

Risk assessments
and hazard
identification on
construction sites
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Explain how risk assessments and hazard identification is carried out for specific tasks on construction and civil engineering sites.

(P3) Describe a range of identifiable hazards associated with deep excavations and scaffolding when working from heights. Explain who may be at risk from these potential hazards.

Deep Excavations

Excavation work is a common part of construction work, it occurs almost on a daily basis; works such as foundations, service and utility access, and retaining wall erection all require excavation. Working in deep excavation or in an excavated trench can be potentially dangerous; hazards are constant to the staff working in and around excavated areas. Excavated areas load extreme pressure onto the sides or walls around them, ground conditions may not always be as desired and therefore workers must keep a constant check on excavation sides. Ground condition may change throughout the working day as a result of the weather, water tables, plant / machinery movement. If the weight becomes too heavy or the ground condition causes the material to move drastically then the sides of the excavation have a possibility to cave in or collapse. In the past this has been a major cause of injury and even death on a work site. It is therefore essential that preparations are put in place to minimize the risk of this occurring, sides should be supported using various methods, including, trench boxes, struts, or in extreme cases piling that is drove deep into the ground.

It is important to monitor the water table throughout the excavation works; this is because if the water table were to rise above the excavated depth, <https://assignbuster.com/risk-assessments-and-hazard-identification-on-construction-sites-construction-essay/>

the added wetness in the ground may cause the material to move or slide into the hole. Throughout the world every construction worker is privy to adverse and ever changing weather, particularly in the UK, heavy rainfall, sub zero temperatures etc. can cause the sides of an excavation to change drastically, it is important to monitor weather forecasts and have appropriate counter measures in place in the case of adverse weather.

Rising water levels in and around the excavated area raise the possibility of flooding. This is especially true when concerning excavated works in and around areas such as riverbanks, and streams. When an excavated area floods, a wide array of hazards are created. Firstly, water is a strong conductor of electricity; any live wiring present in the excavation would pose the threat of electrocution. If there is a large amount of water present, then there is the possibility of personnel drowning or becoming entrapped in the area. Any if there water entering the excavated site has passed through an area of impurity there may be a possible where the spreading of disease occurs. Good health and safety planning can reduce the risk of flooding by always monitoring water levels and keeping pumps near by to remove any water that lies in the excavation.

Depending on the requirements excavation depth can be of a wide variety, whether it is a couple of feet or over 100 metres. Those excavations of a greater depth are classed as deep excavations; such excavations present a different hazard in the form of falling. Falling into excavations was again quite common in the past, this not only concerns personnel, plant and machinery have also fell into excavations in the past. Health and Safety

regulations determine that any excavated areas with a depth greater than 2
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metres must be surrounded with a barrier. The barrier or guardrail acts as a deterrent to anyone walking around the top of the excavation as well as a visual warning to any plant or machinery being used nearby.

Excavated areas often create confined spaces at their base; this can create a location for harmful gases to gather, thus creating a hazard to those working in and around the excavation. Gases have been known to suffocate or choke personnel resulting in fatality, gases can also be explosive creating the risk of fire. It is imperative that excavations are properly ventilated; personnel must monitor the levels of oxygen on the area and ensure that staff working in the excavation is allowed to get fresh air whenever required. Again in the case of good or correct health and safety planning gas detectors will be placed around the area in order to calculate the presence of the different gases and their level.

Excavation requires the digging out of land to a required depth; during this operation it is possible to discover service pipes. A wide range of service pipes lie underground, these include gas, electric, water, telephone, television and street lighting. Heavy machinery and plant can from time to time cut or smash service pipes, this can be extremely dangerous. Gas explosions, electric shocks and loss of light are few of the serious consequences of disrupting underground services. It is important to contact all necessary Service Company's to obtain drawings showing the services present in the area where the excavation is planned to take place. Once obtained, personnel carrying out the work must stick to the drawings in order to prevent damaging any service lines.

