

**METHOD STATEMENT**

**INSTALLATION OF  
CATHODIC PROTECTION EQUIPMENT**

*GENERAL*

Revision	Date	Prepared By	Approved By
<b>Method Statement Install ICCP</b>		<b>Contract Reference</b>	
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## **1 INTRODUCTION**

This Method Statement covers standard procedures for the installation of cathodic protection equipment.

## **2 REFERENCE DOCUMENTS**

### ***2.1 Specifications***

British Standard 7361: Part 1: 1991 The Code of Practice for Cathodic Protection for Land and Marine Applications

British Standard BS7671 : 1992 Requirements for Electrical Installation

### ***2.2 Drawings***

As required.

## **3 RESPONSIBLE PERSONS**

Activities associated with the inspection and testing of cathodic protection system shall be carried out by suitably experienced and trained personnel.

Service Technicians will respond to the appropriate Project Engineer.

Project Engineers report to the Manager, Engineering Services

## **4 TEST EQUIPMENT**

### ***4.1 Calibration***

Test meters utilised during commissioning of the Cathodic Protection system shall be calibrated to National or International measurement standards

### ***4.2 Equipment List***

Multimeter with test leads

Copper/Copper Sulphate portable reference electrode

Handtools as required

## 5 INSTALLATION PROCEDURES

### 5.1 Test point procedures

#### 5.1.1 Pipe cable connection

- i) Ensure that all relevant site conditions and working practices are observed. If necessary obtain a work permit as required by the site.
- ii) Locate the site and clear any undergrowth.
- iii) Check for buried services with a pipe/cable locator.
- iv) Excavate to expose the pipe.
- v) Remove the coating over an area suitable for the type of connection to be used carefully with a hot knife, scraper or grinding burr. Do not use a chisel or other instrument that could damage the pipe. The area should be cleaned to a bright finish.
- vi) Make a connection to the pipe using an approved method. This may vary according to the pipeline operator. Generally, this will be by pinbrazing. See separate method statement which details the appropriate pinbrazing procedure.
- vii) Test the connection by pulling the cable using body weight in the direction that the cable lies.
- viii) Coat the pipe and cable to waterproof the joint. The repair should be to the same standard as the original coating.
- ix) Backfill the excavation and re-instate the ground.
- x) Excess spoil to be removed from site.

#### 5.1.2 M28 type concrete test post

- i) Ensure that all relevant site conditions and working practices are observed. If necessary obtain a work permit as required by the site.
- ii) Locate the site and clear any undergrowth.
- iii) Check for buried services with a pipe/cable locator.
- iv) Excavate so that the post will be buried to 50% of its length.
- v) Insert cables through the post and terminate at brass bolts. Ensure that the cables are protected where they enter at the base of the post.
- vi) Insert the post in the hole and brace it so that it will not move.
- vii) Fill the hole with concrete and leave braced until the concrete sets.
- viii) Excess spoil to be removed from site.

#### 5.1.3 M4 type concrete marker post.

- i) Follow procedure as in 5.1.2, except there will be no cables.

#### 5.1.4 DC Cables

- i) Cable connections to the pipe should be made as in 5.1.1.
- ii) Buried cables should lie at a depth that will protect them from disturbance by ploughing or other excavations. Cable tiles or cable warning tape should be used to warn of the presence of the cable during any subsequent excavation.
- iii) Cables should be colour coded or marked to identify them.

#### 5.1.5 Sacrificial Anode

- i) Installation of sacrificial anodes should be in accordance with BS7361.
- ii) Ensure that all relevant site conditions and working practices are observed. If necessary obtain a work permit as required by the site.
- iii) Locate the site and clear any undergrowth.
- iv) Check for buried services with a pipe/cable locator.
- v) Excavate to the required depth, and excavate trench for cable as required.
- vi) Ensure that any plastic covering is removed from the anode. The muslin bag should be left intact.
- vii) Place the anode in the required position and water thoroughly. (A bucket of water is ideal)
- viii) Terminate cables as required.
- ix) Backfill the excavation and re-instate the ground.
- x) Excess spoil to be removed from site.

## **5.2 Transformer-Rectifier Procedures**

### **5.2.1 Groundbed**

- i) Ensure that all relevant site conditions and working practices are observed. If necessary obtain a work permit as required by the site.
- ii) Locate the site and clear any undergrowth.
- iii) Check for buried services with a pipe/cable locator.
- iv) Excavate to the required depth, and excavate trench for cable as required.
- v) Arrange the anodes and main cable ready for installation.
- vi) Connect the anodes and the main cable according to the specification. Actual connections are usually made by line tap (split bolt) and sealed with an appropriate splice kit filled with resin. Ensure sufficient time is allowed for the resin to set.
- vii) Allow sufficient cable to enable either termination in a junction box near to the trench or at the transformer. This will be specified according to the design of the system.
- viii) Test the continuity of the cables.
- ix) Use half the carbonaceous backfill and line the bottom of the trench.
- x) Place the anodes and main cable on the carbonaceous backfill.
- xi) Use the remainder of the carbonaceous backfill to cover the anodes.
- xii) Backfill the trench and re-instate the ground.
- xiii) Excess spoil to be removed from site.
- xiv) Terminate the cables appropriately.

### **5.2.2 DC Cables**

- i) Cable connections to the pipe should be made as in 5.1.1.
- ii) Positive or groundbed cables should be treated with great care to prevent any damage to the insulation.
- iii) Buried cables should lie at a depth that will protect them from disturbance by ploughing or other excavations. Cable tiles or cable warning tape should be used to warn of the presence of the cable during any subsequent excavation.
- iv) The specification may call for above ground installation of cables. In this case, the cable should be installed as required in the specification.

