Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Procedure for Construction Safety Management

Procedure No. 203

	Print Name	Title	Date
Prepared by	**N.Mooney**	**Assistant Fire and Safety Officer**	**6th May 2009**
Reviewed by	**B. Lennon**	**Fire and Safety Officer**	**6th May 2009**
Corporate Authorisation	**Joe Hoare**	**Estates Officer**	**6th May 2009**

INTRODUCTION

The purpose of this procedure is to describe how to manage control and co-ordinate construction works in order to protect the health, safety and welfare of all personnel engaged in such projects and others who may be affected by such works.

All persons shall take responsibility for their own Health and Safety and that of their colleagues by working within the spirit of this procedure. Any person found to be disregarding the requirements of Construction Safety Management should be subject to disciplinary procedures, which may result in their dismissal.

Contractors shall observe and perform all obligations relating to Health and Safety placed upon employers by any statutory safety regulations and all regulations and codes of practice made under the authority of any utility company or the like are applicable to the construction works.

Sub-Contractors should comply with the safety instructions of the main contractor.

Scope

This procedure applies to all construction works carried out by or on behalf of the Health Service Executive, Mid-Western Area.

Responsibility

It is the responsibility of Estate staff, the Design Team, Contractors and all involved in Construction works on behalf of the Health Service Executive, Mid-Western Area to ensure that the guidelines included in this procedure and relevant legislation are adhered to.

PROCEDURE

1.0 Brief Description of the Works

A brief description of the works should be given to indicate the nature of the construction and scope of work.

2.0 Safety Obligations

2.1 Statutory Obligations

The Health Service Executive, Mid-Western Area recognise their responsibility to comply with all relevant statutory health and safety requirements and will ensure that we observe such requirements accordingly.

The principal statutory Health and Safety requirements to be observed during the execution of Construction Works include:

- Safety, Health and Welfare at Work Act 1989,
- Construction Regulations 2001 SI No.481 of 2001

- Health Service Executive, Mid-Western Area Safety Statement dated March 2002
- The European Communities (Protection of Workers) [Exposure to Noise Regulations] 1990.

2.2 Contractual Obligations

The contractor should recognise the contractual obligations to ensure that the ongoing safety of the public and all project personnel, during the execution of the works, is given priority. A Site Safety Plan should be designed to describe how the contractor intends to satisfy these obligations and to manage and co-ordinate our operations and the operations of our sub-contractors accordingly. Every sub-contractor will be required to co-operate on all relevant health and safety matters to enable us the contractors to meet their contractual obligations.

Safety Structure

Individual Responsibilities

3.1.Contractors Project Manager based on site

- Establish, approve and ensure implementation of the project safety plan.
- Delegate a clear safety responsibility to all staff and sub-contractors.
- Ensure from the planning stage that safe systems of work are incorporated into proposed construction methods, and are subsequently adhered to.
- Ensure that all plant and equipment used on site is maintained in a safe condition and that operators are correctly trained / licensed.
- Arrange for the provision of the necessary site welfare facilities.
- Organise basic fire precaution, prevention, and procedures
- Anticipate hazards, recommend precautions and instruct all personnel with a sequence of operations to follow.
- Organise and maintain a policy of correct and safe storage of materials. Provide adequate information to persons using hazardous materials.
- Monitor the safety performance of sub-contractors and instruct corrective action when required.
- Appoint First Aiders.
- Ensure that all personnel put to work on site are competent for the work and that they have been trained in the statutory safety procedures.
- Maintain a tidy workplace and ensure that access routes and pathways are kept clear.
- Report any injury sustained by a contractor's employee to the Health Service Executive, Mid-Western Area.
- Notify the Health Service Executive, Mid-Western Area of any material or substance brought to works site which has health, fire or explosive risks.

3.2 Site Safety Supervisor

- Ensure that protective clothing and equipment are being used and that working practices are in accordance with the Project Safety Plan.
- Monitor Sub-Contractors and ensure that neither the Subcontractors personnel or any other persons in the working area are put at risk by their actions.
- Keep themselves aware of any accidents/incidents that may occur and endeavour to prevent recurrences.
- Notify the Project Manager of any reportable accidents/dangerous occurrences.

3.3 Foreman / Ganger

- Understand and implement the company safety policy, rules and work practices.
- Incorporate the needs of safety within all instruction about work.
- Discourage any bad practices, rebuke any operatives putting themselves at risk, create good safety procedures and manage all activities safely.
- Ensure that all newcomers to the site, especially apprentices and trainees, take adequate precautions by providing all knowledge to them and explaining their legal and moral obligations.
- Restrain all operatives, both directly employed and sub-contracts' employees, from taking any risk.
- Supervise any particular task which one would associate with potential hazards so as to ensure the health and safety of the workers engaged therein.

3.4 Fitter / Electrician

- Ensure that all lifting appliances, lifting gear and pressure vessels used on site have been tested and examined by a competent examiner as required by the statutory regulations including all such items brought to site and operated by or for Sub-Contractors.
- Carry out periodic maintenance to the plant and machinery, ensure that all plant and machinery used on site are safe and without risks to health.
- Ensure that no person can operate any plant or machinery on site unless he has been properly trained, has practical experience and has any relevant certificate required to operate such plant or machinery.
- Provision of regular inspection and maintenance to all temporary electric equipment and apparatus on site so as to prevent any electrical hazards.
- Ensure that all lifting appliances used on site have been inspected weekly by competent person or operator and such inspections entered in the safety register.