Deep excavation works require the use of various equipment and materials; these may need to be lifted in a dropped down to the area of work. In order for this operation correctly machinery is needed to be used, such machinery varies from manual lifts to large cranes. Operations like the one detailed above creates potential hazards. Items can fall into the excavated area harming the ground condition or possibly striking those working in the area. A thorough risk assessment would need to carry out prior to the excavation work taking place; materials would be weighed and measured in order to allow those carrying out the work to calculate the safest method.

Excavations especially those deep in depth can be poorly lit, thus the problem of inadequate lighting arises. If an excavated area becomes dark at certain part of the day in can stop work from being carried out a have a negative effect on timetables, costing and completion dates. It is therefore important that excavated areas are properly lit, allowing employees full eye capacity and removing all risk of accidents occurring to down partial sight. This can be achieved through the use of portable lighting columns or even small lights attached to the clothing of a worker i. e. lamps on safety helmets. Many mistakes have been made concerning the lighting of an excavated area; health safety planning must identify all areas around the excavation as required lighting points, not just the excavated area.

Another major potential risk is the fire on a construction site, there a wide range of reasons as to why fire may occur, such as, harmful chemicals, sparks from machinery, carelessness of an employee and even arson. The dangers of fire are obvious, however these dangers are further enhanced when taking place in an excavated area, this is because the fire can take off

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quickly in a confined space and there are very few escape routes in an excavation.

However, there are precautions that can be made to ensure the safety of personnel if a fire was to break out. Clear, marked access and egress to the excavation must be set in place, where there must be at least two. In many cases there are stairways leading down into the excavation from scaffold towers, as well as ladders in various different places for escape routes. Fire fighting equipment such as small fire extinguishers and fire blankets are placed inside the excavation and more than often a trained fire steward is on hand during major works.

Working at height on Scaffold

Scaffolding is a part of everyday construction work, although it is thought to be a stable and extremely helpful apparatus. However there are many dangers that arise from its erection and use. Health and Safety regulations require scaffolding to be checked and tagged on a daily basis prior to its use.

Scaffolding is built up from ground level; it is designed as a weight bearing structure which provides platforms at various heights. It is vital that the base of the structure is constructed correctly. If it is butyl incorrectly scaffolding can topple, collapse, loosen, and even snap under pressure. These potential faults are potential hazards and are extremely dangerous to the personnel working on, around and underneath the scaffold. There is also the possibility that those working on the scaffold falling from height. Hand and guide rails must be put into place correctly to minimize the risk of staff falling from the scaffold. Those working on the scaffold have a responsibility to make sure

that all materials used, such as, paint, nails and hammers are secured and away from the edge of the scaffold. Measures are put into place to further secure the structure, base plates are used at ground level to prevent any slipping and moving, as the scaffold is built from the ground up it is important to begin with a secure base.

It is vital when working on scaffold that all access points are kept clear, this is also the case regarding ladders and walk ways leading to and around the structure. Every scaffold will have a desired weight load; this is the maximum amount of weight that the structure can handle. If this weight load is not recognised and the structure is overloaded then even the strongest scaffolding can collapse under the extra duress. Scaffolder's will identify the type of scaffold required to accommodate with the jobs specific needs prior to its erection, the purpose of the construction will then be clearly labelled, labelling categories usually range from general purpose, light duty or heavy duty. The tags can then be checked throughout the works to ensure the scaffold is not being misused or overloaded.

Modern scaffold structures are considered to be an extremely safe place to work if constructed competently. However the most stable scaffolding cannot eradicate human error. It is possible that a member of staff working on the scaffold can slip, trip or fall, methods can be put in place to minimize the risk of this occurring. Anti slip surfaces can be used on the structure, manufacturers could select grip surfaced hand and stair rails. It is also important to recognise the importance of achieving the correct distances in board spacing and the correct width for walkways.

