

**workplace
access&safety[®]**

the fall prevention specialists

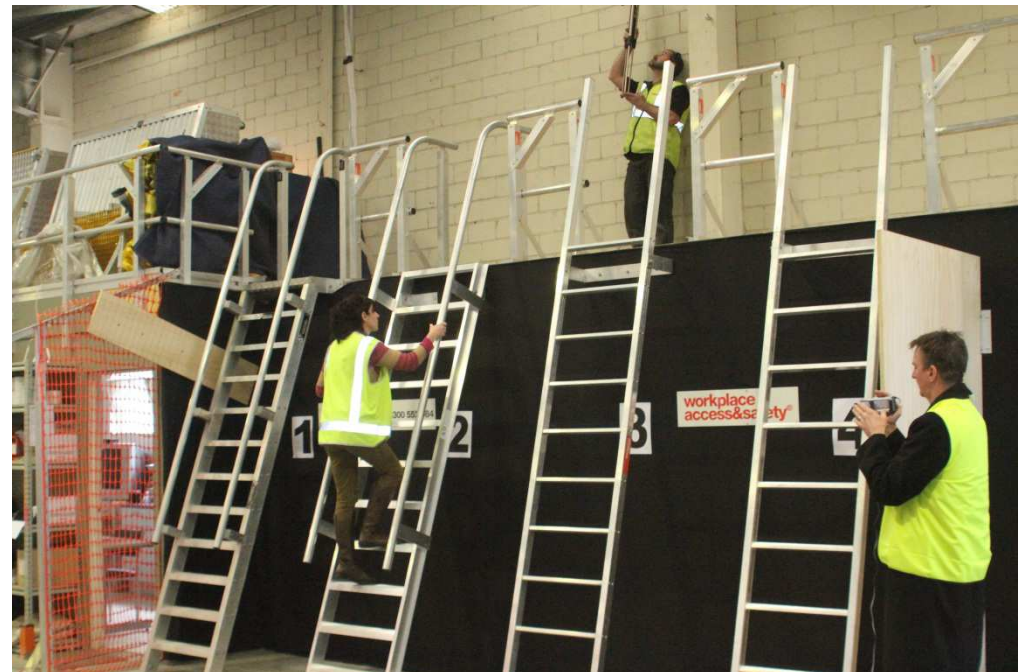
Ladder study

Queensland Safety Show

June 2013

Safe Ladder Research

- Objective – test assumptions of committee
 - Science vs intuition
 - Ergonomic based

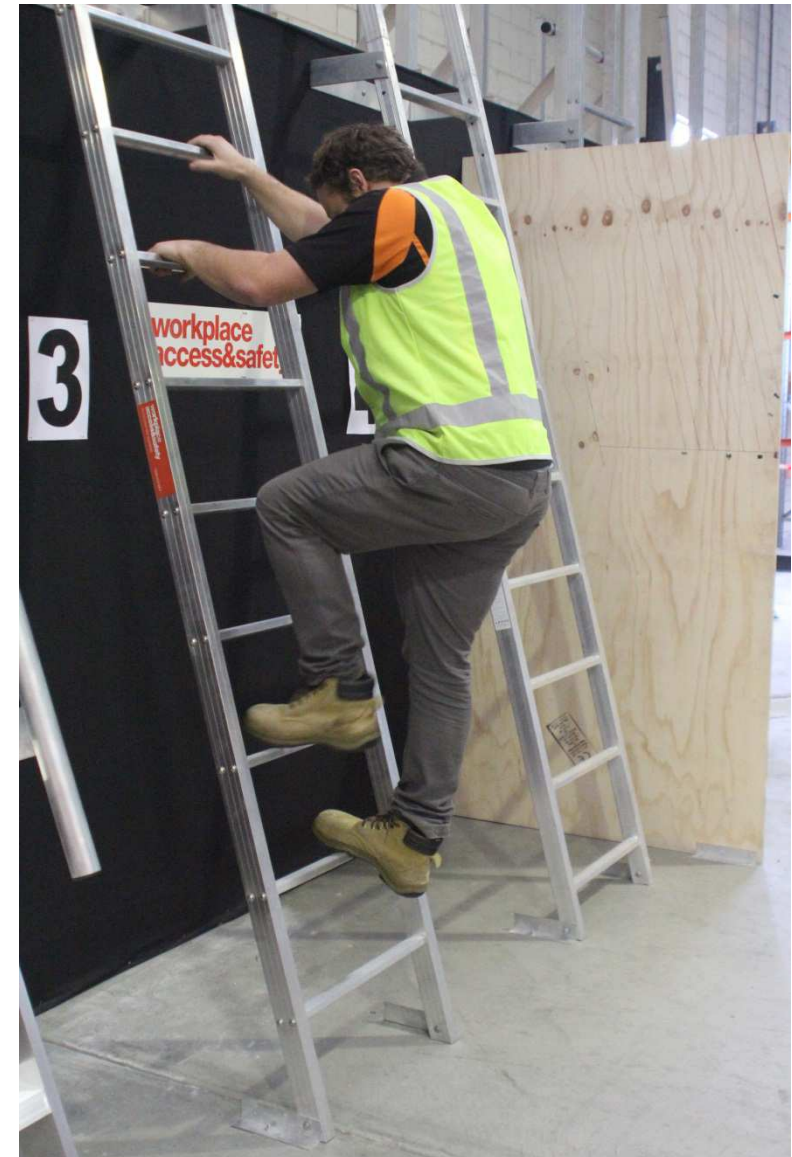


Professor David Caple.



