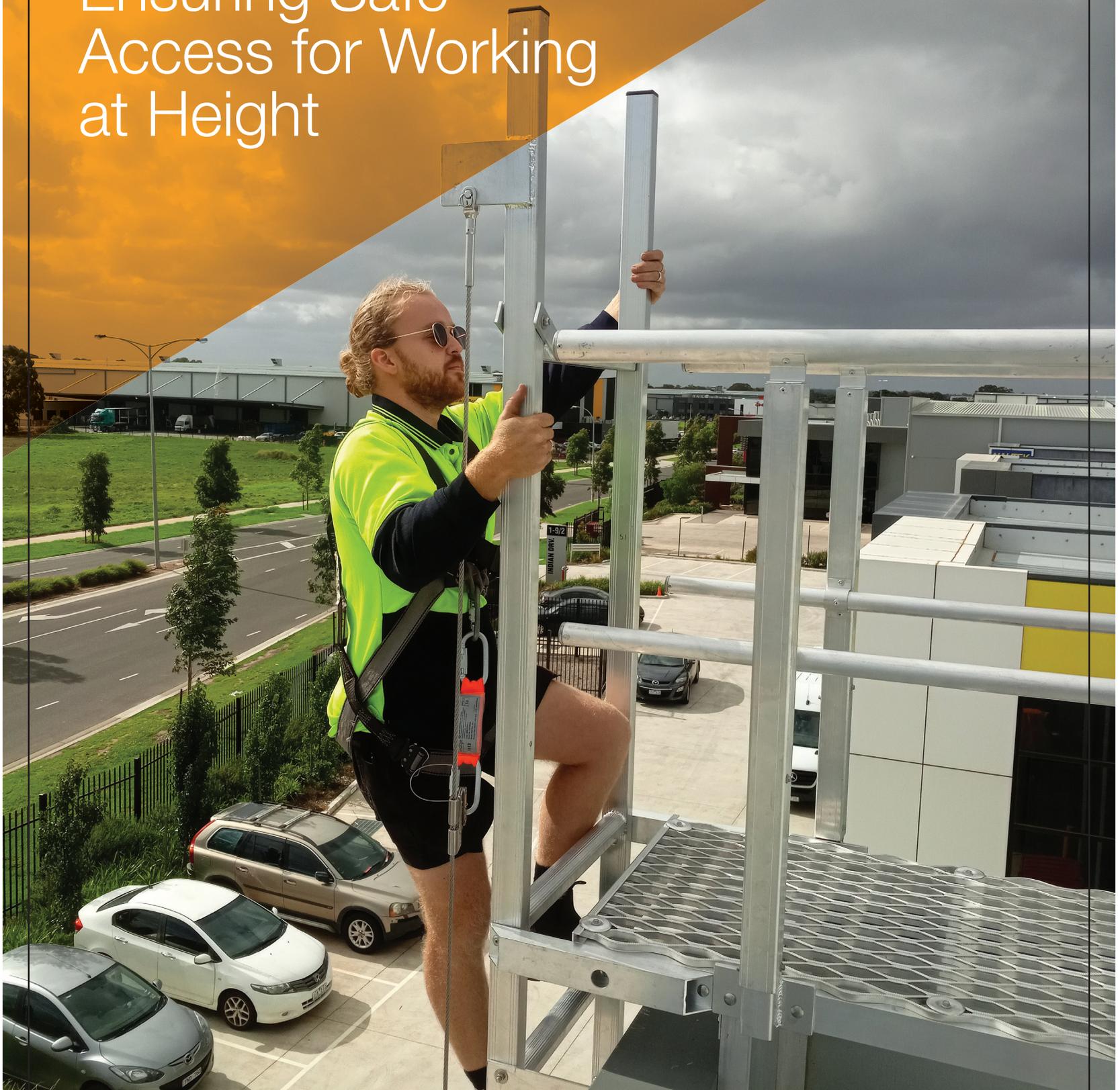


High Stakes:

Ensuring Safe
Access for Working
at Height



 **AM-BOSS**
ACCESS LADDERS

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INTRODUCTION

The importance of safe ladder access when working at height cannot be understated. Ladder falls have been identified as both a leading cause of death for people working at height¹ and a common cause of brain injury.² This has led to ladder usage and working at heights becoming a heavily regulated domain - from Australian Standards to legislative and Government agency-based controls such as Occupational Health and Safety guidelines. As a general rule, the focus is on two areas: safe equipment and safe use.