With regards to ladders leading to and from scaffold structures, it is important to reduce the risk of slips and falls by ensuring the ladders are kept dry in all circumstances where possible. Ladders must be placed at a correct angle to make it easier for those working on the structure to access the correct level. Checks to ensure these specifications are correct should be carried out on a daily basis in order to fully reduce to risk of accident.

An overcrowded working platform is a dangerous situation to work in. Scaffold that is used for certain tasks and purposes are specifically designed for the operation. Like many other hazards when working on scaffold, a situation like this can lead to further hazards and incidents occurring as a reaction. Widths of scaffold platforms are set to specific measurements for the jobs that will be carried out upon them. These measurements are listed in the British Safety Standards and are set in place to minimise hazards and risks on scaffold platforms.

An example of safe working space would be: for persons and materials on scaffold platforms, 4 boards should be set down (800mm wide) minimum. Ensuring these distances and spaces are set in place, accidents and hazards are minimised significantly.

Workers and general public are at potential risk to harm involving scaffolding beams and poles where they hang over public footpaths or general access to working areas on site. Scaffold platforms are dangerous even when idle and in an area where no works are being carried out, even more so when left standing at night. Anyone working on site at night should be made well aware of scaffold platforms as well as their access routes and changes in

level. Also, scaffold should be well illuminated using flashing beacons and cordoned off tape when situated in a public place such as dropping onto a footpath with a walkway underneath or road that is in constant use.

(P4) Review and evaluate the main principle features of a typical risk assessment for these situations and determine the main differences risks and hazards.

A risk assessment is simply a careful examination of what, in your work, could

Cause harm to people, so that you can weigh up whether you have taken enough precautions or should do more to prevent harm. Workers and others have a right to be protected from harm caused by a failure to take reasonable control measures.

Accidents and ill health can ruin lives and affect your business too if output is lost, machinery is damaged, insurance costs increase or you have to go to court. You are legally required to assess the risks in your workplace so that you put in place a plan to control the risks.

Health and Safety

Executive

Step 1 Identify the hazards

Step 2 Decide who might be harmed and how

Step 3 Evaluate the risks and decide on precautions

Step 4 Record your findings and implement them

Step 5 Review your assessment and update if necessary

Don't overcomplicate the process. In many organisations, the risks are well known and the necessary control measures are easy to apply. You probably already know whether, for example, you have employees who move heavy loads and so could harm their backs, or where people are most likely to slip or trip. If so, check that you have taken reasonable precautions to avoid injury.

If you run a small organisation and you are confident you understand what's involved, you can do the assessment yourself.

You don't have to be a health and safety expert. If you work in a larger organisation, you could ask a health and safety advisor to help you. If you are not confident, get help from someone who is competent. In all cases, you should make sure that you involve your staff or their representatives in the process. They will have useful information about how the work is done that will make your assessment of the risk more thorough and effective. But remember, you are responsible for seeing that the assessment is carried out properly.

When thinking about your risk assessment, remember a hazard is anything that may cause harm, such as chemicals, electricity, working from ladders, an open drawer etc; the risk is the chance, high or low, that somebody could be harmed by these and other hazards, together with an indication of how serious the harm could be.

Step 1 Identify the hazards

First you need to work out how people could be harmed. When you work in a

Place every day it is easy to overlook some hazards, so here are some tips to help you identify the ones that matter:

Walk around your workplace and look at what could reasonably be expected

To cause harm Ask your employees or their representatives what they think.

They may have noticed things that are not immediately obvious to you. Visit the HSE website (www.hse.gov.uk). HSE publishes practical guidance on

Where hazards occur and how to control them there is much information here on the hazards that might affect your business.

Check manufacturers' instructions or data sheets for chemicals and

Equipment as they can be very helpful in spelling out the hazards and putting

Those in their true perspective have a look back at your accident and ill-health records these often help to identify the less obvious hazards.