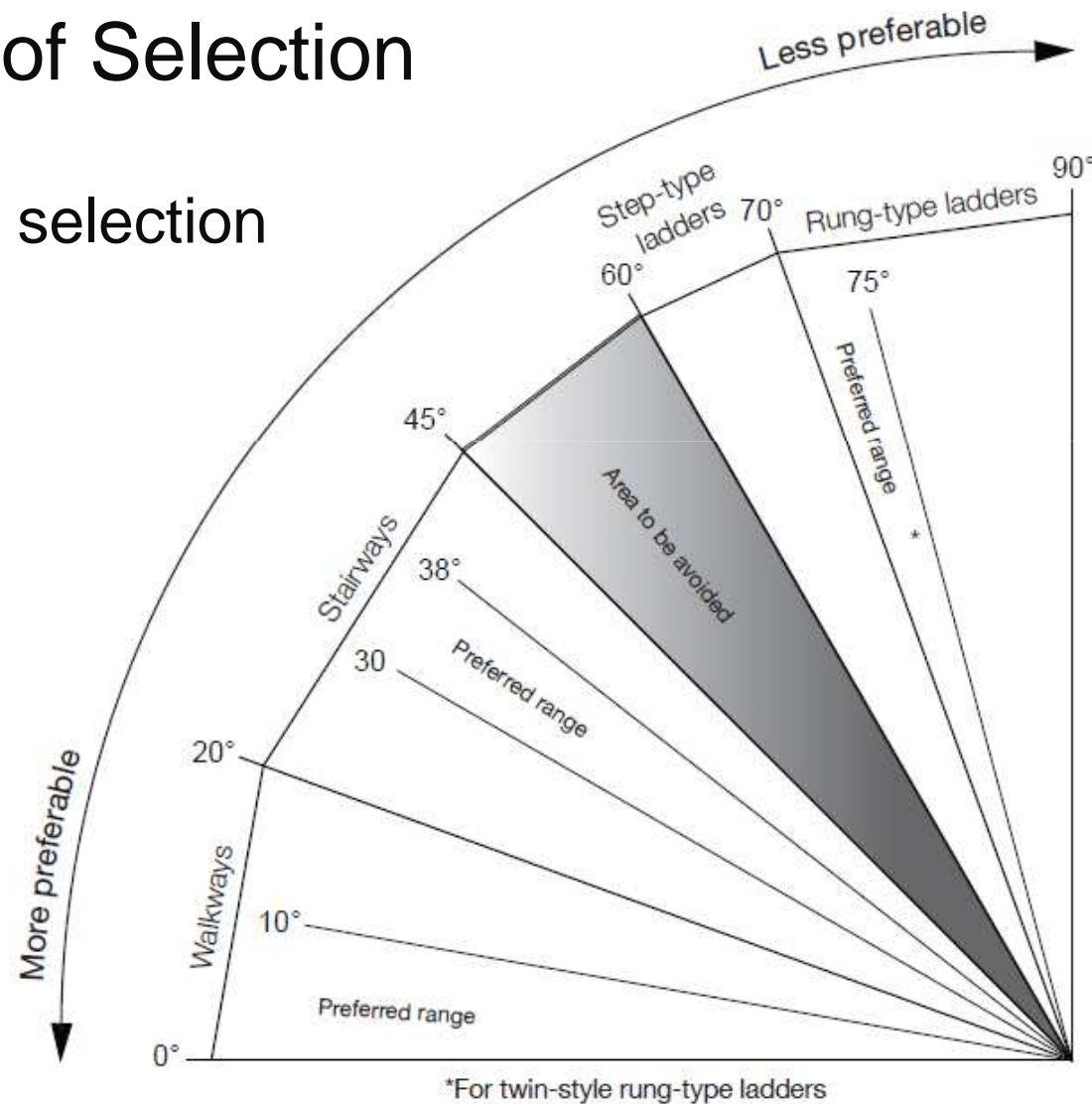
Issues reviewed

1. Hierarchy of selection
2. Inter tread distances – step ladders
3. Top and bottom tread/rungs
4. Rear clearances
5. Transition from ladder to landing
6. Rung shape
7. Hand grip clearances



Hierarchy of Selection

➤ Scope of selection



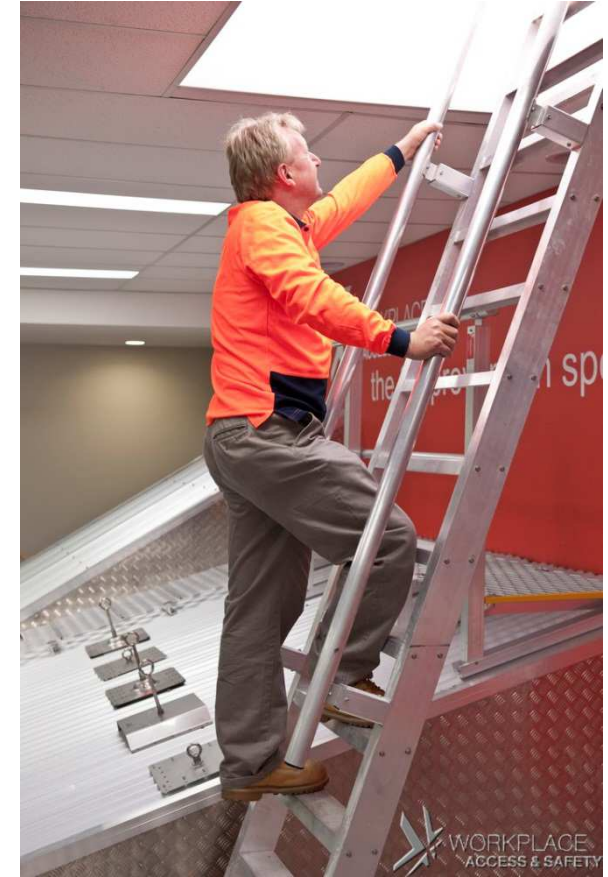
Vertical rung ladder



Inclined rung ladder



Step ladder



Inter tread distances

- 200-250mm (8"- 10")
- 250-300mm (10"- 12")
- Equal distance



Top Rung Positioning

- Level with landing or,
- One full rung below



Note: does not comply, but common practise.

