

NIGC 2

Element 1:- Movement of People and vehicles

Hazards to pedestrians

Slips, trips and falls on same level
Falls from height
Collisions with moving vehicles

Precautions for accidents on Staircases

Removal of obstructions
Provision of non-slip surfaces
Reflective edging
Adequate lighting
Effective maintenance
Use of signs
Width
Provision of handrails
Consider disabled persons
Avoid the need to carry heavy objects up and down

Causes of accidents on staircases opposite of above Accidents on walkways almost the same

Hazards of fork lift trucks

Overturning
Overloading
Loss of loads
Collision with other vehicles
Collision with pedestrians
Explosions and fire

Why can trucks overturn?

Travelling on gradients that are too steep
Travelling forwards when descending slopes
Overloaded or unevenly loaded
Travelling over soft or uneven ground
Travelling over slippery surfaces
Travelling too fast
Striking kerbs or other edges
Not suitable for the task
Carrying loads at a dangerous heights
sudden braking

To avoid overturning opposite of above

Parking of fork trucks

- Put in neutral
- Put on handbrake
- Switch off engine
- Remove key
- Give key to appropriate person
- Forks on floor
- Mast slightly forward
- Parked in suitable location
- No blocking of exits

Additional hazards of electric fork trucks

- Hydrogen gas released during battery charging
- Electricity problems
- Manual handling of liquids
- Corrosive acids
- They are quiet

Driver selection

- Suitable age
- Medical examination
- Routine medical checks at regular intervals
- Assessment after prolonged absences
- Trained
- Refresher training

Safety of pedestrians in vehicle moving areas

- Segregation
- Suitable parking areas
- Avoid reversing if possible
- One-way systems
- Avoid sharp or blind bends
- Sufficiently wide entrances and gateways
- Vision aids
- Speed limits
- Signallers (Banksmen)
- Protection from fumes
- Protection from materials falling off
- High visibility jackets

Element 2:- Manual and Mechanical Handling Hazards

Manual Handling Injuries

External:- Cuts, bruises, abrasions, crush injuries

Internal:- Strains, Tears, Hernias

Hierarchy to reduce handling injuries

Avoid handling (mechanical assistance/ team work)

Assess

Implement controls

ITIS

Manual Handling Risk Assessment

Load

Weight

Size

Shape

Rigidity

Difficult to grasp

Unstable

Sharp, hot, cold etc.

Individual

Gender

Posture

Individual capability

Training

Persons assessment of own capability

Task

Holding away from trunk

Twisting

Stooping

Reaching upwards

Large vertical movement

Long carrying distances

Pushing or pulling

Unpredictable movement of loads

Repetitive handling

Insufficient rest or recovery

Work rate imposed by the process

Environment

Constraints on posture

Poor floors

Variations in levels

Hot/Cold/ humid conditions

Poor lighting

Correct Kinetic Handling Technique

Assess the load
Close to load as possible
Secure grip
Suitable feet position
Back straight
Bend the knees
Load close to the body
Smooth movement

Conveyors

Hazards	Precautions
Trapping in drive mechanisms	Guards, No loose clothing
Traps, Nips, Drawing in	Pop out rollers, nip guards
Sharp edges	Edge protection, eliminate edges
Items jamming conveyor	Adequate design
Falling objects	Edge guards, barriers
Riding or crossing conveyor	Bridges, complete enclosure
Impact with objects	Helmets, padding
Noise	Hearing protection
Manual handling	Mechanical handling
Electrical hazards	Suitable electrical equipment

Types of Cranes

Mobile
Tower
Gantry
Overhead

Cranes may fail because of

Overturning
Overloading
Unsuitable support or inadequate bases for crane
Loss of load
Failure of load
Lack of maintenance
Failure of load bearing part

Safe use of Cranes

Suitable crane
Suitable ground conditions
Use of outriggers
Avoidance of obstructions
Care near overhead power lines
Designated and protected area

