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Guide to Using Components of Existing BMU Systems as Anchorage Points for Industrial Rope Access Equipment

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1. Introduction

This document has been prepared to assist anyone who is considering using existing Suspended Access Equipment as anchorage points for Industrial Rope Access. (e.g. facilities managers, building owners, main contractors and other persons acting as duty holder)

There have been many instances recently where SAEMA members are aware of installed suspended access systems being used incorrectly and dangerously as Industrial Rope Access anchors or where existing suspended access systems have been proposed for Change of Use

The guidance below relates to the interface between industrial rope access techniques and Suspended Access Equipment and anyone involved planning organising or completing Industrial rope access works should at all times comply with all requirements of the applicable Industrial rope access Standards, ACOP's and refer to the requirements of the IRATA Codes of practice.

2. Purpose.

The purpose of this SAEMA Guidance Document is to provide some guidance to assist in determining whether the existing Suspended Access Equipment can be used as an anchorage for Industrial Rope Access and give advice on the process that should be followed and documentation that should be in place.

3. List of Suspended Access Equipment

The following is a list of items that should be considered as Suspended Access Equipment. Please note this list is not exhaustive.

- BMU tracks
- BMU track anchorages
- Roof Trolleys
- Monorails
- Monorail Trolleys
- Cradles
- Gantries and Travelling ladders
- Davits
- Parapet Trolleys

4. Change of use

Existing Suspended Access Equipment is **NOT** designed for use as anchorages for Industrial Rope Access Systems

For this reason the majority of suspended access equipment is not suitable for the loadings imposed by rope access techniques

Under no circumstances should level 3 rope access technicians make the assumption that any component of a suspended access system is of unquestionable strength or being permanently anchored that they are capable of taking the minimum required loading for rope access of 15kn without failing. Especially where the intention is to acheive a permanent change of use.

Where suspended access equipment is proposed to be used as permanent anchorages for Industrial Rope Access the following process should be followed and carefully documented

1. **Complete a risk assessment under the Work at Height Regulations,2005. (WAHR)**

   WAHR **states** that when designing or planning work at height you **must**:

   - Complete a risk assessment, and
   - Choose a method which complies with the risk hierarchy for work at height.

   The Duty Holder should complete a risk assessment to justify the reason for changing from the use of *collective protection (work equipment)*, to using *personal protective measures (work positioning)*, a lower option under the WAHR, hierarchy of risk for work at height.

   This assessment should be unbiased and independent. If the assessment concludes that rope access should be given further consideration then move to step 2.

2. **Carry out theoretical verification of the equipment and any supporting structure to ensure that it is suitable and capable of taking the proposed loadings in the direction in which the load could be applied.**

   The verification will need to be completed by a "**competent person",** which would normally be a suitably qualified Structural Engineer, the original suspended access equipment manufacturer or on occasion the maintaining suspended access equipment contractor (where they have suitable and sufficient structural knowledge of the equipment and its anchorages).

3. **Carry out practical testing to confirm the suitability under step 2. This may include one off tests / inspections to confirm site details.**

   One off tests may result in the equipment not being suitable for service following the testing, one area may need to be sacrificed in order to prove the suitability of the remainder.

4. **Complete a LOLER 9(2) Thorough Examination and produce a fully compliant Report.**

   Subsequent to this the system will require LOLER 9(3) Thorough Examination every 6 months and this may include some form of non destructive testing such as pull out tests on anchors.

Note:

Change of use *SHOULD NOT* be considered if the above processes have not been:

a) **completed**
b) **verified and**
c) **documented**.

5. Loadings produced by Rope Access.

In order to calculate the loadings back to anchors points for industrial rope access the 'competent person' must be aware of the extracts in Appendix A.

The main issues are summarised as follows:

Opinion of experts in the rope access industry in the UK suggest that where more than one technician could be in a span of track at any one time, the anchorage should be capable of sustaining 15kn per person for the first two persons, plus 3kn per subsequent person.

While it is unlikely for two people to load the anchorage at the same time in a fall, it is theoretically possible, and for three people to load the anchorage at the same time is extremely unlikely.

Hence, only a 3kN mass of the user and equipment is taken into account for the third person (300 kg = approx. 3kN), not the load that could be experienced in a fall (i.e. 6kN).

6 SAEMA position.

We acknowledge that there may be a need for Industrial Rope Access on a building but the decision to use this form of access should not be taken lightly when changing from Permanent Suspended Access Equipment to an Industrial Rope Access solution.

Industrial Rope Access is perfectly acceptable if designed, maintained, examined and certified correctly in accordance current Regulations.

7 Reference regulations and standards.

The regulations and standards used when compiling this Guidance Note are listed below.
The list used is not claimed to be exhaustive, and other regulations and standards may exist that offer further advice that should be considered regarding the Health & Safety of façade access equipment users when developing Rescue Plans.