3.5 All Personnel

- Take all reasonable care for the health and safety of himself and or other persons who may be affected by his acts or omissions at work.
- Carry out tasks only for which he is competent or trained or only if the task involved does not involve unreasonably high risk. If in doubt about a task other than his normal duties, he should discuss the work involved with his supervisor.

- As regards any duty or requirement imposed on the company or any other person by or under any of the relevant statutory provisions, to co-operate with the contractor or him so far as is necessary to enable that duty or requirement to be performed or complied with.
- Guide and encourage all new employees, to be safe, and make them aware of any particular hazard.
- Immediately report any accident occurrence, personal injury or occupational disease to the supervisor ask for first aid treatment even though that the injury is a minor one.
- Maintain a tidy workplace.
- Wear a safety helmet, safety boots, safety gloves, safety glasses and hearing protection at all times and other protective equipment as required, as outlined in the Safety statement and as instructed by a charge-hand.

Safety Procedures

4.1 Risk Assessment

Hazard	Potential Dangerous Event	Steps to Reduce Risk
Traffic movement around working area.	Collision between vehicles or vehicle and works area.	Traffic diversion scheme including signage and barriers
Pedestrian movement around working area.	Working/falling into works area. Struck by falling object. Struck by vehicles or construction plant entering/leaving site.	Provide marked, safe access routes of sufficient width routed away from site accesses. Erect barriers between pedestrian routes and works areas. Provide barriers around open excavations. Supervise vehicles entering / leaving site across pedestrian routes.
Use of cranes	Material dropped from height.	Follow established procedures and statutory requirements with modifications to allow for working in

		restricted space in a congested area.
Hazard	**Potential Dangerous Event**	**Steps to Reduce Risk**
Working in confined spaces.	Suffocation	Supervisors to be experienced in similar type of work. Special care taken in selection of plant to be used. Atmosphere to be tested prior to entry and subsequently monitored. Forced ventilation to be provided if required.
Fire.	Fire on site	Follow established procedures and statutory requirements Provide sufficient exit points Avoid use and storage of combustible materials in underground works areas.
Welding / cutting operations and equipment.	Burns to personnel. Fire. Fumes.	Follow established procedures and statutory requirements. Provide screens around welding operations during traffic deck installation. Provide adequate ventilation in confined areas.
Use of scaffolding & work platforms.	Scaffolding / platform collapse. Fall from height. Falling objects.	Follow established procedures and statutory requirements.
Use of ladders.	Ladder failure. Fall from height. Falling objects.	Follow established procedures and statutory requirements.
Use of hand/Power tools.	Injury to personnel through cuts/abrasions/burns.	Follow established procedures and statutory requirements.

	Bursting of abrasive/cutting wheels.	

Hazard	Potential Dangerous Event	Steps to Reduce Risk
Use of electrical equipment.	Electrocution. Ignition of fire.	Follow established procedures and statutory requirements.
Use and storage of hazardous materials.	Fire. Burns. Explosion.	Follow established procedures and statutory requirements.

4.2 Individual Procedures

4.2.1 Traffic Management around works area

Prime considerations during the preparation of diversion arrangements will be the safe movement of vehicles around the works areas, and the safe movement of construction vehicles into and out of the works areas.

4.2.2 Pedestrian Movement Around Working Area

Pedestrian movement routes around the works areas will be clearly defined on site

Barriers appropriate to the nature and proximity of adjacent construction work will be put in place to define the access routes and protect pedestrians for the effects of the work.

Open excavations will be protected with barriers which cannot be readily moved or overturned.

4.2.3 Access into Works Area for Materials/Personnel

Wherever possible access points will be chosen to minimize the effect on traffic movements, and not to cross pedestrian movement routes.

Ensure that the safe minimum distance from high voltage power lines is maintained.

Major material deliveries into the works area will be made outside periods of peak traffic flow.

4.2.4 Operation of cranes and other lifting appliances

General safety precautions :-

a) Lifting appliances shall be installed under the supervision of a competent person appointed by the site safety supervisor.
b) No structural alteration or repair shall be made on any part of the lifting appliances that affects the safety of this appliance without the permission of the competent person.

c) The maximum safe working load shall be marked on the lifting appliance.
d) No persons under 18 years of age shall be employed to operate a crane or lifting appliances.
e) No crane , hoist , winch or other lifting appliance, or any part of such appliance, shall, except for testing purposes, be loaded beyond the safe working load.
f) During hoisting operations, effective precautions shall be taken to prevent any person from standing or passing under the load.
g) If necessary to prevent danger long objects such as planks and girders shall be guided with a tag line, while being raised or lowered.
h) The hoisting of loads at points where there is a regular flow of traffic shall be carried out such that the load does not pass over the traffic , or if this is impracticable (e.g. in the case of bulky objects) measures shall be taken to hold up or divert the traffic until the load being lifted is clear.

4.2.4.i Lifting Appliances

- Every lifting appliance must be tested and thoroughly examined by a competent examiner at regular intervals.
- The owner responsible for any lifting appliance which is in use on site shall ensure it is inspected by a competent person.
- Only a trained and competent workman over 18 years of age is allowed to operate mechanical equipment in a construction site. (N.B.: Mechanical equipment includes any bull dozer, compactor, dumper, excavator, locomotive and any mobile machine which is used for the handling of any material in a construction site.)

