



APPENDIX 1

RISK ASSESSMENT, IDENTIFICATION OF HAZARDS AND CONTROL MEASURES

OPERATION: EXCAVATIONS AND EARTHMOVING

Hazards:

- Falling into excavations
- Collapsing of sides of excavations or steep slopes
- Asphyxiation or poisoning by gases in excavations
- Falling material eg from excavator or dump truck
- Personnel crushed or driven over by plant

Control Measures:

Physical Systems of Work

- Fence off excavations which are left open
- Do not enter deep (>1.2m) or unstable excavations which are not supported
- Use gas monitors in deep excavations
- Position plant and vehicle exhausts downwind when possible

Personal Protective Equipment

- Hard hats
- High visibility clothing

Training

- Induction and tool box talks for all site staff, plant operators and banksmen to be adequately trained
- Especially new or inexperienced staff

Information and Reference

- See confined spaces risk assessment

Record

- Record of training and toolbox talks to be held for each site
- Register of excavation inspections to be maintained

Monitoring

- Monitoring of training and working methods by site supervisor
- OPERATION: LOADING/UNLOADING AND STACKING MATERIALS**

Hazards:

- Falling loads eg equipment failure or poor slinging causing load to slip or drop
- Swinging loads eg cranes or jibbing or lifting when rope not vertical
- Collapsing stacks of rolls of lining material

Control Measures:

Physical Systems of Work

- Lifting to be directed by a trained banksman
- Loads to be slung by a trained banksman or slinger
- Equipment to be suitably rated and certified
- Avoid standing under loads or between a load and a hard place.
- Rolls to be placed so as to reduce the risk of rolling

Personal Protective Equipment

- Hard hats

Training

- Lifting plant to operated by trained and certified personnel
- Loads to be slung and directed by suitably trained site staff
- Induction and tool box talks for all site staff

Information and Reference

- Construction (Lifting Operations) Regulations

Record

- Records of training to be maintained
- CR1-9 certificates for plant and lifting gear to be maintained on site for owned equipment or inspected for equipment not owned.

Monitoring

- Monitoring of training and working methods by site supervisor

OPERATION: TRANSPORTING AND DEPLOYING LINING MATERIAL

Hazards:

- Person hit by materials being unrolled down slopes
- Slipping/falling over on smooth liner
- Persons hit, knocked over or dragged by wind blown liner
- Persons hit by plant or rolls of material in transit on site

Control Measures:

Physical Systems of Work

- Ensure no persons in area in front or on downhill side of roll to be unrolled
- Lining materials to be anchored with sandbags as deployment progresses.
- Do not handle or lay unrolled material in strong winds
- Use rope ladders on slopes and safety ropes if appropriate
- Rolls in transit on site to be guided by a suitable person

Personal Protective Equipment

- Hard hats
- Safety footwear
- Rope ladder and safety ropes if appropriate

Training

- Induction/tool box talks

Information and Reference

- See risk assessments on loading/unloading

Record

- Record of induction/tool box talks

Monitoring

- Regular monitoring by site supervisor

OPERATION: CUTTING AND PREPARING LINING MATERIALS

Hazards:

- Serious cuts and minor injuries from craft knives
- Injuries from contact with angle grinder eg fingers,limbs
- Eye injuries and minor injuries from flying particles during grinding
- Inhalation of dust, particles and fibres.
- Burns and fumes from cleaning fluids

Control Measures:

Physical Systems of Work

- Use hook blades
- Maintain knives in good condition
- Cut away from body
- Wear gloves and eye protection when grinding
- Wear dust masks during dusty operations
- Ensure other personnel are not put at risk by operations

Personal Protective Equipment

- Gloves
- Eye protection
- Dust Masks

Training

- Induction training and tool box talks
- Training and certification for staff to mount abrasive wheels

Information and Reference

- Abrasive wheels regulations
- Provisions and use of Work Equipment Regulations
- COSHH assessment for cleaning fluids

Record

- Maintain record of training and certification

Monitoring

- Monitoring of training and working methods by site supervisor.

