

<b>Title: Laboratory Ground Investigation</b>	
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# PLACE HEALTH AND SAFETY MANUAL

## 1. Introduction

This Code of Practice has been prepared in accordance with the requirements of the Health and Safety at Work Act (H&SAWA) 1974, Lincolnshire County Council's Safety Policy and the Policy, Manual and requirements of the Place Directorate.

Investigation work, by its nature, is potentially hazardous and as such employees are expected to be aware of the risks involved and take reasonable care of their safety and the safety of others.

Staff visiting sites or working on sites under the control of another organisation must additionally comply with any site specific requirements.

This code of practice relates to Laboratory investigation works only. Where traffic management, access equipment or services are involved, the requirements of the relevant safety codes of practice shall also apply.

## 2. Scope and Application

This Code of Practice relates to Geotechnical and related site investigation works undertaken by Lincs Laboratory staff, this also includes the County Council's Term Drilling Contractor and any other Contractors who undertake Site Investigation works on behalf of the Laboratory.

## 3. Definitions

For the purpose of this Code of Practice, a competent person is defined as someone who has received formal training in the relevant aspects of Ground Investigation work or someone who has gained sufficient experience, understanding of the risks involved and the relevant Health and Safety requirements with regards to Ground Investigations. Those who undertake the role of competent person and have not received formal training must be deemed competent by the Laboratory Geotechnical Engineer before any works are undertaken.

Laboratory investigation work is defined as any Ground Investigation work undertaken by or project managed by Lincs Laboratory.

## 4. Standards and Information

Site investigation is included within the scope of the Construction (Design and Management) Regulations and therefore duties need to be allocated in advance of the works to allow for the works to be designed. See Place directorate Health and Safety Code of Practice G2 CDM Regulations 2015 for further detail.

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A site specific risk assessment shall be developed for all Laboratory Ground Investigation works which shall include consideration of underground and overhead services and all activities shall follow a safe system of work. The risk assessment and service drawings shall be made available to all who attend site. For further information see the following documentation, Place directorate Health and Safety Code of Practice G5 – Danger from Overhead Powerlines and G4 – Danger from Underground Cables and Pipelines.

CAT & Genny equipment shall be used on site by a competent person in conjunction with service drawings and a dynamic risk assessment before any trial pit / excavation works are started.

For non-Laboratory excavations undertaken on behalf of Lincolnshire County Council see Place Directorate Health and Safety Code of Practice G11 – Excavation Works.

Where Soakaway Testing is to be undertaken reference shall be made to Laboratory generic risk assessment RA6 Soakaway Testing and should be made available to all concerned.

### 5. Trial Pits/Excavations

The main cause of accidents in excavations (including trial pits) is the collapse of the sides burying or partially burying those below.

Entry into an excavation is not normally required and should not be undertaken. If entry into a excavation is required a site specific risk assessment, and method statement/safe system of work shall be created and reviewed by a competent person and approved by a member of the laboratory management team. All identified control measures must be implemented and then it should always be undertaken with care. Staff must ensure that the excavation is stable and that all practical steps have been taken to prevent accidental collapse.

#### **Excavations shall not be entered**

Trial pits which are left open shall be adequately fenced off and illumination provided if necessary. Where the size of the excavation permits, a rigid cover shall be placed over the opening.

### 6. Cable Percussion Boring and Rotary Drilling

Cable Percussion boring and rotary drilling operations are normally undertaken by the County Council's term drilling contractors. The contractors shall be required to provide a copy of their Health and Safety policy and associated documentation and comply with all method statements and risk assessments in place for the works they undertake.

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The nominated Project Manager (or member of the Project Team) responsible for the works shall be available at all times during site operations to give instructions to the drilling contractors.

Information relating to the site (e.g. access, services, geology, etc) shall be obtained prior to the commencement of the works and specific instruction given to the contractor in writing.

Any special hazards or risks relating to the site shall be identified and, where necessary, appropriate working methods/instructions drawn up.

Appendix 1 gives guidance on items that may require attention prior to and during the site work.

If there is any doubt about the safety of the drilling operation or the working methods of the contractor, the Project Manager shall instruct the contractor to cease work immediately.

Highways Divisions and Technical Services personnel working in the vicinity of or observing drilling/boring operations shall do so under the instruction of the drilling foreman.

