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SAFETY AND HEALTH TOPIC SHEET NO. 30: SCAFFOLD USE FOR RIGGING AND ANCHORING

A safety and health 'topic sheet' aimed at raising awareness of hazards in the rope access industry. The series may be of use as a toolbox talk.

1 INTRODUCTION

1.1 With scaffold structures now more than ever forming part of rigging and anchoring for industrial rope access operations and training, it is increasingly important for those who utilise these methods to be aware of not only the potential hazards relating to this but also the various legislative and regional requirements associated with the use of scaffolding for rigging and personal anchor points.

1.2 Scaffold and similar constructions are extremely adaptable and useful as a method of installing rigging and anchorage points to be used for industrial rope access. Being a fixed structure, as opposed to a temporary anchor, they must meet the IRATA requirement for anchor strength of 15kN.

Case Study

A scaffold structure has been built over the top of a building to provide a temporary roof whilst works are carried out which would otherwise leave the building exposed to rain.

The roof has been constructed of lattice beams and tube and fix scaffold to support the temporary roofing material. The scaffold has been designed by a scaffold designer and constructed by competent scaffolders to the design specification.

When the roofing works are nearly completed a rope access company have been employed to install the final skylight on the roof, the method to be used is for two technicians to work in suspension over the opening to the skylight and to rig a simple hauling system and a tension line to manoeuvre the 65kg skylight into position over the opening.

The technicians position themselves above the opening and rig a tension line from the bottom tube of the lattice beam above the opening, down to the main scaffold below and then begin to haul the skylight into position.

Shortly after the weight of the skylight is transferred onto the tension line, the top lattice beam anchor begins to twist and deform, breaking some of the welds on the beam and deforming the roof where the technicians are anchored.

The technicians immediately lower the skylight to remove the weight from the tension lines and then descend onto the roof below to remove their own weight from the roof above.

This stopped the damage from worsening and prevented the roof collapsing.

2 WHY DID THIS HAPPEN?

2.1 Whilst the scaffold structure had been designed and competently installed it was not intended to be used as an anchor for rope access technicians.

2.2 The rope access company had reviewed the designs of the structure, the competencies of those who had built it and the scaffold inspection records, but had then assumed that the load capabilities provided where above that being levied and could be imposed in any direction.

2.3 The roof structure was capable of supporting the loads of the two technicians and the skylight, but the forces placed on the structure were intended to be in a vertical line. By adding the tension lines and the weight to those lines the directional force changed dramatically causing the lattice beam to twist and buckle.

3 WHAT SHOULD HAVE HAPPENED?

3.1 The scaffold should have been designed for its specific intended use, purpose and operation. Had the designer known of this, the scaffold design could have been constructed with the appropriate strength and support to allow for the additional directional loadings imposed by the rope access anchor systems.

3.2 The scaffold must be designed and constructed by competent persons for its intended use, any change of use or alterations to scaffold must be fully reassessed to ensure the structures safety and suitability.

4 GUIDANCE ON THE REQUIREMENTS FOR SCAFFOLDING

4.1 There are different regional and legislative requirements for the design, construction, inspection and use of scaffolding. The following are provided as examples for guidance:

a) Design

A scaffold should be designed by a competent person taking into account the following considerations:

- Intended use such as trade access, shelter, material storage and anchorage;
- the intended loads to be placed on the scaffold including the location and direction of those applied loads;
- the loading capacity and stability of the surface on which the scaffold will be constructed;
- environmental, wind, rain, snow and marine environments are examples of common environmental factors which may have a significant impact on scaffolding;
- frequency and duration of use, how frequently will it be used and for what duration?
- access to the location may have an impact on the design and materials to be used, for example a restricted location which limits vehicle or mechanical access, may require lighter weight materials such as lattice beams in place of traditional steel tube and fittings.

b) Construction

The scaffold should be built by competent persons. There are various recognised qualifications for scaffolders which help to assure that scaffold is erected both according to the design and in line with any relevant regional/legislative requirements. A competent person should inspect and verify that a scaffold has been built, inspected and authorised for use in accordance with its design criteria.

c) Alteration

Any alterations made to scaffolding should be carried out by a competent person and in line with any necessary design changes with a further inspection and verification.

d) Inspection

A scaffold inspection should be carried out and documented by a competent person to the frequency specified by design, use and regional legislation and requirements.