Top rung clearance

- 60-100mm gap or
- Full closed



Bottom Rung Positioning

➤ Equal rungs



➤ Cut down

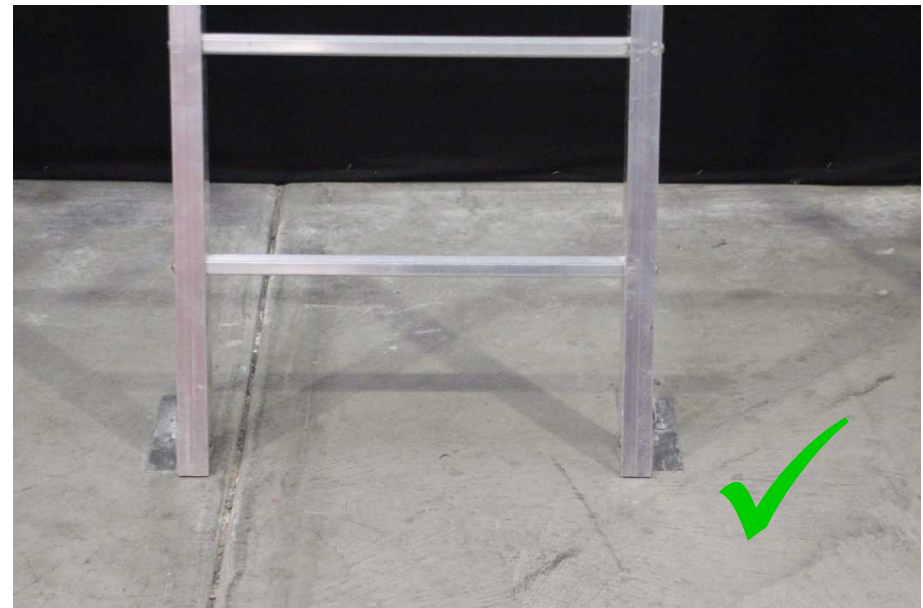


Professor Caple on lower rung positioning



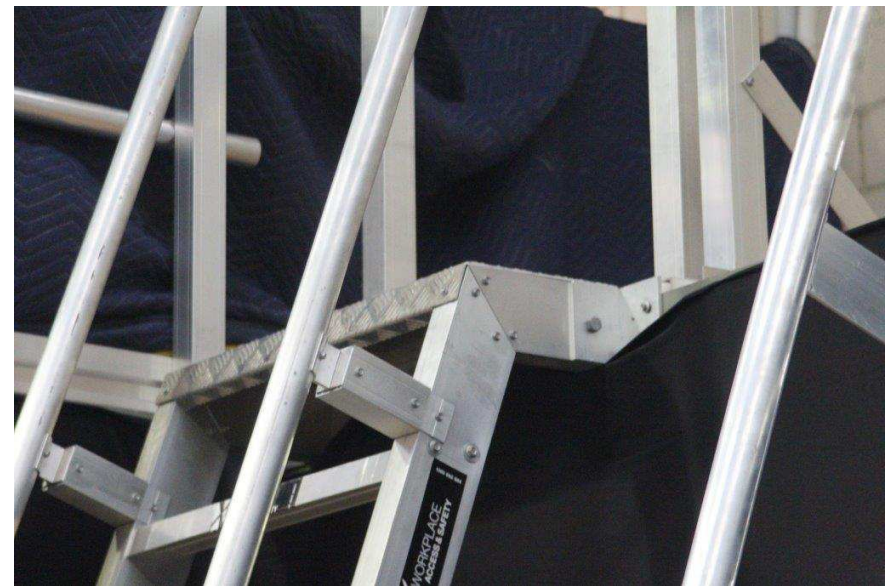
Bottom Rung Positioning

