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Manual handling of highway kerbs—focus group findings

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Abstract

The manual handling of concrete highway kerbs remains commonplace in the construction industry despite obvious risks to operatives. This study was undertaken to find out why kerb installation still includes manual handling, to identify the alternatives that exist and to consider how the organisation of the work affects exposure to risk. Focus groups were held with industry professionals to discuss kerb design, installation and the training of operatives, with site visits and interviews undertaken to place the focus group findings in context. The focus group discussions highlighted manufacturer's 'myopia', a lack of installation knowledge of designers and shortfalls in training for installation work. It was concluded that risks to the health of construction workers remain as they are not considered in the design of the product, design of the work or ameliorated by adequate risk assessment. Recommendations from the research are that a pro-active approach to health needs to be adopted by the manufacturers of heavy construction products. Designers of work requiring the use of heavy products need to have more experience of site operations, and education and training in manual handling is desirable at all levels in construction organisations.

Keywords: Construction safety; Construction worker health; Construction ergonomics; Manual handling

1. Introduction

Concrete kerbs are used in many countries throughout the world as an element to separate the roads from pedestrian footpaths and to control the flow of surface water from roads into drainage systems. Kerbs accentuate the boundary between the carriageway and adjacent highway areas and can have an important function concerning drainage or structural support of the carriageway. In the United Kingdom (UK) urban all-purpose roads, urban motorways and slip roads are generally kerbed at all carriageway edges (Highways Agency, 1989).

Kerbs are also an integral part of housing estates, industrial and retail complexes and transport networks. Around 4% are replaced in the UK every year. In the UK, concrete kerbs, weighing around 70 kg, are widely used. As the kerbs are heavy, laid in large numbers and installed at ground level, this represents a considerable risk to the health of the operatives who install them by hand (Fig. 1). This is despite the established causal relationship between musculoskeletal disorders and combinations of repetition, force and postural work (Buckle and Devereux, 2002).

The installation of highway kerbs is a construction activity. The UK Government's Health and Safety Executive (HSE) reported an illness rate among individuals, whose current or most recent job was in construction, of 5600 in 100,000. This was for illness believed to have been caused or made worse by the construction job (HSE, 2003). The attention to health and safety (including ergonomics) in the construction industry has been rather poor compared to other industries (including office work). There are only a few places in the world where institutions or centres have been active in this field over a sustained period of time (Koningsveld and Van der Molen, 1997).

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Fig. 1. (a) Manual Handling of Concrete Kerb During Road Alterations, and (b) Manual Handling of Concrete Kerb for Car Park.

Despite this lack of attention there are regulations which, if adhered to, would remove manual handling of heavy construction products on building sites. However, regulation of construction activities has not had the hope for impact with regard to health and safety (Baxendale and Jones, 2000). The HSE in the UK has made manual handling a target for enforcement. In the construction industry they have previously been instrumental in reducing the size of material bags from 50 to 25 kg and restricting the manual handling of heavy concrete blocks for walls. With the increased emphasis by the HSE on manual handling of kerbs in 2002/03, UK industry began to look at the issue and this led to the sponsorship of the project described here by the Construction Health and Safety Group (CHSG).

The manual handling of prefabricated concrete elements during manufacture was investigated in the early eighties (Grandjean, 1983) and a later study (Burdorf et al., 1991) showed that workers handling these products were almost three times more likely to experience back pain than a control group of maintenance workers. While the manufacturing sector has made great strides in improving occupational health and safety, advances in the construction sector have been limited (Gyi et al., 1998; Gervais, 2003). Research has investigated health issues in highway construction work (Pacquet et al., 1999) but the work activities examined did not include the manual handling of highway kerbs.

With this background, the aims of the present study were to

- understand why manual installation of kerbs still takes place,
- identify alternatives to manual handling,
- identify barriers impeding the use of these alternatives,
- determine the changes needed to the construction process to eliminate manual handling of kerbs.

2. Methods

Focus groups can be linked with other techniques to triangulate data, or add insight into a research problem (Bruseberg and McDonagh-Philp, 2002). In this study, focus groups were used to explore issues surrounding the manual handling of kerbs, accompanied by individual interviews, site observations and equipment assessments.

Three focus group meetings, with a number of industry professionals (total $n = 24$), were held to discuss topics associated with kerb installation work (Table 1). The areas covered included kerb manufacture, lifting equipment, design issues and training. Five–six questions (Tables 2–4) were developed prior to each meeting to assist in guiding discussion within the group.

As recommended (Christie et al., 1995), the group numbers were between five and ten members. Also, as ergonomists and designers have extended the usefulness of the basic focus group methodology by integrating activity elements to aid generation of new ideas (Langford and McDonagh, 2002), an exercise was used at each group meeting to act as a break from the round table discussion. The groups were split into two with each half working to consider a particular problem. Meetings were recorded and later transcribed. The transcripts were then used to identify themes and key points by the lead investigator. The analysis and conclusions were subsequently reviewed jointly by the research team.

In addition to the focus groups, the study involved a literature search, contact with industry (dedicated web page, project information sheets) and site visits (kerb installation, manufacturing and lifting equipment demonstrations). While the results from the latter elements of the research are not presented in detail in the current