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Part 2

General Health & Safety Procedures

Part 1
Health & Safety Policy Statement

Part 3
Working Documentation Appendices

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Health & Safety Legislation Register				
Aspect Types	Relevant Legislation	Main requirements	Date	Purpose of Legislation
General	Health & Safety At Work Etc. Act	Produce a Company Health & Safety Policy. Refer to HSAWA Guidance Section contained in Part 3 of the Company Health & Safety Policy for a full description of requirements.	1974	Main Act of Law covering Company and employees Legal responsibilities and duties and the powers of the HSE, etc. This Act covers all aspects of the Company's operations, office and site, etc.
	The Health & Safety (Display Screen Equipment) Regulations	A requirement to assess computer workstations and the employees who use them, ensuring that standards outlined in these Regulations are applied.	1992	The Health & Safety (Display Screen Equipment) Regulations 1992 and associated guidance set standards which aim to control the health risks associated with DSE. Amended 2002 apply to all display screen equipment (DSE) - computer screens.
	Workplace (Health, Safety & Welfare) Regulations	These Regulations set out the basic requirements for workplaces provided for employees and self-employed persons.	1992	Workplaces such as offices, workshops, stores and yards etc., and their associated corridors, staircases, access roads, and welfare facilities etc., other than those on a construction site where the Construction (Design & Management) Regulations 2015 would apply.
	Construction (Design & Management) Regulations	Allocating tasks to competent persons, ensuring tasks are scheduled in line with the planned programme. Monitoring, auditing and reviewing site specific arrangements and taking effective action for improvements where necessary. Ensuring the Client is aware of their duties. Ensure a Principal Designer has been appointed. Ensure the HSE have been notified (F10). Vet the competency of the Project Team, including Designers, Sub-Contractors and employees, etc. Refer to the CDM Sections contained in Part 2 of the Company Health & Safety Policy for a full description of requirements.	2015	Duties are placed upon Clients, Principal Designer, Designers, Principal Contractors and Contractors for construction projects health & safety. Existing projects will need to be handed over before 6 th October 2015.
	Management of Health & Safety At Work Regulations	To appoint a competent person to provide advice and direction. Effective planning, organisation, control, monitoring and review. Assess risks to employees and make arrangements for their health, safety and welfare.	1999	Providing competent advice, guidance, instruction, information and training. Empowering management and staff to help them recognise hazards, assess risks and determine suitable and sufficient risk control. Promote a positive safety culture and formulate a suitable and applicable Policy and procedures.

Health & Safety Legislation Register continued / ...				
Aspect Types	Relevant Legislation	Main requirements	Date	Purpose of Legislation
General continued / ...	Health & Safety (Safety Signs & Signals) Regulations	Display all appropriate Health & Safety signage in the workplace to an appropriate standard.	1996	Displaying of signage to provide appropriate information to employees regarding warnings, precautions, advice and prohibits.
	Safety Representatives & Safety Committee Regulations	Consult with Union & Safety Representatives and Safety Committees.	1977	To provide arrangements for a good working relationship with the Safety Representatives and Safety Committees established in accordance with the current Legislation (SI 1977 No. 500).
	The Health & Safety (Consultation with Employees) Regulations	Consult with Employees who are not members of Safety Representatives or Committees.	1996	Provide arrangements for good working relationships with employees who are not members of Unions.
	The Provision & Use of Work Equipment Regulations	Ensure that competent Managers are given the responsibility of keeping in good, safe order machines, equipment, vehicles, Health & Safety record keeping, etc.	1998	It is the responsibility of Management to provide the right kind of tools, equipment / machines for the job and to see that they are properly used by employees. Information concerning the safe use of machines and equipment
	Personal Protective Equipment Regulations	To carry out a PPE Assessment for employees. Provide employees with appropriate PPE. Maintain, inspect and review PPE. Instruct employees on how to use PPE. Refer to the PPE section contained in Part 2 of the Company Health & Safety Policy for a full description of requirements. Updated in 2016 to include the visibility of workers	2002	To ensure that employers provide employees with suitable and sufficient personal protective equipment when and where appropriate.
	The Control of Noise at Work Regulations	To carry out Noise Assessments and protect employees from excessive noise.	2005	Requirements to eliminate, minimise and / or protect employees from noise levels which could affect their hearing.
	The Control of Lead at Work Regulations	Carry out an Assessment of the works and formulate appropriate controls to safeguard personnel and others who could be affected. Keep records of persons working with lead. Persons working with lead must be competent and appropriately trained. Refer to the Control of Lead at Work section contained in Part 2 of the Company Health & Safety Policy for a full description of requirements.	2002	These Regulations are aimed at protecting those persons who may be exposed to significant quantities of lead from various sources in the industry.

Aspect Types	Relevant Legislation	Main requirements	Date	Purpose of Legislation
Confined spaces	The Confined Space Regulations	<p>Eliminate the need to enter confined spaces. Carry out a Risk Assessment. Produce a safe working method. Operate a Permit to Enter Confined Spaces. Formulate an emergency rescue procedure. Ensure emergency evacuation equipment is available. Provide Confined Space Training. Comply with the standards of the Approved Code of Practice. Refer to the Confined Space section contained in Part 2 of the Company Health & Safety Policy for a full description of requirements.</p>	1997	<p>The Confined Spaces Regulations require that where it is reasonably practicable to do so, entry into a confined space is avoided. When unavoidable, a competent person must carry out a Risk Assessment and develop a safe working method which eliminates or reduces the risks to an acceptable level.</p>
COSHH	Control of Substances Hazardous to Health (Amendment) Regulations	<p>Carry out Assessments for substances which could be hazardous to health and produce suitable and sufficient control measures to safeguard employees and others health. Instruct / train employees in precise terms the necessary precautionary measures. Supervise, monitor and review the use of hazardous substances. Refer to the COSHH section contained in Part 2 of the Company Health & Safety Policy for a full description of requirements.</p>	2002	<p>The Control of Substances Hazardous to Health regulations (as Amended in 2004) defines in general and specific terms how the Company is expected to safely manage the use of potentially harmful substances or substances produced in the course of work.</p>
Electricity	The Electricity at Work Regulations	<p>Engage competent trained Electricians only. Electrical works must comply with relevant Regulations / Codes of Practices. Electrical supply must be made dead and locked-off. Inspect and certify electrical installations / works. Refer to the Working with Electricity section contained in Part 2 of the Company Health & Safety Policy for a full description of requirements.</p>	1989	<p>Compliance with the Regulation, Code of Practice and Manufacturers recommendations / specifications. Also comply with the requirements for The Low Voltage Electrical Equipment (Safety) Regulations 1989 and The IEE Wiring Regulation (Code of Practice) 17th Edition.</p>

Health & Safety Legislation Register continued / ...				
Aspect Types	Relevant Legislation	Main requirements	Date	Purpose of Legislation
Fire	The Regulatory Reform (Fire Safety) Order	<p>Carry out a Fire Risk Assessment for Company offices and site operations to evaluate the potential of fires and consideration toward appropriate preventative measures and controls.</p> <p>Produce Fire Action Plans.</p> <p>Appoint competent persons to implement control measures effectively.</p> <p>Carry out Fire Drills and keep records of results.</p> <p>Inspect and maintain fire-fighting equipment.</p> <p>Display evacuation signage and install emergency lighting.</p> <p>Keep emergency exits clear.</p> <p>Refer to the Fire Precautions and Fire Policy sections contained in Part 2 of the Company Health & Safety Policy for a full description of requirements.</p>	2005	The objective of fire precautions is the protection of life, avoidance of damage to property, plant and processes from fire.
First Aid	Health & Safety (First Aid) Regulations	<p>Carry out a First Aid Risk Assessment and regular reviews of potential injuries, working environments and the number of personnel employed.</p> <p>Provide provisions for office and site personnel.</p> <p>Appoint trained First Aiders and Appointed Persons.</p> <p>Refer to the First Aid section contained in Part 2 of the Company Health & Safety Policy for a full description of requirements.</p>	1981	Employers must ensure adequate first aid provisions are made for their employees. The Approved Code of Practice explains adequate and appropriate provisions.
Gas	The Gas Safety (Management) Regulations	<p>Only Gas Safe Engineers are allowed to work on gas appliances and gas installations.</p> <p>Refer to the Gas & Electrical Services Precautions section contained in Part 2 of the Company Health & Safety Policy for a full description of requirements.</p>	1996	<p>The main objective of the Gas Safety (Management) Regulations 1996 is to provide a regulatory regime which will maintain the safety standards achieved by British Gas as a relatively low risk, and to offer scope for further improvements. The priority is to ensure safety of life, property and locate and repair the escape wherever possible, leaving the installation safe.</p> <p>Also comply with the requirements for The Gas Safety (Installation and Use) Regulations 1994 and The Gas Appliance (Safety) Regulations 1991.</p>

Health & Safety Legislation Register continued / ...				
Aspect Types	Relevant Legislation	Main requirements	Date	Purpose of Legislation
Lifting operations	The Lifting Operations and Lifting Equipment Regulations	<p>Persons working with lifting appliances must be properly trained and experienced.</p> <p>Appropriate Operations Manuals and Safety Data Information must be supplied with the appliance.</p> <p>Information must be provided to the Temporary Works Co-ordinator, the appointed person and operators.</p> <p>Safety Inspections and tests of lifting appliances and lifting gear.</p> <p>Lifting Plans must be produced to ensure lifting operations are carried out safely.</p> <p>Appoint competent persons to evaluate the projects requirements.</p> <p>Refer to the Lifting Operations section contained in Part 2 of the Company Health & Safety Policy for a full description of requirements.</p>	1998	<p>The Lifting Operations and Lifting Equipment Regulations 1998 cover many different aspects relating to the safety of lifting operations and equipment.</p> <p>Lifting appliances must be designed, erected, maintained and operated by competent persons.</p>
Manual Handling	The Manual Handling Operations Regulations	<p>Carry out a Manual Handling Assessment and eliminate wherever possible, or provide suitable controls.</p> <p>Provide adequate and appropriate information, instruction, training and supervision.</p> <p>Monitor and review manual handling operations.</p> <p>Refer to the Manual Handling Operations section contained in Part 2 of the Company Health & Safety Policy for a full description of requirements.</p>	1992	To avoid hazardous manual handling operations where reasonably practicable.

- 5.8 **Personal Protective Equipment Regulations 2002:** Persons operating an Abrasive Wheel machine must wear the recommended form of protection, as determined by the risk assessment and depending upon the circumstances, box goggles or faceshield to (BS EN 166,167 & 168) Grade 1 impact.
- 5.9 When operating an Abrasive Wheel machine, ensure that other persons are not put at any risk. Operate abrasive wheel machines away from other persons where possible, or adequately shield off possible danger areas. Do not use them in accessways, near doorways or in a 'No Naked Flame' area. Take dust control measures if required.
- 5.10 Besides the wearing of goggles / faceshields, operators of Abrasive Wheel machines should wear safety footwear, gloves, overalls and dust masks. If noise levels exceed the permissible levels set in The Control of Noise At Work Regulations 2005, ear protection will be required.
- 5.11 See Abrasive Wheels – Hot Works – Permit to Work (Appendices Section)

6 Accidents, Dangerous Occurrences, Near Miss Incidents and Diseases

- 6.1 **Emergency procedure if you are the injured person:**
- If you are able, move away from the area if that area still poses further risk of injury to you or to anyone who may come to your assistance. If you are not able to move and the area poses a risk to someone who may come to your assistance, warn them of the danger.
 - Do whatever you can to draw the attention of others, i.e., shout out 'help', make a continuous loud noise, and / or position yourself where it would be likely that someone could see you.
 - If you are losing a lot of blood, cover the cut firmly with your hand, where possible with a clean cloth.
 - If you feel dizzy or faint, sit down on the floor and keep away from edges of floors, platforms and stairs etc., where you could fall.
 - Keep as calm as possible.
- 6.2 **Emergency procedure if you come across someone who has been injured:**
- The first thing you must do is assess the accident area to ascertain any hazards or risks to yourself before venturing into the accident area to assist the injured person. If there are hazards and risks, try to eliminate or isolate the hazard without putting yourself in danger. If you are unable to assist the injured person safely, call out for help or go and get assistance where help is not at hand, ensuring that the appropriate Emergency Services can be called for.
 - An injured person should be attended to by a qualified First Aider so your main aim would be to notify that person as soon as possible. Someone should remain with the injured person if possible.
 - When helping an injured person, ensure that you do not come into contact with their blood, particularly if you have an open wound yourself.
- 6.3 **Reporting of accidents must be carried out in accordance with the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR).**
- 6.4 **All accidents, dangerous occurrences, near misses and diseases:**
- Must be reported as soon as possible to Head Office so that the Safety Advisor or Senior Management can give appropriate detailed advice on what action should be taken under the circumstances.
 - Ensure the scene of the accident, dangerous occurrence or near miss incident is not disturbed until consultation with Senior Management has taken place and authority has been given.
 - Witnesses' names, addresses and telephone numbers must be recorded so that a statement can be obtained from them at a later date.
 - All accidents, dangerous occurrences or near miss incidents are to be investigated as quickly as possible by the immediate Manager and Senior Management / Company Safety Advisor, where Senior Management feel the accident / incident requires further investigation and a review to prevent a reoccurrence. In all accident / incident investigations, recommendations are required to be formulated by Management / the Company Safety Advisor so that the recommendations can be further considered by Senior Management and where necessary, new procedures and controls implemented to prevent reoccurrence.
 - To assist in any investigation, photographs should be taken of the accident area if possible.

ACCIDENT / INCIDENT REPORTING PROCEDURES FOR SITES

Under RIDDOR, employers and other responsible people who have control over employees and work premises have certain responsibilities.
 If any of the following events occur at work, employers and other responsible people must report the incident to the relevant enforcing authority.
 (See the list of major injuries / occupational diseases and dangerous occurrences)



All accidents / injuries however minor must be reported to the site manager and the injured person's supervisor, details of the accident / injury and first aid treatment given must be recorded in the accident book / form. Senior Management at Head Office must be notified immediately of any accident / incident which causes injury.

WHAT HAS TO BE REPORTED

If incidents involving employees, contractors, self-employed, visitors and members of the general public fall within these criteria they should be reported under RIDDOR

Deaths
Major Injuries
Accidents - Over Seven-Day Injuries
Occupational Diseases
Dangerous Occurrences
Not At Work

DEATHS / MAJOR INJURIES

Inform immediately the site manager, the company's senior management and your health and safety advisors. The HSE must be notified without delay:

In the case of a fatality or a major injury which may lead to a fatality

Telephone:
0845 300 9923 (8.30-5.00)

Out of Hours:
0151 922 9235

Otherwise complete the on line form via
<http://www.hse.gov.uk/riddor/>

OVER SEVEN-DAY INJURIES

If the injured person has been incapacitated or is likely to be unable to carry out their normal working duties for more than 7 consecutive days (excluding day of the accident but including rest days and bank holidays) the HSE must be informed within fifteen days of the incident.

Report on-line to:
<http://www.hse.gov.uk/riddor/>

OCCUPATIONAL DISEASES

Employers and self-employed people must report occupational diseases. This must be done when they receive a written diagnosis from a doctor that they, or an employee, is suffering from one of these conditions and the sufferer has been doing the work activities listed for that illness.

Report on-line to:
<http://www.hse.gov.uk/riddor/>

DANGEROUS OCCURENCES

Dangerous occurrences are certain, listed near-miss events. Not every near-miss event must be reported.

Report on-line to:
<http://www.hse.gov.uk/riddor/>

PERSONS NOT AT WORK

You must report injuries to members of the public or people who are not at work if they are injured following an accident that arises out of, or in connection with work and are taken from the scene of an accident to hospital for treatment.

Report on-line to:
<http://www.hse.gov.uk/riddor/>

DO NOT DISTURB THE SCENE OF THE INCIDENT - WARN WITNESSES THEY MAY BE REQUIRED FOR AN INVESTIGATION /

Accident Data needs to be kept for at least three years after the accident if the person is above the age of eighteen.

If the person who has had the accident was under the age of eighteen then the accident records have to be kept until they are 21.

Health & Safety Advisors

Richardson-Hill Limited - Office: 020 85248396
 Who will inform The Local Health & Safety Executive if required under RIDDOR 2013 (0845 300 9923)

LIST OF REPORTABLE ACCIDENTS / INCIDENTS

HOW TO REPORT	
<p>Online Go to http://www.hse.gov.uk/riddor/ and complete the appropriate online report form. The form will then be submitted directly to the RIDDOR database. You will receive a copy for your records.</p>	<p>Telephone All incidents can be reported online but a telephone service remains for reporting fatal and major injuries only. Call the Incident Contact Centre on 0845 300 9923 (opening hours Monday to Friday 8.30 am to 5.00 pm).</p>

DEATHS

A death must be reported if:

- it results from a work accident;
- a worker sustains an occupational injury;
- it results from a suicide on a relevant transport system (this is considered to be an accident for the purpose of **RIDDOR**); or
- it results from an act of physical violence to a worker.

OVER SEVEN DAY INJURIES

This is where an employee, or self-employed person is away from work or unable to perform their normal work duties for more than seven consecutive days (not counting the day of the accident), but including rest days and bank holidays.

DANGEROUS OCCURRENCES

Dangerous occurrences are certain, listed near-miss events. Not every near-miss event must be reported.

There are 21 categories of dangerous occurrences that are relevant to all workplaces, for example:

- the collapse, overturning or failure of load-bearing parts of lifts and lifting equipment;
- plant or equipment coming into contact with overhead power lines;
- electrical short circuits or overloads causing a fire or explosion, which results in the stoppage of the plant for more than 24 hours or has the potential to cause death;
- the accidental release of a biological agent likely to cause severe human illness; and
- the accidental release of any substance that may damage health (not applicable offshore).

MAJOR INJURIES

These include:

- a fracture, other than to fingers, thumbs and toes;
- amputation;
- dislocation of the shoulder, hip, knee or spine;
- loss of sight (temporary or permanent);
- chemical or hot metal burn to the eye or any penetrating injury to the eye;
- injury resulting from an electric shock or electrical burn leading to unconsciousness, resuscitation or admittance to hospital for more than 24 hours;
- any other injury leading to hypothermia, heat-induced illness, unconsciousness, resuscitation or admittance to hospital for more than 24 hours;
- unconsciousness caused by asphyxia or exposure to a harmful substance or biological agent;
- an acute illness requiring medical treatment;
- loss of consciousness arising from absorption of any substance by inhalation, ingestion or through the skin; and/or
- acute illness requiring medical treatment where there is reason to believe that this resulted from exposure to a biological agent, its toxins or infected material.

INJURIES TO PEOPLE NOT AT WORK

You must report injuries to members of the public or people who are not at work if they are injured following an accident that arises out of, or in connection with work and are taken from the scene of an accident to hospital for treatment.

If the injured person was already at a hospital, the report only needs to be made if the injury is a 'major injury' (see list).

OCCUPATIONAL DISEASES

Employers and self-employed people must report occupational diseases. This must be done when they receive a written diagnosis from a doctor that they or an employee is suffering from one of these conditions and the sufferer has been doing the work activities listed for that illness.

For a full list of dangerous occurrences applicable to all workplaces and additional categories of dangerous occurrences applicable to mines, quarries, relevant transport systems (railways etc) and offshore workplaces:

A guide to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013

6.5 Facts and evidence regarding accidents, dangerous occurrences, near misses & diseases:

- Facts and evidence should be obtained as soon as possible.
- Ensure the Company Accident Form is completed for every accident / illness.
- Ensure the Company Incident Report Form is completed for every dangerous occurrence / near miss incident.
- A copy of all accident documentation, including photographs and witness statements etc., must be sent to the Head Office for the attention of Senior Management as soon as possible. The original information received is to be retained in the Company Accident File.

6.6 Vehicle Accidents & Emergencies

- Damage caused to vehicles, no matter how slight, must be reported immediately to Senior Management and on your next scheduled visit to the office, you are to ensure that you complete an appropriate claims form giving all details of the occurrence.

6.7 In the event of a road traffic accident, the following procedures must be adhered to.

- Ensure the well-being of yourself. If you are able, get out and away from the vehicle and the road if the circumstances pose further risk of injury to you or to anyone who may come to your assistance. If you are not able to move and the area poses a risk to someone who may come to your assistance, warn them of the danger if possible.
- Do whatever you can to draw the attention of others, i.e., shout out 'help', make continuous loud noises, such as sounding the horn of the vehicle and / or position yourself where it would be likely that someone could see you.
- If you are losing a lot of blood, cover the cut firmly with your hand, where possible with a clean cloth.
- If you feel dizzy or faint, sit down on the floor and keep away from the road.
- Keep as calm as possible.
- In the event of a vehicle fire in the engine compartment or fuel lines, evacuate your vehicle and remain at a safe distance. Do not attempt to extinguish under the bonnet or fuel line fires.

6.8 Ensure the well-being of others who may have been involved or affected by the accident, i.e.:-

- Passengers, drivers of other vehicles involved in the accident, pedestrians, etc. If you are a First Aider and able to, assist persons who are injured.
- Ensure the emergency services are contacted as soon as possible.
- In the event of any vehicle fire, in the first instance ensure that you and your passengers evacuate the vehicle immediately. Give immediate assistance to passengers where possible and where necessary, providing you do not put yourself at risk from serious injury. Only small fires should be attempted to be extinguished using an appropriate fire extinguisher, providing you are trained to use such equipment and all passengers have been evacuated from the vehicle.

6.9 In the event of a vehicle accident, obtain the following information where possible:

- Name and address of persons involved in the accident, i.e., drivers of other vehicles and pedestrians etc.
- If it is a car accident, obtain the following:- Make, model and registration number, details of their Insurers.
- Make a note of the circumstances to the accident.
- Take photographs of damage and the incident area if possible, i.e., with your mobile phone.
- Names and addresses of any witnesses.
- Details of damage to all vehicles involved.
- Make a note of any points of interest that you believe may affect the outcome of a claim.

6.10 Reporting of Accidents (Management Responsibilities):

- You must report all of the following in accordance with RIDDOR by informing the Incident Contact Centre based at Caerphilly (a joint venture between the HSE and Local Authorities) via the internet (www.hse.gov.uk/riddor), or for fatal and major injuries only, by telephone on 0845 300 9923 – Monday to Friday 8.30 am to 5.00 pm. If you use the internet or telephone service a copy of your report will be sent by the Incident Contact Centre to the Company head office:-
- A death or major injury;
- 1995 RIDDOR change 6th April 2012: An over seven-day injury (not counting the day on which the accident happened, when an employee or self-employed person has an accident at work and is unable to work for over seven days, but does not have a major injury), must be reported within 15 days from the day of the accident; Employers and others with responsibilities under RIDDOR must still keep a record of all over three day injuries – if the employer has to keep an Accident Book, then this record will be enough.
- A work-related disease; and dangerous occurrence (this is when something happens that does not result in a reportable injury, but which clearly could have done);
- Enter details of all accidents in the appropriate Company Accident Record Form.
- Carry out an investigation of the accident taking care to ensure that written statements are obtained from all witnesses.

- 6.11 A thorough investigation into an accident, dangerous occurrence, near miss incident or disease should provide Management with answers to the following questions:
- What caused the accident, dangerous occurrence, near miss incident or disease?
 - Who was involved?
 - When did it occur?
 - Where did it occur?
 - Why did it occur?
 - How could it have been prevented?
 - How can a recurrence be prevented?
- 6.12 Copies of the F2508 Form, the Company Accident Record Form and an Incident Report Form are contained within Part 3 – Appendices Section of this Policy document.

7 Alcohol, Drug & Substance Abuse Policy

- 7.1 Anyone found under the influence of or in possession of alcohol, illegal drugs or found abusing substances must be removed from Company premises and / or areas under the Company's control, which includes vehicles and plant and would be subjected to disciplinary measures. Illegal drug offences are considered a major breach of the Company Health & Safety Policy which would result in the employee being dismissed and the matter will be reported to the Police.
- 7.2 Random drug screening may be carried out on employees engaged on safety critical work. If tests prove positive for alcohol, drug or substance abuse, this would be classified as a breach of the Company Health & Safety Policy and would therefore result in disciplinary procedures which could include dismissal. The standards for a positive test shown below for alcohol, drugs and substance abuse will be used by the Company as the standard generally. Company Management should check the standards of positive tests with all the Company's Clients and if there are standards for positive tests lower than the figures below, then those lower standards will be adopted by the Company for that particular Client.
- 7.3 Employees should note that it may take more than 24 hours for alcohol in blood to disperse. Employees should carefully consider this aspect, particularly those who are engaged on safety critical work, such as driving and operating plant, or those employees engaged on Contracts where the Company's Clients specify very low acceptable alcohol levels.
- 7.4 **Alcohol, Drug & Substance Abuse References**
 Education & Information: All personnel required to work on the Company's premises / Contracts are required to be formally briefed on the Company's Alcohol, Drug & Substance Abuse Policy, as well as the associated harmful effects and increased risks, during their initial Company Induction and any Site Safety Induction.
 Records are required to be kept on Alcohol, Drug & Substance Abuse Policy briefing, i.e., a Register.
 Positive screening results
 For the purpose of the standards, means that screening for drugs and substance abuse:
 The presence of drugs, other than medication which does not affect the work performance.
 For the purpose of the standard, means that screening for alcohol showing:
 More than 29 milligrams of alcohol in 100 millilitres of blood, or
 More than 13 micrograms of alcohol in 100 millilitres of breath, or
 More than 39 milligrams of alcohol in 100 millilitres of urine.
- 7.5 **The effects of alcohol**
 You don't need to be over the legal drink-drive limit for your driving or ability to operate plant to be affected - even a small amount of alcohol can put you and others at risk. The effects of alcohol (even a small amount) are slow reactions, poor judgement, reduced field of vision and over-confidence, making you more likely to take risks, therefore the only safe option is not to drink alcohol if there is a chance you may be driving or operating plant. How long you should go after drinking alcohol before you drive or operate plant depends upon the amount and type of alcohol you drink and your body's characteristics, i.e., weight and gender. Your liver cleanses the body of alcohol as blood flows through it. After allowing an hour for the body to absorb the alcohol you have drunk, it does this at a rate of about one unit of alcohol per hour. There is no way of speeding this up. If you are planning to drive the morning after drinking, you MUST take this into consideration when deciding how much to drink. For example, if you drink just three pints of Stella (9 units) or one bottle of 12% ABV wine (9 units) it will take roughly nine hours for the alcohol to leave your system. This means that if you stop drinking at 11pm, the alcohol will not have left your system until 8am. You should not drive or operate plant before this time and should allow even longer if you think you are still likely to be affected by the alcohol.

- 7.6 **Assessing, reviewing & monitoring:** Company Managers will continuously assess, review and monitor the Company's working environments to ensure compliance to this Policy. Substances which could be abused will be strictly controlled, kept to the minimum and kept under lock and key by Management. Managers will also address issues in the work environment which may contribute towards substance abuse because of the rigours and stress of work.
- 7.7 **Smoking:** Smoking in an enclosed workplace is prohibited. Anyone found smoking in Company premises, an enclosed workplace or Company vehicle, including any hired vehicle, must be instructed to extinguish the cigarette immediately in a safe manner and be subjected to disciplinary measures (See Appendix).
- 7.8 **How do you know if you have a problem:** There are several different signs that indicate that something could be wrong. These can include physical, mental or social problems, e.g., you may feel unwell, tired or depressed; you could be having trouble concentrating, be making a lot of mistakes, or having lots of minor injuries; or perhaps you are taking days off work to recover from alcohol or drugs, or getting into fights or arguments at work because you have become subject to mood swings or aggression.
- If one or more of the following descriptions applies to you, get a medical check-up or think about reducing or cutting out your alcohol or recreational / illegal drug use.
 - Alcohol:
 - ♦ I regularly drink more than the recommended number of units per week;
 - ♦ I go to work when I am hung-over;
 - ♦ I drink heavily late into the night and go to work early the next day;
 - ♦ I need a drink at lunchtime or during the day;
 - ♦ I feel sick, get the shakes, or feel worried or 'nervy' if I do not have a drink;
 - ♦ I miss work because of hangovers.
 - Illegal Drugs (e.g., heroin, cocaine, speed, ecstasy, marijuana):
 - ♦ I have difficulty concentrating;
 - ♦ I often feel tired or uninterested in things;
 - ♦ I am clumsy or have poor coordination;
 - ♦ I have problems with my vision.
- 7.9 **Do not forget** that by indulging in illegal / recreational drugs / alcohol you may lose your job and end up with a criminal record.
- 7.10 **If you think you might have a drug or alcohol problem** you could be endangering your and others safety at work so you should approach your employer for some advice and help.
- 7.11 **The Company has a Legal responsibility** to make sure that the workplace is safe and healthy, which includes making sure employees who may be affected by alcohol and drugs are not putting themselves or others in danger. As an employee you are required to follow instructions and rules in your workplace. For example, carry out your work in the way you have been instructed or trained to do and work and behave in ways which are safe and do not endanger the health and safety of yourself or others in your workplace.
- 7.12 **Practical Solutions:**
If you think your substance abuse is a problem for you or a danger to others, seek advice. For example:
- The Company will confidentially support, where Management feel it is appropriate, employees undergoing treatment and rehabilitation.
 - Talk to your local GP.
 - Talk to your workplace Health & Safety Advisor or your Supervisor / Manager.
 - Contact a confidential telephone help service – numbers are in the front of the telephone book.
 - Contact your local Community Health Centre.
 - Talk to a family member.
- 7.13 **Or get further advice and assistance from:-**
- National Drugs Helpline: 0800 7766 000 (Free, confidential, 24 hours a day)
 - The Scottish Drugs Forum: 0141 221 1175
 - RELEASE: 020 7729 9904
 - Alcohol Concern: 020 7928 7377 or 0800 9178282. E-mail: www.contact@aolholconcern.org.uk
 - Drugs scope: 020 7928 1211. E-mail: www.drugscope.org.uk
 - Narcotics Anonymous: 0845 3733 366. E-mail: www.NAHelpline@uknd.org
 - Hope UK: 020 7928 0848. E-mail: www.a.wilson@hope.uk/org
 - Alcoholics Anonymous: 0845 9697 555

8 Arson

- 8.1 **Introduction:** The Criminal Damage Act 1973 defines arson as “unlawful damage by fire of property belonging to another”. Malicious ignition is a common cause of fires generally. Company premises and vehicles are vulnerable to arson attack, therefore security is important to minimise the potential.
- 8.2 **Preventative measures:** The Company has developed this management plan to address arson.
- **Risk Management:** Company personnel, in particular Managers, should continuously assess and evaluate the potential of arson occurring. If there is a realistic threat, security measures must be continuously monitored to ensure that the potential of arson is minimised and that fire precautions are all in good order, in particular the fire alarm so that should arson occur, there is a means for early detection and extinguishing.
 - **Security arrangements to prevent arson:** The Company premises and property should be regularly assessed with regard to the vulnerability of arson, in particular preventing unauthorised persons from gaining access. If there is a perceived risk of arson, all employees should be vigilant with regard to security measures, even when the premises are occupied and when vehicles are in use. Arson attacks can occur without access, therefore combustible materials and explosive substances should not be easily accessible to trespassers, etc., and these materials and substances should be kept to a minimum, in particular rubbish and the positioning of rubbish bins. A common vulnerability to locked premises is the letter box, therefore an external self-contained post box would be a good preventative measure where arson is perceived as a possible threat. External doors should be fitted with self-closers and not be able to be opened without a key from the outside. Ensure prominent ‘Private Property – Keep Out’ signs are displayed around the perimeter of the premises and consideration should be given to maintaining CCTV systems which although may not prevent persons gaining access, would discourage arson generally. Vehicle doors, shutters, windows and sunroofs should always be closed and locked when the vehicle is unattended. Vehicles should also have lockable petrol caps or flaps.
 - **Systems and fire alarm detection:** The Company’s fire alarm detection should be regularly reviewed for its effectiveness with regard to early warning where there are security vulnerabilities, for example the main access to the premises, particularly if letter boxes are fitted to doors and where there are windows and glazed doors which are adjacent to public areas.
 - **Fire Policy, containment and extinguishments:** A good standard of fire containment throughout the premises will minimise the effect of an arson attack and improve the chances for persons evacuating without harm. Regularly reviewing the Company Fire Policy and Fire Procedures would be good practice to safeguard Company Personnel and the premises, therefore the duties of Company Managers and Personnel to prevent the possibility of fires should be adhered to and regularly monitored with a view to improvements where necessary. Firefighting equipment are life savers in the event of fires and arson attacks and it is therefore paramount that sufficient extinguishers are available and that Company Personnel are trained on how to use them.
 - **Reporting and investigating fires:** Any occurrence of a fire or suspicion of a threat of arson should be reported to Senior Management immediately. Management should arrange for an investigation to be carried out and report the matter to the Police and Fire Brigade.
 - **Fire / Safety Awareness Training:** All employees should be reminded during training of the potential of arson and of appropriate measures to safeguard themselves and others against the threat or possibility.

9 Asbestos Policy

- 9.1 **Introduction:** The Control of Asbestos Regulations 2012 came into force on 6th April 2012. These Regulations update previous sets of Regulations covering the prohibition of asbestos, the control of asbestos at work and asbestos licensing. The Regulations prohibit the importation, supply and use of all forms of asbestos. They continue the ban introduced for blue and brown asbestos in 1985 and for white asbestos in 1999. They also continue to ban the second-hand use of asbestos products such as asbestos cement sheets and asbestos boards and tiles; including panels which have been covered with paint or textured plaster containing asbestos. The ban applies to new use of asbestos. If existing asbestos containing materials are in good condition, they may be left in place providing the condition of the asbestos containing materials are monitored and managed to ensure they are not disturbed.
- 9.2 **The Control of Asbestos Regulations 2012 includes the following additions:-**
- From 6 April 2012 some non-licensed work needs to be notified to the relevant Enforcing Authority.
 - From 6 April 2012 brief written records should be kept of non-licensed work, which is to be notified e.g., copy of the notification with a list of workers on the job, plus the level of likely exposure of those workers to asbestos. This does not require air monitoring on every job if an estimate of degree of exposure can be made based on experience of similar past tasks or published guidance.

- By April 2015, all workers / self-employed doing notifiable non-licensed work with asbestos must be under health surveillance by a Doctor. Workers who are already under health surveillance for licensed work need not have another medical examination for non-licensed work, but medicals for notifiable non-licensed work are not acceptable for those doing licensed work.
- Some modernisation of language and changes to reflect other Legislation, e.g., the prohibition section has been removed, as the prohibition of supply and use of asbestos is now covered by REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals Regulations 2006).

9.3 **The objective of this Policy:** Exposure to asbestos dust can result in asbestosis, a disease of the lungs due to the inhalation of asbestos particles. Lung Cancer, Mesothelioma Cancer and Laryngeal Cancer are other diseases that can be suffered from after contact with asbestos dust. To prevent any harmful asbestos exposure to employees and any other persons who could be affected by the Company operations where asbestos is present, the Company has a duty not only to employees, but also to the Client's employees, other Contractors employees, occupiers of the site being worked on, visitors, neighbours and any other persons who could be affected by operations which involve disturbing or working with asbestos.

9.4 **The three main types of asbestos used / found are:-**

- Chrysotile - commonly known as 'white' asbestos.
- Crocidolite - commonly known as 'blue' asbestos.
- Amosite and Mysorite - commonly known as 'brown' asbestos.

Note: - Colour must not be relied upon for positive identification.

9.5 **If asbestos is found or suspected at the workplace** where it is likely to be disturbed, stop any work which could disturb the asbestos, or work that may be carried out in an area where asbestos contamination has occurred and inform Site Management immediately so that proper procedures can be put in place to safeguard against the hazards. The area where asbestos is suspected should be surveyed by a competent person and samples taken for analysis. This will determine whether asbestos is present and if so, what type. Once the type of asbestos has been determined, all necessary precautionary arrangements can be made.

9.6 **Asbestos can be found blended with cement and similar materials.** It has been widely used as building materials such as roof sheets and pipes. In combination with calcium silicate and magnesia, it forms a thermal insulation material for boilers, steam pipes and similar applications. Asbestos based compounds have in the past been applied by spray techniques to provide fire-resistance to walls and ceilings.

9.7 **Only properly trained and competent persons** are allowed to disturb or work with asbestos. Companies must be Licensed Contractors when working with 'Brown' - Amosite or Mysorite, or 'Blue' - Crocidolite asbestos.

9.8 **Compliance with Safety Standards:** Works in connection with Asbestos must be carried out in accordance with all current Asbestos Regulations, Approved Codes of Practices and British Standards (see Asbestos References for details).

9.9 **Employees' awareness of asbestos precautions and controls:** The Company's Management have the responsibility to ensure that all persons are protected from harmful asbestos exposure. All Company employees are required to be made aware of all necessary precautionary measures and controls related to work which may disturb asbestos. It is the duty of Company Management to ensure that employees, who may be required to work in areas where asbestos could be present, receive Safety Awareness Training for asbestos. Prior to a Contract starting where asbestos is present, Company employees must receive Site Safety Induction specific to the asbestos precautionary measures and controls necessary for site operations. This would include Client's asbestos procedures and documentation, i.e., Policy's, Survey Reports, Drawings and instant notification procedures. Induction will also include details of the Risk Assessment and Safe Method of Work Statement for asbestos related works specific to the Contract.

9.10 **Client requirements:** Prior to a Project starting, Company Managers should check that all Client requirements will be complied with regarding asbestos procedures for precautionary measures and controls that the Company has to comply with.

9.11 **Information required from Clients:** Management should ensure that all necessary information regarding asbestos is obtained from the Client prior to work being carried out which could give rise to harmful asbestos exposure, i.e., Client's Asbestos Policy, Asbestos Surveys and Reports, Drawings showing where asbestos is present and Incident Records, etc.

9.12 **Monitoring:** Company Management are required to set a monitoring procedure to ensure that all asbestos precautionary measures and controls are complied with.

- 9.13 **Vetting Licensed Contractors:** Company Managers involved in Projects which could involve harmful asbestos exposure are required to check that Licensed Contractors safety arrangements are in order, i.e., their License details, the training records of employees carrying out the work on site, the service records of equipment that will be used on site, particularly the function tests and that equipment that will be supplied to site will be clean and free from asbestos contamination, waste arrangements and records and their past accidental asbestos exposure incidents records.
- 9.14 **Emergency arrangements for employees:** In the event of an asbestos incident where you suspect asbestos to be present where it has not been identified, or asbestos exposure may have occurred, or you need to report a non-compliance with asbestos controls etc., inform your Site Managers / Supervisors immediately.
- 9.15 **Emergency arrangements for Managers:** In the event of an asbestos incident where you suspect asbestos to be present where it has not been identified, or asbestos exposure may have occurred, or you need to report a non-compliance with asbestos controls, inform Senior Management immediately at the Company's Head Office for further advice and ensure full compliance with any Client's emergency procedures.
- 9.16 **For further guidance on action to be taken** in the event of asbestos being found or suspected contact the Safety Advisor immediately and do not disturb the material.
- 9.17 **Also see Asbestos Project Planning Checklist in Part 3 - Appendices Section.**

References

Legislation

The Health & Safety At Work Etc., Act 1974.

The Control of Pollution Act 1974.

The Special Waste Regulations 1996.

The Control of Asbestos Regulations 2012 and Approved Code of Practice (2nd Edition).

Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004.

Approved Code of Practice: Work with Asbestos Insulation, Asbestos coating and Asbestos Insulating Board (2nd Edition).

The Personal Protective Equipment Regulations 2002.

The Construction (Design and Management) Regulations 2015.

Note: The Approved Codes of Practices mentioned above should be considered with reference to The Control of Asbestos Regulations 2012 until new Codes of Practices are changed to accommodate the new requirements of the 2012 Regulations.

British Standards

PAS 60-1:2004 Equipment used in the controlled removal of asbestos-containing materials. Controlled wetting of asbestos containing materials.

PAS 60-2:2004 Equipment used in the controlled removal of asbestos-containing materials. Negative Pressure Units.

PAS 60-3:2004 Equipment used in the controlled removal of asbestos-containing materials. Operation, cleaning and maintenance of class H vacuum cleaners.

BS EN ISO 13982-1:2004 Protective clothing for use against solid particulates. Performance requirements for chemical protective clothing providing protection to the full body against airborne solid particulates (type 5 clothing).

BS EN ISO/IEC 17020:2004 General criteria for the operation of various types of bodies performing inspection.

BS EN ISO/IEC 17024:2003 Conformity assessment. General requirements for bodies operating certification of persons.

BS EN ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories.

Guidance

Existing HSE Guidance Notes should be considered with reference to The Control of Asbestos Regulations 2012:

EH 10 Asbestos exposure limits and measurements of airborne dust concentrations.

EH 35 Probable asbestos dust concentrations at construction processes.

EH 36 Work with asbestos cement.

EH 37 Work with asbestos insulating board.

EH 42 Monitoring strategies for toxic substances.

EH 47 The Provision, use and maintenance of hygiene facilities for work with asbestos insulation and coatings.

EH 50 Training operatives and supervisors for work with asbestos insulation and coatings.

EH 51 Enclosures provided for work with asbestos insulation, coatings and insulating board.

- EH 52 Removal techniques and associated waste handling for asbestos insulation, coatings and insulation board.
- EH 57 The problems of asbestos removal at high temperatures.
- MS13 Asbestos.

HSE Guidance:

HSE Website: www.hse.gov.uk/asbestos/information.htm

10 Audit Procedures for Safety Management System

- 10.1 All components of the Safety Management System are to be internally audited by Management annually based upon the general requirements of OHSAS 18001.
- 10.2 The safety aspects, number of contracts to be audited and scheduling will be determined by Management and the Safety Advisors to ensure that the contracts with a higher assessed risk are audited most frequently and more comprehensively. The Project Health & Safety Management Audit form will be utilised for site-based Audits. The Internal Health & Safety Management System Core Audit form is to be utilised for an overall Audit of the Safety Management System.
- 10.3 Management will appoint a competent Auditor for each Audit. The appointed Auditor does not have to be a person who has been directly involved in the development of the Safety Management System. Competency for internal auditing will depend upon the Auditors safety awareness, training and experience.
- 10.4 Audits may be completed by Senior Managers, Site Management or Safety Advisors.
- 10.5 Managers and the Safety Advisors will define the scope, Audit criteria and programme for each Audit in collaboration with the Internal Auditor.
- 10.6 The Internal Auditor will undertake each Audit in accordance with the defined scope, Audit criteria and programme.
- 10.7 During the Audit the Internal Auditor classifies any findings relative to each element of the Audit criteria as a pass, observation, minor non-conformity or major non-conformity.
- 10.8 Upon completion of the Audit the Internal Auditor will produce an Audit Report for Management, summarising findings using the Audit forms contained in Part 3 of the Company Health & Safety Policy.
- 10.9 Managers will action all non-conformities and any observations deemed to be significant, as detailed within the Audit and Report forms.
- 10.10 Copies of all Audit notes, reports and related forms will be retained by Management in the Company's main Health & Safety file at head office.
- 10.11 The Safety Management Representative will present a summary of the Audits for discussions with Senior Management during Safety Management Meetings.

11 Bomb Threats and Attacks

- 11.1 **Introduction:** The Health & Safety at Work etc. Act 1974, The Management of Health & Safety At Work Regulations 1999 and The Workplace (Health, Safety & Welfare) Regulations 1992 places requirements which relate to bomb threats. The Company premises and vehicles are vulnerable to bomb attacks, therefore the security of the Company premises and property is important to minimise the potential. The normal types of bomb threats are letter and parcel bombs sent through the post, anti-personnel and anti-property bombs, incendiaries and hoax bomb threat calls.
- 11.2 **Preventative measures:** The Company has developed this management plan to address bomb threats and attacks.
- **Risk Management:** Company personnel, in particular Managers, should continuously assess and evaluate the potential of bomb attacks occurring. If there is a threat, security measures must be continuously monitored to ensure that the potential is minimised. Bomb threats are to be taken seriously whenever a threat is received, which includes encountering suspicious objects, or an increase in bombing activities in the local community or related types of businesses.

- Security arrangements to prevent bombing: The Company premises and property should be regularly assessed with regard to the vulnerability of a bomb attack in heightened circumstances, in particular preventing unauthorised persons or vehicles from gaining access into the Company premises. If there is a heightened risk of a bomb attack, all employees should be vigilant with regard to security measures even when the premises are occupied and when vehicles are in use. Bomb attacks can occur without access therefore the premises should be clean and tidy with minimal areas to hide objects etc. A common vulnerability to locked premises is the letter box therefore an external self-contained post box would be a good preventative measure where letter bombs are perceived as a possible threat. External doors should be fitted with self-closers and not be able to be opened without a key from the outside. Ensure prominent 'Private Property – Keep Out' signs are displayed around the perimeter of the premises and consideration should be given to maintaining CCTV systems which although may not prevent persons gaining access, would discourage bombers generally. Vehicle doors, shutters, windows and sunroofs should always be closed and locked when the vehicle is unattended. Vehicles should also have lockable petrol caps or flaps.
- Receiving bomb threats or suspicious objects: Bomb threats or suspicious objects are to be taken seriously by employees and should be reported to Senior Management and the Police immediately.
 - If you discover a bomb or suspect device anywhere:-
 - ◆ Do not touch it;
 - ◆ Warn others in the vicinity;
 - ◆ Report the find to Senior Management immediately;
 - ◆ If the article is not identified as being safe call the Police by dialling 999;
 - ◆ If evacuation is necessary leave by the nearest exit or as directed, obeying any specific instructions given by the Police.
- Bomb threats / Safety Awareness Training: All employees are to be reminded during Induction and Safety Training of the potential of bomb attacks and of appropriate measures to safeguard themselves and others against the threat or possibility.

12 Carpentry

12.1 Regulations: The Health and Safety At Work Act 1974, The Provision & Use of Work Equipment Regulations 1998, The Pressure Systems Safety Regulations 2000 and The Electricity At Work Regulations 1989 must be fully complied with. There are certain Approved Codes of Practices, British Standards and HSE Guidance Notes related to Plant and Equipment / Tools which must also be considered.

12.2 Guarding - General Principles:-

Keep the hands of machinists as far as possible from cutting edges by:-

- Using properly enclosed automatic feeding units wherever possible.
- Providing guards which enclose the cutters as far as possible.
- Providing wherever possible, jigs, holders, guides and push sticks.
- Guards should be robust and strong enough to contain flying cutters, securely fixed and easily adjustable, where necessary, by using manual methods of locking and release such as wing nuts, hand wheels and handles. Guards should also be maintained in good condition and capable of free movement to the limits of their adjustment.

12.3 Some basic points on cutters:-

- Keep cutters sharp; blunt cutters contribute to many accidents.
- Cutters with closed slots are less liable to move out of place than those with open ended slots.
- Thick packing should be avoided because it will be gradually compressed in use and will permit the cutter to become loose. Packing should be limited to one strip of paper at the tail of a cutter in order to counteract the minute end gap which occurs when a cutter is tightened.
- When the length of a cutter is reduced by successive grindings, the clamping area reduces and some cutter distortion can occur. Unless a cutter can make contact over more than half of the clamping area, it should not be used.
- It is good practice to check securing bolts and set bolts after initial tightening and also to check them periodically during a long run, so that any tendency to slacken will be detected before dangerous conditions arise.
- Precautions on cross cut saws, chain saws and hand held power saws are outlined here since these machines are not dealt with specifically in the Regulations.

12.4 Cross-cut Saws:-

Danger arises when the operator allows part of his hand to remain in the track of the saw while holding the material. To reduce hazards on cross cut saws:

- See that slides and bearings are clean, free from sawdust and kept oiled.

- Ensure that the saw returns to the rest position and is positively latched in this position.
- Check that the return is suitably damped to reduce the possibility of the blade bouncing back.
- Check that the upper half of the saw is guarded and that the extension guard is properly adjusted to the work piece.
- Ensure that in the rest position, the saw teeth are behind the fence.

12.5 Hand-held circular saws:-

Modern machines are fitted with guards which completely enclose the saw blade. The depth of cut is adjusted by altering the position of a moveable shoe or plate in relation to the saw. For bevel cutting, the shoe may be set at an angle to the plane of the saw.

12.6 Before using the saw ensure that:-

- The blade is of the correct type for the material to be cut.
- It is in good condition, not cracked or damaged, and if toothed, that the teeth are sharp.
- It is properly and securely fixed in the machine.
- It will rotate in the correct direction. The sharp edge of the tooth must cut upwards from bottom to top of the material when the saw is in use.

Alternatively, if direction of rotation is marked on the face of the blade and the body of the saw, the marks must both be in the same direction. Before use, the depth of the cut must be adjusted so that the saw blade only just projects through the underside of the material being cut.

The guard which covers the saw blade below the shoe is designed to retract as the blade enters the material. It must never be tied back or rendered inoperative during sawing. Ensure that it operates freely before using the machine. Never adjust guards with the saw blade in motion or the machine connected to the power supply. Never operate the machine with a defective ON / OFF switch or secure the switch in the ON position. Always ensure that the supply cable is sufficiently long and so restrained that it cannot be damaged by the saw before starting to cut.

Whenever possible, cut to a fence or guide to minimise the risk of the saw binding in the cut.

13 Confined Spaces – General Precautions

- 13.1 Work associated with confined spaces is covered by the Confined Spaces Regulations 1997 and the associated Approved Code of Practice. These impose duties on both employers and the self-employed
- 13.2 For the purpose of safety, the term 'confined spaces' covers a great variety of workplaces which, because of their enclosed nature, have associated reasonably foreseeable 'specified risks'.
- 13.3 The Regulations define these 'specified risks' as a risk to a worker of:
- Serious injury due to a fire or explosion.
 - Loss of consciousness because of increase in body temperature.
 - Loss of consciousness because of exposure to gas fume, vapour or lack of oxygen.
 - Drowning because an increase in the level of liquid.
 - Asphyxiation because of the presence of a free flowing solid.
- 13.4 The hazards associated with confined spaces arise through a combination of their confined nature and the possible presence of substances or conditions. These are as follows:
- Flammable substances and oxygen enrichment.
 - Toxic gases, fumes or vapours.
 - Oxygen deficiency.
 - The ingress or presence of liquids.
 - Free-flowing solid materials.
 - Presence of excessive heat.
- 13.5 The Confined Spaces Regulations require that where it is reasonably practicable to do so, entry into a confined space is avoided. This can be achieved by making the work in the confined space unnecessary or finding a way that the work can be carried out from outside the confined space. Where entry into a confined space is unavoidable, a competent person must carry out a risk assessment to assess the risks connected with entering the space and develop a safe working method that eliminates or reduces the risks to an acceptable level.

13.6 The main elements to consider when designing a confined spaces safe working method, which may form the basis of a permit-to-work system (see appendices section), are as follows:

- Supervision.
- Worker training and competence.
- Communications.
- Atmosphere testing and monitoring.
- Gas purging and removal of residues, ventilation and cooling.
- Isolation from gases, liquids & other flowing materials, mechanical and electrical equipment.
- Selection and use of suitable work equipment and personal protective equipment.
- Location of portable gas cylinders and internal combustion engines.
- Safeguards where gas is supplied by pipes and hoses.
- Safe access and egress arrangements.
- Fire and explosion prevention.
- Lighting.
- Eliminating sources of ignition.
- Emergencies and rescue.
- Limiting working time.

14 Construction (Design & Management) Regulations 2015 and Industry Guidance

The Construction (Design & Management) Regulations (CDM 2015) are the main set of regulations for managing the health, safety and welfare of construction projects.

CDM applies to all building and construction work and includes new build, demolition, refurbishment, extensions, conversions, repair and maintenance.

CITB has published the industry guidance documents written by the Construction Industry Advisory Committee (CONIAC) with small businesses in mind. Each guide sets out in practical terms what actions are required by duty holders to create a safe working environment.

There are six industry guides: one for each of the five duty holders under CDM 2015 and an additional one for workers.

The six documents are available for download below.

