

The Delivery hub health, safety and environment
Raising the bar 8
Manual handling

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Objective

The objective of this raising the bar document is to improve the methods used for manual handling and to ensure all contractors are aware of the techniques available for safe manual handling

Background

More than a third of all accidents reported across Highways England's projects each year are associated with manual handling. The most common type of injury is to hands and fingers closely followed by backs. Many of these will lead to a lost time injury.

The main hazards associated with manual handling and lifting are:

- Excessive stress and strain causing injury to muscles and tendons, particularly where handling involves bending, twisting or other difficult postures.
- Sharp edges causing cuts and abrasions to the skin.
- Falls of materials causing bruised/broken toes or feet, crushing of hands or fingers.
- Slips, trips, and falls caused by poor housekeeping.

To understand the scale of the issue it is important to understand that manual handling is involved in a whole range of operations including:

- Lifting and carrying
- Housekeeping
- Site clearance
- Joinery
- Steel fixing

- Fencing
- Labouring
- Office relocation

Minimum requirement

The expectation is that all the guidance contained within should be considered as minimum requirements. To achieve current best practice projects should:

- Design works to avoid the need for manual handling e.g. precast units off site, modular construction.
- Mechanise handling eg mechanical placing of kerbs.
- Where manual handling cannot be avoided.
 - Make a suitable and sufficient risk assessment of manual handling operations
 - Plan the works to take into account the allocation of resources and procurement of equipment to be used.
 - Provide employees with information on weight, centre of gravity, etc.
 - Provide employees with appropriate training on safe lifting techniques.

General guidance on the above can be found on the [Health and Safety Executive website](#).

Design of works

Designers are legally bound under construction, design and management to take the weight of items into account at the design and specification stage of a project. But contractors also have a duty to ensure each activity is carried out with the least risk possible. Manual handling should always be considered as the last resort and with advances in technology and mechanical assistance there are many reasonably practicable solutions to every day manual handling problems. Where manual handling cannot be eliminated on a project, contractors should communicate the reasons why manual handling cannot be reasonably avoided, in their construction phase plan.

Suggestions on ideas in design stage can be found on the Highway England's health and safety toolkit. [Remote control traffic management signs](#) not only reduce the need to cross a carriageway but also prevent traffic management personnel from lifting heavy sign plate onto frames night after night. [Lightweight cranes](#) added to site vehicles provide an ideal solution to the problem of loading and unloading small, heavy items of plant and materials into and out of medium sized commercial vehicles. The Health and Safety Executive [art tool](#) is also a useful method to enable contracts to effectively assess repetitive tasks.

Storage of equipment

Many project sites can be located in rural or undeveloped premises, but this should not negate the need to ensure the facility is modified for purpose. During the early stages of project mobilisation it is recommended that when completing the site logistics plan, suitable storage is designed for safe retrieval of materials and articles. For example, the first photograph below shows traffic signs laid out on the ground where workers will need to bend down to pick them up and also causing a trip hazard. Therefore when designing storage areas always ensure there is suitable racking or similar placed at a height where they can be comfortably selected.



Mechanising operations

Projects should always be looking to challenge the concept of doing it manually as more often than not an option to mechanise most activities is available. For example, when excavations are required to be hand dug due to buried services, consider the use of mechanical means such as air picks and vacuum excavators, these prevent the risk of injury to the operative. For office relocation, use of sack trucks and folding trolleys to aid manual handling and the use of vehicles with automatic lift at the rear is good practice

The use of mechanical kerb lifters reduces the manual handling and the associated injuries of heavy kerbs. Mechanical gulley cover lifter also helps reduce the manual handling injuries associated with the lifting of large and heavy drainage covers. The wheelbarrow sling is used with existing vehicle-mounted cranes to remove the need to manually move material into pickup trucks using the wheelbarrow. [Handling attachments for MEWPS](#) – If you hire powered access platforms to install materials at height, take steps to improve safety and efficiency with machine attachments.

Manual handling controls

While manual handling is a last resort, it is recognised that eliminating manual handling in civil engineering completely is difficult. Where manual handling is unavoidable this document focuses specifically on practices to help achieve the minimum standard.

Suitable and sufficient risk assessment

An effective risk assessment is key to identifying suitable controls measures, but far too often the controls identified for manual handling in activity risk assessments are simply statements such as use mechanical assistance, apply correct lifting techniques or suitable gloves to be worn. It is important when completing an activity risk assessment that clear and concise controls are recorded and decisions are not left up to the individual to implement.

A good example of this is in the selection of suitable gloves to protect against hand injury. Whilst a glove may seem suitable on appearance, there can be widespread confusion as to which glove offers the correct protection level required for a specific task. Most gloves in today's construction industry meet the EN388 standard, this standard tests for abrasion, cut, tear and puncture and places gloves in to one of four performance levels as detailed within the table below.

European standards – mechanical testing EN388 performance level test criteria

Performance level	1	2	3	4	5	
Abrasion cycles	100	500	2000	8000	n/a	
Cut index	1.2	2.5	5	10	20	
Tear force (N)	10	25	50	75	n/a	
Puncture force (N)	20	60	100	150	n/a	

It is generally accepted that of these four performance factors, cuts and abrasions are the prime causes of hand injuries during manual handling activities. It is therefore crucial that the glove wearer understands the level of protection they require and that the risk assessment process identifies the minimum performance level required for the activity. An effective aid to achieving this is to adopt gloves that are colour coded to their performance level see [health and safety toolkit 342](#).

