



# Finance Technical Guideline

## TG006 Roof Access

### 1 Purpose

This guide assists agency representatives, consultants, and project managers to procure safe roofs and provide appropriate roof access systems for routine maintenance.

### 2 Methodology

Safety is everyone's business. Safety and health legislation is complex and there is an overlap regarding the duty of care of designers, employers and contractors. There is an onus on building designers, building owners, persons conducting a business or undertaking (PCBUs), building managers, supervisors, manufacturers, suppliers, maintenance personnel and workers to ensure, as far as reasonably practicable, that hazards and risks to a person's health and safety are avoided.

A safe design approach, comprehensive consultation, risk management process, and good planning ensure that construction, renovation, servicing, maintenance or repair of roofs, plant or equipment on a building or structure can be undertaken in a safe manner.

### 3 Requirements for Finance Projects

#### 3.1 Design to Avoid Roof Access Requirements

From the commencement of project design, wherever possible, consultants are to apply planning and design strategies to eliminate the requirement to access roofs for routine maintenance.

In principle, equipment and plant must be located on the ground or in dedicated plant rooms to provide easy access for ongoing maintenance requirements. This principle applies to all Government buildings.

Finance does not support the use of internal box gutters or "concealed gutters". The design of paving, hardstand, and landscaped areas around the perimeter of a building, immediately below eaves gutters, should facilitate access to those gutters for cleaning from ground level (e.g. via ladder or elevated work platform).

To design out opportunities for unauthorised access to the roof, careful consideration should be given to the placement of items such as gates, fences, and other potentially climbable features.

## 3.2 Planning Requirements for Roof Access Systems

When locating plant or equipment on a roof is unavoidable, roof safety systems should not be overly complicated and should generally only be located to the areas of a roof where access for routine maintenance is required.

### 3.2.1 Design Considerations

Roof safety and fall prevention systems require regular maintenance, inspection, and re-certification for continued use, create multiple penetrations of the roof sheet, and have the potential to create accelerated corrosion of the roof sheeting by galvanic corrosion if not properly installed.

In consideration of this, Finance's strong preference is that the installation of elements such as roof anchor points be minimised wherever possible and limited only to the extent required to facilitate routine maintenance such as the maintenance of mechanical plant & equipment, high level glazing, gutter cleaning (where it cannot otherwise be accessed from ground level), and the like.

The frequency of access required should be determined in consultation with the relevant consultant discipline(s) having jurisdiction over the plant and/or equipment requiring maintenance. Consultants shall reference NATSPEC TECH Report TR07 *Providing Access for Maintenance*. TR07 Clause 3.1.2 *Frequency of Access* classifies access for maintenance requirements by frequency (i.e. Access Class A (Frequent), B (Occasional) or C (Infrequent) and recommends the types of access that should be provided for the respective classes. NATSPEC's TR07 defines access required at intervals less frequently than 6 months as being *infrequent*.

Plant or equipment shall not be positioned close to roof edges, or on steep roofs, and should consider any other potential risks to installation and maintenance providers. When maintenance walkways, platforms and ladders are to be provided they should, wherever possible, be placed on internally facing roofs and located to minimise their visual impact. Maintenance walkways should be raised sufficiently to avoid trapping debris and utilise non-penetrating fixing methods to preserve the integrity of the roof sheeting.

The point of access to a roof should be located as close as practicable to the area of maintenance concerned to minimise the distance of travel required, and therefore the extent of the roof access system itself. More than one point of access (particularly for ladder access) may be considered appropriate in this regard.

To prevent unauthorised persons accessing the roof, points of access such as roof hatches and access ladders should be appropriately secured by locking mechanisms or other security feature appropriate to deny unauthorised access.

### 3.2.2 Design & Documentation

A design and construct (D&C) approach for procuring a safe roof access solution by the Contractor is NOT permitted. Full design, documentation, and certification by the Consultant is required.

### 3.2.3 Height Safety and Access Management Consultant

Where a height safety and access management (HSAM) consultant is appointed for the design and specification of roof access systems, engagement should occur at the early stages of a project. Early engagement ensures planning and design decisions made during schematic design and design development are informed and well considered, remove or mitigate risk where possible, and a safe roof access strategy is developed appropriately.