<http://www.citb.co.uk/health-safety-and-other-topics/health-safety/construction-design-and-management-regulations/cdm-guidance-documents/>

- [Industry guidance for Clients](#)
- [Industry guidance for Principal Designers](#)
- [Industry guidance for Designers](#)
- [Industry guidance for Principal Contractors](#)
- [Industry guidance for Contractors](#)
- [Industry guidance for Workers](#)

Which industry guide applies to you?

Decide which guide applies to you and read the document to understand what you need to do. Organisations or individuals can undertake the role of more than one duty holder, provided they have the skills, knowledge and experience necessary to fulfil those roles in a way that secures health and safety.

Which one are you?

A **client** is an organisation or individual having a construction project carried out in connection with a business.

You are a **domestic client** if you're having building work carried out which is not connected to running a business, typically on the property where you or a family member lives.

A **designer** is someone who as part of a business, prepares or modifies designs for a building, product or system relating to construction work.

A **principal designer** is appointed by the client of projects with more than one contractor. It can be an organisation or an individual with sufficient knowledge, experience and ability to carry out the role.

A contractor is the individual or organisation doing the actual construction work.

A **principal contractor** is appointed by the client to plan, manage, monitor and co-ordinate health and safety during the construction phase of a project when there's more than one contractor involved.

A **worker** is an individual working for or under the control of contractors on a construction site.

Summary of role and main duties

Client

The CDM 2015 defines a client as anyone for whom a construction project is carried out. The regulations apply to both **domestic** and **commercial clients**. This guidance document is for commercial clients.

A client has responsibility to make suitable arrangements for managing a project.

This includes making sure that:

- other duty holders are appointed
- sufficient time and resources are allocated
- relevant information is prepared and provided to other duty holders
- the principal designer and principal contractor carry out their duties
- welfare facilities are provided.

Domestic clients

They are included in these new regulations, but their duties as a client are normally transferred to:

- the contractor on a single contractor project or
- the principal contractor on a project involving more than one contractor

The domestic client can choose to have a written agreement with the principal designer to carry out the client duties.

Designer

The designer's role when preparing or modifying designs is to eliminate, reduce or control foreseeable risks that may happen during construction or maintenance and use of a building after it's been built.

The designer also provides information to other members of the project team to help them fulfil their duties.

Principal Designer

The principal designer is responsible for planning, managing, monitoring and coordinating health and safety in the pre-construction phase of a project. This includes:

- identifying, eliminating or controlling foreseeable risks
- Ensuring designers carry out their duties.
- Preparing and providing relevant information to other duty holders.

The principal designer also liaises with the principal contractor to help in the planning, management and monitoring of the health and safety in the construction phase.

Contractor

If you are a sole trader, self-employed worker, individual or business carrying out, managing or controlling work in the construction industry then this guidance is for you.

Anyone who directly engages construction workers or manages construction work is a contractor.

This includes companies that use their own workforce to do the work on their premises and duties apply to all workers be they employees, self-employed or agency workers.

The contractor's duty is to:

- Plan, manage and monitor construction work under their control so that it is carried out without risks to health and safety.
- For projects involving more than one contractor, co-ordinate their activities with others in the project team – in particular, comply with directions given to them by the principal designer or principal contractor.
- For single contractor projects, prepare a construction phase plan.

Principal Contractors

The principal contractor's duty is to:

- plan, manage, monitor and coordinate health and safety in the construction phase of a project
- liaise with the client and principal designer
- prepare the construction phase plan
- organise cooperation between contractors and coordinate their work.

Ensure:

- suitable site inductions are provided
- reasonable steps are taken to prevent unauthorised access
- workers are consulted and engaged in health and safety matters
- welfare facilities are provided

Workers

As people working for or under the control of contractors on a construction site the workers have duties as well as their employers.

Workers must:

- be consulted about matters which affect their health, safety and welfare
- take care of their own health and safety and others who may be affected by their actions
- report anything they see which is likely to endanger either their own or others' health and safety
- cooperate with their employer, fellow workers, contractors and other duty holders

15 Control of Substances Hazardous to Health

15.1 The Company has a duty of care to their employees and others when their operations involve the use of substances that could be hazardous to health. Management have a responsibility to carry out a COSHH, Assessment for substances that could be hazardous to health and to have in place a management system for checking that the control measures required are in order. The Control of Substances Hazardous to Health regulations 2002 as Amended in 2004 defines in general and specific terms how the Company is expected to safely manage the use of potentially harmful substances or substances produced in the course of work. The Regulations are structured to describe a management strategy:-

- Assess the hazards and risks to health.
- Implement a control programme.
- Ensure that controls are being used properly and maintained.
- Where necessary, monitor the control measures.
- Where necessary, measure workers exposure.
- Where necessary, carry out medical surveillance.
- Inform, instruct and train persons likely to be affected about the risks and precautions.
- The keeping of records.
- All suppliers and sub-contractors must provide full COSHH information on any hazards associated with equipment or materials supplied to the Company. This information must be passed to the relevant supervision for assessment before potentially hazardous equipment and materials are used. The COSHH Team Members (Managers) are responsible for vetting materials and substances to be used.
- The Head Office library of safety information and the COSHH files are to be kept in order (up-to-date) by the COSHH Team Members (Managers).
- A stock of or individually issued protective clothing and safety equipment are to be provided when and where required.

- Materials and equipment delivered to the Company premises or work areas are/is to be stacked and stored in a position/manner which does not create a hazard.

15.2 General Guide for formulating COSHH Assessments

- Carry out surveys of the Head Office, Workshops and Sites to obtain information regarding all the substances used by the Company that could be hazardous to health. It may be useful to use a purchasing list particularly if it is based on the computer.
- Obtain Safety Data Sheets from the suppliers/manufacturers for substances that could be hazardous to health on an on-going basis.
- Ensure layout drawings of premises, i.e., offices and workshops are marked-up, i.e., number up and label cabinets in storage areas where hazardous substances are stored so that they can be referred to and identified in COSHH, Assessments
- Careful note must always be taken of unusual uses of substances, particularly those that may be in conflict with manufacturers' instructions and outline the general methods of work highlighting areas of non-compliance for evaluation.
- Record and regularly review existing control measures and working environments where they would have a bearing on the safe use of hazardous substances.
- Assess regularly the level of understanding of persons using substances and their immediate Foreman.
- Regularly assess the level of understanding of those that purchase substances for the Company.
- Carry out numeric assessments to prioritise substances that need immediate assessments. Assess the more hazardous substances first.
- A simple word processing COSHH, Assessment form (which is contained within this Appendices section) has been formulated. Necessary information contained in the manufacturers/suppliers Data Sheets should be written into the appropriate sections after checking that their controls and provisions are acceptable bearing in mind, how the substances are used in a particular environment. Occupational Exposure Limits should be carefully checked against the HSE's EH40 document available through HSE publications and website. Care should be taken to check the latest version.
- Carry out Safety Awareness Training for Management regarding COSHH, control measures.
- Company COSHH, Team members consist of the following: a Manager, a Senior person in purchasing, Foreman, one or two long term operatives and the Company Safety Advisor.
- A COSHH, file record system and library of safety information must include health records of employees using known hazardous substances.
- Regular Safety Awareness Training for Workshop and Site Operatives regarding COSHH, is to be carried out. Additionally, this will include scheduling regular Safety Tool Box Talks on COSHH All new employees are to receive Safety Induction and proper instruction on potentially hazardous substances.
- The COSHH, files are to be maintained. The COSHH Assessment Record Sheets should be filed with the Manufacturers/suppliers Safety Data Sheets. Whenever there is a requirement to supply this information to Company Personnel, including site projects, ensure that the Assessment sheets are supplied with the Data Sheets.
- Monitoring and Auditing employees and workplaces will be carried out to ensure control measures are effective and fully understood.

15.3 General Guide for formulating COSHH Assessment numbering system:

The degree of risk which should be highlighted on the Assessment Sheet is a simple scaling system from 1 to 10. The higher the number the greater the risk.

Degree of risk - 10 out of 10

<p>Wherever possible, these substances should be substituted for a safer product/method of work. Whenever these substances are to be used, we advise that the operatives involved in using them receive appropriate training with regards to control and precautionary measures. A record system is required for persons using these substances, a diary of who used it and when and a detailed note of the circumstances in which the substances were used (Safe Method of Work Statement).</p>
<p>Degree of risk - 9 out of 10</p>
<p>These substances again should be considered to be substituted for safer products wherever possible, but with good control and precautionary measures, there is no reason why they should not be used. Safe Method of Work Statements would need to be produced when using these substances and a record system kept with regards to the persons using the substances.</p>
<p>Degree of risk - 8 out of 10 & 7 out of 10</p>
<p>Many products fall into this category which has hazardous substances contained within them, but because of their normal use or low level of hazardous substances, they should not cause any substantial hazards or ill health problems providing the control measures are properly adhered to. If there is a safer substitute it must be considered. Operatives involved in using these substances must be supplied with appropriate Safety Information. These substances should be mentioned along with their precautionary measures in the Safe Method of Work Statement.</p>
<p>Degree of risk - 6 out of 10 & 5 out of 10</p>
<p>These substances would normally be of a low hazardous nature, only in unusual circumstances would hazards be present. When planning to use these substances consider the possibilities of misuse, potential hazardous applications and working environments etc. Appropriate information should be supplied to persons using these substances.</p>
<p>Degree of risk – 4 to 1 out of 10</p>
<p>We seldom categorise substances under these low assessment numbers in a construction industry due to the potential hazard diversity of construction environments. The hazardous nature of these substances may be dependent on volume or environmental conditions and would still need to be considered when planning works and storing etc. For example, drinking water, as we can all appreciate, in itself would not have harmful effects, but if used in a process which could come into contact with live electrical systems could impose the hazard of an electrical shock.</p>

16 Coronavirus (COVID-19)

16.1 Coronavirus is the name for a family of viruses which can cause a range of respiratory symptoms, with several strains making up the groups including Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS). COVID – 19 has proven to have been the most dangerous coronavirus. COVID – 19 coronavirus has broken out globally and the company have produced procedures based on UK Governments guidance to protect our employees and others associated with the business.

The company has produced separate Coronavirus (COVID-19) documentation detailing the company procedures and instructions to employees and associates during the Coronavirus (COVID-19) pandemic.

If you require a copy of the Coronavirus (COVID-19) documentation, please contact a member of our senior management team.

17 Damage to Services

- 17.1 **Electrical Cables:** Should any electrical cables be damaged, then everyone in the vicinity must evacuate the area immediately and position themselves so that no-one can approach the damaged cable. Management should then be notified so that they can inform the Local Electricity Company to deal with the matter.
- 17.2 **Gas Mains:** In the event of the presence of gas being detected during operations, either as a result of damage to gas mains or for any other reason, the following emergency action must be taken immediately:
- The person in charge must order immediate cessation of work and clear all employees and personnel from the area of possible danger.
 - Employees should be stationed at a safe distance to prevent the general public from entering the affected area and to warn against smoking and the presence of naked lights. Barriers and signs should be erected whenever possible.
 - All machines, excavators, compressors, dumpers, pumps, etc., in the area, must be switched off immediately and left standing. Naked lights and fires must be extinguished.
 - Notification of an escape of gas and precise details of the location must be conveyed immediately to the Management who will arrange for the local Distribution Superintendent of the Gas Company to be informed.
 - The Site Manager / Contract Supervisor should remain on the scene in order to ensure that the area is kept clear until the arrival of the Gas Company employees and officials.
 - The Gas Company will make arrangements if Police assistance is required but this should not deter Site Management from requesting Police assistance at the outset if the situation is considered sufficiently serious.
- 17.3 **Other Services:** Should any other services be damaged, i.e., British Telecommunications cables, sewers etc., then Management must be notified immediately.

18 Dust

At the design stage of a project the design needs to ensure dust hazards are eliminated wherever possible otherwise sufficient controls will need to be adopted. If there are potential dust hazards, the health hazards can be eliminated via the hierarchy of controls. PPE/RPE must be considered as a last resort to protect against health hazards associated with dust.

In assessing the hazards inherent in construction work, there are three key elements involved in determining levels of exposure and the control measures needed to protect workers and the environment.

- Assess the risks
- Agree control measures, with input from those likely to be affected and
- Regularly review the agreed controls, to ensure they are still fit for purpose.

18.1 Hierarchy Control Measures

- **Eliminate dust through design**
 - ◆ Persons designing / planning / carrying out works must be sufficiently aware and trained in eliminating where possible or minimising health hazards in relation to dust.
 - ◆ Choose materials via COSHH assessments that are not hazardous to health
 - ◆ Select work processes that would prevent the generation of dust.
- **Enclosures / Local Exhaust Ventilation (LEV)**
 - ◆ Enclosing the work area to stop dust escaping by using sheeting or temporary screens.
 - ◆ Using LEV to remove dusty air from the work area, e.g. in enclosed spaces such as indoor locations
- **Water**
 - ◆ Water damps down dust clouds. However, it needs to be correctly. This means enough water supplied at the right levels for the whole time that the work is being done. Just wetting the material beforehand does not work.
 - ◆ During sweeping up works, a fine spray of water should be used.
- **On-tool extraction**
 - ◆ Removes dust as it is being produced. It is a type of local exhaust ventilation (LEV) system that fits directly onto the tool. This 'system' consists of several individual parts – the tool, capturing hood, extraction unit and tubing. Using an extraction unit to the correct specification (i.e. H (High) M (Medium) or L (Low) Class filter unit). Do not just use a general commercial vacuum.
- **Respiratory protective equipment (RPE)**

Water or on-tool extraction may not always be appropriate or they might not reduce exposure enough. Often RPE has to be provided as well. You will need to make sure that the RPE is:

- ◆ Adequate for the amount and type of dust – RPE has an assigned protection is provided to the operative. The general level for construction dust is an APF of 20. This means the wearer only breathes one twentieth of the amount of dust in the air;
- ◆ Suitable for the work – disposable masks or half masks can become uncomfortable to wear for long periods. Powered RPE helps minimise this. Consider it when people are working for more than an hour without a break where permissible in line with manufacturers guidelines;
- ◆ compatible with other items of protective equipment;
- ◆ Fits the user - ace fit testing is needed for tight-fitting masks;
- ◆ Worn correctly - anyone using tight-fitting masks also needs to be clean shaven

- **Ride on / Manual Sweepers**

- ◆ Collects excessive dust that has been created via vacuum system.
- ◆ Ideal for larger areas to reduce manual methods (broom, etc.).
- ◆ Low noise output.
- ◆ Battery operated and chargeable via 110v.

- **Brooms**

- ◆ Brooms should only be used as a last resort if no other equipment can be used to remove the dust.
- ◆ If brooms are to be used then water suppression and masks must be worn (as highlighted above).
- ◆ There are dust suppressant products that can be of consideration if the need of a broom is still required. These anti suppressant products help to allay potential airborne dust whilst collecting dirt and debris from the floor surface.

18.2 Operatives will also need to be trained to ensure they undertake the task correctly by receiving relevant training and ensuring that the controls are used correctly. Supervisors shall ensure that operatives are:-

- made aware of dust risks and how it may affect their health how to use the dust controls and check that they are working correctly
- how to maintain and clean equipment
- how to use and look after RPE/PPE that is issued
- Encouraged to stop work if the agreed control measures are not delivering adequate protection.

18.3 During soft stripping works and particularly where floor coverings are to be removed, operatives and visitors must wear an appropriate face fitted mask whilst on site (even where LEV is used). The policy applies to all soft strip works.

18.4 Health surveillance must be provided by employers for all their employees who are likely to be frequently exposed, or are at risk for any reason, e.g. they already suffer from breathing difficulties, or an existing medical condition that may be made worse by dust exposure.

18.5 Health records containing information on the outcomes of health surveillance and fitness for work should be kept and updated as necessary. Health records must be kept separate from any confidential medical results.

19 Working with Electricity

19.1 Any persons carrying out work on electrical installations should be members of at least one of the following:

- The Electrical Contractors Association;
- Chartered Electrical Engineers;
- National Inspection Council for Electrical Installation Contracting.

19.2 Their work must comply with relevant Regulations and Approved Codes of Practice, The Electricity at Work Regulations 1989, The Low Voltage Electrical Equipment (Safety) Regulations 1989, The IET Wiring Regulation (Code of Practice), and Manufacturers recommendations / specifications.

19.3 Electrical supply should be made dead and locked-off where dangers could arise from electrical shock or fires etc., when working on electrically powered machinery / circuits wherever possible.

19.4 If the electrical power supply cannot be made dead and locked-off, all appropriate warning notices / guards / PPE and Safe Method of Work system, should be utilised and complied with.

- 19.5 Electrical machines, equipment and circuits should be designed and installed so that they do not cause unnecessary hazards or be subjected to unnecessary wear and tear / damage.
- 19.6 All electrical systems, i.e., machines, equipment and circuits etc., should be checked regularly to ensure that they are maintained in good order. All electrical equipment etc., found not in good order, should be locked off and taken out of service immediately.
- 19.7 For further information on electrical health and safety refer to the above stated Regulations and the Company's Health & Safety Advisors. Reference should also be made to the electrical checklists in Part 3 - Appendices Section of the Policy.

20 Excavations & Groundworks

- 20.1 Excavating: Excavation and groundworks must be carried out under a Permit to Dig.
- 20.2 Excavation Supports:
- The support method of excavations must be designed by a competent person.
 - The arrangements and calculations must be checked by a competent Temporary Works Co-ordinator.
 - Supporting excavation works must be carried out by competently trained personnel.
 - All excavation sides must be adequately supported or the sides of the excavation battered to a safe angle where persons, machine operations or nearby buildings, etc., are at risk.
 - The type and method of supports will vary depending on the ground condition, nature of work to be carried out in and around the excavation and the environmental conditions etc.
 - Whatever system of support is adopted for an excavation, it must provide adequate protection preventing the sides of an excavation giving way.
 - When battering, the sides of an excavation must be cut back to a safe angle so that it would not be possible for the excavation sides to give way.
 - All support materials must be checked to ensure they are adequate and in good condition.
 - Excavations must be adequately supported or battered back to a safe angle as the excavation work progresses.
 - No persons are allowed to work in or near an unsupported excavation.
 - Lifting supports in and out of an excavation is classified a lifting operation, therefore the arrangements for carrying out this work safely must be planned and overseen by a competent person who has been suitably trained in lifting operations and all appropriate safety controls.
 - An excavator used for lifting must be correctly configured to lift safely. The excavator must not be allowed to lift more than it's Safe Working Load (SWL), taking into account gradient and ground conditions. Safety check valves must be fitted to the hydraulics to prevent unexpected collapse of loads.
 - All associated lifting gear must be tested and inspected.
 - Prior to any lifting gear being used it must be checked by a competent person to ensure the lifting gear is in good order and the correct safe slinging methods or attachments are used.

Excavations, Cofferdams & Caissons Inspection Report Notes											
Place of work requiring inspection	Timing and frequency of inspection										
	Before being used for the first time	After substantial addition, dismantling or alteration	After any event likely to affect strength or stability	At regular intervals not exceeding 7 days	Before work at the start of every shift	After accidental fall of rock, earth or any material.					
Any working platform or part thereof or any personal suspension equipment – Work at Height Regulations 2005 as amended 2007– Regulation 12.	✓	✓	✓	✓							
Excavations – Construction (Design & Management) Regulations 2015 - Regulation 22.			✓		✓				✓	✓	
Cofferdams and caissons – Construction (Design & Management) Regulations 2015 - Regulation 23.			✓						✓		
Checklist of typical scaffolding faults											
Footings	Standards	Ledgers	Bracing	Putlogs and transoms	Couplings	Bridles	Ties	Boarding	Guard-rails and toe-boards	Ladders	
Soft and uneven	Not plumb	Not level	Some missing	Wrongly spaced	Wrong fitting	Wrong spacing	Some missing	Bad boards	Wrong height	Damaged	
No base plates	Jointed at same height	Joints in same bay	Loose	Loose	Loose	Wrong couplings	Loose	Trap boards	Loose	Insufficient length	
No sole plates	Wrong spacing	Loose	Wrong fittings	Wrongly supported	Damaged	No check couplers	Not enough	Incomplete	Some missing	Not tied	
Undermined	Damaged	Damaged	--	--	No check couplers	--	--	Insufficient supports	--	--	

Working platforms only

1. An inspection is only required where a person is liable to fall from a place of work.
2. Any employer or any other person who controls the activities of persons using a scaffold shall ensure that it is stable and of sound construction and that the relevant safeguards are in place before his employees or persons under his control first use the scaffold.
3. No report is required following the inspection of any mobile tower scaffold which remains in the same place for less than 7 days.
4. Where an inspection of a working platform or part thereof or any personal suspension equipment is carried out:
 - i. before it is taken into use for the first time; or
 - ii. after any substantial addition, dismantling or other alteration; not more than one report is required for any 24 hour period.

Excavations only

1. The duties to inspect and prepare a report apply only to any excavation which needs to be supported to prevent any person being trapped or buried by an accidental collapse, fall or dislodgement of material from its sides, roof or area adjacent to it. Although an excavation must be inspected at the start of every shift, only one report of such inspections is required every 7 days. Reports must be completed for all inspections carried out during this period for other purposes, e.g., after accidental fall of material.

General Notes

1. The inspection report should be completed before the end of the relevant working period.
2. The person who prepares the report should, within 24 hours, provide either the report or a copy to the person on whose behalf the inspection was carried out.
3. The report should be kept on site until work is complete. It should then be retained for three months at an office of the person for whom the inspection was carried out.

20.3 Guardrails for excavations, shafts and manholes, etc:

- Guardrails are required to be erected wherever it is possible for someone to fall into an excavation. The height of the top guardrail should not be less than 950 mm above any edge from which persons are liable to fall. An intermediate guardrail or other substantial barriers should be fitted between the top guardrail and the toe-board; the vertical gaps should not exceed 470 mm. The guardrail should be rigid enough not to give way should persons fall or lean against them.
- Guardrails can only be removed if the guardrails themselves become an unsafe obstruction or if it is reasonably not practicable to carry out the works with the guardrails in place. In these cases, other forms of protecting persons from falling must be employed.

20.4 Toe-boards for excavations, shafts and manholes, etc:

- Toe-boards are required at the top edges of excavations etc., where it could be possible for materials / equipment to fall into the excavation etc., where persons are required to work. The height of toe-boards must be at least 150 mm above the ground level without gaps between them. If the excavation supports extend above the ground level by at least 150 mm, then this would be sufficient as toe-boarding, providing there are no gaps.

20.5 Spoil heaps:

- Must be kept at a safe distance from the edges of excavations and shafts etc., so that the spoil does not impose additional loading on the excavation sides and that unobstructed safe access can be maintained on all sides of excavations.

20.6 Inspection of excavations:

- A competent person, who fully understands the dangers and necessary precautions, should inspect the excavations at the start of each shift. Excavations should also be inspected after any event that may have affected their strength or stability, or after a fall of rock or earth. In addition, excavations that remain open for more than seven days must be inspected weekly. Any faults found should be rectified immediately. A record must be kept of all inspections.

21 Avoiding Danger from Potential Underground Hazards

21.1 There are many different types of underground hazards varying from underground, electric, gas and water services, supply pipes, signal and telecom cables, sewers, storm water drains, underground and railway tunnels, ground contamination, de-stabilisation of the ground, nearby structures, gases, oxygen deficiency and groundwater, etc.

- All appropriate information, such as concept design drawings, calculations, utility drawings and keys, Local Authority information, History searches of the location, including consultation with the local people and businesses, Transport Companies (Rail & Underground) local layout Plans, etc., should be studied and Surveys carried out to establish the location and condition of potential hazards, such as services, obstructions / contamination, ground conditions, etc., to take into account all potential hazards and risks.
- From this, a Design Risk Assessment with sufficient control measures to eradicate or reduce risks should be drawn-up and agreed between all parties involved.
- It is important that there is a proper understanding of underground hazards in the vicinity of the boundary of the site which could be affected by the planned works, for example site deliveries / temporary crange and connections, etc.
- Potential underground hazards must be avoided wherever possible through design and where this is not possible, the risks must be minimised with sufficient controls and supervision.
- Underground hazards which cannot be eliminated must be sufficiently safeguarded against by establishing their exact location by means of surveying, using cable locating devices, trial holing, safety signs and barriers, safe distance indicators, utilisation of competent and experienced personnel, competent supervision, carrying out checks, inspections, reviews and record keeping.
- Service Companies and other Companies / Authorities who have constructed / laid services, etc., must be consulted with regard to safe distances and methods of working.
- Professional Engineers, the Project's Temporary Works Co-ordinator and Safety Advisor should be informed of any underground hazards and be consulted for further advice and the Principal Designer should be kept informed to ensure that all parties with responsibilities and duties are informed of agreed control measures and that the Health & Safety file for the project is updated accordingly with information regarding any possible residual risks.
- Locating Underground Services and other potential hazards:
- Only trained competent persons with suitable civil engineering experience should carry out surveys and associated works with regard to locating underground services. The Site Managers / Supervisors must check the competency of all persons involved in this type of work prior to commencement.
- Where an excavator is to be used for digging or general groundworks, work must be carried out under a Permit to Dig (refer to the Company Health & Safety Policy, Part 3).

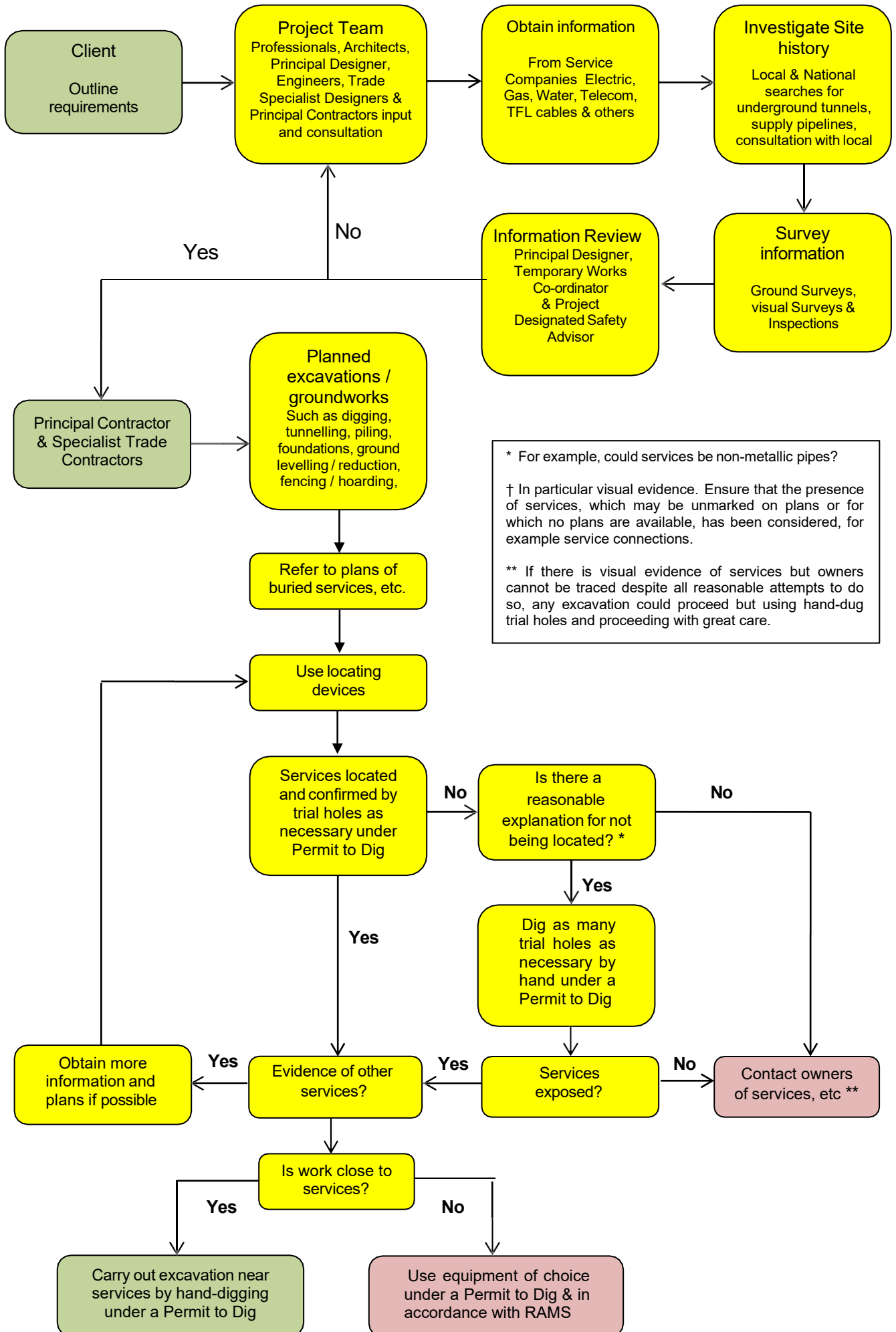
- Ensure that all appropriate up-to-date Service and Design Drawings and other relevant information is carefully considered and any queries discussed with the appropriate Service Companies, i.e., Gas, Electric, Water, etc., and the Company Safety Advisor for further advice and any additional safety control measures which may be required.

21.2 The line of the excavation or location of other forms of groundworks must always be checked before works are carried out in the vicinity of underground services and other obstructions, etc., by:

- Inspecting work surfaces, i.e., roads, pavements and fields, etc., for confirmation of where excavation works and laying of services may have been carried out previously. Look for clues such as service and manhole covers, service markers, differences in tarmac, paving slabs, top soil and plant growth, etc.
- Checking the lines and locations of service markers and access covers, etc., where they could be in the vicinity of the works area.
- Investigating the history of the area of works for potential hazards, i.e., previous land use, ground contamination and potential natural hazards such as water courses, rock and unstable ground. If these types of hazards are suspected of being present, contact the Company Safety Advisor for further advice and any additional safety control measures which may be required.
- Using an underground cable detector, i.e., Cable Avoidance Tool (CAT) and Genny. All known underground services in the vicinity of the works which could be affected, must be clearly marked up and trial holed in advance of using an excavator to dig. Trial holing should be a hand-dig operation, using hand tools only. Plant and Mechanical tools must not be used. When hand-digging do not dig directly above indicated services. Dig down either side, then ease the spoil away from the service.

21.3 Plant and Equipment Selection: Plant and equipment that is capable of damaging services, etc., or could cause further hazards, such as explosions from gas leaks or destabilisation of the ground, etc., should not be used in the proximity where they may cause further danger.

21.4 Avoiding Danger from Potential Underground Hazards Flowchart:



- 21.5 **Trial Holing:** After all appropriate surveying and detection techniques have been utilised, trial holing is necessary to expose and clarify the exact location of underground hazards.
- It is important when trial holing for underground services, such as electric, gas and vital communication and telecom cables, etc., that these services are made 'dead' by the Service Company and diverted permanently or temporarily wherever possible.
 - Trial hole digging should not be carried out directly above a service. Hand tools, i.e., picks, shovels, chisels and club hammers can easily damage services which could cause electrocution or gas explosions.
 - Trial holes should always be dug at a safe distance to one side of the service, then when at the required depth, work towards the service, prising the surrounding earth away as opposed to forceful digging.
 - If services are found to be encased in concrete, trial holing must stop and advice sought from Service Companies and the Company Safety Advisors.
- 21.6 **Piling:** If any unexpected obstructions are encountered, work must stop immediately and further investigations and reviews must take place to be certain of what the obstruction is and works redesigned accordingly to safeguard persons carrying out the work, or others who may be affected.

22 Excavators (Mechanical Diggers)

- 22.1 **Prior to any selection and delivery of plant such as 360° and 180° excavators,** all appropriate contract documentation should be studied and a survey carried out to take into account all potential risks and hazards (Risk Assessment).
- 22.2 **Pre-site delivery checks**
Ensure a suitable excavator is selected for the work required to be carried out on site. The following considerations should be taken into account:-
- The terrain, ground conditions, height restrictions, space in which to manoeuvre, existing underground services, protecting ground surfaces, access to the site, likely weather conditions;
 - The extent of requirements for the machine, depth of excavation, reach requirements, lifting requirements, machine attachments;
 - Check Manufacturers specifications to ensure the excavator to be provided is suitable for the extent of works;
 - Provide Operators Handbook for the machine, Test Certificates, Records of Maintenance and weekly Inspection Report Forms for a competent person to complete in accordance with The Provision & Use of Work Equipment Regulations 1998 and The Construction (Design & Management) Regulations 2015;
 - The machine should be fitted with "Danger Keep Clear" signs on rear slewing corners and on each side of the excavator arm;
 - The Safe Working Load (SWL) must be clearly displayed on the machine;
 - Ensure there are competent persons on site to operate the excavator supplied and that there are competent banksmen / slingers available to assist with manoeuvring the vehicle and to generally assist with operations;
 - Check that safe height indicators and safety distance barriers etc., are erected prior to machine delivery to site.
- 22.3 **Site delivery checks**
- Ensure that safe height indicators and all appropriate safety signage and barriers are positioned where required.
 - The Foreman / Ganger / competent person is to check that all the pre-site delivery checks have been carried out and are in order, including any items such as additional buckets and lifting gear, etc.
 - Check the competency of the person required to operate the machine and banksmen / slingers who will assist with machine manoeuvres and operations.
- 22.4 **Before operating:**
- Prior to operating the excavator, the Operator and Banksmen / Slingers must be inducted into the established safety controls for the site with regard to overhead power lines, underground services, lifting arrangements and excavation support method.
 - Hi-visibility jackets, safety footwear and safety helmets are to be worn by all Site Personnel where excavators are operational.
 - Prior to use each day, the Operator must carry out recommended safety and service checks in accordance with the Manufacturers Handbook.
 - Where excavators are required to carry out lifting operations, the lift must be planned by a competent person and all lifting gear must be checked to ensure that it is in good order. A record of the planned lift and checks carried out must be kept.
 - When excavator operations are required to be carried out, careful consideration must be given to ground conditions that may have an effect on the general stability and safety of the machine operation, in particular unstable ground, soft ground and gradients.

- All unnecessary personnel should vacate the area where an excavator is to work.
- Communications between Banksmen and machine operators must be agreed in advance of works being carried out (as recommended by The Building Employer's Confederation and Federation of Civil Engineering Contractors).

22.5 Underground services should be adequately protected from possible damage caused by excavator operations, i.e.,

- When laying the pipes in position.
- When lifting / lowering support boxes.
- Adequately supporting services which are exposed by excavations etc.
- Adequately bridge-support services which may be tracked over by heavy plant.
- All operatives involved in excavation and groundworks should be made aware of underground service hazards and control measures in the form of job induction and regular Tool Box Talks.
- Site Management must check carefully that all of the services within the vicinity of the working area are clearly marked-up and suitably protected prior to allowing an excavator to work and issue a Permit to Dig.
- The Company Safety Advisor must be consulted whenever underground services precautions cannot be adhered to, for whatever reason, before the work is carried out for further advice.

22.6 Whilst operating an excavator:

- Necessary personnel within the working vicinity of an excavator should keep at a safe distance from the machine and be in visual contact with the Operator at all times. The Operator must not operate the machine where other persons are not at a safe distance, which includes not slewing over persons.
- The Operator and Banksman must ensure that all appropriate signs and barriers are erected where required to keep others at a safe distance from machine operations.
- Mechanical digging must not be carried out within 1 metre either side of a live service.
- The machine must be operated within the Manufacturers specifications for Safe Working Loads and gradients, etc.
- Working areas must be adequately illuminated.
- If the machine develops any faults, it should be switched off and the fault reported immediately to Site Management for rectification. A machine should never be operated if it is not in good safe working order.

22.7 When the machine is not being operated:

- The machine must be switched off when not being operated and the ignition key removed. The door should be locked. The arm of the excavator should be at rest on the ground.
- At the end of a shift, security shutters should be fitted to windows.
- The machine should be parked in a secured area where it does not obstruct accessways or a public highway.

References

Legislation

Management of Health & Safety at Work Regulations 1999
 Provision & Use of Work Equipment Regulations 1998
 Supply of Machinery (Safety) Regulations 1992
 Health and Safety (Safety Signs and Signals) Regulations 1996
 Lifting Operations & Lifting Equipment Regulations 1998
 Road Traffic Acts
 Road Vehicle (Construction and Use) Regulations 1986 (as amended)

Approved Code of Practice

L22 Safe use of work equipment
 L101 Safe work in confined spaces
 L113 Safe use of lifting equipment
 BS 5975:2019 Code of practice for temporary works procedures and the permissible stress design of falsework

Guidance

HSE SIM:

SIM 02/2010/04

HSE Booklets:

HS(G) 136 Workplace transport safety
 HS(G) 144 The safe use of vehicles on construction sites
 HSE Guidance Note GS 6 Avoidance of danger from overhead electric lines

HSE Leaflets:

IND(G) 148 Reversing vehicles
 IND(G) 199 Managing vehicle safety in the workplace: a short guide for employers

IND(G) 242 In the driving seat: advice to employers on reducing back pain in drivers and machinery operators.
 Safety of loads on vehicles DOE 1984

23 Falsework

- 23.1 Falsework is defined as any temporary structure used to support a permanent structure while it is being erected and until it becomes self-supporting. It may be used in any construction activity where the permanent structure requires support because of a period of instability during its erection e.g. in-situ concrete construction, brick arches and the erection of structural steel.
- 23.2 The main causes of failure of falsework are as follows:
- Errors when the supported loads are being estimated.
 - Design errors.
 - Original design not amended after variation to loading programme.
 - Detailing not adequate.
 - Incorrect execution of points of load transference.
 - Horizontal lacing and diagonal bracing not adequate to resist lateral loads.
 - Inadequate foundations.
 - Unintentional loads.
- 23.3 The erection and dismantling of falsework is covered by the Construction (Design & Management) Regulations 2015. The design phase of the falsework is subject to the requirements of the Construction (Design & Management) Regulations 2015. Any equipment used is covered by the Provision & Use of Work Equipment Regulations 1998 and use of lifting equipment by the Lifting Operations & Lifting Equipment Regulations 1998 and Work at Height Regulations 2005 as amended 2007.
- 23.4 Section 8 of BS 5975 gives standard solutions to the provision of falsework in simpler and more commonplace situations, however, in more complex or non-standard circumstances, the services of a Falsework Designer and the appointment of a Temporary Works Co-ordinator will be required.
- 23.5 In order to avoid the errors listed above, the Falsework Designer must be fully competent, as must all other persons involved, and work closely with the Falsework Co-ordinator / Temporary Works Co-ordinator, Site Management and the Falsework Contractor, to ensure that the design brief accurately reflects the actual requirements of the falsework and that the falsework design, drawing out and specification is reviewed, especially if there are changes to the loading programme. There should also be a thorough independently check of the design before it is agreed. There also needs to be very close control of the whole erection process so that the design is properly realised, with only the specified materials and construction methods employed.
- 23.6 The falsework erection supervisor should use a pre-prepared safety checklist to ensure that nothing important is overlooked. In the event of any difficulty arising they should always raise the matter with the designer and await a decision before proceeding further.

References

Approved Code of Practice

BS 5975:2019 Code of practice for temporary works procedures and the permissible stress design of falsework

Guidance

HSE SIM:

SIM 02/2010/04

24 Fire Precautions

- 24.1 The objective of fire precautions is the protection of life, avoidance of damage to property, plant and processes from fire. Fires should only be tackled providing there is no risk of danger to yourself or others.
- 24.2 Common causes of fire are:
- Malicious ignition (including by children).
 - Carelessness in smoking or with lighted matches.
 - Faulty or misused heating equipment.
 - Incorrect storage and careless use of flammable liquids.

- Electrical faults.
- Uncontrolled rubbish burning.
- Careless use of cutting / welding equipment.

- 24.3 Fire action plan for Site Operations: It is essential at the design / planning stage of works to be carried out, that fire precautions are realistically assessed and adequate account taken of operations including those to be undertaken by sub-contractors, etc.
- 24.4 Prevent risk from fire, explosion, flooding and asphyxiation: Provide emergency routes and exits; Make arrangements for dealing with emergencies, including procedures for evacuating the site; where necessary, provide fire-fighting equipment, fire detectors and alarm systems.
- 24.5 Fire action plan for Offices / Yard / Sites – All staff / personnel should be made aware of the following arrangements:
- Means to detect and give warning of fire (fire alarm).
 - An effective evacuation plan – fire drills should be established and performed as a minimum on a six monthly basis.
 - Adequate means of escape and the displaying of emergency fire exit signs and lighting where appropriate.
 - How to use fire-fighting equipment (fire alarms/extinguishers etc.).
 - Effective communications with the emergency services (obtain an outside line) and telephone 999 and ask for the Fire Brigade and the Ambulance Service if someone has been injured. The emergency services should be contacted as soon as possible in the event of a fire occurring.
 - A fire plan of the premises (display in areas where emergency exits may not be obvious, or where alternative emergency exits could be an advantage).
 - All persons are required to sign in and out of the premises. A register for employees and a visitors book for visitors.
 - Areas which could be affected by a fire must be evacuated by all persons at risk immediately.
 - Raise the fire alarm as soon as possible if you detect smoke or fire.
 - The Company Safety Advisor should be contacted as soon as possible in the event of a fire occurring.
- 24.6 The Company must comply with the Regulatory Reform (Fire Safety) Order 2005 which requires a Fire Risk Assessment approach to evaluate the potential of fires and consideration toward appropriate preventative measures and controls. The order replaces previous Fire Safety Legislation. Any Fire Certificate issued under the Fire Precautions Act 1971 will cease to have any effect.
- 24.7 To comply with the Regulatory Reform (Fire Safety) Order 2005 NTP Access Limited must:
- Appoint one or more competent persons as fire wardens (someone with enough training and experience or knowledge to implement the control measures effectively) dependent upon the size and use of your premises and carry out preventative and protective measures. Provide employees with clear and relevant information on the risks to them identified by the Fire Risk Assessment and about the measures taken to prevent fires and how these measures will protect them if fire breaks out.
 - Consult with employees (or elected representatives) about nominating people to carry out particular roles with regard to fire safety and about proposals for improving fire precautions.
 - Inform non – employees, e.g. temporary workers, contract workers, of the relevant risks to them and provide information about who the nominated persons are and about the fire safety procedures for the premises.
 - Co-operation and co-ordination must happen with other responsible persons who may occupy the same premises and inform them of any significant risks that are identified and how to reduce control risks that might affect the safety of employees.
 - If the Company employs any agency staff that work in your premises you must provide clear and relevant information to the agency with regards to the risks to those employees and protective measures taken.
 - If you are not the employer but have control of premises which contain more than one workplace you must comply with requirements of the reform order with areas which you have control.
 - The Company must consider all dangerous substances within its premises and the risk it presents to relevant persons from fire.
 - The Company will establish means of contacting the emergency services and provide them with information about dangerous substances.
 - The Company must provide information instruction and training to employees about fire precautions in the workplace.
 - The Company must ensure that any equipment provided with regard to fire-fighting e.g. fire detection, warning devices and emergency routes and exits are covered by a suitable system of maintenance and maintained by a competent person in an effective state, in good working order and repair.
 - All employees must co-operate with the employer to ensure that the workplace is safe from fire and its effects and must not do anything that will place themselves or others at risk.

There are additional requirements with regard to construction type activities under The Construction (Design & Management) Regulations 2015. For a full listing of requirements and guidance, refer to the reference section below).

- 24.8 It is advisable to request an inspection of the premises by the local Fire Brigade (Fire Prevention Officer), at least once every year or when any alteration is planned to the premises which could affect the existing fire precautionary measures.
- 24.9 Senior Management should request the Safety Advisor to visit the premises on a regular basis or when any alteration is planned to the premises which could affect the existing fire/safety precautionary measures.
- 24.10 The premises fire precautionary measures must be inspected regularly by the Management to ensure they are in good order. Special consideration must be given to the Insurers requirements and specifications.
- 24.11 Fire Check List:
- Fire Exit, Stairs, Corridors, Accessways and Entrances must be kept free from obstruction and of items that could give rise to a fire.
 - The storage of materials/gases and chemicals etc., must be kept in a proper manner in accordance with Regulations and Codes of Practices.
 - Adequate fire-fighting equipment should be made available. Appropriate fire extinguishers etc., should be located where required in well signed fire point areas.
 - Fire-fighting equipment must be kept in the correct location and maintained in good working order and regularly checked by a competent person.
 - Internal fire doors must be kept closed to prevent the spread of fire and smoke.
 - Fire signs must be displayed where required.
 - Fire Plans must be displayed in appropriate places in the premises.
 - All equipment that could give potential rise to a fire should be properly installed and maintained, e.g., Boilers, Heaters, Cookers, Electrical Equipment etc.
 - Waste should not be allowed to accumulate in Offices, Workshops, Warehouse, Yard and Store areas.
 - Are separate metal waste containers supplied for each of the following? Oily rags, paint rags, paint scrapings, waste flammable liquids and off-cuts.
- 24.12 Premises Fire Safety Assessment
- All premises that do not have a current fire certificate must comply with The Regulatory Reform (Fire Safety) Order 2005.
 - Under the Management of Health and Safety at Work Regulations 1999, employers are required to have regard for fire safety in the workplace. The Regulatory Reform (Fire Safety) Order 2005 reinforce that requirement by imposing a duty to specifically assess fire risks at premises, consider the effectiveness of any existing measures to control those risks and then make any improvements that are found to be necessary.
 - The assessment should include the physical fire safety measures employed, such as the adequacy of fire / smoke stop doors, fire exit doors, fire-fighting equipment etc., and that of active fire safety measures, such as fire warning systems, escape lighting, automatic fire detection systems, automatic fire-fighting equipment etc.
 - Smoke detectors provide the most effective early warning of outbreak of fire. They promptly alert occupiers to the early stages of a fire, while conditions allow for a safe escape. Most smoke detectors are of the ionising type and are particularly suitable at detecting hot blazing fires. The other type of detector i.e. the photoelectric, tend to be more sensitive to smoke from smouldering fires. Smoke detectors must not be treated as a substitute for taking precautions against fire.
 - Escape lighting provides sufficient illumination to allow persons to evacuate premises safely in the event of a power failure in a building used outside daylight hours, or in parts of the building, such as basements, where there is no natural light. This can easily happen in a fire if there is damage to the electrical installation. Escape lighting may consist of trickle charged, battery operated lights which switch on automatically if the mains power fails. Alternatively, or in addition, photo luminescent tapes, discs and arrows may be used.
 - Procedural systems, Fire Evacuation Plans, Fire Safety Audits and the provision of fire safety training will also form part of the assessment and satisfactory arrangements must be formulated, implemented and monitored by the employer.
 - If yours is a shared workplace (with other organisations) you will need to check that they know about any significant risks you have identified and what you have done about them. The reverse is also required and any co-occupiers must keep you informed of their risk assessments.
 - Where you do not have direct control over places or equipment in the workplace which the staff will use in the course of their work, then the person who does have control has a responsibility to make sure that these areas or items comply with the requirements of the Regulations.

- There are no set, hard and fast rules on how the assessment must be carried out, but as with other types of risk assessment it must be effective and recorded. Most importantly, it should be both practical and systematic and consist of the following stages:
 - ◆ Stage 1 - Identify any fire hazards, i.e., anything that could cause an outbreak of fire, such as the presence of any readily combustible materials or highly flammable liquids in locations where there are sources of heat or where circumstances allow there to be malicious ignition.
 - ◆ Stage 2 - Identify the persons who are at risk, especially those who would be more vulnerable in the event of there being an outbreak of fire, such as the disabled or those with certain medical conditions.
 - ◆ Stage 3 - Consider the existing fire safety measures and assess their adequacy.
 - ◆ Stage 4 - Consider the findings of stages 1 to 3 and determine what else needs to be done to eliminate the detected fire hazards or reduce any associated risk of an outbreak of fire and/or an outbreak of fire leading to injury, damage and other loss.
 - ◆ Stage 5 - Record the findings of the risk assessment and implement any identified new control measures.
 - ◆ Stage 6 - Prepare an emergency plan for the premises or update the existing plan.
 - ◆ Stage 7 - Check that all necessary arrangements are in place to allow the emergency plan to operate effectively. Provide premises occupiers with sufficient information, instruction and training on fire safety awareness, fire precautions and hold fire drills regularly to practice the arrangements.
 - ◆ Stage 8 - Monitor the arrangements and periodically review the Risk Assessment or when there are changes to circumstances at the premises, such as building remodelling or changes to the activities at the site which could make the assessment invalid.
- A competent person must carry out the Risk Assessment, who must be appointed by the employer in compliance with the Management of Health & Safety at Work Regulations. Anyone who delegated responsibility for performing this risk assessment, in order to be deemed acceptably competent must be temperamentally suitable, be appropriately qualified and experienced, and have been provided with specific training on the task involved.
- They should use the Premises Fire Safety Assessment Checklist to assist them to address all significant factors at their premises. Refer to Premises Fire Safety Assessment Checklist contained in Part 3.

References

Legislation

The Regulatory Reform (Fire Safety) Order 2005
 Management of Health & Safety at Work Regulations 1999
 Dangerous Substances and Explosive Atmospheres Regulations 2002
 Petroleum Consolidation Regulations 2014
 Health & Safety (Safety Signs & Signals) Regulations 1996
 Construction (Design & Management) Regulations 2015

British Standards

BS 476 Fire tests on building materials and structures
 BS 1945 Specification for fireguards for heating appliances
 BS 5266 Part 1, (amended 1998) Emergency lighting of premises
 BS 5306 Part 1 Hydrant systems, hose reels and foam inlets
 BS 5306 Part 3 Code of practice for selection, installation and maintenance of portable fire extinguishers
 BS 5499 Part 1 (amended 1993) Fire safety signs
 BS 5588 Fire precautions in the design, construction and use of buildings
 BS 5839 Part 1 (amended 1996) Fire detection and alarm systems
 BS 6778 Specification for fireguards for use with portable, free-standing or wall-mounted heating appliances
 BS 7863 Colour coding to indicate the extinguishing medium in portable fire extinguishers
 BS 7944 Specification for fire blankets
 BS 8214 (amended 1992) Fire door assemblies

HSE Booklets

HS (G) 51 Storage of flammable liquids in containers
 HS (G) 168 Fire Safety in construction work
 Fire Safety: an employer's guide ISBN 0-11-341229-0

HSE Guidance Notes

CS 15 Cleaning and gas freeing of tanks containing flammable residues

HSE Leaflets

IND (G) 227 Safe working with flammable substances
 HSE 8 Take care with oxygen
 CIS 51 Construction fire safety

Other guidance

Fire Prevention on Construction Sites: Joint Code of Practice on the Protection from Fire of Construction Sites and Buildings Undergoing Renovation (CC, LPC) (9th Edition October 2015).
Standard Fire Precautions for Contractors Engaged on Crown Works (HMSO ISBN 0 11 753094 8)

25 Company Fire Policy

- 25.1 It is important that all staff are vigilant in both the prevention and detection of fire on the premises. If you consider there is a potential fire hazard inform your immediate Site Managers / Supervisors immediately.
- 25.2 Should a fire start, do not panic, shout out loud “Fire, Fire, Fire” and go to the nearest fire alarm point immediately and raise the alarm so that all other persons in the building are made aware of the danger.
- 25.3 After the alarm is raised, providing you have been trained in the use of fire extinguishers and as long as there is no personal risk, attempt to extinguish the fire using one of the extinguishers sited around the premises. Ensure that you use the correct fire extinguisher for the type of fire, i.e., does not use water extinguishers for electrical fires.
- 25.4 Leave the building by the nearest safe Fire Exit. Do not stop to collect personal belongings.
- 25.5 After leaving the building, go to the main assembly point; do not leave the fire assembly area until you have given your name to the person calling the register roll who will give any necessary further information. Do not re-enter the building.
- 25.6 The fire assembly point is situated: Outside the building’s main entrance.
- 25.7 The person in charge of evacuation of the building in the event of a fire will be made known to all employees. This person is to take the employees attendance register and the visitor book to the fire assembly point to assist the roll call.
- 25.8 If the fire cannot be controlled quickly by isolating the cause of the fire or with the aid of extinguishers, the Fire Service should be called using the emergency number (999). This should be carried out by Reception Staff where possible. If the telephone system is not working or a phone is not accessible, go to one of the adjoining buildings to make the call.
- 25.9 If the fire is spreading ensure occupants of adjoining buildings which could be affected by the fire are made aware of the potential danger.
- 24.10 Employees are to be informed and regularly reminded of fire emergency procedures so they are familiar with the position of the fire alarm points, location of extinguishers and turn off points for services.
- 24.11 General precautions to prevent fires:
- Ensure all equipment that can cause a fire is handled with the utmost care.
 - Do not leave any naked flames unattended.
 - Extinguish cigarettes and matches properly and do not smoke in No Smoking Areas.
 - Do not discard cigarette ends or any hot items into non-fireproof bins or containers.
 - Ensure all electrical machinery and equipment is switched off after use.
 - Ensure that gas appliances are properly turned off after use.
 - Store gas and oxygen cylinders in a proper manner in the designated area.
 - Substances, systems and equipment that have the potential of causing a fire must be used and stored correctly and maintained in safe order.
 - Ensure that the Company premises have adequate fire protection to reduce the possibility of the spread of a fire where appropriate.
 - Ensure the Company premises security arrangements are in order to reduce the potential of arson and unauthorised access.