- Equal rungs



Rung/tread clearances

- Equal rungs



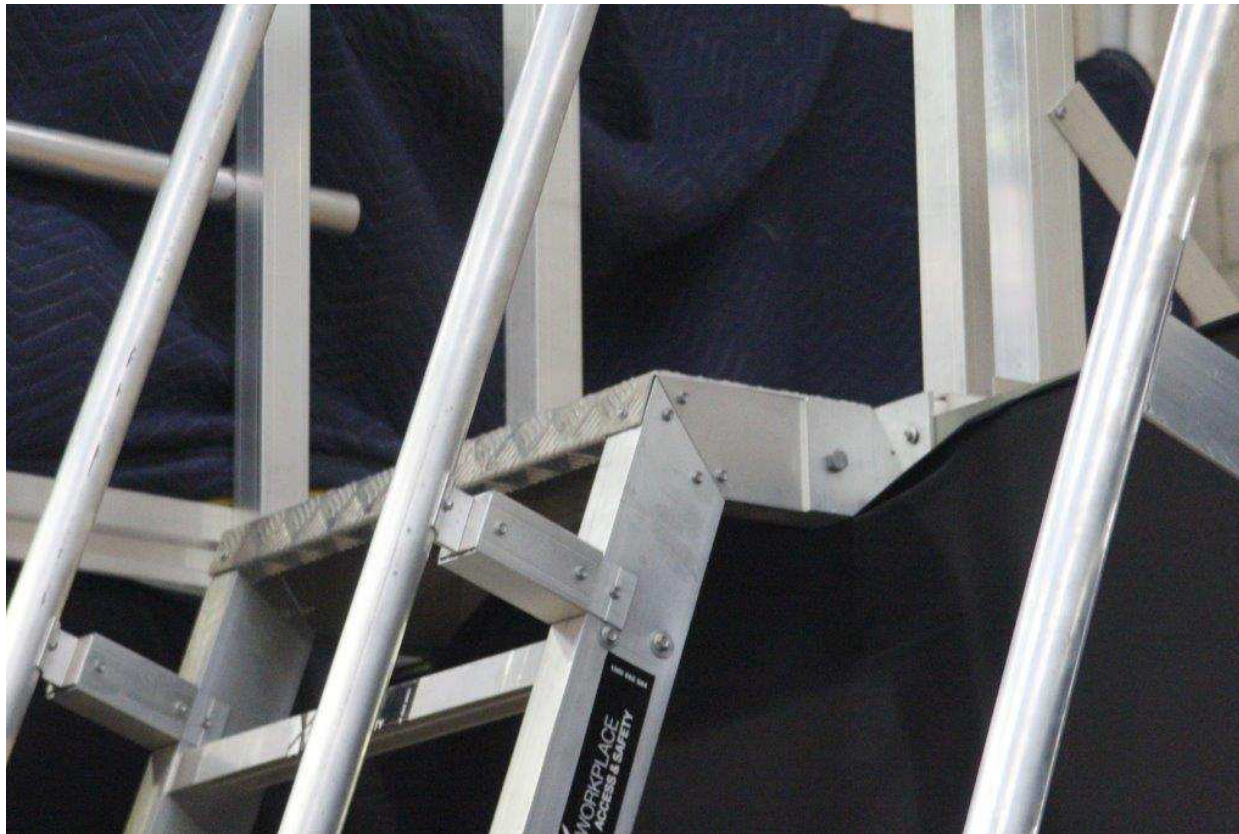
Rear clearances

- 50mm for step (150mm from front)
- 200mm for rung

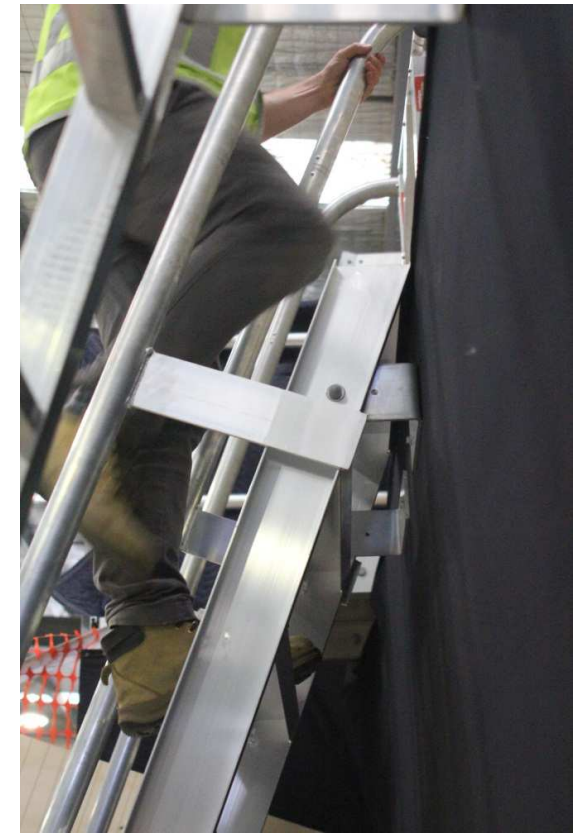


Handrail clearances

- 150mm – 200mm

