Domestic construction

Controlling falling risks while working on roof structures

Risk assessment should always be carried out, and appropriate controls put in place to reduce the risk of falling

This bulletin has been developed to inform workers, people in control of workplaces and employers:

- of the hazards of falling from roof structures during construction and installation of roofs; and
- to provide guidelines to implement safe systems to prevent injuries arising from these hazards.

While this bulletin does not cover all requirements under safety and health laws, it does cover a range of situations and will give users helpful guidance on common measures to control the risk of falls from height.

The nature of roof frames and the methods of installation provide a falling risk to those involved in their construction or erection. Examples of situations where workers are at particular risk of falling through roof framing can include:

- installing roof framing where trusses and rafters exceed 900mm centres;
- installing roof bracing;
- measuring the top chord for batten set out;
- installing battens and sarking;
- installing metal or tile cladding; and
- walking on unsupported pine ceiling joists.

Workplace safety and health legislative requirements

A person who at any workplace, is an employer, the main contractor, a self-employed person, a person having control of the workplace or a person having control of access to the workplace must, as far as practicable:

(a) identify each hazard to which a person at the workplace is likely to be exposed;

(b) assess the risk of injury or harm to a person resulting from each identified hazard;

(c) consider the means by which the risk may be reduced; and

(d) maintain good general housekeeping, especially ensuring possible fall zones are kept clear.

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To prevent injuries arising from falls from height, industry operators involved in the erection of timber stick roof and metal and timber roof trusses must implement safe systems of work. This includes:

- proper planning and organisation of work at height using risk management processes to identify hazards, assess risks and control hazards;
- consultation with employees, safety and health representatives (if any), self employed persons or contractors to ascertain problems associated with performing tasks/jobs;
- inspecting equipment/plant used to work at height before use; and
- ensuring persons who work at height are trained and competent to perform the task.

Although there are rules for heights at which physical controls are required, it should be recognised that falls can and do occur at any height. Consequently a risk assessment should always be carried out, and appropriate controls put in place to reduce the risk of falling.

It is acknowledged that methods of safety control suitable for one housing site may not be practicable for another site. Similarly there will be differences between metal and timber-framed roofing. As a result, all construction work needs to be considered individually, and a risk assessment done to assist the employer or person in charge and the person performing the work to identify and implement the most appropriate methods of control.

Control measures that could be used to reduce the risk of falls during different types of roof construction work may include, but not be limited to the following:

1. Pitching a conventional roof (single and double storey)

a) Ceiling framing

For a ceiling frame, both single and double storey, working from the top plate or joist should be avoided. When working below the top plate or joist, excess mortar from the tops of brick walls should be cleaned while the mortar is still green.

Laying plates, joists, hangers or soldiers should be done using a suitable platform[1] at least 450mm wide where practicable.

External fall protection should be based on a risk assessment where the potential fall is less than three metres (single storey) and is mandatory where there is a potential fall of three or more metres.

b) Pitching the roof

Once the ceiling frame has been securely fixed, the ceiling frame may act as a base to install a platform. Planks or sheet flooring plywood could be used as a platform to then pitch the roof.

Where additional height is required above the suitable platform, an additional platform may be erected.

Safe access/egress, as determined by the relevant contractor in consultation with the builder, must be provided to all platforms.

For single storey houses less than three metres, external and internal fall protection is to be used if a risk assessment deems it necessary.

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1 Suitable platform - may include, but not be limited to a scaffold, mobile scaffold, trestles or trestle scaffold, planks, or sheet flooring material secured to the top surface of ceiling rafters or the bottom chord of roof trusses.

c) Ceiling joist safety procedures

The top of brick walls to be left clean and free of mortar before the timber wall plate is installed.

The practice of roof carpenters balancing on a ceiling hanger while nailing ceiling joists to the hanger is to be avoided where practicable.

2. Standing and securing prefabricated timber roof trusses

Avoid manual lifting of large spanning trusses onto wall plates. When assembling and erecting trusses, use a platform and where practical use a crane.

Eliminate walking along external or internal top plates. Instead, use a platform or work from below.

Avoid standing or putting weight on unbraced trusses.

Use pre-cut spacers to brace each truss where practicable.

Provide safe access between trusses when bracing bottom chords.

Avoid walking the bottom chord of the truss.

A suitable working platform is to be used to fix speed bracing.

3. Rafter, truss and batten spacings

Battens used in construction must be strong enough to span the top chords of trusses or rafters and reduce the risk of a worker falling through the spacing of the roof.

Note: The installation of the roof battens themselves present a degree of risk because of the framing member spacings the worker will be moving along. Therefore:

- a control measure should be in place to prevent both internal and external falls to the person installing the battens;
- when working from above, roof battens must be installed from the roof edge up the pitch of the roof;
- workers must not be located above the height of the battens prior to batten installation; and
- perimeter battens to ridges, hips and valleys are to be installed in a methodical manner, during or after the battens to the body of the roof have been installed, to reduce the risk of falling.

To reduce the risk of internal falls:

- where design specifies truss/rafter centres greater than 900mm, batten spacing should be reduced to 900mm where a worker is required to work from above; and
- reduce truss/rafter centres where practicable.

To reduce the risk of external falls:

- battens to be installed sequentially from the perimeter of the roof using a suitable platform;and
- fall protection to be provided based on a risk assessment where the potential fall is less than three metres (single storey) and is mandatory where there is a potential fall of three or more metres.

Example of a safe working procedure for the installation of timber trusses

1. Install plates from a suitable platform.
2. Use a suitable platform to land trusses on wall plates.
3. Brace and secure a commencement point from a suitable platform stand.
4. Move trusses from landing points to standing position along suitable platform.
5. Work sequentially from braced and secured section outwards bracing only to a point that can be easily reached, ie about 2 to 2.2 metres from bottom chord, and bottom chord braced as required.
6. Use a suitable platform with secured trestle on braced bottom chords; plumb and brace apex if required.
7. Install hips, creepers and valleys.
8. Speed brace roof frame as required from braced and secured bottom chord. Where fixing points are at a height, use a suitable platform and/or a secured trestle.
9. Roof and intermediate battens to be installed from fascia upward.

Note: Due to roof dynamics, where walking along planked sections or between platforms that cannot practicably have handrails, the trusses that are moved should be in place and braced immediately.

Example of a safe working procedure for the installation of steel trusses

1. Install plates by using a platform and connect top plates to hoop iron straps.
2. Stand first truss and brace, starting at one end of the building/structure.
3. Install each additional truss followed by a pre-cut spacer to secure truss, working sequentially from the first truss.
4. Install ceiling batten and screw off.
5. Install hips, creepers and valleys.
6. Complete fascia and eaves.
7. Install roof battens starting from the bottom and complete each plane of the roof prior to moving up to the next row of battens.

Further information

Please refer to the *Code of practice: Prevention of falls at workplaces*, published by the Commission for Occupational Safety and Health.

Acknowledgement

WorkSafe acknowledges the Queensland Government Workplace health and safety guide on domestic construction, which has been used in the development of this bulletin. This bulletin was prepared in consultation with the Construction Industry Safety Advisory Committee.

This bulletin is available on request in other formats to assist people with special needs.

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