

HEALTH, SAFETY AND ENVIRONMENT PLANNING REQUIREMENTS FOR CONSTRUCTION WORKS



Civil and Installation Works, Subcontract ABB Power Systems

The health and safety requirements are the minimum for the contractor employed to do construction works. Client's requirements, contractor's own standards, local regulations or laws may stipulate higher, and or additional requirements, the higher standard shall always be followed.

These requirements form an integral part of the contract between ABB and the Contractor.

It is the Contractors responsibility to ensure that the Health, Safety and Environment planning requirements are implemented and followed by his employees and of all who may be affected by the construction works.

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CONTRACT CONDITIONS

The conditions set out in this Appendix shall form an integral part of the contract between ABB and the contractor. They shall apply to all contractors throughout the duration of the contract, to ensure that the work is completed with minimum risk to ABB, its client and any other person who may be affected by the work

A1. General Requirements

The Contractor is responsible to follow and further develop the content of these health and safety requirements in his own plan, and to comply with the elements of ABB's Construction Health and Safety Plan. Contractor's shall:-

- (a) Ensure the tender is based on compliance with the requirements of this Appendix
(b) Prepare and maintain a construction Health care and safety plan , aligned to ABB's. The contractor will not be allowed to start work on site unless submitted to the ABB responsible at least 21 days prior to the scheduled start date on site a health and safety plan approved by ABB.

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- (c) Complete risk assessments for all assigned activities of the project and provide safe method statements. Method statements shall be submitted at least 7 days before planned start of the work activity, for approval by the ABB representative.
 - (d) Identify all potential emergency situations regarding health, safety and environment aspects in all activities at site and have emergency action plans for these situations.
 - (e) Ensure that all his subcontractor's personnel working at site are informed/consulted in health, fire safety, labour safety and environmental aspects and trained in how to avoid health, safety and environmental damage caused in own work procedures.
 - (f) Ensure that all of his and his subcontractor's personnel working at site comply with the requirements set out in this Appendix.
 - (g) Ensure that all of his and his subcontractor's personnel working at site have adequate training and information of Live Electrical Working and/or near of Electrical Working hazards..
 - (h) Ensure that ID/Names of all of his and his subcontractor's personnel are available at Contractor's site management
 - (i) Ensure that competent and adequately resources are used by himself and his subcontractors
 - (j) Ensure, when appointed as contractor that co-ordination of activities are completed to ensure effective project execution.
 - (k) Ensure that only authorized persons enter the site and that they are given a health and safety induction/orientation training that includes requirements of the construction health and safety plan, and this instruction.
 - (l) Maintain a high standard of housekeeping, and cleanliness on site.
 - (m) Appoint a named health and safety advisor to co-ordinate and monitor the site works in line with the health, safety and environment requirements. On smaller projects, less than 10 workers, these responsibilities can be included in the responsibilities based on local law (e.g. the co-ordinate is main task for general contractor) of the contractor's site manager.
 - (o) Ensure liability insurance for his activity.

A2. Health and Safety/Environmental Rounds

Health and safety/environment rounds shall be carried out regularly on suitable intervals in all buildings, plant and working areas. The (internal) inspection made by EHS expert (health and safety/environment advisor) and personnel responsible for the work activities shall attend the rounds. The rounds and all non-conformances and findings must be documented. Related to the corrective actions - action plan must be drawn up and the responsible persons, priorities and deadlines should be determined exactly. After the deadlines the fulfilments regularity must be rechecked.

A3. Health and Safety Meetings

The contractor's site manager, the health and safety/environment advisor and ABB representative shall attend the health and safety meetings. All meetings shall be documented and copies of the minutes of meeting shall be kept in a health and safety file. Frequency shall be minimum weekly, but increased frequency if significant risks, or

changes.