26 First Aid

- 26.1 The Health & Safety (First Aid) Regulations 1981, accompanied by an Approved Code of Practice and Guidance Notes. Employers must ensure adequate first aid provisions are made for their employees. The Approved Codes of Practices explain ‘adequate and appropriate’ provisions.
- 26.2 Company Requirements for First Aid: Management will ensure the Company’s legal requirements for first aid are fully complied with. The provisions for first aid will be based upon assessments and regular reviews of potential injury, working environments and the number of personnel employed, etc. First Aid for all

employees, whether based in offices or on site, must be able to be catered for without difficulty. With regard to site personnel, arrangements for appropriate first aid provisions are to be negotiated and agreed with the other parties involved in a project and the arrangements should be recorded in writing by completing Form F2202. Where the Company has lone workers or small gangs, special consideration should be given through an assessment of their first aid provisions to ensure that they are appropriately covered.

- 26.3 **First Aiders:** First Aiders will be properly trained and receive regular refresher training by an HSE recognised training body so that their First Aider credentials remain in order.
- 26.4 **Appointed Persons:** In addition to a First Aider, Appointed Persons will be trained by an Approved 1 Day HSE First Aid Course as back-up to the fully qualified First Aider, particularly with regard to high risk activities or environments. Appointed Persons will take charge of a First Aid situation should the First Aider be unavailable.
- 26.5 **First Aid Kits and other provisions:** The Company premises, places of work and vehicles will have appropriate first aid kits and provisions. First aid kits and provisions must be easily accessible for the First Aiders / Appointed Persons. First aid kits and provisions should be checked frequently by the First Aider / Appointed Person / Manager to ensure they are fully stocked and that all items are in a useable and hygienic condition. First aid kits and provisions locations must be clearly identified with first aid signage. Only specified first aid contents are allowed in first aid kits as detailed in the HSE Guidance Notes.
- 26.6 **First Aid Record:** All first aid cases which are treated are to be reported to Senior Management and recorded in the Company's accident records. (Company Accident Form contained in the Appendices Section of this Policy). Senior Management will review all accidents immediately to ensure that where required, the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations are complied with.

27 Fixed, Portable & Mobile Machines – General Requirements

- 27.1 **Regulations:** The Health & Safety At Work Etc., Act 1974, The Provision & Use of Work Equipment Regulations 1998, The Pressure Safety Systems Regulations 2000 and The Electricity At Work Regulations 1989 must be fully complied with. The Lifting Operations & Lifting Equipment Regulations 1998 also apply to equipment used for lifting operations. There are certain Approved Codes of Practices, British Standards and HSE Guidance Notes related to plant and equipment / tools which must also be considered.
- 27.2 **It is the responsibility of Management** to provide the right kind of tools, equipment / machines for the job and to see that they are properly used by employees. Information concerning the safe use of machines and equipment should always be requested and obtained wherever possible from the manufacturers / suppliers who by law are required to provide such information. Machines and equipment should be checked on issue and regularly tested and inspected whilst in use in accordance with the Manufacturers / Suppliers Guidance. They should also be checked when being returned to the store.
- 27.3 **Main Requirements:**
- Persons required to operate tools / plant / equipment / machines etc., should only do so if they have been thoroughly trained on the safe use and the necessary precautionary measures to be taken.
 - Use the correct tools and equipment for the job.
 - Managers will ensure that equipment supplied to employees is accompanied with the operator's instructions and that they are fully understood.
 - Managers and operators will check that the equipment is safe and fully efficient. A record of checks and services will be maintained by the Company.
 - Equipment will be guarded and equipped with safety devices where required.
 - Equipment will be tested in accordance with all applicable Regulations.
 - Tools / plant / equipment / machines must be used within their safe limitations.
 - Do not use unsafe defective equipment.
 - If unsafe defects are found in equipment and tools, the matter must be reported immediately to Management
 - Any plant found not in good order must be taken out of service immediately, safely isolated and locked off. "Out of Order" signs/labels should be displayed on defective equipment until in good order.
 - Do not attempt to repair or maintain equipment unless you have been properly trained to do so, particularly when it may involve the removal of safety guards or live electric's.
 - Ensure the working environment meets the safety requirements for operating the type of equipment and tools you require to use, i.e., adequate space and lighting etc.
 - Ensure when operating equipment, other persons that may be affected must be adequately safe-guarded / protected.
 - All appropriate Personal Protective Equipment must be worn / used as and when required.

27.4 The Provision and Use of Work Equipment Regulations 1998 cover many different aspects relating to the safety of equipment – below are some of the main issues:

Reg. 4	Suitability of Work Equipment	Reg. 18	Control systems
Reg. 5	Maintenance	Reg. 19	Isolation from sources of energy
Reg. 6	Inspection	Reg. 20	Stability
Reg. 7	Specific Risks	Reg. 21	Lighting
Reg. 8	Information and instructions	Reg. 22	Maintenance operations
Reg. 9	Training	Reg. 23	Markings
Reg. 10	Conformity with Community requirements	Reg. 24	Warnings
Reg. 11	Dangerous parts of Machinery	Reg. 25	Carrying employees on mobile work equipment
Reg. 12	Protection against specific hazards	Reg. 26	Rolling over of mobile work equipment
Reg. 13	High or very low temperatures	Reg. 27	Over-turning of fork lift trucks
Reg. 14	Starting and modifying operation controls	Reg. 28	Self-propelled work equipment
Reg. 15	Stop controls	Reg. 29	Remote-controlled self-propelled work equipment
Reg. 16	Emergency stop controls	Reg. 30	Seizure and Safe-guarding of drive shafts
Reg. 17	Marking and safe positioning of controls	Reg. 37	Transitional Arrangements

27.5 Guarding – General Principles:

- Operators and persons assisting must keep their hands as far as possible from cutting edges by:
- Using properly enclosed automatic feeding units wherever possible.
- Providing guards which enclose the cutters as far as possible.
- Providing wherever possible, jigs, holders, guides and push sticks.
- Guards should be robust and strong enough to contain flying cutters, securely fixed and easily adjustable; where necessary, by using manual methods of locking and release such as wing nuts, hand wheels and handles. Guards should also be maintained in good condition and capable of free movement to the limits of their adjustment.

27.6 Safe operation of machines, equipment and tools: Manufacturers Operators Manuals / Specification Information for machines, equipment and tools should be fully considered and accommodated where they meet appropriate safety standards. This information should be available to Operators, Managers and Maintenance Personnel.

27.7 Training: When considering training requirements in relation to equipment/machines/tools etc., it is important to bear in mind that three categories of persons have to be considered:

- Machine operators.
- Other persons who work at machines, such as “takers-off” and cleaners.
- Young workers.
- It should be noted that experience alone in working with equipment/machines/tools etc., is not enough and that merely giving instruction cannot be regarded as training. Actual demonstrations should be given by the person in charge, followed up by such supervision as necessary to ensure that the lessons have been completely absorbed and that the trainee is competent to follow the prescribed practices.

27.8 Plant layout: Machines should be sited with safety in mind, to the following general principles:

- Lay out machines in operational sequence.
- Provide a minimum of 1m back space for the machine operator.
- Ensure that materials being processed do not interfere with operations on adjacent machines.
- Provide clear passageways.
- Keep all materials not in use properly stacked and away from machines.
- Take account of any special materials handling requirements.

27.9 Lighting requirements for using tools / equipment / machines: The Workplace (Health, Safety & Welfare) Regulations 1992, compliment the requirement for sufficient and suitable workplace lighting. An efficient lighting system should provide adequate illumination for the work being done and illuminate passages and gangways. A general overall illumination of 250 lux is satisfactory, but people doing specialised work may need double this amount of light over their work; this applies especially to people over 50 years of age.

To avoid glare, all lamps should be properly shielded or diffused. Particular attention should be paid to the positioning and shielding of local lights. Lighting should be installed in such a way as to avoid shadows. Fluorescent lighting overcomes problems of glare and shadow, but can occasionally cause rotating parts of machinery to appear stationary. The hazard resulting from this stroboscopic effect can be overcome by adjacent lamps being wired off different phases of the 3-phase supply or by using localised incandescent

lamps. Consideration should also be given to protect lamps from being damaged by machine operations and material handling.

- 27.10 **Ventilation requirements for equipment:** Adequate ventilation/extraction must be provided to safeguard the health of equipment users and others who may be affected. For example, machines which generate dust, fumes and vapours etc., which could be hazardous to health.
- 27.11 **Harmful substances connected with tools / equipment / machines:** Some machine operations may involve the use of substances which may be hazardous to health, therefore, the Control of Substances Hazardous to Health (Amendment) Regulations 2004 must be complied with. For example, dust, fumes, vapours and oils, etc.
- 27.12 **Noise generated by tools / equipment / machines:** The Control of Noise At Work Regulations 2005 must be complied with when operating machines, equipment and tools. Where machinery is noisy to such an extent that it may damage hearing, noise levels can be reduced by:
- Anti-vibration mountings.
 - Damping doors and panels to eliminate vibration and rattle.
 - Exhaust silencers.
 - Separation of noisy machines by distance or screening.
 - Machine enclosures.
 - Using helical cutters on planning machines.
 - Damping vibration of saw blades.
 - Efficient maintenance.
 - If, in spite of such engineering controls, persons are still at risk of exposure to noise above the action levels of 80 dB(A) or 85 dB(A) over an 8 hour period, or its equivalent, other measures must be taken, such as to:
 - Reduce personal exposure times – for example, by shifts, quiet refuges, job rotation.
 - Provide ear protection. Areas where ear protectors are required must be clearly marked and entry strictly controlled.
- 27.13 **Stability of Mobile Work Equipment:** Where there is a risk of mobile work equipment falling or rolling over, etc., this risk must be minimised by:
- Stabilising the work equipment.
 - Ensuring that the work equipment only falls on its side (90° roll-over) and does not overturn further.
 - Providing a roll-over protection structure (ROPS) if the work equipment can roll-over by 180° or more.
 - Providing a device which gives equal protection as the above measures from the over-turning of the mobile work equipment.
- 27.14 **The use of a suitable restraining system** will be considered where there is a significant risk of a driver or passenger being injured due to the over-turning of mobile work equipment, whether by 90° or greater, to prevent someone from being crushed between the work equipment or its ROPS and the ground.
- 27.15 **A restraining system may also be required** in the case of the ROPS taking the form of a fully-enclosed cab to prevent an employee being injured by striking against contact with part of the work equipment or the ROPS during roll-over.

28 Forklifts and Telescopic Material Handlers

- 28.1 **Introduction:** The following guidance applies, in general terms, to the use of both Rough Terrain Forklifts and Telescopic Materials Handlers. In the interests of brevity, the expression “Forklifts” is used to cover both types of machine.
- 28.2 **Operators and Banksmen:** The efficiency and safety in use of forklifts depends mainly on the competence of those who control, maintain and operate the equipment. Operators must be properly trained in all aspects of forklift operations. Banksmen and others who work in the vicinity of forklift operations must be made aware of appropriate safety criteria related to forklifts in their work routine or working environment.
- 28.3 **Training requirements:** Before anyone is permitted to operate a forklift for the first time, they must be given off-the-job basic training by a competent instructor and at the end of the training, pass a test on the skills and knowledge required for safe operation. A record must be kept which includes the details of basic training given and the nature of the test. The employee will need a copy of the record as evidence of training, on change of employment.

- 28.4 Employers should not allow personnel to operate forklifts without written authorisation, relating to specified types of forklift.
- 28.5 Banksmen should be 18 years of age or over and medically fit, with good eyesight, hearing and reflexes. They should be familiar with any communication systems or signals used in association with the machine's operation and have been sufficiently trained in the workings of the forklift to be able to direct the driver as necessary in a safe manner.
- 28.6 Machine stability and safe load handling: Safety in forklift operations demands that machine stability is maintained at all times. Forklifts should therefore be carefully selected for the work they are required to do.
- 28.7 The rated capacity of a machine will be quoted by the Manufacturer; but careful checks should be made to ensure that the capacity is appropriate for the work to be carried out. For example, safe loads will be lower if the mast is tilted forward or the boom of a telescopic material handler is extended. Stated capacities apply in a static condition and may be far in excess of those which are safe when the machine is moving. Limits of safe operation will depend on site conditions and as far as possible; machines should be operated only on designated routes.
- 28.8 Even with the right machine for the job and satisfactory site conditions, the safe operation of forklifts on site still depends on the machine being properly operated. The establishment of safe systems of work (in written form where appropriate) and incorporated in operator training programmes is all important.
- 28.9 When stabilisers are fitted to a machine, they should be used in accordance with manufacturer's instructions.
- 28.10 When operating forklifts, operators must be aware of the effect of the machine's stability of induced forces. These are the forces which act upon a machine or on its load due to a change in speed or direction, for instance, when starting, stopping, turning or rolling. The greater the speed of the machine, the greater these induced forces. Accelerating, decelerating and braking must be done progressively and smoothly, never hard or jerkily. Turning must be done carefully, giving due consideration to the weight and placing of the load and the condition of the ground.
- 28.11 Accident experience has indicated certain points which need particular attention:-
- Load stability is crucial and should be checked before travelling;
 - Wide loads have tilted and caused fatal accidents. Ensure that loads cannot tip sideways;
 - Accessways must be checked to see that they are wider than any load which may be carried along them. Loads should normally be carried close to the ground, but if they have to be raised to clear obstructions, they must be lowered when the way is clear. The operator should be assisted by a Banksman;
 - The weight of porous material should be re-estimated if it is wet;
 - If the machine has a mast, loads should be lifted with the mast vertical or slightly tilted back;
 - Travelling on slopes or in poor ground conditions may be critical and the machine manufacturer's recommendations should be followed. The danger of skidding and overturning is particularly serious on two wheel drive machines where braking can cause weight to transfer away from the brake axle when negotiating a slope;
 - There are reversing hazards with forklifts, as with other transport. Audible warning alarms are a useful aid, but their effectiveness can be limited by general background noise and by operators relying on them, instead of carrying out a visual check before reversing. The need for a banksman should always be considered.
- 28.12 Whenever the load impairs the operator's vision, a banksman should be used to guide the operator.
- 28.13 With articulated forklifts, a lift should not be made unless the front and back wheels are in the same straight line.
- 28.14 Unit loads should not be broken down unless the overall weight would overload the machine.
- 28.15 Stacking of materials: Stacking areas should be clearly designated and built on firm level ground with good drainage. There should be adequate clearance between the stack and any wall, because walls have been known to collapse as a result of the horizontal pressure exerted by the weight of stacked material.
- 28.16 The stability of a stack depends on:-
- Relation of its height to the narrowest base dimension (height should not exceed three times the narrowest base width);
 - Interlocking of the material to prevent movement;

- Compactness and the security of wedging, where applicable, to avoid sideways movement;
- Proper understanding of the weight to be carried by the components at the bottom of the stack (this is particularly important where fragile materials are concerned);
- The avoidance of any projecting items which if accidentally struck could cause the collapse of the stack;
- Adequate measures to ensure security in high winds.

- 28.17 Most accidents involving collapse occur during the de-stacking process, when material is removed in an uncontrolled order to suit the operator's convenience, thereby leaving portions standing at a height which cannot be supported by the remaining base. De-stacking should be in the reverse order of the original stacking process.
- 28.18 Loading areas must be strong enough to withstand the loads imposed by a forklift depositing material on them.
- 28.19 **Safety of Personnel:** In a forklift working environment, all personnel must be fully instructed in the safe systems of work laid down for their protection and must observe them at all times. Some of the points which should be covered by the safe systems of work are:-
- Everyone not directly involved in forklift operation should keep well clear of the machine;
 - The carrying of passengers is not permitted at any time;
 - Persons acting as banksmen or guiding the driver in removing forks from the pallet, should:-
 - keep a safe distance from the machine and its load;
 - never stand under the elevated load of a forklift;
 - never stand between the load and any exposed floor edge, or between the load and a fixed object;
 - Wear conspicuous clothing; reflective jackets should be worn during poor visibility.
- 28.20 **Attachments:** Attachments are designed to increase the scope of forklifts. In each case it must be remembered that the use of an attachment can radically alter the forklift's stability characteristics and hence it's safety. Preferably, an attachment should be made by the manufacturer to the forklift and its incorporation on the forklift done in consultation with them; otherwise it is essential that the attachment is designed by a competent person and that adequate testing is carried out before the equipment is allowed into general use.
- 28.21 The use of attachments may involve additional training for operators to ensure overloading does not occur.
- 28.22 When using a jib/hook attachment, similar operating procedures to those for mobile cranes should be employed.
- 28.23 **Safety Devices:** Each rough terrain forklift should have a device incorporated in its hydraulic system which will not allow the machine to lift weights greater than its rated load. The machine should also have a device which will prevent a specified load being lifted beyond a given height.
- 28.24 The provision of a simple levelling indicator is strongly recommended, with the danger zones, where it is not permitted to raise the load, clearly marked. Such indicators, if not fitted as original equipment, can be fitted by the user, but only after consultation with the manufacturer of the forklift.
- 28.25 Every telescopic materials handler should be fitted with an Automatic Safe Load Indicator which gives a continuous read out of forward stability and sounds an audible alarm when the load exceeds 95% of the Safe Working Load. Other safety devices which should be fitted to these machines are:-
- A levelling indicator;
 - Check valves which will hold the load in the event of hydraulic pressure loss;
 - An indicator lamp which will show when stabilisers are on firm ground.
- 28.26 **Maintenance:** The Provision & Use of Work Equipment Regulations 1998 require that all such plant is maintained in efficient state, in efficient working order and in good repair.
- 28.27 Details of necessary maintenance will be given in the manufacturers manuals. It will be necessary to arrange for this maintenance to be carried out, usually involving a fitter to do the less frequent but more complex work and the driver to do the simple but vital checks.
- 28.28 **The driver should:-**
- Check that any defects previously reported to the Supervisor have received attention;
 - Check battery levels, topping up where necessary;
 - Check tyres for wear, damage and pressure;
 - Check the fork locating or retaining pins;
 - Check water and oil levels;

- Check brakes;
- Check any roll-over or falling-object protective structures (ROPS or FOPS), where fitted;
- Check that steering is positive;
- Check the stability of the seat;
- Check the mirrors and test the horn (it is recommended that these items are fitted);
- Check that lights are working correctly;
- Check working or lift mechanism; check chains for lubrication and for foreign material caught in links;
- Check hydraulic hoses for chafing and leakage;

28.29 Any defects revealed by these checks should be reported by the driver to their Supervisor / Foreman. Machines should not be used until defects which affect their safety have been rectified. The forklift should be isolated and a “Do Not Use” sign displayed on it until it is in good order. Keys should be kept with the Supervisor / Foreman to prevent use when the machine is not in good order.

References

Information and Guidance:

Rider operated lift trucks – operator training – Approved Code of Practice and Supplementary Guidance COP 26.

HSE Booklet HS(G)6 – Safety in working with lift trucks.

HSE Booklet HS(G)113 Lift trucks in hazardous areas.

“Transport kills – a study of fatal accidents in industry 1978-1980” (ISBN 0 11 883659 5).

“Operators Safety Code for Rough Terrain Fork Lift Trucks” (British Industrial Truck Association, High Street, Ascot, Berkshire, SL5 7JF).

Training Aids:

Film “Any fool can do it” (RoSPA).

HSE Video:

“Plan your Slings”.

CIP Limited – Telephone: 0121-722-8200.

29 Gas & Electrical Services Precautions

- 29.1 This section covers some of the main safety precautionary measures when carrying out works on gas and electrical services. Detailed provisions can be found in appropriate Codes of Practices and British Standards applicable to the gas and electrical industries.
- 29.2 **Gas services:** In addition to the Approved Codes of Practices and British Standards, full consideration must be given to Regulations specific to the gas and related industries.
- 29.3 **The Gas Act 1996.** Gas customers can now purchase gas from whichever gas supplier they wish to use. To enable British Gas to respond to this situation, it has been split into separate business units:
- British Gas (Gas Supply), the ‘gas supplier’;
 - British Gas (Transco), transporting gas through pipeline networks and gas emergencies;
 - British Gas (Retail), the sale of appliances (not necessarily just gas appliances);
 - British Gas (Service), servicing and maintaining appliances and systems for which they decide to take responsibility.
- 29.4 **The Gas Safety (Management) Regulations 1996.** These Regulations were implemented to reflect the recommendations in the Health & Safety Commission’s (HSC) Report ‘Britain’s Gas Supply: A Safety Framework’. The Department of Trade and Industry (DTI) introduced legislation to open up the domestic gas market to competition from 1st April 1996. The main objective of the HSC’s Gas Safety (Management) Regulations 1996 is to provide a regulatory regime which will maintain the safety standards achieved by British Gas as a relatively low risk, and to offer scope for further improvements.
- 29.5 **These Regulations address:**
- The safe management of gas through the national network supplying domestic consumers;
 - The provision of arrangements for dealing with emergencies when the gas supply fails or leaks occur;
 - The preparation of safety cases by those conveying gas and by a network emergency co-ordinator;
 - The requirements for emergency response, the composition, odour and pressure of gas.

- 29.6 **Reporting of Gas Incidents:** In addition to the RIDDOR Regulations, the reporting of gas incidents is now extended to any registered installation business if it finds that there is, in any premises, a gas fitting or associated flue or vent arrangement which could be dangerous in a way as specified in Regulation 6(2).
- 29.7 **The following are examples** of the kinds of fault that the HSE have given guidance on which, if likely to cause death or a major injury, would be reportable to the HSE (which is the responsibility of the Client who should be notified immediately) with regard to a gas appliance:
- A dangerous gas leak arising, for example, from the use of unsatisfactory materials or bad workmanship;
 - For any reason, is spilling its products of combustion;
 - Clear signs of incomplete combustion;
 - Signs of combustion problems due to inadequate provisions for ventilation;
 - Not suitable for use with the gas supplied;
 - A safety device, such as a flame-failure device, has been made inoperative;
 - An appliance which is connected to a gas supply by a flexible connection made of an unsatisfactory material, such as a garden hose;
 - An appliance or installation which has become or remains dangerous because of faulty servicing.
- 29.8 If any of these faults have actually caused death or a major injury, then the conveyor, filler, importer or supplier of the gas (whichever is appropriate) is responsible for reporting this to the HSE.
- 29.9 All reports of gas incidents must be made to the relevant HSE Area Office using the report form F2508G, which is available from the Company Head Office and HSE Books.
- 29.10 **Gas Escape Procedures:** Gas escapes must be dealt with immediately when they are noticed, taking priority over any other work. The gas supply should be turned off wherever possible and the area ventilated to disperse gas. Other sources of ignition should also be turned off wherever possible, without putting yourself and others at risk. The affected area must be evacuated immediately by all persons and the matter reported immediately to the Gas Suppliers Emergency Control. Stay at a safe distance from the escape to report to the Gas Suppliers Personnel upon their arrival - ensuring in the meanwhile, that life and property are safeguarded as far as possible.
- 29.11 The order or priorities is as follows:
- Ensure safety of life;
 - Ensure safety of property;
 - Locate and repair the escape wherever possible, leaving the installation safe.
- 29.12 **General:** Most gas escape reports stem from the detection of a concentration of gas by smell. The degree of smell is no indication of the seriousness of a gas escape and therefore must be treated with urgency. A person with a normal sense of smell can usually detect a 0.1% level of gas-in-air mixture in a room, but only upon immediately entering the room from outdoors. If a person is already in the room when gas is introduced, considerably higher levels can build up before detection. This is due to the fact that people exposed to the smell for any length of time tend not to notice it.
- 29.13 **Gas escapes** can be either internal, i.e., from a buildings pipe work, connections or appliances or externally from the mains outside, i.e., on the service pipe up to the emergency control valve, or service pipes under the road. The former can be controlled by the consumer's control valve (emergency control valve) adjacent to the gas meter. The other escapes can only be brought under control by the Gas Supplier.
- 29.14 **Part F. The Gas Safety (Installation and Use) Regulations 1994** places obligations on the responsible person and sets out their responsibilities in the event of an escape of gas.
- 29.15 **All Gas Escapes - General Procedure.** Persons reporting an internal gas escape are to be told to:
- Turn off the gas emergency control valve immediately;
 - Eliminate all sources of ignition in a safe manner;
 - Do not operate electrical lights or switches either 'on' or 'off';
 - Open all doors and windows, ventilate area;
 - Contact the gas supplier if the smell of gas persists, if the escape is suspected to be upstream of the emergency control or the smell of gas is outside or from another property.
 - Whenever in doubt, get everybody out.
- 29.16 Always consider the evacuation of nearby and adjacent properties that may be affected. Remember Safeguard Life, Safeguard Property.

- 29.17 If no escape can be found on the installation or appliances even though the smell of gas had ceased after the emergency control was isolated, the gas supplier is to be contacted to confirm the soundness of pipe work and equipment. Consideration must be given to the possibility of the smell of gas coming from appliances operating incorrectly or coming from adjacent properties. Further investigation is required.
- 29.18 If a gas escape found on the installation is on the meter or supply pipe work to the meter, the gas supplier is to be contacted and the emergency control left isolated. Any escape downstream of the meter is to be traced and repaired before the installation can be turned on again. If an escape cannot be repaired then the installation must be isolated from being used with an indication given to the reasons why.
- 29.19 **Gas Appliance (Safety) Regulations 1991 (SI 1992 No. 711):** This Regulation replaces The Consumer Protection Act, The Gas Cooking (Safety) Regulations, The Heating Appliances (Fireguards) Regulations and imposes other requirements.
- 29.20 Before an appliance can be marketed by a manufacturer it must first have been tested by a recognised testing authority, called a 'Notified Body'. Notified Bodies for gas appliances are as follows:
- British Gas plc;
 - Calor Gas;
 - British Standards Institution.
- 29.21 **Appliances must be quality guaranteed:** This means that during the manufacturing process the manufacturer must operate a quality scheme of some type, such as British Standard 5750, to ensure that all appliances conform to the tested design. This will be monitored by the Notified Bodies.
- 29.22 **Appliances must carry the CE mark.** All appliances that conform to the previous three points will carry a CE mark issued by the Notified Bodies.
- 29.23 **Electricity Acts:** The Electric Lighting (Clauses) Act 1899, the Electricity (Supply) Acts 1882 - 1936 allowed provision for supply Regulations to be made by the Electricity Commission. Regulations came into operation on the 1st January 1937 and were The Electricity Supply Regulations 1937. The current Act is The Electricity Supply Regulations 1988.
- 29.24 The other statutory Regulation to be complied with is The Electricity At Work Regulations 1989 which came into force on the 1st April 1990.
- 29.25 These Regulations apply to all electrical equipment and systems and require that such installations must not give rise to danger; should be suitably insulated and protected and provide for the installation to be isolated, or cut off, or the current reduced in the event of a fault. The Regulations also require equipment and installations to be properly identified and labelled.
- 29.26 It is now illegal to work on live electrical systems unless there is no other way in which work can be done.
- 29.27 The Regulations create duties for employers, the self-employed and employees and cover all aspects of electrical work, requiring that persons who work with electricity are competent. To be considered competent, a person must have:
- Adequate knowledge of electricity;
 - Good experience of electrical work;
 - An understanding of the system being worked on;
 - Practical experience of that type of system;
 - Knowledge of the hazards that might arise and the precautions that need to be taken;
 - The ability to immediately recognise unsafe situations.
- 29.28 **IET Wiring Regulations:** The BS 7671: Requirements for Electrical Installation (referred to as IET Regulations, 18th Edition) are not statutory regulations, except in Scotland. They are issued by the Institution of Engineering and Technology and are designed to provide for the safety of electrical installations in and about buildings generally. Compliance with the IET Regulations will, in general, satisfy the requirements of the Electricity At Work Regulations, the Electricity Supply Regulations and the Building Standards (Scotland) Regulations.
- 29.29 It is important that reference is always made to the current edition of the Regulations.

30 General Public Safety

- 30.1 The general public is defined for the purpose of this Safety Policy as any person who is not employed by the Company:
- Occupiers of neighbouring and multi-occupied properties;
 - Employees of neighbouring businesses;
 - Visitors to Company and neighbouring business premises;
 - Pedestrians and road users;
 - Any persons who could be affected by Company activities;
 - Trespassers.
- 30.2 General public areas must be kept free from any obstructions and activities which could be a hazard. Where general public areas have to be guarded-off due to the nature of work, all necessary temporary safeguards must be provided and adequate control measures put in place. Areas of possible danger to the general public must be safely guarded-off and appropriate warning notices displayed. Those who could be affected by the works must be notified in advance wherever possible so that where necessary, their normal safety arrangements can accommodate additional safety provisions necessary for the safe use of temporary works. General public safety with regard to temporary works must be checked and co-ordinated by a competent Temporary Works Co-ordinator.
- 30.3 When pavements could be affected by the works all appropriate signs and guards must be displayed. Temporary walkways for pedestrians must be at a safe distance from the work. The walkways should be defined with red and white continuous rigid guard-rails and toeboards or hoarding. Where temporary pedestrian walkways have to be located in roads, red and white secured road timbers should be used instead of toeboards and all appropriate road signs / lights and cones must be displayed. Where pavements will be required to be closed off, the Company's Safety Advisors, Temporary Works Co-ordinator and the Local Highways Department / Local Council must be informed so that all appropriate precautions and controls are taken. **Note:** Pavements are used by mothers pushing prams, children, blind and disabled persons as well as ordinary pedestrians and they must all be considered when diverting / closing pavements.
- 30.4 Trespassers safety must also be considered so they are protected from danger. There is a particularly strong liability towards children who may be 'attracted' onto Company premises or site works after working hours. The precautions to exclude children depend on circumstances. If it is reasonably foreseeable that a child might gain access, the precautions which have been taken are not sufficient. Every reasonable precaution must be taken to keep trespassers out of Company premises and sites. Considerations must be given to safeguard trespassers should they gain entry, e.g., Guard dogs must be under control. Machinery, plant and equipment should be left immobilised (disconnected / locked off) and in a safe condition.
- 30.5 **Third Parties and Visitors:** The Company has a responsibility not to jeopardise any persons safety. This covers not only Company Employees, but also the Client's Employees, Sub-Contractor's Employees, Visitors and persons making deliveries, etc.
- 30.6 Where third parties or visitors are allowed onto Company Premises or site locations, they should be made aware of safety standards and any special hazards. They should be accompanied by a responsible person and provided with protective clothing/equipment where appropriate.
- 30.7 Site working areas must be suitably guarded / cordoned-off and appropriate safety signs displayed, particularly scaffold working platforms where the protection preventing persons from falling has been temporarily affected, at the base areas where hoists are being erected, areas where persons could be struck by hoist platforms and areas of potential fall of materials, etc.

31 Hand-arm Vibration Syndrome (HAVS)

31.1 Summary of the problem. Workers whose hands are regularly exposed to high vibration may suffer from several kinds of injury to the hands and arms, including impaired blood circulation and damage to the nerves and muscles. Collectively the injuries are known as "Hand-Arm Vibration Syndrome" (HAVS). "Vibration White Finger" is one form of HAVS in which impaired blood circulation causes blanching or whitening of affected fingers. The main symptoms of HAVS are:

- Tingling and/or numbness in the fingers;
- Loss of sensation and manual dexterity;
- Finger blanching;
- Aching digits and limbs.
- There is no treatment or recovery from the sensory symptoms (numbness, etc). However, the vascular symptoms (blanching, etc..) can exhibit some long term improvements for mild cases in younger persons after removal from exposure. There are various classification systems that determine the severity of the damage. A separate assessment is made for each hand. HAVS is a notifiable disease under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR). If a medical practitioner diagnoses an employee as suffering from HAVS caused by their work, the necessary notification must be made by the Company to the HSE.

31.2 Risk factors. The primary cause of HAVS is work that involves holding vibrating tools or work pieces. The damage caused by vibration depends on its frequency. Low frequency motion from 5-20 Hz is potentially more damaging than higher frequency motion. Vibration at frequencies below 2Hz and above 1500Hz is not thought to cause damage. To take account of this, a "weighting" system has been developed which adjusts vibration levels according to the frequency; taking more account of the more harmful frequencies and less account of the less harmful frequencies. Measurements of personal vibration exposure should therefore be taken and expressed as weighted values. The risk depends on the vibration "dose" received by a person, which is a combination of the vibration magnitude and the exposure time. To allow comparison, exposures are adjusted to a standard reference period of 8 hours, however long the actual exposure period is. This adjusted exposure is known as A(8). HSE have set an action level of 2.5 m/s² above which management programmes should be introduced which the Company must comply with (see below).

31.3 Hierarchy Controls. To ensure individuals are not exposed to vibration levels that exceed legal limits or manufacturer guidelines by eliminating risks where possible, reducing risk levels where elimination is not possible by the use of engineering controls where appropriate, for example remote controlled mechanical aids. The use of Personal Protective Equipment should be used as a last resort.

This will be achieved by following the hierarchy of control during the design and construction process as follows:-

- Reviewing designs to eliminate works which may create vibration where possible.
- Where elimination is not possible, or practical, look at design options to reduce the vibration hazard.
- Ensuring that tools have been properly maintained and repaired to avoid increased vibration caused by faults or general wear and making sure cutting tools are kept sharp so that they remain efficient.
- Advising operatives that the Vibration Regulations include an exposure action value (EAV) and an exposure limit value (ELV) based on a combination of the vibration at the grip point(s) on the equipment or work-piece and the time spent gripping it. The exposure action and limit values are:
 - ◆ a daily EAV of 2.5m/s² A(8) that represents a clear risk requiring management; and
 - ◆ a daily ELV of 5 m/s² A(8) that represents a high risk above which employees should not be exposed.

Simple steps that can be used by Supervisors when looking to control vibration on site are:

Identify and assess the risks – understand each piece of equipment's rating, investigate alternative methods and create a hierarchy of control to concentrate on the highest risks. Undertaking risk assessments and identifying practical vibration reducing measures before works commence along with discussion with operatives undertaking the task.

Monitor and control – both the actual work and health surveillance for the operatives and documenting on a daily basis via the Daily Activity Briefings.

Education – it is vital that everybody understands why we are doing this, and what the symptoms are. As a last resort, providing operatives with protection, as well as information.

31.4 Identifying Hazardous Work and Assessing the Risk. A wide range of tools and processes may give rise to significant vibration exposure including:

- Percussive tools;
- Caulking and chipping hammer;
- Pneumatic chisel;
- Concrete breaker / jackhammer;
- Concrete levelling vibro-table;
- Concrete vibro-thickener;
- Impact wrench;
- Needle gun;
- Nut runner;
- Poker;
- Percussive / hammer drill;
- Road drill;
- Rock drill;
- Rotary hammer;
- Scaling gun;
- Tunnelling tools;
- Vibratory compactor / whacker plate;
- Grinding and finishing;
- Angle grinder;
- Pedestal grinder;
- Portable grinder;
- Rotary de-burring tool;
- Sander;
- Timber, woodworking and ground clearance;
- Chain saw;
- Circular saw - hand-held or hand-fed;
- Jigsaw;
- Strimmer.

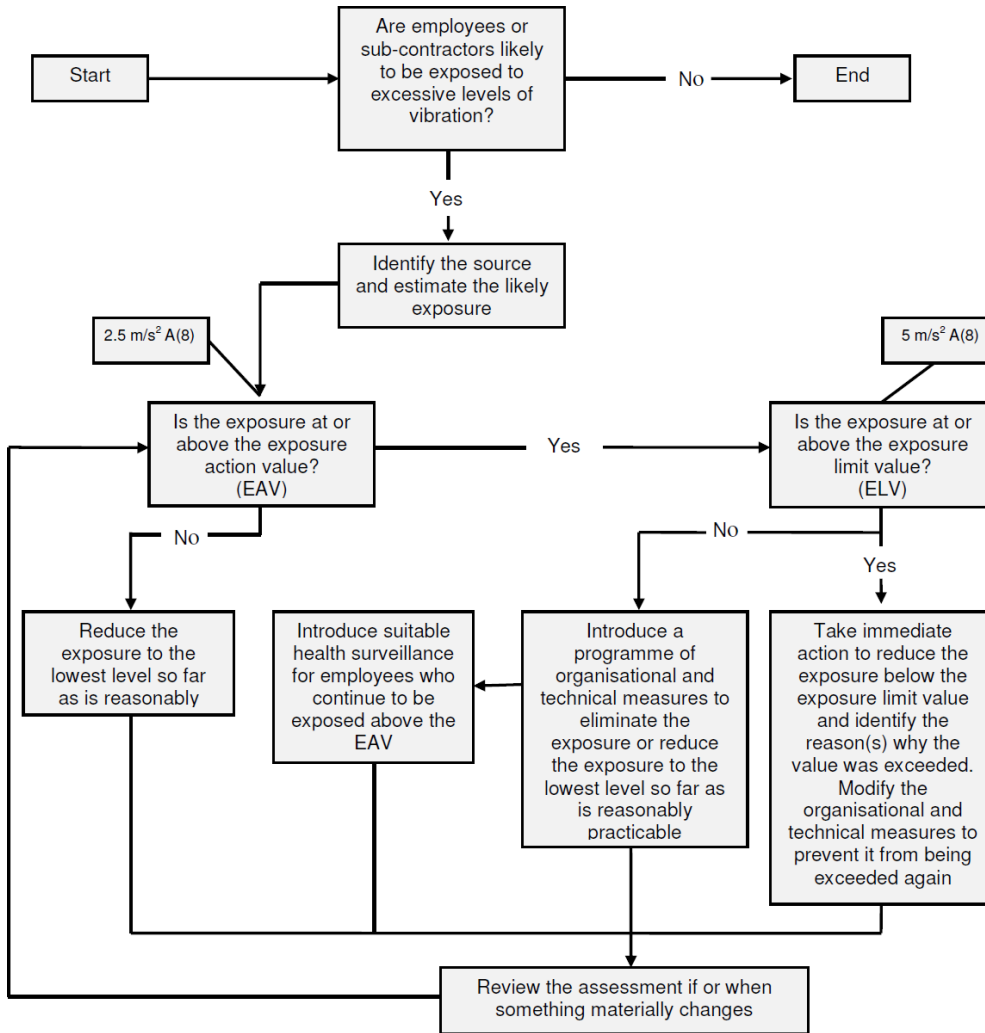
31.5 Vibration Management Programme. A vibration management programme will include the following elements:

- Identifying hazardous work and assessing the risk;
- A preventive programme to control the risk of injury including;:
- Process design / selection / modification;
- Tool selection & maintenance;
- Training & Information for operators and Site Managers / Supervisors;
- Limitation of duration of exposure ("trigger time");
- A health surveillance programme;
- A tool purchasing policy.

Use of any of the above tools/equipment should be further assessed as described below. Other tools and equipment may also give significant vibration exposures. A useful rule of thumb is to suspect any process that causes tingling or numbness after 5-10 minutes. Operatives should be trained to report such symptoms. Having identified tools/processes that might give rise to significant vibration exposure it is necessary to assess the actual exposures being received. The first stage is to identify which workers are exposed. It is difficult to assess workers vibration exposure from the manufacturer's vibration data for the tool being used. This is because the manufacturer's data has been produced using a standard test with the tool in a test rig and not under actual operating conditions. Actual vibration exposures in use are likely to be significantly higher in most cases than the manufacturer's published data. However, manufacturers' data is useful in making relative comparisons between different makes and models (see section on purchasing policy). The accurate measurement and assessment of vibration exposure is a complex process requiring specialist skills and equipment. It should only be carried out by someone who has received appropriate training and is competent to use the equipment. Vibration levels will vary not only according to the type of tool but also between individual tools (depending on their condition and attachments), between different materials on which the tool is used, and between different operatives (depending on the grip or push used to apply the tool or guide the workpiece). Accordingly, if measuring vibration levels it is necessary to arrange to measure the vibration using a representative sample of tools, materials and operators. In order to determine the vibration dose it will also be necessary to measure the duration of the exposure ie the "trigger time" on the tool. Experience shows that individuals' estimates of "trigger time" can be wildly inaccurate and duration of exposure should be determined by a more reliable method such as the use of a device to meter the time a tool is in use or by a job study. If operatives use several different vibrating tools during the course of the working day the overall vibration exposure has to be calculated.

31.6 Implementing preventative programmes to control the risk of injury process, design, selection, modification. In some cases it may be possible to eliminate or reduce the exposure altogether by altering the design or process. This is the best approach where it is possible. It may be necessary to approach clients with a view to amending designs or specifications e.g., tunnel designs that require use of hand-tunnelling methods, or concrete finishes produced by scabbling. It is also necessary to question established processes and ask whether the job really has to be done that way or whether there are alternatives e.g. grinding out temporary tack welds in steel fabrications can sometimes be avoided by reorganisation of the process. To be successful it requires an open-minded approach and innovative ideas. In many cases, where this approach has been taken there have been significant reductions in vibration exposure and impressive gains in productivity. It should be remembered that when altering the process to eliminate or minimise one hazard, it is possible to introduce a different and possibly more serious hazard. Careful risk assessment should be carried out to avoid this possibility. This option may take time and money to research and develop, in which case other control measures must be adopted in the short term (see below).

31.7 Requirements for a Hand-Arm Vibration Risk Assessment:



31.8 Tool selection & maintenance. In many cases it will be possible to reduce vibration exposure by selecting "low vibration" tools. It must be recognised that such tools, while potentially making a substantial contribution, are not likely to be the complete solution. Many "low vibration" tools still produce vibration levels in excess of 2.8ms-2 and further controls will be necessary. In addition, they will need to be correctly maintained to prevent vibration levels becoming greater over time. It is important to look not only at the tool itself but any associated accessories/equipment. For example, the full benefit of "low vibration" angle grinders may not be obtained if existing grinding discs are used. Changing to a different type of disc may give both lower vibration levels and greater productivity, which itself helps to reduce exposure time. Manufacturers of the equipment can provide appropriate advice. It will also be necessary to involve the workforce and ensure that replacement tools are suitable for the job. If suitable low vibration tools are available and a decision is taken to use them, it may not be reasonably practicable to replace all existing tools immediately. In this case a replacement programme should be determined giving priority to replacement of those tools producing the highest vibration levels. In the meantime, other controls must be adopted (see below). Whatever tools are used, it is essential to ensure that they are properly maintained to minimise vibration levels. A maintenance programme must be established setting out the periods for routine inspection and maintenance of each tool. Measurements may need to be made to check that vibration levels are not increasing to an unacceptable level. Suitable records must be kept of the maintenance and vibration measurements.

31.9 Training and information for operators and Site Managers / Supervisors. Training is necessary for operators, Site Managers / Supervisors to ensure that they understand the risks of HAVS and the measures required to minimise those risks. They should be fully aware of the various elements of the vibration management programme including the provisions for health surveillance and the steps that they can take to reduce the risk e.g., not applying excessive force, etc. Training should include:

- Nature of the risk to health;
- Symptoms of HAVS;
- How, why and when to report problems;
- Control measures to be used;
- Effects of cold and other factors affecting blood flow.

31.10 Limitation of duration of exposure. If all other reasonably practicable steps have been taken to reduce exposure but the measured level is still more than 2.8ms-2, the A(8) can be reduced by limiting the duration

of exposure or "trigger time". If this option is used it will be necessary to introduce strict controls to ensure that the maximum operating time is not exceeded e.g., information, training, monitoring and supervision.

- 31.11 **Gloves.** Gloves may be important to keep hands warm and maintain a good supply to fingers or to provide physical protection of the hands. They should be appropriate for the tools and the task so that the wearer finds them comfortable and is able to manipulate the tools and controls properly without increasing grip or force. "Anti-vibration" gloves may not reduce the transmission of vibration to the hands at the frequencies that cause harm although they may cut down high-frequency vibration. Great caution should be taken before using "anti-vibration" gloves as part of the control programme.
- 31.12 **Health surveillance programme – general.** Health surveillance will be necessary for all workers in jobs identified as giving rise to significant risk of HAVS i.e. A(8) more than 2.8m-2 or tingling or numbness after 5-10 minutes continuous operation. The health surveillance programme must be under the direction of a qualified medical practitioner who has experience and training in occupational medicine (eg MFOM) and experience in HAVS assessment. An occupational health nurse, suitably trained, may make assessments under the direction of the medical practitioner.
- 31.13 **Pre-employment assessment.** Potential employees to jobs which have been identified as involving significant risk of exposure to hand-arm vibration should be assessed prior to employment. This should take the form of an initial screen using an appropriate questionnaire backed up with a basic examination by, for example, a suitably qualified nurse. The questionnaire should be developed in conjunction with the medical practitioner directing the health surveillance programme. If significant symptoms are found a further assessment should be made before employment including seeking advice from the medical practitioner. Care should be taken to ensure that, if necessary, alternative employment is considered in accordance with the Equality Act 2010.
- 31.14 **Routine assessment.** Routine medical assessments should be carried out annually for employees in jobs identified as giving rise to significant risk of HAVS. For new employees, it is recommended that a check should be made after 6 months and annually thereafter. A suitably qualified nurse may carry out these assessments. More frequent assessments may be appropriate for people displaying symptoms of HAVS. The medical practitioner directing the programme should determine this. In order to ensure that routine medical assessments are effective in identifying symptoms they should normally be carried out during the colder months between October to April. A suitable questionnaire for routine assessment is contained in Appendix 3 of HS(G) 88 "Hand-Arm Vibration" published by the HSE. It is recommended that this questionnaire should be utilised for all routine assessments. Employees should be encouraged to report tingling or numbness in the fingers after 5/10 minutes continuous operation, or other HAVS symptoms. In this case, a medical assessment should be carried out and the tool they have been using should be checked.
- 31.15 **Management of the affected worker.** Cases identified by routine assessment as level 2 (moderate) or higher (using a standard scale known as the Stockholm scale for classifying vascular and neurological symptoms) should be referred to the medical practitioner. Whenever level 2 is confirmed, management should be informed that the worker's vibration exposure should be minimised. If the medical practitioner confirms level 3 (severe), the recommendation will normally be to remove from exposure to vibration, unless there is evidence that it is a longstanding case related to previous exposure, there is no evidence of worsening and there are no safety implications. This is to be decided on professional judgement and may require access to objective testing to confirm the severity.
- 31.16 **Tool purchasing policy.** One of the most cost-effective, long-term measures to reduce vibration exposure is the purchase of low vibration tools. Suppliers are bringing out new designs of equipment that generate lower vibration levels and are ergonomic to use. See also section on tool selection. It is essential to implement a purchasing policy that requires questions to be asked concerning vibration levels in order to inform purchasing decisions. Below are some appropriate questions to ask suppliers. However, remember that manufacturers' vibration data should not normally be used to assess workers vibration exposure. The questions below include questions about vibration levels under operating conditions. When purchasing new tools and equipment, suppliers should be asked for information on vibration. The following questions should be asked:
- Is the vibration on any handle or other surface to be held by the user likely to exceed an acceleration of 2.8ms-2 in normal use?
 - What is the frequency-weighted acceleration?
 - Under operating conditions producing the highest vibration?
 - Under typical operating conditions?
 - Under other standard conditions?
 - Under what operating conditions were the measurements made?
 - If the tests were in accordance with a published standard, provide details and indicate the extent to which the vibration may differ from the quoted values under normal conditions of use.
 - What measures have been taken to minimize vibration?

- Are additional vibration reduction measures practicable? Give details.
- What other measures are required to minimise the vibration hazard to which employees are exposed when using the tool or equipment? Give details of any special maintenance requirements.

References

Legislation

Management of Health and Safety at Work Regulations 1999

Provision & Use of Work Equipment Regulations 1998

Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR)

Approved Codes of Practice

L22 Safe use of work equipment - ACOP and guidance

British Standards

BS 6842 Measurement and evaluation of human exposure to vibration transmitted to the hand

BS EN 28662-1 (ISO 8662-1) Hand-held portable power tools.

Measurement of vibrations at the handle

PD 6585-1 (For information/guidance only) Hand-arm vibration.

Guidelines for vibration hazards reduction. Engineering methods by design of machinery.

PD 6585-2 (For information/guidance only) Hand-arm vibration.

Guidelines for vibration hazards reduction. Management measures at the workplace.

Guidance

Health & Safety Executive

Guidance booklet HS (G) 61 Health surveillance at work

Guidance booklet HS (G) 88 Hand-arm vibration

Guidance booklet HS (G) 170 Vibration solutions

Pocket-card INDG296P Hand Arm Vibration Syndrome for employees

Health & Safety Executive and Southampton University occupational exposure to noise and hearing difficulties in Great Britain.

32 Employees Guide to Hand-arm Vibration Syndrome

Below is an example of a pocket card produced by HSE on Hand Arm Vibration Syndrome to remind operators of the importance of maintaining good circulation to the fingers when operating vibrating tools and some tips on how to do this.

- 32.1 What is hand-arm vibration syndrome (HAVS)? A disorder which affects the blood vessels, nerves, muscles and joints of the hand, wrist and arm and can become severely disabling if ignored. Its best known form is vibration white finger (VWF) which can be triggered by cold or wet weather and can cause severe pain in the affected fingers.
- 32.2 What are the signs to look out for?
- Tingling and numbness in the fingers;
 - In the cold and wet fingers go white, then blue, then red and are painful;
 - You can't feel things with your fingers (you'll have difficulty picking up small objects such as screws or nails);
 - Pain tingling or numbness in your hands, wrists and arms which may stop you sleeping;
 - Loss of strength in hands (you may be unable to pick up or hold heavy objects).

Symptoms will probably get worse if you continue to use high-vibration tools a lot.

- 32.3 Who is at risk? You are at risk if you regularly use hand-held powered tools such as:-
- Concrete breakers, chipping hammers, jigger picks;
 - Vibrating pokers;
 - Sanders, angle grinders;
 - Vibratory compactors;
 - Hammer drills, jigsaws;
 - Scabblers, needle guns.
- 32.4 How can it be prevented? It is the Company's responsibility to protect you against HAVS, but you can:-
- Ask your manager if your job could be done in a different way without using vibrating tools;
 - Use a low-vibration tool;

- Always use the right tool for the job;
- Check tools before using them to make sure they have been properly maintained and repaired to avoid vibration caused by faults and general wear;
- Make sure cutting tools are kept sharp;
- Reduce the amount of time you use the tool in one go by doing other jobs in between;
- Avoid gripping or forcing the tools more than you have to;
- Store tools correctly so that they do not have very cold handles when next used;
- Encourage good blood circulation by keeping warm and dry (wear gloves, hats, waterproofs and use proprietary heating pads if available); Give up or cut down on smoking as smoking reduces blood flow; Massage and exercise your fingers during work breaks.

32.5 What else can be done?

- Learn to recognize the signs of vibration injuries;
- Report any symptoms promptly to your Company manager;
- Tell your doctor about any symptoms;
- Ask your health & safety representative for advice;
- Ensure that you use all the control measures put in place to reduce the risk of a vibration injury.