4.2.4.ii Lifting Gear

- Every item of lifting gear shall be tested and thoroughly examined by a competent examiner at regular intervals .
- Every item of lifting gear shall be clearly marked with its safe working load and an appropriate mark to distinguish it from other similar gear.
- Every item of lifting gear shall not be used for any load exceeding its safe working load.
- Any lifting gear which shows evidence of excessive wear shall be withdrawn from use.
- When not in use, ropes, chains and accessories shall be stored under cover in clean, dry, well-ventilated places where they are protected against corrosion or other damage.
- Lifting gear will be tested in accordance with the relevant work procedure.

4.2.4.iii Records of inspection of cranes

- Statutory records will be held by the contractor.

4.2.5 Excavation - General

- The severity of excavation accidents is high, about one in every eight being fatal. This is one of the highest risks in any industry. A cubic metre of spoil weighs at least a tonne and a person only partially buried by a collapse could be severely or fatally injured and any person who is completely buried would probably not live for more than a few minutes.
- Excavations should where possible at under 1.2m be to the line of repose, especially where strutting is in place.
- In excavation, shaft or tunnel more than 1.2 m deep where there is a risk of material collapsing or falling, timbering, trench sheeting, benching etc, must be used to safeguard operatives.
- Protection is required for those engaged in timbering or sheeting operations and there must be an adequate supply of suitable materials.
- Any excavation, shaft or tunnel more than 1.2 m deep shall be inspected by a competent person at least once a week. Excavations more than 1.2m deep should also be examined by a competent person after heavy rain or flooding before work commences.
- No examination, timbering or sheeting is required to the excavation, shaft or tunnel if there is no risk of earth collapse or of men being struck by material falling from a height or more than 1.2 m.
- Barriers or coverings shall be provided to excavations, shafts, pits and openings into which a person is liable to fall a vertical distance of more than 2m, except during the period necessary for the access of person, movement of plant, equipment and materials or if it is not yet practicable to erect such barriers or coverings.
- Material shall not be placed close to the edge of the excavation, shaft pit or opening so as to endanger any person working in it.
- Before work begins on any excavation, the position of all underground services such as sewers, gas pipes, water pipes and electric cables that may cause danger during the work shall be identified.

4.2.5.i Excavation Check Lists

Before Work Starts check that :

- suitable arrangements are made for the deposition of spoil. Where possible the toe of the spoil heap should be the same distance from the edge as the depth of the excavation; in all cases a space of at least 1 m should always be maintained at the edge space;
- suitably qualified supervision and labour is available;
- the location of all underground services has been established and marked;
- the system of work is clearly understood by all concerned and method statements being prepared and issued as appropriate;

- no load, plant or equipment shall be placed or moved near the edge of any excavation where it would be likely to cause a collapse of the side of the excavation and thereby endanger any person.
- temporary sheet piling installed for the construction of a retaining wall shall not be removed until the wall has attained its full strength.
- drainage around the excavation shall be provided wherever practicable to keep the excavation dry, particularly in the rainy season.

4.2.5.ii The Use of Excavators

a. Inspections and Examinations

An excavator is a lifting appliance and must be inspected as such at least once a

4.2.6 Working in Confined Space

A confined space means;

a) a completely enclosed structure with limited access though a manhole e.g. storage tank, boiler, pressure receiver and vessel
b) a structure or vessel of such a depth as to require special means of entry and an emergency exit, with its top usually open e.g chamber, tank, pit, well, caisson, vault, bin, silo and shaft.
c) A structure or ducting of sufficient length with inadequate cross ventilation e.g. tunnel, pipeline, flue, duct and sewer
d) A room or enclosed area in which dangerous fumes such as toxic , flammable , explosive or corrosive fumes are present

Working in confined space may result in exposure to hazards like deficiency in oxygen or lethal concentrations of toxic or flammable gas. Therefore, no person shall be allowed to enter until the atmosphere has been tested and certified by a competent person.

4.2.6.i Atmosphere Monitoring

a. If the atmosphere in any confined space is suspected of being hazardous, tests must be made, and no-one must enter until a competent person has certified that entry is safe.

b. Where it is known that confined space hazards may exist suitable atmosphere monitoring equipment should be kept available on site with persons specially trained to use it.

c. Types of equipment used to detect dangerous atmosphere condition include the followings:-

- oxygen deficiency indicators and recorders;
- explosimeters to indicate the presence of flammable gases and vapours;

- aspirator hand pumps (sniffers) with selective detective tubes sensitive to toxic gases; (Draeger sets)
- flame-type detectors sensitive to both oxygen deficiency and the presence of flammable gas;
- electronic devices which detect oxygen deficiency, flammable gas and certain toxic gases, in some cases in a single unit; (Extox)
- hydrogen sulphide detectors including both electronic devices and the traditional lead acetate paper. It should be appreciated that some gas detectors only respond to a particular gas and various gas sensitive indicators may be necessary where the nature of the gas is unknown.

All testing and monitoring equipment must be maintained in good order.

4.2.6.ii Respiratory Protective Equipment
Appropriate breathing apparatus must always be readily available for use in an emergency and key personnel must have received adequate training in the working principles.

All breathing apparatus, safety harness, lifelines, reviving apparatus and any other equipment provided for use in, or in connection with, entry into a confined space, and for use in emergencies, must be properly maintained and thoroughly examined by a competent person at least once a month, and as soon as possible after every occasion on which it has been used.