The following items are mandatory on the agenda:-

- (a) Site activities. Co-ordination the subcontractors on the construction site (in space and in time)
- (b) Health and safety risks and prevention action associated with present and future tasks
- (c) Control measures/method statements to reduce risks, and their communication to workforce, measure and evaluate the safety KPI's,
- (e) Observations noted of safe/unsafe conditions during safety/environment rounds
- (f) Incidents, accidents, cases of environmental damage
- (g) Inspections by authorities

Contractor's site manager shall attend ABB's daily pre-start meetings, to review activities/plan for the day, ensure coordination (e.g. work permit, fire permit).

A4. Reporting of incidents, and hours worked

All incidents and hours worked shall be reported to the ABB representative as detailed in the Appendix 1, and 2. Incident records shall as a minimum contain the following:

- (i) Project and site,
- (ii) Date and time
- (iii) Incident type and description, related circumstances must be documented, main cause of the accident, first aid related measures etc.
- (iv) Root causes and corrective actions taken
- (v) Responsible person for corrective actions,
- (vi) Estimated cost of the incident
- (vii) Signed report with photographs if available.

A5. Emergency Contacts

The contractor shall have information boards located in work area, approved by ABB, listing emergency contacts, including:-

- (i) Names of personnel on site who are First Aid/CPR Trained
- (ii) Ambulance
- (iii) Hospital or medical center
- (iv) Police
- (v) Fire brigade
- (vi) Health and safety/environment advisor/ expert
- (vii) Contractor's representative
- (viii) ABB representative

Telephone or radio communication equipment shall be available for emergency calls.

If there is waiting time for or long distance for emergency response, a suitable vehicle shall be available at all times when personnel are onsite for emergency transport the all duration of work.

A6. Security and Environment

(i) **Security:** a security fence shall be erected around the site to keep unauthorized persons out. Areas likely to pose danger to personnel or equipment shall be clearly marked with signs, barrier or fencing. As an alternative, lookout men might be used. The warning signs must be used and the area should be fenced and watching person should be presented permanently on the area.

(ii) **Waste disposal:** The different wastes must be collected separately and stored in acceptable /identified and labeled/ storage boxes at an environmental station. The generated and collected wastes must be disposed by licensed contractor and the related documents /delivery notes/ must be kept. Hazardous waste such as lubricants, greasing substances, spilled oil, batteries, paint, asbestos etc shall be stored in special containers. A recycling program shall be employed to ensure that all recyclable materials are placed in a recycling stream. Incineration of any material is prohibited.

A7. Drugs and alcohol

Having, consuming, bringing onto site or be affected by drugs or alcohol is strictly forbidden.

B. Non-compliance

The ABB representative/site manager shall:-

(a) have the power to exclude any person from the site, after reasonable warning, if that person is deemed to be non compliant with the requirements of this Appendix, and/or are working unsafely. There shall be no cost to ABB as a consequence.

(b) have the power to stop work at any time if of the opinion that the contractor is working unsafely, or where there is a significant risk to others who may be affected by the work or to the environment, or where the contractor is in direct contravention with the requirements of this instruction. In such circumstances the contractor shall bear any costs that may arise as a result of not being able to complete the work at the time.

C. Site Health and Safety Controls

Contractors shall comply with these controls and ensure that they and their sub-contractors have the competence and resources to meet its requirements as a minimum.

For any activities or operations not covered in this appendix or for more details the requirements of the following documents shall be used as the minimum.

ILO Safety and health in construction, ISBN 92-2-107104-9
Operation of electrical installations EN 50110-1
International Electrotechnical Commission (IEC) 61482.

C1. Project Planning

The contractor shall have a formal health and safety management system that ensures the creation of project health and safety plans that achieve the requirements of this Appendix.

C2. Site Mobilization

Planning for site mobilization shall take account of the requirements of this Appendix.

C3. Access and Egress

1. Working off ladders shall only be up to 2.0m. Above 2.0m suitable access equipment shall be used i.e. mobile elevated work platform, fixed work platform. The falling protection must be provided /usage of safety harness/
2. All ladders shall be of sound construction, and be of adequate strength.
3. All ladders shall be subject to inspection regularly (at least every six month) by competent person, and a register kept.
4. Made by non manufactured and ladders without certificated ladders shall not be used.
5. Ladder use, shall have slope 4:1, and shall be footed (The legs of the ladder must be fixed and supported at base when in use.)
6. Obligatory the safety check by employee before work start.