This page is suitable to be given as a hand-out to employees instead of the HSE books pocket card ISBN 07176 24544.

33 Health surveillance

33.1 What is it?

Health surveillance is a process involving a range of strategies and methods used to systematically detect and assess the early signs of adverse effects on the health of workers exposed to certain health hazards; and subsequently acting on the results.

33.2 Why do it?

- To protect the health of your employees;
- To make sure you are complying with the Legal requirements for a safe workplace;
- To detect any adverse health effects at an early stage;
- To evaluate your control measures;
- Information may be used for detection of hazards and assessment of risk.

33.3 Criteria for conducting Health Surveillance

- There is an identifiable disease or other identifiable adverse health effect
- The disease or health effect may be related to exposure;
- There is a likelihood that the disease or health effect may occur;
- There are valid techniques for detecting indications of the disease or health effects

33.4 Simple methods - these can include:

- Simple skin surveillance: looking for skin damage on hands from using certain chemicals;
- Simple respiratory surveillance: asking employees to fill in a respiratory questionnaire to assess whether they have developed any breathing problems from substances they work with.

33.5 Technical methods - these can include:

- Spirometry tests: A lung function test to assess the capability of the lungs in gaseous exchange. This will detect any underlying damage to the lungs, such as occupational asthma or other respiratory diseases.
- Audiometry tests: A hearing test, which will assess any hearing defects which may have been caused by exposure to noise at work.
- In addition to the above there may be a requirement for medical examinations, urine tests or blood tests depending on the work activities and the employees exposure to various substances or hazards.
- It may be necessary to carry out a Noise Assessment or air sampling to determine whether these tests are required. These are normally carried out by an Occupational Hygienist although the sampling can be performed by competent persons in the workplace if they have had appropriate training and have the proper equipment.

33.6 How do I know whether I should introduce health surveillance?

Once a Risk Assessment has been completed all hazards and health hazards should be identified in the workplace. The following steps are important prior to any health surveillance being carried out:-

- Determine what the health hazards are;
- Identify who might be at risk from exposure;
- Decide what to do to prevent harm to health, e.g:
- Remove hazard altogether;
- Reduce risk by changing the way work is done or use other controls;
- Provide protective equipment as a last resort.

If risks still remain once you have completed the above, further steps to protect employees will need to be taken. These are some of the issues you need to consider:-

Are any of my employees at risk from:

- Noise;
- Hand Arm Vibration;
- Respiratory disease;
- Skin disease or irritation;
- Eye irritation, or;
- Kidney or liver damage.

In order to answer these questions you need to understand the full work process and what employees are exposed to. This must be identified in the Risk Assessment.

The main areas of concern are:

- Solvents;
- Fumes;
- Dusts;
- Biological agents;
- Asbestos;
- Lead;
- Compressed air;
- Ionising radiations;
- Diving.

Some forms of health surveillance are required by Law. Other forms of health surveillance are undertaken as good practice such as pre-employment assessments as to fitness to work in the particular job.

33.7 How is it carried out and who can do it?

In its simplest form, health surveillance involves employees checking themselves for signs or symptoms of ill-health, but these self-checks can only be carried out where they are part of wider health surveillance programme. They will only work where employees have been properly trained on what to look for and know to whom to report symptoms. An example would be employees noticing soreness, redness and itching on their hands and arms, where they work with substances that can irritate or damage the skin.

A responsible person can be trained to make basic checks such as skin inspections for first signs of redness and could for example be a Site Managers / Supervisors, Employee Representative or First Aider.

For more complicated assessments such as fitness medicals for specific jobs, lung function tests, hearing tests etc, an Occupational Health Nurse can perform the assessment and do various examinations. Some jobs may only require the employee to fill in a questionnaire, which can be screened by the Occupational Health Nurse. This is normally done for new employees to ensure their fitness for the type of occupation, but can also be done periodically for jobs with specific hazards. For more complicated procedures, an Occupational Health Physician may be required.

Common Examples of Health Surveillance	
Tasks	Type of surveillance
DSE Use	Vision Screening Muscular Assessment Workstation Assessment
Drivers	Occupational Health Assessment
Manual Handling work	Occupational Health Assessment or questionnaire
Noise	Hearing test if exposure at levels of 80Db or above
Vibration	Self-reporting examination or questionnaire + Occupational Health examination if required
Asbestos, lead, compressed air	Occupational Health Assessment
Substances Hazardous to Health: Chemicals, vapours, solvents, fumes Dusts, gases, aerosols Biological agents	Varies depending on substance: Self-reporting Occupational Health Assessment Respiratory function tests Skin surveillance Blood test Urine tests
Ionising Radiations	Dosimetry Personal monitoring
Laser users	Eye examination
Confined spaces – use of respirators	Occupational Health Medical
Pregnant workers	Occupational Health Assessment or questionnaire
Night work	Occupational Health Assessment or questionnaire

33.8 Health Records

The Company must ensure that Health Surveillance records for personnel, details of the substances / operations information, safety controls, exposure times and working hours are kept for a minimum of 40 years.

33.9 Glossary:

Biological Monitoring: Testing for the presence of a hazardous substance, its metabolites or a biochemical change in a person's body tissue, exhaled air or fluid.

- **Carcinogenic:** Capable of causing cancer.
- **Chemical name:** The scientific or technical name of a substance.
- **Code of Practice:** A systematic collection of rules, standards and other information relating to the practices and procedures followed in an area.
- **Control measures:** Ways of preventing or minimising a person's exposure to a hazardous substance. A hierarchy of controls ranks measures taken to prevent or reduce hazard exposure according to effectiveness.
- **Corrosive:** Capable of destroying materials or living tissue (eg skin) on contact.
- **Cytotoxic:** Having the property of being destructive to living cells.
- **Harmful:** Capable of causing health problems after exposure.
- **Exposed:** A person is exposed to a hazardous substance if the person absorbs, or is likely to absorb the substance by ingestion or inhalation or through the skin or mucous membrane.
- **Hazard:** The hazard presented by a substance is its potential to cause harm. It may be able to cause illness, disease, injury or death.
- **Hazardous substance:** A chemical or other substance that can affect workers health, causing illness, disease, injury or death and any substance for which the Supplier, Manufacturer or Importer must provide a current Material Safety Data Sheet. Since September 1997, hazardous substances include those with carcinogenic, mutagenic and teratogenic effects, and cytotoxic drugs.
- **Health surveillance:** The monitoring (including biological monitoring or medical examination) of a person in relation to the person's exposure to a hazardous substance. Surveillance is for the purpose of identifying changes in health status due to exposure.
- **Hierarchy of controls:** Ranking of measures taken to prevent or reduce hazard exposure according to effectiveness.

Further Information

IND G 95 (revised) Respiratory Sensitisers and COSHH – Breathe Freely
 IND G 304 Understanding Health Surveillance at Work
 Health surveillance under COSHH (HSE) ISBN 9 780118 854474

34 Health & Safety in the Offices / Yard Etc.

Workplace (Health, Safety & Welfare) Regulations 1992

- 34.1 Application:** These Regulations apply to all the Company's workplaces provided for employees and self-employed, which includes offices, workshops, stores and yards etc., and their associated corridors, staircases, access roads, and welfare facilities etc., other than those on a construction site where the Construction (Design & Management) Regulations 2015 would apply. If construction work is carried out on the Company offices etc., the construction works must be fenced-off, otherwise the Workplace Regulations will apply. The Workplace Regulations also do not apply to mines, quarries and domestic premises. Operational ships, aircraft, trains and road vehicles are also excluded from the Workplace Regulations, apart from when stationary in the workplace, when precautions against falls, or falling objects, must be taken. There are some restrictions on the application of the Workplace Regulations to the agricultural and forestry industries. The Workplace Regulations require employers and others in control of workplaces to take measures concerning the following matters:
- 34.2 Maintenance** The workplace and associated equipment and systems must be maintained in a clean and efficient state, in efficient working order and in good repair. Maintenance of equipment and systems should be carried out in accordance with manufacturers' recommendations and authoritative guidance such as that published by the HSE or the British Standards Institution. Where appropriate (e.g., in the case of ventilation systems), maintenance records should be kept.
- 34.3 Ventilation:** Where windows or other openings will not provide suitable ventilation, mechanical ventilation systems should be provided and properly maintained. Detailed advice is given in HSE Guidance Note EH22 Ventilation in the workplace.
- 34.4 Temperature:** The temperature in workrooms must be "reasonable" and where practicable, this should normally be at least 16°C. Where work involves significant physical effort, the temperature should be at least 13°C. If, despite measures to heat or cool a workroom, workers are exposed to temperatures which do not give reasonable comfort; suitable protective clothing and rest facilities should be provided. Sufficient suitable thermometers must be readily available to allow workers to check the temperature in the workplace.
- 34.5 Lighting:** Natural lighting should be provided, where reasonably practicable; windows and skylights must therefore be kept clean. Lighting should be sufficient to enable people to work and move safely without visual fatigue. Local lighting should be provided where necessary. Where appropriate, emergency lighting must be provided and maintained. Further guidance is given in HSE booklet HS (G) 38 Lighting at Work.
- 34.6 Cleanliness and tidiness:** Floors, walls and ceilings, together with furnishings must be kept sufficiently clean, the standard of cleanliness depending on the use of the workplace. Some other Regulations, e.g., the Food Hygiene Regulations have specific requirements. Absorbent floor surfaces, such as untreated concrete or timber, which are likely to be contaminated by oil, grease, etc., should be sealed or coated, e.g., with a suitable non-slip floor paint. Waste, dirt and refuse should be cleared regularly. Furniture, materials and tools should be placed so that they do not cause people to trip or fall and do not obstruct access or fire escape routes.
- 34.7 Workspace:** Workplaces should have enough space to allow people to move with ease. The total volume of a workroom, when empty, divided by the number of people normally working in it, should be at least 11m³ (in this calculation, a room or part of a room which is more than 3.0m high, should be counted as 3m high). The figure of 11m³ per person may be insufficient if much of the room is taken up with furniture, etc. This recommended minimum figure does not apply to rooms used for lectures, meetings etc.
- 34.8 Workstations & Seating:** Workstations should be arranged so that each task can be carried out safely and comfortably. Seating should, where possible, provide adequate support for the lower back; a footrest should be provided where the foot cannot comfortably be placed flat on the floor. Further guidance on seating is given in HSE booklet HS (G) 57 Seating at Work. (See also Display Screen Equipment Regulations).
- 34.9 Floors and Traffic Routes:** Floors of workplaces and surfaces of passages, staircases, access roads, etc., must be suitable for their intended use and properly maintained. Measures must be taken to reduce the risk of persons slipping, tripping and falling, or of vehicles becoming unstable. Any open side of a staircase should be securely fenced by an upper rail at 900mm, or higher and a lower rail. A secure and substantial handrail should be fixed on at least one side of every staircase.
- 34.10 Precautions against persons or objects falling - fencing and covers:** Secure and suitable fencing, guard-rails or covers should normally be provided where persons are liable to fall which could result in an injury. Fencing installed after 1 January 1993 should extend to at least 1.10m in height, except where lower fencing has been approved under Building Regulations. Guard-rails should consist of a top rail and at least

one intermediate rail should be fixed to prevent persons from falling under the top rail. Where necessary, adequate upstands or toeboards should be fixed to prevent objects falling.

- 34.11 **Ladders:** Fixed ladders, which include steep stairways (which are descended facing the treads or rungs), should extend at least 1.10m above any landing place which is served. Fixed ladders installed after 31 December 1992, with a vertical height of more than 6m, should have a suitable resting place every 6m. Floor openings for ladders should be as small as reasonably practicable, with fencing and a gate provided where necessary to prevent falls. Fixed ladders at an angle of less than 15° to the vertical, which are more than 2.5m high, should, where possible, be fitted with safety hoops or permanently fixed fall arrest systems. Ladders should conform to BS 4211 Specification for ladders for permanent access and BS 5395 Code of Practice for the design of industrial type stairs, permanent ladders and walkways. Ladders should be considered as access equipment only. If working at height, other forms of access equipment with adequate protection preventing persons from falling must be utilised. When using a ladder, both hands must be free to enable adequate handhold. Ladders should be maintained in good order. Ladders not in good order should not be used. To reduce risks when using ladders, personnel should be suitably fit and trained in using ladders safely. Refer to 'Ladders – General Use and Precautions' (Section 37) of this Policy.
- 34.12 **Roof Work:** Where frequent access is needed to roofs, suitable fixed, safe means of access should be provided.
- 34.13 **Stacking and Racking:** Materials should be stacked and stored in such a way that they are not likely to fall and cause injury. Racking should be of adequate strength and stability.
- 34.14 **Loading and Unloading Vehicles:** The need to climb on top of vehicles or their loads should be avoided as far as possible. Where this is unavoidable, measures such as fixing fencing on top of a tanker should be taken to prevent falls.
- 34.15 **Danger Areas:** Where it is not reasonably practicable to take measures such as the provision of fencing, guard-rails, covers etc., to prevent falls, entry to such "danger areas" should be restricted to authorised persons who have received adequate information, instruction and training on any appropriate safe system of work. In certain situations a Permit-to-Work system will be appropriate. The provision of safety nets or personal protective equipment, such as safety harnesses, may be necessary.
- 34.16 **Glazing:** Glazing of doors and walls which could be broken accidentally by persons or materials and cause injury, must be made of suitable safety material, or be adequately protected against breakage by suitable screens or barriers. The Approved Code of Practice gives detailed guidance on these requirements. BS 6206 Specification for impact performance requirements for flat safety glass and safety plastics and BS 6262 Code of Practice for glazing of buildings provide relevant information on safety materials. Such glazing must also be conspicuously marked to avoid the likelihood of people colliding with it.
- 34.17 **Windows:** Windows, skylights etc., must be capable of being opened and closed without any risk. Windows should be designed, or provisions should be made, to ensure that cleaning can be carried out safely. Further advice is given in HSE Guidance Note GS 25 Prevention of falls to window cleaners.
- 34.18 **Doors and Gates:** Doors and gates which swing in both directions should have a transparent panel. On main traffic routes, all doors should be fitted with such panels. Power operated doors and gates must have appropriate safety features to prevent injury to persons where it is possible to be struck by them.
- 34.19 **Traffic Routes:** Traffic routes must allow the safe movement of persons and vehicles within the workplace and when entering or leaving it. Appropriate measures may include: clearly marked separate routes for pedestrians and vehicles; fitting reversing alarms to vehicles; appointment of banksmen to supervise safe movement of vehicles; display warning signs to alert drivers to restrictions in force; setting speed limits for vehicles and installing road humps; warning indication of height limitations or obstructions; use of one-way systems for vehicles; wearing of high visibility clothing.
- 34.20 **Sanitary Conveniences and Washing Facilities:** Suitable and sufficient facilities must be provided for the maximum number of persons likely to be at work in a workplace at any one time. Facilities should be available for use without undue delay and account should be taken, therefore, of the pattern of work. Account should also be taken of the type of work involved; washbasins, with running hot and cold, or warm water, must always be provided but, in some cases, the provision of showers and/or baths may be appropriate.

The following table shows the minimum facilities which should be provided. Where separate sanitary accommodation is provided for different groups (e.g., men, women, office workers or manual workers),	1	2	3
	Max. number in the workplace	Number of water closets	Number of washbasins
	1 to 5	1	1

a separate calculation should be made for each group. An additional water closet and one additional washing station should be provided for every 25 (or fraction of 25) people above 100.	6 to 25 26 to 50 51 to 75 76 to 100	2 3 4 5	2 3 4 5
Where sanitary accommodation is used only by men, the following table may be used as an alternative to column 2 above. In the case of water closets used only by men, one additional water closet and one additional urinal should be provided for every 50 men above 100. Sanitary accommodation must be adequately ventilated and all facilities must be kept clean.	Max. number in the workplace	Number of water closets	Number of urinals
	1 to 15	1	1
	16 to 30	2	1
	31 to 45	2	2
	46 to 60	3	2
	61 to 75	3	3
	76 to 90	4	3
91 to 100	4	4	

- 34.21 **Drinking Water:** An adequate supply of wholesome drinking water must be provided, together with suitable cups, etc., unless the supply is from a drinking fountain. There should also be facilities for washing cups, or alternatively, disposable cups should be provided. Drinking water supplies should be clearly marked as such if there is any risk to people drinking from contaminated supplies.
- 34.22 **Accommodation for clothing and changing:** Suitable and sufficient accommodation must be provided for any special work clothing and for personal clothing which is not worn at work. Clothing should be able to be hung in a clean, warm, dry and well ventilated place, with at least a separate hook, peg or hanger for each worker. Where workers are required to wear special work clothing, adequate room for changing should be provided and measures should be taken to ensure security, for example by providing lockers.
- 34.23 **Facilities for rest and meals:** Suitable seats should be provided for workers whose work gives them opportunities to sit. Seats should also be provided for use during breaks; such seats should be in an area where protective equipment, such as hearing protection, need not be worn. Other than in offices, or similar clean workplaces, separate rest areas or, in new workplaces, separate rest rooms, should be provided. Suitable and sufficient facilities for eating meals should be provided where workers regularly eat meals at work. Seats in work areas may be suitable, provided they are in a clean place and there is a suitable surface on which to place food. Minimum facilities should include a means of preparing or obtaining a hot drink and, where necessary, means of heating food. Eating facilities should be kept clean and be in the charge of a responsible person.
- 34.24 **Further Information:** These Regulations are supported by an Approved Code of Practice. Further information is contained in HSE booklet L24 Workplace Health, Safety & Welfare which contains the full text of the Regulations, the Approved Code of Practice and detailed guidance.

35 Display Screen Equipment

- 35.1 **Introduction:** Until recently, what is now called display screen equipment (DSE), was known as visual display units (VDU's). Possible hazards associated with the use of DSE are mainly those leading to musculoskeletal problems, visual fatigue and stress. The likelihood of experiencing any of these problems is remote and usually related to duration and intensity of the use of DSE, combined with the ergonomic factors of the workstation and the environment in which it is situated. Widely held fears that ionising and non-ionising electro - magnetic radiation from DSE are damaging to the health of pregnant mothers and the unborn foetuses have been shown by extensive studies to be groundless.
- 35.2 **Application:** The Health & Safety (Display Screen Equipment) Regulations 1992 and associated guidance set standards which aim to control the health risks associated with DSE.
- 35.3 **The Regulations apply only to the protection of employees who are 'users' as defined by the Regulations.** A 'user' means an employee who habitually uses DSE as a significant part of normal work, whether at his/her own employer's workstation, at another employer's workstation, or at a workstation at home. Whether an employee is a 'user' depends on a number of factors which will indicate whether he/she habitually uses DSE as a significant part of normal work. In a construction setting, the user will normally be found as a personal secretary in a head or site office environment, in a secretarial pool, as a data input operator, or using computer-aided design equipment in a design office.
- 35.4 **The Regulations define DSE as any alphanumeric or graphic display screen and cover both conventional (cathode ray tube) screens and other display processes such as liquid crystal displays and microfiche.** It is unlikely that process control screens on construction equipment will be subject to the Regulations, only in rare cases would a plant operator be defined as a 'user'. There are a number of exclusions from what is deemed

to be DSE, the most important of which are equipment driver's cabs, or control cabs for vehicles or machinery and equipment on board a means of transport.

- 35.5 **Risk Assessment:** The Regulations require a risk assessment (analysis) of all workstations. If the workstation is modified or changed in any way, the risk assessment must be reviewed. A workstation comprises the display screen, keyboard or other inputting device such as a mouse, optical accessories to the screen equipment, disk drive, telephone, modem, printer, document holder, work chair, work desk, work surface and the immediate work environment. In most cases in construction, health & safety personnel or line managers with sufficient training will be able to carry out the assessments. Training will be given by persons sufficiently qualified in ergonomic principles and practice. All Risk Assessments and reviews should be recorded, as a basis for acting on risks identified and for future reference. Such records provide valuable evidence in the event of upper limb disorders or any other health problems arising.
- 35.6 A detailed schedule to the Regulations sets out the minimum requirements for workstations. It covers the essential characteristics of the workstation itself and environmental conditions including space, lighting, reflection, glare, noise, heat, radiation and humidity. It incorporates a number of principles on designing, selecting, commissioning and modifying software and in designing tasks using DSE.
- 35.7 **Information and Training:** In keeping with much of health and safety Legislation, which is related to the Management of Health & Safety At Work Regulations 1999, the DSE Regulations require training and information to be given to users and operators. The purpose of training is to increase the user's competence to use workstation equipment safely, adding to the general health and safety training that they should have already received. Further training will be given if the workstation, software, environment or job is modified. The curriculum will include hazard recognition, nature of risk to the musculoskeletal system (in particular risks leading to fatigue and pain) and the essentials of remedial action. Users must understand how to adjust furniture and equipment and deploy workstation components and the need to regularly clean and inspect equipment and the importance of making use of breaks and changes of activity.
- 35.8 Specific information on hazards associated with DSE must be given to users and operators in parallel with the requirements of the training curriculum. An emphasis will be placed on the application of ergonomic principles in design, selection and installation of DSE so as to reduce bodily fatigue, stress and temporarily impaired vision.
- 35.9 **Sight tests:** Eye and eye sight test must be provided by employers to employees who are DSE 'users' if they request them. In effect, this means a "sight test" as defined in the Opticians Act and includes a test of vision and an examination of the eye. Users who request sight tests will be offered an examination by a registered ophthalmic optician (optometrist) or a registered medical practitioner. Although entitled to do so, a medical practitioner will not normally carry out such tests unless he has an ophthalmic qualification. Some companies rely on vision screening tests to identify individuals with defective vision. These are not designed to identify eye disease in the same way as a full sight test and employers must provide sight tests if users request them. If the tests indicate a possibility of eye injury or disease, the user will be referred for ophthalmological examination which is free under the NHS.
- 35.10 If the sight tests indicate that a 'user' needs 'special corrective appliances' (spectacles), as distinct from their normal spectacles, to overcome vision defects at the specific viewing distances recommended by the guidance to the Regulations, they must be provided by the employer free of charge. However, he is only obliged to provide basic spectacles which are adequate for the purpose. If users choose more expensive spectacles, they must pay the difference in cost between the basic ones and those of their choice. If a user's normal corrective spectacles are adequate for safe use at their DSE, the employer is not responsible for the provision of additional spectacles.

36 High Pressure Water Jetting

- 36.1 The most relevant items of Health and Safety Legislation are The Control of Substances Hazardous to Health regulations 2002 (Amendment) 2004, the Provision and Use of Work Equipment Regulations 1998, and the Personal Protective Equipment at Work Regulations 1992 (as amended). Specific guidance is provided in HSE Guidance Note PM29 'Electrical hazards from steam / water pressure cleaners etc.' and the Association of High Pressure Water Jetting Contractors' Code of Practice.
- 36.2 This is defined as any water jetting procedure above a pressure of 140 bars, with or without the addition of **chemical additives** to the water. It must only be carried out by a team of properly trained and experienced **competent operatives**, usually consisting of a supervisor, a pump operator and the person in charge of the jetting nozzle.

- 36.3 Good teamwork and co-ordination are essential to the safety of both the jetting team and others in the area. Because of this factor the members of the team should be trained together and not separately if this is practicable.
- 36.4 Water at high pressure and the possible inclusion of hazardous chemicals, are capable of inflicting very severe injury and must be the subject of an adequate **risk assessment** from which is developed a detailed **safe working method statement**. In most on-site situations, only the use of personal protective equipment represents a reasonably practicable means of reducing the risk to an acceptable level. The **PPE** normally required, for all members of the jetting team will consist of:
- Safety helmet.
 - Gloves (proof against any chemicals being used).
 - Heavy duty water-proof overalls.
 - Hearing protection at decibel levels of 90 dB(A) and above.
 - Appropriate eye protection (against impact and chemical splash as appropriate).
 - Appropriate protective footwear (proof against any chemicals being used and providing adequate grip in slippery conditions).
- 36.5 Appropriate and adequate measures must be taken to protect persons not involved in the water jetting. **Barriers** to prevent their access to any danger areas must be provided and maintained, together with **warning signs** complying with the Safety Signs and Signals Regulations.
- 36.6 Before commencing jetting the work area should be checked for any items vulnerable to damage and appropriate action (removal or provision of protection) taken. This precaution is of particular importance if asbestos may be present, as damage could lead to spread of fibres.
- 36.7 Apart from the normal operational procedures, plans for dealing with any foreseeable **emergency** should be drawn up and the operatives trained in how to deal with any problems encountered. When hazardous chemicals are being used, adequate **eye washing facilities** must be kept to hand and the site first-aider be on call. In the event of **accidental contact with the jet**, the medical staff should be informed that the injuries were due to water jetting, as there may be internal injuries arising that are not visible on the skin surface.
- 36.8 The equipment must adequately maintained and used in accordance with the manufacturer's instructions. Equipment should be given a simple **visual external examination** by the Foremen at the beginning of each shift and a more detailed external and internal **inspection by a competent person** every week it is in use. Only fully competent persons should carry out equipment repairs and maintenance. All inspections and maintenance should be recorded in the equipment **maintenance log book**.

37 Hygiene

- 37.1 The following precautions can protect your health:-
- Protect your skin – work safely and wear your protective gloves and clothing.
 - Cuts and grazes can allow bacteria into your body, causing an infection, so it is particularly important to wear protection, using waterproof dressings and impervious gloves / clothing.
 - Avoid direct contact with chemicals and waste etc., such as aggressive cleaning fluids, poisons and potentially contaminated items / ground etc. These can damage or irritate the skin and cause further health problems, such as infections and dermatitis, etc.
 - When using chemicals, poisons or working in a potentially contaminated area, keep your hands away from the nose, eyes and mouth. 'Bugs' or chemicals picked up onto the hands can find an easy way into the body through the eyes, nose and mouth.
- 37.2 **Always wash your hands:** Before eating and drinking etc., make sure your hands are thoroughly cleaned with soap, antibacterial gel, wipes and sprays, etc. Don't make it easy for 'bugs' or chemicals on your hands to get into your mouth.
- 37.3 **Avoid breathing in dusts and airborne 'bugs':** Some jobs can generate or disturb airborne 'bugs' and dusts which can be breathed into the lungs. 'Bugs' can reach deep down inside your lungs where they can cause permanent damage to breathing. To stop this happening:-
- **Avoid causing dust clouds:** Do not use compressed air for cleaning. Use vacuum cleaners or damp sweeping methods for cleaning floors.
 - **Use air extraction systems:** Make sure they are well maintained and kept in the best position to extract the dust.
 - **Wear your face-mask:** The last line of defence is wearing a suitable mask to cover your nose and mouth. It should be chosen by someone competent to ensure it gives the right amount of protection; well-fitting and

you should have had proper training in how to use it, when to use it and how to keep it in good condition; kept clean and well-maintained. Disposable masks should only be worn once, then thrown away.

- 37.4 **Keep your vaccinations up-to-date:** You should have current vaccinations for tetanus; polio. Some workers may have been vaccinated for hepatitis A, and depending on the type of work you do, you may have to be vaccinated for other possible illnesses.
- 37.5 **Is your health being regularly monitored?** The Company will evaluate employee's health to identify any problems at an early stage. This will be determined by the completion of a medical questionnaire and by a possible examination by an occupational health Doctor or Nurse.
- 37.6 **If you become ill:** Inform Management, as well as letting your Doctor know the type of work you do - it may be that your illness could be work related and will help determine the best treatment for you. Personnel should know of the risks from contact with rats' urine (known as Leptospirosis or Weil's disease). Refer to the Leptospirosis Section contained in this Policy.

38 Ladders – General Use and Precautions

- 38.1 **Ladder misuse is the cause of many accidents.** Ladders must be properly maintained and used only after careful assessment of the risks involved. In particular, a ladder should not be used as a place of work unless there is no reasonably practicable alternative, the work is of short duration and is such that it is within easy reach and can be carried out with one hand, the other hand being on the ladder for support. There is a Legal requirement to protect persons from falling, therefore persons working at height must not be put at risk from falling, Refer to the Work at Height Regulations 2005 as amended 2007.
- 38.2 **Portable ladders.** Ladders should be erected on a firm level base and the ladder supported by the stiles only. On sloping or uneven surfaces an adjustable safety foot can be used to ensure equal support; loose packing should not be used. The use of non-slip pads, caps or sleeves is recommended, especially on slippery floor surfaces. The head of the ladder should rest on a firm, solid surface. A ladder stay can be used where the support may otherwise be unsuitable, such as at a plastic gutter. The correct slope for a ladder is an angle of about 75° to the horizontal, i.e. one metre out for every four metres of height. All ladders between places of work must be secured against slipping and all ladders which are 3m or more in length must be secured, where possible, near the top. This is normally achieved by lashing or clamping each stile to a convenient secure anchorage. In certain cases the use of spreader arms attached to the top of the ladder may satisfy this requirement to secure, but it must first be established that the ladder, so fitted, cannot slip in the circumstances in which it is to be used. Where a ladder cannot be secured at the top, it must be secured near its base by means of guy ropes secured between stiles and stakes embedded into the ground or to other suitable anchorages. If possible, the feet of the ladder should be heeled in. If no other means of securing the ladder, to prevent slipping, can be used, then someone must hold it at the base whilst it is in use. This is only effective with short ladders. On long ladders an intermediate tie rope is necessary to prevent swaying. In use, a ladder should be placed so that there is space behind each rung for proper foothold. Rungs should be clear of grease, oil or other slippery substance. Only one person should be permitted on a ladder at any one time.
- 38.3 **Classification.** Timber and aluminium ladders are divided into three classes:-
- **Class 1**, the heaviest duty, is suitable for construction work where the ladder is subject to substantial loads.
 - **Class 2** is intended for lighter trades, such as decorating, where relatively low loads are involved.
 - **Class 3** is for light, e.g. domestic use.
- Class 1 and Class 3 ladders are covered by BS 1129 and BS 2037; Class 2 ladders by BS EN 131. It is important that the correct class of ladder is selected, choice being determined by the type of work to be carried out and the likely load to be imposed.
- 38.4 **Timber ladders.** Damage to timber ladders may be caused without leaving any visible sign of that damage great care must be exercised in handling timber ladders so that they are not overloaded or dropped from a height. Correct storage is necessary so that ladders do not warp or the rungs become loose. Ladders should be erected with the wire tie rods beneath the rungs, and wire stile reinforcement on the underside of the stile.
- 38.5 **Metal ladders.** Metal ladders and timber ladders with metal stile reinforcement should not be used where any electrical hazard exists.

- 38.6 **Suspended ladders.** When ladders are suspended they should be lashed at top and bottom so that they are equally supported on each stile. Long ladders will need additional ties in the length to prevent movement.
- 38.7 **Ladder towers.** Ladders used for gaining access will normally be timber pole ladders and should be erected in parallel rather than zig-zag pattern where more than one ladder is used.
- 38.8 **Extension ladders.** When using an extension ladder the overlap of any two adjacent sections should be as follows: Closed length of ladder less than 5m – 11.2 rungs 5m-6m – 21.2 rungs over 6m – 31.2 rungs.
- 38.9 **Access to and from ladders.** All ladders must extend above any landing place, or beyond the highest rung from which a man may be working, to ensure adequate handhold. A distance of 1.10m (5 rungs) is recommended. If this is not possible, then a nearby adequate handhold must be provided. Suitable access to a working place must be provided at the stepping-off point. Persons should not be required to climb over or under guardrails or over toeboards. Gaps in guardrails and toeboards must, however, be kept as small as possible. Where ladders rise more than 9m in vertical height, an intermediate landing place must be provided. Landing places must be fitted with a main guardrail at least 950mm above the platform and an intermediate guardrail (or other effective barrier) so that there is not an unprotected gap of more than 470mm in height. Where materials are stored on a landing place, toeboards at least 150mm high, must also be fitted. Wherever ladders pass through platforms, the openings should be no longer than is reasonably practicable and no more than 500mm in width, leaving sufficient platform width for access.
- 38.10 **Inspection of ladders.** Timber ladders must not be painted as the paint hides defects. Coating with a preservative and clear varnish is permitted. All ladders should be inspected frequently and the following points should be checked:
- Timber ladders for splits or cracks, splintering, warping or bruising. Metal ladders for mechanical damage;
 - Rungs for signs of undue wear or movement. No rungs should be missing;
 - Wedges and tie rods for tightness. Metal reinforcement to stiles for correct position;
 - Feet for splitting and fraying. Timber or plastic inserts to metal ladders for wear and correct position;
 - Ropes for wear, fittings for security and pulleys for freedom.
- If a ladder cannot be properly repaired, it must be scrapped.

39 Control of Lead At Work

- 39.1 **The exposure of persons to various forms of lead during their normal occupation** has long been recognised as a health risk. Early Legislation was concerned with hazards arising from lead in individual industries and with protecting, in particular women and children. Current Legislation, The Control of Lead At Work Regulations 2002 is aimed at protecting those persons who may be exposed to significant quantities of lead from various sources in the industry. The Regulations are accompanied by an Approved Code of Practice and additional Health and Safety Executive Guidance.
- 39.2 **The purpose of a hygiene facility when working with lead** is to ensure that persons who have been exposed to lead during their work are able to clean themselves adequately before either returning to other tasks on the site or going home. These facilities will range from the use of an existing wash hand basin with nail brush and towels, to a purpose designed hygiene unit complete with changing areas and shower facilities.
- 39.3 **In circumstances where exposure to lead has been slight and there will be little contamination of overalls,** for example when carrying out wet sanding operations, the hygiene facility should consist of the following:-
- Wash hand basin;
 - Soap;
 - Nail brush;
 - Towels;
 - Suitably labelled polythene bags to receive overalls and soiled towels for laundering or disposal;
 - Disinfectant for washing respirators;
 - Replacement filters for respirators.
- 39.4 **When undertaking work which may give rise to high concentrations of lead in air,** but for short durations such as welding of steel with lead based paint, the hygiene facility should also incorporate a shower. For such short term work it would be reasonable to use existing showers within the site, but showers should be segregated for the use of lead decontamination and should be thoroughly cleaned before being returned to normal use. Where such facilities are not available, showers should be provided.

- 39.5 For extensive work giving rise to high lead in air values such as demolition of structures with lead based paint on the steel and it is not possible to allocate the existing changing facility with showers, it will be necessary to establish a purpose built hygiene unit. All facilities provided for work with lead must be kept clean by hosing or washing at least on a daily basis.
- 39.6 The effects of exposure to lead in the form of lead dust and lead fume arise when that dust or fume is inhaled or ingested. The lead is then absorbed through the lung and to some extent through the gut and is transported around the body in the blood stream. Continued exposure can cause a build-up of lead in the body and the following effects:-
- Headache;
 - Fatigue;
 - Constipation – becoming severe;
 - Weight loss – eventually becoming severe;
 - Abdominal pain;
 - Anaemia;
 - Weakness of extremities due to damage to the peripheral nerves (wrist drop);
 - Possible brain damage at high concentrations;
 - Lead line of the gums – this is a blue line where the gums meet the teeth;
 - Effects on the reproduction system of females giving rise to potential abortion or stillbirth.
- Exposure to tetraethyl lead can give rise to the above symptoms, together with psychosis, mania, convulsions, insomnia, nightmares and hallucinations.
- 39.7 Before any work is carried out which may expose employees to lead, a comprehensive procedure describing the risk and the appropriate precautions must be established. Such procedures should be documented so that they may be readily communicated to employees and any person who may have responsibility for overseeing the work. These procedures should clearly identify the following:-
- A description of the works;
 - The likely level of exposure to lead in the probable duration of the works;
 - The nature of personal protection which must be worn;
 - The location and nature of the hygiene facility;
 - The extent of decontamination required for particular work.
- 39.8 For Contractors who are working extensively with lead, procedures would normally contain standard clauses. These clauses would include the following requirements for employees:-
- Not to eat, drink or smoke until they have thoroughly decontaminated themselves;
 - To report for medical examinations as required;
 - To report any of the symptoms outlined above immediately;
 - To report any defect in any item of personal protection or hygiene facility;
 - To report to the Site Managers / Supervisors any matter contained in the procedures which they do not understand or have not received sufficient training to undertake.
- 39.9 In order that the employer may verify that the procedures which have been established for a particular task are adequate, air monitoring should be undertaken to ensure that the projected levels of lead in are accurate. Where a comprehensive picture has been established as a result of access to air monitoring figures for similar work, existing procedures may be applied.
- 39.10 Persons who could be exposed to lead must be given comprehensive training to ensure that they understand the risks to their health, the precautions which should be taken and the means by which to report any defects in equipment. An explanation should be given of the functions and use of all items of personal protection, in decontamination procedures and the need for sound hygiene such as refraining from smoking and taking drink whilst contaminated with lead. It is important that operatives understand the nature and benefits of medical surveillance and the need to report on time for any medical examinations. Operatives should also be given information on the nature of air monitoring and be privy to the results of any such monitoring which might affect them.
- 39.11 Each employee working with lead should receive a copy of the leaflet ‘Lead and You’. This should be in the possession of the employee before he starts work on lead for the first time and subsequent copies should be made available should they be required.

40 Leptospirosis (Weil’s disease)

- 40.1 Human leptospirosis can be a difficult infection to describe, as the symptoms can vary dramatically between patients. Some symptoms are extremely common, but only a small number of patients will experience

the severe life-threatening illness known as Weil's disease. The severity of the infection depends on the age and general health of the patient, plus the strain of bacteria involved and the number of bacteria that entered the patient's body.

- 40.2 The infection usually affects the whole body and causes a sudden fever. In mild cases it lasts a few days, following a pattern similar to flu but often in two phases - a period of illness lasting a few days, then a slight recovery, then a second period of illness. In mild cases the second phase lasts a short time and the patient recovers, but in severe types the illness develops and progresses rapidly, leading to organ failure and often death if not treated with intervention and support.
- 40.3 **Incubation time:** From the time you were infected with the bacteria, there is a period where it has to reproduce enough to cause illness - called the 'incubation time'. With human leptospirosis this is typically 3 to 21 days, with most patients developing illness after about 3 to 14 days. It does not usually take more than 28 days, but in rare cases very long incubation periods have been reported. It generally cannot show illness in less than 24 hours unless the volume of bacteria taken into the bloodstream was massively larger than normal.
- 40.4 **First stage:** Leptospirosis starts suddenly, with a severe headache, redness in the eyes, muscle pains, fatigue and nausea and a fever of 39°C (102°F) or above. There is sometimes a red non-blanching pinprick rash on the skin, similar to that seen in meningitis. Young children can be tired or distressed and may show an aversion to bright light. The severe headache is almost always present and can be incapacitating. Nausea may or may not cause vomiting. Muscle pains can be extreme and are often particularly bad in the calf and back areas - muscles will be sore to move and to touch. A rapid pulse is also common in the first few days.
- The skin rash develops in the first one or two days and often the skin is warm and pink just beforehand, with the patient complaining of feeling warm. Rashes can occur anywhere but in some cases are confined to local regions of skin such as the front of the legs. Sometimes they will be itchy, but rashes are only seen in about 30% of all cases so the lack of any rash is not too significant.
 - Psychological changes are often seen with patients feeling depressed, confused, aggressive and sometimes psychotic - with schizophrenia and hallucinations, personality changes and violence.
 - This phase lasts between three and five days, then the patient (temporarily) recovers. During this phase the bacteria are active in the patient's bloodstream (so it is sometimes called the septicæmic phase) and so can be detected by lab tests.
- 40.5 **Second stage:** In many mild cases this does not happen at all, but where the infection is more severe, the patient enters a second phase of illness after a few days of apparent recovery. The initial symptoms and fever return, accompanied with chest and abdominal pain, some renal problems and psychological changes. Increased symptoms of meningitis are often seen with neck stiffness and vomiting, but in most mild cases the patient will not suffer kidney or liver failure and will eventually recover. There may be a sore throat and dry cough, with a little blood. With treatment, mild cases will recover within a few weeks.
- During this second phase the bacteria are only really active in the tissues of the patient, and so can be difficult to find in the bloodstream, making lab tests a problem. This second phase is usually called the 'tissue' or 'immune' phase.
- 40.6 **Severe infections:** In cases of particularly virulent serovars or patients with poor health, the infection follows a different pattern and the patient develops very rapid and severe symptoms from the start, without much of a remission. Symptoms are the same as for the mild type but more pronounced, and multiple organs are damaged - liver and kidney failure can occur within 10 days, leading to jaundice and death if not treated. Haemorrhages are common (including bleeding from the mouth, eyes and other mucous membranes), plus infection of the heart and significant internal bleeding. Dialysis is the most important intervention and the patient will require antibiotics and hospital admission in order to stand a chance of survival. Death, when it occurs, is usually due to heart, liver or respiratory failure. Severe infections are often called 'icteric' because of the presence of jaundice and these are the only cases that can really be called Weil's disease.
- 40.7 **Recovery:** Patients with mild infections recover quite quickly, so are usually feeling okay after a few weeks, but they can suffer from fatigue and depression for a while and may be at risk from persistent infection. Patients with the more severe infections can take several weeks to recover, as removing the bacteria is not the problem - they will have caused damage to the body's tissues that take time to heal. Although some patients can die, with medical treatment the chances of survival are good - though patients that have had a severe illness may suffer long-term symptoms due to organ damage that cannot completely heal. Psychological changes (mood swings, depression, and psychosis) are common for a few months following recovery.
- 40.8 **Immunity:** Patients who survive infection will develop some immunity, but only to the serovar that infected them and some closely-related ones. They can still be infected by other strains, and the immunity lasts no more than ten years in humans. There is a very small possibility of auto-immune reactions to the bacteria if patients are re-infected, but the main concern of patients is that they can suffer from medium-term symptoms due to persistent infection which are almost impossible to treat.

- 40.9 **Protecting employees in the workplace:** To protect people at work who have an elevated risk of exposure to leptospirosis the employer should begin with removal of the hazard (where possible), followed by protective equipment if it is not possible at this time to protect employees by giving them medication or vaccination.
- 40.10 **Note for European workplaces:** *Leptospira interrogans* is a Class 2 pathogen under EU Directive 93/88/EEC and where it is being used as part of research, appropriate containment measures must be enforced. However, as there is no human vaccine, the requirements of Article 14(3) do not apply.
- 40.11 **When exposure to the "wild" bacterial population is incidental to a workplace task,** measures to limit the risk to employees are still required, however it is clearly not possible to enforce laboratory-type containment and barrier systems and as the bacteria are not packaged as 'a product' there will be no material data safety sheets, labelling or transport rules to follow.
- 40.12 **Hazard removal:** In simple terms, where the bacteria can be eliminated from a workplace they should be - so for example pest control and building hygiene are important first steps. This is often difficult where the workplace cannot be controlled, but measures should be put in place to at least protect eating areas and water supplies. Where the work itself involves exposure to the bacteria, staff education is paramount. Facilities should be on hand to allow workers to disinfect their skin should they be accidentally exposed and advice given on the reasons for infection, the symptoms to look out for and what action to take should an accident occur.
- 40.13 **Personal protective equipment & hygiene:** For general activities, protection of broken skin using waterproof dressings or clothing is the most important factor, but where there is a risk of aerosol spray (for example when pressure-washing), then eye and face protection is advised to prevent liquid droplets from entering the mouth or eyes. Goggles and a simple paper dust mask will be adequate in most cases. Waterproof overalls are advised to be worn in conditions where it could be possible for clothing to be contaminated. Non-disposable waterproof overalls should be disinfected after use. Employees must be provided with facilities to clean and disinfect themselves, which should include soap, antibacterial gel, wipes and sprays, etc., so they can remove any contaminant from their skin after an accidental exposure.
- 40.14 **For situations where workers may accidentally immerse themselves** (by falling into water) there is no reasonable way to prevent them inhaling and ingesting some water, so protective measures should be used to prevent the fall in the first place - barriers, covers or fall protection harnesses. It is important to remember that water which is likely to contain leptospira is equally likely to contain many other harmful bacteria, viruses or chemicals.
- 40.15 **Human-to-human transmission:** An infected human will shed leptospores in their urine for a period both during and after the illness and so can present a risk of infection to others but only in a specific way. General social interactions are perfectly safe, as the bacteria are not airborne. Saliva is not considered a high risk, as the bacteria cannot tolerate the acidity of the human mouth for very long, so although we advise against it the risks from sharing food, cutlery or cups is very small. Items that can dry between uses, such as towels, are also of extremely low risk once they are dry - but handling very wet bedding, blood-soaked clothing or similar can present a risk.
- 40.16 **The presence of bacteria in the urine means that leptospirosis is a sexually-transmitted infection,** since during intercourse there will be the opportunity for small volumes of urine to exchange between partners. There are several documented cases of human infection via sex, but insufficient data to show if a particular sexual practice is more or less risky (though any event where urine can come into contact with damaged skin is hazardous).
- 40.17 **In humans, viable bacteria will be present in the urine** after about 2 days from the exposure and they will usually remain present for a few weeks after illness, but there are recorded cases of humans shedding the bacteria for up to 11 months. Treatment with antibiotics can reduce the symptoms and also reduce this shedding time, but in most patients their urine contains detectable bacteria for many weeks after clinical recovery. Advice is to assume some risk from urine for up to 12 months after the acute illness has faded.
- 40.18 **The risks from direct blood transfer are actually less of an issue,** as the bacteria are present in the blood for only a short time (typically they appear in noticeable levels on day 1 after exposure) and reduce on or before day 10 of symptoms. It does remain a concern for medical staff handling samples and treating injuries, but due to the rapid death of leptospira when dried the usual blood-related hazards such as needle-stick injuries are far less important than when dealing with viruses. Pregnant mothers may pass the infection on to their foetus.

References

The Leptospirosis Information Centre – www.leptospirosis.org
 Leptospirosis – are you at risk? INDG84 – www.hse.gov.uk

41 Lifting Operations

41.1 Lifting operations cover a wide scope of appliances and lifting gear which must comply with The Lifting Operations & Lifting Equipment Regulations 1998, The Provision & Use of Work Equipment Regulations 1998, The Health & Safety At Work Etc., Act 1974, Work at Height Regulations 2005 as amended 2007 and The Notification of Conventional Tower Crane Regulations 2010 (Note: the Regulations that set out the duty to notify the use of conventional tower cranes on construction sites to HSE have been revoked and the associated Register closed down with effect from 6 April 2013). There are also British Standards, HSE Approved Codes of Practices and Guidance Notes which should be adhered to.

41.2 The Lifting Operations & Lifting Equipment Regulations 1998 cover many different aspects relating to the safety of lifting operations and equipment - below are some of the main issues:

Reg. 4	Strength & Stability	Reg. 9	Thorough Examination & Inspection
Reg. 5	Lifting Equipment for Lifting Persons	Reg. 10	Reports & Defects
Reg. 6	Positioning & Installation	Reg. 11	Keeping of Information
Reg. 7	Marking of Lifting Equipment	Reg. 12	Exemptions
Reg. 8	Organisation of Lifting Equipment		

41.3 **Lifting Appliance Introduction:** There are many different types of lifting appliances, for example, Tower Cranes, Telescopic Mobile Jib Cranes, Hoists, Forklifts, Excavators, Gin Wheels and Pulley Blocks, etc., all of which must be designed, erected, maintained and operated by a competent person, i.e., someone who has been properly trained and is experienced. Appropriate Operation Manuals and Safety Data information must be supplied with the appliance by the supplier and be available to the Temporary Works Co-ordinator, the appointed persons and operators.

41.4 **Lifting Gear Introduction:** The severe usage to which lifting gear is often subjected, together with the serious consequences to life and property which may result from any failure, make it important that maximum attention be paid to the correct use and maintenance of this equipment. This can best be achieved by:

- Good design and workmanship (by using lifting gear complying with an appropriate British Standard),
- Careful testing after manufacture or repair,
- Detailed planning and correct and careful use and storage of the lifting gear,
- Regular, careful inspection and maintenance during the life of the gear.

41.5 **Lifting Plans:** A safe system of work must be in place to ensure that lifting operations are carried out safely. Management must ensure that competent appointed persons evaluate the requirements for a project / site to ensure that hazards and risks are minimised and that all appropriate arrangements and safeguards are in place. These arrangements should be checked and co-ordinated by the Temporary Works Co-ordinator.

41.6 **Safety Inspections of Lifting Appliances:** After the erection of a lifting appliance, appropriate tests and inspections must be carried out prior to use and thereafter on a weekly basis, or after any alteration, repairs and bad weather etc. These inspections must be carried out by a competent person and a record kept on site.

41.7 **The requirements for Banksman / Slingers** include the general principles of slinging, the capacity to select lifting gear suitable to the load, a knowledge of safe working loads at various crane radii, agility and physical strength to handle lifting gear, and an aptitude for judging distance, height and clearance.

41.8 **Duties of the Banksman / Slingers** include ensuring that the lifting gear is sound and correctly used and that the load is properly secured.

41.9 A large proportion of the accidents that arise from lifting operations stem from faulty slinging, overloading of slings, and trapping of persons between load and other objects - items over which the crane driver has little or no control. Management should accept that the duty of the banksman / slinger is not one that can be undertaken by untrained persons.

41.10 **Quality of lifting equipment:** It is of the utmost importance to ensure that any lifting equipment put to use is of the correct quality. To that end the equipment must be manufactured in accordance with the relevant British Standards listed at the end of this section and, where applicable, have current test and examination certificates (see following paragraph).

- 41.11 Some lifting tackle may also be subject to weekly inspection; in any event it must be inspected prior to being used to ensure that it is not damaged or defective.
- 41.12 **Statutory testing and examination:** Most lifting equipment is subject to statutory test and examination which must be carried out by a competent person. This would normally be undertaken by an Engineer Surveyor or similarly qualified and experienced person.
- 41.13 **Marking of lifting equipment:** It is important to inspect the markings on an item of lifting equipment before it is used. It will be seen that there are three sets of numbers; the manufacturer's identification number, the owner's identification number and the safe working load. These numbers are normally stamped onto the master eye or ferrule of slings and the body of eye bolts, shackles etc. Alternatively, metal tabs which bear this information may be fitted to slings. On web slings the information may be on a label stitched into the sling, normally at the eye, and they may be additionally colour coded to identify SWL.
- 41.14 **Multi leg slings will be marked with one safe working load** for angles between legs (the included angle) of 0°-90°, e.g. SWL 5.4t 0°-90°. The maximum marked included angle must not be exceeded, and the SWL is not increased at any lesser included angle. For specifically planned lifts, the included angle may be increased to a maximum of 120°, in which case the sling would be marked with a further SWL at 90°-120°.
- 41.15 If a sling is found to be marked SWL 5.4t at 90°, this indicates that the SWL varies with the included angle and, in a factory situation; the user would refer to a chart listing the SWL at 0°, 30°, 60°, 90° and 120°. However this system is not used for general lifting operations on site and, in the construction industry, such a sling would be treated as if marked SWL at 5.4t 0°-90°. Metric units (tonnes) are normally recognised by the use of a "t" and where appropriate a decimal point. Imperial units are normally specified in tons (T) and cwt. Lifting gear which is used in pairs, e.g. collar eyebolts, should be identified as such normally with an "a" and "b" suffix to the identification number and the SWL quoted "X.t the pair".
- 41.16 **Chain slings:** Due to the multiplicity of grades of chain available, a given chain diameter will give rise to varied SWL's. For this reason, it is important to refer to the SWL marked on the sling.
- 41.17 **Repairs:** Chains derive their properties from close control of materials and the heat treatment of them. Proper heat treatment and testing are essential features of any repair. Arc welding cannot provide the necessary conditions and thus it is impossible to effect any repairs on site. Suspect chains should immediately be put out of use for further examination by a competent person.
- 41.18 **Defects:** The most common defect to be found with chains in service is that of stretching - and this includes stretched or distorted links, rings or hooks. Other regular defects are (a) cuts in the surface through bending round sharp-edged objects - these cuts (or nicks) reduce the strength of a link out of all proportion to the depth of the cut (b) hooks opened out, most frequently due to lifting on, or near, the point as the result of using end links, rings or shackles that are too small and which therefore cause the full load to be borne by some part of the hook not in line with its support.
- 41.19 **Wire rope slings:** Wire rope is manufactured from a number of single wires which are twisted together to form a strand. There can be any number of single wires in a strand and the single wires are laid round a core of fibre or steel. To make up wire rope, the strands themselves are then twisted round a core of fibre or steel. Obviously there can be great variety in the arrangement of wire or strands. (BS302 refers).
- 41.20 **The two wire ropes most commonly used for lifting purposes** are known as (a) 6 x 19 - six strands of 19 wires each (b) 6 x 37 - six strands of 37 wires each. Of the two, the 6 x 37 is the more flexible.
- 41.21 **The safe working load of a wire rope** is determined from its guaranteed breaking load. In all cases, the manufacturer's own recommended SWL should be strictly followed.
- 41.22 **Making wire rope slings:** When a sling is manufactured, wire rope is sometimes bent around at the end to form an open eye, the free end being fixed back in some way to the main length. "Soft" eyes, formed in this manner, are often used for convenience, but, in use, they become flattened round the eye and suffer considerable wear through friction. They should therefore be frequently inspected and, at the first sign of damage, renewed.
- 41.23 **By far the better method** is for the eye to be formed by bending the rope round a thimble which takes the rub whilst the sling is in use and which prevents the rope itself from being damaged.
- 41.24 **Having formed the eye, fixing back the free end** is achieved by (a) splicing (b) using a ferrule or socket.