Suitable and tested lifting tackle
Correct slinging technique
Competent personnel
Load near ground if travelling
Good visibility
Good communications
Suitable storage for fuels etc

Hazards opposite of above plus Use of crane in high winds

Employee safety during lifting

Trained personnel
Properly trained equipment
Equipment has had statutory inspections
Warning of lift taking place
No employee to walk under load
Ensure load is secure
SWL of crane and tackle not exceeded
Lifted to correct height
Moved at appropriate speed
Adequate supervision
Lifting Accessories (Tackle)

Main Hazards

Overloading/used above safe working load
Incorrect use e.g. too wide an angle with chains
Insecure attachment of load
Damage to tackle
Incorrect slinging method
Failure to examine and inspect pre-use
Incompetent staff

Precautions opposite of above

Element 3:- Work Equipment Hazards and Control

Work Equipment: “Any machinery, appliance, apparatus, tool or assembly of Components which are arranged so that they function as a whole”

Precautions in maintenance of Work Equipment

- Use of permit to work
- Isolation/locking off
- Dissipation of stored energy
- Segregation
- Safe means of access
- Use of PPE
- Competent personnel
- Ensure safe environment

Hazards of maintenance work opposite of above plus

- Chemicals
- Biological
- Asbestos
- Hot or cold
- Pressure to complete work

Mechanical Hazards of Machinery

- Entanglement
- Nips
- Traps
- Impact
- Contact
- Ejection

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Non-Mechanical Hazards of Machinery

- Chemical/biological hazards
- Dust and fumes
- Ergonomics
- Electricity
- Fire/explosion
- Hazardous substances
- Manual handling
- Noise
- Radiation
- Stability of machine
- Temperature extremes
- Ultra violet light
- Vibration

Office machinery: - Photocopier and Shredder

Common hazards

- Electrical
- Ergonomic
- Noise
- Stability of machine

Other Hazards

Photocopier	Document shredder
Drawing in	Drawing in to cutters
Trap between moving parts	Contact with cutters
Chemicals	Dust
Ultra violet light	

Manufacturing/Maintenance Machinery: Bench top grinder/Pedestal drill

Common Hazards

- Electricity
- Ergonomics
- Dust
- Stability of machine

Other hazards

Bench top grinder	Pedestal drill
Contact with rotating wheel	Entanglement
Drawing into the trap between the tool rest and wheel	Contact (Stabbing/puncture)
Ejected parts of wheel or workpiece	Impact from an unsecured workpiece
Fire and sparks	Cutting from swarf
Vibration	Ejection of a broken bit or materials
	Manual handling

Agricultural/Horticultural Machinery:- Cylinder mower and strimmer

Common Hazards

- Biological e.g. animal droppings
- Chemicals e.g. herbicides
- Electrical
- Fire/explosion if petrol
- Ergonomics
- Manual handling
- Noise and vibration
- Ejection of materials

Other Hazards

Cylinder mower	Strimmer
Contact with rotating blades	Contact with cutter
Entanglement in blades	Entanglement with cutter

Retail Machinery:- Waste Compactor/Checkout Conveyor

Common hazards

- Electricity
- Ergonomics
- Manual handling

Other Hazards

Waste Compactor	Checkout Conveyor
Impact	Drawing in traps
Crush	Non-ionising radiation (Scanner)
Biological infection from waste	

Construction Machinery:- Cement Mixer/Circular Saw

Common Hazards

- Dust
- Electricity
- Stability of machine
- Ergonomics
- Trapping between fixed and moving parts
- Noise

Other Hazards

Cement Mixer	Circular Saw
Entanglement	Drawing into rotating blade
Chemicals	Contact
Manual handling	Ejection of materials

Machinery Hierarchy of Controls

- Fixed guards
- Other guards or protection devices
- Protective devices (Jigs, Holders, Push Sticks)
- Information, Instruction, Training and Supervision

Fixed Guards:- A physical barrier not connected to machine controls which has no moving parts and requires a tool to remove it