C4. Asbestos Materials

Asbestos shall not be used. Demolishing works where asbestos is present must be conducted with strict adherence to the ABB Asbestos instruction GI/SA-01.02A01 (available from ABB representative) as a minimum, and the local laws applicable to asbestos.

Any work must be authorized by local authority and the ABB representative, and shall only be conducted by contractors trained, authorised and licensed to work with asbestos. An asbestos abatement plan shall be developed that defines all required personal protective equipment and decontamination protocols.

C5. Chemical Safety

1. Risk assessments shall be submitted by all contractors working on site in respect of their activities where hazardous substances are to be used.
2. Site personnel working with chemicals shall be qualified for the work and know proper emergency response.
3. Sufficient, suitable and secure storage shall be provided for chemical products and other hazardous materials to avoid leakage to the environment.
4. Material safety data sheets shall be on site and workers trained on the hazards of the chemicals/hazardous materials and their proper use.
5. Containers/packaging shall be labeled with the information of the content, be protected from the external impact/damage and continuously controlled
6. Appropriate absorbent materials shall be onsite and readily available for addressing any spill depends on the quantity of hazardous materials.
7. Adequate facilities, equipment and protective clothing shall be used. "No smoking" signs shall be displayed.
8. Hazardous waste and left over shall be taken care of in accordance with the manufacturer's instructions safety data sheets.

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9. Equipment containing PCB shall be handled in accordance with ABB's standards, and applicable Country regulations.

C6. Compressed Gases

1. Store gas cylinders in a dry, safe place on a flat surface, in well ventilated area
2. Ensure no sources of ignition
3. Ensure that fuel gases are stored separately from oxygen (> 1m).
4. Store cylinders in the upright position and securely to prevent item being knocked over.
5. Use suitable cradles and slings for lifting cylinders when using a hoist or crane.
6. All hoses, fittings, valves, and cylinders must be in good condition, and inspected regularly for damage
7. Flashback arrestors shall be fitted to all cylinders containing fuel gases.
8. Cylinders shall be color coded, and labeled to indicate contents

C7. Confined Spaces

All work within confined spaces shall be avoided where practicable. If work has to be carried out then a risk assessment shall be carried out, and a written permit to work issued. Work may only proceed once the ABB representative has established and witnessed that the correct safety controls are in place. Depends on the area the gas detection must be provided.

C8. Electricity

1. Only trained for the related hazards, qualified, personnel are allowed to work on or near installations energized or capable of being energized.
2. It is the responsibility of anyone working in a substation plant to make sure that they have a written work permit from the client and document their observation to verify proper earthing/grounding.
3. When construction works or erection works have to be done in close proximity to live parts the current shall be cut off and earthed/grounded. If for operational reasons this is not possible, the live part should be fenced off, labeled and appointed qualified safety personal shall supervise and monitor the works at all time. When possible the Client must place insulation material over live circuits to protect from inadvertent contact. For details see EN 50110-1.
4. Safe working areas in switchyards. Demarcation of a work area is one of the main control measures to ensure clear boundaries between safe and unsafe workplaces. Demarcation equipment (Barriers, Chains, and Cones etc.) and Safety Notices must only be fixed or moved by a Competent Person following an effective risk Assessment. The color and material of demarcation equipment may vary according to local rules, regulations and custom and practice but must in all circumstances provide a clear indication to personnel that they are moving from an area of safety to an area of danger and visa versa.
5. Contact with underground cables. Serious injuries can also result when undertaking digging operations or carrying out excavation work when there is a possibility of either

penetrating electricity cables or crushing them. In such circumstances injuries can often be severe, potentially fatal with burns to the hands, face and body. Precautionary measures include:

- Checking with the customer on the likely presence of any cables.
- Check with utilities and obtain any relevant drawings.
- Use locating devices and mark presence on ground
- The exploration must be done by hand /excavation by hand/

6. Overhead Cables

Before vehicles and heavy machinery are allowed to enter into live areas an overhead clearance barrier shall be installed.

