National Operational Guidance

Hazard

Unguarded edges

Developed and maintained by the NFCC

Contents

Hazard - Unguarded edges

Hazard Knowledge

Firefighters responding to incidents may encounter unguarded edges around, for example, roofs, cliff edges, sink holes, docks and quarries. Guards around edges may have been severely damaged in an incident, as in the case of a serious fire in a high-rise building. The safety of crews in these situations should be of paramount importance to incident commanders.

An unguarded edge is generally defined as a floor, gallery, balcony, roof or area that people can access, and where there is no solid wall or raised rail of minimum 950mm high and no intermediate guard rail to offer protection from falling.

The work at height environment and the equipment and techniques used to overcome the inherent hazards will vary from incident to incident.

Most core work at height carried out by fire and rescue services will be on ladders and aerial appliances. Fall protection methods using harnesses are often used, such as rope access and rescue techniques, while wire equipment is used by specialist teams where necessary.

Control measure - Use appropriate work equipment

Control measure knowledge

Where it is not possible to avoid working at height near an unguarded edge then it is essential that a safe system of work is established. Where possible, a temporary physical barrier should be erected to provide collective protection to operational personnel. When the work at height environment is above ground level, ladders (for short duration tasks against stable structures) and mobile elevating working platforms (for long duration tasks and unstable structures) can be used to prevent the need to work near or on the unguarded edge. Such equipment may not be practical when the work at height environment is at ground level; for example, working at the top of cliff edges, sink holes, docks or quarries. Risk assessment should always determine correct equipment selection and deployment.

In any operation, sufficient measures should be identified or established to provide collective and personal fall protection to minimise the distance and/or consequences of a fall. Practical examples of collective protection include safety nets and soft landing systems where present (such as air bags installed close to the level of the work). Personal protection can include using rope-based systems that fall into three categories: work restraint, fall arrest and work positioning.

It is important that incident commanders select the most appropriate equipment and, where necessary, consider using supplementary equipment to add protection to the initial equipment and systems. Using items that will reduce uncontrolled or unexpected movement should also be considered.

Appropriate pre-use equipment and system checks should be conducted before personnel who will rely on work equipment for safety are deployed.

Strategic actions

Fire and rescue services should:

- Make appropriate work equipment available to prevent responders falling from height

Tactical actions

All personnel must:

- Use any work equipment or safety device provided in accordance with training and instructions

Incident commanders should:

- Select the most appropriate work at height equipment for the activities and hazards identified

- Use ladders for short duration tasks and request other equipment (e.g. aerial appliance) for other activities

Control measure - Use a secondary system or build in redundancy

Control measure knowledge

Using rope-based systems for access and rescue gives additional flexibility in certain operational environments but the same systems can be vulnerable to damage or failure. This can lead to catastrophic failure.

Poor selection of, or damage to, anchor systems, poor stowage/maintenance, incorrect system selection or operator errors can put personnel and casualties in danger. Using secondary systems to back up any possible system failure is therefore recommended and should be implemented wherever possible.

Redundancy should be built in to rope access and rope rescue systems, to act as a backup in case of failure. This can be done in many ways, but the most usual is to use a two-line system that starts at the anchors and works through the whole system to the operator and casualty.

Strategic actions

Tactical actions

Incident commanders should:

- Implement predetermined procedures and emergency arrangements at incidents involving working at height

- Use only personnel trained in the equipment and systems to advise or supervise work at height operations
- Ensure that work at height operating systems include an appropriate degree of redundancy

Control measure - Safety officers

Control measure knowledge

The incident commander or sector commander should assess levels of risk and consider appointing one or more safety officers to act as advisers; this appointment can be made at any time

Safety officers should have suitable competencies for the role and wear a blue and yellow tabard with the words 'Safety Officer'. If there is a safety sector, safety officers will report to a safety sector commander.

Safety officers will be responsible for functions including:

- Identifying safety issues
- Starting corrective action
- Maintaining safe systems of work
- Ensuring people are wearing appropriate personal protection equipment (PPE)
- Observing the working environment
- Monitoring the physical and psychological condition of personnel
- Regular reviews
- Recording an analytical risk assessment
- Updating the incident commander when circumstances change

Safety within sectors

Sector commanders are responsible for the health and safety of people within their sector. However, they may need to nominate a safety officer to assist and report to them.

At a large incident, a safety officer may be appointed as the safety sector commander; they will report to a command support officer.

If a safety sector commander has been appointed, they will co-ordinate the role of safety officers and may be responsible for functions including:

- Surveying operational sectors, identifying hazards, and advising the sector commander
- Working with sector safety officers to support and exchange information
- Confirming the validity of the initial risk assessment and recording as appropriate
- Collating and recording an analytical risk assessment
- Providing additional monitoring of the safety of personnel for sector commanders
- Working with the incident commander or operations commander
- Reporting health and safety issues, including accident investigation

Strategic actions

Fire and rescue services should:

- Identify suitably competent personnel who can be appointed as safety officers or safety sector commanders

- Provide a means to identify personnel on the incident ground who are carrying out the role of safety officer or safety sector commander

Tactical actions

Incident commanders should:

- Appoint suitably competent personnel at safety officers

- Task safety officers to carry out activities that will maintain the safety of operational personnel

- Instigate a safety sector at large or complex incidents under the control of a safety sector commander

- Task safety sector commanders to carry out activities, primarily to co-ordinate the role of other safety officers

Sector commanders should:

- Consider appointing a safety officer to assist with maintaining the health and safety of people within their sector

Control measure - Establish appropriate cordon controls: Work at height

Control measure knowledge

An inner cordon will be established to control the immediate scene of operations. The cordon must take into account the specific factors associated with working at height, such as:

- Almost any object falling from height may cause injury. Personal protective equipment (PPE) should be worn inside the cordon but may not be enough to protect personnel from injury.

- The wind can have a dramatic effect on how far objects travel: for example, a karabiner with a sling attached will travel a considerable distance because the sling acts like a sail in the wind. Even with no wind, some objects will naturally plane away from a structure.
- The height at which work is taking place can have an impact on how dropped objects behave, particularly if the wind is involved and if objects strike the structure on the way down, causing them to bounce outwards.
- There is a risk that equipment may be tampered with, for example, anchors could be vulnerable if set up and then left unattended.

A range of issues must therefore be taken into account when deciding on an appropriate cordon. The unique situation and circumstances of each incident will inform the incident commander's judgment about the size of a cordon and whether the minimum cordons recommended should be increased.

The location and environmental conditions such as wind at the incident will need to be considered when establishing an effective cordon around a work at height incident, as these factors could affect the movement of an unsecured item falling from height. The type and shape of structure can also have an effect on the way that items may fall, for example very tall buildings can create specific wind conditions that can make items move laterally further than may be expected.

See National Operational Guidance: [Incident command](#).

Strategic actions

Tactical actions

Incident commanders should:

- Establish and control inner and outer cordons, taking into account items falling from height and wind conditions
- Secure any unattended fall prevention systems to ensure they cannot be interfered with