All the reports shall be kept for reference and inspection whenever necessary.

4.2.6.iii Ventilation
Adequate ventilation must be provided at every confined space in which persons have to work, with a free circulation of air being maintained, whether by natural or artificial means.

4.2.6.iv Safe Systems of Work
In planning and executing work in a confined space, a safe system of work must be established which takes into account:-

a. the possible environmental hazard and any relative tests of the atmosphere;
b. ventilation;
c. access and egress;
d. plant and equipment;
e. materials;
f. personal protective equipment;
g. the experience of the person involved;
h. supervision and instruction;

i. emergency equipment and procedures, including the contact number and location of the nearest first aid station / hospital.

Other hazards may be existed for persons working in confined space.

Danger of Drowning

Conditions can change very quickly and persons at work should be aware of the risk of being swept away in fast or rising water.

They should be aware of the movement of air, an increase in the depth or velocity of the flow, or the noise of approaching water, and be prepared to evacuate immediately. Where practicable, bars or chains should be fitted downstream of the working area

Bacterial Infection

Although risk of disease through contact with sewage is low, contact with the urine of rats can cause a kind of infectious jaundice known as Weil's Disease. Persons exposed to sewage should therefore cover any cut or graze with waterproof plaster; use lanolin based barrier cream; wear appropriate protective clothing and be scrupulous about personal hygiene, washing hands, face and forearms with hot water and soap and scrubbing the nails, after work. Eating, drinking and smoking must not be allowed before the personal hygiene rules have been observed. Should a person, at any time, feel unwell he should report to his doctor at once and tell him that he may have been in contact with sewage.

The foregoing advice is relevant whenever rats may be present.

4.2.6.v Lighting

Temporary lighting in a confined space should be of low voltage rating. Smoking should not be permitted.

4.2.6.vii Instruction, Training, Supervision

Persons who enter confined spaces must receive such instruction, training and supervision as is necessary to ensure, so far as is reasonably practicable, the safety of themselves and of other persons.

4.2.6.viii Emergencies

a. The planned system of work must provide for the prompt rescue of any person who may be injured or collapse in a confined space. No person should work alone.

Depending upon the location of the confined space and the nature of the possible hazard, lookout, rescue harness with lines attached, hoisting apparatus, breathing apparatus with persons trained to use it, and means of giving immediate artificial respiration, may be necessary.

b. Should a person collapse in a confined space and cannot be swiftly pulled out by means of a harness and rescue line, **on no account must any person enter the**

confined space to attempt a rescue, unless he is wearing suitable breathing apparatus. In such cases the fire brigade and ambulance service must be called immediately.

4.2.7 Fire

Fire in the construction site can occur in temporary buildings like in messrooms, drying rooms or stores or where combustible materials present or some hazardous processes is undertaken.
Precautions must be followed in order to minimize the outbreak of fire as follows.

4.2.7.i Electrical Installations

a. All electrical installations and alternations must be carried out by, or supervised by, a registered electrical worker.

b. The length of flexible leads must be kept to a minimum; temporary wiring if not in conduit must be fixed in position by cleats; fuses must be of the correct rating; and the use of multi-point adapters must be avoided.

c. All portable electrical equipment on site to be 110v centre tap or 50v if entering a confined space i.e. Boilers, Silos etc.

4.2.7.ii Flammable Materials

a. General

High fire risk materials, e.g. paint solvents, some adhesives, cartridges, gas cylinders, etc. must, except for those quantities required for immediate use, be kept well away from work areas. Typical storages are paints; solvents; etc. - metal storage hut or bin, kept solely for the purpose and locked when not in use, cartridges - locked away in steel cupboards, gas cylinders - in a special compound.

b. Packaged Materials

Special attention must be paid to the fire hazards created by packaged materials. Storage within the permanent works should be dispersed to enable regular checks to be made, and to limit damage in the event of fire.

Discarded packaging materials must not be permitted to accumulate at work or storage areas. Arrangements must be made for all such materials to be collected and disposed of regularly.

c. Expanded Polystyrene

Expanded polystyrene should be of the flame-retardant type. However, the degree of resistance to combustion can vary and it should be treated in the same way as packaging materials.

d. Rubbish Fires

Rubbish fires on site are forbidden unless suitable off-site disposal facilities are not available. In such circumstances, the burning of rubbish must be carried out under strictly controlled conditions.

e. Mechanical Equipment

Mechanical Equipment should be leak free and have drip trays positioned under them. Fuel/oil spill should be cleaned up immediately.

4.2.7.iii Smoking
Smoking must not be permitted in any store, or in any place where combustible materials or flammable liquids or gases are kept; 'NO SMOKING' notices must be prominently displayed. Non-combustible ashtrays must be provided wherever smoking is permitted in offices.

4.2.7.iv Waste Paper
Non-combustible containers must be provided for waste paper, food wrappers, etc. in offices and messrooms, which must be emptied daily.

4.2.7.v Action in Case of Fire
It is important that everyone on site is aware of the action to be taken in the event of a fire. Appropriate instructions must therefore, be communicated to the workforce, giving details of:

a. how to give the alarm and ensure evacuation of the building or structure;

b. where and how to call the fire brigade, including telephone arrangements outside normal working hours;

c. the fire-fighting equipment available and how to use it.