7. Electrical equipment and hand tools

(a) Power supply to all electrical equipment and hand tools shall be provided with a ground fault circuit interrupter. All circuits shall come from a circuit breaker protected supply that is clearly marked with the circuit identification for emergency shutoff.

(b) Where risks are high because the site is wet or because it constitutes a confined space then pneumatically powered tools should be used thus eliminating any electrical risk.

(c) A reduced low voltage system which delivers 110V to the equipment which is designed so that the maximum voltage to earth is on 55 V in a single phase system (65V in a 3 phase system) is safer than using 230V.

(d) Where it is essential to use portable tools at 230V then a residual current device (RCD) shall be used with a tripping current of 30mA and checked daily.

8. Personal Protective Equipment

(a) only approved PPE shall be worn

(b) arc flash resistance clothing shall be provided at all times when in the vicinity of live apparatus. Class 1 IEC is the minimum requirement or class 2 where the work activity requires it. (equivalent to NFPA 70E hazard category 2 and 4 respectively)

(c) where insulated gloves are used they shall be worn in conjunction with abrasion and puncture resistant outer gloves.

(d) approved eye protection in the form of a face shield.

9. Insulated tools etc

(a) all LV work shall be carried out with insulated tools and shall be maintained in good condition.

(b) Rules and tape measures must be non conducting

(c) testing and proving devices shall be dedicated potential measuring devices. Multimeters are not permitted.

C9. Excavations and Services

1. Plan and execute the excavation or trenching in a manner that prevents cave-ins. A trained/qualified individual shall evaluate soil conditions and select appropriate protective systems.
2. Contact Client and utilities (gas, electric etc) to locate underground lines and confirm UXO-investigations/clearance.
3. In risk areas, mine-investigation and UXO clearance shall be done and documented in accordance with the UN rules.
4. If contaminated soil areas are discovered, inform the ABB representative and store separated from other types of waste at site, and dispose properly.

5. If contaminated soils are encountered, work shall stop until the contaminants are identified and appropriate controls are implemented to prevent exposure to hazardous contaminants.
6. Excavation spoil shall be placed at least 1.5 m from the edge or if the depth of the excavation is >1.5m then a distance equivalent to the depth is considered adequate.
7. The sides of the excavation will need to be adequately supported using timber supports of reasonable quality, or approved proprietary systems. An alternative to providing support is to batter back or slope the slides to a safe angle.
8. An adequate means of access shall be provided into the excavation.
9. Edge protection is also required to prevent objects and materials falling on to the heads of persons who are working in the excavation.
10. Vehicle stop blocks shall be provided to ensure that loading/unloading vehicles do not approach too close to the excavation.
11. All open excavations shall be fenced or barricaded, or covered. Where there is an interface with the public then the fencing shall be 2 m and be secured and provided with suitable lighting.
12. Vehicles shall not be allowed within 2.0m of the edge, or more if ground conditions dictate.
13. All workers on site must be briefed on the hazards associated with working in excavations.
14. All excavations must be inspected before each shift and after any event that is likely to have affected its stability e.g. heavy rain. A record of the inspection shall be kept.
15. All excavations should be back filled as soon as it is practicable to do so.
16. Dust protection or low dust techniques shall be used. After the excavation works are finished the site area shall be restored as agreed.

Services

1. If there is little or no information available in respect of the utility service routes on site then suitable locating devices shall be used to identify the services.
2. The service routes shall be identified on the ground and also on the site plan and where the excavation is in close proximity to the services then hand digging shall be carried out.
3. Where there is any doubt about the identity of any services that are uncovered then it must be assumed that they are either gas or electrical services. Once identified they shall be marked.

