# IRATA SAFETY BULLETIN SB22

# Catastrophic failure of ropes rigged over an edge

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*NOTE The advice on protection against edges in this document equally applies to protection against abrasive edges and hot surfaces.*

## 1 Essential safety measures

It is essential that, wherever possible, contact of anchor lines with edges is totally avoided. It is critical that, where risk assessment identifies the risk of contact of anchor lines with an edge, the following hierarchy is followed:

a) Anchor lines must be rigged in such a manner so as to prevent them from coming into contact with any edge. When rigging or deviating anchor lines to prevent contact with edges, reference should be made to the IRATA ICOP**, 2.11.2.14 to 2.11.2.15.

b) Whenever edge avoidance by rigging or deviation is not possible, risk control measures must be validated by a comprehensive on-site risk assessment.

c) Where edge avoidance by rigging or deviation is not possible suitable edge protection in conjunction with rope (anchor line) protectors must be used. Reference should be made to the IRATA ICOP, 2.7.10, 2.11.3.2 and 2.11.3.5 to 2.11.3.8.

d) Consideration should be given during the entire rope access operation to the possibility of changes of position of the anchor lines and what effect this might have on the safety of the operatives, e.g. a lateral movement of the anchor lines outside the intended range that could result in contact with an edge.

## 2 Information on rigging

### 2.1 General

The following information gives an overview of some rigging considerations.

### 2.2 Y hangs

A Y hang may be used to allow anchor lines to be rigged directly above the drop, thus avoiding edges. See IRATA ICOP, 2.11.2.10 and Figures 4 and 5.

### 2.3 Re-anchors

A re-anchor (re-belay) may be used to prevent exposure to contact with an edge.



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### 2.4 Deviations

If the anchors and their anchor points are not in a suitable location for rigging the anchor lines directly above the planned position for descent and/or ascent, anchor lines may be deviated using a side anchor to prevent contact with the edge. It is vital to assess what the effect of deviation failure (stored energy) would have if anchor lines should contact any edge as a result of that failure. Consideration should be given to using a number of side anchors to ensure the position of the anchor lines is maintained during the entire rope access operation.

## 3 Edge protection

### 3.1 General

Where it is not possible to use any of the methods described in clause 2 and, where the risk assessment identifies that there is **ANY** possibility of anchor lines coming into contact with an edge, the edge should be covered with suitable protective material. The following gives some examples of ways in which anchor lines can be protected against edges.

### 4.2 Protective edge roller or plate

An edge roller or plate is an option for protecting the anchor lines from cutting (or abrading) on an edge. It is usually placed over the edge and secured to the structure and the anchor lines are run over the bearing wheel or plate. As an alternative, 50 mm diameter scaffold tubes positioned to protect from any edges may provide adequate protection.

### 4.3 Protective edge matting

This method utilizes a mat or other thick, tough material, which is placed over the edge and secured to the structure.

### 4.4 Double-layer canvas rope protector

A double-layer rope protector only provides limited protection to the anchor lines from edges when anchor line movement is perpendicular to the edge. When anchor line movement is transverse along an edge, the protection afforded by a canvas rope protector can be negligible, and catastrophic failure can occur in a very short period of time to the main working line and to the safety line during any subsequent fall, if both anchor lines are rigged over the same edge.

## 5 Further reading

The following documents provide useful information:

Health and Safety Executive (HSE) Contract Research Report CRR 364/2001 Industrial Rope Access – Investigation into items of personal protective equipment.
See section 5 for information on rope protectors. This document is freely downloadable from:
http://www.hse.gov.uk/research/crr_pdf/2001/crr01364.pdf

*NOTE The data collected in the above report is only valid for perpendicular movement against an edge.*

** Industrial Rope Access Trade Association (IRATA) *International code of practice* (ICOP) First edition, January 2010 (currently under revision at July 2011)

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