4.2.7.vi Fire-Fighting Equipment
Every site must be provided with and must maintain, appropriate means of fire-fighting equipment to be readily available for use.

4.2.8 Welding / Cutting Operations & Equipment
Welding and cutting operations can create a number of risks, both physical and environmental. These include the risk of fire or explosion; burns; electric shock; arc eye; respiratory problems; and the creation of hazardous atmospheres. Such risks are compounded when the operation take place on contaminated material or in confined

spaces such as tunnels. A full appreciation of the possible hazards of any welding or cutting operation is, therefore, essential.

4.2.8.i Gas Welding & Cutting

a. Cylinders

Gas cylinders must be treated with the utmost care and under no circumstances must they be rolled along the ground, subjected to mechanical damage, falls or excessive heating.

When in use, cylinders must be secured vertically, preferably to a suitable trolley.

When stored, acetylene and propane cylinders must be vertical. Other cylinders can be vertical (and chained) or horizontal (and wedged) not more than four cylinders high.

Welding and cutting underground should only be carried out under a 'Permit-To-Work'. If used underground, they must be contained in trolleys and removed immediately they are no longer required. Cylinders must <u>not</u> be stored underground.

Any cylinder having been involved in a fire should be set aside, clearly marked, and the supplier should be contacted immediately. If the metal of the cylinder has been subjected to a high temperature, some change in the metal structure may occur, rendering the cylinder unfit and dangerous for further use.

b. Regulators

Appropriate regulators must always be used and be fitted with flashback arrestors.

c. Valves & Fittings

Oil or grease must not be allowed to come into contact with oxygen valves or fittings, as spontaneous combustion may ensue.

d. Hoses

Hoses, to BS5120 must be inspected regularly for signs of damage.

4.2.8.ii Electric Arc Welding

In electrical arc welding processes there is an ever-present risk of electric shock from defective wiring or equipment. This risk can be significantly reduced by attention to the following:-

a. The workpiece must always be securely earthed separately from the welding return connection and all insulation must be in good condition on electric holders, cables and accessories.

b. The operator must ensure that his workplace is dry, secure and free from obstruction.

c. If damp conditions are unavoidable, equipment with the lowest possible open-circuit voltage should be used, means of cutting off the current must be available, and rubber mats and boots used to improve insulation.

d. The casing of mains operated equipment must be securely earthed to the mains earth.

e. Where possible, the power supply should be switched off when not in use. Where this is impractical, an insulated hook on which the electrode holder can be placed should be provided.

4.2.8.iii Personal Protective Equipment(PPE)

a. Head & Face Protection

It is mandatory that all persons on site wear head protection in the form of hard hat (bump cap or welders cap may be acceptable in very limited circumstances).

For electric arc welding, a face shield attached to the head or safety helmet, or a hand-held shield, with filters to BS679 or equivalent, is essential to protect against radiation, spatter and hot slag.

Because the danger of radiation does not exist in gas welding and cutting, the need to protect the head and face is not as important as in electric arc welding. However, the risk from hot particles and flying sparks does exist and in addition to goggles [see (c) (iii), below]; safety helmets should always be worn.

b. Footwear

Strong footwear preferably with steel toecap and ankle protection will be worn. Training shoes and flip-flops etc are not acceptable.

c. Skin Protection

Gloves and barrier cream will be available on site for activities identified in the risk assessment as so requiring. For most welding operations a normal sized leather or treated fabric inseam type of glove, to BS1651, with reinforcement between the thumb and forefinger, satisfactory.

d. Eye Protection

Spectacles or goggles will be available on site for activities identified as processes for which eye protection is required.

The arc created by electric welding, and to a lesser extent, the molten metal in the weld pool, each radiate light and heat, both of which can severely damage the eyes.

In electric arc welding, filters, to BS679 or equivalent, are fitted to face shields and hand-held shields.

For gas welding and cutting, protective filters to BS679 or equivalent, are usually worn in the form of goggles.

When a welder removes slag after welding, clear impact resistant goggles, a clear impact resistant face shield, or clear impact resistant safety spectacles, to BS2092 or equivalent, must be used.

Persons not employed in the welding process must be protected from exposure to an electric arc, and from the chipping of slag, by the use of fixed shields or free-standing screens.

Employees are obliged to use the eye protectors provided by the employer; to make full use of any fixed shields; to take care of such equipment; and to report any loss, destruction or defect forthwith.

e. Protective Clothing

Foul weather gear will be made available as required.

Leather jackets and / or aprons, to BS2653 or equivalent, may be necessary to protect the clothing and body from heat and sparks.

Leather leggings, to BS2653 or equivalent, and leather safety boots may be necessary to protect the legs and feet. However, in damp conditions wellington boots may afford better protection from electric shock.

f. Respiratory Protection

Every effort must be made to eliminate dangerous or offensive fumes, dusts, and gases by efficient general, and where necessary local, ventilation. However, for some activities, particularly when undertaken in confined spaces, respiratory protection will be necessary. Further information and advice may be obtained from the Safety Department.

Dust masks and cartridge respirators will be available on site for operations where there is dust or contaminated air.

g. Ears

Ear plugs, ear muffs will be worn at all times in areas identified by noise monitoring as an ear protection zone.

h. Falls

A sufficient number of safety harnesses will be available on site for use on above ground or entering hazardous space operations.