C10. Fire and Evacuation

1. Provide a suitable means of fire detection and warning. This could be a klaxon, whistle, bell or by word of mouth if the site is small.
2. Fire fighting equipment such as hand held fire extinguisher shall be available at marked places based on local fire law
Extinguishers for electrical fires shall also be provided where appropriate. Extinguishers for other type of fire e.g. metal, oils and fats shall be provided if necessary.
3. Fuel supplies, combustible products, gases and gas cylinders, liquids, other materials and waste shall be stored separated from the work area and the equipment to be installed.

Fire Evacuation

- 1 A suitable means of escape in case of fire must be provided which must be free from obstruction at all times
2. There shall also be 2 means of escape provided in case of fire. The means of escape must also be suitably signed and open outwards and lead to a place of safety
- 3 There must be fire evacuation procedures in place which must be briefed to all persons on site through the site induction.
- 4 A fire evacuation drill shall be carried out at least once a year, or once during the execution of the project.

Hot Work

1. Hot work shall be avoided wherever possible. If it occurs all hot work shall be authorized by the ABB representative who shall issue a hot work permit.
2. Personnel working with Welding, heat treatment, grinding works, burning etc shall have necessary training. Before start of the work safety regulations shall be reviewed (risk assessment). Special risks and hazards shall be mitigated and documented.
3. A fire watch shall be maintained to ensure that sparks from welding, cutting and grinding operation do not result in a fire. The fire watch shall have a fire extinguisher on hand during the entire Hot Work operation.

C11. Flammable Liquids

1. Important to avoid the use of flammable materials whenever it is practicable. If not then materials with a high flash point shall be favored over liquids with low flash points.
2. Store the bulk containers away from the work area in a store or cupboard of fire resisting material. It shall have some natural ventilation or air flow present at high and low level to allow any vapors that may be present to be diluted and dispersed.
3. Only allow quantities equivalent to half a day's supply to be present in the working area. A fire resisting container shall be provided for this purpose.
4. Where storage is less than 50 litres, metal lockable bins may be used.
5. All containers must be properly labeled and kept with lids on when not in use.
6. Non spill containers or dispensers should be used if possible.
7. In situations where decanting is carried out this shall be carried out in the open air and placed in non spill safety containers.
8. No sources of ignition shall be present near storage and use. "No smoking" signs shall be displayed.
9. bulk containers of flammable liquids shall be in a bund holding 110% of the largest container.
10. spill control kit shall also be available to deal with any spillages and prevent any contamination of surface water drains.
11. In the event that there is a fire then emergency fire procedures will be needed

C12. Lifting Operations

1. Based on the loading diagram ensure that the appropriate size of crane is obtained with a sufficient safety margin.
2. Check on competence of crane supplier and the operator, slinger and signaller to be provided. The safety check must be done prior to use the crane or lifting equipment, the checking result should be documented.

3. Ensure that a lifting risk assessment has been carried out and has taken into account the load, ground conditions and any adjacent structures.
4. The load test must be provided prior to start the lifting process.
5. Check on ground conditions. If not suitable for the load a special base may need to be provided to position the crane and its out riggers.
6. Ensure that crane has its documentation in respect of its last inspection/examination, at least within the last 12 months.
7. Check lifting slings to be used and that they have also been inspected within the last 6 months and there is an inspection record.
8. Check competence evidence of driver, slinger and signaler if provided.

C13. Lone Working

1. Lone working should be avoided. On no account is lone working permitted where people are working on or near to electrical installations.
2. Night shift workers shall be supervised at all times

C14. Manual Handling

1. Manual handling tasks shall be risk assessed, and suitable controls introduced.
2. Max load for workers to handle manually is 25 kg.

