	$0{,}5\ l_5$	250	65°	65°
max.	—		$l_5 + 15$	$l_5 + 15$	300	75°	75°

If separate parts of the ladder can be used as a leaning ladder refer to Table 2.

a The thickness of the stile t is the outside dimension of the stile.

b The minimum usable distance between the inner sides of the stiles at any point shall be 280 mm.



Base width increases by 0.15 times the height increase

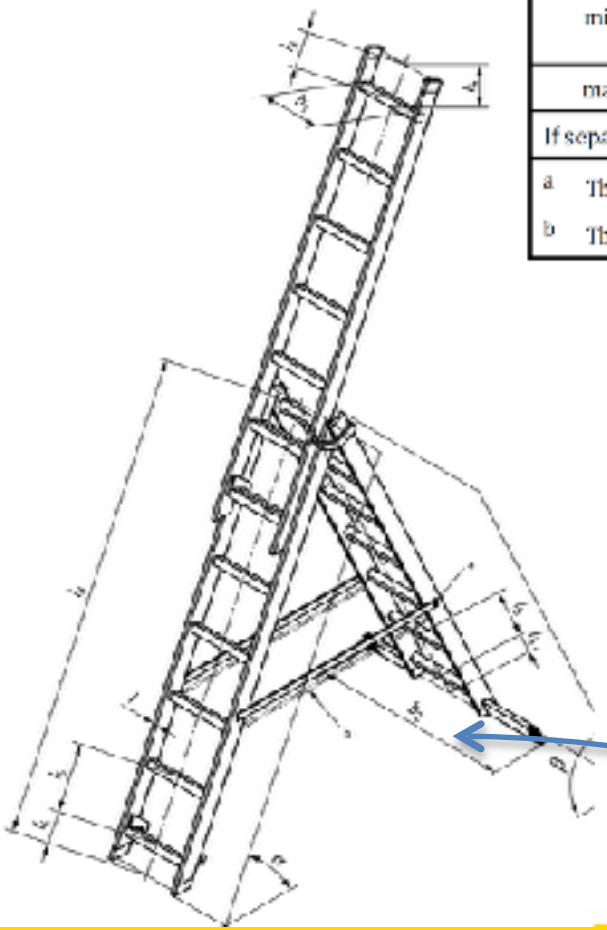
Increased Stability required (EN131-1:2015).