While it is the responsibility of individual workers to ensure they use equipment strictly in the safest way possible, the reality is that this does not always occur. This issue is particularly prominent with portable ladders, which are commonly misused in order to decrease job time or minimise inconvenience.³ This means that fixed and pull down ladders are a safer option in commercial applications where ladder access is required.

This whitepaper will provide an overview of the safety features of access ladder solutions and fall arrest systems. It will take a detailed look at the considerations for specifiers seeking to create safer conditions for those working at height.



PORTABLE VS FIXED LADDERS

While all ladders can be dangerous if not installed, maintained or operated correctly, it is widely accepted that portable ladders are more dangerous than fixed access ladders. In fact, WorkSafe Victoria has noted in its guidance that, “portable ladders are one of the least stable but most commonly used tools for working at heights.”⁴ There are numerous potential hazards that can arise when using portable ladders. They may be placed in an unsafe position such as under power lines. They may be placed on unstable or uneven ground, and any inbuilt levelling assistance not used properly. Portable ladders must be regularly checked as they may crack or buckle if not maintained properly. Many of these hazards and risks can be mitigated by the use of fixed access ladders or pull down ladders in commercial environments.

In a commercial environment it is common to have external tradespeople such as electricians, builders or plumbers come to carry out maintenance works. They may be unfamiliar with the access points around the building, however having existing access ladders installed provides them with safe passage to the relevant parts of the building. While there are undoubtedly applications where a portable ladder is the best tool for the job, a fixed ladder is a safer, more stable option for people working at heights. For industrial use or applications where the path of access is up a wall, or on the outside of a building, a permanent fixed access ladder is an ideal option. However for interiors, or places where the best path of access is in a thoroughfare, pull down access ladders can provide added safety for those working at height without causing danger or disruption to the flow of the design and people operating below.

SAFETY THROUGH STRENGTH

Modern pull down access ladder systems are built for maximum safety, functionality and durability over time. This is achieved through a combination of high quality material construction and smart design. In order to achieve the best possible level of operability, ladders must be extremely strong and lightweight. This means that an aluminium alloy is ideally suited for these applications. Aluminium alloys have extremely high strength-to-weight ratio, as well as high corrosion resistance. Aluminium’s tensile strength increases at colder temperatures while maintaining its toughness⁵ which is highly advantageous in applications where ladders are located outside or in ceilings or other non-heated spaces.

Just as important as strong ladder construction, is the inclusion of long-lasting and durable parts such as springs. Here, a zinc-plated steel construct is ideal. Galvanising these parts extends their lifespan and means that their performance will not be compromised by corrosion, making them a safer choice to protect workers.

The load capacity of any commercial ladder is a key detail for any specifier to observe. It is possible to get heavy-duty ladders (both pull-down and fixed access) rated to 400kg, however for the majority of applications this would not be required. A more standardised load rating would be to 150kg at any fixed point, not spread weight. This will safely support a fully grown worker with plenty of additional leeway should tools or other equipment also need to be transported using the ladder.



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CAGES AND FALL ARREST SYSTEMS

Ladder cages and fall arrest systems are crucial safety features for those working at height. Indeed, for ladders of more than 6 metres height, a ladder cage or ladline is mandatory in order to be Building Code of Australia compliant.⁶ However, there are many other fall arrest systems that will increase safety for those working at height. These are regulated by the AS/NZS 1891 - *Industrial Fall Arrest Systems and Devices* set of standards, which set out requirements for the manufacture, use and maintenance of modern fall arrest systems.⁷