Note: Scaffolding should be appropriately marked / tagged to show that it is inspected and safe for use.

5 ARE THERE BENEFITS OF USING SCAFFOLD FOR RIGGING AND ANCHORAGE?

5.1 Scaffolding is a versatile method and structure, which when designed and constructed effectively provides a method of access for rope access and supporting trades.

5.2 Temporary anchors and structures may be suitable, but must be assessed for their intended use and any limitations identified and documented.

6 TYPICAL SIGNIFICANT HAZARDS AND CONTROL MEASURES

6.1 There are a number of typical hazards and control measures to be considered when using scaffolding (see Table 1):

Note: This list should not be considered exhaustive and should only be considered as the starting point of reference for undertaking a comprehensive risk assessment.

Hazard	Risk	Example control measure(s)
Incorrect loads	Scaffold damage, collapse or failure due to incorrect loads being imposed.	Load the scaffold in accordance with the design and construction, and only for its intended use.
Poor construction	Scaffold damage, collapse or failure due to poor construction.	Scaffold to be designed and constructed by suitably competent persons.
Lack of inspection	Scaffold may be unsafe and not constructed as per the specific design.	Do not use untagged scaffolds or those that have not been confirmed as safe for use.
Incorrect rigging	Rigging points placed incorrectly resulting in damage, failure or collapse of scaffold.	Rigging should be attached in the manner specified in the design.
No verification of suitability	Assuming that the scaffold is safe and will be suitable for use due to the nature and material of construction.	Only use scaffold specifically designed and constructed for its intended use.
Incorrect use	Scaffold damage, collapse or failure due to being used incorrectly.	Only use scaffold specifically designed and constructed for its intended use.

Table 1: Typical hazards and control measures

7 OTHER SOURCES OF USEFUL INFORMATION

- National Access & Scaffolding Confederation (NASC) https://nasc.org.uk/
- NASC - TG 20:21 https://nasc.org.uk/information/tg2021/
- Scaffolding Association https://scaffolding-association.org/members/
- Health, Safety Executive (HSE) Scaffolds – What you need to know? https://www.hse.gov.uk/construction/safetytopics/scaffoldinginfo.htm
- Occupational Safety and Health Administration (OSHA) Scaffolding “eTool” https://www.osha.gov/etools/scaffolding/general-requirements
- ANSI/ASSP A10.8-2019: Scaffolding Safety Requirements https://blog.ansi.org/ansi-assp-a10-8-2019-scaffolding-safety-asse/
- Safe Work Australia Scaffold general work https://www.safeworkaustralia.gov.au/doc/guide-scaffolds-and-scaffolding
- Australian and New Zealand Standards: AS/NZS 1576 Scaffolding General Requirements

8 RECORD FORM

8.1 An example 'IRATA Safety and Health Topic Sheet: Record Form' is given below. Members may have their own procedure(s) for recording briefings to technicians and others.

IRATA SAFETY AND HEALTH TOPIC SHEET – RECORD FORM			
Site			
Date			
Topic(s) for discussion		Topic Sheet No. 30: Scaffold Use for Rigging and Anchoring	
Reason for talk			
Start time		**Finish time**	
Attended by *Please sign to verify understanding of briefing*			
Print name		**Signature**	
Continue overleaf (where necessary)			
Matters raised by employees		**Action taken as a result**	
Continue overleaf (where necessary)			
Briefing leader *I confirm I have delivered this briefing and have questioned those attending on the topic discussed.*			
Print name		**Signature**	**Date**
Comments			