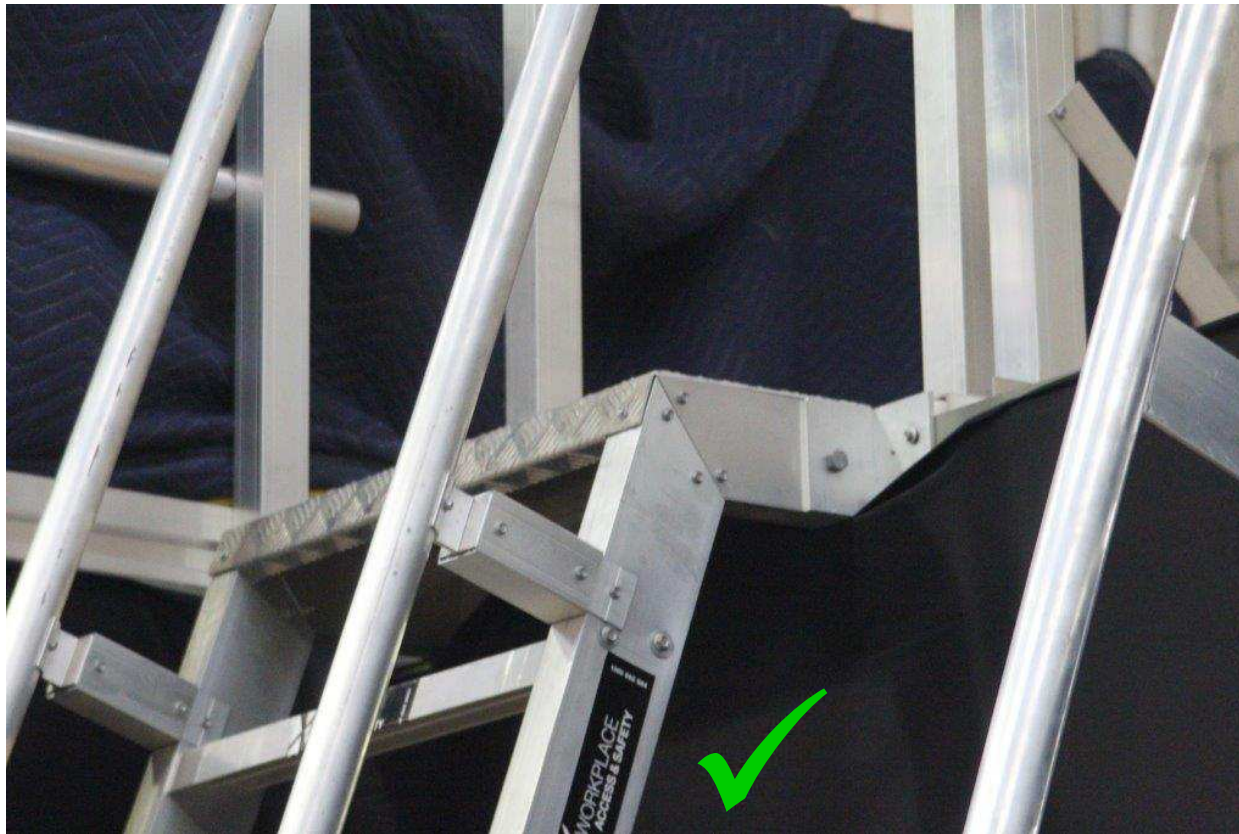


150mm



Handrail clearances

- 150mm – 200mm



150mm



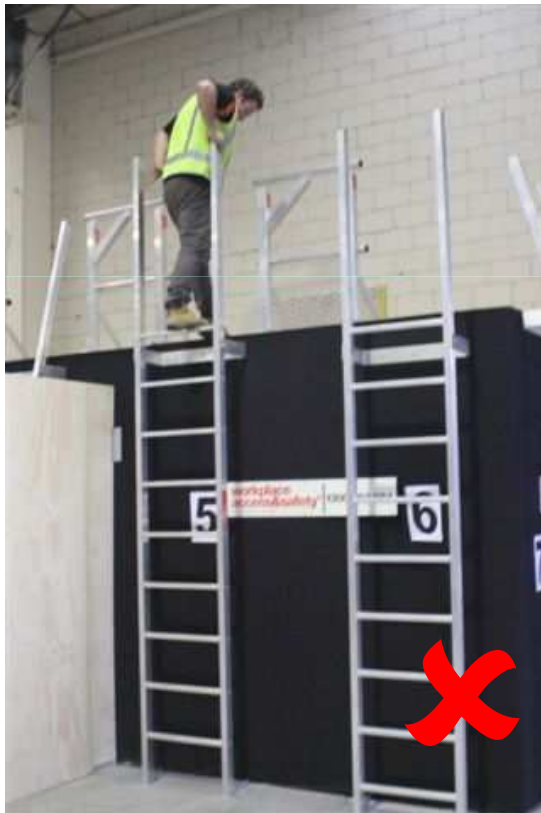
Transition to and from landing



Transition to and from landing



Top landing – Hand grip options



26 June 2013

