

March 2007

# Scaffolding for the Future?

## Presentation by Clive Johnson, British Airports Authority, Terminal 5 Heathrow, H,S&E Team Leader

Construction Section Chairman, Gerry Mulholland, of Crown House Technologies, introduced this special Construction Meeting with a brief update on the year-to-date accident statistics from the HSE. He reported that, although the statistics had remained down, the HSE were concerned because the overall figures appeared to have plateaued out. There were also more Handling accidents, whilst the number of slips, trips and falls were still a high proportion of the total. Since their introduction in 2005, the HSE considered that the Work at Height Regulations had made a good impact and it was thought that the changes in the '2m Rule' had achieved a significant effect. Regarding fatalities, after reducing last year to 59, sadly this year the figure has risen to 74 before the end of the period!

At this point, Gerry handed over to our speaker, Clive Johnson, who told us that he had worked in his present job for British Airports Authority, the Heathrow Terminal 5 project. He also served on the committee of the National Federation of Roofing Contractors, the National Specialist Contractors Council and CONIAC, on which he had the advantage of receiving information direct from the HSE.

Clive also explained that he was involved in another organisation called System Access for Fall Elimination UK Limited (SA-FE [www.sa-fe.org](http://www.sa-fe.org)). This is a health and safety driven, association that is dedicated to ensuring that the most professional best practices through training, experience and knowledge are provided by all its members. The association has been launched, aimed at health and safety improvements in the erection, dismantling and alteration of access and falsework systems. SA-FE provides a forum for industry professionals and associates to promote all aspects of business that benefit its members and clients. This includes Safety, Training, Engineering and Design in the regulatory process, with a portal for marketing and networking across the Access Industry. SA-FE intends to provide the industry with safer systems of work that meet the requirements of the Working at Height Regulations 2005, therefore promoting and demonstrating industry best practice. He suggested that it was an excellent resource for anyone involved with work at heights.

He went on to say that the organisation activities comprise the following seven categories: -

1. Manufacturers
2. Associate Members
3. Approved Training Centres (*e.g. Shire Safety at Tamworth, Staffs.*)
4. Approved Trainers
5. Equipment Providers (*Pop Concerts and Public events*)
6. Safety Practitioners

## 7. Health & Safety – *Technical Information and specific Training, which includes a free **Helpline***

Clive added that one of the innovative packages of training that SA-FE offered was Behavioural Training, which had been used to great effect with 75,000 workers on the Terminal 5 Project..

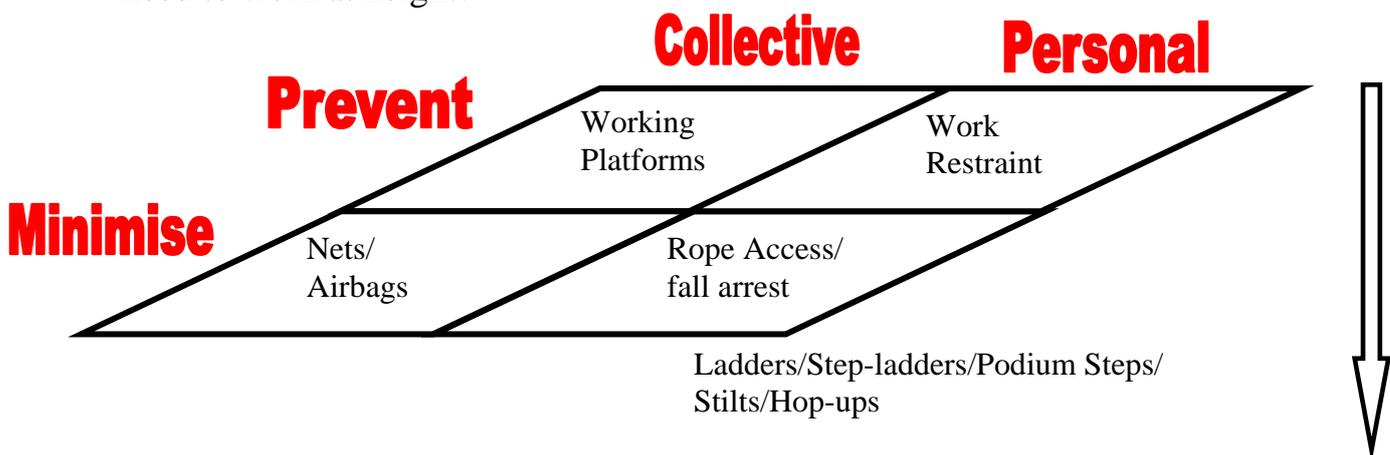
He commented that SA-FE had been set up for three main reasons: -