Fixed Guards

Advantages	Disadvantages
Minimal maintenance	Not linked to machine controls
Only defeated by deliberate act	No protection when removed
Only visual inspection	Access to dangerous parts when removed
May protect against other hazards e.g. noise, dust, ejection of materials	More difficult to remove not practical when frequent access required
	Tends to be left unfixed when frequent access required
	May hamper visibility

Interlock Guard:- Linked to the machine controls so that when the machine is in a dangerous condition the guard cannot be opened or opening the guard causes the machine to become safe

Interlock Guard

Advantages	Disadvantages
Allow safe access for feeding materials	Increase the complexity of the machine
Convenient to use	Difficult to test and maintain
Less likely to be deliberately defeated	May need a brake or time delay
Speeds up operations	Components could fail in service
	Regular maintenance required
	May not fail to safety

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Element 4:- Electrical Hazards and Control

Main Hazards of Electricity

Burns
Shock
Arcing
Fire
Explosions

Secondary Effects of Electricity

Falls from height
Unintentional movement of machine
De-activation of control measures
Loss of information
Throw off

Health effects of Electricity on the body

Damage to nervous system
Irregular heartbeat (Fibrillation)
Internal burns
External burns
Muscular contractions
Stopping breathing
Stopping of the heart

Factors Influencing severity of electrical shock

Voltage
Current
Time
Conductivity or resistance
Current path

Action on finding someone in contact with electricity

Isolate the supply if possible
Summon help
Give first-aid if capable (A B C)
Remain with casualty until emergency services arrive

Causes of Electrical Fire

Inadequate circuits
Overloaded circuits
Incorrect fuses
Damaged insulation
Loose connections
Flammable materials too close to electrical equipment
Overheating of cables

Safety of Portable Electrical Appliances

The appliance:-

- Battery operated
- Checked before use
- Suitable selected equipment
- Properly maintained equipment

The Lead:-

- Ensure not run over by vehicles
- Dragged over rough services
- Trapped in machinery
- Exposed to hot surfaces or corrosive chemicals
- Continuous flexing

Joints, Connections and plugs:-

- Temporary connections
- Leads getting pulled out
- Poor made connections
- Fuse being replaced
- Battery operated

Fuse:- A weak link designed to melt, breaking the circuit at excessive currents

Circuit Breakers:- Electromagnetic device which perform the same function as fuses i.e. break the circuit at excessive current although slightly faster

Earthing: - Electricity will always try reach earth and earthing means providing a path to earth lower than the human body

Isolation: - The disconnection and separation of the electrical equipment from every source of electrical equipment in such a way that the disconnection and separation is secure

Reduced voltage systems:- By reducing the voltage present system the consequences of electrical shock can be greatly reduced

Residual Current Devices (RCD):- It compares the current flowing into the system with the current flowing out. When the level differs by a preset value the RCD will open rapidly and interrupt the supply

Double Insulation: - Covering live parts by two separated layers of insulation

User checks

- Equipment is of an approved standard
- Wiring and casing are free from damage
- Cables are correctly routed
- System not overloaded
- Correct fuses
- Plug properly wired and gripped
- Competent users
- Using reduced voltage in wet conditions
- Using RCDs

Office Environments

- Suitable equipment manufactured to appropriate standards
- Avoid the use of trailing cables
- Avoid multi-socket extensions
- Control private electrical equipment brought from home
- Report defective and damaged equipment
- Ensure effective heating
- Switch off overnight
- Test appliances at regular intervals

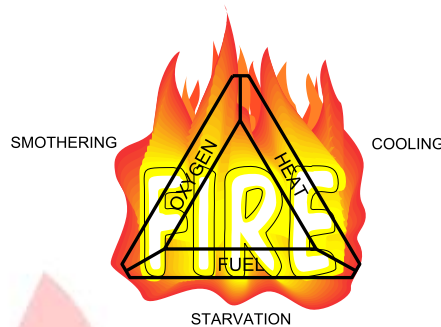
Element 5:- Fire Hazards and Control

Causes of fire

Arson
Electrical faults
Misuse of electrical equipment
Smokers' materials
Oil/gas heating equipment and portable heaters
Unsafe storage of materials
Use of flammable liquids or gases in unsuitable areas
Welding/hot work
Mechanical heat (Sparks/friction)