- 41.25 Ferrule or socket eyes are commonly used. When properly made, they are at least equal in strength to a conventional splice. They are neat and eliminate danger from wire ends sticking out which sometimes arises when a splice has been continuously used. (Ferrules or sockets should conform to BS3865).
- 41.26 Whether hand or mechanically spliced, slings must be tested, marked with means of identification and marked with the SWL.
- 41.27 Bulldog grips: Bulldog grips must not be used to make up slings, which must be properly manufactured and tested.
- 41.28 Defects: Efficient examination of wire rope slings requires considerable experience before sound judgement can be made. The following should always be considered:
- 41.29 Kinks usually caused by use around sharp bends can give rise to serious weakening of the rope. Wear: a wire rope is unserviceable if wear on a rope results in flattening such that there is a 10% reduction in rope diameter. Where this results in broken wires, the criteria in the following paragraph should be applied. Reduction in rope diameter may be caused by other than surface wear, but this will still warrant rejection.
- 41.30 Broken wires: it is a statutory requirement that a rope must be taken out of use if the number of visibly broken wires in any length of 10 diameters exceeds 5% of the total number of wires in the rope. Thus a 6 x 19 rope, which has a total of 114 individual wires, cannot have more than 5 broken wires in any 10 diameter length. Broken wires are dangerous to hands. These wires should be broken off, on or below the surface, by bending backwards and forwards (cutting always leaves a raised sharp edge). It is a wise precaution to replace slings long before the permitted broken wire limit is reached.
- 41.31 Fibre rope slings: Only properly manufactured fibre rope slings may be used. Lengths of rope found on site must not be adapted for slinging purposes. The strength and other properties of a rope will vary considerably with the material from which it is made. For example, a sisal rope will have only about one-third of the strength of a polyamide (nylon) rope of the same diameter. Manufacturers should be consulted to ensure that the sling's performance will be appropriate to the application.
- 41.32 The use of the rated strength of the rope as a measure of its performance is subject to reservations, the most important of which concerns loss of strength in knotting and splicing. A well-made splice reduces rope strength by some 10%, while some commonly used knots may reduce rope strength to less than half the unknotted value. It is thus quite inadequate to relate the rope strength directly to the value of the load, and substantial safety factors - which will vary according to conditions and may be as high as 12 - should be allowed. It is partly for these reasons that the SWL of a fibre rope is not quoted, but breaking strain is specified relative to a particular rope circumference. There are, however, some fibre ropes that do bear the SWL on a tag and their use in preference to the others is strongly recommended. It is important that the user fully understands the conditions to which that SWL relate.
- 41.33 Fibre rope slings may be covered in a coloured protective sheath. The colour of this sheath will often indicate the SWL.
- 41.34 As all fibre ropes are very prone to mechanical damage, they should be checked before each use and generally treated with great care.
- 41.35 Natural fibre ropes are subject to rotting and chemical attack. Man-made fibre ropes do not rot and their resistance to chemical attack may be considerable. Polyamide (nylon) rope has a high resistance to alkalis but is attacked by acids. The reverse applies to polyester (terylene) ropes. Polypropylene ropes are highly resistant to both alkalis and acids but are weaker than ropes of the same size in the other two materials.
- 41.36 Man-made fibres may lose strength on prolonged exposure to sunlight and checks should be made with manufacturers who are often able to supply ropes treated so as to inhibit this form of degradation.
- 41.37 It is important that the accepted rules for care and maintenance of ropes (and indeed of other fibre-based components) are followed. Guidance on these is published in the British Standards covering the ropes (e.g. BS 4928).
- 41.38 There is a tendency to accept the word "nylon" as covering all man-made fibres, which of course is wrong. Nylon refers to a specific class of material and the use of, for example, a polypropylene rope under the impression that its strength is that shown in a table of data for nylon could be dangerous.

- 41.39 **Flat lifting slings:** A flat lifting sling gives a breadth of bearing to a load and therefore the risk of damage to it. Three main types are in use:
- a woven material made of an appropriate man-made material, the end fittings being sewn in
 - (BS 3481 part 2),
 - Formed from wire mesh, sometimes covered with a plastic material (BS 3481 part 1).
 - Formed from plaited wire rope or from a number of panelled wire ropes, secured between the end fittings. The panelled wire version is sometimes covered with plastic material.
- 41.40 **Slings made from woven material** should be regularly checked for cuts, excessive wear or fraying. Blisters in the covering of wire mesh types are a sure indication that the mesh has been broken underneath.
- 41.41 **In use, slings should be protected from sharp edged loads** by sacking or similar padding. It is most important that all lifts should take place vertically, since any side-pull tends to overload the edge of the sling and risk tearing it; it also tends to move the sling inwards over possibly rough edges and risk cutting it.
- 41.42 **Hooks:** The Lifting Operations & Lifting Equipment Regulations 1998 require that every hook used for raising or lowering, or as a means of suspension, shall be either provided with an efficient device to prevent the displacement of the sling or load from the hook, or, of such shape as to avoid, as far as possible, the risk of such displacement.
- 41.43 **A load can become displaced** by the hook falling back after it has been set through an eye or hole in the load to be lifted, or, particularly in the case of multi-leg slings, when the load is at rest. Loads can also become displaced if the point of a hook catches against something during the lift, e.g. a girder or block of stone, causing the hook to open out or tip over.
- 41.44 **The best hook designs** therefore either have the point of the hook turned in or protected in some other way. The “C” and Liverpool are admirable examples. Where safety catches are fitted, the hook must be immediately withdrawn from use if a defect occurs.
- 41.45 **Loads should only be applied to hooks at the place specifically designed to take them**, i.e. the bed of the hook. Loading at any other place, e.g. the point can only result in greatly overstressing the hook, causing it to open or even break. To avoid overloading the point of any hook, all lifting rings or holes should be large enough to take the whole hook and where, for example, flat plates are to be raised; only properly designed plate clamps should be used.
- 41.46 **Particular attention must also be drawn here to the requirements of Regulation 37** because it is frequently overlooked. This regulation requires that all rope or chain slings be properly attached to the crane hook by ring; link or shackle of adequate strength (so that unstable conditions resulting from the sling slipping over the hook surface cannot arise). It also requires double or multiple slings used for raising or lowering to have the legs connected by a ring or shackle. This is to prevent overcrowding of the crane hook by too many links or rings which could easily cause excessive strain.
- 41.47 **Eyebolts:** There are various methods of marking the SWL of eyebolts and the user must be fully aware of the particular criteria applying. Where hooks will not freely locate into the eye or link of the eyebolt, a shackle should be used. Eyebolts, which should be to BS 4278, are of three kinds:
- 41.48 **Dynamo Eyebolt:** has a large eye and relatively small collar. It is designed for vertical lifting only. Ignorance of this has caused many accidents.
- 41.49 **Collar Eyebolt:** has a smaller eye, with a large collar, machined on the under face and relieved to allow for good radius between collar and shank; the end of the thread is run out. It can be used for angular loads in the plane of the eye. To obtain the full strength of the eyebolt, the collar must be tight down on its seating. To obtain these conditions, a considerable amount of careful fitting is required.
- 41.50 **Collar Eyebolt with Link:** overcomes these difficulties because it takes a higher angular loading than other types and allows the pull to be taken in any direction no matter which way the eye lies when it is tightened down.
- 41.51 **Shackles:** Shackles are widely used for making connections in slinging. They should be matched to the grade of chain in use. They must be tested, certificated, marked with their SWL and inspected prior to use.
- 41.52 **The pin is a separate part of the shackle** but belongs to it and there is always a great risk that the wrong pin may be used, or an ordinary bolt inserted if the proper pin has been lost. The greatest care is always necessary to ensure that only the proper pins are used and that they are fully tightened.













- 41.53 In circumstances where the load may rock on a shackle pin (e.g. with brick cages) the pin must be provided with a locking device to ensure that it does not unscrew itself
- 41.54 **Proprietary lifting equipment:** Many types of lifting equipment, specifically designed for a given operation, are readily available (e.g. beam clamps, lifting dogs, etc.). Reference should be made to manufacturers for their availability and suitability.
- 41.55 **Types of sling:** The following are some of the more common slings in use in the construction industry:
- 41.56 **Single leg sling with eye and hook:** Single leg slings would normally be used on loads with a single point of attachment with the sling in a vertical plane.
- 41.57 **Single slings with eye at both ends:** Choke sling or Reeving sling. This is a single leg sling with the eye at one end large enough to permit the other eye to pass through it to form a choke hitch and may be used singly or connected to each leg of a multi-leg sling.
- 41.58 **Two leg sling:** This type of sling will be used when two lifting points are required. The angle between the legs of the sling should not exceed 90°.
- 41.59 **Three leg sling:** The sling may not be used when the angle between any leg and a line vertically below the centre of the master ring exceeds 45°.
- 41.60 **Four leg sling:** The angle between legs on a four leg sling is measured between diagonally opposite legs and should not exceed 90°.
- 41.61 **Chain shortening clutch:** These are used on multi-leg slings to permit the shortening of one or more legs. This will enable the hook to be placed over the centre of gravity in eccentric loads or will permit a load to be lifted at an angle. It is critical when using a chain shortening clutch that the loaded part of the chain is placed so that it comes out of the bottom of the clutch. Use of chain shortening clutches is the only permitted method of shortening chains. Bolts, knotted chains, etc., must not be used.
- 41.62 **Spreader beams:** This is a device which is used when headroom is restricted and the wide spacing of lifting points would require a long sling to maintain the 90° included angle. Alternatively, they are used when the load will not sustain the compressive force applied by slings used at an angle.
- 41.63 **Endless sling:** These are commonly used in the construction industry in the form of web slings, or round slings, and reference must be made to the manufacturer's specification in relation to the SWL in various slinging applications.
- 41.64 **Sling attachment:** The attachment of a sling to a load will normally fall into one of four categories. Straight lift, Basket hitch, Choke hitch, Wrapped Choke and Basket Hitch. Note: The use of a sling in a choke hitch will cause a reduction in the SWL of 20%. This will not apply to slings designed to be used as a choke hitch e.g., Reeving slings.
- 41.65 **Sling selection:** The following are the basic precautions which must be taken:
- Weight of the load to be lifted. The weight of routine loads of pipes, timber, steel, etc., can often be established from the manufacturer, or supplier, from delivery tickets or by calculation. Where weights of loads cannot be determined, e.g., pile extraction, they must be estimated by a person of experience in such matters,
 - The load dimension. The size and shape of the load must be considered together with any lifting points which may be available. An assessment of the centre of gravity must also be made to ensure the crane hook is placed above that point.
 - The positioning of the load. Many loads may have to be placed at an angle or have one face resting directly on a surface which would prohibit removal of the slings if the more traditional "wrap around" method of slinging was used.
 - Headroom. If lifts are to take place in areas of restricted headroom, then spreader beams may be more appropriate than other types of slinging methods
 - Method of detachment. It is not uncommon in building and civil engineering, particularly when slinging structural members, that access to the load when it has been lifted into position is extremely hazardous and consideration should be given to the use of quick release shackles etc.
- 41.66 **Slinging precautions:** The following are the basic precautions which must be taken:

- All hooks must be of sufficient size to permit the load to be taken on the bed and not the tip.
- Where less than the full numbers of legs of a sling are in use, the SWL will be reduced accordingly. All unused legs of the sling must be hooked back to the eye. This will prevent the hook swinging where it may strike personnel or get caught up.
- The hook must be placed over the centre of gravity of the load to avoid the load swinging; it is important that loads are not lifted when persons are between that load and a fixed object.
- The slinger must ensure that the slings do not pass directly over sharp edges such that they may be damaged. To that end, packing is often required to provide a suitable radius around which the sling may be safely placed.
- Sling hooks must be positioned facing outwards from the crane hook, unless specified otherwise for a particular lifting operation.
- Before lifting the load, the suitability of the landing must be established together with the quality of any chocks, battens, etc., on to which it is to be placed.
- Consideration must be given to the use of tail ropes, to control the movement of the elevated load.
- Clear signals must be given as recommended by the Building Employers Confederation and Federation of Civil Engineering Contractors.
- The load must be checked to ensure that it is “free” and not trapped in any way. This would not necessarily apply in pile extraction and certain demolition operations.
- The load must be lifted slightly and checked for stability and angle.
- The load should not be directed over any person’s head. Slingers should always wear a safety helmet, safety boots and gloves and be clearly identifiable.

41.67 Weather conditions and environment: It should be noted that slings may suffer a reduction in SWL in excesses of heat and cold. These would not normally be experienced in the natural environment in Britain, but may be found inside certain plants where construction work is being carried out. Consideration should also be given to the corrosive nature of any environment in which slinging is to take place.

41.68 Storage of lifting equipment: At the end of the lifting operations, lifting equipment must be placed under cover in a designated store. Slings should be hung up on a rack and other lifting gear placed off the floor to avoid becoming damaged.

41.69 Attachment of pulley blocks and gin wheels: It is most important that all portable lifting appliances, e.g., chain blocks, are strong enough for the job and are securely fixed; also that the structure to which they are fixed is strong enough to hold them. Perhaps the most common method of fixing is to pass a chain sling round a convenient joist. This is acceptable, provided that the sling is strong enough and that any sharp corners are suitably packed. It must be remembered that any sling used for this purpose must be properly certificated and that, in any such fixing arrangement, angles may well arise which reduce the capacity of the sling. It is highly dangerous practice simply to use odd pieces of chain. Fixing clamps are more convenient and much safer. They can be fitted very quickly and are so designed that they cannot come off whilst the hook of the lifting appliance is in position. When securing the simplest of lifting appliances such as a gin wheel, it is imperative that the point of attachment is of adequate strength and that accidental displacement of the device is prevented. Gin wheels must be fitted with appropriate hook adequately secured to the rope.

 <p>DANGER – Emergency stop Both arms point upwards with the palms facing forwards</p>	 <p>START – Attention Start of command Both arms are extended horizontally with the palms facing forwards</p>	 <p>STOP – interruption End of movement The right arm points upwards with the palm facing forwards</p>
 <p>END – End of operation Both arms are clasped at chest height</p>	 <p>RAISE The right arm points upwards with the palm facing forward and slowly makes a circle</p>	 <p>LOWER The right arm points downwards with the palm facing inwards and slowly makes a circle</p>
 <p>VERTICAL DISTANCE The hands indicate the relevant distance</p>	 <p>MOVE FORWARDS Both arms are bent with the palms facing upwards and the forearms make slow movements towards the body</p>	 <p>MOVE BACKWARDS Both arms are bent with the palms facing downwards and the forearms make slow movements away from the body</p>
 <p>RIGHT – to the signalman's The right arm is extended more or less horizontally with the palm facing downwards and slowly makes small movements to the right</p>	 <p>LEFT - to the signalman's The left arm is extended more or less horizontally with the palm facing downwards and slowly makes small movements to the left</p>	 <p>HORIZONTAL DISTANCE The hands indicate the relevant distance</p>

41.70 The series of crane signals recommended by the Building Employer's Confederation and Federation of Civil Engineering Contractors. The signaller should stand in a secure position where he can see the load and can be clearly seen by the crane driver. It at all possible, he should face the driver. Each signal should be precise.

41.71 Slewing areas of plant: Slewing areas must be respected for their potential dangers. In the planning stages of a Contract, the area in which plant is required to work should determine the method of work and what plant would be best suited to the site conditions.

- 41.72 One of the most important safety factors regarding plant with slewing motion, i.e., excavators, cranes, etc., is the clearance between the slewing area of the plant and obstructions, e.g., buildings and walls etc.
- 41.73 Where it is not possible to achieve a safe clearance from the radius of the slewing motion of plant, adjacent structures and obstructions, the area must be completely guarded off (preventing access to everyone) and 'Danger - Keep Clear' signs displayed.
- 41.74 The safe clearance for the general public is the standard width of a pavement.
- 41.75 The safe clearance for site operatives should be not less than 1 metre.
- 41.76 In general public areas, e.g., where the site is not completely fenced off from the general public, the slewing area must be completely guarded off.
- 41.77 'Danger - Keep Clear' signs must be displayed on all slewing corners of plant.
- 41.78 The slewing areas of plant should be contained within guarded off working areas. In some situations, this may not be possible, e.g., where a road has to remain open for the access of traffic and the slewing parts of the machine encroaches the road open to traffic due to inadequate road width sufficient safety measures must be deployed to safeguard road users and to assist the Plant Operator to prevent any risks.

References

Legislation

Lifting Operations & Lifting Equipment Regulations 1998
 Provision & Use of Work Equipment Regulations 1998
 The Work at Height 2005 (Amendment) Regulations 2007

British Standards

BS 327	Power driven derrick cranes
BS 357	Power driven travelling jib cranes
BS 1397	Safety belts and harnesses
BS 1757	Power driven mobile cranes
BS 1761	Single bucket excavators
BS 2799	Power driven rail mounted tower cranes
BS 7121	Code of practice for the safe use of cranes
BS 7262	Specification for automatic safe load indicators
BS CP 3010	Safe use of cranes (partly superseded by BS 7121)
BS 5975:2019	Code of practice for temporary works procedures and the permissible stress design of falsework

Guidance

HSE SIM

SIM 02/2010/04 The Management of temporary works in the construction industry

HSE Guidance Notes:

GS 39	Training of Crane Drivers and Slings
PM 3	Erection and dismantling of tower cranes
PM 9	Access to tower cranes
PM 42	Excavators used as cranes
PM 43	Scotch derrick cranes
PM 46	Wedge and socket anchorage's for wire ropes

HSE Report:

Management's responsibilities in the safe operation of mobile cranes (ISBN 0 11 883301 4)

HSE Video:

Automatic safe load indicators on mobile cranes (Central Film Library)

British Standards

Chain

Short link chain for lifting purposes	BS 4942
Higher tensile steel Grade 40	BS 1663
Alloy steel Grade 60	BS 3113
Alloy steel Grade 80	BS 3114
Calibrated round steel link lifting chains	BS 6521

Chain slings

Higher tensile steel	BS 2902
Alloy steel	BS 3458
Welded	BS 6304
Eyebolts	
Eyebolts for lifting purposes	BS 4278
Hooks	
Higher tensile steel hooks for chains, slings and general engineering purposes.	BS 2903
Shackles	
Higher tensile steel shackles	BS 3032
Alloy steel shackles	BS 3551
Ropes	
Wire ropes for cranes, excavators and general engineering purposes	BS 302
Code of practice for the safe use of wire rope slings for general lifting purposes	BS 6210
Small wire ropes	BS 3530
Wire rope slings	BS 1290
Ferrule secured eye termination's for wire ropes	BS 5281
Specification for ropes made from manila, sisal, hemp, cotton and coir	BS 2052
Man-made fibre ropes	BS 4928
Code of practice for the selection, care and maintenance of steel wire ropes	BS 6570
Slings	
Wire coil flat slings	BS 3481 (part 1)
Flat woven slings made of man-made fibre for general service	BS 3481 (part 2)
Textile lifting slings	BS 6668
Lifting slings	BS 6166
Pulley blocks	
Heavy duty pulley blocks for use with wire rope	BS 4536
Pulley blocks for use with natural synthetic fibre ropes	BS 4344
Pulley blocks for use with rope maximum lift 25 tons	BS 4018
Hand operated chain pulley blocks	BS 3243
Winches	
Hand operated plate-sided winches	BS 3701
Gin blocks	
	BS 1692
HSE Guidance Notes	
PM 16	Eyebolts
PM 20	Cable-laid slings and grommets
PM 39	Hydrogen embrittlement of grade 'T' chain
PM 54	Lifting gear standards

42 Lifting Appliance Erection

- 42.1 **Lifting Appliances information:** All lifting appliances must conform to all current Regulations, Approved Codes of Practices and British Standards (see preceding section for Lifting Operations). The manufacturers of lifting appliances must ensure that the lifting appliances they produce conform to current Safety Standards with regards to performance and use, etc. To assist suppliers and users of lifting appliances, manufacturers provide Safety Data Information regarding performance figures, erection and dismantling procedures, maintenance procedures and schedules for servicing, operator's guidance and emergency procedures, etc. This information must be available to persons who need to select lifting appliances and be available to the lifting appliance operators and safety persons carrying out Inspections, which includes providing information to the Temporary Works Co-ordinator so that they may check calculations and co-ordinate arrangements. The Manufacturers information has to be checked carefully where lifting appliance manufacturing date precedes current Legislation. Lifting appliance information must be kept up-to-date with current Legislation and where necessary, the lifting appliances themselves may require alteration to conform to new, safer, standards.
- 42.2 **Suitability of lifting appliances** - The suitability of lifting appliance for the job is very important criteria to ensure that associated hazards and potential risks are kept to a minimum. This would also reduce damage to lifting appliances due to abuse of the working specifications of the appliance, i.e., overloading and lifting items too large or long for the platforms etc. Other aspects to consider would be whether there is a need for containment of materials being hoisted from any possibility of them falling, i.e., a hoist that requires a fully

enclosed scaffold tower from the base and extends the full travel height of the hoist due to materials being hoisted are not able to be kept completely contained within the platform cage, etc.

- 42.3 **Competency of erectors: General Safety Awareness training** - Erectors and others involved in working or providing a service with regards to lifting appliances need to be aware of other associated hazards involved, other than those specifically related to the lifting appliance. Being appreciative of the understandings of Risk Assessments, Safe Methods of Work and general safety procedures would be beneficial in making employees aware of associated hazards and safety controls / procedures that would also play a major part in minimising the potential for accidents occurring, as well as offering a professional service to the customers.
- 42.4 **CITB training for Operators** - Erectors and others involved in working with lifting appliances also will be required to operate them. Therefore, the CITB Operators Training Course for the lifting appliance would be appropriate.
- 42.5 **Qualified skills training, electrical & mechanical engineering, etc** - Many aspects of an erectors job would be greatly enhanced by formal training in electrical and mechanical engineering. Electrical connections and repairs to lifting appliances are not permissible by Operatives who have not been properly trained. Employees involved in repairing and servicing plant would have a greater understanding with regards to the engineering aspects that could affect the safety of plant operations, therefore, engineering skills training is essential.
- 42.6 **Scaffolding Safety Appreciation** - Many of the lifting appliances are required to be connected to, or have provisions allowed for scaffolds. As required by Law, persons who are required to erect, alter, maintain or dismantle scaffolds must be competent, therefore, employees involved in plant erecting will need to have formal scaffolding training, or work in conjunction with a qualified scaffolder. Some of the main scaffold considerations when erecting lifting appliances are as follows:
- 42.7 **Scaffolds being worked on must be safely guarded-off** from other areas being used and appropriate signs displayed, i.e., "Incomplete Scaffold - Do Not Use";
- 42.8 **The scaffold structure and lifting appliance** must be adequately tied as work progresses in erecting, maintaining or dismantling lifting appliances / scaffold;
- 42.9 **Scaffold platform landings** must be safely boarded-out, minimising gaps, boarding to be in good condition and boarding adequately secured and supported;
- 42.10 **Access at landing levels** must be unobstructed by guard-rails and braces etc., therefore the design of the scaffold in the area of the lifting appliance will have to accommodate this requirement;
- 42.11 **Persons working at height**, i.e., when altering scaffolding or erecting lifting appliances, must safeguard themselves from falling. When the integrity of the scaffold platform is affected in this way, or when working at height on the lifting appliance, safety harnesses are required to be utilised.
- 42.12 **For further guidance in scaffolding**, refer to the Scaffold Section of this Policy.
- 42.13 **Experience** - Persons involved in working with lifting appliances are required to be adequately experienced or sufficiently supervised and instructed on safe working practices.
- 42.14 **Fitness** - Persons involved in working with lifting appliances and associated works must be physically fit to perform their duties and tasks with particular reference to manual handling requirements, mobility and judgement.
- 42.15 **Erection, maintenance and dismantling procedures:**
- **Assessment** - Persons involved in supplying or working with lifting appliances must understand the disciplines of Risk Assessments so that hazards and necessary controls can be properly evaluated and all necessary precautions provided for in advance of carrying out the work.
 - **Careful consideration** - must be given to what use the lifting appliance is required for to ensure that it would be safe and efficient for the tasks in hand. Careful note must be given to those requirements and checks carried out to ensure those requirements are fully met, i.e., prohibited smoking, additional PPE requirements and additional electrical works permits, etc.
 - **Environment conditions** - Full consideration must be given when designing the method of work with regards to working areas and access, ground conditions, potential obstructions, scaffold structures or buildings in which the lifting appliances are required to be secured to, the condition and integrity of power

supplies for lifting appliances, weather conditions in particular, freezing temperatures with regards to snow and ice, wet weather with regards to slip factors and strong winds.

- **Thorough Examinations, Inspections and Testing of Lifting Appliances** - the Regulations, Approved Codes of Practices, British Standards and manufacturer's 'specifications must be complied with regarding thorough examinations, inspections and testing of lifting appliances and lifting gear. Refer to the preceding section for Lifting Operations for further details. All lifting appliances / gear must be tested before use.
- **Test Certificates** - Records of these Certificates must be kept by the Hire Company and copies supplied with lifting appliances and lifting gear to customers. Refer to the preceding section for Lifting Operations for further details.
- **Safety checks before lifting appliances are used** - Checks must be carried out to ensure that lifting appliances have all the provisions necessary to meet with Health and Safety requirements. Careful consideration must be given to the quality standards and the design of lifting appliances, particularly with regards to vital safety elements. Good designed quality products will reduce potential hazards and failures.
- **Upon Delivery** - When lifting appliances are delivered to site, checks must be carried out to ensure that there are no parts missing and that all parts are in good, safe working order. Special attention must be given to any specific additional requirements that a particular job may require. Service records must be checked to ensure that all current test certificates and details of maintenance programmes are up-to-date and in order.
- **During the erection stage of lifting appliances** – Prior to erecting lifting appliances, erectors must check that all the parts necessary are present and in good order. During the erection process, the plant and environment conditions must be checked carefully to ensure there are no safety defects or potential hazards that have not been accounted for. Information such as Manufacturers data, Risk Assessments and Safe Method of Work Statements for the job, must be reviewed and fully considered and complied with during the erection, maintenance / repair and dismantling stages. Provide necessary test certificates, maintenance records and operators guides to the user and ensure the customer is reminded that the lifting appliances must be operated by competent persons.
- **Maintenance and repair works to lifting appliances** - It is absolutely essential from a safety point of view that fitters / service engineers and erectors etc., fully evaluate the lifting appliance and associated working environment prior to carrying out works, particularly when working at height, in areas of potential fall of materials and working with electricity, etc. This is important to safeguard others who could be affected by fitters / service engineers and erectors works, as well as themselves.
- **Dismantling lifting appliances** - Prior to dismantling, the working environment must be surveyed and a full assessment of potential risks considered. Ensure that others who could be affected by the works are informed and safeguarded from hazards. Special consideration must be given to scaffold structures and working platforms that could be affected by the dismantling work. Effective ties must remain in place with regards to connected scaffolding and safety measures such as guard-rails and working platform boarding safety protection must be maintained. Safeguards must be put in place to prevent materials from falling and areas that could be at risk as a potential fall area must be suitably cordoned-off so that others are not put at risk from the dismantling operation. Safety during transportation must be considered, ensure lorries are safely loaded and that plant and equipment etc., are adequately secured.

42.16 **Service records** - The Lifting Operations & Lifting Equipment Regulations 1998 and the Provision & Use of Work Equipment Regulations 1998 require records to be kept for thorough examinations, servicing/repairs, tests and inspections. This will require a co-ordinated effort between Service Engineers, Erectors and those concerned with office administration/filing.

43 Lone Workers

43.1 Lone workers should not incur more risk than other employees. The following bullet points are not exhaustive, but answering these questions will assist in producing procedures for lone workers.

43.2 Risk Assessments are required to identify the following:

- Does the workplace present particular risks to the lone worker?
- Is access and egress suitable for the lone worker, including provision of temporary access equipment?
- Can plant, substances and materials be handled by one person?
- Are there personal risks such as violence?
- Is the lone worker medically fit and suitable for the work?
- Is additional training required for the lone worker?
- How will the person be supervised?

- What communication procedures are in place for emergencies such as the worker becoming ill or having an accident?

- 43.3 Lone workers should not be subjected to high-risk activities due to their vulnerability and lack of assistance in the event of emergencies. The following circumstances should not involve lone workers:-
- High level works where provisions must be in place to protect persons from falling;
 - Heavy or awkward manual handling operations;
 - Hazardous substances which could asphyxiate persons;
 - Confined spaces where access and egress is limited and there is the potential of an environment becoming hazardous, i.e., manholes and tanks;
 - Any Permit to Work where special safety controls are required;
 - Working in high risk areas where attacks on persons frequently occur;
 - Roadworks or pedestrian areas.

The Company's Risk Assessment contained in Part 3 of this Policy outlines arrangements that are required to be met for lone workers.

44 Lorry Loaders

- 44.1 **Safety – general.** Responsibility for safety lies with the person or organisation having overall control of the place of work and with the employers of personnel involved in the lifting operation. In order that this responsibility may be effectively discharged, the appointed person should be given the authority to ensure that adequate systems to achieve safety are in operation. Matters relating to the safety of lifting operations include the use, maintenance, repair and renewal of safety equipment and the instruction of, and allocation of responsibilities to the various personnel handling the equipment.
- 44.2 **Identification of persons directing movements.** The person directing lorry loader movements (slinger or signaller) should be easily identifiable to the lorry loader operator, e.g., by wearing high visibility clothing or by using radio call signs. **Note:** When choosing high visibility clothing, backgrounds, type of illumination and other relevant factors should be considered.
- 44.3 **Personal protective equipment.** The person appointed should ensure that:
- Appropriate personal safety equipment is available, such as helmets, safety spectacles, safety harness, safety boots and ear defenders;
 - Equipment is inspected before and after use and is maintained in good working order or replaced where appropriate;
 - A record of inspection and repairs is maintained.
 - Some safety equipment (e.g., helmets and safety harnesses) may deteriorate with age and should therefore be considered for renewal periodically. Damaged safety equipment should be replaced immediately.
- 44.4 **Use of personal protective equipment.** All personnel working on or in the vicinity of the lorry loader, or visiting the site, should be made aware of the requirements relating to their personal safety and to the use of the personal safety equipment provided. Personnel should be instructed in the correct use of the personal safety equipment provided and should be required to use it.
- 44.5 **Access and Emergency Escape – general.** Safe access and means of emergency escape should be provided and maintained in good condition for the operating position(s) of the lorry loader and for inspection, maintenance, repair, erection and dismantling of the lorry loader.
- 44.6 **Boarding and leaving the lorry loader.** No person should be permitted to board or leave without first obtaining the operator's permission. The operator should be aware of the precautions that are necessary while the person is boarding or leaving and should take them. If the boarding or leaving point is out of sight of the operator, means should be provided to ensure that the operator is aware of the other person's whereabouts and a notice stating the boarding procedure should be posted at the boarding point.
- 44.7 **Instruction of personnel.** Personnel should be instructed to use (and should use) only the proper access and means of emergency escape.
- 44.8 **Fire extinguishers.** Any fire extinguishers should be appropriate to the hazards on the particular lorry loader. Any fire extinguishers mounted on the lorry loader or at the location should be scheduled for periodic inspection and renewed as necessary. **Note:** Attention is drawn to BS 5306.

- 44.9 **Lorry Loader Safety Equipment – Motion limiting devices.** Devices fitted to limit any motion of the lorry loader should be regularly inspected and maintained in good working order.
- 44.10 **Overload cut-out devices.** Switches and other devices may be fitted to cut-out motions when the lorry loader is in an overload situation. This should not be achieved by stopping the primer mover. Only motions that permit the lorry loader to be returned to a safe condition should remain operative. The devices should be maintained in good working order.
- 44.11 **Level indicator.** Level indicators should be used in accordance with the instruction manual and maintained in good working order.
- 44.12 **Anemometer.** Anemometers or other wind speed measuring devices should have their indicators mounted in clear view of the operators, or if appropriate, the person controlling the lift. The correct operation of these devices should be regularly verified and they should be maintained in good working order.
- 44.13 **Machinery guarding.** All guarding should be properly fitted whenever the lorry loader is in use and should be maintained in good condition. **Note:** Attention is drawn to BS 5304.
- 44.14 **Documentation – Rated capacity charts.** Readily understandable rated capacity charts applicable to the various specified operating conditions of the lorry loader should be prominently displayed to the operator. They should indicate the appropriate de-rating for special applications such as magnet or grabbing duties. The lorry loader should not be operated outside these parameters, even in an unloaded situation.
- 44.15 **Instruction manuals.** Instruction manuals in English, containing adequate information on the erection, use and dismantling of the lorry loader should be kept readily available at the location of the lorry loader.
- 44.16 **Test and examination certificate.** All current certificates of test and examination for the lorry loader and lifting gear should be kept readily available.
- 44.17 **Records.** A record of the lorry loader's condition should be maintained to enable its fitness for further operations to be assessed. The record should include the following:-
- Technical information, including maintenance instructions and performance data provided by the Manufacturer;
 - Test certificates and a record of inspections (whether statutory or not) including inspection of ropes;
 - A record of significant repairs and modifications, including renewal of major parts and confirmation of completion, with signatures of responsible person(s);
 - Details of occurrences that are of more than short-term relevance.
- The form in which records are kept should allow a relevant and coherent history of the lorry loader to be readily retrieved. The records should clearly identify the lorry loader to which they refer.
- 44.18 **Siting – general.** Siting of the lorry loader should take account of all the factors that may affect its safe operation, particularly the following:-
- The standing and support condition;
 - The presence and proximity of other hazards;
 - The effect of wind during in-service and out-of-service conditions;
 - The adequacy of access to allow the placing or erection of the lorry loader in its working position and for dismantling and removing the lorry loader after completion of lifting operations.
- 44.19 **Standing and support conditions.** Under working conditions, the loads imposed on the tyres and stabilisers arise from the combined effects of:-
- The dead weight of the vehicle plus loader;
 - The lifted load plus any attachments;
 - The load carried on the vehicle platform;
 - Dynamic effects caused by loader and lifted load movements.

The highest pressures upon the ground are likely to occur under the stabiliser feet. The use of special packing to spread the load under the feet should be considered when working on soft ground. Care should be taken to ensure that such packing is sufficiently strong to withstand the loadings imposed by a fully loaded vehicle and its loader when working. Particular care should be taken to ensure that tyres and stabilisers are not positioned close to excavations, cellars, ground cavities or on weak decking of any sort. The placing of stabiliser feet on the verges of roads or pavements should be avoided. If roads or pavements cannot be avoided, stabilisers should be extended and special reinforcement should be considered. If doubt exists, competent advice should be sought.

The loads quoted by the manufacturers are usually given for the lorry loader standing on firm, level ground. Working on sloping ground should be avoided because this can have an adverse effect on the load radius and the stabilisers.

44.20 Proximity Hazards – general. Consideration should be given to proximity hazards such as overhead electric lines or conductors, nearby structures or machinery, and public areas including highways, railways and rivers. The danger to or from underground services such as gas mains or electric cables should also be considered. Care should be taken to ensure that the lorry loader stands clear of any underground services, or where this is not possible, that the services are adequately protected against damage.

44.21 Electric cables. The operator and other persons nearby can be killed if the lorry loader or its load touches or comes too close to overhead electric cables. An operator controlling the crane from a position on the ground is particularly vulnerable.

The local electricity authority, or if appropriate, the generating authority, should be consulted if the lorry loader is to be used within a distance of 15m plus the maximum jib length from overhead lines which are supported on steel towers, or within a distance of 9m plus the maximum jib length from overhead lines which are supported on wood, concrete or steel poles.

References

British Standards

BS 7121

45 Material and Passenger Hoists

45.1 Hoist Selection: A competent person must plan the lifting requirements for a site. An Assessment must be carried out to determine the most suitable type of hoists and their locations for projects.

45.2 Hoists must be operated by competent trained persons who hold a Plant Operators Training Certificate.

45.3 Material Hoists must only be used for the carriage of materials / equipment / debris and must never be used to carry personnel. Passenger Hoists can be used for the carriage of persons and materials etc.

45.4 All hoists must be erected by competent qualified personnel and must be tested before use to ensure that it is in good order. A thorough examination certificate must be issued after the hoist has been erected and tested.

45.5 Safety Inspections of Lifting Appliances: After erection of a hoist, weekly inspections must be carried out by a competent person, i.e., hoist erectors or competent safety personnel. Safety Inspections must also be carried out after any alteration, repairs and bad weather etc. A record of these Inspections must be kept on site.

45.6 Any defects found in the hoist must be reported to Management immediately. Hoists in unsafe order must not be used and the power must be turned off. 'Out of Order - Do Not Use' signs must be displayed.

45.7 The safe working load must always be displayed on the hoist and the hoist gates as well as 'Keep gates closed' and 'No riding on hoists' (for material hoists).

45.8 Passenger hoists must be fitted with devices preventing the hoist platform from moving if the safety gates are not properly closed. Over-run devices must be fitted to the tops of the hoist masts to prevent over-run of the hoist platforms.

45.9 The ground floor area of all hoists must be guarded-off with at least 2 meter high guards so that it prevents persons from venturing into danger areas of the hoist platform.

45.10 If materials are not fully enclosed by a hoist platform cage, it will be necessary to completely enclose the hoistway with suitable steel or wire mesh throughout its height to prevent materials etc., falling and endangering persons who may be nearby. Particular attention must be given to the top landing where it is good safe practice to extend the enclosure protection of the hoistway a minimum of 2 meters above the

platform landing. If taller items are to be transported, consideration must be given to extend the enclosure protection even higher.

- 45.11 Gates must be fitted at all levels where access is required.
- 45.12 Hoist masts must be adequately tied (secured) in position. Scaffold structures must also be adequately secured.
- 45.13 Hoists must only be capable of being operated from one position in which the operator has an unobstructed view of all landings.
- 45.14 Hoist landings must be numbered and the hoist marked up so that guidance is given to the operator to ensure the hoist cart is at the required level to suit landings. Ensure that landings are fully boarded. Protection preventing materials from falling from the landing must be fitted. Landings must be kept free from any unsafe obstructions. Adequate lighting must be provided for landings and ground floor areas.
- 45.15 Hoist operations involving manual handling: Hoist landings must accommodate lifting aids to minimise the need for manual handling.
- 45.16 Hoist operators must not leave a hoist unattended when switched on. The hoist must always be locked off when left unattended.

46 Manual Handling

- 46.1 The duties imposed by the Manual Handling Operations Regulations are as follows:
 - Avoid hazardous manual handling operations where reasonably practicable
 - Risk assess any hazardous operations that are unavoidable
 - Reduce the risk of injury as far as is reasonably practicable
 - Provide adequate and appropriate information, instruction, training & supervision.
 - Monitor and review
- 46.2 Manual handling injuries include:
 - Strains and sprains - muscles and joints can be injured by over-exertion.
 - Fractures - dropping a heavy load onto the feet can break bones.
 - Wounds - from handling objects with sharp edges and rough surfaces.
 - Hernias - the strain of lifting can cause painful ruptures in the abdominal wall.
 - Spinal injuries - damage to the vertebrae and the spinal discs can cause permanent disability
- 46.3 It is the Company's policy to prevent injury and ill-health to the workforce engaged in manual handling and it is important that management and employees take reasonably practicable precautions to prevent manual handling injuries from occurring.
- 46.4 Management are to check before they instruct persons to carry out manual handling whether those persons suffer from any pre-existing back problems or there are any other factors which could make them significantly more prone to sustaining a manual handling injury. They are to assess the loads required to be lifted and where reasonably practicable, provide mechanical aids and/or take other steps to eliminate or adequately reduce the risk of manual handling injury.
- 46.5 Employees must be fit for the purpose: It is the Company's policy not to engage employees with existing back problems or having other personal factors which could make them significantly more prone to sustaining a manual handling injury, to carry out manual handling duties.
- 46.6 The following personal factors of a manual handler may contribute to the risk of a manual handling injury:
 - size.
 - weight.
 - age.
 - physique.
 - state of health.
 - training in manual handling.
- 46.7 Manual Handling Injuries: Employees are to notify their Managers immediately should they suffer acute injury or develop health problems related to manual handling operations, or if they feel that the loads required to be lifted manually are too heavy for them to lift safely.

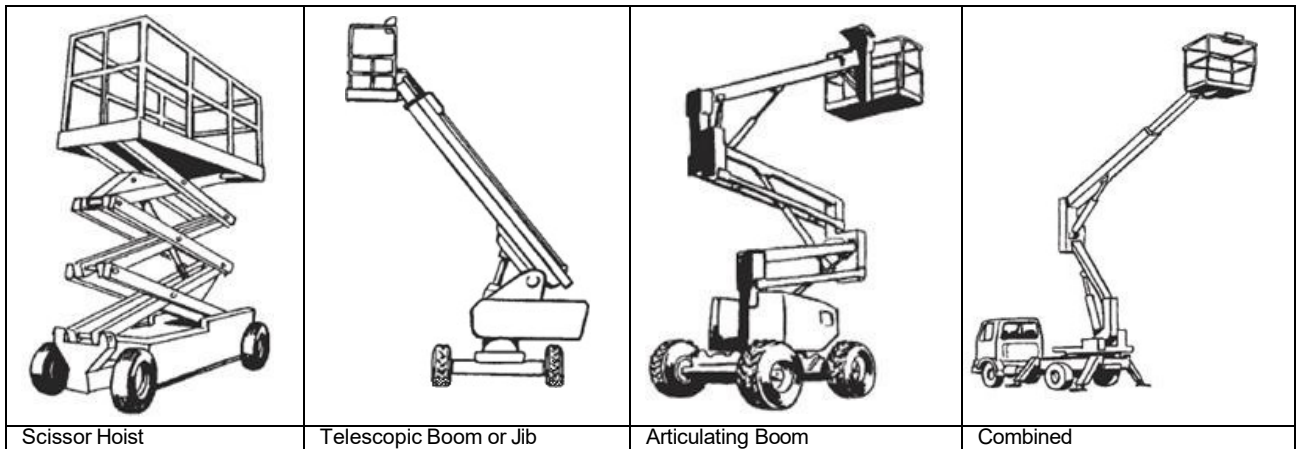
46.8 See Appendices for Manual Handling Operations Assessment Form.

47 Mobile Elevating Work Platforms (MEWP's)

47.1 MEWP's are classified as lifting equipment for lifting persons. They are particularly suitable for short duration tasks, where the use of a ladder would be unsafe or the erection of a scaffolding platform time consuming or impracticable in relation to the job to be done. There are a number of differing types of MEWP's. They can be classified according to:

- The type of carrier or chassis: and
- The type of elevating structure.

47.2 Examples of MEWP's



47.3 Principal types of carrier:

- Road Vehicles: Most have hydraulic stabilisers and are stationary when in use. Some small platforms can operate off locked-out suspension systems allowing low speed travel with the work platform elevated.
- Trailers: Designed to be towed on the highway. Usually come with low capacity range. Most have manually deployed stabilisers of the screw jack type and are thus stationary when in use.
- Self-Propelled: The superstructure is mounted on a purpose-built chassis designed to allow the machine to be driven at slow speed with the boom and chassis in access use. The machines are controlled from the working platform (with secondary controls at ground level).

47.4 Principal Machine Types:

- Scissor lifts: Generally, vertical lift only. May be fitted with outriggers, depending upon the size and height to which it extends.
- Telescopic boom or jib: Gives direct straight line approach to the point of work, but has a limited ability to clear obstructions between the vehicle and the point of work.
- Articulating boom: Gives a wide range of reach and height, with platform mobility.
- Combined telescopic and articulating boom: Gives maximum flexibility.

47.5 Primary hazards associated with the use of MEWP's

- Collapse or overturning of the MEWP;
- People falling or being thrown from the carrier or basket;
- People in the carrier being trapped against fixed structures;
- Materials falling from the carrier or basket.

47.6 Factors in collapse or overturning incidents typically include:

- Equipment failure;
- Ground Conditions;
- Outriggers not being used or faulty;
- MEWP being struck by a vehicle or other mobile plant;
- Overloading a carrier;
- Carrier struck by a load.

47.7 Factors in people falling or being thrown from the carrier typically include:

- Sudden movements caused by an impact;
- Ground movement;

- Overreaching from the carrier;
- Climbing in or out of an elevated carrier.

47.8 Factors in people in the carrier being trapped against fixed structures typically include:

- Overhead obstructions that an operator could come into contact with while the MEWP is being used;
- Routes not being chosen to avoid overhead obstructions;
- Type of MEWP selected;
- Distance between the MEWP and any overhead obstruction when travelling;
- Ground conditions;
- Lighting;
- Drive speeds used, particularly when reversing;
- The controls used when working close to an overhead obstruction;
- Operators awareness and behaviour;
- Operator training and familiarity with the controls, particularly their effect if operated when a boom-type machine is slewed through more than 90 degrees (operators can become disorientated as to the direction of movement that a control will cause);
- Systems or features on the MEWP to prevent an operator from inadvertently operating the controls if they are accidentally pushed against them by an overhead or adjacent object while operating the equipment;
- If the operator is pressed against the controls would they be able to stop and reverse the direction of travel to release themselves?

47.9 Factors in materials falling from the carrier or basket typically include:

- Use of the MEWP to lift materials in to position. For example, materials, such as pipes and ductwork, may be “carried” on the guardrails of the MEWP. They may fall if not secured and may impose loads on the guardrail for which it is not designed and can lead to failure of the guard rail assembly.

47.10 Regardless of type, a number of precautions need to be taken.

- It is essential that the correct type of plant is selected for the intended work and the work location is inspected for hazards. The following points should help in selecting the most suitable MEWP for the job:
- What work needs to be done;
- Who is going to operate the MEWP;
- At what stage in the job will the MEWP be needed and what will the ground conditions be like at that stage;
- What access there is to the site;
- The base area available at the work position;
- What terrain and gradient the MEWP has to cross to get to the work position;
- Adequate visibility and segregation for the manoeuvre;
- The maximum ground-bearing capacity at the work area and along the route to and from the work positions;
- How many people need to be lifted;
- What height / outreach is required;
- Will the MEWP be expected to move in the elevated position?
- Are there any overhead power lines on site?
- Are there likely to be any overhead structures which the operator could be crushed against?
- Are there any materials to be lifted and if so, how heavy / long are they?
- Are there any manual handling issues?
- What interface is there with other vehicles and pedestrians and are there any unusual issues e.g., aircraft or rail traffic?
- What fuel type is allowed on site and where will refuelling take place?
- What wind loads can be expected?

47.11 If the MEWP has to be lifted into position by crane, make sure that the lifting points are well indicated and the weight is known.

47.12 If there are overhead obstructions that an operator could come into contact with while the MEWP is being used, ensure that:

- There is an adequate risk assessment? In particular does it cover:
- Travelling to and from the work area;
- Accessing the work area;
- Work at height;
- Illumination of the area;
- A MEWP has been selected with the right operating characteristics which can substantially reduce the risk of entrapment. Particular attention should be given to:
- Reach – it is better not to operate close to the limit of the machine’s “operating envelope” if possible;

- ◆ Clearance – make sure that the MEWP and platform are not too large for the spaces in which they need to be operated.
- ◆ There is a sensible distance between the MEWP and any overhead obstruction when travelling. This distance will need to be greater for a boom-type MEWP being driven at height to allow for the possible “bounce” and “see-saw” effects which are exaggerated at height. Driving a boom-type MEWP at height should be the manoeuvre of last resort when positioning the platform close to an overhead obstruction;
- Slow drive speeds are used, particularly when reversing;
- Use of the “coarser” drive, elevate and slew controls of a boom-type MEWP when working close to an overhead obstruction is avoided. Only the fine positioning controls of a boom-type MEWP should be used in these circumstances;
- Operators are aware that they must not crouch over the controls as this significantly reduces their margin of safety;
- Operators are aware of the control functions of the particular MEWP including the operation of any “dead man” controls and how the controls operate if a boom-type MEWP is slewed past the 90 degree position as they can suffer disorientation with respect to the expected direction of movement.

- 47.13 Check that the MEWP has been thoroughly examined by a competent person in the last six months, inspected (frequency of inspections should be stated in the examination scheme and is normally weekly), properly maintained in accordance with the manufacturer’s instructions and daily checks carried out (see below).
- 47.14 Check that no part of the MEWP can protrude into roads or other transport routes. This is particularly relevant with articulated boom machines. If this is not possible, other safe systems should be used e.g. temporary road closures. If the working area is traversed by other vehicles or pedestrians, temporary barriers, cones, etc should be used to prevent encroachment into the MEWP’s working area.
- 47.15 If outriggers are fitted, check they can be fully extended in the working area.
- 47.16 Check the ground is firm and will support loadings. Where possible, eliminate ground risks by phasing the work to avoid uneven ground or excavations etc., or by compacting soft ground. Know the maximum point load (under a wheel, outrigger or jack pad) and use spreader plates if required. If MEWP’s are self-propelled, the operator must walk the intended route to identify any hazards before commencing the operation. Check the work area for features such as basements, cellars, sewers, drains, manholes, old trenches, potholes, joints in concrete and cracks. Even a shallow hole could cause an overturn. Check that weather conditions have not altered ground conditions e.g., heavy or prolonged rain.
- 47.17 Check the machine is level or can be levelled. If it is necessary to operate a MEWP near a steep slope or edge (e.g., of an elevated floor slab), ensure that suitable barriers are used. Travelling on inclines must only be carried out within the limits specified by the Manufacturer. Most MEWP’s have very low gradient tolerance and are fitted with tilt alarms to warn when the limits are exceeded.
- 47.18 The Safe Working Load must be clearly marked at the base of the machine and on the working platform. The weight of materials must be known and the safe working load specified must not be exceeded. Care needs to be taken to reduce the build-up of debris on the platform and any materials being lowered into the platform area. Telescopic and articulating machines are normally designed to carry operators and tools only, while scissor lifts may have the capability to carry some materials. Consideration must be given to the load distribution. Manufacturers’ instructions must be followed.
- 47.19 If the MEWP has to pass under any overhead power lines ensure there is enough clearance and that the presence of the power lines is adequately marked, e.g., by using “goalposts”.
- 47.20 Materials must not be “carried” on the guard rails of a MEWP. If they cannot be safely carried within the carrier or basket, then purpose-made and tested securing / handling equipment, designed to be used with the MEWP, should be used. Ensure people below are protected from the risk of falling objects. If the MEWP is working in an area used by other workers or vehicles, the entire MEWP work area (based upon reach distances, not just base structure footprint), should be barricaded and signage provided.
- 47.21 MEWP’s must only be used within the Manufacturers’ recommended wind speeds. This may necessitate a wind speed indicator being available. Remember that conditions can change even when working within a building, e.g., if roller doors are opened. If the MEWP is being operated between buildings, increased wind speed or turbulence can be a problem.