### **5.2.3 AC Cables**

- i) Generally AC mains voltage cables will be provided by the electricity supplier and terminated by them or by a qualified electrician. If it is necessary to install mains voltage cables then the requirements of BS7671 should be observed and advice sought from a qualified person.

### **5.2.4 Transformer Rectifier**

- i) Ensure that all relevant site conditions and working practices are observed. If necessary obtain a work permit as required by the site.
- ii) Locate the transformer rectifier at the planned point of installation. This may be on a prepared concrete plinth, on a wall, or on a pole.
- iii) Fix the unit in place using appropriate fixings.
- iv) Arrange to have the AC supply connected.

- v) Test the unit according to the specification.
- vi) Terminate DC cables to the appropriate connections. Take particular care to observe the polarity of the pipe and groundbed cables.
- vii) Energise the system and carry out any testing procedures.
- viii) Commission the system.

## 6 HEALTH AND SAFETY

### 6.1 General

It is the intention of BAC that all test and inspection procedures are carried out in a safe manner in accordance with the Health and Safety At Work Act and any other relevant legislation.

If required by the Client, BAC personnel will attend any Site Safety Induction Courses before carrying out work on site.

### 6.2 Safety Handbook

It is the responsibility of all BAC personnel to be familiar with the latest revision of the Company's Safety Handbook. The Safety Handbook details the responsibility of the Company and the individual regarding Safety Regulations.

### 6.3 Risk Assessments

#### 6.3.1 General hazards

- i) *Site safety.*  
There can be assorted hazards associated with working on any site and site regulations as laid down by the site owner/operator should be observed.
- ii) *Manual handling risks.*  
Equipment and associated items may be heavy and care should be taken when handling manually. It is generally preferable to reduce any risk by avoiding manual handling altogether. When unavoidable, correct lifting procedures should be used. Heavy items will include, but not be limited to, concrete posts, transformer rectifiers, anodes, bags of backfill, and rolls or drums of cable. Arrangements should be made for items such as these to be delivered as close as possible to the intended point of installation and be moved subsequently as much as possible by machine.
- iii) *PPE*  
The minimum personal protective equipment is as follows:
  - Approved safety helmet
  - Approved ear defenders/earplugs
  - Safety footwear
  - Eye protection
  - Gloves
  - OverallsAnd any other equipment required by the site operator or deemed necessary by the task
- iv) *Risk of falling.*  
If any equipment or enclosure is installed in a location that requires the use of a ladder, care should be exercised in the use of that ladder. The ladder should be used on firm ground, and secured to prevent slipping.
- v) *Road traffic.*  
If any equipment or enclosure is located near a roadway, there is a risk of injury



caused by moving vehicles. All personnel should wear suitable high visibility clothing and exercise increased care.

### 6.3.2 Specific hazards applicable to Installation Procedures

- i) *Mains Voltages*  
Care should be exercised when working with mains voltages (240V or 380V AC). AC connections to apparatus should conform to BS 7671 Requirements for Electrical Installations. All connections should be made by a qualified electrician. Where there are exposed conductors the equipment should be isolated before work continues.
- ii) *Cable connections.*  
When connecting DC cables and making connections to pipes/structures, compounds may be used to seal the joint which are listed on the CoSHH register. Appropriate steps should be taken according to the relevant CoSHH datasheet. The application instructions and recommendations of the manufacturer should be observed.

### 6.3.3 Specific hazards applicable to Excavation Procedures

- i) *Buried cables / ducts / pipes*  
Before commencing any excavation, the area should be examined using a suitable pipe/cable locator to ensure that any buried services in the vicinity of the excavation are located and marked before the excavation begins.
- ii) *Overhead cables*  
If a mechanical excavator is used, ensure that appropriate safety measures are taken to avoid damage to overhead cables. Excavators should be excluded from the area beneath overhead cables or a device used to limit the movement of the excavator arm below the height of the cables.
- iii) *Open excavations.*  
Once an excavation is opened, appropriate precautions should be taken to avoid persons or livestock from falling into the excavation.
- iv) *Working in excavations.*  
Unless absolutely necessary, personnel should not enter the excavation. Any excavation, regardless of depth can be dangerous and there is no "safe" working depth. If the work cannot be completed without entering the excavation then suitable safe methods of exit and egress must be provided. Any risks should be assessed and steps taken to ensure the safety of the excavation. For example, is the soil stable, is shuttering required, or can the sides of the excavation be graded?  
**Under no circumstances should a person working alone enter an excavation. There must always be someone outside the excavation to raise the alarm in case of emergency.**
- vi) *Excavations and road traffic.*  
If excavations are required in a roadway then a separate risk assessment should be carried out. Reference should be made to the Road Traffic Act.
- vii) *Working in confined spaces.*  
Personnel should not enter confined spaces without the authority and direct

supervision of qualified personnel. Site owners/operators should have their own procedures for entry into confined spaces and these should always be followed. Always ensure the correct permit has been issued and that all correct procedures have been carried out before continuing.

**Under no circumstances should a person working alone enter a confined space. There must always be someone outside the confined space to raise the alarm in case of emergency.**

#### ***6.4 Control of Substances Hazardous to Health (C.o.S.H.H.)***

Where applicable, substances hazardous to health shall be listed and itemised in the form of a register.

Health and Safety Data Sheets for all hazardous substances shall be kept in a file for reference.

Site personnel shall be issued with copies of Health and Safety Data Sheets relevant to their work activities.