The fire triangle:

- Fuel, Source of ignition, Oxygen



Flash point:- The temperature at which a vapour given off by substance will ignite when brought to a source of ignition

Classes of fire

- A** Combustible solids (Coal, paper etc.)
- B** Flammable liquids (Alcohol, Petrol)
- C** Flammable Gases (Butane, hydrogen, propane)
- D** Metals
- F** Cooking media (Vegetable oil or animal fats)

Method of Heat Transfer

Direct Contact: - The flame and a combustible fuel are in direct contact and the fuel heats up and eventually ignites.

Conduction: - Heat travels within a solid material from hotter to cooler parts

Radiation: - Heat is radiated through the air causing heating of materials at a distance from the fire.

Convection: - Hot air rises in currents causing the build up of hot and unburned gases under ceilings etc. and allows fire to spread from one room to another.

Fire precautions to minimise the risk to people in the event of fire

Suitable Fire/smoke detection

Fire Alarms:-

Suitable

Regular Testing

Contact with emergency services

Means of escape

Travel distances

Stairways

Fire doors

Signage

Emergency lighting

Assembly points

Means of fighting the fire

Suitable extinguishers

Properly sited extinguishers

Training in use of extinguishers

Extinguishers properly maintained

Emergency evacuation procedures

Fire marshals

Fire notices

Fire drills

Roll calls

Provisions for disabled

Limiting numbers of persons



Element 6:- Chemical and biological health hazards and controls

Target Organs: - A part of the body which sustains an adverse effect when it is exposed to or by contaminated by a particular harmful agent

Examples: - Mercury, Lead the brain
Asbestos, Ammonia the Lungs

Body's defences against dust

The hair and wetness of the nose
The change of direction of the larynx
Sneezing and coughing
The hair cells in the respiratory tract
Tears and blinking of the eyes

Dermatitis

Symptoms: - Blisters, Inflammation, Dryness, reddening, cracking of skin

Protective measures against dermatitis

Eliminate the substance
Substitution of the substance
Barrier creams,
Good hygiene practices
PPE

Routes of entry in the body

Inhalation
Ingestion
Absorption
Direct entry
Injection

Acute effects:- Adverse health effects resulting from single or short term exposure which is usually reversible

Chronic:- Adverse health term effects resulting from prolonged or repeated exposure leading to a gradual often irreversible effects

Classification of Hazardous Substances

Irritant:- Non-corrosive substances which through immediate, prolonged or repeated contact with skin or mucous membrane may cause inflammation e.g. Petrol

Corrosive:- Substances which on contact with living tissue may destroy it by burning e.g. acids

Harmful:- Substances which if swallowed, inhaled or penetrate the skin may cause damage to health

Very Toxic:- A poisonous substance which in low quantities may cause death, acute or chronic damage to health

Toxic:- A poisonous substance which in low quantities may cause death, acute or chronic damage to health

Carcinogenic:- Substances which cause disorders to cell growth that may lead to cancer

Information on Manufacturers Safety data sheets

- Identification of the substance
- Manufacturers information
- Composition of the ingredients
- First-aid precautions
- Fire-fighting measures
- Handling and storage
- PPE
- Disposal considerations
- Transport information
- Regulatory information

Grab Sampler (Chemical stain detector tube)

Advantages	Disadvantages
Low cost	Inaccurate
Takes little time	Positioning of tube
Immediate result	Only a snap shot
Little training	Inefficient
Information during spillage	Chemical use only
Good for coarse indication	Substance specific

Hazardous substance risk assessment 5 steps as normal

Control of health hazards

Eliminate

Reduce by substitution

Isolate:-

Total Enclosure

Segregate the people

Control

Engineering Control (LEV)

Maintenance of controls

Change the work pattern or method
Hygiene and housekeeping

PPE

Discipline

Emergency controls for spillage, air pollution etc.