Remember to think about long-term hazards to health (eg high levels of

Noise or exposure to harmful substances) as well as safety hazards

Step 2 Decide who might be harmed and how

For each hazard you need to be clear about who might be harmed; it will help you identify the best way of managing the risk. That doesn't mean listing everyone by name, but rather identifying groups of people (eg ' people working in the storeroom' or ' passers-by'). In each case, identify how they might be harmed, ie what type of injury or ill health might occur. For example, ' shelf stackers may suffer back injury from repeated lifting of boxes'.

Remember: some workers have particular requirements, eg new and young workers, new or expectant mothers and people with disabilities may be at particular risk. Extra thought will be needed for some hazards; cleaners, visitors, contractors, maintenance workers etc, who may not be in the workplace all the time; members of the public, if they could be hurt by your activities; if you share your workplace, you will need to think about how your work affects others present, as well as how their work affects your staff – talk to them; and ask your staff if they can think of anyone you may have missed.

Step 3 Evaluate the risks and decide on precautions

Having spotted the hazards, you then have to decide what to do about them. The law requires you to do everything ' reasonably practicable' to protect people from harm. You can work this out for yourself, but the easiest way is to compare what you are doing with good practice.

There are many sources of good practice – HSE’s website (www.hse.gov.uk), HSE Info line (Tel: 0845 345 0055) and Workplace Health Connect (Tel: 0845 609 6006) will all help. So first, look at what you’re already doing; think about what controls you have in place and how the work is organised. Then compare this with the good practice and see if there’s more you should be doing to bring yourself up to standard.

When controlling risks, if possible in the following order: try a less risky option (eg switch to using a less hazardous chemical); prevent access to the hazard (eg by guarding); organise work to reduce exposure to the hazard (eg put barriers between pedestrians and traffic); issue personal protective equipment (eg clothing, footwear, goggles etc); and provide welfare facilities (eg first aid and washing facilities for removal of contamination).

Improving health and safety need not cost a lot. For instance, placing a mirror on a dangerous blind corner to help prevent vehicle accidents is a low-cost precaution considering the risks. Failure to take simple precautions can cost you a lot more if an accident does happen. Involve staff, so that you can be sure that what you propose to do will work in practice and won’t introduce any new hazards.

Step 4 Record your findings and implement them

Putting the results of your risk assessment into practice will make a difference

When looking after people and your business. Writing down the results of your risk assessment, and sharing them with your staff, encourages you to do this. If you have fewer than five employees you do not have to write <https://assignbuster.com/risk-assessments-and-hazard-identification-on-construction-sites-construction-essay/>

anything down, though it is useful so that you can review it at a later date if, for example, something changes. When writing down your results, keep it simple, for example ' Tripping over rubbish: bins provided, staff instructed, weekly housekeeping checks', or ' Fume from welding: local exhaust ventilation used and regularly checked'.

We do not expect a risk assessment to be perfect, but it must be suitable and

Sufficient you need to be able to show that: a proper check was made; you asked who might be affected; you dealt with all the significant hazards, taking into account the number of people who could be involved; the precautions are reasonable, and the remaining risk is low; and you involved your staff or their representatives in the process. There is a template at the end of this leaflet that you can print off and use. If, like many businesses, you find that there are quite a lot of improvements that you could make, big and small, don't try to do everything at once. Make a plan of action to deal with the most important things first. Health and safety inspectors acknowledge the efforts of businesses that are clearly trying to make improvements. A good plan of action often includes a mixture of different things such as: a few cheap or easy improvements that can be done quickly, perhaps as a temporary solution until more reliable controls are in place; long-term solutions to those risks most likely to cause accidents or ill health; long-term solutions to those risks with the worst potential consequences; arrangements for training employees on the main risks that remain and how they are to be controlled; regular checks to make sure that the control measures stay in place; and clear responsibilities who will lead on what

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action, and by when. Remember, prioritise and tackle the most important things first. As you complete

Each action, tick it off your plan.