### 3.2.4 Safety in Design Consultation

Roof safety is to be considered as part of the project's Safety in Design assessment.

Australian Standard AS/NZS 1891.4:2009 *Industrial Fall-Arrest Systems and Devices*, Clause 2.1.1, defines the following considerations which should be made during risk assessment:

- (i) Work type - What parts of the roof will need access for maintenance work? How long will task take? How often is task required?
- (ii) Potential for a fall and fall severity - What parts of the roof are a fall hazard? (For example, unprotected edges, fragile surfaces, holes, steepness of pitch)
- (iii) Task mobility - How many people are required to do the work? How will workers access the area where work is to be done?
- (iv) Constraints on fall distances and clearances - What are the vertical and lateral clearances?

It should be noted that anchor points require regular inspection and maintenance in accordance with AS/NZS 1891.4:2009. Additional and unnecessary anchor points will increase the requirements for inspection and maintenance, which should be considered throughout the risk assessment process.

Maintenance personnel are responsible for providing their own compliant fall arrest equipment that is compatible with the installed system, and in compliance with AS/NZS 1891.4:2009 *Industrial Fall-Arrest Systems and Devices*. They are also responsible for ensuring that any anchor points are inspected for compliance and certified prior to use.

### **3.2.5 Structural Considerations & Certification**

Roofs are required to be designed to specified structural loads, including live loads. The roof structure to 'trafficable' zones and equipment locations may require additional strength or bracing. The Consultant shall liaise and coordinate with the Structural Engineer as necessary.

If roof access systems are to be installed, a structural engineer should be engaged to provide the information necessary to ensure the adequacy of the structure to accept the system to be installed.

Structural engineer's certification for anchorage points and other access fixtures is required to be provided as part of the tender documentation by the Lead Consultant.

### **3.2.6 Testing & Certification**

The roof access, fall arrest and fall prevention systems, fixed platforms, walkways, stairways, and ladders are to comply with:

- (a) the approved design and specification,
- (b) AS 1657, AS/NZS 1891, and AS/NZS 5532, and
- (c) are to be certified by the Installer as having been installed in accordance with Australian Standards and the Manufacturer's requirements.

Any items to be installed on the roof in cyclonic regions (including Regions B, C and D), including roof access systems, are required to have evidence of recognised cyclone test certification. Certification should establish the performance of the complete assembly (as it will be installed) for concentrated loads, wind pressure (including fatigue loading for cyclonic areas) and water tightness.

### **3.2.7 Practical Completion – Certification**

Prior to the issue of the Certificate of Construction Compliance (CCC) and Practical Completion, inspection and certification of the completed roof access system is required to be undertaken by the Contractor to confirm compliance with the documented design and specification.

### **3.2.8 Practical Completion – O&M Manuals**

At Practical Completion, the Operation and Maintenance (O&M) Manuals will include all technical specifications, operating and maintenance instructions, and certificates of compliance for all roof access and fall prevention systems installed on the project. All certification and warranty periods shall be valid from the Date of Practical Completion, such that the Principal has the full benefit of warranty and certification periods commencing on their possession of the building.

One copy of the O&M Manuals should be retained on site by the building manager for future reference by roof safety inspectors at regular intervals during the building's operations. Documents in the O&M Manuals must include, but are not limited to, the following:

- (a) a printed copy of the Manufacturer's manual/s for all fixtures,
- (b) the Manufacturer's certificate of fabrication in accordance with the relevant Australian Standard (e.g., under AS/NZS 5532),
- (c) an Independent Inspector's certificate where applicable,
- (d) the Installer's certification that the completed installation is in accordance with Australian Standards and the Manufacturer's requirements, and
- (e) As-Constructed drawings of the entire roof safety system.

## **4 Summary of Design Responsibilities and Deliverables**

### **Schematic Design.**

- Apply planning and design strategies to eliminate the requirement to access the roof for routine maintenance to the full extent possible.
- Engage Height Safety & Access Management consultant (HSAM), if required.
- Commence Safety in Design (SID) consultation to the extent possible.