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Rung shapes

- “minimum 20mm diameter bar



Rung Shape

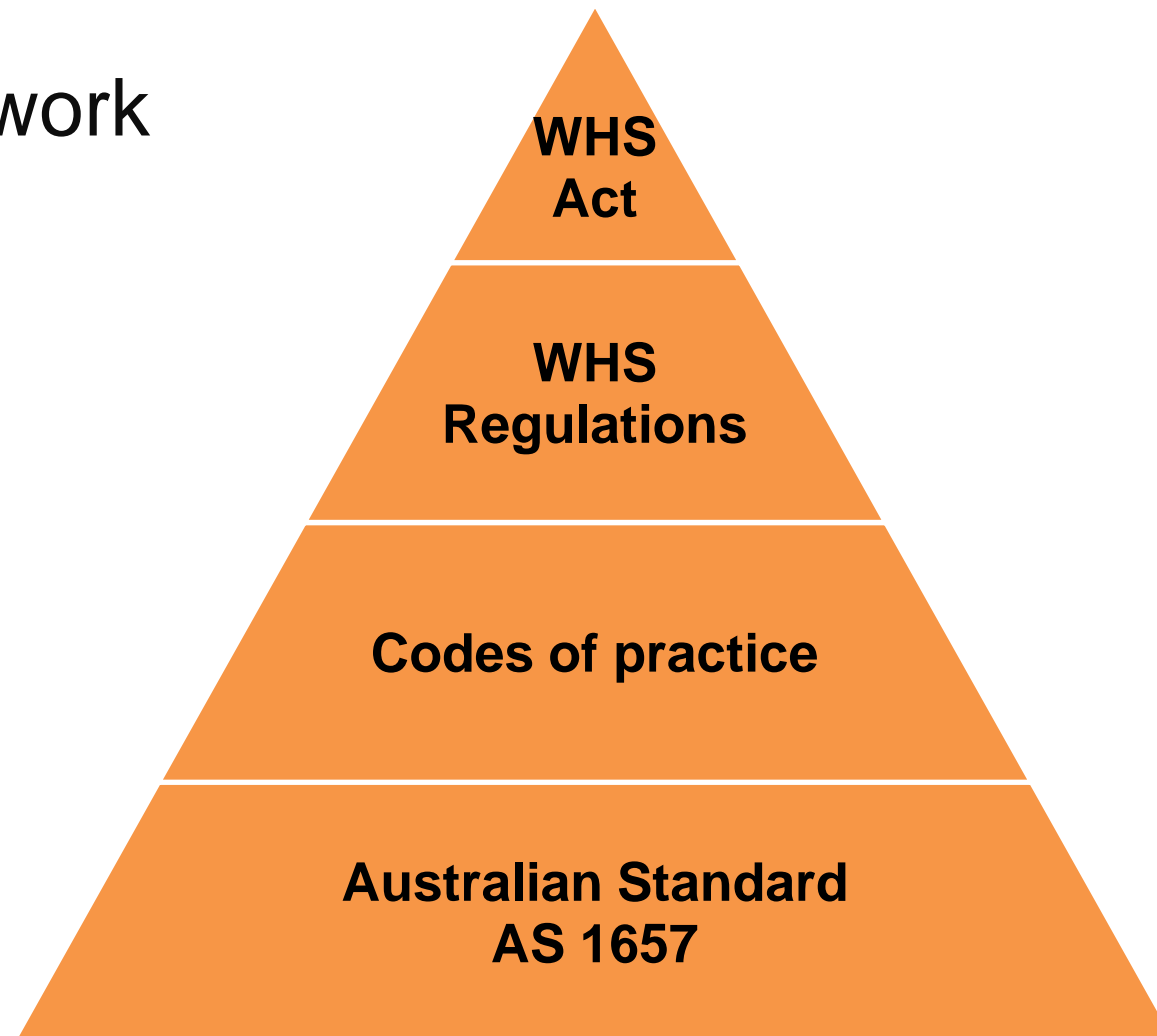


Rung/tread shapes

- “flatter” shape preference

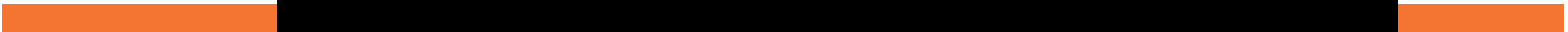
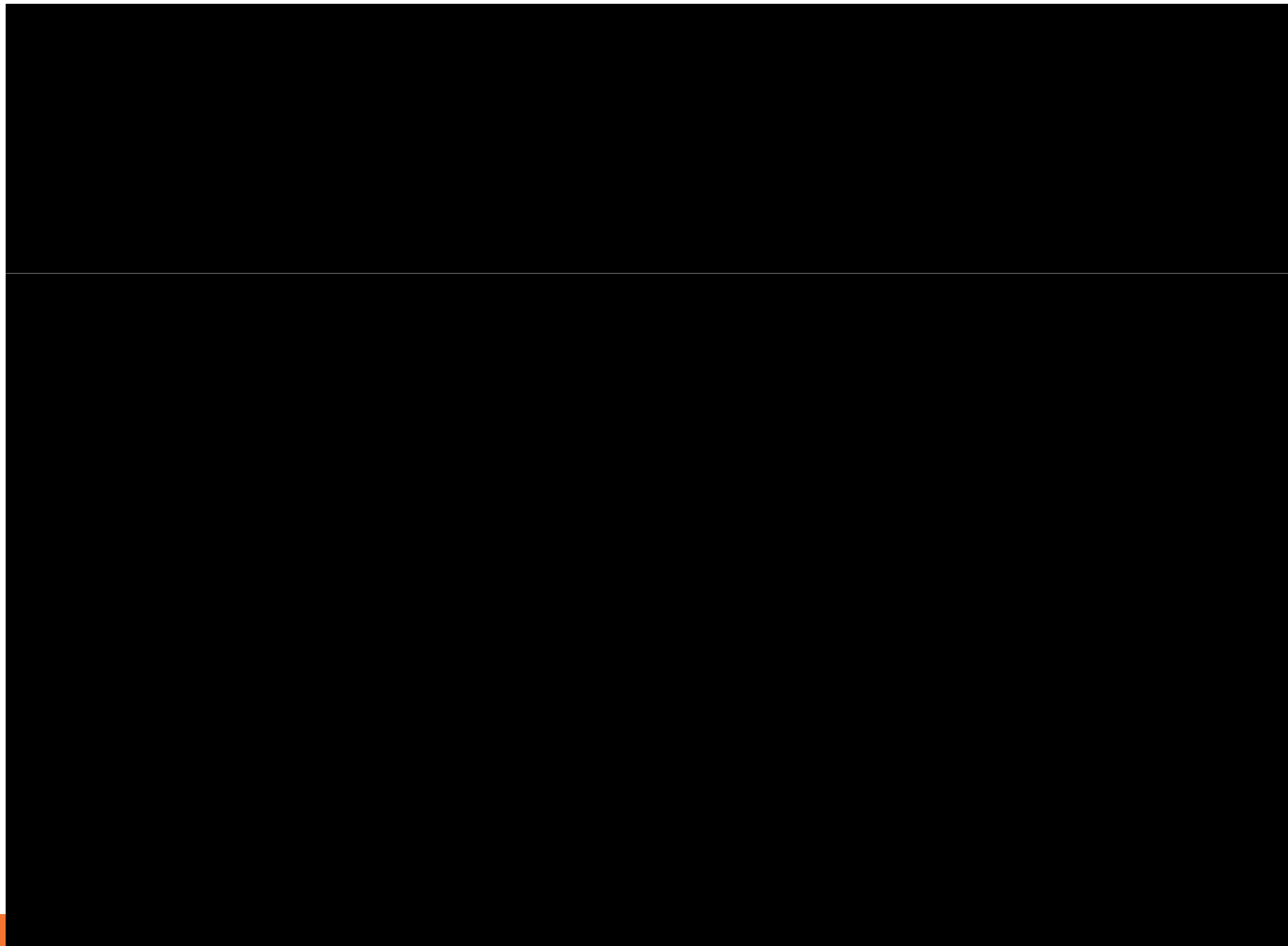