Step 5 Review your risk assessment and update if necessary

Few workplaces stay the same. Sooner or later, you will bring in new equipment, substances and procedures that could lead to new hazards. It makes sense, therefore, to review what you are doing on an ongoing basis. Every year or so formally review where you are, to make sure you are still improving, or at least not sliding back. Look at your risk assessment again. Have there been any changes? Are there improvements you still need to make? Have your workers spotted a problem? Have you learnt anything from accidents or near misses? Make sure your risk assessment stays up to date.

When you are running a business it's all too easy to forget about reviewing your risk assessment – until something has gone wrong and it's too late. Why not set a review date for this risk assessment now? Write it down and note it in your diary as an annual event.

Hazards & Risks

A hazard is something that can cause harm, eg electricity, chemicals, working up a ladder, noise, a keyboard, a bully at work, stress. A risk is the chance, high or low, that any hazard will actually cause somebody harm. For example, working alone away from your office can be a hazard. The risk of personal danger may be high. Electric cabling is a hazard. If it has snagged on a sharp object, the exposed wiring places it in a ' high-risk' category.

Risks and hazards of chemicals

For there to be a risk there must be both the hazard and the exposure to that hazard present at the same time. The hazard of a chemical means it has an intrinsic ability to cause an adverse effect for humans or environment.

Risk is the chance that such effect will occur. Even if a chemical has hazardous properties, any risk to human health or environment is extremely low if the chemical is handled safely under controlled conditions.

Risk assessment is a management tool to determine whether, how and in what circumstances, harm might be caused. In order to assess risk, both hazard and exposure must be considered. Although there may be several ways in which a risk assessment could be performed, it is important that the best way is chosen.

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(M2) Carry out a risk assessment for the tasks associated with the construction of a retaining wall. Remember to consider the 5 Steps to Risk Assessment in your examples.

See attached risk assessment.

(D1) Justify your risk assessment strategy with accident records and data available and explain how you have taken all reasonable and practicable steps for control measures and monitoring that you believe are essential

It is easy to see why the current governmental structure is trying to make the construction industry a safer place to work. During the last 25 years there have been over 2800 fatalities in the construction industry alone and a great deal more injured. The attached risk assessment details the hazards

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that have arose over the past years many of them becoming common on a construction site.

Many of the hazards regarding the construction of the desired retaining wall are clearly apparent, thus ensuring their addition along with other common hazards as suggested by the HSE. In my opinion too many of these hazards are regular occurrences and too easily accepted in the construction industry as everyday life. It has become imperative that we begin to learn from our mistakes and correct them next time around. If this is not done bad habits creep in and bad practise becomes the way.

Information collected and researched by the HSE the industry's most common accident is the fall from height. There are over 70 deaths year concerning falls from height in the industry with a further 4000 injuries due to the same type of accident. As the retaining wall may require deep excavation work the risk of falls from height becomes even more apparent. There are various different incidents when concerning falls from height, it may not involve the falling of a person but dangerous plant or machinery. It is essential that all possible measure is taken in and around the excavated area to fully minimize the risk of a fall from height.

Again, by looking into the procedures for the construction of a retaining wall, it is clear that excavations, often on a large scale must be carried out as a main stage of the works. This itself can be dangerous, however has various smaller hazards which all have just as large an effect if left uncontrolled, thus I have identified this within the risk assessment in a range of different

hazards that were brought to my attention such as: Collapsing sides, confined spaces, and asphyxiation.

I have considered and acted upon the steps into creating a risk assessment for the retaining wall, identifying each hazard with a ' Potential to Harm' category of High, Medium and Low as well as the control measures set in place to prevent such hazards escalating. By using a categorical approach to risk assessment such as this, it is easy to make out the hazards with the highest potential to harm, which should be dealt with firstly before setting precautions for those that although are less significant, are still a hazard that needs to be brought to everyone's attention and controlled.