### **Design Development.**

- Appropriately brief subconsultants (e.g. mechanical, landscaping) to continue to apply planning and design strategies to eliminate the requirement to access the roof for routine maintenance to the full extent possible.
- Formal SID consultation. Recommend consultation includes Designer/s, HSAM Consultant, Project Manager, Client Agency, and Maintenance Contractor/Personnel.
- Identify proposed safe roof/height access strategy and extent.
- Inclusion of SID Report within Design Development Report submission to BTS for review.

### **Contract Documentation.**

- Further SID consultation if required between Designer/s, HSAM Consultant, PM, Client Agency, and Maintenance Contractor.
- Finalise safe roof access strategy and extent.
- Prepare full and appropriate documentation for tendering and Building Permit application requirements, including a specification work section and full details for the proposed system.

- Structural engineer's certification for anchorage points and other access fixtures to be provided as part of the tender documentation.
- Updated (and consolidated) SID Report within Contract Documentation Report - submission to BTS as part of Design Review process.
- The Consultant is required to ensure that the Safety in Design Report is included in the tender documentation. A copy of the Report is required to be provided to the Principal's Representative and Contractor prior to the Contractor commencing work on the site.

### **Practical Completion.**

- Inspection and certification of completed roof access system to be undertaken by Contractor and verified by Superintendent's Representative. The Contractor is to ensure the roof safety system has been installed as per the manufacturer's requirements.
- Operation and Maintenance (O&M) Manuals to include all technical specifications, operating and maintenance instructions, and certificates of compliance for all roof access and fall prevention systems.

## **5 References**

### **5.1 Statutory Requirements**

Safety and health in Western Australian workplaces are regulated by Western Australia's *Work Health and Safety Act 2020* (the WHS Act).

Under the WHS Act, there are three types of instruments to help meet workplace health and safety obligations, namely Regulations, Australian Standards (AS) or Australian/New Zealand Standards (AS/NZS), and Codes of Practice.

#### **Regulations.**

The WHS Act is supported by three sets of regulations which specify the way in which some duties under the WHS Act must be met, and prescribes procedural or administrative requirements to support the WHS Act:

- *Work Health and Safety (General) Regulations 2022* – applies to all workplaces except those covered by the other two sets of regulations (WHS General Regulations)
- *Work Health and Safety (Mines) Regulations 2022* – applies to mining and mineral exploration operations (WHS Mines Regulations)
- *Work Health and Safety (Petroleum and Geothermal Energy Operations) Regulations 2022* – applies to onshore and offshore petroleum, pipeline and geothermal energy operations (WHS PAGEO Regulations).

## Codes of Practice.

A Code of Practice is a document prepared to provide practical guidance on how to comply with a general duty or specific duties under Western Australian occupational safety and health laws. A Code of Practice may include explanatory information, recommendations for best practice, or references to occupational safety and health laws. While duty holders must comply with the underlying occupational safety and health laws, the preventative strategies outlined do not represent the only acceptable means of achieving a certain standard.

Codes of Practice approved under the WHS Act include:

- *Code of Practice - Prevention of Falls from Height at Workplaces*, and
- *Code of Practice – Safe Design of Buildings and Structures*.

## 5.2 Safe Access, Standards and Compliance

The National Construction Code (NCC) and Australian Standards should be complied with to the full extent applicable when designing roofs and safe roof access systems.

The **NCC** in clauses D1.16 and D2.18 of Volume One (non-residential buildings) provides for compliance with AS1657 for access ways to machinery rooms, plant rooms and the like.

Australian Standard **AS 1657:2018** *Fixed Platforms, Walkways, Stairways and Ladders – Design, Construction and Installation* sets out the requirements for design, selection, construction, and installation, and is intended to provide safe access to places used by operating, inspection, maintenance, and servicing personnel.

**AS/NZS 1891.4:2009** *Industrial Fall-Arrest Systems and Devices – Selection, Use and Maintenance* sets out the required specification for the selection, safe use, and maintenance of industrial fall arrest systems and devices based on the use of safety harnesses, horizontal static safety lines and rails, fall arrest devices, and associated lanyards, connectors, anchorages, and fittings.

**AS/NZS 5532:2013** *Manufacturing Requirements for Single Point Anchor Devices Used for Harness-Based Work at Height* establishes parameters for the manufacturing of anchor points as stated.

## 6 Document Control

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### 1. Document Approval

This guideline was endorsed and approved for use on 29 June 2022 by:

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Department of Finance, Western Australia