OPERATION: SEAMING OF LINING MATERIALS

Hazards:

- Burns from welding equipment, hot welds or extrudate
- Burns from hot air blowers
- Fingers crushed in rollers of wedge welders
- Fingers or limbs injured by stitching machines
- Inhalation of bentonite dust from joining GCL's

Control Measures:

Physical Systems of Work

- Only suitably trained and qualified personnel to use welding and stitching equipment
- Wear suitable protective clothing
- Keep hands etc clear of hot machine parts and welds
- Equipment to be properly maintained

Personal Protective Equipment

- Gloves wherever possible
- Dust masks when handling bentonite

Training

- Training in the safe use of all equipment for welding technicians
- Induction/tool box talks for all other site staff

Information and Reference

- Bentonite dust COSHH assessment/data sheet

Record

- Record of training and tool box talks

Monitoring

- Monitoring of training and working methods by site supervisor

OPERATION: TESTING LINING SEAMS

Hazards:

- Electrocution from HVE spark test equipment
- Burns from gas torch

Control Measures:

Physical Systems of Work

- Only trained personnel to use spark test equipment and gas torches
- Switch off/disconnect when not in use

Personal Protective Equipment

- Gloves where possible

Training

- Induction training and tool box talks

Information and Reference

Record

- Record of training and tool box talks

Monitoring

- Monitoring of training and working methods by site supervisor

OPERATION: WORKING ON LANDFILL SITES

Hazards:

- Infection with diseases
- Poisoning with toxic substances or gases
- Physical injury from sharp objects in refuse
- Injury or death from heavy plant eg waste compactors
- Risk of fire/explosion from flammable landfill gas

Control Measures:

Physical Systems of Work

- Seek information from site owner regarding types of waste likely to be encountered
- Avoid direct contact with refuse or leachate
- Keep away from landfilling areas if possible
- No scavenging or collecting is permitted
- Wash thoroughly before eating or drinking
- Use gas detector before spark testing
- No smoking

Personal Protective Equipment

- Gloves
- Boots
- Overalls
- Dust masks
- High visibility clothing
- (where close contact with refuse or leachate is unavoidable)

Training

- Induction training and tool box talks

Information and Reference

- EPA Publications
- BDA Guidelines (British Drilling Association)

Record

- Record of training and tool box talks

Monitoring

- Monitoring of training and working methods by site supervisor

OPERATION: WORKING ON PETROLEUM / CHEMICAL SITES

Hazards:

- Fire, explosion, toxic and corrosive substances.

Control Measures:

Physical Systems of Work

- Seek site specific details from site owner / manager and agree safe working procedures with site owner / manager

Personal Protective Equipment

- As determined from above.

Training

- Arrange training and induction for all site staff with site owner or obtain site rules and carry out own training

Information and Reference

Record

- Maintain record of training and certification

Monitoring

- Monitoring of training and working methods by site supervisor.

OPERATION: WORKING IN CONFINED SPACES

Hazards:

- Asphyxiation due to oxygen or toxic gases
- Fire or explosion due to inflammable/explosive gases
- Other physical hazards eg deep tanks, slippery surfaces, poor lighting etc
- Site Specific Risk Assessment Required

Control Measures:

Physical Systems of Work

- Assessment of risk and necessary precautions to be undertaken by trained and suitably qualified person
- Obtain information from site manager
- Site specific method statement to be developed, likely to include, as a minimum, use of portable gas detector to ensure safe atmosphere before and during entry into a confined space.
- Develop 'permit to enter' system with site owner, if appropriate.

Personal Protective Equipment

- Gas detector
- Possibly man riding winch
- Escape breathing apparatus or full breathing apparatus.

Training

- Site supervision in charge of operations to be trained and qualified
- All other personnel to have suitable training

Information and Reference

- Code of Practice for Working in Confined Spaces, Safe Work in Confined Spaces, Health & Safety Authority.

Record

- Maintain record of training

Monitoring

- Regular monitoring by site supervisor

OPERATION: USING SCAFFOLDING AND MECHANICAL MATERIAL HOISTS

Hazards:

- Scaffold collapsing / overturning leading to serious injury or death
- Falling personnel or materials leading to serious injury or death
- Failure or incorrect use of hoists leading to serious injury or death

Control Measures:

Physical Systems of Work

- Scaffolds not to be used until they are complete and have been inspected
- Scaffold towers to be erected and used only in accordance with suppliers instructions normally with ladder fixed inside tower
- Only certified lifting equipment to be used

Personal Protective Equipment

- Hard hats

Training

- Only suitably trained and qualified personnel are to erect and inspect scaffolding and lifting equipment.

Information and Reference

- Guidelines to the Safety, Health & Welfare at Work (Construction) Regulations, 2001 SI No 481 of 2001
- Guidelines to the Safety, Health & Welfare at Work (Construction) Regulations, 1995 SI No 138 of 1995

Record

- Register of inspections to be maintained.

Monitoring

- Monitoring of training and working methods by site supervisor.