C15. Mobile Plant, Equipment & Vehicles (Cars/passenger vehicles see C24)

1. Ensure that vehicles and pedestrians are kept apart and that there is adequate access for the vehicles used on site.
2. Provision of roll over protection (ROPS) as well as protection from falling objects (FOPS).
3. Seat belts shall be fitted and worn whenever the vehicle is moving;
4. Ensure that drivers are properly trained and are competent and are authorized to drive the vehicle;
5. Vehicles shall be of suitable construction and be properly maintained on a regular basis;
6. All drivers shall carry out a daily check of their vehicles. This shall include tyres, brakes, lights, horn, mirrors, reversing alarm and flashing light; The result of the safety check must be documented in case of dangerous machines (e.g. forklifts).
7. All vehicles must be driven with proper regard to speed limit on site and general conditions.
8. When the field of vision is limited from the machine the movement of the machine the safety signal should be used permanently.

C16 Noise and Vibration

1. High noise level equipment e.g. a generator or compressor shall have an acoustic cover, or be positioned away from people, residential areas.
2. Where workers are likely to be exposed to noise levels in excess of 80 dB(A) on site then they shall wear hearing protection.
3. Suitable hazard warning signs shall be posted where such noise levels exist on site.
4. Where such protection is provided workers shall be instructed in its use and its care and maintenance.
5. Adequate supplies to be made available on site for workers and also other persons such

as visitors.

6. Vibration dampers and or gloves shall be used where excessive vibration is encountered.
7. Prior to conducting construction activities, the local environmental noise standards shall be determined and complied with.
8. All construction equipment with internal combustion engines shall be equipped with mufflers. Every effort shall be made to conduct construction activities at times that will impact the environment in a minimal manner.

C17. Personal Protective Equipment

1. The site induction must detail exactly what PPE is required to be worn and where. The site PPE requirements shall be displayed on the site notice board at the entrance to the site.
2. All personnel on site shall at all times wear safety boots.
3. All personnel on site shall wear a hard hat when over-head work is performed, or where over head risks exist on any part of the site.
4. High visibility vests/tabards or jackets shall be worn by all those on site, to ensure visibility.
5. Risk assessment shall identify if any additional PPE is required, such as protection goggles, ear protection, respiratory protection, overalls, gloves and kneepads etc. If so it shall be provided and worn..
6. Adequate supplies of personal protective equipment (PPE) shall be made available on site for visitors.

C18. Health and Safety Signage

The site set up shall identify what signage is required. Signage shall be provided for four basic categories

1. Safe condition -signs that indicate the safe condition can be rectangular or square in shape and will typically be used to indicate the means of escape in case of fire, then first aid station, safety shower etc. Normally Green.
2. Prohibition-signs that prohibit an activity or behavior that is likely to increase a danger. They are circular in shape with a black pictogram on a white background, red edging and diagonal line.
3. Hazard warning-signs that give warning of a particular hazard or danger and are triangular in shape with a black pictogram on a yellow background with black edging.
4. Mandatory signs which indicate a requirement that must be complied with. The signs are round in shape and have a white pictogram on a blue background.

C19. Inspections of Plant and Equipment

Ensure regular inspection and examination of plant and equipment by a competent person. Inspection and examination records shall be kept.

The frequency of inspections and examinations shall be as defined by supplier/manufacturer based on legal and standard requirements.

C20. Working at Height

Work at height shall be avoided whenever possible. When required the following shall apply:-

Scaffold

1. Scaffold to be erected by a competent person and tagged to indicate checked. After the installation it should be made the commissioning process. It should be checked regularly.
2. Scaffold erected on ground must have suitable sole plates to support the load.
If the legal and standard requirements don't give other order:
3. Standards (uprights) shall be vertical and spaced at 2.1m, and vertical and horizontal joints shall be staggered.
4. Transoms that support the platform shall also be spaced at <1.2m distance.
5. Working platform width 600mm min and adequately supported.
6. Scaffolding tubing and fixtures shall be made of metal.
7. Timber boards to be of sound material and adequate strength.
8. Toe boards shall be in place and secured, and be 150mm min.
9. Guard rails shall be set at 950mm & 470mm from working platform.
10. Adequate bracing of the scaffold and scaffold to be tied at suitable distances (min 1 tie every 32m²)
11. Scaffold needs to be suitable for the predicted loads and adequate consideration of any wind loading.
12. Scaffold must be inspected before use, after any alteration and in any event every 7 days. Documented safety checking must be provided.