On no account should a member of staff, work or observe within 3m of a rig whilst it is operating.

Personnel shall keep clear of suspended equipment and on no account should observations be taken down a borehole beneath a suspended tool.

Hard hats are required to be worn at all times when in the vicinity of the boring/drilling rigs.

### 7. Contaminated Land

In recent years, increasing demand for investigation works in contaminated ground and on landfill sites has necessitated additional precautions during investigation works and sample handling.

The British Drilling Association (BDA) have produced guidance notes for the safe drilling of these sites which are classified as follows:

<u>Category</u>	<u>Description</u>
Green	Inert fill (e.g. Subsoil, Topsoil, hardcore, bricks, stone, concrete, clay, excavated road materials, glass, ceramics, wood, paper, cardboard, plastics, metals, cement, etc).

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Yellow	Intermediate Waste (e.g. Waste food, vegetable matter, floor sweepings, household waste, animal carcasses, sewage sludge, organic compounds, tar, pitch, bitumen, tyres, dye stuffs, etc).
Red	All substances that could subject persons and animals to risk of death, injury or impairment to health (e.g. Toxic metals, organic compounds, pharmaceutical and veterinary wastes, phenols, medical products, solvents, hydrocarbons, asbestos, cyanides, etc).

For sites designated as green, normal good drilling and personal hygiene practice should suffice. However, it should be noted that indiscriminate dumping or uncontrolled tipping may have taken place and caution is required at all times on sites which are known to contain landfill or are contaminated.

For sites designated yellow or red, work shall be undertaken by accredited personnel who have been trained in the operation of appropriate safety equipment. The site shall be assessed for risks prior to the commencement of the work and method statements prepared in accordance with the guidance given in the BDA codes of practice.

Where contamination is encountered on “green field” sites or where the material encountered is in a higher category than that anticipated, work on the site shall immediately be suspended until the appropriate measures have been taken. Particular care is required if animal carcass burial pits are encountered on farmland. In this instance advice shall be sought from The Department for environment, food and Rural affairs (Defra).

### 8. Sample Handling

Before handling any samples, all potential hazards associated with the material must be determined and the appropriate level of personal protection adopted. If there is any doubt, advice shall be sought immediately from a line manager/safety adviser.

Good hygiene practice is required at all times when handling samples of soil, whether contaminated or not, and relevant protective equipment, (e.g. chemical resistant gloves, dust masks, etc.) shall be worn as required.

Samples which are known or suspected of being contaminated shall be marked with “hazard” tape and left outside undercover until required for testing. All potentially contaminated materials shall be tested at an appropriate chemical laboratory. The results of the chemical testing will be used to determine the methods to be adopted for any secondary physical testing.

All sample residues from contaminated ground shall be disposed of by a specialist contractor using an appropriately licensed tip.

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## APPENDIX 1

### CODE OF PRACTICE FOR SAFE DRILLING

These notes have been prepared as guidance for Project Managers.

All drillers employed by Lincolnshire County Council shall be fully conversant with the relevant safety documents and guidelines.

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### 1. Personnel

No LCC staff or contractor shall be employed on any work unless they have been adequately instructed and trained, and are competent to work without supervision, or are working under the instructions and supervision of a person who is competent to give instruction and supervision.

Suitable personal protective equipment shall be worn on all sites.

Alcohol should not be consumed on site. Persons who have been drinking shall not be allowed on site.

Care must be taken when carrying and lifting items. Employees should not be required to lift, carry or move heavy objects which are likely to cause injury.

Visitors should be kept clear of operations unless required otherwise.

### 2. Travel

Vehicles travelling on public highways must comply with the Road Traffic Act appropriate Motor Vehicle Regulations. All vehicles must be checked for road worthiness prior to travel.

Loads must be correctly positioned and firmly secured.

When towing equipment correct towing speeds, reversing and manoeuvring procedures should be observed and assistance obtained where necessary.

### 3. Site Preparatory and Restoration Works

Information should be obtained from necessary Statutory Bodies regarding the presence of services on site. The services should be located wherever possible and steps taken to avoid them.

A safe approach route shall be found to the proposed drilling positions.