Ventilation systems alarmed

PPE

Emergency showers, eye wash facilities

Booms, sawdust, spillage procedures

Evacuation procedures

Isolation of the area

Evacuation of the employees at risk

PPE for staff involved in clear up

Local Exhaust Ventilation

LEV becomes inefficient because of:-

Blocked filters

Lack of maintenance

Position of hood

Unauthorised alterations

Broken ducting

Wear of fan blades

Incorrect settings

Increased contaminant level

Inadequate design

Failure of operators to use it

Checks opposite of above

Specific Agents

Ammonia

Strongly alkaline colourless gas with a pungent odour. It is a corrosive and can cause irritation to the eyes and upper respiratory tract in small concentrations.

Large concentrations can cause blindness and fluid in the lungs. Eye protection and respiratory protection essential.

Asbestos

Main types:- Blue, Brown and White

Diseases:- Asbestosis, Lung cancer, Mesothelioma

Carbon Dioxide
Carbon Monoxide
Chlorine

Dusts Nuisance dust can cause asthma, bronchitis, emphysema and conditions such as asbestos, Silicosis.

Dust Identification

Visual signs of dust
Dust lamps
Static or personal sampling
Health surveillance

Control measures for dust

Elimination
Substitution e.g. pellets instead of powders
Enclosure of the process
Local exhaust ventilation
Vacuuming instead of sweeping
Damping down
Limiting time of exposure
Limiting numbers exposed
Respiratory protective equipment

Lead

Organic Solvents

These dissolve other substances and are also used as cleaning and degreasing agents. They are volatile and evaporate quickly at room temperature so their vapours can be drawn into the lungs.

Acute effects are irritation of the eyes, skin, throat and lungs. Effects may be headaches, nausea, dizziness and loss of consciousness and in extreme cases in death.

Isocyanates

Organic compounds widely used in industry for products such as spray painting of vehicles and production of polyurethane rubbers and foams. Inflammation of the nasal passages and throat can lead to asthma.

Silica

Found in sand, granite etc. and the health hazard comes from breathing it in which can lead to the lung disease silicosis.

Biological Agents

Leptospirosis or Weils disease

Bacteria found in the urine of female rats and the most common source is in river water, sewers etc. Enters the body through puncture of the skin or ingestion. Attacks the kidneys and liver causing high temperatures and may be fatal.

Legionella

An airborne bacterium found in water sources such as cooling towers, stagnant water etc. It is caused by inhalation of airborne droplets of water containing the legionella bacteria leading to a form of pneumonia i.e. breathing difficulties, high temperature and possible death. Those at greatest risk are middle aged smokers or elderly people with chest problems. Control measures involve temperature control and monitoring, avoiding “dead legs” legs in pipework, biocide treatment and effective cleaning and maintenance.

Hepatitis

A disease of the liver and can cause high temperatures, nausea and jaundice. It is caused by hazardous substances or a virus. Health workers and those handling bodily fluids are most at risk. The control measures involve inoculation and good hygiene practices.

Control measures for Biological Hazards

Cleaning and disinfection

Water treatment

Vermin control

Containment of the biological agent

Avoidance of sharp implements

Proper disposal of contaminated waste

Immunisation

Personal hygiene

PPE

Waste Storage

Sufficient storage area

Clearly label the storage area

Ensure storage area secure

Protect storage area with bunds etc.

Store different types of waste separately

Never store incompatible waste together

Select appropriate containers

Keep quantities of waste to a minimum

Protect waste from the elements

Element 7:- Physical and psychological hazards

Ergonomics

The study of the relationship between workers and their environment, work equipment and work task.