The Storekeeper will maintain a checklist of PPE. The Safety Officer will review this list at regular intervals to ensure that there is adequate protective equipment in stock. See appendix 4 for stores checklist of PPE.

4.2.8.iv Health Hazards

a. Metal Fume Fever

The most serious cases of metal fever occur to welders working on galvanized metals, particularly those containing cadmium; zinc, mercury; chromium; tin or copper. The symptoms, which appear several hours after exposure, are severe headache, shivering and aching of the joints, similar to a bad bout of 'flu'. The condition rarely lasts more than a day.

The most effective form of prevention is good general and local ventilation.

b. Gases

The most common harmful gases that may be encountered during the welding are carbon monoxide; ozone; and nitrogen dioxide. However, phosgene and phosphine may also be present as a result of thermal decomposition of chlorinated hydrocarbon cleaning agents and phosphate metal coatings respectively. For further information and advice please consult the Safety Department.

4.2.8.v Arc Eye

a. If the naked eye is exposed to an electric arc, the ultra-violet rays can cause 'arc eye' which usually develops a few hours after exposure. The symptoms are a sore gritty feeling in the eyes, intolerance to light and severe headache. It usually clears within 24 hours.

b. Screens must always be used to protect persons not employed in the welding process from the effects of exposure to arc eye.

4.2.9 Use of Scaffolding and Working Platform

4.2.9.i Construction and Maintenance of Scaffolds

a. All scaffolds shall be -

of good construction, made of strong and sound materials, and free from patent defects;

properly maintained; and

so fixed, secured or placed in such a manner as to prevent accidental displacement.

b. Nobody shall alter the scaffold without the prior approval from the construction management.

c. For scaffolding over 7m in height it must be designed and specified by a qualified engineer and to include acceptable factors of safety.

4.2.9.ii Safety Precautions for People Below Scaffolds

a. Prior to scaffold erecting / dismantling work, the affected area on ground shall be fenced off and sufficient warning signs shall be displayed conspicuously. The scaffold members shall be passed cautiously from ground to height or vice versa (warning: it is prohibited to drop scaffold member, e.g. bamboo pole, from height).

b. All loose materials and tools must not be left in scaffold. Furthermore, protection against falling material must be provided in the form of suitable fans; temporary roofing debris / protection / safety nets, or by other suitable means.

4.2.9.iv Construction of Working Platforms, Gangways, Runs Etc.

a. Every working platform, gangway or run from any of which a person is liable to fall more than 2 metres must be closely boarded, planked or plated, or of open metal work without any interstice exceeding 3800 square millimetres in area.

b. Every board or plank forming part of a working platform, gangway or run shall -

be of sound construction, adequate strength and free from patent defect;

be of sufficient thickness capable of providing security having regard to the distance between the supports and shall not be less than 200 mm in width and not less than 25 mm in thickness or not less than 150 mm in width when the board or plank exceeds 50 mm in thickness;

be resting securely and evenly on its supports.

c. Overhangs not to be projected beyond support for more than 150 mm unless secured to prevent tipping.

4.2.9.v Widths of Working Platforms

a. A working platform from which a person is liable to fall more than 2 metres shall be at least 400 mm wide.

A gangway or run from which a person is liable to fall more than 2 metres if it is used for the passage of persons only shall be at least 400mm wide or if it is also used for passage of materials its width shall be at least 650mm or wider when necessary.

b. The above do not apply to working platform, gangway or run where it is impracticable by reason of limitations of space to provide the required width; but in any such case, the platform, gangway or run shall be as wide as is reasonably practicable.

4.2.9.vi Guard Rails at Working Platforms and Places

a. A working platform, working place, gangway, run or stair from which a person is liable to fall more than 2 metres shall be provided of guard-rails or adequate strength to a height between 900 mm and 1150 mm.

b. Guard-rails may be removed or remained unerected only for the duration necessary for the access of persons or the movement of materials.

4.2.10 Use of Ladders

A ladder or a folding step-ladder shall be of good construction, sound materials, adequate strength and is properly maintained. No ladder with any of its rung is defective or missing is allowed to use.

When a ladder standing on a base is used, it shall be securely fixed to its upper resting place or near its upper end in the case of vertical ladder & if such fixing is impracticable, the ladder must be fixed near its lower end. We have to ensure the ladder have a firm footing & not stand on any loose materials. It shall be secured to prevent under swaying or sagging and shall be evenly & properly supported on each stile or side. Whenever necessary, a person shall be stationed at the foot of the ladder to prevent the ladder from slipping.

The projecting end if an access ladder to any working platform shall be kept at least 1 metre in length in order to prevent accidental fall.

4.2.11 Use of Hand / Power Tools

All portable tools shall be entered in Portable Tool Register. They shall be inspected at least once every 3 months by a competent person.

Electrical connections must be proper plugs & sockets. Makeshift connections & taped joints are not permitted.

The uses of cartridge fixing tools shall be compliance with Cartridge-Operated Fixing Tools Regulation 1977.

4.2.12 Use of Electrical Equipment

All electrical appliances (except double-insulated tools) shall be provided with proper earthing.

All electrical power tools & equipment shall be properly stored & maintained in good condition.

All electrical appliances shall be checked for safety before use. In case of fault, they shall be repaired at once.

The plugs of electrical appliances shall be maintained in good condition and the electric wiring securely jointed to their terminals.