- WAHR 2005: Work at Height Regulations: 2005
- LOLER 1998: Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)
- PUWER 1998: Provision and Use of Work Equipment Regulations 1998. Open learning guidance
- BS 6037-1:2003 Code of practice for the planning, design, installation and use of permanently installed access equipment Suspended access equipment
- BS 6037-2:2004 Code of practice for the planning, design, installation and use of permanently installed access equipment Travelling ladders and gantries
- EN361 : 2002 Personal protective equipment against falls from a height — Full body harnesses
- EN358 : Personal protective equipment against falls from a height — Work positioning equipment
- EN813 : Personal protective equipment against falls from a height — Sit harness
- BS 7985:2012 Code of practice for the use of rope access methods for industrial purposes
- BS7985 2012 - Part-3-Annex-F-2013-Mar-01 - Anchor Devices - Considerations
- IRATA International code of practice (ICOP) for industrial rope access – July 2014

APPENDIX A

BS7895:2012. Code of practice for the use of rope access methods for industrial purposes, states:

The maximum permissible impact force on the user in the event of a fall should not exceed 6KN. This British Standard has used a safety factor of 2.5 to determine the anchor strength requirement. Therefore the static strength of all anchors, except deviation anchors and anchors placed simply to maintain the position of the anchor lines, should be at least 15KN.

There is no requirement for designers (e.g. building designers) to add a further safety factor but, of course, the static strength may be increased if it is considered prudent or necessary to do so. These values have been determined assuming a total mass of the operative plus their equipment of 100 kg, which is the standard test mass used in European Standards for personal fall protection equipment. The mass of the user might be greater than this, especially in the case of rescue, where there could be more than one person attached to the anchor system. (During rescue, rope access operatives are required to follow procedures which restrict the potential for dynamic loading of the anchor system.)

BS7985 2012 - Part-3-Annex-F-2013-Mar-01 - Anchor Devices – Considerations, states:

F.2 Installed anchor devices
WARNING! Anchor devices should only be installed by competent persons, who should be trained in the installation of each type of anchor device to be installed and for each type of base material into which they are to be installed. An IRATA rope access qualification at any level is not sufficient to assure competency to install or test anchor devices, or to carry out a detailed inspection of them. It should not be assumed that a Level 3 or other IRATA rope access technician is competent to install or inspect eyebolts or other specialist anchor systems.

F.2.2.4 In the absence of any recognized standards for anchor rails, it is recommended that anchor rails are designed by a competent engineer. In addition, it is recommended that a static strength type test is carried out and that anchor rails (including any travellers, where travellers are intended to be used) are able to withstand a minimum static load of (15 +1/0) KN for (3 +0,25/0) min when the load is applied gradually, i.e. as slowly as is practicable, at:

a) an extremity anchor;
b) an intermediate anchor if one is fitted;
c) the centre of the largest span;
d) the centre of any span containing a joint in the anchor rail;
e) the end of any cantilevered section.

***NOTE:** A span is considered to be the distance between:*
a) extremity anchors (i.e. anchors at the ends of an anchor rail), where there is no intervening intermediate anchor;
b) an extremity anchor and an intermediate anchor;
c) two intermediate anchors.

F.2.2.5 The type test should be carried out on a sample of the anchor rail installed as recommended by the manufacturer of the anchor rail in a sample of the base material that is representative of the base material to which it is intended to install the anchor rail for the rope access work in hand. If the type test is to be carried out on site, it should be well away from this work area. The static test load to be applied to the anchor rail should be in the intended direction of use, e.g. in shear.

F.2.2.6 The static strength test described in F.2.2.4 and F.2.2.5 should be applied to the anchor rail via an anchor sling fitted to the anchor rail or, if the anchor rail system is intended to incorporate a traveller, via a traveller fitted to the anchor rail. During the test, yielding is acceptable but should take into account any necessary clearance distances required to avoid contact by the rope access technician with the ground or structure, should a fall occur.

F.2.2.7 Normally, only one rope access technician should be attached to any one span of the anchor rail at any one time. When establishing the static strength of an anchor rail, the possibility of use by more than one person per span should be taken into consideration and the strength increased accordingly.
Advice on what the increase should be is not given in this annex because opinions vary between different countries, their authorities and their standards bodies.

Consideration should also be given to extra loads that may be imposed during rescue.

IRATA International code of practice (ICOP) for Industrial Rope Access – July 2014, states:

2.11.2.1 The anchor system is of primary importance in the rope access system and should be unquestionably reliable.
2.11.2.6 To determine the minimum anchor strength recommendation, this code of practice uses a safety factor of 2.5. The maximum impact load on the user in the event of a fall should not exceed 6KN; therefore, as a general rule, the static strength of anchors, with the exception of some deviation anchors, should be at least 15 KN.

***NOTE**: The anchor may yield but should not fail at this load.*

2.11.2.7 There is no requirement for designers (e.g. building designers) to add a further safety factor but, of course, the static strength may be increased if it is considered prudent or necessary to do so.
2.11.2.8 The values have been determined assuming a rope access technician with a mass,
Including equipment, of 100 kg, which is a typical standard test mass used in product standards for personal fall protection equipment. Rope access technicians with a mass that is greater than 100 kg including equipment should take appropriate steps to ensure that their anchors are of sufficient strength, e.g. by ensuring that there is sufficient energy absorption in the anchor system to keep the impact load on them and the anchors down to 6 KN or less in the case of any fall, and/or by increasing the strength of the anchors above the recommended minimum of 15 KN.

***NOTE:** The recommendations regarding situations where the mass could be more than 100 kg applies especially in the case of rescue, where there could be more than one person attached to the anchor system.*
However, during rescue, IRATA rope access technicians are required and trained to follow procedures which restrict the potential for dynamic loading of the anchor system.