Work Related Upper Limb Disorders (WRULDs)

Causes of WRULDs

Repetitive finger, hand or arm movements

Twisting movements

Squeezing

Hammering

Pushing, pulling or reaching movements

Symptoms

Numbness in fingers

Pains in hands or arms

Restriction of joint movement

Soft tissue swelling

Factors to be considered during risk assessment

Force exerted

Frequency and duration of operation

Repetition of movement without rest or recovery

Posture

Constraints on space

Environment

Improve above plus:-

Mechanise task

Use correct tools and equipment

Display Screen Equipment (DSEs)

Health effects

Upper limb pains and discomfort

Eye and eyesight effects

Epilepsy

Radiation effects on pregnant women

Fatigue and stress

Workstation requirements

Adequate lighting

Minimum noise

Ample legroom

Suitable screen at eye level

Suitable software

Keyboard

Work surface
Suitable work chair
Footrest if necessary

Health effects of remaining seated for a long time

Vertebral and muscular damage
High blood pressure
Circulation problems

Suitable Seat for sedentary workers

Good lumbar support
Good width and depth
Ability to adjust seat back and height
Stable base
Ability to swivel
Provision of arm rests

Welfare and Environment issues

Welfare

Sufficient toilets
Washing facilities
Eating and changing facilities
Clothing storage
Seating
Rest areas
Arrangements for non-smokers

Working environment

Temperature
Ventilation
Lighting
Room dimensions
Suitable work stations and seating
Weather protection for outdoor workstations

Health effects of poor lighting

Eye strain
Headaches
Poor posture
Tripping over unseen objects
Increased likelihood of human error
Increased time to vacate work area

Factors to consider when assessing adequacy of lighting

The tasks being undertaken
The size and layout of the work area

The equipment used
 Availability of natural light
 Shift times/work patterns
 Suitable number of artificial light
 Contrast levels
 Glare
 Areas in shadow
 Need for localised lighting
 Maintenance of lighting
 Adequate emergency lighting

Noise

Intensity:- The loudness of the noise

Decibel:- The sound pressure level

“A” Weighting:- A filter in the noise meter that equates the noise to how the human ear perceives the noise

Hearing Damage

Acute	Chronic
Stress	Noise induced hearing loss
Temporary threshold shift	Permanent threshold shift
Temporary tinnitus	Permanent tinnitus
Blast deafness	Prebyacosis

Noise Control

Source

Design
 Damping
 Isolate
 Maintenance

Path

Screens and barriers
 Enclosure
 Absorption
 Silencer

The Person

Distance
 Time exposed
 Information and training

Limitations on Personal Hearing Protection

Not worn correctly
 Not fitted correctly

Not properly maintained
Uncomfortable or inconvenient to wear
Needs constant management commitment
May introduce secondary risks

Hand-Arm Vibration

Health Effects

Tingling in the hands and extremities
Numbness and blanching of the fingers
Swollen painful joints
Reduction in manual dexterity
Reduction in the sensation of touch

Control Measures

Elimination

Reduce the degree of vibration

Select low vibration equipment
Select ergonomically designed equipment
Maintenance of equipment
Reduce grip and push force with work equipment
Reduce the time workers exposed
Introduce health surveillance
Gloves and heated pads
Information and training on the nature of risks

Work in a Hot Environment

Health effects

Skin burns
Cataracts
Dehydration
Heat cramps
Headaches
Fainting

Precautions

Medical pre-selection
Acclimatisation
Limit time of exposure
Cold drinks
PPE

Work in Cold Environment

Health effects

Hypothermia
Loss of concentration
Shivering
Frost bite

Precautions

Medical pre-selection
 Acclimatisation
 Limit time of exposure
 Hot drinks
 Insulated clothing

Radiation

Non-Ionising

Type	Use in Industry
Infrared	Heating and brazing
Lasers	Cutting, Bar code readers
Microwaves	Food preparation, Signal transmission
Ultra-violet	Welding