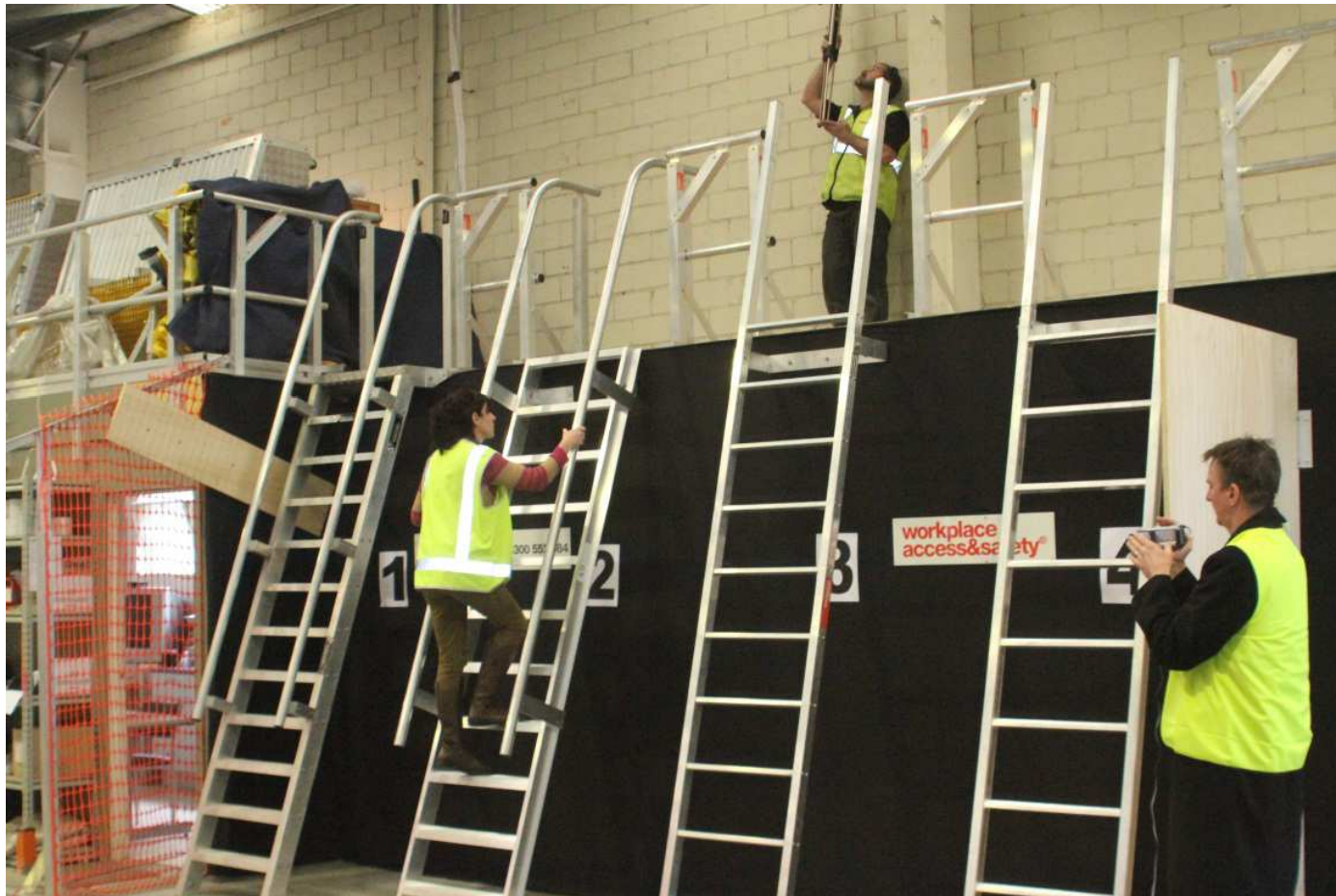
Legal Framework



Michael Tooma, Norton Rose

.....on reasonably practicable





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South Australia

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Salisbury Plains SA 5109

Western Australia

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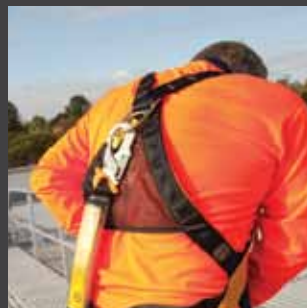
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“Workplace Access & Safety are very professional and their workmanship is good. I’d use them again without a doubt. Their product is good, they were great, I couldn’t fault them. When I’ve asked for service they were prompt, professional and flexible. They met our demands and needs absolutely. The whole company is good to deal with. Their PR was great and everyone was helpful. Workplace Access & Safety is well worth using.”

*K Andrews, Project Co-ordinator,
H.J. Heinz Co. Australia Ltd.*

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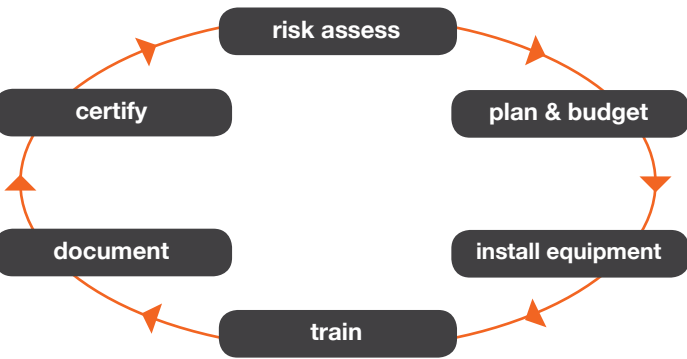
**fall
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solutions**

Make your workplace safe and compliant with specialist fall prevention advice and solutions from Workplace Access & Safety.

As your fall prevention consultant, equipment supplier and installer, Workplace Access & Safety makes safe work at heights a reality, painlessly.

Planned fall prevention

Systematic, simple and safe. Workplace Access & Safety's professional approach to fall prevention takes the risk out of working at heights in six steps.



Your site assessment by Workplace Access & Safety fall prevention specialists includes a comprehensive report, detailing:

- » How the regulations, codes of practice and Australian Standards apply to each site
- » Recommended priorities for your fall prevention program
- » Practical plans that include accurate costings to help you budget

Based on the report, Workplace Access & Safety will design, engineer and install a cost-effective height safety solution that minimises your liability and protects your people. And, to keep your workplaces safe and compliant – wherever they are – we deliver Australia-wide maintenance and training.

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Workplace Access & Safety designs, manufactures and installs your height safety equipment using its own team of fall prevention specialists. The result is:

- » Guaranteed compliance with Australian Standards
- » Rapid installation
- » Preservation of roof surfaces and waterproofing
- » Project management of your works for full visibility and minimal disruption
- » Consistent height safety standards across all sites, Australia-wide

Best of all, because Workplace Access & Safety treasures its independence and stocks all the major brands, you can be confident the equipment we recommend is the very best choice for your site.

Walkways and guardrails

- » Fix easily to many roof profiles
- » Disruption-free installation
- » Safe and stable working surface
- » Corrosion resistant, waterproof installation
- » Comply with AS1657-1992



Platforms

- » Maintenance-free
- » Comply with AS1657-1992
- » Corrosion resistant aluminium and galvanised steel
- » Tailored designs installed fast
- » Specialist platforms for asbestos roofs
- » Ideal for access to cooling towers



Access ladders

- » Step type and Rung type
- » Quick installation
- » Lightweight, durable, non-corrosive
- » Certified to Australian Standards
- » Safe, secure internal and external installations



Roof access hatch and surrounds

- » Sliding lids for ergonomic safety and stability
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- » Safe, permanent support for access and egress



Fall restraint and arrest systems

- » Extensively tested and certified
- » Durable, high quality
- » Solutions matched to your site
- » Suits all roof types
- » Installed by specialists





Height safety: when risk assessment is not enough

Both Victoria and NSW have developed an hierarchy of controls specifically for people working at heights. Here Carl Sachs* outlines what safety professionals need to know.