It should be ascertained that the load bearing quality of the proposed site is adequate for safe working conditions. Hazardous situations should be avoided.

The working area should be suitably prepared and, where necessary, levelled, drained and surfaced.

Where working platforms are required to support personnel, equipment, etc the platform should be properly constructed, be of adequate size and have guard rails if necessary.

An incomplete borehole should be left in a safe manner until the hole is finally capped.

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(Note: - to prevent collapse of a completed borehole, the borehole should normally be grouted with a sand/cement or other type of grout).

The site should be left in a safe, clean and tidy state.

### 4. Special Sites

#### Mine workings (Coal)

The National Coal Board should be consulted prior to any site works, and records searched.

When searching for or proving old mine shafts all drilling rigs and equipment should be set on a platform capable of spanning any potential area of collapse, and attached to a secure anchorage outside the immediate area of works.

All men engaged in such operations should wear safety harnesses at all times which are secured to a suitable anchorage outside the immediate area of works.

Where work is being carried out which may encounter coal workings, flammable gas, etc, equipment should be provided and tests carried out to establish the presence of gas. If gas is detected smoking and the use of naked flames should not be allowed.

#### Railways

If work is carried out within the vicinity of a railway boundary, Network Rail Safety Regulations must be observed. (See Highway and Transportation Code of Practice CPA8.)

#### Refuse Tips and Contaminated Sites

Special care must be taken on refuse tips, either domestic or industrial, which may contain poisonous wastes and release toxic fumes. Appropriate protective clothing must be worn when handling such materials. (See BDA Code of Practice.)

#### Quarries

Drilling operations should not be carried out in the vicinity of a quarry face or edge which is unstable.

Drilling operatives should obey the quarry safety instructions especially with regard to explosives.

#### Highways

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When working on or near a highway the appropriate road signs, signals, lighting and Personal protective equipment shall be provided. (See Place directorate Health & Safety Codes of Practice G1 and L3.)

### Overhead and Underground Electric Cables

Drill rigs should not be sited within the vicinity of the conductor of a power line. (See Highways and Transportation Code of Practice G5 and G4.)

#### 5. Setting up (General)

It should be ensured that any footing for a jack is substantial.

The site should be left in a tidy state and clear of debris.

All relevant machine guards must be installed prior to setting up.

Rods, casing and collars should be neatly stacked, preferably on adequate pipe racks and maintained in a clean condition.

Threads and connectors should be regularly cleaned and greased.

Tools and materials should be stored safely.

Care should be taken when ascending or descending the mast and safety harnesses work if necessary.

#### 6. Drilling Operations

##### Cable Percussion Rigs

A firm and level working surface should be established.

The equipment should always be operated in a safe manner.

Cable tools should be laid horizontally when not in use.

Personnel should keep clear of suspended equipment. They should never look down a borehole beneath a suspended tool.

The winch should not be overloaded. Proper jacking equipment should be utilised when additional force is required.

All equipment shall be regularly serviced and replaced as required.

Personnel should check for indications of broken strands of wire, rope or shackles becoming undone.

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Spoil at the hole collar should not be cleared by hand or any tool unless the rig is in neutral and the clutch disengaged.

All plant should be inspected at regular intervals and maintained in good condition.

### Rotary Rigs

The foundation for the rig should be solid and level.

Rigs should never be left unattended during drilling.

Operators should keep their hands and feet away from rods when the clutch jaws are being tightened or released.

Wrenches should never be applied to rods which are rotating, and should be used in a safe manner at all times.

Threads of rods and casing should be maintained in good condition.

Foot clamps should be kept in good working order.

Hoist ropes should be examined daily and replaced when necessary.

A daily check should be made of all hoses, clips and couplings on the compressor.

Compressed air should be used in a safe manner and only as an aid to drilling.

All plant should be inspected regularly and maintained in good condition.

### Window Sampler Rigs

The foundation for the rig should be solid and level.

Rigs should never be left unattended during drilling.

Operators should keep their hands and feet away from collar when in operation.

The equipment should always be operated in a safe manner.

Rods and casings should be laid horizontally when not in use.

All equipment should be regularly serviced and replaced as required.

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Wrenches should never be applied to rods when the rig is in operation and should be used in a safe manner at all times.

Threads of rods and casing should be maintained in good condition.