- 47.22 Only trained persons should be allowed to operate a MEWP. Suitable training schemes include the Powered Access Licence Scheme administered by the International Powered Access Federation (IPAF) and the CPCS scheme administered by Construction Skills. Operators should have received training for the relevant class of machine and in addition, should receive familiarisation training for the particular make and model to be operated. Familiarisation should cover:
- Manufacturer's warnings and safety instructions;
 - The control functions of the particular MEWP, including the operation of any "dead man" controls and how the controls operate if a boom-type MEWP is slewed past the 90o position, as operators can suffer disorientation with respect to the expected direction of movement;
 - The function of each safety device specific to the MEWP;
 - Operating limits such as limiting wind speed, wheel and outrigger loadings, set-up requirements, maximum operating gradient, etc;
 - Emergency lowering procedures (include those personnel who would be required to lower the work platform using the controls at ground level as well as the operator);
 - Safe Working Loads;
 - Maximum number of people who can be carried;
 - Maximum safe operating speed.
- 47.23 Such familiarisation is typically provided by Plant Hire Companies when a MEWP is delivered to site. It does not constitute adequate training in itself. Familiarisation should be recorded.
- 47.24 Persons should not leave the working platform whilst in an elevated position, nor should materials be transferred.
- 47.25 Stepladders or hop-ups must never be used on the working platform to gain extra reach or height.
- 47.26 MEWP's are fitted with emergency (auxiliary) lowering controls and an emergency stop switch. Before using a MEWP a suitable plan for carrying out an emergency rescue must be in place. Typically, the operator(s) and another responsible person on site (who is not working on the platform) must know how to use the emergency controls and be briefed on the steps to take in an emergency.
- 47.27 A suitable fire extinguisher (e.g., dry powder) should be readily available at ground level.
- 47.28 Upon completion of the work, the MEWP should be parked in a designated area. It should never be left in a raised position. The MEWP should have the engine / motor switched off and the key removed or be isolated using a security keypad with a designated PIN number.
- 47.29 **Use of Fall Protection**
 After assessing the risks and taking the necessary precautions, there may still be a residual risk of persons falling from the carrier. Examples of when this may arise include:
- When working next to or in a live highway where there is a risk of a vehicle hitting the MEWP;
 - When travelling with the carrier in a raised position where it may strike fixed objects in its path e.g., steelwork or branches, or over uneven ground. NB: The MEWP must be suitable for travelling with the carrier in a raised position;
 - During steel erection when the carrier has to move in and around the steelwork.
- 47.30 If there is a residual risk of failing, fall protection equipment should be used.
- 47.31 There are two types of fall protection that could be used:
- Work restraint or fall restraint system. This stops a person falling from the carrier (unless it overturns);
 - Fall arrest system. This stops a person after they have fallen from the carrier. You will need to check that there is a suitable anchor point(s). The anchor points should be clearly marked for work restraint or fall arrest as appropriate and the number of persons for which they are rated. The majority of anchor points in MEWP's are rated for work restraint and not fall arrest.
- 47.32 Use of fall arrest equipment can lead to a number of additional problems e.g.:
- Arresting a fall could generate enough force to cause an overturn. Check with the Manufacturer that the MEWP can absorb this shock load;
 - After an arrested fall, the MEWP will flex causing more severe swinging movements than normal and this could lead to a risk of the person striking the MEWP or other nearby structures;

- The impact of a fall arrest could cause other occupants, loose materials or tools to be ejected from the carrier;
- Consideration must be given to how a rescue would be affected in the event of an arrested fall.

47.33 In light of the above where fall protection is required, it should normally be of the work restraint type and fall arrest should only be used after a full assessment of the factors above.

47.34 Work Restraint Systems:

- A work restraint system for use on a MEWP should normally be a combination of a full body harness to BS EN 361 and a lanyard to BS EN 354. It does not normally have shock-absorbers fitted;
- Retractable lanyards may be suitable for this purpose, but should only be used after checking with the Manufacturers as to their suitability. Do not use retractable lanyards unless they have been specifically tested in the manner of use;
- Lanyard length (of both fixed length and retractable systems), should be carefully selected and matched to the carrier of the specific MEWP that is going to be used. They must be set short enough to prevent a person reaching a position where they could fall. Operators should be instructed in the use of the fall protection equipment provided.

47.35 MEWP Operator's Daily Safety Checklist - From ground level:

- Check that the Manufacturer's Handbook is with the machine;
- Check fuel, water, oil levels and that the batteries are fully charged. Ensure batteries are secure, clean, free from corrosion and that the electrolyte level is adequate;
- Check the machine starts and that the emergency stop button (engine cut-out) works;
- Check that tyres are free from significant damage and are inflated to the correct pressure. Check that wheel nuts are in place and properly tightened;
- Check structural parts for visible cracks or damage;
- Check that the hydraulic system is free from leaks and that cables are in good condition;
- Check that pins and retainers are in position and in good condition;
- Check that signs identifying the controls, SWL, crush points, etc., are in place and readable;
- Check that all powered movements for telescoping, raising, lowering and slewing are in good working order;
- Check that emergency lowering controls are fully functional. Always refer to Manufacturer's Handbook.
- Test lights and horn where fitted.

47.36 From the working platform:

- Check that the platform structure is in good condition, clean and free from grease and dirt and that cage door locks are fully functional;
- Check that details identifying the controls, SWL, harness anchor points, maximum wind speeds, etc., are in place and readable;
- Check that all powered movements for telescoping, raising, lowering and slewing are in good working order;
- Check that emergency lowering controls are fully functional;
- Test lights and horn, when fitted;
- Check that the steering controls function correctly in forward and reverse;
- Test brakes to ensure that they are working efficiently in forward and reverse;
- For machines designed to travel while the platform is raised, check that the drive speed is restricted when the platform is in the raised position.

47.37 NB: When carrying out these checks operators must not work under a raised boom or platform unless movement has been prevented by means of suitable locking devices.

47.38 Further guidance is contained in guidance published by the International Powered Access Federation (IPAF) and BS 7171 – see references.

References

BSI

BS 8460:2005 "Safe Use of MEWP's. Code of Practice"

ISO 18878:2004 "Mobile Elevating Work Platforms. Operator (driver) training"

BS EN 361 Personal Protective Equipment against falls from height. Full body harnesses.

BS EN 354 Personal Protective Equipment against falls from height. Lanyards

HSE

Construction Information Sheet No. 58 "The selection and management of mobile elevating work platforms"

Information Sheet MISC614 "Preventing falls from boom-type mobile elevating work platforms"

INDG367 Inspecting fall arrest equipment made from webbing or rope.

General Guidance Note GS6 "Avoidance of danger from Overhead Electric Power Lines"

IPAF

Technical Guidance Note H1 "Safety Harnesses in Mobile Elevating Work Platforms"

Technical Guidance Note F1 "Familiarisation of MEWP's"

48 Mobile Phones, PDA's and Blackberry Policy

- 48.1 This Policy Statement defines the requirements for the safe use of mobile phones, PDA's and Blackberry's.
- 48.2 The use of personal electronic equipment (which is any device that requires the use of ear phones or headsets, including hands-free headset devices, MP3 players and iPods) is prohibited at any time whilst at the workplace on site.
- 48.3 This Policy applies equally to employees, operatives, consultants, sub-contractors, visitors and agency personnel whilst they are within the Company's site boundaries.
- 48.4 Whilst we recognise that the use of mobile phones as a means of communication is now essential in the business environment, the increased use of mobile phones has become a major safety issue on operational construction sites. Studies of accidents and near misses occurring on construction sites or whilst driving on Company business has revealed that the use of mobile phones or personal electronic equipment is a contributory factor in an ever increasing number of cases.
- 48.5 To ensure that accidents and near misses do not occur as a result of inappropriate use of mobile phones or personal electronic equipment, their use is prohibited within the site boundary unless:-
- Carrying out a designated operation where the equipment has been sanctioned by the individuals Line Manager and documented in the Risk Assessment and Method Statement.
 - As a means of communication in an emergency situation.
 - Within identified designated areas away from the working area and where their use is deemed safe.
- 48.6 The use of mobile phones is prohibited whilst walking or carrying out any work duty within the site boundary. In order to ensure that all site personnel and visitors are not put at risk as a result of the distraction of mobile phones, each site will identify designated areas for their safe use which will be detailed in the Construction Phase Plan for the project.
- 48.7 The use of a mobile phone or personal electronic equipment whilst driving on Company business, including journeys to and from work, is also prohibited at all times unless the employees vehicle is equipped with a Company Approved integrated hands-free kit with cradle mounted phone or dash mounted interface device. However, calls should be restricted to essential calls which cannot wait until the vehicle is safely parked. At all times such use must be compliant with Statutory Law.
- 48.8 It is prohibited within the site boundary for anyone driving or operating any vehicles, plant or requirement to make or receive a telephone call (even with the aid of an approved hands-free device).
- 48.9 Texting, e-mailing or dialling out is strictly prohibited.
- 48.10 Failure to comply with this Policy will be regarded as a gross breach of Health & Safety procedures. Any worker found in breach of this Policy will be subject to disciplinary action which may ultimately result in dismissal. Any person so excluded may be refused access to Company sites / offices / workplaces in the future.
- 48.11 The Company reserves the right to monitor mobile phone calls and the use of personal electronic equipment in all cases where the work had any involvement in a workplace accident or an accident which has, or could have caused a danger to Health & Safety.

49 Noise

- 49.1 Excessive noise levels can cause permanent damage to hearing and lead to serious disability. Therefore, it is our policy to ensure individuals are not exposed to noise levels exceeding legal limits, by eliminating noise where possible, reducing risk levels where elimination is not possible by the use of engineering controls where appropriate. The use of Personal Protective Equipment will be used as a last resort.

This will be achieved by following the hierarchy of control during the design and construction process as follows:-

- Reviewing designs to eliminate noisy works where possible. For example, leaving and reusing, or designing around, existing block/brick/concrete walls, floors and plant bases.
- Where elimination is not possible or practical, look at design options to reduce the noise hazard.
- For example, limiting the quantity of demolition needed to achieve the Client's brief and by employing quieter
- Plant and work processes.
- Identifying sources of excessive workplace noise (greater than 80dBA).
- Advising operatives when noise levels are likely to exceed 80dBA / 85dBA.
- Undertaking risk assessments and identifying practical noise reducing measures. Considering, for example, the use of engineering controls such as noise reducing blankets, enclosing and confining the noisy works, to reduce the impact on the workforce and the local environment, or using remotely controlled machinery for concrete cutting, or crushing tasks.
- As a last resort, providing operatives with hearing protection, as well as information, instruction and supervision.

If it is not reasonably practicable to reduce noise levels below 85dBA by design then the project team will be required to manage controls on site. The undertaking of dynamic risk assessments during noisy operations will be required. This will be a follow up action after desk top exercises and following receipt of risk assessments from sub-contractors have identified generic anticipated noise levels for specific tasks to be undertaken on site.

Dynamic risk assessments will be undertaken by suitably qualified contractor's staff using hand held, fully calibrated noise reading meters. Following on-site noise readings adjust the originally agreed controls as necessary, including the attenuation levels of any PPE issued by the users employer. Attenuation levels should not reduce the hearing of operatives to less than 75dBA. This is in line with HSE's advice, to ensure operators can still communicate and hear verbal instructions and on-site alarms.

Disposable ear inserts are not permitted on some client construction sites. Disposable hearing protection is not suitable for all persons, as many individuals are uncomfortable with inserting anything into the ear canal and will not fully engage with the process, thereby putting themselves at risk. The other reason to discourage ear inserts is for reasons of hygiene.

Hearing protection that is worn as a control of last resort on some clients construction sites must be over-ear and properly fitted hearing protection, conforming to BS EN352 and with attenuation levels that reduce noise levels to the individuals, to about 75dBA, in line with HSE's advice.

- 49.2** Where site conditions and dynamic risk assessments conclude that PPE is to be adopted, the project team will be responsible for ensuring suitable hearing protection is provided, properly worn, maintained and stored and for ensuring that replacement hearing protection is readily available.

Prior to any project starting, noise assessment should be undertaken to identify the impact of noise on the Client, neighbours and occupiers etc. This assessment should be undertaken as early as possible, to allow sufficient time for any necessary changes to design, sequencing of the work and/or management changes required to meet programme dates.

When carrying out this assessment and determining the level of impact noise may cause, the following areas should be considered as an absolute minimum:-

- The extent of the works?
- The programme for the works.
- Does the programme run through sensitive time periods?
- Are there any local events planned that cannot be change or relocated that need to be accommodated?
- What times of the day is noisy works permitted?
- What impact will noisy works have on occupied areas?
- Does the site have any existing delivery/noise restrictions?
- Are there any on-going or historical disputes/complaints?

- 49.3** The outcome of this global risk assessment will likely impact on the programme or sequence of works and must be agreed in advance with the Client.

The following control measures and principles should be considered (this list is by no means exhaustive and the control measures may vary greatly from project to project):

- Methods of control - Consider the use of specialist products such as noise booths, acoustic screens/curtains/hoardings, mats etc. to help control specific elements of work.
- Alter the programme - By moving noisy works to set times that are agreed with others such as the Client, occupiers and neighbours etc.

- General equipment - Consider the use of less noisy tools and equipment. For example, the use of 110v cement mixers in place of fuel powered. Ensure operatives know and understand the use of the equipment and are aware of attenuation levels.
- Communication - Ensure that all contractors are fully aware of the noise controls on the site via Daily Activity Briefings and Tool Box Talks.
- Signage - Utilise signage and notices to help communicate details of noise levels, working times and restricted areas. Regardless of noise zones, noted in Regulations, we would expect to see more noise enclosures as a matter of course to isolate and minimise disturbance to others.
- Monitoring - Consider the use of noise monitoring to keep track of the noise levels being created. Noise readings to be taken before works start with risk assessments reviewed and PPE / controls adjusted accordingly.

49.4 Mobile acoustic tents / enclosures

- Can be quickly erected to contain isolated noise sources such as cutting, breaking out or drilling. Some models offer up to 24dB reduction in noise.
- Can be easily assembled / dismantled / repositioned allowing excellent flexibility on site.

49.5 Acoustic curtains

- Can be easily fitted to existing hoarding, fences and walls to reduce the noise transfer between the work area and local residents, businesses and / or other surrounding premises.
- Can be hired / purchased in individual sheets allowing greater flexibility and manoeuvrability on site.

49.6 Acoustic site hoardings

- Designed to be used on longer running projects where a semi-permanent solution is required.
- Offers similar benefits to acoustic curtains, albeit with less flexibility. Typically supplied and installed by specialist contractors.

49.7 Noise activated signage

- Used to alert people carrying out work when noise is exceeding a pre-determined level.
- Can be positioned near to local residents, businesses and/or other surrounding premises to provide accurate measurements.
- Large number of styles and designs available.

49.8 Personal noise alarms:

- Used to alert people carrying out work when noise is exceeding a pre-determined level.
- Worn by operative carrying out noisy work so gives very accurate reading.
- Large number of styles and designs available.
- Health surveillance must be provided for all employees who are likely to be frequently exposed above the upper exposure action values, or are at risk for any reason, e.g. they already suffer from hearing loss or are particularly sensitive to damage. Keep health records containing information on the outcomes of health surveillance and fitness for work. Health records must be kept separate from any confidential medical results.
- All contractors must have a suitable occupational health scheme in place, such as Constructing Better Health (CBH) and have a policy in place reflecting this.

50 Working in Occupied Premises

50.1 Occupiers must not be put at risk from activities carried out. Special attention must be given to old people and children who would be at greater risk. Ensure accessways are kept free from unsafe obstructions and that temporary protective floor coverings and dust sheets do not present safety risks such as tripping or fire hazards. Occupiers should be segregated from working areas – where possible, keep occupiers out of rooms being worked in. Occupiers requiring access to working areas must be directly supervised and safeguarded. Hand tools and power tools must not be left unattended. Ensure that the fire arrangements for the premises are not affected by the works or work strictly in accordance with appropriate Permits to Work. Gas / electrical and hot works must be carried out by competent persons only. If you experience difficulties in complying fully with occupier's safety requirements, stop work, safeguard the area and contact your Site Managers / Supervisors immediately.

50.2 Risk Assessments & Safe Method of Work Statements: Must be produced prior to working in occupied premises. The following criteria will need to be addressed during the planning stages of the works:-

- Landlord's duties;
- Existing fire / emergency systems;
- Existing access/egress and emergency routes;
- Normal working practices in the premises;
- Effects of works to existing occupiers;
- Welfare facilities;

- Existing site rules.

50.3 Training

Suitable training, including Health and Safety Induction will need to be carried out prior to works commencing. It may be necessary for NTP Access Limited. Personnel to attend the premises occupiers own Health and Safety Induction.

50.4 Supervision

Site Managers / Supervisors must ensure that all measures taken to avoid hazards / risks are agreed with the premises occupier / Principal Designer / Client / Facilities Management prior to the Contract commencing.

50.5 Site Managers / Supervisors

Must monitor and audit works being carried out and where defects are found, they are to be rectified immediately. Where it is necessary to alter working practices, the Site Managers / Supervisors must agree changes with the Client's Agent.

51 Overhead Power Cables

51.1 During planning, the presence of overhead electric lines must be taken into account since vehicles, plant and equipment must not be allowed to be in a position within 15m of overhead lines from steel towers, or 9m in the case of wooden poles.

51.2 Consultation with the Safety Advisor and the area Electricity Company should take place at the earliest opportunity, since it may be possible for them to divert the line and as much time as possible must be allowed for this work to be done. If the overhead lines cannot be diverted or made dead, then precautions, depending on the nature of work, must be taken.

51.3 Where no work has to be carried out or plant to pass under the overhead lines, barriers should be erected parallel to the overhead line and not less than 6m distance from it.

51.4 The possibility of mobile cranes etc., encroaching on the minimum distance must be taken into account and where necessary the 6m distance increased. These distances are subject to agreement with the local Electricity Company and may be dependent upon the voltage of the overhead line.

51.5 The barriers should be surmounted by coloured bunting which forms an additional warning. If access is only possible from one side, then a barrier on that side will be sufficient.

51.6 Where plant may pass under the line: If it is necessary for plant to travel to and fro under overhead lines, the area where they may pass should be as small as possible and not more than 10m wide. This passageway should be clearly defined by the use of fencing barriers and goalposts should be in position across the width of the passageway. The goalposts should be of rigid construction and of a non-conducting material, distinctly marked in order that they may be clearly identified. Warning notices should be provided on each side of the passageway advising persons of the hazard and giving the cross bar clearance in order that drivers realise that they must lower their jibs etc. To give crane drivers sufficient time to lower the jib before reaching the goalposts, it is advisable to position advance warning notices as far from the goalposts as is required by the length of the jib on the machine.

51.7 Where work will be carried out beneath the overhead line: If it is essential for work to be carried out beneath the overhead lines and they cannot be diverted or made dead, it will be necessary to take precautions in addition to those noted above. The Electricity Company, Safety Advisor and the Health and Safety Executive should be consulted for advice on what additional precautions will be required (also see HSE Guidance Note GS.6).

51.8 Plant, equipment or tools that could reach beyond the safe clearance limit should never be taken under the line. Plant such as cranes and excavators should be modified by the addition of suitable physical restraints so that they cannot reach beyond the safe clearance limit.

51.9 When work has to be carried out on a structure with a consequent reduced safe clearance, the Safety Advisor and the Electricity Company should be consulted about proposed working methods. A responsible person familiar with the hazard should be appointed for the purpose of ensuring the observance of safety precautions and the work carried out under his direct supervision. For guidance: HSE Guidance Note GS 6.

52 Power Tools / Equipment & Plant

- 52.1 It is the responsibility of Management to provide the right kind of tools and equipment for the job and to see that they are properly used. Information concerning the safe use of tools must always be requested from the manufacturers/suppliers who by law are required to provide such information. Tools must be regularly checked on issue from and on return to the store. Details of the Law and Codes of Practices can be found in the Company's Library of Safety Information.
- 52.2 You will only operate equipment for which you have been thoroughly trained. Use the correct tools and equipment for the job. Ensure that equipment supplied to you is accompanied with the operator's instructions and check that the equipment is safe and fully efficient. Equipment will be guarded and equipped with safety devices where required and tested in accordance with all the current Regulations. Defects in equipment and tools must be reported immediately to your Superior. Do not use unsafe defective equipment until it has been put back in good safe condition. Do not attempt to repair or maintain equipment unless you have been properly trained to do so, particularly when it may involve the removal of safety guards or live electrics. Ensure that guard protection is always in place where required. Ensure the working environment meets the safety requirements for operating the type of equipment and tools you require to use, i.e., adequate space and lighting etc.
- 52.3 **Pneumatic Tools:** Compressed air is delivered at high pressure. If it enters the body it can rupture internal organs and cause death. Any form of horseplay or misuse will be expressly forbidden.
- 52.4 **Compressors:** Must always be under the supervision of a competent person who will be responsible for ensuring that the machine is kept in good order, i.e., making sure that feed belt and pulley drives are guarded, that hoses and couplings are maintained in good order and that regular checks are made to ensure that oil feed to the airline is properly topped up. Air receivers must be marked with a safe working pressure and distinguishing number. They must also be fitted with safety valves, pressure gauge, drain cock and manhole. Hose connections must be properly clamped - it can be dangerous to have loose or over-tightened connections. Air receivers must be cleaned and thoroughly examined at least every 26 months.
- 52.5 **Cartridge Operated Tools:** Must only be used by properly trained and certificated persons over the age of 18 years. Supervised test runs are always advisable before the methods of using cartridge operated tools are put into general practice on site. When operating cartridge tools, operators must wear head, ear and eye protection. Major hazards in using cartridge tools apart from malevolent firing are as follows:
 - Where material is of a soft nature, the fastener can puncture and emerge from the other side like a bullet.
 - Where the material is brittle or of uneven constituency, the fixing device may turn back on itself and injure the operator.
 - The material may splinter at the point of impact.
 - Recoil, which can throw the operator off balance.
 - Excessive noise levels in certain circumstances, for example, confined spaces.

53 Portable Appliance Testing

- 53.1 **Maintenance of plant and tools.** In view of the risks from damaged or faulty electrical equipment, an appropriate maintenance system must be set up. It is also important that equipment is regularly serviced in accordance with Manufacturer's instructions.
- 53.2 **Visual checks** will be carried out daily by users and formal inspections must be carried out by competent persons at regular intervals. These checks and inspections must ensure that:-
 - Bare wires are not visible;
 - The cable covering is not damaged;
 - The plug is in good condition;
 - There are no taped or other non-standard joints in the cable;
 - The cable covering is gripped where it enters the plug or equipment;
 - The outer casing of the equipment is not damaged or loose;
 - There are no signs of overheating on the plug, cable or equipment;
 - Residual Current Devices (RCDs) are working correctly (the test button must be pressed daily)
- 53.3 **Testing by a competent person** can detect faults such as loss of earth continuity, deterioration of the insulation and internal or external contamination by dust, water, etc.
- 53.4 The table below gives guidance on suggested frequencies of user checks, planned formal visual inspections and combined visual inspection and testing of portable electrical equipment:-

Equipment / application	Voltage	User check	Formal visual inspection	Combined inspection and test
Battery operated power tools and torches	Less than 25v	No	No	No

25v Portable hand lamps (confined or damp situations)	25v Secondary winding from transformer	No	No	No
50v Portable hand lamps	Secondary winding centre tapped to earth (25v)	No	No	Yearly
110v Portable and hand-held tools, extension leads, site lighting, moveable wiring systems and associated switchgear	Secondary winding centre tapped to earth (25v)	Weekly	Monthly	Before first use on site and then 3 monthly
230v Portable and hand-held tools, extension leads and portable floodlighting	230v mains supply through 30mA RCD	Daily/every shift	Weekly	Before first use on site and then monthly
230v Equipment such as lifts, hoists and fixed floodlighting	230v Supply fuses or MCB's	Weekly	Monthly	Before first use on site and then 3 monthly
RCD's	Fixed**	Daily/every shift	Weekly	*Before first use on site and then 3 monthly
Equipment in site offices	230v office equipment	Monthly	6 monthly	Before first use on site and then yearly
<p>* Note: Residual Current Devices (RCDs) need a different range of tests to other portable equipment and equipment designed to carry out appropriate tests on RCDs will need to be used. ** It is recommended that portable RCDs are tested monthly.</p>				

54 Protective Clothing and Equipment

- 54.1 All personnel must wear / use protective clothing and equipment where and when required, e.g.: Safety footwear, gloves, goggles, waterproofs, earmuffs / plugs, high visibility clothing and masks, must be worn where relevant.
- 54.2 Safety harnesses, lifelines, gas detectors, emergency breathing apparatus, underground service detectors should always be used where and when required.
- 54.3 Personal Protective Clothing and Equipment: All site personnel are required to wear all appropriate clothing and equipment when and where required. Refer to Part 3 - PPE Assessment Checklist).
- **Safety Helmets** are to be worn whenever there is a likelihood of head injury from either falling/flying objects or head strikes against fixed objects.
 - **Safety Footwear** - appropriate footwear will be worn for respective trades. Trainers and lightweight shoes are not permitted.
 - **Gloves** - appropriate gloves will be worn for respective trades particularly when demolition works are concerned so that hands are protected from cuts and abrasions so that it prevents the likelihood of catching Leptospirosis Jaundice from rats urine.
 - **Overalls** - appropriate overalls are to be worn for respective trades when and where required. Overalls are to be cleaned when necessary if they are not of the disposable type.
 - **Eye Protection** will be worn whenever there is a likelihood of eye injury.
 - **Masks** of the appropriate type will be worn when and where required.
 - **Ear Protection** will be worn when noise levels are above 85 dB(A).
- 54.4 Safety helmets:- The Personal Protective Equipment Regulations 2002 updated in 2016 to include the visibility of workers. Applies to the provision and wearing of head protection on construction sites. It will be an offence for persons not to wear a safety helmet at any place on site where there is a foreseeable risk of head injury (other than by falling). The Regulations apply to all building operations, works of engineering construction and the extent of length of the work is not a determining factor
- 54.5 The exception to the rule is turban wearing Sikhs. The Employment Act 1989 exempts turban-wearing Sikhs from any Legal requirement to wear a safety helmet whilst on a construction site. However, where as a consequence of not wearing a safety helmet, a turban wearing Sikh suffers death or serious injury, the employer (or other person required to provide head protection), will not be held liable.

54.6 Generic PPE Assessment Guidance

Guidance: The following PPE must be used in conjunction with the identified tasks / tools / equipment. Further PPE may be required, dependent upon the working environment and site rules, i.e., safety helmets have to be worn on all building sites. It is the responsibility of Company Managers to check that PPE is in good order upon issue and to check as often as necessary that PPE remains in good order and is within any appropriate test period. Persons provided with PPE are required to report any defects to their immediate Manager.

Tasks / Tools / Equipment	Helmet	Gloves	Safety Footwear	Hi clothing	Vis	Wet weather gear	Face Mask	Respirator	Ear Defenders	Safety goggles glasses	Coverall	all rotection	Knee Pads
Office Cleaning		✓	✓								✓		
Surveying property / project sites prior to works starting	✓	✓	✓	✓		✓					✓		
Surveying / attending building sites	✓	✓	✓	✓		✓			✓	✓	✓		
Erect scaffold	✓	✓	✓									✓	
Erect trestles & boards		✓	✓										
Acrow props	✓	✓	✓										
Tile saw		✓	✓						✓	✓			
Blow lamp		✓											
Sledge hammer		✓	✓						✓	✓			
Concrete mixers		✓	✓				✓			✓			
Vertical trench rammer		✓	✓						✓				
Vibrating plate		✓	✓						✓				
Compressor breakers		✓	✓				✓		✓	✓			
Kango	✓	✓	✓				✓		✓	✓			
Nail guns		✓	✓						✓	✓			
Using hammer and chisel	✓	✓	✓						✓	✓	✓		
Using power drills	✓	✓	✓				✓		✓	✓	✓		
Handling sharp edged items		✓	✓							✓	✓		
Angle grinders	✓	✓	✓				✓		✓	✓	✓		
Sanders		✓					✓		✓	✓			

- 54.7 It is the Company's policy that on all sites, employees, all sub-contractors employees, all visitors and purchasers, must wear safety helmets. The wearing of safety helmets is mandatory throughout the site, with only the following exception: Inside site offices and huts as long as no works are being conducted in those areas or within the immediate confines of these areas.
- 54.8 Further guidelines with regards to the wearing of protective clothing and equipment will be read before using substances and materials of a hazardous nature. This information will be contained in the COSHH Safety Data Sheets. COSHH Assessment Sheets will be supplied to the site before the materials are used. See Part 3 - Appendices Section, for PPE Assessment Checklist.

55 Road Rage

- 55.1 Road rage is a term commonly known for violent behaviour by a driver of a vehicle.
- 55.2 How can it start? Road rage can start if one driver does something to irritate another. The main things that cause Road Rage are:-
- Tailgating;
 - Cutting up at islands;
 - Inappropriate overtaking;
 - Undertaking on motorways.
- 55.3 What usually happens? Road Rage involves drivers acting aggressively, typically tailgating and waving a few selected hand gestures. That's thankfully where most incidents end! However, sometimes things can get nasty and drivers will try to ram other cars. Occasionally, as we have seen in the media, Road Rage (although very rare) can have fatal consequences so beware.
- 55.4 What is red mist? Red mist is a psychological state that can arise when a driver is so determined to achieve some non-driving related objective, such as following a person who has annoyed them, that they can no longer assess driving risks realistically. Professional drivers such as police pursuit drivers and ambulance drivers, as part of their extensive training, are very aware of red mist. The nature of their job, whether it is driving to a road traffic accident or following a 14-year-old who has just stolen a car, could so easily result in them becoming frustrated and angry or taking dangerous risks for "a noble cause".
- 55.5 How to stop the red mist coming down: The best way drivers find to overcome this is to firstly realise the symptoms. This usually is a feeling of anger and frustration. Once you have acknowledged how you are feeling it's easier to deal with. The best way (although it does vary from driver to driver) is to try to objectively describe the situation you are in and not become emotionally involved in the situation. This is often very effective. Using this technique can help you defuse anger from a Road Rage incident.
- 55.6 How to defuse Road Rage: Now that you have an understanding of what red mist is you will be able to deal with any Road Rage incident more effectively. Follow these steps should any situation arise:
- If you feel you are in the wrong, acknowledge your mistake by putting your hand up in the rear view mirror in an attempt to say sorry – this can literally turn a very angry person calm within a matter of seconds.
 - If you feel that you are getting angry try to describe the situation objectively such as "ok the driver in front has pulled out too soon, failing to judge my speed which means I now have to brake allowing him time to speed up" – this can be **very hard** to do if you have had a stressful day but trying to remove any kind of emotion linked to the situation is good.

Don't take it personally. If someone is driving too close to you, perhaps forgets to indicate or cuts you up try to not take it as a personal insult. Remember chances are, they are probably just lost, or not very confident, perhaps don't know the car or have just made an honest mistake. Also, you can't be sure that the driver who just undertook you earlier today was responding to a personal emergency. A man pulled over by the Police recently for undertaking on a motorway did so, as his wife had just gone into labour with their first child and he needed to be with her. This of course does not justify dangerous driving at all. However, it just shows there are many reasons why people can drive in a poor manor on the road.

Remember: If anyone does anything to annoy you on the road, it is usually very unlikely that they set out to upset you - chances are, you would have already done that yourself.

56 Risk Assessments - A Practical Guide

- 56.1 Legal Requirements:** The Management of Health & Safety at Work Regulations 1999 (MHSW Regs) implement the EC Framework Directive and require every employer to make a suitable and sufficient assessment of:-
- The risks to health & safety of his employees to which they are exposed whilst they are at work;
 - The risks to health & safety of persons not in his employment arising out of or in connection with the conduct by him of his undertaking;
 - For the purpose of identifying the measures he needs to take to comply with the requirements and prohibitions imposed upon him by or under the relevant statutory provisions;
 - There is a similar requirement on self-employed persons;
 - The MHSW Regulations also contain a range of other requirements, which are not addressed by this guidance. It is essential that employers comply with all parts of the Regulations;
 - Risk Assessment is also explicit or implicit in certain other Regulations made under the Health and Safety at Work etc., Act. Reference is made to some of these later.
- 56.2 Risk Assessment:** A Risk Assessment may be defined as an identification of the hazards present in an undertaking and an estimate of the extent of the risks involved, taking into account whatever precautions are already being taken. It is essentially a three-stage process:
- Identification of all the hazards;
 - Evaluation of the risks;
 - Measures to control the risks.
- 56.3 There are different approaches which can be adopted in the workplace, for example:**
- Look at each activity which could cause injury;
 - Look at hazards and risks in groups, e.g., machinery, transport, substances / materials, electrical etc;
 - Look at each section / department, e.g., goods inwards, machine shops, laboratory, offices, warehouse etc.
- 56.4 Whichever method is manageable for you is probably best.** (N.B. do not forget non-routine activities, e.g., maintenance, breakdowns, etc.).
- 56.5 Risk Assessment requirements:** In order to be suitable and sufficient and to comply with other legal requirements, a Risk Assessment must:
- Identify all the hazards associated with the operation and evaluate the risks arising from those hazards (taking account of relevant Acts and Regulations);
 - Record the significant findings if more than five persons are employed (even if they are spread across two or more locations);
 - Identify any group of employees (or single employees as the case may be) who are especially at risk;
 - Identify others who may be specially at risk e.g., visitors, contractors, members of the public;
 - Evaluate existing controls, stating whether or not they are satisfactory and if not, what action needs to be taken. This should include training and information provisions;
 - Judge and record the probability or likelihood of an accident occurring as a result of uncontrolled risk. Also record the 'worst case' likely outcome;
 - Record any circumstances arising from the assessment where serious and imminent danger could arise;
 - Identify what information is needed for employees on the risks to their health and safety identified by the assessment, the precautions to be taken and any emergency arrangements;
 - Provide an action plan giving information on implementation of additional controls, in order of priority and with a realistic timescale.
- 56.6 The Risk Assessment is also required to be maintained.** This means that significant change to a process or activity, any new process, activity or operation should be subject to Risk Assessment and that if new hazards come to light then these should also be subject to Risk Assessment. In addition, the Risk Assessment should be periodically reviewed and updated. The frequency of review depends upon the level of risk in the operation and should normally not exceed ten years. It may be found useful to carry out review of Risk Assessment as part of Safety Policy/Manual review as the two activities are closely linked.
- If a serious accident occurs in the organisation or elsewhere, but could happen in the organisation and where a check on the Risk Assessment shows no assessment or a gap in assessment procedures, then a review is necessary. Similarly, for unidentified areas resulting from Health & Safety monitoring at the workplace.
- 56.7 Definitions of Hazard and Risk:** The terms 'hazard' and 'risk' are frequently used in the Regulations, Approved Code of Practice and Guidance. It is important to appreciate what these terms mean.
- Hazard is the potential for harm;
 - Risk is a function of the probability (or likelihood) of that harm actually occurring and the severity of its consequences;
 - The extent of the risk should also take account of the number of people exposed to the harm.
 - It should be carefully noted that this does not need quantified probability except for high risk activities where the outcome could be multiple fatalities.
- 56.8 Hazard Identification:** There are a number of simple ways in which hazards can be identified. In order to achieve a suitable and sufficient Risk Assessment, it is essential to identify all the hazards associated with the

activity, therefore all the methods of identifying hazards will need to be assessed and the most suitable mix used.

- Before going to the next stage, a check needs to be made that all the hazards have been identified. In all cases team consultation is a powerful aid. This can involve an appropriate selection from line management and safety representatives.
- For complex activities it can be useful to break down the activity into its component parts, perhaps by job analysis. For example, at a large machine this could comprise:
 - Normal operating;
 - Breakdown;
 - Cleaning / spillage;
 - Lubricating;
 - Setting / adjustment;
 - Overhaul;
 - Installation;
 - Dismantling.

56.9 Risk Assessment: For each activity a Risk Assessment then needs to be made. There are many techniques of Risk Assessment ranging from complex techniques such as fault tree analysis and reliability studies to simple subjective judgement.

- In simple terms, if there is a risk of a single event/fault killing many people, then a complex assessment method is justified. On the other hand, if the worst case is a single fatality occasionally, then a simple method is justified.
- Given the needs of most employers, the method which follows is felt to be suitable for most situations, although others may be preferred by some users. The method incorporates a judgement as to whether or not a risk is acceptable.
For each hazard identified for each activity/situation, ask the question 'what if?'. Realistically what is the worst likely outcome? Is it:
 - A fatality?
 - Major injury/permanent disability including permanent ill health?
 - A minor injury?
 - Environmental / plant damage?

- Two important laws of human nature should always be taken into account. First, never rely solely on common sense as it is much less common than is generally assumed. Secondly, always rely on sod's law, "if someone can do it, sooner or later someone will".
- Next, make a judgement of the probability or likelihood of harm occurring.

Probability / likelihood	Description
Likely / foreseeable	Occurs repeatedly / event only to be expected.
Probable	Not surprised. Will occur several times. Could occur sometimes.
Possible	Unlikely, though conceivable.
Remote / Improbable	So unlikely that probability is close to zero.

- If the judgement is 'improbable' this needs to be subject to particularly rigorous scrutiny as, in reality, it is a relatively rare situation.

56.10 If existing controls fail, use this matrix: Decisions as to whether or not action is needed can then be made by reference to the following matrix. This should be done assuming that any existing controls will fail. The question of adequacy of existing controls comes in a later section of this document.

	Likely	Probable	Possible	Remote	Improbable
Fatal	1st	2nd	2nd	3rd	
Major injury/ permanent disability	2nd	2nd	3rd		
Minor injury	3rd	3rd			
No injury					

- KEY:

	1st rank actions*
	2nd rank actions
	3rd rank actions
	acceptable risk - no action**

*need to consider whether this constitutes 'serious and imminent danger' and therefore whether a procedure for withdrawal etc., is needed.

***the matrix given above represents a minimum standard. Some users may wish to reflect higher standards in their organisation by extending the appropriate type of shading and hence priorities for action.*

- Within each rank a method of deciding priorities can be made. Items from the first rank would be prioritised first, followed by those from the second rank and then those from the third rank. Bringing together a risk of injury and likelihood such that an unshaded area is reached means that the risk is acceptable, further assessment on this hazard is needed, but no action need be taken to control the risk arising from it. Such an outcome would arise when considering a hazard which, at worst, would produce a minor injury, which 'could occur sometime'.

56.11 Risk / Hazard Control: This selection and implementation of the most appropriate method of risk or hazard control is a crucial part of health and safety input. It is this which largely determines the success or failure of the effort to reduce the risk of injury or ill health to persons affected by work activities. However, failure of effort can also arise either if all the hazards have not been identified or if an incorrect judgement of probability/likelihood has been made.

- The most common cause of failure is where reliance for hazard information is based exclusively on accident statistics. Actually observing the activity etc., under consideration is also likely to give a more accurate Risk Assessment than treating it as a desk top exercise. The latter approach can give a false sense of security as well, because what it says in the safety manual may not be what happens in practice.
- Where there is more than one control option available for a similar degree of control of risk, then due account needs to be taken of the most cost effective option.
- A crucial consideration is the order of rank priority for risk (or hazard) control. In the following list, item 1 is the most effective method and item 10 the least effective. Where people are involved, their level of competence needs to be taken into account. In some work, e.g., electrical work, it could be a limiting factor.
 - Elimination (e.g., buying ready sawn timber rather than using a circular saw);
 - Substitution by something less hazardous and risky;
 - Enclosure (enclose it in a way that eliminates or controls the hazard/risk);
 - Guarding/segregation of people;
 - Safe system of work that reduces the risk to an acceptable level;
 - Written procedures that are known and understood by those affected;
 - Adequate supervision;
 - Identification of training needs;
 - Information/instruction (signs, handouts);
 - Personal protective equipment. Objectified
- In many cases a suitable combination of control methods may be necessary.
- As well as the above list being in rank order of effectiveness, it is worth bearing in mind that the amount of Management / Site Manager effort needed to maintain the controls is in inverse rank order. In other words, item 10 takes the most effort to maintain and item 1 the least effort.
- It may be found that there is more than one control measure or combination of measures which could be used. The most risk and cost effective one should be chosen, using informal or formal cost benefit analysis (should that be helpful). An essential part of the assessment is to look at the existing controls (if any) and judge whether or not they are adequate and to record this. It is not necessary to record all the details of existing controls if they can be dealt with by reference to other documents (for example, reference to a lock-off procedure could be dealt with by putting "see Safety Manual Section G pages 10-14", rather than by reproducing the whole procedure). Similarly, reference can be made to other assessments where they are relevant. Examples of this reference to existing COSHH or Noise Assessments where those are suitable and sufficient.
- A further crucial aspect is to bear in mind what is the best practice for controlling the risk or hazard which is under consideration. This means that one needs to be aware of relevant practice in other employment sectors. This can best be done by reference to HSE Guidance Notes, the publications of Industry Advisory Committees, trade press, supplier's manuals etc.

56.12 Recording the Assessment: The assessment must be recorded (electronic methods are acceptable) where more than five persons are employed, even if these employees are spread across a number of locations. All the significant findings are required to be included.

- Fundamentally this record should be activity/situation based. The overall objective is to improve controls and monitor these to ensure they continue to be applied.
- Appendix 1 contains one type of record sheet, but other methods are equally acceptable provided that they cover the points listed below. It should also be noted that other UK legislation transposing other EC Directives also requires recorded assessments. Reference is made to these later.
- In order to produce a suitable and sufficient assessment the following points must be recorded:-
 - The activity / situation;
 - The number of persons at risk;
 - Any group of persons especially at risk (e.g., especially vulnerable employees such as disabled or lone workers, young persons, visitors, members of the public, contractors);

- Any serious and imminent risk (in which case written procedures are required and one or more competent persons appointed to carry out the procedure);
- Probability of harm occurring and the realistic worst case outcome (e.g., fatality, major injury, minor injury, no injury, environmental, plant damage);
- Relevant health and safety information needed by employees / others (as a minimum this would mean reviewing the provision of safety signs and audible / visual warnings);
- Any additional training needs;
- Reference to existing controls and whether or not these are satisfactory (existing controls need not be reproduced in full where they are documented elsewhere. Referring to these other documents as appropriate is sufficient);
- Action required in order of priority with proposed timescale and who is responsible for action.

56.13 Other Assessments: UK Regulations bringing into effect other EC Directives will require other assessments, some of which are capable of being integrated into the Risk Assessment, others of which are best dealt with as separate issues.

- Those capable of being integrated into the Risk Assessment are:-
 - Assessment of all factors relevant to safe working, e.g., lighting, ventilation etc., and the development of a preventive maintenance scheme including electrical system maintenance;
 - Assessments under Provision and Use of Work Equipment Regs (HSE Guidance paras 110-120);
 - Assessment of need/provision of personal protective equipment including the level of risk and an estimate of the performance requirement for the personal protective equipment.
- Assessments which are best dealt with as separate issues are:-
 - Manual handling;
 - Display screen equipment/workstation;
 - Fire precautions/fire risk.
- Although the above three assessments are best dealt with as separate issues, nonetheless the general approach of this document may be found useful.

56.14 Generic Assessments: Generic assessments are assessments produced once only for a given activity or type of workplace. For example, where a company has several locations where the same activity is carried out, then a single generic assessment could be done for that activity to cover all the locations. Similarly, if a company has employees who work away from base, such as electricians, then generic assessments can be used for their hazardous work, rather than attempting to produce an assessment for each activity at each location.

Be warned, generic assessments can result in very poor control and no improvement in safety unless certain features are included. Worst case situations should be considered (e.g., if an activity is normally carried out at ground level but could require work above ground level at one or more locations with no permanent place of work, then this situation should be included in the generic assessment); Provision should be made on the assessment to monitor implementation of the assessment controls, which are/are not relevant at a particular location and what action needs to be done to fully implement the relevant required actions from the assessment. Particular care is needed to add any hazards or risks apparent at a particular situation where these are not included in the generic assessment.

56.15 Health Surveillance: Risk Assessments need to identify where health surveillance is appropriate. This will arise where there is an identifiable disease or health condition related to the work, where there is a valid technique for its identification, where there is a likelihood that the disease or condition may occur as a result of the work and where the surveillance will improve the protection of health of the workers, (e.g., work related upper limb disorder, vibration white finger).

56.16 Maintenance and Effectiveness of Assessments / Controls: The Regulations require Risk Assessments not only to be suitable and sufficient, but also to be maintained to ensure that they remain valid. This means that they must be kept under review and updated periodically.

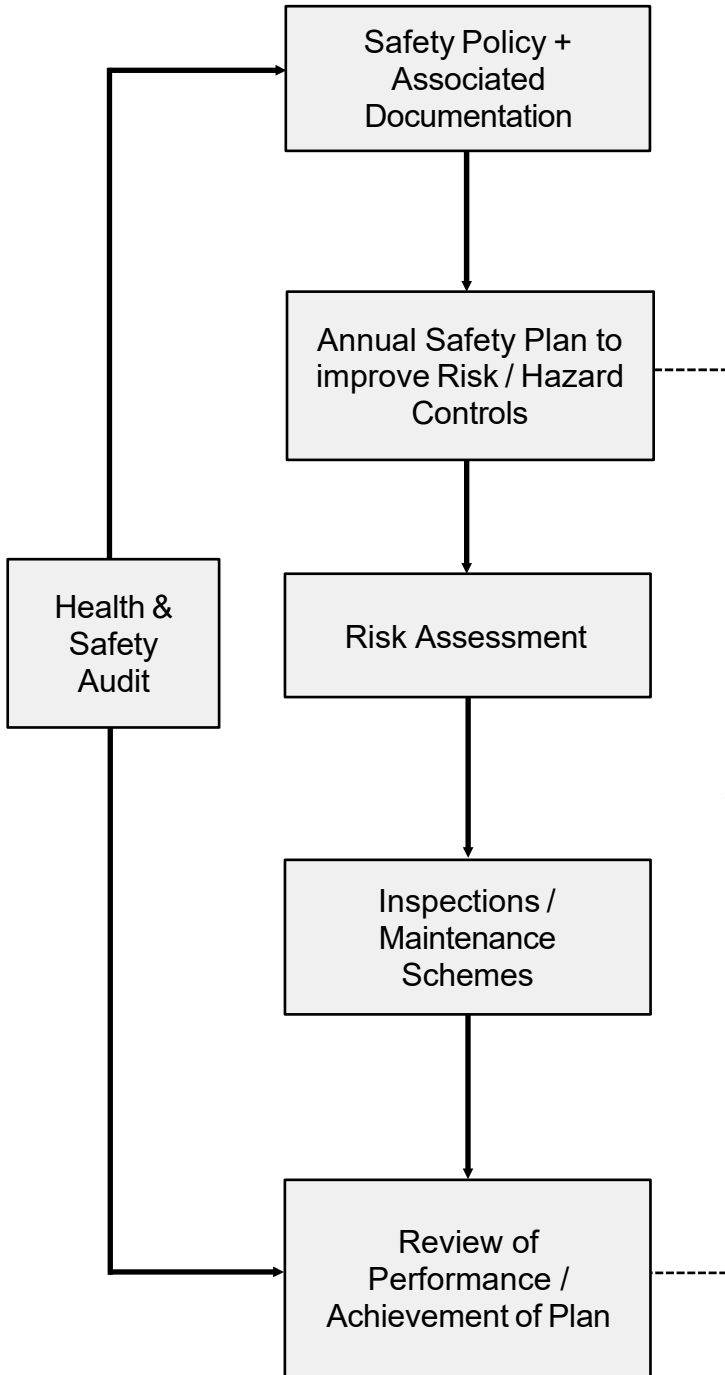
- This is best achieved by a suitable combination of inspection and monitoring techniques, taking corrective/additional action where the need is identified. The process of monitoring, review and corrective action for Risk Assessments is given in Appendix 3. The techniques which need to be included in this process are listed below. Two common omissions which cause this effort not to be as successful as it deserves to be, are a lack of an effective safety audit and a lack of an effective system to ensure that defects/actions really are actioned and that they remain 'flagged' until they are actioned.
 - Preventative maintenance inspections;
 - Safety representative/committee inspections;
 - Statutory and maintenance scheme inspections, tests and examinations;
 - Safety tours and inspections;

- Occupational health surveys/measurements;
- Safety audits.
- Useful information on checking performance against own control standards can also be obtained reactively from the following activities:
 - Accident and ill health investigation;
 - Investigation of damage to plant;
 - Incidents which did not cause these events but could have had serious consequences.
- An excellent and practical publication which addresses these and other aspects of relevance to this guidance is contained in 'Successful Health and Safety Management' produced by the HSE Accident Prevention Advisory Unit (available from HMSO. ISBN No. 0 11 885988 9).

56.17 Timescale for Risk Assessments: The HSE expects companies to be able to demonstrate a clear commitment to carrying out risk assessments in a suitable and efficient manner.

- A good way to demonstrate this is to have a realistic timetable for carrying them out (perhaps as part of an annual safety plan) with a start having been made and with existing controls reviewed plus evidence of the use of a prioritised programme of improving controls where this is shown to be necessary by the Risk Assessment.
- One method for deciding on priorities is given in Appendix 4.

Appendix 3



Appendix 4 - Hazards

The following list gives the hazards which may need to be considered when carrying out Risk Assessments. It is not necessarily a comprehensive list, but is given to illustrate the extensive nature of the hazards which may need to be taken into account:

- Fall of persons from height;
- Fall of object/material from height;
- Fall of person on same level;
- Manual handling;
- Use of machines;
- Operation of vehicles;
- Fire, including static electricity;
- Electricity;
- Drowning;
- Excavation work;
- Stored energy;
- Explosions (Chemicals/dust);
- Contact with cold/hot surfaces;
- Compressed air;
- Mechanical lifting operations;
- Noise;
- Biological agents;
- Ionising radiation;
- Non-Ionising radiation;
- Vibration;
- Hand tools;
- Adverse weather;
- Chemicals/substances;
- Stacking;
- Housekeeping;
- Lighting;
- Confined spaces;
- Cleaning;
- Bomb alert & emergency evacuation.

57 Safety-Critical Workers

57.1 Some jobs in the construction industry involve activities that can place workers at risk unless the person has full, unimpaired control of their physical and mental capabilities. These jobs are called 'safety critical' and the people who do them are 'safety-critical workers'.

57.2 Identifying safety-critical work (Assessment): Before starting a project and engaging personnel, an Assessment of the work, plant & machinery and type of working environment will need to be carried out to identify safety-critical works. The chart below gives guidance to the focus on health conditions that would be a concern for particular types of operatives. The 'x' in the chart would exclude a person from the safety-critical job.

Job	Loss of consciousness	Impaired awareness or concentration	Sudden incapacity	Impaired balance or co-ordination	Restricted mobility	Impaired vision or hearing
Crane operator	x	x	x	x	x	x
Forklift operator	x	x	x	x	x	x
Earthmover operator	x	x	x	x	x	x
Dumper driver	x	x	x	x	x	x
Excavator operator	x	x	x	x	x	x
Rope cradle operator	x	x	x	x	x	x
Abseiler	x	x	x	x	x	x
Hiab operator	x	x	x	x	x	x
Steel Erector	x	x	x	x	x	
Scaffolder	x	x	x	x	x	
The shaded areas are other examples of safety-critical jobs dependent upon the environment personnel work in and whether they are assisted in their job by a workmate, or have other support mechanisms, such as hearing aids, prescription glasses, etc., which enables the person to carry out their job safely without risk to themselves or others.						
Roofer	x			x		
Persons using ladders	x	x				
Abrasive wheel operator	x	x	x	x		
Wood machinist	x	x	x	x		
Chain saw operator	x	x	x	x		
Certified Gas Safe worker	x	x	x			
Hot works personnel	x	x	x			

57.3 Screening potential safety-critical workers: Management must ensure, before placing personnel on safety-critical tasks, that the personnel have passed a Safety-Critical Medical within the last three years. During this three year period, if a safety-critical worker incurs an injury or medical condition which could affect their work, that worker will need to undergo interim safety-critical medicals.