Imagine for a moment you have carefully identified the hazards, assessed the risk, put control measures in place, consulted with employees and documented every step. Are you safe?

When it comes to safe work at heights, maybe not. Legislation surrounding working at heights in Victoria and NSW is quite prescriptive by today's standards and the standard risk assessment process is simply not enough.

Mandatory Equipment

Safety professionals are familiar with the hierarchy of controls that sets out the order of control measures, running from elimination to substitution, followed by engineering, administration, and finally, personal protective equipment.

In the field of working at heights however, the law takes the hierarchy of control mechanisms beyond those loose terms and lays out the equipment and systems to match.

WorkCover NSW's *Safe Working at Heights Guide 2004* clearly spells out the importance of the hierarchy on page 7, "Unlike other areas of the OHS

Regulation, the appropriate risk control measures are not solely determined by conducting a risk assessment. Instead, clause 56 specifies a mandatory hierarchy of controls, which relate solely to the risks associated with people falling from heights."

There is little room for manoeuvre under the two states' laws. You must apply the controls in the listed order and can only move down to a lower level where it is "not practicable" to use a higher order control.

The *Victorian Code of Practice (No 28) - Prevention of Falls in General Construction* explains neatly that "Practicable" does not just mean the cost in dollar terms, and lists four factors to be taken into account:

- the severity of the hazard or risk;
- the state of knowledge;
- the availability and suitability of ways to remove or mitigate the hazard or risk; and



Walkways and guardrails are typical level 2 controls.

- the estimated cost of removing or mitigating the hazard or risk.

Move from one level to the next, and both state regulations stipulate that you document the reasons why a higher level of protection was not practicable.

Hierarchy Demystified

The hierarchy of control is similar in both Victoria and NSW but organised a little differently.

Victoria's hierarchy of control specifies five levels of control, while NSW groups them into three.

For the sake of clarity, this article will outline the five-level Victorian hierarchy, which includes the following:

Level 1: Undertake the work on the ground or on a solid construction -

This first level aims to eliminate the hazard altogether, in line with the more general hierarchy of controls used in other safety fields.

It suggests a host of measures from using extendable handles on paint rollers to tilt-slab concrete wall construction as alternatives to working at height.

The definition of a "solid construction" is a little more complex. It must have enough structural strength to support people and materials; have a non-slip

surface free from trip hazards and at a readily negotiable gradient; edge and void protection and; finally, a safe means of access and egress.

Level 2: Undertake the work using a passive fall protection device -

The phrase "passive fall protection device" is vague because it covers quite a range of height safety products with one common element: once they are installed, there is no need for alteration. Examples include fixed or mobile scaffolds, guard rails, scissor lifts, cherry pickers and roof safety mesh.

Level 3: Undertake the work using a work positioning system -

If eliminating the risk is not practicable and neither are the level 2 controls, consider the category of safeguards referred to as "work positioning systems".

These typically include industrial rope access systems and travel restraint systems. Simply put, these systems prevent workers falling over an unprotected edge and are harnesses attached by lanyards to roof anchors or static lines, or harnesses with ropes and friction devices.

The effectiveness of these safeguards depends entirely on the skills of their users and how well the equipment is

continued on page 20

continued from page 18

maintained. Both users and their supervisors should undertake competency based training before implementing any level 3 safeguards.

Level 4: Undertake the work using a fall injury prevention system - Often confused with work positioning systems, fall injury prevention systems are fundamentally different. While work positioning systems prevent the fall from occurring at all, level 4 controls merely minimise the distance of the fall.

Examples of fall injury prevention systems are safety nets, catch platforms and individual fall arrest systems (IFAS). All of them need to be installed by people with specialist technical skills but workers using IFAS must also be highly trained.

Some of the most common hazards associated with IFAS are caused by the “pendulum effect”, where a worker falls over the edge and swings underneath. First, the worker risks being smashed against the side of the building.

Second, a line that is extended too far across the roof can become too long to prevent the person from hitting the

ground as the rope swings back towards the anchor point.

Even if the fall has been arrested without injuring the worker, there is the risk of suspension trauma, where blood pools in the legs in the minutes after the fall, leading to unconsciousness and eventually, death.

For all these reasons, workers using IFAS should never work alone and an emergency plan needs to be put in place to allow a speedy rescue.

Level 5: Undertake the work from ladders, or implement administrative controls - The very last resort for working safely at height encompasses ladders and procedures, or “administrative controls”. In its summary of the regulations, WorkCover Victoria has this to say about level 5 controls:

“The reason these two are grouped together at the end of the risk control sequence is that they are equally poor ways to control the risk of a fall.”

The Victorian Code details the correct use of ladders and outlines the need for stringent documentation of administrative controls.

The Bottom Line

It makes sense to follow the safe work at heights hierarchy of controls. Aside from meeting your moral and legal obligations, it is good business to install the higher level controls like guardrails and walkways wherever possible rather than relying on fall prevention and fall arrest systems.

Level 1 and 2 controls focus on making the environment (usually a rooftop or building) safe. The remaining levels place the emphasis on safe behaviour or restraining the worker with technical equipment.

In practice, this means that simple, low maintenance systems like guardrails are less costly over their lifetimes, require little training to use and allow a broader spectrum of workers to do the job safely. Better height safety really does equal a more productive workforce.

**Carl Sachs is a director of Workplace Access & Safety, 1300 552 984, and represents the Master Builders Association on the committee for AS 1657 - 1992: Fixed platforms, walkways, stairways and ladders - Design, construction and installation.*

Like to know more about fall prevention?



Height safety specialists, Workplace Access & Safety offers training, audits and installs all the equipment needed to make your workplace comply with Australian Standards and state regulations.

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