1. To give the workers setting-up and dismantling scaffold in the same protection as those who were going to use it for the main activity of Construction. This had been new impetus by the Work at Height Regulations 2005 (WAH), which focussed on erection, dismantling and alterations of scaffolding AND falsework!
2. There is a lack of systems of work to prevent fall risk during these activities by “**Collective Measures**”, instead of merely relying on mitigation.
3. The founder members realised they could remedy these problems quickly by working more effectively together, rather than through existing industry associations which would take longer to set up the necessary links.

The SA-FE philosophy is linked to the hierarchy of Risk Control Measures laid down in the WAH: -

1. Avoid the need for WAH by design
2. Prevent falls by edge protection
3. Prevent by use of collective equipment (**SA-FE systems using Façade Scaffolds**)
4. PPE work restraint systems
5. Mitigate by Collective systems to reduce the distance/consequence of fall, incl. Safety Nets, Air Bags.
6. Mitigate by use of PPE (e.g., Harnesses, as in the **NASC SG4:05 Code** for tube & fitting scaffolding)
7. Mitigate through Training and Instruction (applies to SA-FE and other systems)

This hierarchy is represented graphically in the following diagram, where it can be seen that new product ranges have developed since the introduction of the new Regulations change attitudes to fall prevention at the lower levels. Traditionally, these new products are in demand for a whole range of facilities management, maintenance tasks. Similarly, new products have been developed for avoiding the need to work at height!



The logic of this that the SA-FE concept is inherently safest because it uses a lower level of risk control in the hierarchy, whereas the rest of the industry adopts a level 6 approach. The SA-FE approach then attempts to maximise the quality of ethos this by providing a closely-controlled, integrated package of Provision of Equipment, Methodology, Accredited Training Organisations, Trainers and an Advisory Service. Clive then commented that the Regulations also required that suitable arrangements must be provided for Rescue of workers who had fallen. This is, almost, always forgotten but is an inevitable requirement when specifying fall arrest harnesses!

**Secretary's Note:** My email to BHSEA Members, dated 04.01.2007, identifies the very high risk of 'Suspension Trauma' that makes not only the provision of rescue systems crucial, but also the training of rescue teams and back-up medical services an essential pre-requisite!

At this point **Malcom Rabett of M.J.Gleeson** asked, if air-bags were used to erect roof-trusses, "what would be the recommended fall distance to accept as safe?". Clive agreed that 1m would be about the maximum distance to accept.

Continuing the discussion, Clive said that selection of the optimum design of equipment was the key to a cost-effective solution. One such system was this Advanced Guard Rail (AGR) design, which can be seen above and to the right of the scaffolder. Each section of the AGR has twin, telescopic rails to accommodate varying width of bays and movement between successive lifts. This progressive system gives temporary protection to scaffolders, whilst they place the permanent guard rails into position on a fully decked platform. This avoids the necessity of scaffolders wearing harnesses and lanyards, which are not comfortable and slow down performance. The AGR has the advantage that it can be used on tube and fitting scaffolding, as well as system scaffolds. In a survey at the T5 site, 200 scaffolders were consulted and they unanimously preferred the AGR system over the tube/fitting design and found it much quicker to erect.



Turner Access Plus Guard System  
in use during scaffold erection

In evaluation tests, the figures in the following table compare the erection costs of different designs. It can be seen from this table that there are cost advantages to be gained from selection between various types of system scaffolding, as well as by just moving away from the traditional tube and fitting design!



Close-up of an AGR Section

In order to evaluate the saving from use of a particular system, it is necessary to collect the following: -

1. Difference in Total Labour Cost of erection and dismantlement, between Tube & Fitting and the selected System Design.
2. Number of times Scaffold is used in 1 year

Multiply 1 by 2 and divide the product into the Capital Cost of the System. This should give you the pay-back period in number of years and, if this is less than two, you will probably achieve a worthwhile saving!