Information of weights

To satisfy the requirements within the manual handling regulations to provide general indications of the weight and nature of the loads to be handled, employers are to ensure weights of objects to be lifted (where known) are either marked on the object, incorporated into the work package plan or labelled at point of loading.

In addition advice should be provided to the worker with information of what they can lift and what requires mechanical / lifting aids. A simple way to implement this is by the use of a colour coding system based on the three traffic light colours or the four colours used in the Health and Safety Executive manual handling assessment charts.

The photograph on page 6, shows a system in use where as equipment arrives into the storage area, it is sprayed a corresponding colour to create an immediate visual indication of its weight.



The use of [sandbags with fill-to line](#) and [weight marked on water containers](#) are other simple initiatives.

Training

A key initiative to achieving improvements in safe manual handling techniques is the provision of good information, instruction and training given to workers. Outdated training methods used to teach that good manual handling is achieved by perfecting the art of picking up an empty cardboard box in the middle of a carpeted room; however accident investigations far too often told a different story. It is therefore recommended employers should move away from the conventional kinetic style manual handling training and provide a bespoke risk assessment and training programme that focuses on the types of manual handling activities likely to be undertaken during the course the project. The training should be specific to the project and split into, theoretical and practical learning.

The theoretical element should comprise of:

- Analysis on the type of manual handling injuries sustained within the industry /company / project
- Reasons for the training
- An understanding of the type of injuries that people develop from incorrect manual handling
- Ways to avoid injury, as well as in-depth explanations of how to and how not to lift.



These pictures are an example of on the job training showing the operatives how to correctly lift an item that they are normally required to lift in their normal environment

Experience has shown that significant improvements in reducing manual handling injuries will only be achieved if there is an ongoing process of training, coaching, assessment and review. As with any other competence one-off training events will only have limited effect on reducing manual handling injuries.

Monitoring and reporting

Following a study into Highways England AIRSWEB reports spanning two years (August 2010 - August 2012) it was noted that less than four percent, 11 in total, near misses were recorded compared to 279 injury related incidents of the same causal factor. Following the principles of Bird / Heinrich there should be far more near misses reported compared to injury events, it is therefore presumed that many opportunities to prevent injury go unreported simply because the individual may not have recognised the potential for injury. We understand that it is sometimes difficult to spot manual handling poor practice so increased awareness of correct technique is required through training demonstrations.

A good initiative to highlight potential near misses is to encourage operatives to stand back, observe and assess how a colleague is undertaking a particular manual handling activity on site and to specifically look at their posture to see where the bad practices may be occurring. Observations can be fed back through the normal process such as positive intervention or hazard reporting cards so not to increase any additional reporting requirements. This will allow the site to understand what the high probability activities are by analysing the data submitted and hopefully help to prevent potential injury events.



This picture shows a colleague taking a step back to assess his peer in their lifting techniques

Risks/controls

Manual handling activities should be included in the activity risk assessment unless they are significant in which case a specific manual handling assessment should be carried out, detailing why the task cannot be mechanised.

When completing activity risk assessments always follow the ERIC process (eliminate, reduce, isolate and control). When undertaking the manual handling assessments follow the TILE process (task, individual, load and environment).

These acronyms help the assessor to follow the right process.

Some contracts have adopted a heavy materials register that details items that must not be moved by hand.

Other points to consider within any risk assessment should include but not be limited to:

- Wherever possible, use mechanical means to lift and transport items.
- Where mechanical handling is not possible, sufficient numbers of persons must be available to lift the load.
- If possible, break the load down into smaller loads.
- Where significant manual handling is carried out, an appropriate toolbox talk should be given.
- Try to arrange work methods to avoid bending, twisting or over reaching when lifting or lowering the load.
- Ensure that access routes are clear.
- Protect or remove sharp edges.
- Try to reduce repetitive lifting by changing work patterns.
- Ensure proper storage, on a firm level base, with the heaviest loads stored in the knee to shoulder range.
- Ensure good grip is provided, where possible, by using a carrying device, handles or handholds.
- Site management should have manual handling training, where required

Legislation

Manual handling operations regulations 1992 (as amended). There is a range of support documentation available for FOC download from the Health and Safety Executive website <http://www.hse.gov.uk/msd/faq-manhand.htm>

Case Study:

Manual Handling of Sand Bags.

Traditional sandbags can be bulky, heavy to handle and prone to splitting.

An alternative is offered with TrafficSack, in its original form it weighs 0.5kg. When ready to use it you simply soak the TrafficSack in water and in minutes its super absorbent polymer filling absorbs up to 7kg of water – and retains it without leaking.



Guidance

Health and Safety Executive guidance document Are you making the best use of lifting and handling aids? <http://www.hse.gov.uk/pubns/indg398.pdf>

If you need help accessing this or any other Highways England information, please call **0300 123 5000** and we will help you.

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Registered office Bridge House, 1 Walnut Tree Close, Guildford GU1 4LZ

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