Health effects

Burns
 Reddening of the skin
 Cataracts
 Arc eye
 Temporary sterility

Ionising Radiation

Type	Use in Industry
Alpha	Smoke detectors
Beta	Thickness testing
Gamma	Non-Destructive testing
X-Ray	Medical
Neutron	By product nuclear fission

Acute effects from high dose	Chronic Effects
Reddening of the skin	Cancers
Radiation sickness, Nausea, Vomiting, Diarrhoea	Sterility
Hair loss	Hereditary defects
Death	Effects on unborn children
	Death

Control Measures

Time
 Distance
 Shielding
Others
 PPE
 Environmental and personal monitoring
 Correct disposal of radiation materials

Good hygiene practices
Training and supervision

Violence at work

Occupations at risk

Taxi drivers
Hospitals
Schools
Cash transactions
Delivery/collection of money

Control measures

Training and information
The environment
Design of the job
Communication
Lone working
Reporting and recording incidents

Stress

Physical Effects	Psychological effects
Headaches	Increased anxiety
Dizziness	Reduced concentration
Aching neck and shoulders	Irritability
Skin rashes	Sudden mood changes
Prone to infections	Inability to cope
Panic attacks	Reduced work output
Raised heart rate	Increased use of alcohol, etc
Increased blood pressure	Poor sleep patterns
Heart disease	
Stomach ulcers	

Causes of Stress

Culture
Demands
Control
Relationships
Change
Role
Individual
Environment

Control measures for stress

Selecting suitable employees
Training

- Clearly defined roles
- Clearly work objectives
- Comfortable working environment
- Good lines of communication
- Realistic work schedules
- Employee involvement
- Grievance procedure
- Impartial investigation of stress
- Management support

Element 8:- Construction Activities Hazards and Control

Site Precautions for children

- Fencing
- Security
- Cameras
- Warning signs
- Visit schools
- Take children to site on visits
- Lock away vehicle keys
- Lock away hazardous chemicals
- Remove ladders
- Cover holes
- Reduce heights of materials

Hazards for repair of Flat Roof

- Falling off
- Falling through
- Access
- Hot bitumen
- Burning gases
- Fumes
- Fire
- Manual handling

Ladders

Hazards in use

- Falling off
- Overreaching
- Carrying up materials
- Unsuitable ladder
- Ladder not properly secured
- Incorrect angle
- Not reaching above landing place
- Aluminium ladders near electrical lines

Scaffolding

Inspection checking the above are correct Plus

- Staggered joints
- Not overloaded
- Suitable access

Mobile Tower Scaffold

Precautions

- Erected by competent persons
- Pre use inspections
- Positioned on firm ground
- Correct height to width ratio 3.5 x narrowest side

Use of outriggers to broaden base
Tying in to adjacent structure
People and materials removed before moving
Handrails and toe boards
Suitable work platform
Not overloaded

Hazards opposite of above
Mobile Elevating Work Platforms

Hazards

People falling or being thrown
Materials falling
Crushing between carrier and a fixed structure
Collapse or overturning of MEWP caused by
Equipment failure
Unsuitable ground conditions
Defective or unused outriggers
Overloading of the carrier
Struck by load
Struck by another vehicle
Interference with controls

Precautions opposite of above
Suspended access cradles and platforms

Precautions

Pre-use inspections
Supports to building of adequate strength
Suitably maintained
Safe access and egress
Not exceed safe working load
Guard rails and toe boards fitted
Safety harnesses worn
Limitations on use in strong winds

Excavations

Main hazards

Undermining foundations
Collapse
Underground services
Persons falling in
Vehicles close to edge
Access and egress
Hazardous atmospheres
Flooding
Contamination
Type of soil
Removal of soil

Precautions for above

Precautions for underground services

Plan job
Locate cables
Avoid cables
Safe digging procedures

Hazards of Demolition

Underground and over head services
Falls from height
Fall of materials
Premature collapse
Health hazards
Gases and vapours
Noise
Vibration
Ionising radiations
Biological hazards

Precautions opposite of above plus

Exclusion zones
Safe method of demolition
PPE