- Management must also take account of contractual arrangements for a project where the Client may require more frequent safety-critical medicals or a medical immediately prior to engagement.
- Management must ensure medical records are kept and maintained at Head Office. These records should be checked upon engagement of a safety-critical worker to ensure that Medical Certificates are current.
- Health Questionnaire for New Employees: Management must ensure that all potential new employees to the Company complete the Health Questionnaire contained in Part 3 of the Company Health & Safety Policy prior to engagement. These records must be kept confidentially at Head Office. Management must ensure that personnel are suitably medically fit for the work they will be engaged for.
- Health Monitoring: Management must ensure they are familiar with health issues related to their operations and regularly monitor and consult with the workforce to ensure their health is not adversely affected. Annually, Management must ensure that employees complete the Health Surveillance Annual Assessment Form contained in Part 3 of the Company Health & Safety Policy. These records must be kept confidentially at Head Office.
- Employees Health Record Register: A health record for all employees must be maintained at Head Office by Management and should contain the criteria as shown in the example below:-

Example:

Employees name	Occupation & general notes	Health Questionnaire for new employees	Health Surveillance Annual Assessment Form	Safety-critical worker only Medical Certificate
Joe Bloggs	Crane Operator	19.07.2010	19.07.2015 19.07.2016	12.07.2010
Tom Smith	General Labourer	26.04.2011	26.04.2015 26.04.2016	N/a
David Jones	Forklift Operator 16.08.2012 - Prescribed a course of anti-depressants by his GP – requires re-test for any adverse effects and re-issue of his Medical Certificate if fit for work. 1 week on anti-depressants – re-tested. Failed due to adverse effects. Suspended from safety-critical works until off of medication or change of medication and reassessed. Reassessed medical.	10.05.2011	10.05.2015 10.05.2016	05.05.2011 23.08.2012 – Failed 01.12.2012 - Passed

57.4 Safety-critical workers are required to immediately report the use of any prescribed and / or over-the counter medication, or medical condition which may adversely affect their job to their immediate Supervisor or Manager prior to carrying out their work. If there are possible adverse effects, Managers must suspend the worker from carrying out safety-critical work and arrange for a Safety-Critical Medical to be carried out before a decision is made to allow a return to safety-critical work. Failure for a safety-critical worker to inform, may lead to the employee being subject to the Company Disciplinary Procedures.

57.5 Alcohol, Drug & Substance Abuse: Safety-critical workers must not carry out their work under the influence of alcohol, drugs or substance. Refer to the Alcohol, Drug & Substance Abuse Policy contained in Part 2 of the Company Health & Safety Policy for further details.

58 Safety Harness – Rescue Procedure and Risk Assessment Flowchart

58.1 Rescue Procedure – Safety Harnesses. The faller could be suspended by the straps of their safety harness some distance below the anchorage point and is likely to start suffering from physiological problems the longer they are suspended. Physiological problems can commonly occur after 20 minutes, particularly if the harness is ill-fitted or badly designed. It is important therefore that the post fall suspension time is kept to a minimum and that the faller is brought back to a position of safety as soon as possible, particularly if the faller complains of discomfort or other injuries that could cause further physiological problems.

Should someone fall and be suspended in a harness, self-rescue may be straightforward. This will be dependent upon whether the faller has any injuries and / or whether it would be straightforward for the faller to climb back to a position of safety (self-rescue). If however, the faller is injured, unconscious and / or working on a hanging scaffold, cantilever or working over water etc., where they are suspended in midair, then carrying out a rescue is going to be much more difficult.

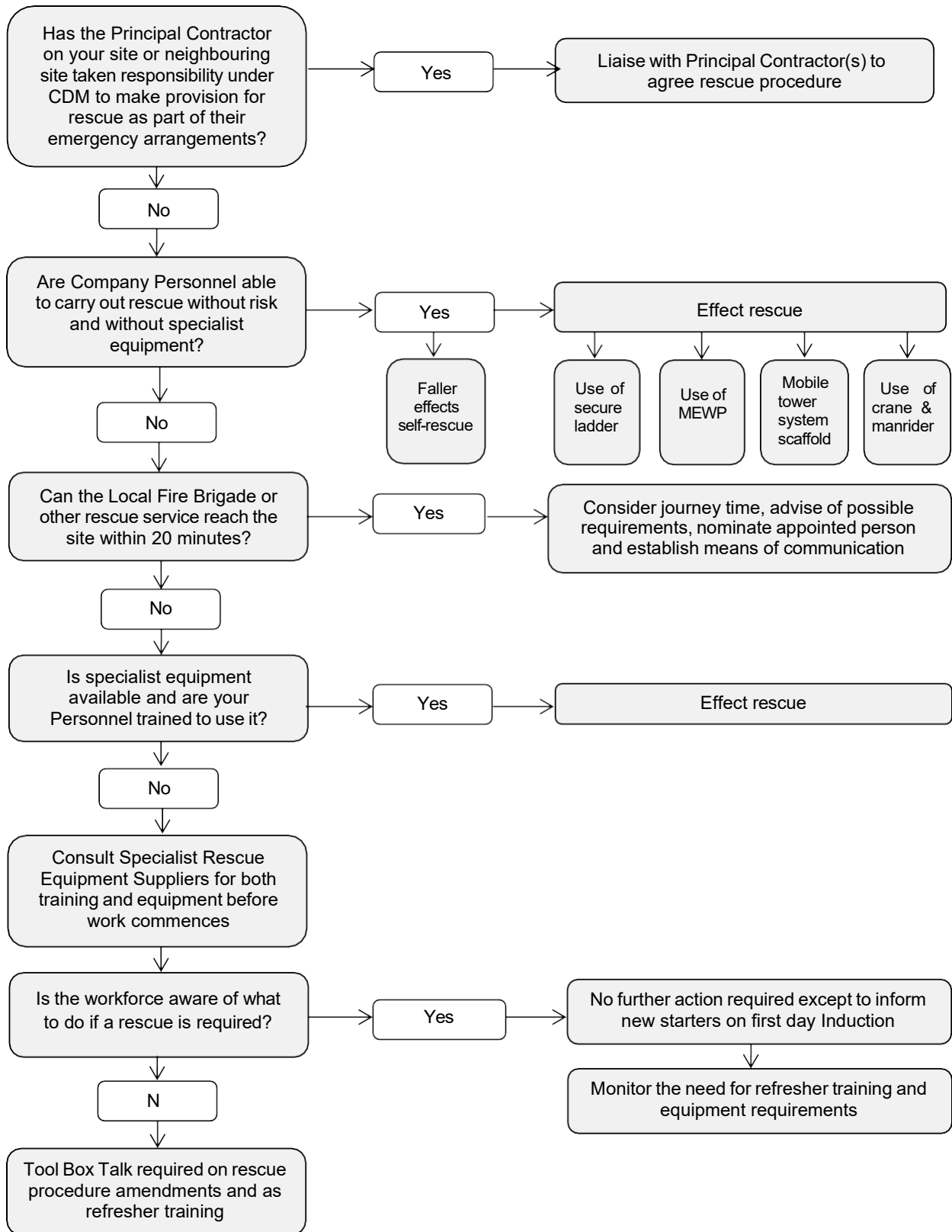
Due to the health hazards associated with being suspended in a harness, a suitable rescue procedure should be in place prior to commencement of the work to be carried out on site, which involves working at height and the use of harnesses etc. By considering the rescue procedure at the Pre-Tender / Planning Stage of the contract and issuing a copy of the procedure to persons who have to work at height for familiarisation, training and record purposes before they commence work on site, they would immediately be aware of who to contact and what, if any, rescue procedures to adopt, thus effecting a rescue as quickly as possible. A site specific Risk Assessment is the first step in determining a rescue plan in the event of a fall.

58.2 Risk Assessment – Rescue Plan. The following questions need to be considered when preparing a Risk Assessment and rescue plan prior to commencement on site:-

- Has the Principal Contractor taken responsibility under the CDM Regulations to make provision for rescue as part of their emergency arrangements?
- Are Site Personnel capable of carrying out a rescue without risk and without specialist equipment?
- Has the local Fire Brigade or any other rescue service been contacted to see if they can provide a rescue service within the critical 20 minute period?
- Is specialist equipment available and are Site Personnel trained to use it?
- Is the workforce aware of what to do if rescue is required?

58.3 Risk Assessment Flow Chart. The Risk Assessment flow chart offers a guide to the steps to be taken in preparing a procedure/plan for the rescue of someone suspended in a safety harness following a fall.

Pre-start Risk Assessment for the rescue of someone suspended in a safety harness:



59 Scaffolding

- 59.1 Scaffolding can impose hazards not only to persons providing a scaffold service but also to the end user and others underneath or nearby. Employees are required to be mindful of this at all times, should be conscientious with regard to their work and how it could affect others. Whether scaffolding is provided by the Company, a Contractor or Scaffold Contractor, etc., the Company has the responsibility to ensure the scaffolding and associated equipment / protection is in good safe order whilst being erected, before use, whilst work is in progress on the scaffold and whilst it is being dismantled. Scaffolding works must be checked and co-ordinated by the project appointed Temporary Works Co-ordinator.
- 59.2 Technical details of how scaffolding should be erected correctly can be found in relevant British Standards, including the European Standard BS EN 12811-1, HSE Guidance Notes and NASC SG4:15. Further information can be found at Head Office or with the Company Health & Safety Advisors.
- 59.3 From a technical point of view scaffold structures must be in compliance with The Construction (Design & Management) Regulations 2015, The Provision & Use of Work Equipment Regulations 1998, The Lifting Operations & Lifting Equipment Regulations 1998, The Work at Height Regulations 2005 as amended 2007, Approved Codes of Practices and all appropriate British Standards, including the European Standard BS EN 12811-1. Persons involved in providing, i.e., Designing, Planning, Managing, Erecting, Maintaining, Dismantling, Testing and Inspecting of scaffolding must do so in accordance with all appropriate Health & Safety Law and Codes of Practices, etc. **Please Note:** Trestles can now no longer be used without being designed to accommodate guardrail and toeboard provisions. These New Regulations supersede The Workplace Regulations.
- 59.4 **Conforming to Approved Standards.** The HSE's official line is: Most scaffolds can be erected following a generally recognised standard configuration, i.e., BS EN 12811-1, TG20, BS5973, or in accordance with Manufacturers Guidance with regard to system scaffolds. Where BS5973 is considered, the NASC and HSE view is that in the interim period before the implications of TG20:21 are fully absorbed, best practice for standard basic tube and fitting scaffolds remains achievable by following BS 5973 amended to adopt the tie patterns and facade bracing as detailed in TG20:21. Where scaffolds, due to their size or complexity cannot be erected to these established configurations, they should be designed according to the principles given in BS EN 12811-1 or based on fundamental engineering principles. In these cases design details must be made available. The NASC have produced TG20:21 which revises the 13 version. The amended guidance now includes the following:-
- E-Guide software include exterior bird caged, tube & fitting mobile towers, tube & fitting loading bays without beams, tied independent scaffold with 3 inside boards.
 - The process for producing a compliant scaffold have been made simpler with changes to the compliance sheets, software and design guide and operational guide.
- 59.5 **Certification Scheme.** The CITB operate a certification scheme for basic and advanced scaffolding courses and issue and control individual training record cards. Scaffolders are grouped into three categories, Trainee, Basic Scaffolder and Advanced Scaffolder and before Scaffolders can be classed as basic or advanced, they should have completed an appropriate course and have had specific minimum experience. Effective training of persons that provide a scaffold service is an essential factor in preventing accidents to Scaffolders, persons who use scaffolds and the general public who may be affected by a scaffold operations or work that will be carried out on the scaffold. The scheme applies, at present, only to Scaffolders who work on scaffolding more than 5m (16.5ft) high.
- 59.6 Participation in this scheme is not a legal requirement, but the scheme should lead to a general rise of the level of expertise throughout the industry. It is important to note that the legal requirements relating to the training of workers in the Health & Safety at Work etc., Act 1974 and to the competence and experience of Scaffolders, apply to all scaffolding work.
- 59.7 This Code of Practice represents a standard of good practice. Compliance with it does not confer immunity from relevant Legal requirements, including Regulations and Bylaws.
- 59.8 There are many different types of scaffolding used for many different reasons. Scaffolding can impose hazards not only to persons erecting or using the scaffold, but also persons nearby or underneath.
- 59.9 **Independent Tied Scaffolds - Safety Checklist from the Ground:**
- Base - soundness: adequate spread of load: avoidance of pavement lights, manhole covers etc: no nearby excavation.
 - Line of standards and ledgers; verticality of standards.
 - Staggering of joints - vertical and horizontal.
 - Spacing of transoms.

- Even support and line of boards: overhang.
- Guardrail and toeboards.
- Facade and ledger bracing.
- Means of access.
- Ties - number and position.

59.10 Independent Tied Scaffolds - Safety Checklist on the Scaffold:

- Special loadings by protective fans, wind sails etc. - anchorage and spread of load.
- Security of boards, toeboards and guard-rails.
- Security and correct use of all fittings (couplers).
- Condition of tubes and fittings.
- Damage, e.g., by loads swinging from cranes or by falling materials.
- Overloading and Security of stacked materials.
- Ties – security (Pull Test Conformity Records).

59.11 Scaffold Tower - Safety Checklist:

- Wheels of appropriate SWL, with brakes secured to uprights.
- Foot ties as close to wheels as practicable.
- Horizontal members fixed to uprights with load bearing couplers (except on working lift).
- All bracing connected to horizontal members with right angle couplers.
- Spacing of uprights not exceeding 2.40m.
- Working platforms must be a minimum width of 600mm.
- Working platform - base x height relationship.
- Working platform - size within base dimensions.
- Working platform - close boarded and evenly supported.
- Working platform - guard-rails will be a minimum height of 950mm with toeboards rising at least 150mm above the working platform. There must not be an unprotected gap between the guardrail and the toeboard of more than 470mm.
- Proper use of correct fittings.
- Ladder access properly secured.
- Kettle (ballast) properly positioned and secured where necessary.
- Overloading.
- Security of stacked material.

59.12 **System Tower Scaffolding:** Should be erected in accordance with the manufacturers / suppliers recommendations by suitably trained persons. All system tower scaffolding must be accompanied with the manufacturers / suppliers instructions on how the scaffold should be properly erected and used. Tower scaffolds must be adequately secured in position to prevent them from tipping. Working platforms must be properly / fully boarded. Ladders must be provided for access to the tower scaffold platforms in accordance with the Manufacturers recommendations.

59.13 Suspended Access, Suspended Platforms and Cradles - Safety Checklist:

- Use an experienced Cradle Erector and obtain a Hand-Over Certificate.
- Ensure that your Site Agents / Foremen are experienced and competent in the operation and capabilities of suspended platform equipment.
- Ensure that a competent person is in charge of equipment when it is in use.
- Ensure that operatives are thoroughly instructed in the use of the equipment, preferably in writing, and are aware of its safe working load in practical terms.
- Ensure that the equipment is inspected and entered in the register as required by the Construction (Health, Safety & Welfare) Regulations 1998 and that the winches and wire rope are the subject of Test Certificates.
- Ensure that necessary Licenses and wayleaves are obtained before work commences.
- Liaise with building occupants regarding the dangers of opening non-sash-type windows when suspended platforms are in use. Also inform the Building Supervisor or the responsible person that the power supply to the platforms should not be disconnected when in use.
- Warn operatives of the danger of open windows or other projections from the face of the building when operating suspended platforms.
- Check suspended platform roof beams, counterweights and fixings and ensure that these are as originally installed.
- Ensure that supporting ropes are not kinked or damaged before using the equipment.
- Ensure that supporting ropes are reeved correctly onto winding drums and over all pulleys and guides.
- Ensure that ropes are secured correctly at anchor ends.
- Ensure that safety ropes, when fixed are similarly checked.
- Ensure that all safety equipment - stops, override switches, brakes, etc., are operational.
- Check power supply and all electrical cables and connections.

- Check that control buttons and emergency buttons / switches function correctly.
- Take precautions to prevent contact between arc welding apparatus and wire safety or suspension ropes which could cause damage or fracture.
- Where pendant controls are supplied, ensure that these are secured to the handrail of the platform.
- Do not supply cables for this purpose.
- Ensure that the safe working load is not exceeded.
- Ensure that hand tools are secured to the platform wherever practicable.
- Ensure that the platform and equipment are kept clean and washed down, particularly if subject to contamination by chemicals or fumes.
- Ensure that the platform, when not in use, is securely lashed down and fended off the building; particular care must be taken if high winds are expected.
- Ensure, when the platform is not in use, that all electrical equipment and controls have been switched-off and all control equipment removed to prevent tampering or vandalism.
- Report all breakdowns or malfunctions to the Supplier.
- Ensure working in a safety harness, if secondary safety wires are not fixed.
- Remember that objects may fall from a higher level.
- Loop and secure the power cable at roof level to prevent risk of it being pulled out of the socket by its own weight.
- Ensure that a warning notice is displayed at the source of power informing people of the work being undertaken and the fact that the power must not be switched-off.
- Do not allow work on suspended platforms if high winds are forecast, especially on tall buildings and exposed sites.
- Do not disconnect, or prevent from working, any safety device.
- Do not enter or leave the platform other than at ground level or at other safe access points.
- Do not allow rubbish to accumulate on the platform.
- Do not allow the use of platforms after snow-fall, until the snow and ice have been removed.
- Do not indulge in reckless or dangerous practices when operating, or working on, the platform.
- Do not move mobile roof rigs whilst operatives are on the platform.
- Do not allow electric cables or connections to lie in gutters, or where water can collect.
- Do not allow fibre ropes to lie in gutters, or where water can collect.
- Do not allow equipment to be used before a thorough examination of the complete installation, including public protection, has been carried out.
- The risks from falling objects must be properly controlled by preventing anything from falling and if this is not reasonably practicable, by ensuring that no one is injured by anything falling. Any areas of potential falling objects must be clearly indicated with warning notices and sufficiently guarded-off to prevent persons from gaining access to the fall zone.
- Emergency and rescue provisions must be in place for work activities in relation to working at height so that persons working at height can be recovered or rescued safely in the event of an emergency.
- Refer to Working at Height section for other provisions.

- 59.14 For further information see BS 5974 (temporarily installed equipment) and BS 6037 (permanently installed equipment).
- 59.15 Only scaffolding in good order is allowed to be used.
- 59.16 Scaffolding should only be erected / adjusted / dismantled by qualified competent Scaffolders. After scaffold has been erected / adjusted, the Scaffolder must issue a certificate of worthiness (Hand-Over Certificate), which is in accordance with the format set-out by the National Association of Scaffolding Contractors (NASc), stating that the scaffolding is in good order. Any area of scaffolding which is not in good order, must be guarded off from areas required to be used and have 'Scaffolding incomplete - do not use' signs displayed on it. Scaffolding not in good order must not be used.

Scaffolding Inspection Report Notes						
Place of work requiring inspection	Timing and frequency of inspection					
	Before being used for the first time	After substantial addition, dismantling or alteration	After any event likely to have affected its strength or stability	At regular intervals not exceeding 7 days	Before work at the start of every shift	After accidental fall of rock, earth or any material.
Any working platform or part thereof or any personal suspension equipment – Work at Height Regulations 2005 as amended 2007 – Regulation 12.	✓	✓	✓	✓		

Checklist of typical scaffolding faults										
Footings	Standards	Ledgers	Bracing	Putlogs and transoms	Couplings	Bridles	Ties	Boarding	Guard-rails and toe-boards	Ladders
Soft and uneven	Not plumb	Not level	Some missing	Wrongly spaced	Wrong fitting	Wrong spacing	Some missing	Bad boards	Wrong height	Damaged
No base plates	Jointed at same height	Joints in same bay	Loose	Loose	Loose	Wrong couplings	Loose	Trap boards	Loose	Insufficient length
No sole plates	Wrong spacing	Loose	Wrong fittings	Wrongly supported	Damaged	No check couplers	Not enough	Incomplete	Some missing	Not tied
Undermined	Damaged	Damaged	--	--	No check couplers	--	--	Insufficient supports	--	--

Working platforms only

1. An inspection is only required where a person is liable to fall from a place of work.
2. Any employer or any other person who controls the activities of persons using a scaffold shall ensure that it is stable and of sound construction and that the relevant safeguards are in place before his employees or persons under his control first use the scaffold.
3. No report is required following the inspection of any mobile tower scaffold which remains in the same place for less than 7 days.
4. Where an inspection of a working platform or part thereof or any personal suspension equipment is carried out:
 - i. before it is taken into use for the first time; or
 - ii. after any substantial addition, dismantling or other alteration; not more than one report is required for any 24 hour period.

Excavations only

1. The duties to inspect and prepare a report apply only to any excavation which needs to be supported to prevent any person being trapped or buried by an accidental collapse, fall or dislodgement of material from its sides, roof or area adjacent to it. Although an excavation must be inspected at the start of every shift, only one report of such inspections is required every 7 days. Reports must be completed for all inspections carried out during this period for other purposes, e.g., after accidental fall of material.

General Notes

1. The inspection report should be completed before the end of the relevant working period.
2. The person who prepares the report should, within 24 hours, provide either the report or a copy to the person on whose behalf the inspection was carried out.
3. The report should be kept on site until work is complete. It should then be retained for three months at an office of the person for whom the inspection was carried out.

- 59.17 **Scaffold Inspections:** Are to be carried out by a competent person prior to scaffolding being used. Persons who are required to use the scaffold should also check that it is in good order before use. Scaffolding should only be used if in good order. Defects should be reported to senior management immediately. Regular inspection reports should be made to prove that the scaffolding has been checked and is being maintained in order. Scaffolding should be inspected by a competent person before first use, after substantial alteration, after any event likely to have affected its stability, for example, following strong winds and at regular intervals not exceeding seven days. Refer to Inspection Report form contained in the Appendices section.
- 59.18 **Toeboards for working platforms:** All working platforms where it could be possible for material/equipment to fall must be fitted with toeboards to the outside edges and the ends of the platforms. The toeboard height should not be less than .150 metres.
- 59.19 **Guard-rails:** Double guard-rails are required to be fitted to all working platforms where there is a risk of persons being injured should they fall, regardless of the height. The minimum height of the guardrail must be no less than 950mm high. The gap between the toeboard and guardrail must not exceed 470mm. Ways of reducing this gap are by additional toeboard, an intermediate guardrail, brickguards or other provisions which would support a person should they fall against it.
- 59.20 **Ladders:** All ladders must be secured into position preventing them from slipping/moving. The ideal angle for a ladder is 75 degrees to the horizontal. Openings and landings must be safe and fitted with guard-rails and toeboards where necessary to prevent falls, but the ladder access must not be unsafely obstructed. Ladders must extend at least 1.10 metres above the landing level for adequate handhold. Ladders should be considered as access equipment only. If working at height, then forms of access equipment with adequate protection preventing persons from falling must be utilised. When using a ladder, both hands must be free to enable adequate handhold. Ladders should be maintained in good order. Ladders not in good order should not be used. To reduce risks when using ladders, personnel should be suitably fit and trained in using ladders safely.
- 59.21 **Working platforms:** Working platforms must be a minimum width of 600mm, be wide enough for required access, work, persons and materials. They must be adequate for the weight loadings to be imposed upon them. Working platform lifts should be planned and constructed to safely accommodate the work required to be carried out on them to minimise bending, over-stretching and general manual handling. Working platforms must be fully boarded and the boards must be adequately supported and be in good condition. Platforms should be kept free from tripping hazards & unsafe obstructions, i.e., foot traps, over-lapped boards, waste & off-cuts of materials, etc.
- 59.22 **Protection preventing materials from falling off the scaffold:** An assessment should be carried out to evaluate the potential risk of materials falling from a scaffold. The minimum requirement for building sites to prevent materials from falling is brick guards. Where there could be a risk to the general public or occupiers, additional protection is required, i.e., scaffold fans, debris netting and Monaflex, etc. Any provision to prevent materials from falling must be maintained at all times

References

Legislation

The Work at Height Regulations 2005 as amended 2007
 Lifting Operations and Lifting Equipment Regulations 1998
 Provision & Use of Work Equipment Regulations 1998
 Personal Protective Equipment Regulations 2002
 Management of Health & Safety At Work Regulations 1999
 Construction (Design & Management) Regulations 2015
 Health and Safety (Safety Signs & Signals) Regulations 1996

Standards

BS 5973	Access and working scaffolds (refer to BS EN 12811-1 and TG20:21)
BS 1139-2.1-2.2 / EN74	Metal Scaffolding - Couplers
BS 2482	Specification for timber scaffold boards
BS 2830	Suspended safety chairs and cradles
BS 1397	Specification for Industrial Safety belts, harnesses and lanyards
BS 3913	Safety nets
BS 8093	Code of Practice for the use of safety nets, containment nets and sheets on constructional works
BS 6399-2	Loading for Buildings – Code of Practice for Wind Loads
BS 6399-3	Loading for Buildings – Code of Practice for imposed roof loads
BS 1129 & BS 2037	Class 1: Ladders - the heaviest duty, suitable for construction where the ladder is subjected to substantial loads. Class 3: Ladders – are for light domestic use

BS EN 131	Class 2: Ladders – intended for lighter trades such as decorating where relatively low loads are involved
BS EN 280	Mobile Elevating Work Platforms
BS EN 361	Full body harness
BS EN 1263	Safety Nets
BS EN 1570	Safety Requirements for Lifting Tables
BS EN 12810	Parts 1 & 2 Façade scaffolds made from prefabricated elements
BS EN 12811-1	Temporary Works Equipment
Part 1:	Scaffolds – Performance requirements and general design
Part 2:	Information on Materials
Part 3:	Load Testing
BS EN 12812	Falsework Performance requirements and general design
CP 118	The structural use of aluminium
BS 5975:2019	Code of Practice for temporary works procedures and the permissible stress design of falsework

HSE SIM

SIM 02/2010/04 The Management of temporary works in the construction industry

HSE ACoPS and Guidance

HS(G)150	Health and Safety in construction
HS(G)151	Protecting the public – your next move
CIS 17	Construction health and safety checklist (Rev. 1996)
CIS 49	General access scaffolds and ladders 1997
L 22	Safe use of work equipment ACoP and guidance
L 113	Safe use of lifting equipment ACoP and guidance

NASC Technical Guidance Notes

TG1:90	Edge protection for sloping roofs
TG2:90	European harmonization standards for steel scaffold tubes
TG3:90	Temporary rubbish chutes
TG4:95	Anchorage systems
TG5:91	Scaffold board specification
TG6:91	Timber batten specification (50mm and 63mm thickness)
TG7:91	Scaffold board nailplates
TG8:91	Fire damage
TG9:91	Guide to the design and construction of temporary roofs with scaffolding materials
TG10:91	Flame retardant treatments for timber scaffold boards and battens
TG11:91	Stress corrosion cracking in high tensile steels and alloys
TG12:92	Tying down of scaffold boards
TG13:92	Non-standard boarded platforms
TG14:93	Supplementary couplers and check couplers
TG20:21	Volumes 1 & 2 – Guide to Good Practice for Scaffolding with Tubes and Fittings
SG4:15	Preventing Falls in Scaffolding

Information and Miscellaneous

RoSPA Technical pamphlet No. 4 scaffolding.

RoSPA Technical pamphlet No. 5 Timber for ladders and scaffolding boards.

Safety of Scaffolding; Report of the Sub-Committee of the Joint Advisory Committee on Safety and Health in the Construction Industry (HMSO).

Practical Scaffolding (CITB).

CIP Construction Safety Manual.

60 Site Electricity

- 60.1 The design and installation of site electrical power systems is a matter for specialists. The competence of an Electrician or an Electrical Contractor must be checked before electrical works start on site. They should be members of at least one of the following: The Electrical Contractors Association; Chartered Electrical Engineers; National Inspection Council for Electrical Installation Contracting. Temporary electrical installations should be checked and co-ordinated by the Temporary Works Co-ordinator.
- 60.2 All works undertaken by Electrical Engineers / Contractors must comply with relevant Regulations and Approved Codes of Practice, The Electricity at Work Regulations 1989, The Low Voltage Electrical Equipment (Safety) Regulations 1989, The IET Wiring Regulation (Code of Practice) 18th Edition, etc.

- 60.3 **General electricity demands for sites:** Plant; 415v 3 Phase. Portable Tools; 110v Single and 3 Phase. General Site Lighting; 110v Single Phase. Site Huts; 240v Single Phase.
- Before work starts on site contact the local Electricity Company and the Client to obtain all appropriate Service Drawings and advice regarding existing services.
 - Existing services should be made dead where dangers could arise from the electric due to building operations.
 - All appropriate warning notices/signs should be displayed on live equipment/cables.
 - Electrical equipment/cables should not be sited where it could be a hazard or be damaged.
 - Electrical equipment/cables should be checked regularly to ensure that it is maintained in good order. All electrical equipment found not in good order, must be taken out of service immediately.
 - Where a high voltage is taken, the user must provide adequate substation facilities and appoint trained duty holders to operate the equipment and supervise its maintenance, alteration, repair or extension as may be necessary. Safe systems of work must be adopted and these will usually include the use of permit to work procedures.

60.4 Full details on Site Electrical Safety can be found at the Company's Head Office Library.

61 Site Planning and Layout

61.1 This section provides a checklist of items which should be taken into account to achieve Health & Safety in site planning and layout. Following a preliminary appraisal, the check-list is sub-divided into Administrative and Operational Sections and both are presented in logical sequence.

61.2 Preliminary Appraisal:

- Examine contract documents and specification and establish constraints which affect planning of site layout and methods of construction.
- Define logic of the work sequence.
- Define area of site available for plant, access, temporary buildings and services, materials storage and welfare requirements.

61.3 Once the basic appraisal is complete the contract should be planned with due regard to the principles established by the Health & Safety At Work etc. Act - in particular that the employer shall provide:

- A safe system of work.
- Safe plant and equipment, safe erection and testing.
- Safe handling, storage and transport of materials.
- Safe place of work, safe access.
- Safe working environment.
- Information, instruction, training and supervision.
- Adequate welfare facilities.
- Protection of all persons likely to be affected by work activities, including the public, particularly children.

61.4 Many organisations already pay considerable attention to site planning and layout. They know from experience that fore-thought in this direction will be more than repaid by the savings effected in reducing hazards to people, equipment, plant and materials. They know too, that elimination of hazards is inherent in producing a job that runs smoothly - with materials delivered as and when required, with statutory requirements taken into account, with storage, fire precautions, health and welfare arrangements all worked out in advance. It even pays to devise safe ways and means of bringing money from the bank and to arrange parking space for employees' cars to prevent obstructions on site. This is an example which can profitably be followed by all sections of the industry.

61.5 Administrative matters - Detailed checklist — Written notification to:

- Health & Safety Executive Area Office (Form F.10) prior to commencement of construction work.
- The Company must comply with the Regulatory Reform (Fire Safety) Order 2005 which requires a Fire Risk Assessment approach to evaluate the potential of fires and consideration toward appropriate preventative measures and controls.

61.6 Statutory Undertakers - Water, British Telecommunications, Gas & Electricity Companies:

- Request in writing to locate existing services, including gas, water, electricity, British Telecommunications, Sewers etc.
- Give instructions to isolate or divert existing supplies.
- Arrange isolation or diversion of overhead supplies or provide adequate protection.
- Arrange for temporary earthed supplies (single and three phase) for electricity.
- Consider safe location of sub-station for electricity.

61.7 Permits To Work - Check whether Permit to Work systems exist or are required.

- 61.8 Documentation - Statutory forms, notices and registers. Company documentation.
- 61.9 Safety Policy - Establish arrangements for conforming with Company Safety Policy on site and consider the possibility of exchanging Safety Policy Documents with Sub-Contractors and other Contractors. Consider arrangements for joint consultation.
- 61.10 Health and Welfare - The Construction (Design & Management) Regulations 2015.
- 61.11 Canteen and Catering:
 - Plan for total numbers employed.
 - Provide sufficient tables and chairs, sufficient warmth.
 - Provide means of heating food and boiling water.
- 61.12 Toilets, washing facilities, drinking water:
 - Provide sufficient pans and basins.
 - Hot and cold or warm water; soap and towels.
 - Drinking utensils.
- 61.13 Clothing accommodation:
 - Provide adequate and suitable accommodation for employees' clothing and protective clothing.
 - Provide means for drying employees' clothing and protective clothing.
- 61.14 First Aid: First Aid requisites and attendants must be provided in accordance with Regulations.
- 61.15 Fire Precautions:
 - Establish fire precautions necessary to comply with statutory requirements.
 - Additional arrangements will be necessary where temporary residential accommodation is provided.
- 61.16 Telephone: Arrangements for summoning an ambulance to be displayed; where no telephone facilities are available, there must be transport capable of taking a stretcher.
 - Other emergency numbers for, e.g., fire authority, to be displayed.

62 Site Welfare Facilities

- 62.1 The Construction (Design & Management) Regulations 2015. Further detailed information is contained in these Regulations or in the HSE's Construction Site Welfare Facilities Guidance Notes. This section highlights the main requirements and the Company's Policy for compliance.
- 62.2 Site workers should have adequate toilet and washing facilities, a place for warming-up and eating their food and somewhere for changing/storing clothing. The Company is responsible for providing or making available such welfare facilities as necessary for its site workers whether they are direct employees or sub-contractors. The welfare facilities should be sufficient for everybody who is working on the site and can be arranged separately or jointly with others under Shared Welfare arrangements. When working on Client's premises carrying out small works operations, often the Client will be in the position to provide suitable welfare facilities.
- 62.3 The status of the Company on site would determine whether the Company's Site Management would be in control of the site welfare facilities which would also include first aid provisions. On most sites, it is best that the Managing Contractor/Main Contractor/Client etc., provides all the necessary welfare facilities and that they offer those provisions under Shared Welfare arrangements. Those arrangements should be in writing by completing Form F2202. Although the F2202 has been repealed, the form is still useful in establishing the provision of welfare to others such as sub-contractors.
- 62.4 Sanitary Conveniences: The number of toilets required will depend on the number of people working on the site. Wherever possible, toilets should be flushed by water, but if this is not possible, use chemical toilets. Rooms containing sanitary conveniences should be adequately ventilated and lit. Men and women may use the same toilet, provided it is in a lockable room and is suitably positioned away from any urinals which may also have been provided. A wash-hand basin with water, soap and towels or dryers should be close to the toilets if the toilets are not near the other washing facilities provided on the site.

- 62.5 Washing Facilities:** On all sites, there must be basins large enough to allow people to wash their faces, hands and forearms. All basins should have a supply of clean hot and cold, or warm water. If mains water is not available, water supplied from a tank may be used. Soap and towels (either cloth or paper) or dryers should also be provided. Where the work is particularly dirty, or workers are exposed to toxic or corrosive substances (for example, during work in contaminated ground), showers may be needed. Full consideration must be given to comply with the COSHH Assessment Control Measures where hazardous substances are concerned. Men and women can share basins for washing their hands, faces and arms. A shower may be used by both men and women provided that it is in a separate, lockable room so that the room can be used by one person at a time. Rooms containing washing facilities should be sufficiently ventilated and lit. Washing facilities must be provided adjacent to all drying rooms and sanitary conveniences.
- 62.6 Drinking Water:** Make sure there is a supply of drinking water. It is best if a tap direct from the mains is available. Otherwise bottles or tanks of water may be used. If water is stored, it should be protected from possible contamination and changed often enough to prevent it from becoming stale or contaminated. Containers of drinking water must be clearly marked. Drinking water taps should be clearly marked and cups or other drinking vessels should be available at the water tap, unless the water is supplied as an upward jet which can be drunk from easily (for example, a drinking fountain).
- 62.7 Storage and changing of clothing:** Make sure there are arrangements for storing clothing not worn on site and for protective clothing needed for site works. Where there is a risk of protective site clothing contaminating everyday clothing, these items should be stored separately. Where men and women are working on site, separate changing arrangements must be provided. There should be somewhere to dry wet site clothing.
- 62.8 Rest Facilities:** Facilities for rest and meal breaks should be available. The facilities should provide shelter from the wind and rain and be heated as necessary. The rest facilities should have tables and chairs, a kettle or urn for boiling water and a means for preparing food.
- 62.9 Smoking:** Smoking in an enclosed workplace is prohibited. Anyone found smoking in Company premises or in an enclosed workplace must be instructed to extinguish the cigarette immediately in a safe manner and be subjected to disciplinary measures (See Appendix).
- 62.10 Location of Welfare Facilities:** Welfare facilities should be easily available to people working on the site. Toilets need to be easily accessible from where the work is being carried out. Wash hand basins should be close to toilets. Washing facilities need to be near rest rooms so that it is convenient for people to wash before eating. In most cases these facilities will be provided on site. Where work is carried out in occupied premises, arrangements can be made with the occupier to use the facilities provided for the people who normally use the premises. In some cases, welfare and toilet facilities may be made available in nearby premises. This is acceptable, providing these arrangements are clear and agreed with the occupier of the premises. Such arrangements may be appropriate for short duration work or work done by mobile gangs.
- 62.11 If mobile gangs are being employed** at work at a number of locations over a few days, facilities can be provided at a central location. This is on condition that they are available to workers within reasonable walking distance or within a reasonable time, taking into account any transport which is available. Alternatively, arrangements can be made at local houses, cafes or other premises. However, these arrangements should be made and agreed in advance by Managers or Site Managers / Supervisors of the Company. Arrangements with local cafes, etc, would not be suitable where employees need suitable facilities for personal hygiene regarding hazardous substances or contaminated sites etc. Workers should not be left to make their own arrangements.
- 62.12 All welfare facilities must be kept clean** and if food is stored on site, it must be kept in a hygienic manner and at the correct temperature. The changing of clothing or the storage of equipment and tools are not allowed in the canteen. Food scraps and rubbish must be removed from sites as soon as possible. All personnel should change their clothing and wash themselves before taking meals particularly when working in environmental conditions which have exposed them to bacteria and harmful substances.

63 Storage and Use of Explosive and Flammable Substances

- 63.1 Comply with the requirements of the relevant statutory provisions, e.g., Petroleum (Consolidation) Act, Explosives Act and The Dangerous Substances and Explosive Atmospheres Regulations 2002.
- 63.2 The manufacturers / suppliers must provide guidance and information for storage for their products, but general considerations should include a ventilated area, keeping ignition sources away from storage, keeping these substances secure and displaying appropriate safety signage. Consideration should also be given to the location of storage areas so that if there was an emergency its impact on humans, neighbours and the business etc., is kept to a minimum.
- 63.3 Competent supervision should regularly check the storage areas and relevant safety arrangements are maintained and that suitable firefighting measures are provided. It is advisable to keep storage of these types of substances to a minimum.
- 63.4 Training. Any persons required to use these substances must be trained on their safe use and associated emergency measures.

64 Temporary Works

- 64.1 The HSE published guidelines in April 2010 on the management of temporary works in the construction industry, essentially aimed at contractors. The HSE guideline also provides useful information for the Design Team to highlight and better control the risks associated with all types of temporary works on construction sites and provide guidance for inspectors of temporary works.
- 64.2 Examples of temporary works include, but are not limited to:
- Earthworks - trenches, excavations, temporary slopes and stockpiles.
 - Structures - formwork, falsework, propping, façade retention, needling, shoring, edge protection, scaffolding, temporary bridges, site hoarding and signage, site fencing, cofferdams.
 - Equipment / plant foundations - tower crane bases, supports, anchors and ties for construction hoists and mast climbing work platforms (MCWPs), groundworks to provide suitable locations for plant erection, e.g., mobile cranes and piling rigs.
- 64.3 The aim is to:
- Promote awareness and knowledge of the importance of managing temporary works;
 - Improve contractors' management arrangements of temporary works;
 - Increase the competence of those engaged in temporary works management and design;
 - Reduce accidents arising from temporary works failures
- 64.4 "Temporary works" is a widely used expression in the construction industry and covers any "engineered solution" used to support or protect an existing structure or the permanent works during construction or to support an item of plant or equipment or support the vertical sides or side-slopes of an excavation or the provision of access to the works.
- Temporary works may or may not remain in place at the completion of the works. The correct design and execution of temporary works is an essential element of risk prevention and mitigation in construction.
 - BS 5975:2019 provides recommendations and guidance on the procedural controls to be applied to all aspects of temporary works in the construction industry and on the design, specification, construction, use and dismantling of falsework. Contractors must be able to demonstrate that they have in place effective arrangements for controlling risks arising from the use of temporary works including:
 - ♦ The appointment of a competent Temporary Works Co-ordinator (TWC);
 - ♦ Preparation of an adequate design brief;
 - ♦ Completion and maintenance of a Temporary Works Register;
 - ♦ Production of a temporary works design (to include Designer's Risk Assessments and Method Statements where appropriate);
 - ♦ Independent checking of the temporary works design;
 - ♦ Issue of a design / design check certificate, if appropriate;
 - ♦ Pre-erection inspection of the temporary works materials and components.
 - Control and supervision of the erection, safe use, maintenance and dismantling of the temporary works – i.e., procedures to:
 - ♦ Check that the temporary works have been erected in accordance with the design, and issue a formal "permit to load" where necessary.
 - ♦ Confirm when the permanent works have attained adequate strength to allow dismantling of the temporary works, and issue a formal "permit to dismantle" where necessary.

- ◆ The procedure should include measures to ensure that the design function, the role of TWC, and Temporary Works Supervisor(s) where appropriate, are carried out by competent individuals.
- ◆ Where the Company may not have the experience to operate their own temporary works procedure external expertise must be obtained by outsourcing aspects of temporary works design and management.
- The Temporary Works Co-ordinator (TWC) is responsible for ensuring that the Company's procedures for the control of temporary works are implemented on site. The TWC is not normally the designer, but is responsible for ensuring that a suitable temporary works design is prepared, checked and implemented on site in accordance with the relevant drawings and specification.
- The TWC for a project should be formally appointed and have adequate authority to carry out their tasks, including stopping the work if it is not satisfactory. It is essential that those selected to act as TWC are competent with relevant up-to-date training, experience and qualifications appropriate to the complexity of the project. The HSE advise that ideally a TWC would:
 - ◆ Have experience of the relevant types of temporary works;
 - ◆ Have completed formal TWC training;
 - ◆ Hold a Degree / HND in civil/ structural engineering;
 - ◆ Be a Chartered Civil / Structural Engineer.

64.5 The HSE recognise that although a Chartered Civil or Structural Engineering qualification is desirable, the numbers with these qualifications and with experience of the co-ordination of temporary works is unlikely to be sufficient to provide cover for all projects. The HSE recommend that the key attributes of a competent TWC are in order of priority,

- Relevant experience;
- Formal TWC training;
- Professional qualifications;
- TWCs should have the competence and authority to be effective.

64.6 **Temporary Works Supervisor (TWS):** On larger sites, or where a number of sub-contractors are involved, it may be appropriate for one or more Temporary Works Supervisors (TWS) to be appointed. A TWS should be responsible to the TWC and assist the TWC in the supervision of temporary works.

64.7 **Temporary Works Register:** A Temporary Works Register is to be prepared and maintained for each project containing a list of all identified temporary works items associated with the project. A Temporary Works Register is contained in Part 3 of the Company Health & Safety Policy.

64.8 **Design brief:** A design brief should be prepared for each item of temporary works to serve as the focus for subsequent decisions, design work calculations and drawings. It should include all data relevant to the design of the temporary works and should be prepared in good time to allow for all subsequent activities. The brief may be relatively simple for the smaller schemes, but for major work, more information will need to be collected and collated before design work can commence. The TWC should ensure that an adequate design brief is provided to the designer and design checker of the temporary works.

64.9 **Temporary works design:** The design of the temporary works should be based on the agreed design brief. Any proposed alteration or modification of the design brief by the designer should be referred back to the TWC. The temporary works should be designed in accordance with recognised engineering principles. The preparation of design calculations, drawings and specification should be undertaken with similar rigour to the procedures applied to the design of the permanent works.

64.10 **Temporary works designers include:** The Manufacturers and Suppliers of proprietary temporary works equipment and those working in a Contractor's Temporary Works Department or office. Temporary works designs are sometimes categorised to indicate the complexity / simplicity of the specific temporary works structure and the potential risk. See next page for an example:

Simple and / or potentially low risk temporary works
Standard scaffold
Formwork less than 1.2m high
Hoarding and fencing up to 1.2m high
Simple propping schemes – 1 or 2 props
Internal hoarding systems and temporary partitions not subject to wind loading
Shallow excavations less than 1.2 deep / high
More complex and / or potentially medium risk temporary works
Falsework up to 3m high
Formwork for columns and walls up to 3m high
More complex propping schemes – multiple props at single level
Needling of structures up to 2 storeys high
Excavations up to 3m deep / high
Safety net systems fixed to robust primary members
Hoarding and fencing up to 3m high
Simple designed scaffold
Temporary roofs
Complex and / or potentially high risk temporary works
Falsework and formwork over 3m high
Trenchless construction, including headings, thrust bores, mini tunnels
Working platforms for cranes and piling rigs
Tower crane bases
Façade retention schemes
Flying and raking shores
Complex propping schemes – multiple props and multiple levels
Needling of structures greater than 2 storeys high
Ground support schemes greater than 3m deep
Complex designed scaffold
Cofferdams
Bridge erection schemes
Jacking schemes
Complex structural steelwork and precast concrete erection schemes
Hoarding and fencing over 3m high

64.11 In practice, even relatively simple temporary works may require careful consideration in their design, construction, commissioning, inspection and loading. An apparently simple temporary works job could lead to failure and even to fatalities if it is not competently executed. The choice of the appropriate temporary works solution, including the use of “standard solutions,” is discussed in BS5975. A “standard solution” is an arrangement for which the basic design work has already been carried out and is presented in a tabular or similar form, and for which no further calculations are required.

64.12 Design Checks: Before erection commences, the temporary works design should be checked for:

- Design concept
- Strength and structural adequacy (including foundations and lateral stability)
- Compliance with the design brief.

64.13 The design check should be carried out by an independent competent person(s). The ability and independence of the checker should be greater where the temporary works are more complex or where new ideas are incorporated. Recommendations for various categories of design check are given in Table 1 of BS5975:2019, reproduced below:

Categories of Design Check (taken from BS 5975:2019)

Category	Scope	Comment	Independence of checker
0	Restricted to standard solutions only, to ensure the site conditions do not conflict with the scope or limitations of the chosen standard solution. These may include standard trench boxes.	This applies to the use of standard solutions and not the original design which will require both structural calculation and checking to category 1, 2 or 3 as appropriate.	Because this is a site issue, the check may be carried out by another member of site or Design Team.
1	For simple designs. These may include: formwork; falsework; needling and propping to brickwork openings in single storey construction.	Such designs would be undertaken using simple methods of analysis and be in accordance with the relevant standards, supplier's technical literature or other reference publications.	The check may be carried out by another member of the Design Team.
2	On more complex or involved designs. Designs for excavations including excavation support using sheet piles, for foundations, for structural steelwork connections, for reinforced concrete. Designs where stability is obtained by restraint at the top of the temporary works (e.g. top-restrained falsework).	Category 2 checks would include designs where a considerable degree of interpretation of loading or soils' information is required before the design of the foundations or excavation support or slope is carried out	The check should be carried out by an individual not involved in the design and not consulted by the Designer.
3	For complex or innovative designs, which result in complex sequences of moving and / or construction of either the temporary or permanent works. It also includes basement excavations and tunnels.	These designs include unusual designs or where significant departures from standards, novel methods of analysis or considerable exercise of engineering judgement are involved.	The check should be carried out by another organisation and should include an overall check to assure co-ordination of the whole design.

64.14 Temporary works management arrangements suitable for small contractors: For smaller contractors, the principles of BS5975 should be in place, if not the formal and specific procedures, in particular:

- Ensuring a suitably competent Temporary Works Designer / Advisor is in place to supply an engineered solution;
- Adequate information flow;
- Design checking to an appropriate level;
- Suitable verification of correct erection of the temporary works and someone overseeing and co-ordinating the whole process.

64.15 Smaller contractors may not have anyone sufficiently experienced to plan effectively all, but the most simple temporary works. There should be clear evidence that appropriate external expertise has been engaged. This includes obtaining the services of a suitably competent TWC and temporary works designer to ensure temporary works are effectively designed, constructed, inspected, loaded and managed. On some projects, particularly smaller jobs involving low risk temporary works, it may be appropriate for the TWC and designer roles to be carried out by the same person.

64.16 Further information visit HSE's website, search for Temporary Works.

65 Transporting / Storage of Petroleum Spirits / Gases

65.1 Petroleum-Spirit / Gases should not be transported in vehicles unless it is essential and that the vehicles have the appropriate signs displayed on them and fire equipment in them.

65.2 Explosion proof metal petrol containers (BS Approved) must be used for storage/transportation and they must be marked: "Petroleum-Spirit - Highly Flammable" and must not exceed the capacity of two gallons.

- 65.3 Petrol containers when being transported in vehicles must be secured in position and protected from other equipment in the vehicles from damaging them.
- 65.4 Gas cylinders, full or empty, must be kept upright and adequately secured to prevent movement when in vehicles.
- 65.5 Dry Powder Fire Extinguishers must be located in the vehicles in an easily accessible position for emergency (fire). Specifications of the type of fire extinguishers are as follows:
 - Dry Powder
 - Transport type (with strap)
 - Empty/full gauge
 - British Kite Marked
 - Size: (1.5 kg)
- 65.6 Appropriate signs are required to be displayed on the rear of vehicles which carry Petroleum-Spirit / Gases. Warning notices should also be displayed inside vehicles.
- 65.7 Vehicles carrying Petroleum-Spirits / Gases must be adequately ventilated.

66 Use of Private Cars for Business Purposes

- 66.1 Persons who use their own vehicles in connection with their business must ensure their vehicle is in a safe roadworthy condition, has a current MOT Certificate and Road Tax. They should also ensure they inform their Insurance Company that they may use their vehicle for business purposes and ensure they have appropriate Insurance cover.
- 66.2 The Company requires any employees who use their private vehicle or hired vehicle for business purposes, to drive the vehicle responsibly and in accordance with the Road Traffic Act and The Highway Code.
- 66.3 All accidents and injuries which occur whilst using a private vehicle for Company purposes must be reported to Senior Management immediately.
- 66.4 Persons using their private vehicles or hired vehicles for business purposes must have a full drivers licence. Any convictions or disqualifications must be reported to Senior Management.
- 66.5 Persons are not allowed to drive vehicles under the influence of drink or drugs which may affect that person's ability to drive safely.
- 66.6 Any goods carried in connection with Company business must be safely transported, i.e., in the boot of the car and adequately secured to prevent the possibility of danger of goods etc., impeding or injuring the driver or passengers. Private vehicles must not be overloaded.
- 66.7 The Company requires you not to drive your vehicles onto sites or made-up roads where your vehicle could become damaged.
- 66.8 Maintenance, repairs and safety checks will be the responsibility of persons using their private vehicles for Company business.

67 Company Vehicles

- 67.1 The Company vehicles, cars, vans, lorries, are vital pieces of equipment and must be treated with respect. Road accidents are one of the largest causes of death in this country.
- 67.2 Persons driving a Company vehicle must have a full drivers licence. Any convictions or disqualifications must be reported to Senior Management. Only persons given permission by Senior Management are allowed to drive a Company vehicle. Persons are not allowed to drive vehicles under the influence of drink or drugs which may affect that person's ability to drive safely.
- 67.3 Maintenance: Company vehicles should be checked by the drivers daily to ensure their vehicle is in good, safe, roadworthy condition, in accordance with the vehicle handbook. Particular attention should be given to the legal tread limits of tyres, tyre pressure, lights, brakes, brake fluid levels, water and oil levels.
- 67.4 Vehicles are required to be serviced in accordance with the Manufacturers recommendations.