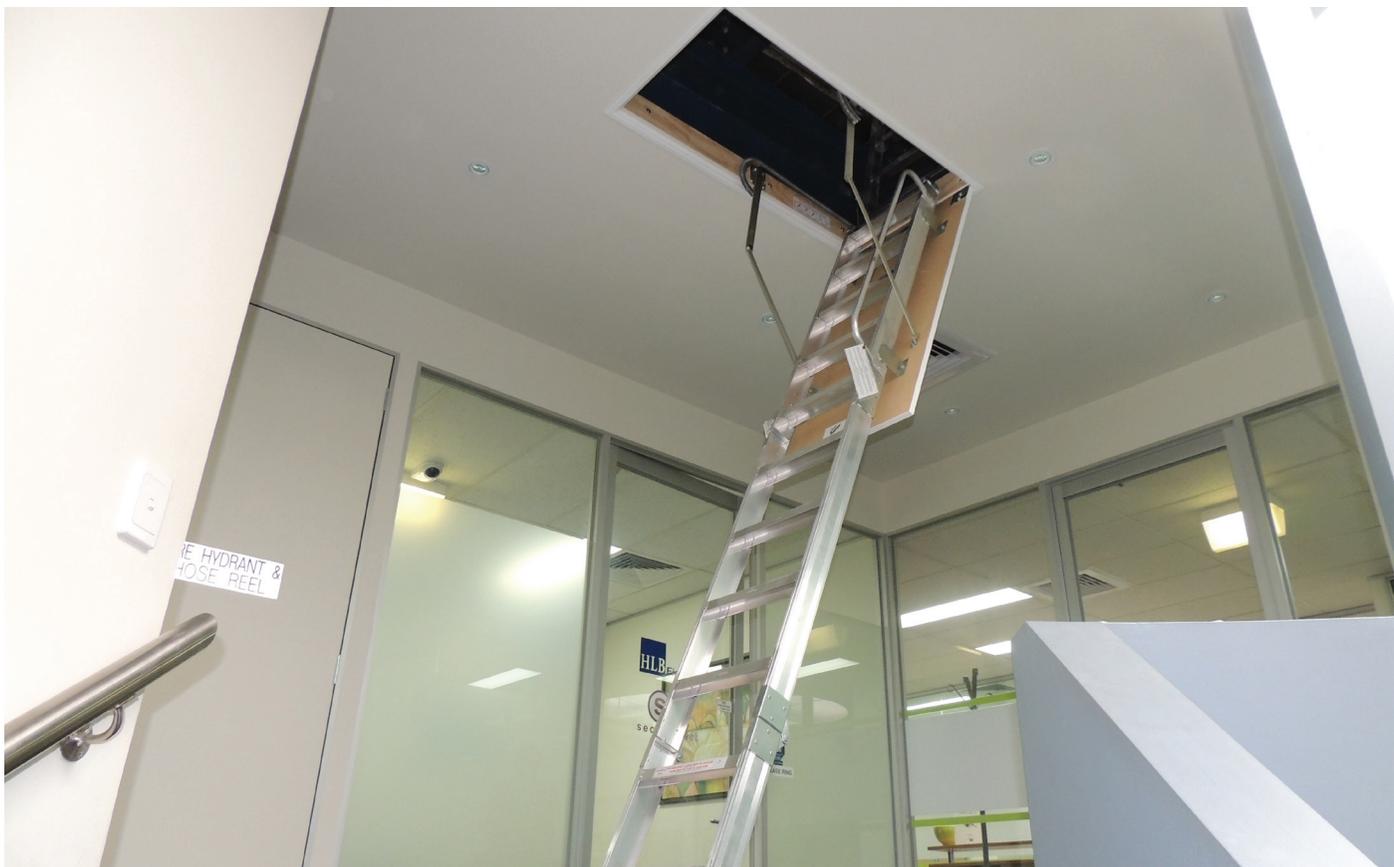
Rooftop anchor point and static line systems are a highly effective means of fall arrest. These systems work by fixing a number of anchor points at intervals along a rooftop, and joining them with a fixed cable (or 'static line'). This allows the worker to wear a harness and clip themselves to the line while they work. This is advantageous for the worker because it means they can have two hands free at any time for maximum freedom of movement, and they can complete work near the roof's edge without fear of falling. These systems work with most roof types and mean that the roof can be made safe for workers without the additional cost or visual impact of installing permanent guardrails or walkways.

INTELLIGENT DESIGN

While there are prefabricated fixed access and pull down ladder solutions available on the market, a customised solution provides better overall design and better safety outcomes for those working at heights. This is due to the range of intelligent design features that can be implemented when solutions are custom-built to the specific requirements of each project, and are particularly impactful in pull-down ladder applications.

