Severed working line

Anchor lines were rigged 3m back from the edge, where they went over a metal rainwater gutter in a rope protector. The injured person had descended 3m and was painting a window when the working line failed. The shunt back-up device locked onto the safety line, but as he was working close above a glass roof, his fall was not arrested before his foot had made a heavy contact with the wired glass roof. He sustained a sprained ankle and broke several panes of glass.

It was found that the working line and rope protector had been cut through by a very sharp edge on a section of the metal guttering, probably exacerbated by sideways movement of the rope to reach the windows being painted. The estimated length of fall i.e. combined stretch of the safety line and device lanyard (cow's tail), slippage of the shunt and slack in the system was 2m.

Incident analysis/ control measures / lessons to be learned

- Although rope protection was in place and had proved to be sufficient over the previous days it was inadequate for that stretch of gutter. The risk assessment although referring to rope protection did not identify the metal gutter as a specific hazard. If the entire length of gutter had been assessed before work started, or before going over the edge, appropriate protection could have been put in place.
- Subsequently they established that by putting a length of hard plastic drain pipe cut vertically over the edge of such guttering, it would allow work to be carried out safely. Other types of protection such as rollers or rounded metal plates are available for sharp edges where textile protection is likely to be inadequate. Care is necessary to ensure protection will be effective with sideways movement of anchor lines.
- A loaded rope over a sharp edge can be cut relatively easily, especially with sideways movement. Technicians need to be particularly aware of all abrasion points when anchor lines are not free hanging and ensure adequate rope protection is in place.
- Working on ropes relatively near to the ground means that if the working line fails it is possible the backup device will not prevent impact with ground or other structure, because of elongation in the safety line. Whatever type of back-up device is used, some elongation cannot be prevented. The longer the safety line above the technician, the greater the fall distance due to elongation. A possible solution is to load the back-up device, but a loaded rope is easier to cut than slack one, so good protection is essential.

Anchor line protection information – though not directly relevant in this case

- At abrasion points in mid-height situations, attachment of the protector to the structure rather than to the anchor line is preferable, as anchor line elongation could result in poor protection or no protection at all. If exit is to be from the bottom, but retrieval of the anchor lines is to be from the top, then anchor line protector should be fastened to the safety line. If the working line and the safety line are some distance apart, an anchor line protector should be used for each anchor line. Where one anchor line protector is used for both anchor lines, it is normally attached to the safety line only, as it is less likely to stretch than the working line, thus minimising the chance of accidental abrasion
- Care is necessary to ensure the anchor line protector remains in the correct place when the anchor line is loaded, or that it is repositioned correctly when more than one person uses the anchor line. This may be particularly relevant if users are of different weights (masses). The consequences of a failure of the working line and the subsequent elongation of the safety line should be taken into account, which may prompt the use of several anchor line protectors.