With the new changes being made and enforced within construction covering the CDM regulations 2007, the HSE states it is the duty of all persons involved in an activity such as working at height in this case, to make sure that all persons involved in an operation such as working at height in this case, are competent fully trained in the tasks they need to carry out. It is the key duty of the CDM co-ordinator to advise the client about the competence of those employed by the client.

It is stressed that the competency of personnel on site should be assessed in two ways:

Assessment of knowledge, training records and qualifications, including basic understanding of site risks.

Past experience in the type of work you are asking them to do.

All those new to the industry should work along side a competent person until they can themselves, demonstrate competence.

From latest HSE inspections the following results were found:

1295 sites and 1586 contractors were inspected

220 Prohibition Notices (PN) on work at height were issued

26 Improvement Notices (IN) on work at height were issued

24 Prohibition Notices on good order were issued

13 Improvement Notices on good order were issued

143 Notices issued on other serious areas of concern

As well as the following calculated statistics:

32% of all worker fatalities (77 killed in 2006/7)

15% of all major employee injuries (3677 in 2005/06)

7492 over 3-day injuries to employees (2005/06)

86. 000 suffering from work-related ill health (2005/06)

3. 5m working days lost per year due to injury and ill health (2005/06)

This information is passed throughout the industry with the main aim of trying to improve site safety and reduce accidents at work. It is with this help, that risk assessments and method statements for operations on site

can be improved to suit new, better ideas, to help reduce these figures and save lives.

Accident Records

RIDDOR rates of reported fatal injury to workers, non fatal injury to employees and averaged+ LFS rates of reportable injury to workers in construction

96/97

97/98

98/99

99/00

00/01

01/02

02/03

03/04

04/05

05/06

06/07p

Fatal (a)

5. 6

4. 6

3. 8

4. 7

5. 9

4. 4

3. 8

3. 6

3. 5

3. 0

3. 7

Major (b) *

403. 0

382. 3

402. 7

395. 9

380. 9

356. 1

354. 9

327. 7

326. 9

307. 8

295. 4

Over 3 day (b)*

1078. 6

966. 3

863. 4

917. 0

829. 2

799. 1

788. 0

680. 0

654. 1

627. 6

565. 9

LFS (a), (c)

n/a

n/a

n/a

2320 (2040, 2590)

2330 (2050, 2610)

2280 (2000, 2550)

2090 (1830, 2350)

1980 (1720, 2230)

1790 (1550, 2040)

1580 (1350, 1820)

n/a

Notes

(a) per 100 000 workers

(b) per 100 000 employees

(c) 95% confidence intervals are given in brackets. They represent the range of uncertainty resulting from the estimate being derived from a sample of people, not from the entire population. They are calculated in such a way that the range has a 95% chance of including the true value in the absence of bias i. e. the value that would have been obtained if the entire population had been surveyed.

* Non-fatal (major and over-3-day) injury statistics from 1996/97 cannot be directly compared with earlier years (see technical note).

n/a Not available (see technical note).

+ Three-year average e. g. 2003/04 – 2005/06 (centered on 2004/05). More details about the data sources are given on HSE's website at <http://www.hse.gov.uk/statistics/sources.htm>.

p Provisional

Control measures are carried out on a daily basis to ensure that hazards are eliminated. Checks must be made on a daily basis to provide the best possible safety for all employees and visitors on site. Inspections should be provided this is usually by the client for temporary shoring, excavation and scaffolding. The Clerk of Works will usually come and inspect the area of work which is commencing on and carry out an inspection request to make sure there is suitable and safe enough to work on.

The review of the area should be undertaken on a daily basis and the conditions should be taken in to consideration e. g. weather Operations around the area may cause potential risk such as vibrations made by machineries around deep excavations. Communication on site need to be maintained to its full potential, as it is essential that every employee is aware or risks and hazards. It is vital that every on aware of the tasks that need to be carried out in advance so each employee can work in a safe environment.