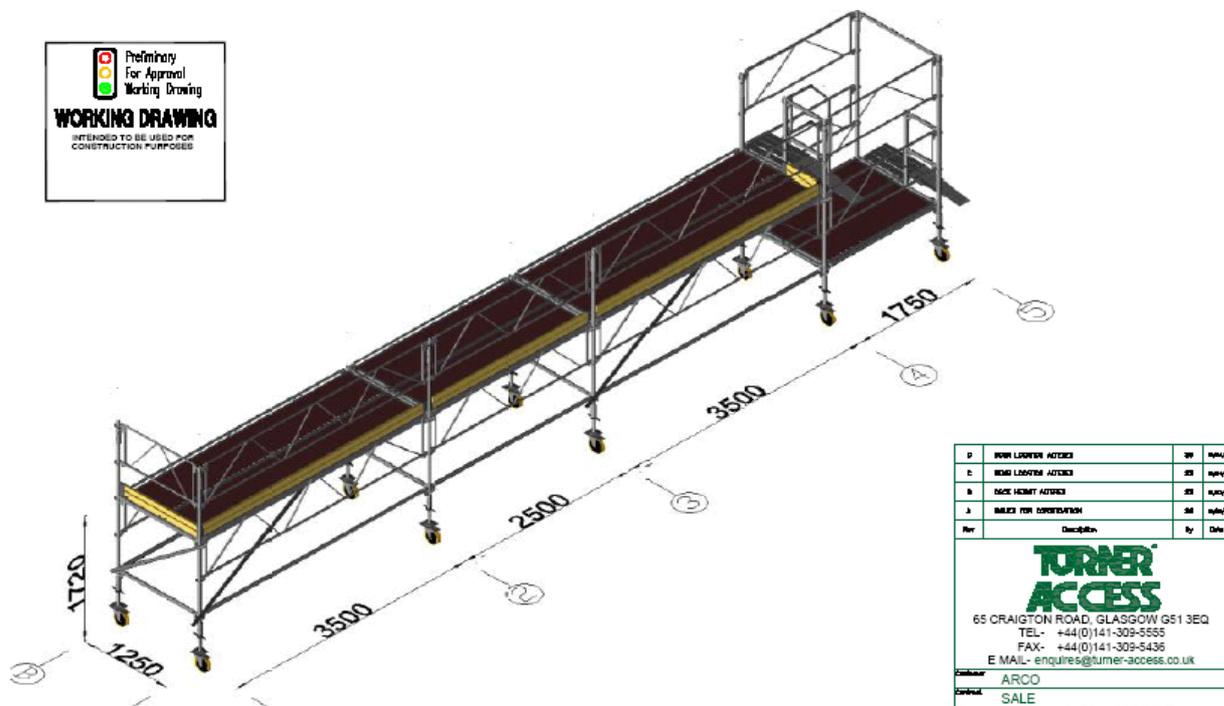
<b>Time to erect Sample Scaffolds.</b>				
<b>Type</b>	<b>Dimension</b>	<b>Components</b>	<b>Weight</b>	<b>Man-Hours</b>
Tube/Fitting	24.0m x 12m high	1487	10,472 kg	74.35
Typical System Scaffold	25m x 12m High	908	10,377 kg	45.4
Turner Plus Eight	24.5m x 12m High	330	1,512	16.5

Although Clive had emphasised the importance of selecting the best system design, he said that it was only as good as the competence of the erector! That was why the SA-FE package had addressed the quality of training so rigorously. All training will be in accordance with **BS 8454 – Code of Practice for the delivery of training and education for work at height and rescue.** Competent Persons will receive a card that will list the types of system on which they have been trained and their details will be listed on the SA-FE database, for access from sites.

The link to SA-FE is [www.sa-fe.org](http://www.sa-fe.org)

# Members' Questions

**Mark Hoare** asked about use of fall prevention for unloading flatbed trucks that Clive had illustrated: -



He said that there were other solutions, such as pre-slung loads and tensioned safety wires above the load deck.

**Gerry Mulholland** commented that Tube and Fitting scaffolds were more adaptable in their usage. Clive agreed that whilst there may be an element of truth in that, it was a fact that System Scaffolds were now much more advanced than initially. He added that there were at least three different makes of AGR designs on the market, now.

**Brian Dunckley of Balfour Beatty** commented that one difficulty could be where Principal Contractors procured a System Scaffold they preferred to hire local erection contractors who may not be trained to SA-FE standards.

As there were no more questions, Gerry closed the meeting and commented that earlier access to problem solving with Designers would also achieve safer working at heights. The members showed their appreciation for the presentation in the usual manner.