Only fully qualified and authorised electrical technicians shall make electrical connections or works on installation or repair of electrical equipment.

A bare conductor shall not be touched without adequate protection until after the system has been de energized and tested. Only designated electrical personnel shall de energize the system. The circuit shall be tagged and locked out at the point at which it has been broken to prevent its being turned on inadvertently.

All personnel who will be affected when the power is turned off shall be notified beforehand as to when and how long it will take place. Before the system is energized again, personnel working on the lines or others who might be endangered shall be informed.
Water shall not be used on electrical equipment fires. When possible, electrical equipment shall be deenergized before fire fighting.

All uninsulated conductors (such as bus bars on panel boards and switchboards, or high-voltage equipment connections in accessible locations) shall be in enclosed, protected area. Doors and gates shall be locked, with the keys in the possession of electrical technicians or other responsible personnel familiar with the hazards.

Extreme care shall be exercised when construction, transportation, or handling equipment with long booms or of extensive heights are operated near high-voltage lines or equipment. If feasible, lines or equipment shall be de-energized temporarily during such operations.

Personnel shall avoid working on electrical circuits or equipment while clothing or shoes are wet, or while hands or feet immersed in water. Wet areas on which personnel must stand shall be covered with dry wooden boards or rubber matting.

Fuse circuit breakers, or thermal cutouts shall be used for overcurrent protection. When a protective device de-energizes a circuit, the reason for the action shall be determined and corrective action taken where necessary.

A fuse with a capacity greater than that prescribed for the circuit shall not be used as a replacement. Jumpers shall not be used across fuse terminals to keep current flowing in a circuit.

4.2.13 Use and Storage of Dangerous Substances

The use and storage of any dangerous substances shall comply with the Dangerous Substances Regulation.

Bulk storage of petrol shall be by application to Fire Services Department for a licence. All containers must be marked with the name of dangerous substance e.g. 'Petroleum Spirit - HIGHLY FLAMMABLE' in Thai & English.

The storage places (locked steel bins are recommended) must be either in the open air or must be ventilated & house direct access from the open air. They must be 6 meters away from any building or flammable materials.

Wherever petroleum spirit is stored, fire extinguishers of dry powder type must be available, with persons trained in their use.

4.2.13.i Highly Flammable Liquids (HFLs)
Highly flammable liquids are those having flashpoints below 32^{o}C (90^{o}F)

All storage containers for HFL's must be kept in fixed storage tanks, securely stopped steel drums or securely capped metal cans. They must be clearly marked "HIGHLY FLAMMABLE" or "FLASHPOINT BELOW 32^{o}C" in Thai and English.

a. Storage

Where the amount exceeds the exempted quantity, application must be made to the Fire Services Department for a licence. If a licence is granted, storage must be in accordance with the Dangerous Goods Ordinance and with any conditions imposed by the licence.

Where the quantity is 50 litres or less HFL containers, other than fixed storage tanks, must be stored in a specially designated, well ventilated, non-combustible storerooms, or in a securely fenced and locked storage compound. Storeroom and compounds must not be used for the storage of other materials, except HFLs. Storerooms must not be heated and any necessary light fittings must be flameproof.

Storerooms and compounds must have a concrete base surrounded by an impervious sill 150mm. high.

Storerooms and compounds must be located at least 6m. from other buildings, from combustible materials, and from the site boundary.

Storerooms and compounds must be clearly marked 'HIGHLY FLAMMABLE LIQUID - NO SMOKING' in Thai characters and English.

b. Use

The quantity of any HFL at any workplace must be as small as practicable.

Empty containers must be securely closed and returned at once to the store.

Drums in use must be supported by stillages, or similar, fitted with taps, and provided with drip trays.

Funnels must be used for transferring HFLs from one container to another, and smoking and naked lights must be prohibited within 6m.

4.2.13.ii Fire Extinguishers
Wherever HFLs or FLs are stored or used, fire extinguishers must be readily available, with persons trained in their use. Foam, Dry Powder, BCF or CO2 are recommended.

4.2.14 Exposure to Noise
We shall reduce, as far as is practicable, the noise level emitted from all our machinery and/or any working process.

Ear protectors shall be provided to all workers who are exposed to high levels of noise.

Where a site operatives are likely to be exposed to a high noise level then the following will be implemented -

signs and notices are put up within the zone in conspicuous positions;

no employee enters or remains in the zone unless the employee is wearing a suitable approved ear protector;

provide relevant information to employees like risk of damaging to hearing if no further protection carried out.

4.2.15 Issue of Personal Protective Equipment to Sub-Contractors' Workers
Every sub-contractor must provide personal protective equipment to his workers.
If any sub-contractor fails to provide personal protective equipment to his worker or equipment provided is not up to standard requirement, we have the right to issue such equipment to the workers and charge the cost to the sub-contractor's account.

4.3 Security and Protection For Authorized Visitors
All authorized visitors shall be accompanied by construction staff when entering the site.
All authorised visitors shall be provided with personal protective equipment

5 SAFETY TRAINING

Adequate safety training shall be arranged for the site managerial / supervisory staff and workers for developing their skills in the use of safe work techniques and practices.

All workers will attend safety induction which will include accidents prevention, basic safety rules, proper uses of protective equipment, emergency procedures.

Record of workers who have attended the course should be kept to ensure that all workers including sub-contractors have basic safety knowledge.