- 67.5 Vehicles should be kept clean and tidy. Items being transported in or on Company vehicles must be adequately secured in position and must not overhang the vehicle.
- 67.6 Vehicles carrying potentially dangerous substances must have the appropriate warning signs displayed on them so that in the event of an emergency, potential dangers will be known. If highly flammable substances are transported in vehicles, i.e., LPG Gas bottles, petrol cans, solvents etc., appropriate fire extinguishers must be carried in the vehicles. Petrol cans must be anti-spillage/anti-explosive type.
- 67.7 **Vehicle Accidents:** Damage caused to vehicles, no matter how slight, must be reported immediately to Senior Management and on your next scheduled visit to the office, you are to ensure that you complete an appropriate claims form giving all details of the occurrence.
- 67.8 In the event of a road traffic accident, the following procedures must be adhered to. Obtain the following information:
 - Name and address of the driver and owner.
 - Make, model and registration number.
 - Details of their Insurers.
 - Names and addresses of any witnesses.
 - Details of damage to all vehicles involved.

68 Ventilation for Hazardous Gases or Oxygen Deficiency

- 68.1 Working environments must be kept free from toxic or explosive gases and it must be remembered that any gases which are heavier than air will tend to settle in excavations, basements and drains etc. The gases involved may be natural, like methane and sulphur dioxide or they may arise from nearby internal combustion engines (carbon monoxide), leakage from liquefied petroleum gas and acetylene equipment, fuel storage tanks and from welding operations, etc., or from substances used. (See Permit to Enter for Confined Spaces Form in Appendices Section).
- 68.2 One of the most common methods of keeping the atmosphere healthy is to use ventilation equipment to blow clean air into the working environment in sufficient quantities to dissipate the hazard, but careful consideration must be given to this method because this method may not efficiently remove particular hazards.
- 68.3 Where it is likely for gases to be present or generated that could be hazardous, tests must always be carried out in advance of work starting and continually monitored as work progresses with the use of Gas Detection Equipment.
- 68.4 No-one must enter into a working environment if toxic / inflammable gases or oxygen deficiency is detected and if a gas detector alarm goes off whilst persons are working in a confined space, then all persons must evacuate the working environment immediately.
- 68.5 Gas boiler flues, general safety precautions. Where work is to be carried out in close proximity (e.g. *within 2 metres of a domestic house gas boiler flue venting to atmosphere, Note: a greater distance will be necessary for larger gas boiler flues or other fuelled boilers such as oil*), a **Risk Assessment** should always take place to ensure suitable precautions and controls are in place to prevent the possibility of Carbon Monoxide (CO) poisoning. Whenever work is required to be carried out in the proximity of a working gas boiler flue the boiler should be switched off for the duration of the works and a permit to work must be in operation to ensure that suitable controls are in place. Works in the vicinity of a working gas boiler flue should never be allowed to hinder / obstruct the normal ventilation operation of the flue. In the rare event of a boiler required to remain operational in an area where close proximity works is to be carried out a Gas Safe engineer and boiler manufacturer should be consulted regarding alternative venting possibilities i.e. temporary boiler flue extension, or additional precautionary measures etc. **Carbon Monoxide poisoning symptoms** are headaches, breathlessness, nausea, dizziness, collapse, loss of consciousness, tiredness, drowsiness, vomiting, pains in the chest, stomach pains, erratic behaviour or visual problems. **Why is Carbon Monoxide dangerous.** CO is colourless, odourless, tasteless therefore difficult to detect. Breathing in Carbon Monoxide can kill quickly because it stops the blood from bringing oxygen to cells, tissues and organs.
- 68.6 For advice regarding ventilation requirements contact the Company Safety Advisor.

69 Violence at Work Policy

- 69.1 There are five main pieces of health and safety law which are relevant to violence at work. These are:-

The Health & Safety At Work etc. Act 1974 (HSW Act) – Employers have a legal duty under this Act to ensure, so far as is reasonably practicable, the health, safety and welfare at work of their employees.

The Management of Health & Safety At Work Regulations 1999 – Employers must assess the risks to employees and make arrangements for their Health and Safety by effective:

- Planning;
- Organisation;
- Control;
- Monitoring and review.

The risks covered should, where appropriate, include the need to protect employees from exposure to reasonably foreseeable violence.

The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR) – Employers must notify their enforcing authority in the event of an accident at work to any employee resulting in death, major injury or incapacity for normal work for three or more days. This includes any act of non-consensual physical violence against a person at work.

Safety Representatives and Safety Committees Regulations 1997 (a) and The Health & Safety (Consultation with Employees) Regulations 1996 (b) – Employers must inform and consult with employees in good time on matters relating to their Health and Safety. Employee representatives, either appointed by recognized trade unions under (a) or elected under (b) may make representations to their employer on matters affecting the Health and Safety of those they represent.

69.2 The definition of work related violence is an incident in which a person is abused, threatened or assaulted in circumstances related to their work. Verbal abuse and threats are the most common type of incident.

The Company recognizes that both employer and employees have an interest in reducing violence at work. Violence can lead to poor morale and a poor image for the organization, making it difficult to recruit and keep staff. It can also mean extra cost, with absenteeism, higher insurance premiums and compensation payments. For employees, violence can cause pain, distress and even disability or death. Physical attacks are obviously dangerous, but serious or persistent verbal abuse or threats can also damage employees' health through anxiety or stress.

69.3 For a variety of reasons some employees may be reluctant to report incidents of aggressive behaviour which make them feel threatened or worried. They may for instance feel that accepting abuse is a part of the job. Employees will be encouraged to report incidents promptly and fully and let them know that this is what you expect. All incidents of violence at work should be reported to Senior Management immediately or as soon after as possible. A record will be kept of all incidents to enable a complete picture of the problem to be built up. The Director in charge of Health and Safety has overall responsibility for dealing with violence at work matters.

69.4 If members of the workforce are reluctant to discuss matters at the workplace it would be helpful to provide an alternative arrangement. For this reason a copy of the Violence at Work Policy is provided at Induction for employees to use as guidance if they prefer to provide you with details in writing.

69.5 Classify all incidents – use headings such as place, time, type of incident, potential severity, who was involved and possible causes. It is important that each incident report is examined to establish whether there could have been a more serious outcome. Here is an example of a simple classification to help decide how serious incidents are:-

- Fatal injury;
- Major injury;
- Serious or persistent verbal abuse;
- Injury or emotional shock requiring first aid, out-patient treatment, counselling, absence from work (record number of days);
- Feeling of being at risk or distressed.

Details from incident records along with the classifications can be used to check for patterns. Look for common causes, areas or times. The steps you take can then be targeted where they are needed most.

69.6 Try to predict what might happen – do not restrict assessments to incidents which have already affected employees. There may be a known pattern of violence linked to certain work situations. Trade and professional organisations and trade unions may be able to provide useful information on this. Articles in the local, national and technical press might also identify relevant incidents and potential problem areas.

69.7 Establishing the extent of the problem: Management should seek the views of the workforce using the questions below:-
 Do they have a problem with violence at work?
 Do they ever feel threatened or at risk from violence at work;
 Obtain details of any incidents which have happened to them:-
 Details of the victim(s)
 The assailant(s)
 Any witnesses
 The outcome, including working time lost for the employee and the Company
 Details of the location of the incident

69.8 Deciding what action to take – Having found out that violence could be a problem for the Company’s employees, decide what appropriate action is necessary to reduce the potential of violence at work.

69.9 Who might be harmed and how – Evaluate the risk – Are the precautions already in place adequate or should the arrangements be improved, i.e.,

- The level of training and information provided;
- The environment;
- The design of the job.

Keep a record of significant findings of the assessment. The records should provide a working document for both Managers and employees. Regularly review assessments for a true reflection of the current work situation. Add further measures or make change to existing arrangements where they are insufficient. This is particularly prevalent when there are job changes. If a violent incident occurs, check the assessments and make the necessary changes.

69.10 Take Action – The Company’s policy in dealing with violence at work has been included in the Company Safety Policy to ensure that all employees are aware of the Policy arrangements. This topic should be included on the agenda of Safety Management Meetings. Incidents should be thoroughly investigated and recorded using an Incident Report Form contained in the Appendices Section, Part 3. The Company’s aim is to progressively reduce the potential of violent situations for the workforce.

69.11 What about the victims? If an employee has been subjected to violence at work, Management should respond quickly to avoid any long-term stress to the employee. The Company’s plan is as follows:-

- Debriefing – Victims will need to talk through their experience as soon as possible after the event.
- Time off work – Management are to be mindful about how individuals react and how much time they need off work to recover. There may also be a need for specialist counselling for victims.
- Legal help – The Company is to support serious cases of violence at work with legal help where appropriate.
- Other employees – The Company recognizes that other employees may need guidance or training to help reduce the potential of violence at work.

69.12 Information and Support – The Home Office leaflet “Victims of Crime” gives advice to employees suffering with injury, loss or damage from a crime, including applying for compensation. This leaflet is obtainable from libraries, Police Stations and Citizen Advice Bureaus.

Victim Support and advice can be obtained from:
 Victim Support, National Office, Cranmer House, 39 Brixton Road, London, SW9 6DZ. Tel: 020-7735-9166

Other information available: The Health & Safety Executive – Preventing Violence to Staff, HSE Books, ISBN 0 11 885467 4.

70 Welding

70.1 General introduction to welding: Welding has been defined as the fusion of two pieces of metal, rendered plastic or liquid by heat or by pressure or by both. There are many different welding processes, but the two most commonly used are gas welding and electric arc welding.

70.2 In gas welding, metal fusion is achieved by the use of very high temperature flames, produced by a mixture of gases at a torch or blowpipe. The gases involved are oxygen and a fuel gas, such as acetylene or LPG.

- 70.3 In electric arc welding, the arc is struck between an electrode and the workpieces. The temperature attained by the welding arc is approximately 4000°C. At this temperature, the workpieces are melted and fused together.
- 70.4 Hazards associated with welding: The principal hazards associated with gas welding are fires, explosions, burns, eye damage, heat stress, respiratory disease and systemic poisoning. This includes mild steel welding fumes according to HSE Bulletin No. STSU1 – 2019. The Workplace Health Expert Committee has endorsed the reclassification of mild steel welding fume as a human carcinogen. Manganese, which is present in mild steel welding fumes, can cause neurological effects similar to Parkinson's disease and there is also new scientific evidence from the International Agency for Research, that mild steel welding fumes can cause lung cancer and possible kidney cancer.
- 70.5 Additional hazards which may result from arc welding are electric shock, ultra-violet radiation and ozone.
- 70.6 Fires and explosions: The potential for fires and explosions is always present unless gas cylinders are stored and handled correctly. When any type of welding equipment is in use, the naked flame, or arc, provides a source of ignition for any combustible material, flammable gas or vapour.
- 70.7 Where possible, flammable materials should be kept out of any area where welding is taking place. Where such a course of action is not practicable, fire resisting sheets should be used to protect the surroundings from the flame and from spatter. At least one fire extinguisher should always be immediately available in the area of any welding operation.
- 70.8 Burns: Skin burns may result from metal spatter or from touching hot workpieces. The hands, arms, legs and feet are particularly vulnerable so should be protected by gloves or gauntlets, spats and jackets made from chrome leather. The use of leather safety footwear is also recommended.
- 70.9 Prolonged exposure to the heat from welding may lead to reddening of the skin of the face. In the case of gas welding, discomfort may be avoided by the use of a hand shield.
- 70.10 Eye damage: During any welding operation, the eyes may be penetrated by sparks, spatter, slag and other foreign bodies. During gas welding, infra-red and of course, visible light is emitted, but not ultra-violet light. Infra-red may dry the outer surface of the eye which may become irritated. The eyes must be protected from infra-red and visible light by means of box goggles with a housing made to BS 1542 and filters made to BS EN 169.
- 70.11 Ultra-violet (UV) radiation, to which the eyes are very sensitive, is produced during welding. The effect from UV radiation on the eyes may vary from conjunctivitis to possible permanent damage to the retina. In order to avoid these injuries, welders must, again in order to comply with The Protection of Eyes Regulations, use a welding helmet or hand screen, with housing complying with BS 1542 and fitted with appropriate filters to BS EN170. Persons working in the vicinity of arc welding also need protection from UV radiation. This protection can be given by means of screens placed around the welder's working area.
- 70.12 Heat stress: The longer duration of welding, the hotter the surroundings, including the welder, become. This heat stress is intensified the smaller the confines in which the welding operation is taking place. In extreme cases, the welder may faint. If thermal stress is envisaged, then ventilation should be introduced and consideration should be given to having a second person on standby in case of emergencies.
- 70.13 Respiratory disease: Every welding process produces gases and fumes which may result in respiratory disease.
- 70.14 The hot metal vapour from the weld pool will produce fumes when the vapour is rapidly cooled and oxidised by the surrounding air. The fumes consist mainly of a cloud of fine particles, predominantly iron oxide.
- 70.15 In addition to fumes, harmful gases may also be generated during gas welding, the principal toxic gases produced being carbon monoxide and nitrous fumes. Carbon monoxide is only formed in large enough amounts to be dangerous when combustion is incomplete. Arc welding produces ozone, a gas which irritates the respiratory system. Nitrous fumes are also produced, but to a smaller extent than during gas welding.
- 70.16 Before carrying out welding operations, the materials involved should be identified, the risks assessed and necessary control measures established.

- 70.17 It cannot be assumed that natural ventilation will produce acceptably low gas and fume concentrations in the welder's breathing zone. If a number of welding operations are being carried out in the same area, or the work is being carried out in a confined space, then the risk is obviously increased. The most effective form of fume control equipment is the type which allows the extractor hood to be placed as close to the weld as possible. Ideally, the extracted fume-laden air should be effectively filtered or exhausted into the atmosphere and not allowed to enter the air of the workplace. If fume control is suspected of being inadequate, the air in the breathing zone of the welder must be sampled to determine its suitability for breathing.
- 70.18 **Systemic poisoning:** The fumes from galvanised metals, lead coated or other toxic metals may affect not only the respiratory system, but also the rest of the body, particularly where the work which produces the fumes is carried on for any length of time in poorly ventilated conditions. The provision of an exhaust ventilation system for this type of work is essential and in addition, the use of respirators may be required. Air sampling must be carried out to confirm the adequacy of the precautions. Where the burning or cutting of lead coated steel takes place, the requirements of the Control of Lead at Work Regulations 2002 must be observed.
- 70.19 **Gas welding - Cylinder identification:** Oxygen cylinders are painted black and the outlet valve threads are right-hand. The outlet valve threads on fuel cylinders are left-hand, acetylene cylinders being painted maroon and propane, the most commonly used LPG, red. Valve connections are not, therefore, interchangeable and every effort should be made to preserve the original colour to avoid confusion.
- 70.20 **Gas characteristics:** Oxygen has no smell and is not itself flammable. However, too much oxygen in the atmosphere can be extremely dangerous. If the gas impregnates materials which normally do not burn, they are liable to burst into flames. Acetylene is highly flammable and with air or oxygen, may form an explosive mixture. LPG is heavier than air and may therefore, collect in low lying areas.
- 70.21 **Storage of gas cylinders:** Oxygen cylinders should be stored at least 3m away from those containing acetylene or LPG, since any mixture of oxygen with one of the fuel gases which might result from a leakage, could be highly explosive.
- 70.22 **Gas cylinders should preferably be kept on a hard standing in a safe place in the open air.** Where this is not reasonably practicable, flammable gases should be kept in a storeroom, constructed of non-combustible material, which has adequate high and low level ventilation. Oxygen cylinders must not be kept in the same storeroom as LPG or acetylene cylinders.
- 70.23 **Acetylene and LPG cylinders whether full or empty, should always be kept upright.** If they are allowed to lie horizontally, acetone or LPG liquid will be withdrawn from the cylinders with the gas.
- 70.24 **Oxygen cylinders may be stacked horizontally, maximum four high and wedged to prevent rolling.**
- 70.25 **Vertically stacked cylinders, whether full or empty, should be secured against falling.**
- 70.26 **Full cylinders should be kept separate from empty ones.** Cylinders should be shielded from direct sunlight or other heat, to avoid the build-up of excess internal pressure which might lead to gas leakage or in extreme cases, bursting of the cylinder.
- 70.27 **Cylinder handling:** Hands and clothing should be free from grit, grease and oil when cylinders are handled to prevent them from slipping and to prevent grit from getting into the valve, or grease onto the nozzle or valve.
- 70.28 **Every effort should be made to stop nozzles being used for handling purposes - they are not designed to take such weight or stress.**
- 70.29 **Cylinders in use should normally be kept and moved in purpose built trolleys.** If it is necessary to move cylinders which are not in a trolley, regulators and hoses should be detached and a check should be made that valves are properly shut. Under no circumstances should cylinders be rolled along the ground.
- 70.30 **If cylinders are to be lifted by crane, they should be secured in a special carrier.** On no account should they be lifted with chain or wire rope slings, which can so easily slip.
- 70.31 **Gas cylinders must be treated with care and not subjected to shocks or falls.** When they are transported in a vehicle and around the premises, they should be secured to avoid any violent contact which

could weaken the walls. When they are being unloaded from a vehicle, they should not be dropped to the ground.

- 70.32 Acetylene cylinders must always be transported and used in the vertical position. If they have been left in the horizontal position, they must be stood upright for approximately 10 minutes to settle out before use.
- 70.33 Regulators: Regulators must always be fitted to the cylinders to reduce the gas pressure from that in the cylinder to the working pressure of the blowpipe. Only regulators designed for the gas being used may be fitted to the cylinders.
- 70.34 Regulators are fitted with filters, but too much dust can easily clog them. To prevent this from happening, the cylinder valve should be "cracked open" before the regulator is fitted to the cylinder. This will blow all dust and other foreign matter clear from where it can do any harm.
- 70.35 The adjusting screw of the regulator must always be released before the cylinder valve is opened and the cylinder valve must be opened gradually. If it is opened suddenly, the abrupt compression of the gas will generate excessive heat which may be enough to ignite the valve seat material or damage the gauge.
- 70.36 Periodic checks should be made to ensure that no gas is leaking from the regulator when the pressure regulating screw is set at zero. A leak will cause a build-up of pressure in the hose to the torch, when the blowpipe valve is shut. Checks for gas leakage from any part of the equipment should only be made with water containing detergent. Bubbles in the detergent indicate the presence of a leak.
- 70.37 Hoses: Hoses should be kept for one type of gas only and colour coded for identification - red for acetylene or other fuel gases (except LPG), orange for LPG and blue for oxygen.
- 70.38 Hoses should be inspected daily to see that they are free from cuts, scratches, cracks, burnt or worn patches. They should be effectively clipped or crimped to the equipment and protected at all times from sharp edges, falling metal, passing traffic and sparks from the welding operation.
- 70.39 Non-return valves and flashback arrestors: If oxygen and the fuel gas become mixed in one of the hoses, a mixed gas explosion or "flashback" may occur. To avoid the risk of igniting such an explosive mixture, each hose should be purged with its own gas before the blowpipe is lit. This operation should be carried out in a well-ventilated space away from any source of ignition.
- 70.40 To prevent gas mixtures arising in use, e.g., if the blowpipe nozzle becomes blocked, non-return valves should be fitted to each blowpipe inlet connection. The additional use of flashback arrestors (flame arrestors) is strongly recommended. In situations of high risk, flashback arrestors must be fitted; examples of such situations include:
- In a confined space, where access is difficult or the means of escape may be endangered by an explosion.
 - Near compressed air workings.
 - When operatives are under training.
 - Where there is a device in the gas line with significant internal volume, e.g., a welding flux container.
- 70.41 Blowpipes: If the nozzle of a blowpipe becomes damaged or blocked, then a build-up of pressure can cause a reverse flow of gas and a flashback may occur. It is advisable therefore, that blowpipes should be dismantled and cleaned at regular intervals.
- 70.42 General precautions: Only proprietary fittings should be used on gas welding equipment. If a cylinder valve leaks and cannot be tightened with a spanner, the valve should be closed and the cylinder returned to the supplier with a label indicating the fault. Cylinder valves should never be packed with washers.
- 70.43 On no account should any oil, grease or other fatty substances such as soap, be allowed to come into contact with an oxygen regulator valve or fittings, as these substances are spontaneously combustible in the presence of oxygen. It is dangerous to allow the flame to come into contact with the cylinders, or a lighted torch to be hung on a regulator, or its guard. It is equally dangerous to rest blowpipes, even after the flame has been extinguished, on empty oil drums or similar containers. It has been estimated that only half a fluid ounce of flammable liquid may be required to give sufficient vapour to form an explosive atmosphere in a 40 gallon drum. Such a small volume of liquid would be present as only a thin film inside the drum.
- 70.44 Fatal and serious accidents are caused almost every year by oxygen enrichment of the atmosphere, due to leaks from equipment or the deliberate "sweetening" of the atmosphere with oxygen.

When a situation like this arises, the area of work must be purged with fresh air. All clothing should be well ventilated in the open air to prevent the risk of spontaneous combustion. At the same time, all sources of ignition in the area must be extinguished.

70.45 Operational faults: It is not uncommon for minor "explosions" to occur during welding or cutting. Some are more frightening than harmful; others can lead to very dangerous conditions. These "explosions" are known as:

- Flame snap-out: Unintentional extinction of the flame outside the nozzle orifice.
- Backfire: Retrogression of the flame towards the blowpipe mixer, the flame being either extinguished or re-ignited at the nozzle.
- Sustained backfire: Retrogression of the flame into the blowpipe neck or body, the flame remaining alight.
- Flashback: Retrogression of the flame beyond the blowpipe body into the hose, with possible subsequent explosion.

70.46 Snap-out: Occurring during use, due to:

- both regulators at incorrect pressure.
- torch nozzle obstructed.
- nozzle held too close to the work.
- blowpipe valves not opened enough to allow adequate gas flow.

70.47 Corrective action:

- completely shut both torch valves.
- check regulator settings.
- check nozzles.
- re-light.
- ensure adequate gas flow.

70.48 Backfire and / or Sustained Backfire: Occurring on lighting up, due to:

- regulators not set to correct pressure.
- light applied before flow of gas mixture properly established.

70.49 Corrective action:

- close both blowpipe valves, oxygen first.
- check cylinder pressure.
- check and adjust regulator setting.
- check torch.
- re-light when gas flow is properly established.

70.50 Occurring during use, due to:

- regulators not set to correct pressure.
- nozzle obstructed.
- nozzle overheated.

70.51 Corrective action:

- close both blowpipe valves, oxygen first.
- check cylinder pressures.
- check and adjust regulator settings.
- cool torch and check; clean nozzle orifice of any obstruction.
- re-light after purging both hoses.

70.52 Flashback: A flashback is the most dangerous of these occurrences, the cause being mixed gases in the hose(s). Usually this mixing of the gases occurs when the hoses have been disconnected from regulators and / or blowpipes or when new hose is being used for the first time. Sometimes it is due to loose connections. Usually one of the hoses will have burst and possibly ignited.

70.53 Preventive action:

- ensure all connections are tight.
- ensure cylinder valves are open and blowpipe valves are closed.
- set regulators to the required pressure.
- purge each hose separately and consecutively by opening the blowpipe valve and allowing gas to flow for sufficient time to ensure only pure gas remains in the hoses.
- close the valve for each gas as the exercise is completed.

- this exercise should be carried out only in the open or very well ventilated areas.

70.54 Corrective action, leaving action to others only increases the danger, so:

- close both blowpipe valves.
- close both cylinder valves.
- extinguish hose if alight.
- remove acetylene regulator, if "bull nose" is sooty, suspect a dangerous condition and carry out procedure advised under Heated Cylinder.
- if "bull nose" clean, replace regulator, repair hose(s) or obtain new ones.
- check whether cut-off valve (if fitted) has closed; re-set or replace as necessary.
- re-assemble equipment, hoses and continue with work.

70.55 Heated cylinder: Great care must be taken to avoid this very dangerous situation. Where an acetylene cylinder becomes accidentally heated or gets hot due to internal decomposition the operator should:

- raise the alarm.
- remove external source of heat.
- shut off valves, detach regulator and other fittings.
- if it is safe to do so, drag cylinder to an open space.
- keep applying water in any possible way until cool (if possible, immerse).
- open valve fully and keep applying water until cylinder is empty.

70.56 The Site Manager should:

- clear the area of Personnel.
- ring local fire brigade.
- contact the suppliers for advice and to remove cylinder.

70.57 Electric Arc Welding - The Circuit: The current use for electric arc welding may be either direct or alternating but, whichever system is used, it is important that the voltage be as low as is consistent with efficient welding.

70.58 Mobile Welding Work: This form of arc welding is usually carried out with direct current (DC), supplied from diesel driven mobile generators. A welding lead takes the current from the generator to the electrode holder. A welding return usually, but incorrectly, termed the "earth", carries the return current from the workpiece being welded back to the generator.

70.59 Cables and cable couplings: Welding leads and welding return cables are frequently dragged over rough surfaces. Their insulation should, therefore, be suitable for resisting hard wear and should be examined frequently for defects. The part of the cable which is connected to the electrode holder should be as flexible as possible, so as not to hamper the movement of the welder. The welder return should be of a section not less than that of the welding lead.

70.60 Joints between cables sections should be made with properly constructed insulated cable couplings, adequately shrouded so that live metal is not exposed if the parts of the connector are separated.

70.61 The welding return should be firmly connected to the metal on which welding is taking place, by means of a well-constructed clamp.

70.62 Electrode holders: An electrode holder is essentially a pair of spring-loaded jaws, or a threaded sleeve, fitted to the end of the welding lead. The holder should be fully insulated, so that the live portions cannot be touched accidentally.

71 Working at Height / Prevention of Falls

71.1 The Work At Height Regulations 2005, as amended by the Work At Height (Amendment) Regulations 2007 – the Regulations apply to all work at height, even if it is at ground level or below where there is a risk of a fall liable to cause personal injury.

71.2 The Work At Height Regulations cover the detailed requirements for the following:-

- Places of work and means of access for work at height;
- Collective fall prevention (e.g., guardrails and toeboards);
- Working platforms;
- Collective fall arrest (e.g., nets, airbags, etc);
- Personal fall protection (e.g., work restraints, work positioning, fall arrest and rope access);

- Ladders and stepladders;
- Inspection reports (for working platforms in construction only).

71.3 Employers, self-employed and any person who controls the work of others – including facilities managers or building owners who may contract others to work at height, have duties under the Work At Height Regulations as Duty Holders to do all that is reasonably practicable to prevent the risk of a fall (of persons, materials, debris and equipment etc) liable to cause personal injury.

71.4 Duty Holders must ensure that:-

- Work at height is avoided wherever reasonably practicable. To minimise work at height, full consideration should be given to design, specification and work technique which in the short, medium and long term, would help to eliminate the need to work at height, taking into account Risk Assessments carried out under Regulation 3 of the Management of Health & Safety At Work Regulations;
- Work equipment or other measures are used to prevent falls where work at height cannot be avoided. When selecting equipment, the most suitable equipment must be used, giving collective protection measures priority over personal protection measures. Consideration must be given to the working conditions and the risk to the safety of all those at the place where the work equipment is to be used.
- Where the risk of a fall cannot be eliminated, equipment or other measures are used to minimise the distance and consequences of a fall should one occur;
- All work at height is properly designed, planned, organised and appropriately supervised by competent persons, for the work to be carried out in a safe manner;
- All work at height takes account of weather conditions, such as wind, rain, ice, snow, etc., which could endanger health and safety. Where persons cannot be sufficiently safeguarded against weather conditions, work must be postponed;
- Those involved in work at height are trained and competent - this includes persons involved in organisation, planning and supervision. Where the risk of falling cannot be entirely eliminated training should include how to avoid falling and how to minimise injury should persons fall;
- The place where work at height is carried out (including means of access) is safe and has features to prevent falls, taking into account the demands of the task, equipment and working environment. A workplace must be inspected by a competent person before that place is used as often as necessary to ensure the safety of that place of work.
- Equipment for work at height is appropriately tested and inspected after it has been assembled or installed if the safety of the equipment depends on how it is assembled or installed. Testing and inspecting should be carried out as often as necessary to ensure safety, in particular any deterioration which can be detected and remedied. Inspection reports must be submitted to Duty Holders supervising and controlling work at height as soon as possible (within 24 hours of completing the inspection). Inspection reports should be kept at the place of work until the work has been completed and for a minimum of 3 months thereafter at an office. Work at height equipment must be supplied with maintenance and test records in accordance with applicable Regulations. Note: Lifting equipment is covered under Lifting Operations and Lifting Equipment Regulations.
- The risks from fragile surfaces are properly controlled, ensuring that no one working under your control goes onto or near a fragile surface unless that is the only reasonably practicable way for the worker to carry out the work safely, having regard to the demands of the task, equipment or working environment. If this is necessary, suitable platforms, coverings, guardrails, etc., must be provided and used to minimise the risk. Prominent warning notices must be fixed at the approaches to a danger zone.
- The risks from falling objects are properly controlled by preventing anything from falling and if this is not reasonably practicable, by ensuring that no one is injured by anything falling. Any areas of potential falling objects must be clearly indicated with warning notices and sufficiently guarded off to prevent persons from gaining access to the fall zone.
- Emergency and rescue provisions are in place for work activities in relation to working at height so that persons working at height can be recovered or rescued safely in the event of an emergency.

71.5 Employees duties under the Work At Height Regulations – must:-

- Report any safety hazards to the person who controls their work activities;
- Use any equipment supplied properly in accordance with training and instruction;
- Seek further advice from the Duty Holders or the Safety Advisor before continuing if you believe the place of work or equipment is unsafe and / or the instruction insufficient.

71.6 The particular hazards of each job for working at height and the best means of overcoming them must be considered by a competent person carrying out a Risk Assessment so that a safe method of work can be established, which must take into account not only persons involved in the work, but others who might be affected, such as other employees, contractors, occupiers and members of the public, etc.

- 71.7 **Demarcation and guarding-off of areas where it is possible to fall** where work does not have to be carried out at or near the edge where someone or materials, etc., could fall, secure barriers, toeboards and signage may be used to limit the extent of the working area at a safe distance from an edge or hole where it could be possible for persons to fall. Such barriers should be positioned at a safe distance (at least 2 meters from the edge) and work should be closely supervised to ensure that persons do not go outside the designated demarcated area. Appropriate warning notices must also be displayed and persons required to work at height must be suitably competent and instructed.
- 71.8 **Where protection is installed at an edge**, toeboards must be at least 150mm high. The minimum height of the guardrail must be no less than 950mm high. The gap between the toeboard and guardrail must not exceed 470mm. Ways of reducing this gap are by additional toeboard, an intermediate guardrail, brickguards or other provisions which would support a person should he / she fall against it. All openings in floor areas must be protected by guardrails and toeboards, or by substantial covers which must either be fixed or suitably marked (e.g. "Hole Below"). It is strongly recommended that covers are both fixed and marked.
- 71.9 **Safety harnesses, belts, nets and mats, etc:** Before considering the use of this type of equipment, permanent design solutions should be considered. Where this is not possible, collective controls to prevent persons from falling should be considered first, e.g., guardrails, barriers and scaffolding, etc. Where this may not be a practical solution, harnesses, belts, nets and mats, etc., could be justified, provided suitable anchorage points capable of withstanding any anticipated shock loading is available. Inertia-controlled reels which allow greater freedom of movement without excessive slackness in the rope are available, as are devices designed to absorb the shock imposed by a fall. Similarly, safety nets can provide a potential solution to problems. Before using any of this type of equipment, you must consult with Manufacturers, Suppliers, Installers and the Company Safety Advisor in relation to the installation and suitability of any particular fall protection method.
- 71.10 **Rope Access:** Before considering the use of this type of equipment, permanent design solutions should be considered. Where this is not possible, collective controls to prevent persons from falling should be considered first, e.g., guardrails, barriers and scaffolding, etc. Where this may not be a practical solution, rope access equipment could be justified provided the building structure and working environment etc. is suitable.

72 Work on or adjacent to railway property

- 72.1 In addition to the statutory and other requirements mentioned elsewhere in this health and safety policy, additional precautions will be taken when working on or adjacent to railway property, in line with the handbook 'Safety of Contractors Staff on Railway Property' and any other relevant publication.
- 72.2 Copies of the booklet and any other appropriate information will be obtained and issued to all employees involved with the work. Before the commencement of any project on railway property, representatives of the Company will meet with the Client to obtain details of any additional safe working requirements, and this information will be drawn to the attention of all appropriate parties.
- 72.3 All Company managers, supervisory staff and operatives who may be involved in works on or adjacent to railway property will receive adequate and appropriate training and instructions before commencing these duties.
- 72.4 Other steps taken will include:
- Ensuring adequate provision to meet any special requirements at tender stage
 - Obtaining permission before starting work near the track or electrical lines
 - Obtaining any required permits to work and complying with associated requirements.
 - Ensuring that approval and instructions are obtained from the railway supervisor on a daily basis
 - Identifying and taking required precautions when crossing conductor rails.
 - Remaining within any designated work area.
 - Not commencing work until any appointed look-out is in position.
 - Provision of the appropriate personal protective equipment including high-visibility garments
 - Establishing adequate emergency procedures
 - Providing adequate and appropriate access equipment
 - Ensuring adequate levels of competent supervision at all times.

- Instructing employees to cease work at any time there is any doubt regarding whether it is safe to continue work, and seek advice from the designated railway point of contact.
- Not permitting any employee who appears to be unfit for work, especially if this is due to the influence of alcohol or drugs to be on railway property.

73 Working on Roofs

- 73.1 Refer to the requirements of the Work At Height Regulations 2005, as amended by the Work At Height (Amendment) Regulations 2007 – these Regulations apply to all work at height, including roof works.
- 73.2 **Safe Access:** Suitable equipment must be provided to give safe access to these areas of work, for example, internal or external staircase access, tower scaffolds, independent scaffold and mobile working platforms etc.
- 73.3 **Safe Place of Work:** Appropriate precautions against falls will be determined by the type of risk and nature of the work to be carried out.
- 73.4 **On large roof areas etc.,** where work does not have to be carried out at or near the edge where someone or materials, etc., could fall, secure barriers, toeboards and signage may be used to limit the extent of the working area at a safe distance from an edge or hole where it could be possible for persons to fall. Such barriers should be positioned at a safe distance (at least 2 meters from the edge) and work should be closely supervised to ensure that persons do not go outside the designated demarcated area. Appropriate warning notices must also be displayed and persons required to work at height must be suitably competent and instructed.
- 73.5 **Roofs with a pitch of less than 10°** may be considered to be flat. Toeboards must be at least 150mm high. The minimum height of the guardrail must be no less than 910mm high. The gap between the toeboard and guardrail must not exceed 470mm. Ways of reducing this gap are by additional toeboard, an intermediate guardrail, brickguards or other provisions which would support a person should he / she fall against it. All openings in roofs and floor areas must be protected by guardrails and toeboards, or by substantial covers which must either be fixed or suitably marked (e.g. “Hole Below”). It is strongly recommended that covers are both fixed and marked.
- 73.6 **Non-fragile Sloping Roofs:** On sloping roofs, unless suitable precautions are taken, there are dangers of persons falling from the perimeter edge - either whilst working there, or due to slipping down the roof - and of falling through the roof at the working edge. Protection can be provided by barriers and platforms. Barriers must be of the correct height and strong enough to stop a person who is rolling or sliding down the roof slope. Platforms must be positioned so that they will stop a fall from the roof. An intermediate guardrail, or other barrier, will be needed where persons need to kneel or crouch near the edge. The need for a barrier at the gable edge must also be considered.
- 73.7 **Roof Ladders:** On most sloping roofs, suitable roof ladders or crawling boards are essential. For minor maintenance work or inspection where work is of short duration and edge protection is not provided, roof ladders with sufficient fall arrest protection should always be used. Roof ladders or crawling boards should be purpose made for the job and should not be made up from odd timber on site. They should be strong enough to support persons when spanning across the supports for the roof covering and be secured or so positioned as to prevent movement. The anchorage at the top of the ladder should not rely on the ridge capping, which may break away from the ridge or, in the case of half-round ridge tiles, prevent an anchor board from getting a good grip. The anchorage should, wherever possible, bear on the opposite slope by means of a properly designed and manufactured ridge iron, or be secured by other means such as a rope. Eaves gutters of the half round or ogee type, normally used on houses, should never be used as a footing, or to support a roof ladder as they are not strong enough.
- 73.8 **Working platforms:** In some cases, a working platform, fitted with guardrails and toeboards, situated on the roof, may be used as an alternative to a barrier or platform at the roof edge. This applies particularly where the steepness of the slope or the type of surface could give rise to an insecure foothold. Proprietary systems to provide working platforms for chimney work, etc., are available.
- 73.9 **Curved roofs or roofs of special shape:** Appropriate precautions will depend on the particular size and shape of the roof. Platforms for curved roofs can be provided by the use of traditional scaffolding arranged to follow the contours of the roof, by specially designed travelling scaffolds, by adapting suspended scaffolds, or by means of a power-operated mobile work platform.
- 73.10 **Non-fragile industrial roofs:** Falls from the eaves and gable ends of a building should be prevented by the provision of suitable guard-rails and where there is no suitable existing upstand, toeboards. If valley

gutters are used for access before decking is laid, guardrail protection should be provided. Adequate precautions, such as the use of safety harnesses attached to suitable anchorages, must be taken during the erection of this edge protection. Steps must be taken to minimise the risk of falls by planning a system of work which avoids the need to lean or step out over an unprotected area. This may entail the provision of a suitable working platform or the use of safety harness attached to suitable anchorages. Non-fragile industrial roofs often contain fragile components such as roof-lights and these should be covered, or protected by suitable barriers.

- 73.11 **Fragile Roofs:** Falls through fragile roofing material are one of the major causes of fatal accidents in the construction industry. Before any roof is used as a means of access or as a place of work during any operation, whether construction, repair, maintenance or demolition, it is essential to identify parts covered with fragile materials and decide on the precautions to be taken.
- 73.12 The appearance of some roof coverings is misleading and can give a false sense of security to those who are working on or passing across them. Although such coverings may be capable of carrying a significant distributed load and appear solid, they will not in fact carry a concentrated load such as that applied by the heel of a person walking, or by a person stumbling and falling. For example, asbestos and non-asbestos cement sheeting is liable to shatter without warning under a person's weight, even when newly installed, and it will usually become more brittle with age. There is a mistaken belief that it is safe to walk along the line of roof bolts above the purlins; in reality, this is akin to walking the tightrope and one false step or loss of balance can lead to disaster. Apart from asbestos cement sheets, other materials which must be regarded as fragile include plastic sheeting, corrugated steel sheeting which has been reduced in strength by rust, glass (including wired glass) and straw board slabs, especially those affected by water. In some circumstances, wood wool slabs may also be liable to fracture and these should be regarded as fragile.
- 73.13 Problems can also arise where a non-fragile roof has been repaired with fragile materials which may not easily be recognised under a paint or tar coating. Plastic roof-lights may similarly be disguised by age or paint and it is important that these points are borne in mind by persons carrying out roof surveys.
- 73.14 On roofs covered by fragile material, roof ladders or crawling boards must be used in conjunction with fall arrest devices. The number of boards or ladders required will depend on the nature of the work, but must not be less than 600mm in width, the type of roof and the access to it and the number of persons carrying out the work. A person must never have to step on to a fragile roof to move a board or ladder: an absolute minimum of two boards or ladders should be provided, but more will normally be required. Scaffold boards are sometimes used as crawling boards, but they are liable to rock if laid along roof corrugations or on projecting bolts and they are normally only 225mm wide. If scaffold boards are used, there must be a sufficient number to provide safe access and they should be secured against movement. Purpose-made staging's or roof ladders; with integral fall arrest devices are therefore preferred.
- 73.15 Staging's positioned in front of the leading edge can provide protection against falls. The planned method of work should cover the way in which such staging's are used and moved
- 73.16 Where a valley or parapet gutter of a fragile roof is used for access, protection against falling through the fragile material must be provided. This may be achieved by means of rows of scaffold boards supported by pieces of timber or, alternatively, the use of a safety harness connected to a taut wire system, might be considered. Where access is needed on a regular basis, the installation of a permanent means of protection should be considered.
- 73.17 Any fragile roof, except where the material consists wholly of glass, must have a warning notice prominently and permanently displayed at the approaches to the roof. Such notices are available from safety sign suppliers.
- 73.18 **Safety harnesses, belts, nets and mats, etc:** Before considering the use of this type of equipment, permanent design solutions should be considered. Where this is not possible, collective controls to prevent persons from falling should be considered first, e.g., guardrails, barriers and scaffolding, etc. Where this may not be a practical solution, harnesses, belts, nets and mats, etc., could be justified, provided suitable anchorage points capable of withstanding any anticipated shock loading is available. Inertia-controlled reels which allow greater freedom of movement without excessive slackness in the rope are available, as are devices designed to absorb the shock imposed by a fall. Similarly, safety nets can provide a potential solution to problems. Before using any of this type of equipment, you must consult with Manufacturers, Suppliers, Installers and the Company Safety Advisor in relation to the installation and suitability of any particular fall protection method.
- 73.19 **Weather Conditions:** The effects of adverse weather conditions must be anticipated and suitable precautions taken. Rain, ice or snow can obviously increase the risk of slipping and a roof should be inspected for such hazards each day, before work is permitted to start. Windy conditions can also be

dangerous with regard to persons losing their balance or materials being blown off the roof, therefore wind conditions should be constantly monitored and if there is a risk of persons on the roof being affected by the wind, work should be postponed. Materials and equipment capable of being blown off the roof by strong winds must always be sufficiently secured.

- 73.20 **Training:** After a competent person has established safe systems of work, it is important that only persons who have been suitably trained are employed on such work. Employees with many years' experience in the industry may have become accustomed to unsafe practices and the Company policy on the safety aspects of roof work must be brought home to Managers, Supervisors, Contractors and Operatives via Pre-start safety meetings, Safety Induction for the work, during Progress meetings and regular Safety Tool Box Talks.

74 Working in Schools

- 74.1 When working at a school the Company will ensure the highest standards of health and safety to provide for the efficient protection of the staff, pupils, and other persons who might be affected by work activities. These same high standards of health and safety as apply during term time school hours; will also apply during the evenings, holidays and other periods, when the premises are deemed to be occupied.
- 74.2 The Company will comply with all special health and safety requirements of the Client, whether this is the local education authority or the governing body of the school. The Company will also ensure that there is full compliance, as appropriate, with the requirements of the Local Education Authority and DfEE, and all common law, statutory regulations, approved codes of practice etc. The Company will also seek to carry out all works in a manner that causes the least amount of disruption to the normal activities of the school.
- 74.3 An appropriate person will be appointed to act as Company Liaison Officer and will conduct and maintain day-to-day communication with the Client's representatives and other appropriate persons. This communication will include keeping all parties informed of the timing and progress of works. Where required, the Liaison Officer will attend site meetings where any potential problems affecting health and safety or the normal activities of the school can be identified and remedied.
- 74.4 The Company will fully co-operate with the security arrangements at the school. It will issue identity badges to all workmen and other authorised visitors attending the site and in other ways help to reduce any opportunity for breaches of security associated with the building works.
- 74.5 The Company will ensure that there is adequate and competent site supervision during the progress of the works by a Site Manager who has adequate previous experience of working at school premises. All operatives working at school sites will similarly be selected for previous experience on similar projects, reliability and good character. Before the commencement of any project at a school, all Company employees involved will receive information, instruction and any necessary refresher training on the precautions and working practices to follow.
- 74.6 The Company will confirm and agree all aspects of fencing and protection before formally taking possession of the work area. Unless otherwise agreed, or this separation is already achieved by an existing boundary wall, fence or other barrier, those parts of the site which are not required by either occupiers or the public for access, will be enclosed within a fence to a minimum height of 2 metres. This fence will be sufficiently solid in its construction to prevent ingress of unauthorised persons, particularly children.
- 74.7 The Company will also where appropriate, maintain an adequately fenced and enclosed materials compound. This compound will be appropriately sited and all materials and plant will be stored safely there until required, and returned during out of site working hours.
- 74.8 The Company will ensure that entrances to both the site and compounds are securely closed and locked when not in use, left unattended and during out of site working hours. The siting of entrances to compounds, site facilities or entrances to site will be as approved by the Client. No alterations to the siting of compounds, facilities, entrances etc. will be made without permission.
- 74.9 Where ladders, scaffolds, cradles, towers, excavations etc., are to be in position for less than one working day, and circumstances allow, a suitable temporary barrier system or hazard warning tape will be employed to provide a clearly demarcated area (safe zone) 2 metres clear of the ladder, scaffold, tower or excavation etc. During these work periods, ladders, scaffolds, towers, excavations etc. will not be left unattended.

- 74.10 Where small works are to be undertaken, or where scaffolds, towers, cradles, excavations etc. remain in position for more than one working day, a barrier will be provided to prevent unauthorised access. The barrier will consist of durable boarding or other solid sheeting/fencing 1.8 metres high, erected 2 metres away from the hazard. The fence will be free of spikes, barbed / razor wire etc., and constructed so that small children cannot crawl beneath it.
- 74.11 In the case of scaffolds or towers where the 2 metres distance cannot be maintained, the barrier will be directly fixed to the face of the scaffold/tower, with an adequate overhead 'fan' installed to provide protection.
- 74.12 The Company will put in place arrangements for the continuing and on-going maintenance of barriers, fences, gates, screen, covers, planked footways, guardrails and gantries etc., including all other forms of protection specified by the Client.
- 74.13 Prior to the commencement of any works within the vicinity of a glazed, asbestos cement sheet or other type of fragile roof, the roof will be protected from damage from falling objects. Any similar areas which may be affected by the erection of scaffolding or other works are to be similarly protected.
- 74.14 Where roofing works involve the use of molten asphalt or similar, this work will only take place where the areas underneath are unoccupied. Where works involve the removal of the whole or parts of the roof, the Company will have contingency plans and arrangements to prevent ingress of rain etc.
- 74.15 Areas that are particularly sensitive from being overlooked (e.g. toilets, changing rooms and shower rooms etc.), will be suitably screened prior to the commencement of works including the erection of scaffold/towers etc.
- 74.16 In respect to scaffolding on occupied premises, where entrances, exit doors and fire exit doors must be maintained free for use, protective fans will be erected of adequate construction and be continuous from the entry/exit door terminating at the barrier hoarding / fence, or as far as is necessary to ensure safety.
- 74.17 Where works are to be undertaken involving the use of substances hazardous to health and / or other hazardous processes, work will not proceed until the safe method of work has been agreed by the Client's representatives.
- 74.18 Where work is to be undertaken in older school premises, prior to the commencement of work, the Company will consider all received information about the presence and locations of materials containing asbestos, carry out any required additional investigations and take steps to ensure that the materials are not damaged or disturbed. In any event, all work will proceed with extreme caution allowing for the possibility that asbestos containing materials are present in any location within older premises.

75 Young Persons

- 75.1 No person under the age of 18 is allowed to drive, or operate any mechanical vehicle or plant unless being trained under the close supervision of a competent person.
- 75.2 Company Management must be informed if any young persons are involved in Company operations.
- 75.3 The Management of Health & Safety At Work Regulations 1999. The law at present requires you to assess risks to all your employees, including young workers and to do what is reasonably practicable to control those risks.
- 75.4 Young workers are seen as being particularly at risk because of their possible lack of awareness of existing or potential risks, immaturity and inexperience. Children under 13 years old are generally prohibited from any form of employment. Children between 13 and the minimum school leaving age (MSLA) are prohibited from being employed in industrial undertakings such as factories, construction sites etc., except when on work experience schemes approved by the Local Education Authority. The Health & Safety (Training for Employment) Regulations 1990 have the effect of designating children on work experience as employees for the purposes of Health & Safety legislation. Employers offering work experience placements to children must provide them with at least the same health, safety and welfare protection that they give their own employees. There are also some age-related restrictions which prohibit young workers, including children on work experience, from working with particular machinery or undertaking particular tasks.
- 75.5 As a result employers are required to:
- Assess risks to young people, under 18 years old, *before* they start work;
 - Take into account their inexperience, lack of awareness of existing or potential risks and immaturity;

- Address specific factors in the Risk Assessment;
 - Provide information to parents of school-age children about the risk and the control measures introduced;
- and;

- 75.6 Employees must take account of the Risk Assessment in determining whether the young person should be prohibited from certain work activities, except where:
- They are over MSLA and it is necessary for their training and,
 - Risks are reduced so far as is reasonably practicable; and,
 - Proper supervision is provided by a competent person.

76 Persons who have problems with verbal & written communications

- 76.1 Health & Safety information, such as English Law, Approved Codes of Practices and HSE Guidance is normally communicated in English verbally and in writing. Persons who cannot speak or read the English language would be unable to understand necessary control measures and safety specifications in English and therefore would be likely to be at greater risk. Safeguarding persons who have problems with verbal and written communications and providing Equal Opportunities for all will require a good understanding of communication problems and related issues by Management to be able to plan for and provide all necessary arrangements to maintain the safety of the Company's operations.
- 76.2 Health & Safety Standards of other Countries can be very different from the Standards of the UK, so the background safety understandings of persons from other Countries will need to be fully considered and accommodated. Even foreign persons who can understand English language may be used to different Standards and work routines which could conflict with English Law and UK building practices.
- 76.3 Management must be aware of the safety implications of a multi-cultured society and have procedures and safeguards in place to ensure the safety of the workforce and anyone else who could be affected by the Company's operations.
- 76.4 Before engaging any Personnel, sub-contractors or suppliers, etc., it is important to evaluate their communicational skills, obtain evidence of any formal safety and skills training and where there may be conflicting differences in knowledge and standards or communicational weaknesses, provide them with the necessary resources to ensure their safety is not jeopardised.
- 76.5 Management should ensure the competency and the safety of the Company's operations and not engage anyone on tasks whose communication skills would be insufficient in safeguarding themselves and others who could be affected by their actions or lack of understanding.
- 76.6 In addition to any general Company Safety Induction for employees and sub-contractors etc., Management are to provide necessary resources to safeguard any person with verbal and written communication problems engaged by the Company or affected by the Company's operations, i.e., instruction, information, training and supervision.

References

The Health & Safety Executive,
HSE's Telephone Language Services Unit - 0114 291 2415 / 2417
Edgar Allen House, 241 Glossop Road, Sheffield, S10 2GW
HSE's Telephone Interpreting Service – 08701 545500

77 Safety Improvement Scheme & Consultation

- 77.1 The Company is continuously looking for ways to improve the standards of safety regarding operations. If you have any ideas which could contribute toward safety performance, then the Company's Management or Safety Advisor would be pleased to hear from you. If you feel that the Company is not doing its best in areas of safety, please do not hesitate to contact Management or the Safety Advisor. You may do this either in person or in writing. Both will be in the strictest confidence. A Safety Improvement Scheme and Consultation Form is contained in Part 3 of the Company Health & Safety Policy.

78 How to obtain a copy of the Company's Policy Statement

- 78.1 All NTP Access Limited Managers have access to the Company's Construction Safety Manuals which must be used as reference with regards to procedures.

78.2 All Statutory Notices, Forms, Health & Safety Law Posters and Registers applicable to Construction and Civil Engineering Works are contained within Site Safety Compendiums which must be supplied to all NTP Access Limited places of work.

78.3 Copies of the Health & Safety Policy can be located at:

NTP Access Limited
Unit 24 – 27
Barnwell Workshops,
Barnwell Manor Estate,
Barnwell,
Cambridgeshire,
PE85PL

Tel: 01832273 060

With the Directors in charge of Health & Safety – Mr. Nick Eccles

- With Managers.
- And are available for perusal at any reasonable time with the Company Safety Advisors:

Richardson-Hill Limited
23, Springfield Road,
North Chingford,
London,
E4 7DJ

Tel: 020 8524 8396
Fax: 020 8524 8446
Email: info@richardson-hill.co.uk