Additional for tower/mobile scaffolds

1. Mobile scaffolds shall be erected according to the manufacturers instructions by a competent person and tagged as safe for use.
2. The ratio of height to base shall not exceed 3:1 for tower scaffolds.
3. Wheels and outriggers to be locked.
4. Provide a safe means of access e.g. an internal ladder.
5. When the mobile scaffold is moved check for overhead power lines and
6. check that there are no holes or dips in the ground and do not allow persons to remain on the scaffold while it is being moved.

Scissor lifts/Mobile Elevated Working Platforms (MEWPs)

1. the basket is fitted with proper guard rails and toe boards;
2. MEWP shall be fitted with outriggers, with spreader plates.
3. MEWPs fitted with a suitable anchorage point for the attachment of lanyards.
4. Occupants shall wear permanently suitable fall arrestment equipments.
5. operators shall be trained in safe operation, and authorized in writing.
6. emergency rescue arrangements shall be made.

Fragile roofs and roof openings

1. Provide a safe means of access to the roof area.
2. Platforms or coverings shall be provided and used to support the weight of any person who may have to work on the roof.

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3. Guard rails to be fitted to prevent fragile roof falls through roof. If not practicable then safety harnesses/lanyard/and life line are required. Safety nets may also be used.

Floor openings

1. Shall be protected on all sides with guard rails, or covered by cover of sufficient strength.

C21. Demolition

Any demolition work shall be risk assessed, and a written method statement submitted to the ABB representative for approval.

C22. Work on Highways

Where work on the public highway/road is undertaken work shall be risk assessed, and a written method statement submitted to the ABB representative for approval. The method statement shall detail controls including, speed restrictions, warning signs and cones, barriers and type. Where significant risk of traffic collision vehicle blocks shall be used. The workers have to be used fluorescent jacky.

C23. Safety in the Use of Harnesses & Temporary Lifelines

If the legal and standard requirements don't give other order:

1. **Harness:** including hardware must be capable of withstanding a tensile loading 22.2kN without cracking, breaking, or taking a permanent deformation.
2. **Lanyard:** The lanyard must be rope or shock-absorbing web lanyard, not to exceed 1.8m in length. The lanyard and all of its components in a fall arrest system must have a minimum tensile strength of 22.2kN. Locking type snap hooks shall be used to connect the lanyard to the harness.
3. The lanyard may be self-retractable that allows freedom of movement but protects the worker should a fall occur.
4. A shock-absorbing lanyard will substantially reduce the force created during a fall. The maximum lanyard elongation when resisting a fall must not exceed 1.06m in length.
5. **Lifeline:** The lifeline can be horizontal or vertical and must have a minimum tensile strength of 22.2kN. Vertical lifelines may only support one worker.
6. **Rope Grabs:** A person may be connected to a lifeline by means of a rope grab or by a rope grab and lanyard combination. The lanyard must be less than 1.8m long to restrict the overall fall to 1.8m or less. The lifeline size must be stamped on the rope grab, and only that size and type of line used.
7. **Anchorage:** The strength of any fall protection system is dependent on a secure attachment point. The attachment point must support a least 22.2kN per employee attached to the line, or designed with a safety factor of 2:1.
8. **Rigging:** Anchor points should be as high as possible, but never lower than the connection point on the harness. Workers must be tied off in a manner that ensures no lower level or other surfaces are struck during a fall.

9. Training and Inspection: All persons using a fall protection system must be trained on the safe use of the system including: Proper fit, wear, inspection, limitations, and care of the system. Fall protection systems must be inspected prior to use, at intervals as established by the manufacturer.

10. Rescue: An emergency rescue procedure must be established prior to using any fall arrest system, including self-rescue, outside services, and in-house rescue. The procedure should outline equipment to be used for rescue, notification procedures, emergency phone numbers, and responsible personnel.