6.1 General Rules for Sub-contractors

A summary of the safety requirements for sub-contractors is as follow:

Ensure that all his employees working on site are instructed and trained on safe working practices.

Provide and maintain a working environment, that is, so far as is reasonably practicable, safe and without risk to health.

Provide adequate personal protective equipment to his employees and give instruction and supervision on its correct use.

Ensure that his plant, machines and tools on site is inspected, tested, certified, and maintained in accordance with statutory regulations and good practice. Copies of test certificates must be provided.

Follow site safety rules.

7 SAFETY MONITORING

The monitoring of site safety is the responsibility of a staff and workers. Any member of staff or worker who believes an activity is potentially unsafe should cease immediately and report to his immediate supervisor, the safety supervisor or the safety officer.

8 First Aid Record

In the event of an accident the accident and emergency procedure will be followed availing of services in the adjacent hospital.

Appendices:

Appendix 1: Health Service Executive, Mid-Western Area Safety Statement
Appendix 2: Health Service Executive, Mid-Western Area Safety, Health and Welfare Requirements for Contractors

Appendix 1:

HEALTH SERVICE EXECUTIVE
TECHNICAL SERVICES:
CORPORATE AND LINE
Safety, Health & Welfare Requirements for Contractors

Every Contractor Employed by the HSE Mid-Western Area must:

1. Comply with the requirements of all appropriate legislation, including the SH&W at work, the SH&W Construction Regulations and the Fire Services Act.
2. Prepare and provide to the HSE Mid-Western Area a safety statement specific to the type of work being undertaken
3. Employ only staff who are fully qualified and competent to undertake the work involved (this is particularly important in the case of hazardous operations such as cutting, welding, and electrical wiring) and who have the appropriate Safety Certificates (these must be provided to the HSE Mid-Western Area on request)
4. Employ only staff who have appropriate training in fire safety, including the use of fire safety equipment, such as extinguishers etc

5. Ensure that all staff wear personal protective equipment appropriate to work such as helmets, boots, glasses etc
6. Be aware of the workings of the Fire Alarm and Emergency Lighting systems in any premises in which work is being carried out
7. Ensure that the Fire Alarms and other safety systems in such premises are not interfered with in any way without written permission
8. Maintain a safe, tidy site (without trailing or other such hazards) and provide proper paper notices and guards for all openings, obstructions, alterations, etc.
9. Employ Hot work permits, where appropriate, especially whenenever open flames or the local application of heat are involved
10. Use low voltage tools i.e. 110 volt or battery powered
11. Not borrow or use Health Board tools, tools or plant without expressed permission
12. Not alter, adjust or interfere with the plant equipment or services of the HSE Mid-Western Area, unless as part of the contract
13. Exercise care at all times in areas where health board staff or members of the general public are present and do not allow plant, materials or parked vehicles to interfere with the free flow of vehicular or pedestrian traffic, except as agreed.
14. Ensure that Health Board staff, patient, clients and the public, working in or visiting the premises, are not unduly discomforted by noise, dust, fumes or weather
15. Comply with National Guidelines for the prevention of Nosocomical Invasive Asoergillosis during Construction/Renovation activities
16. Comply with guidelines for Asbestos removal

On Behalf of …… (Contractor), this is to confirm that the above requirement are understood and accepted. Name…….. Title ….....

Signed ……

Date…….

Appendix 2:

STATEMENT OF GENERAL POLICY:

This document sets out the Safety Statement of

Health Service Executive, Mid-Western Area

TECHNICAL SERVICES DERPARTMENT

This document is prepared pursuant to the Safety, Health and Welfare at Work Act 1989

It is the policy of **HSE Mid-Western Area** to ensure, insofar as is reasonably practicable, the Safety, Health and Welfare of all its Employees while at work and of anyone who might be affected by the operations of the company

HSE Mid-Western Area recognises the responsibilities placed on it towards the provision of a safe and healthy workplace and in this regard, the policies and practices required to ensure such safe and healthy workplace is given equal priority with all other policies and practices of **HSE Mid-Western Area.**

HSE Mid-Western Area Safety Management system, as detailed in the Safety Statement, takes into account all requirements under the 1989 Act including the Safety, Health and Welfare at Work (General Application) Regulations, 1993 (S.I. No. 44 of 1993), Construction Regulations 2001 and any other relevant regulations

HSE Mid-Western Area in order to meet its safety, Health and Welfare objectives will provide, within reason, sufficient resources of time, personnel and finance. It is also Mid Western Health Board Policy to

provide sufficient information, instruction and training to its workforce in pursuance of these objectives

The Safety Statement also outlined the arrangements for consultations with employees. Employees have responsibilities towards Health and Safety in the workplace, as outlined in the Safety, Health and Welfare at Work Act 1989. Construction Regulations, 2001 S.I. No. 481 of 2001 and in this regard, every employee has a duty to work safely and abide by the Health and Safety principles as set out in this document.

HSE Mid-Western Area acknowledges that it is not possible to eliminate all risks to Health & Safety from the workplace, but will always strive towards improvement, insofar as is reasonably practicable, in accordance with developing work practices and improved technology

Employees are encouraged to make constructive safety suggestions. Once approved, any improvement to safety systems and procedures will be incorporated in a revision of the Safety Statement.
This safety statement must be read in conjunction with the **PARENT SAFETY STATEMENT** and the **AREA SAFETY STATEMENT**

Signed_____ Date _____