European standards (EN131-1:2015) now require extra stability

Table 5 — Functional sizes of three-piece combination ladders

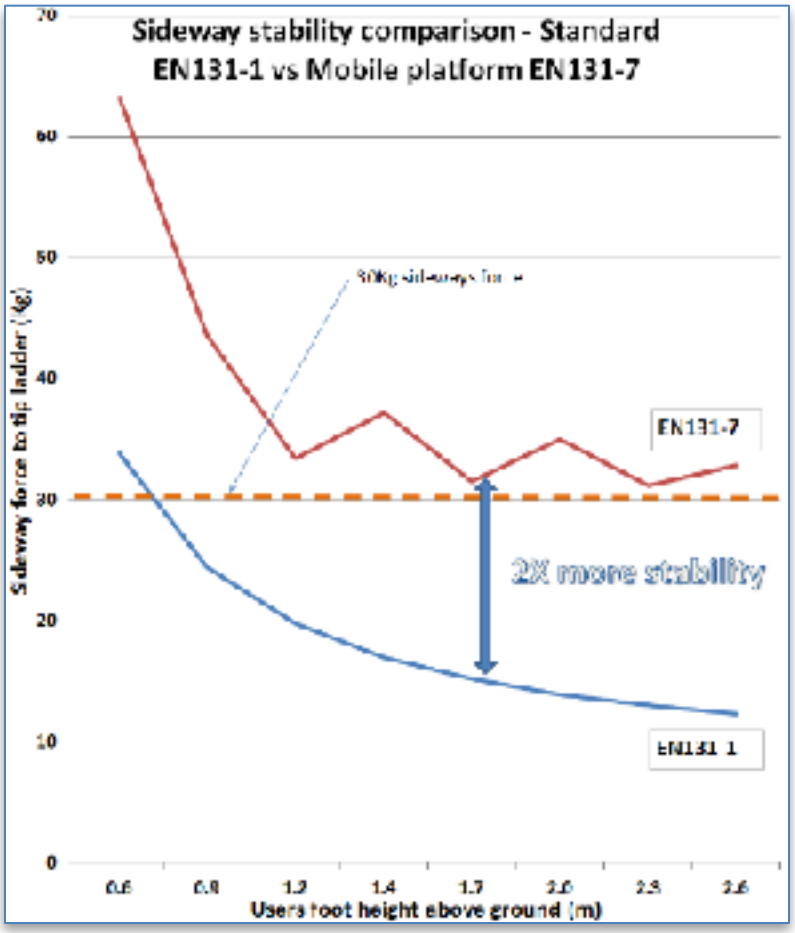
Dimensions in millimetres

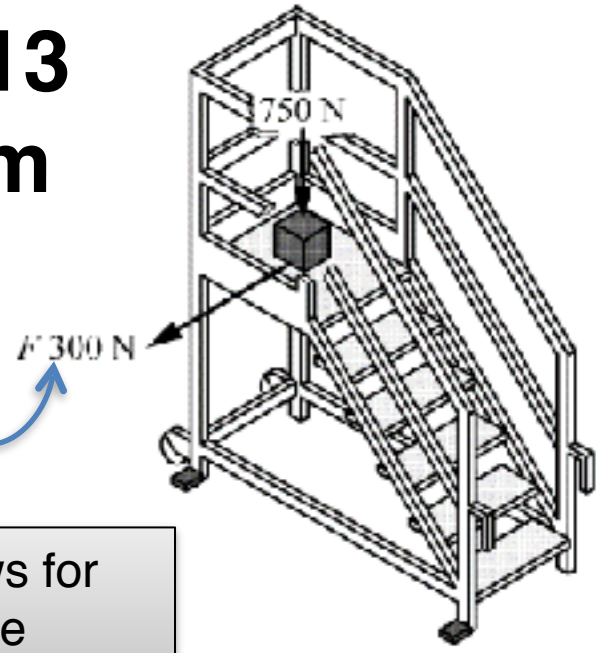
	b_1[b]	b_2	l_3	l_1	l_5	α	β
min.	280	$b_1 + 0{,}175$ $l_0 + 2\,t^{a}$	$0{,}5\,l_5$	$0{,}5\,l_5$	250	65°	65°
max.	—	—	$l_5 + 15$	$l_5 + 15$	300	75°	75°
If separate parts of the ladder can be used as a leaning ladder refer to Table 2.							
[a] The thickness of stile t is the outside dimension of the stile.							
[b] The minimum usable distance between the inner sides of the stiles at any point shall be 280 mm.							



Base width increases by 0.175 times the

Introduction of EN 131-7:2013 Mobile Ladders with platform





Standard allows for **30Kg** side force before tipping ladder.

EN131 (2007 + A1:2011) changing to EN131 (2015)

1. The stabiliser arrangement will add cost to ladder
2. While the product can be delivered without the stabiliser attached it must be permanently fitted before it can be used
3. Flat stabiliser bars are more suited to flat surfaces and will present challenges in uneven or inconsistent terrain
4. For longer ladders this will add significant width and additional weight to the product making transport and manual handling more difficult.
5. Standard is a minimum. Need to look to see how you can provide better solutions than the minimum standard. Zero Harm mentality and culture.

At Branach we start with risks and engineer to reduce or eliminate the cause

Portable Ladder Safety Levels

A new way to manage ladder risk

Level 1

- Compliance as per AS/ NZS 1892.3
- Independently certified to standard.
- A statement of method and frequency of inspection.
- Suitable for:
  - Access / egress
  - Application loads less than 5Kg

Level 2

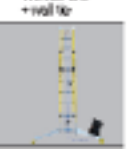
- Base of support providing stability for higher loads up to 20Kg.
- Provides for ladder stability but not user separation from ladder.

Follows from BS EN 131-1:2015

Level 3

- Portable Fall protection system providing:
- Strength required to arrest user. *(6KN offset static loading)*
- Stability required to remain upright during fall event. *(140Kg dynamic fall).*
- User does not separate from the structure and is arrested before striking the ground or other objects.

Ladder Usage
Work Risk Matrix

Stage	Risks	Failure Mode	Controls			
			Level 1	Level 2	Level 3	
						
Access/Egress	Uneven ground	Side tip	✕ ▲	●	●	●
	Soft ground	Side tip	✕	●	●	●
	Wrong setup incline	Slip back	✕ ▲	●	●	●
	Slippery surface	Slip back	✕ ▲	▲	●	●
	Carrying tools up ladder	Slip off	✕	✕	✕	●
	Fall during climb	Slip off	✕	✕	✕	●
Work from ladder	Apply force to structure	Slip back	✕ ▲	●	●	●
	Two hand operation	Fall off	✕ ▲	▲	●	●
	Over reaching	Side fall	✕	✕	●	●
	Over reaching	Ladder tips	✕	●	●	●
	Slip	Fall off	✕	✕	✕	●
	Legs get tangled in fall	Side tip	✕	✕	▲ 1	▲ 1
	Head injury from slip	Fall off	✕	● 2	● 2	● 2
	Bite/Sting/Accident	Fall off	✕	✕	●	●
	Dropping Tools		●	●	●	●
Rescue	No rescue equipment	Suspension trauma	✕	✕	● 3	●
	Wait to be rescued	Suspension trauma	✕	✕	▲ 4	▲ 4
	Rescue accident on ladder	Ladder falls	✕	✕	▲	●
	Ladder system damaged		✕	✕	✕	✕
	Injured from fall	Unconscious	✕	✕	✕	✕

Key

- ● Risk addressed
- ✕ No control
- ▲ Admin control needed
- 1 2nd Ladder tie off
- ● Personal Equipment
- 2 Climbing Helmet
- 3 Pole ladder top rescue kit
- 4 Lone worker fall down system

If you look beyond basic compliance zero harm of workers is a possibility.

Video of TerrainMaster System testing

Time to bring ladders and safe work platforms into the 21st century.

Thank you for your time today

We would love to hear your thoughts on safety at heights and how we can help you with your challenges

www.branacheurope.com

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