C24. Driving and Transport Safety

This applies to vehicles used by contractors to transport their workers to and from site.

The Vehicles Used

1. Ensure that all vehicles are fit for purpose;
2. Ensure that all vehicles and fittings meet appropriate safety standards & laws;
3. Ensure that all vehicles are suitably inspected and maintained;
4. Ensure that all vehicles have front and rear fitted seat belt.
5. Ensure that all vehicles are insured for driver, passengers, damage to the car and third person.
6. Be fitted with a fire extinguisher and a First aid kit.
7. Only vehicles specifically designed for passenger use shall be used for transporting workers e.g. mini bus, coach etc
8. Canopies are not required, as ABB will not tolerate employees to be transported on the back of any vehicle. The sole purpose of a canopy will only be for the protection of transportation of goods against rain etc.

The Driver, and Passengers

1. Comply with all national road laws, and site speed limits;
2. Seat belts are worn by all occupants;
3. Be suitably trained, licensed and medically fit to operate the class of vehicle;
4. Not drive under the influence of alcohol or drugs, or when suffering from fatigue;
5. Do not use hand-held cell (mobile) phones, or radios when driving;
6. Comply with procedures for safe operation and maintenance of their vehicle;
7. Ensure the manufacturers limit for passengers, and load to be carried are not exceeded.
8. Vehicles shall be checked before use/shift to assure that all parts, equipment and accessories are in safe operating condition and free of apparent damage that could cause failure, injury while in use or environmental harm.

C25. First Aid and Emergency Medical

1. Minimum Response times

Provisions shall be made so that:-

- (a) an injured person will be treated by a first aider within 5 minutes of incident.
- (b) a seriously Injury person will be treated by a Medical professional within one hour of incident. This will normally be at hospital, or suitable trauma centre.

Reference shall be made to response times at pre-tender, and site mobilization stages. To achieve the response time for seriously injured persons at remote sites/locations it may be necessary to make additional medical provisions at site including:-

-
- (a) Ambulance, or vehicle capable of taking full length stretcher
 - (b) Medical professional, and trauma facilities
 - (c) Helicopter evacuation

2. Numbers of First Aiders

Where 5 – 50 workers there should be at least one qualified first aider present ALL the time. A further first aider is required for every additional 50 workers. It may be that additional qualified first aiders are required to achieve the response times detailed in this sheet. Also if there are additional hazards and risks.

3. First Aid Kits on Site

- All projects and work areas must have at least one first aid kit. With additional kits for each 50 workers.
- First aid kits shall be constructed of impervious material, dustproof and of sufficient size to store the required contents. They must be capable of being sealed and have a handle for emergency transport.
- The exterior of the first aid kit must be labeled in a manner that will clearly identify, for example - "First Aid".
- Contents of the kits shall be suitable and sufficient for the site.
- Projects executed in remote areas should consider the purchase of an automated electronic defibrillator (AED).

4. First Aider Training shall be by competent recognized organization. With refresher training at suitable intervals.

5. Workers training in Basic Actions

Workers shall have instruction in basic actions:-

- Immediately take control of the casualty at the site of accident
- Clear the area, don't let workers gather around the casualty
- Use first aid rules of DRABC (D-Danger, R-Rescue, A-Airway, B-Breathing, C-Circulation)
- Call for the first aid/ambulance immediately
- Reassure the casualty

6. Emergency contacts

Information must be posted visibly around site, and communicated to all workers.

Telephone/Radio contact name & numbers:-
First Aider/ Medical professional.....
Ambulance:.....
Hospital:.....

D. Appendices / Referring documents

Appendix 1: Contractor Incident and Hours Worked Reporting

End customer:
Contractor:
Appendix H&S
Date of Issue:
3VAA100104 Rev 2. 1 Nov 2008

Civil Erection

Rev.: Date:

Main contract:
ABB Ref. No:



Incident and Hours
Worked reporting

Appendix 2: Example of Site Report



Site HSE report