OPERATION: WORKING CLOSE TO WATER

Hazards:

- Drowning
- Infection with diseases
- Site Specific Risk assessment required

Control Measures:

Physical Systems of Work

- Assessment of risk and necessary precautions to be undertaken by trained and suitably qualified person
- Personnel to carry Instruction Card on diseases for work near water
- Precautions may include:
 - Fencing off water area
 - Provision of buoyancy aids
 - Strategic placing of ropes for life lines
 - Provision of boat in extreme cases

Personal Protective Equipment

- Life Jackets
 - Buoyancy aids
 - Harnesses
 - Ropes
- (Where appropriate)

Training

- All personnel to have site specific induction training and tool box talks

Information and Reference

Record

- Maintain record of training

Monitoring

- Monitoring of training and working methods by site supervisor

OPERATION: MANUAL HANDLING AND LIFTING

Hazards:

- Risk of back injury
- Risk of injury to limbs

Control Measures:

Physical Systems of Work

- Weights in excess of 25kg should be mechanically handled wherever possible
- Any unavoidable hazardous manual handling is to be assessed.

Personal Protective Equipment

Training

- FAS Manual Handling Awareness course to be undertaken by all staff and renewed every two years.
- Induction and tool box talks for all site staff, especially new or inexperienced staff

Information and Reference

- Health & Safety Authority publication, Handle with Care – Safe Manual Handling

Record

- Keep record of assessments except for simple operations.

Monitoring

- Monitoring of training and working methods by site supervisor.

OPERATION: USES OF ELECTRICITY ON SITE

Hazards:

- Electric shock, possibly fatal

Control Measures:

Physical Systems of Work

- Circuit breakers fitted to all generators, appliances and cables
- All equipment to be regularly maintained and inspected by a competent person

Personal Protective Equipment

Training

- Induction and tool box talks for all personnel, specific training for competent person

Information and Reference

- Health & Safety Authority Regulations

Record

- Record of training and equipment inspections

Monitoring

- Site supervisor or nominated competent person to check on safe systems of work.

OPERATION: USES OF ELECTRICAL EQUIPMENT ON SITE

Hazards:

- Electric shock, possibly fatal

Control Measures:

Physical Systems of Work

- Use of a generator compatible with the load it is to supply (particularly with regard to voltage, rated output of the unit (KVA), connections and earthing.
- Circuit breakers and fuses to guard against overloads and short circuits.
- The star point of the 3-phase unit is connected to the earthing conductor of the electrical system to be supplied and to the frame of the generator. The output cable from the unit is terminated in a clearly identified and labelled change-over switch to ensure that the normal supply network can not be re-energised by the unit; that the system supplied by the unit cannot be energised by two sources of supply at the same time and that no live conductors are at the interface point between the permanent and standby supplies.
- Supply points fitted with an RCD (Residual Current Device) to provide sensitive earth leakage protection as a backup to other precautions which are the primary means of protection.
- Efficient and safe means of isolation from the electrical supply which is readily accessible.
- All equipment to be regularly maintained and inspected by a competent person
- Defective equipment is withdrawn from service and not returned until repaired.

Personal Protective Equipment

Training

- All personnel operating welding machines to be TWI certified. All technicians under training to be supervised by a certified technician at all times.
- All operators are instructed in the correct and safe use of electrical apparatus and to undertake inspections to locate potential damage to the equipment.
- Induction and tool box talks for all personnel, specific training for competent person

Information and Reference

- Apparatus technical manual
- TWI Manual

Record

- Record of training and equipment inspections

Monitoring

- Site supervisor or nominated competent person to check on safe systems of work.

OPERATION: WORKING IN THE VICINITY OF OVERHEAD LINES

Hazards:

- Electric shock, possibly fatal following contact with overhead services.

Control Measures:

Physical Systems of Work

- A visual survey of overhead lines shall be undertaken prior to the commencement of site works, immediately following the ESB Safety Induction.
- Safety goalposts are to be erected at agreed safe working distances from overhead lines and marked with high visibility red and white striped marker tape.
- Trucks shall not be permitted to tip in the vicinity of overhead lines.
- Fill material shall be dozed into areas below overhead lines from their boundaries as defined by the above goal posts.
- Banksmen shall be employed as necessary while work is being undertaken in the vicinity of overhead lines to ensure the safety of all site staff.

Personal Protective Equipment

- Standard

Training

- All personnel must attend the ESB Safety Induction prior to the commencement of any works.
- Lining Technology Induction and tool box talks for all personnel including instruction on the location of all power lines and cables near the works and on the route to the works.

Information and Reference

- ESB Safety Induction and Green Book
- Health & Safety Authority Regulations

Record

- Record of training and site safety audits

Monitoring

- Site supervisor or nominated competent person to check on safe systems of work.