Many commercial spaces are fitted with floating ceilings that conceal wiring, HVAC tubing, insulation and other structural aspects. This means that a prefabricated ladder solution would often be unsuitable as the standard gypsum ceiling lining would be unable to support its weight. A custom-designed and installed pull down ladder is able to attach to the roof hatch, with only a frame in the suspended ceiling. This means that the roof supports the weight of the ladder, not the ceiling. Similarly, an effective counterbalance system will allow ease of use and reduce wear and tear on parts such as springs, prolonging lifespan and reducing any risk of degradation due to overuse.

In addition, a custom-made pull down access ladder can be designed specifically so that there is equal spacing between each tread and the top of the ladder. With just a small difference in rise attributing to a number of trips and falls,⁸ this is a significant safety consideration.



COMPLIANCE

While there are no standards pertaining specifically to pull down access ladders, there are some Australian Standards which have some bearing in this space. In addition to the aforementioned *AS/NZS 1891 suite*, *AS 1657:2018 - Fixed platforms, walkways, stairways and ladders* covers fixed access ladders and outlines requirements pertaining to maximum heights, rung spacing and clearances.

The simplest way to ensure compliance when specifying a safe ladder for commercial applications is to check CodeMark certification. CodeMark is a voluntary third-party scheme that provides proof that a product meets 'evidence of suitability' requirements for the Building Code of Australia.⁹ CodeMark certified products are automatically accepted by building control authorities and thus provide shorthand means for specifiers to guarantee the product they have selected is code compliant.

AM-BOSS ACCESS LADDERS

AM-BOSS provides high-performance, CodeMark certified pull down and fixed access ladder solutions that comply with AS1657-2018 to the Australian market. Made from high-strength welded aluminium stainless steel and / or galvanised parts, AM-BOSS products are built for durability and to prioritise safety above all else. AM-BOSS pull down access ladders are rated to a standard load capacity of 150kg at any point. However, heavy-duty models are rated to 400kg.

AM-BOSS access ladders are customised for the specifics of each project, allowing even tread spacing to minimise trip hazards, and providing for the incorporation of additional safety features that may be necessary in specific circumstances. Pull down ladders are counterbalanced to make them easy and safe to operate in commercial environments of all types.

AM-BOSS is also certified to install and test fall arrest systems and anchor points in line with AS/NZS 1891. This means that AM-BOSS staff are able to provide specifiers with a full-spectrum view of the systems, products and regulations that will best suit the specific needs of any project and contribute to greater safety for those working at height.



REFERENCES

- ¹ Safe Work Australia. "Working at Heights". Accessed 10 June 2020. <https://www.safeworkaustralia.gov.au/heights>
- ² Brain Injury Australia. "New Research: Ladder Falls are the Most Common "Do-It-Yourself" Injury, and Nearly 1 in 10 Result in a Brain Injury". Accessed 10 June 2020. <https://www.braininjuryaustralia.org.au/ladder-falls/>
- ³ Harvard Campus Services. "Construction Safety Quick Take: Ladders". Accessed 11 June 2020. https://www.ehs.harvard.edu/sites/ehs.harvard.edu/files/ladder_safety_quick_take.pdf
- ⁴ OHS Rep. "Ladders - What are the Rules and Regulations?". Accessed 10 June 2020. https://www.ohsrep.org.au/ladders_-_what_are_the_rules_and_regulations
- ⁵ AZO Materials. "Aluminium - Specifications, Properties, Classifications and Classes". Accessed 10 June 2020. <https://www.azom.com/article.aspx?ArticleID=2863>
- ⁶ Standards Australia. "AS1657:2018 - Fixed platforms, walkways, stairways and ladders - Design, construction and installation". Accessed 10 June 2020. <https://www.standards.org.au/standards-catalogue/sa-snz/building/sf-013/as--1657-colon-2018>
- ⁷ Working At Height Association. "Australian Standards – Status on AS/NZS1891 Series". June 2017. Accessed 10 June 2020. <https://www.waha.org.au/technical-bulletins/update-on-changes-to-australian-standards-1891-series/>
- ⁸ InspectAPedia. "Stair step height: Guide to Stair Riser Dimensions". Accessed 11 June 2020. https://inspectapedia.com/Stairs/Stair_Risers.php
- ⁹ Australian Building Codes Board. "CodeMark Certification Scheme". Accessed 11 June 2020. <https://www.abcb.gov.au/Product-Certification/CodeMark-Certification-Scheme>

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