

REDUCING FALLS FROM VEHICLES: INTRODUCING SAFETY SOLUTIONS

1. Organisations involved

Balfour Beatty

'We will not compromise on safety or quality'

2. Description of the case

2.1. Introduction

Balfour Beatty is a large global organisation that functions in over 80 countries, and operates as an infrastructure business and manages the partnership between clients, design teams, subcontractors, and stakeholders throughout all stages of the construction process. With a diverse resource inclusive of designers and planners, engineers, builders, project and facilities managers, analysts, and consultants, it facilitates planning, design, construction, maintenance and support across road and rail; airports, seaports, tunnels and bridges; health and education facilities; heat, light, power and water industries.

The organisation is committed to the prevention of work related ill health and injury, and recognises prevention as a business necessity that will ensure the occupational health and safety of all those who may be affected by the activities that it does. The organisation has a Health Safety Policy, which it distributes to all its employees. This policy outlines the framework and principles to which it works. Further, the organisation is accredited to OHSAS 18001:2007 'Occupational Health and Safety Management Systems'. As it operates within the construction industry, it is aware that falls from heights is a factor that needs to be considered in the work environment, especially regarding the negative impact that this may have on the occupational safety and health (OSH) of its employees.

Falls from heights, inclusive of falls from vehicles is a hazard when working on construction sites. The Health and Safety Executive (HSE), the regulatory body in Great Britain (GB) estimates that three million people in Great Britain work on or near vehicles as part of their regular job. When workers use vehicles as part of their normal duties, it can include getting on and off the vehicle to carry out loading/unloading operations. These actions may occur at height, and are often considered as supplementary to the workers' main job. Due to this perception, both managers and workers may not properly consider the risks that are involved in these tasks. In 2004/05, HSE estimated that the economic and human cost of falls from vehicles was £36 million.

2.2. Aims

To improve safety, raise awareness and promote good practices among employees when working at heights, specifically with respect to working on vehicles.

2.3. What was done, and how?

As part of the process of undertaking work in the construction section, Balfour Beatty reviews incident trends. These reviews showed that there was a need to improve safety while working at height. The first step in understanding these trends and thereby finding a solution, involved conducting an analysis to assess the risk of falls from vehicles. The assessment highlighted that vehicle access points varied greatly, in design and function, between the different vehicles within the fleet (see

Figure 1). Moreover, the accident trends drew attention to the fact that the majority of incidents related to lorry mounted cranes and 7.5 tonne+ tippers.

Figure 1: Typical access ladder of a lorry mounted crane which was used previously



These results supported the implementation of a working group. It was participatory in nature and consisted of representatives from:

- vehicle manufacturers and suppliers,
- vehicle drivers,
- various departments within the business, and
- Balfour Beatty Fleet Services.

The initial working group meetings, together with the use of a partnership with the key stakeholders, resulted in the identification and trialling of a number of solutions, which were rolled out across the business as part of a long-term programme. These solutions integrated changes to both worker and machine, and will be explored below. There was support for a whole systems approach, i.e. the human and the machine, when assessing and improving on human performance (see Proctor & Van Zandt, 1994). The HSE notes that injuries from falls from heights could occur at heights just above average head level. The most common area of the vehicle from which people fall is the load area, which is followed by the cab access steps and the fifth wheel catwalk. This knowledge should support any assessment or redesign of equipment that has a specific purpose to lower risks from working at heights.

Crane access platform

The access of equipment is essential and constant in the construction industry. If workers could access equipment safely and easily, this would be one of the ways to reduce the risk of falls from heights.

To facilitate better access to the crane platform on a large vehicle, the crane unit was turned around, which repositioned the cranes outriggers allowing for a wider access ladder. New ladders were constructed, with equally spaced steps that are wider and deeper with improved grip. In addition, the ladder is designed with an incline, which provides a more natural position while climbing (see Figure 2).

Furthermore, remote controlled lorry mounted cranes are being trialled with the view of preventing or reducing the need to work at height.

Figure 2: Redesigned ladder



Vehicle body

The changes to the vehicle body involved designing a folding access ladder to provide an inclined access, with wider, deeper steps and a greatly improved grip pattern cut into the step (see Figure 3).

A further change to the vehicle was the redesign of the crane access platform area to allow an access point to the body from the platform.

In addition, the access platform design of tarmac vehicles was changed, so they now allow spillages to fall into a catchments tray, while providing improved grip.

Figure 3: Folding ladder with grab handles



Cab access

While cab access may not, at first, appear to be a high-risk action, the use of improper footwear and not using due care, may result in injury. In order to improve cab access to its vehicles, the organisation replaced the cab steps with a highlighted step and with grab handles (see Figure 4).

In addition, to sustain this change, the maintenance inspections were amended to include the replacement of worn or damaged access steps.

Moreover, the organisation was trialling a low entry cab for lorry-mounted cranes. It was anticipated that this new cab would provide a reduced access height and a folding passenger door to allow occupants to walk forwards out of the cab, rather than having to climb down backwards.

Figure 4: Highlighted steps and handles



Awareness campaign

The improvements to the vehicles were supplemented with raising the awareness of employees about falls from heights when working on vehicles. The awareness included sending *top tips* flyers to site managers's home addresses, advising them on how to avoid falls from vehicles within their teams.

As well as providing information to the site managers, the *top tips* flyers were given out to drivers and passengers of vehicles over 7.5 tonnes. Another way in which awareness was raised was through circulating a presentation on Falls from vehicles that had been used as a briefing by regional HSE teams.

In addition, a quick visual aid was gained by placing stickers on cab doors to remind passengers to always use three points of contact when getting in and out of the vehicle.

2.4. What was achieved?

- Raising awareness among staff of the risk of falls from heights when working on vehicles.
- A sensible approach to the management of health and safety risks of working at heights at the workplace.
- A commitment of the organisation to a long-term investment in producing solutions to reduce falls from heights when working on vehicles.

2.5. Success factors

- The organisation has an accident frequency rate which is significantly lower than the industry average.
- Balfour Beatty has received the Royal Society for the Prevention of Accidents' (RoSPA) Gold Award for Occupational Health and Safety, and the British Safety Council's International Safety Award.

2.6. Further information

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2.7. Transferability

This process may be used by other large organisations with the resources to invest in these practices. Balfour Beatty, as a large organisation, had the resources to invest in the redesign of vehicles, and to then raise awareness amongst its staff on how to reduce the risk of falls from heights. SMEs might be able to use certain aspects of the project, such as those done under the awareness campaign, of using *top tips* flyers and placing stickers on cab doors to provide a visual reference of good practice.

3. References, resources:

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