

Excavate and profile tunnels

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**Overview**

This standard is about interpreting information, adopting safe, healthy and environmentally responsible work practices, selecting and using materials, components, tools and equipment, and excavating and profiling tunnels for sprayed concrete lining, hand mining, tunnel boring or drilling and blasting

This standard is for people working in the occupational area of tunnelling operations and can be used by operatives, supervisors and managers

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### Performance criteria

You must be able to:

- P1 interpret the given information relating to the work and resources to confirm its relevance
- P2 comply with the given, relevant legislation and official guidance to carry out your work and maintain safe and healthy work practices
- P3 select the required quantity and quality of resources for the methods of work
- P4 comply with organisational procedures to minimise the risk of damage to the work and surrounding area
- P5 comply with the given contract information to carry out the work efficiently to the required specification
- P6 complete the work within the allocated time, in accordance with the programme of work

## Knowledge and understanding

You need to know and understand:

### Performance Criteria 1

#### Interpretation of information

- K1 the organisational procedures developed to report and rectify inappropriate **information** and unsuitable **resources**, and how they are implemented
- K2 the types of **information**, their source and how they are interpreted
- K3 the organisational procedures to solve **problems** with the **information** and why it is important they are followed

### Performance Criteria 2

#### Safe work practices

- K4 the level of understanding operatives must have of **information** for relevant, current **legislation and official guidance** and how it is applied
- K5 the types of **fire extinguishers** and how and when they are used
- K6 how **emergencies** should be responded to and who should respond
- K7 the organisational **security procedures** for tools, equipment and personal belongings
- K8 what the accident reporting procedures are and who is responsible for making the report
- K9 why, when and how health and safety control equipment should be used
- K10 how to comply with environmentally responsible work practices to meet current **legislation and official guidance**

### Performance Criteria 3

#### Selection of resources

- K11 the characteristics, quality, uses, sustainability, limitations and defects associated with the **resources** and how defects should be rectified
- K12 how the **resources** should be used and how any **problems** associated with the **resources** are reported
- K13 the organisational procedures to select **resources**, why they have been developed and how they are used
- K14 the **hazards** associated with the **resources** and **methods of work** and how they are overcome

#### **Performance Criteria 4**

##### **Minimise the risk of damage**

K15 how to **protect work** from damage and the purpose of protection

K16 why **disposal of waste** should be carried out safely and how it is achieved

#### **Performance Criteria 5**

##### **Meet the contract specification**

K17 how **methods of work**, to meet the specification, are carried out and **problems** reported

K18 how **maintenance** of tools and equipment is carried out

#### **Performance Criteria 6**

##### **Allocated time**

K19 what the **programme** is for the work to be carried out in the estimated, allocated time and why deadlines should be kept

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**Scope/range****Performance Criteria 1**

1 interpretation of drawings/required excavation support sheet (RESS), method statements, task briefings, risk assessments and manufacturers' information related to the work to be carried out

**Performance Criteria 2**

2 avoidance of risk by complying with the given information relating to the following

2.1 methods of work

2.2 safe use of health and safety control equipment

2.3 safe use of access equipment/systems

2.4 safe use, storage and handling of materials, tools and equipment

2.5 specific risks to health

**Performance Criteria 3**

3 selection of resources associated with own work

3.1 materials and components

3.2 tools and equipment

**Performance Criteria 4**

4 protection of the work and its surrounding area from damage

5 maintain a clean work space

6 disposal of waste in accordance with current legislation

**Performance Criteria 5**

7 demonstration of work skills to excavate and profile

8 use and maintain ancillary equipment

9 excavate and profile tunnel to given working instructions and engineering controls for at least one of the following operations

9.1 sprayed concrete lining

9.2 hand mining

9.3 drilling and blasting

9.4 tunnel boring

**Performance Criteria 6**

10 completion of own work within the estimated, allocated time to meet the needs of other occupations and/or client

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**Scope/range related to knowledge and understanding** **Disposal of waste**

1 environmental responsibilities, organisational procedures, manufacturers' information, statutory regulations and official guidance

**Emergencies**

2 operative's response to situations in accordance with organisational authorisation and personal skills when involved with

2.1 fires, spillages, injuries

2.2 emergencies relating to occupational activities

**Fire extinguishers**

3 water, CO<sub>2</sub>, foam, powder and their uses

**Hazards**

4 those identified by risk assessment, method of work, manufacturers' technical information, task and tool box talks, statutory regulations and official guidance

**Health and safety control equipment**

5 identified by the principles of prevention for occupational use, types and purpose of each type, work situations and general work environment

5.1 collective protective measures

5.2 personal protective equipment (PPE)

5.3 respiratory protective equipment (RPE)

5.4 local exhaust ventilation (LEV)

**Information**

6 drawings/required excavation support sheet (RESS), method statements, task briefings, risk assessments, manufacturers' information, organisational procedures, official guidance and regulations governing tunnelling

### **Legislation and official guidance**

7 this relates to the operative's responsibilities regarding potential accidents, health hazards and the environment whilst working in the workplace, below ground level, in confined spaces, at height, with tools and equipment, with materials and substances, with movement/storage of materials and by manual handling and mechanical lifting

### **Maintenance**

8 operative care of ancillary equipment

### **Methods of work**

9 application of knowledge for safe and healthy work practices, procedures and skills relating to the method/area of work and materials used to

9.1 follow engineering controls to excavate and profile tunnels for sprayed concrete lining, hand mining, drilling and blasting or tunnel boring operations

9.2 recognise and determine when specialist skills and knowledge are required and report accordingly

9.3 work with, around and in close proximity to plant and machinery

9.4 direct and guide the operations and movement of plant and machinery

9.5 use equipment

9.6 work at height

9.7 use access equipment/systems

10 team work and communication

11 needs of other occupations associated with excavating and profiling tunnels

### **Problems**

12 those arising from information, resources and methods of work

12.1 own authority to rectify

12.2 organisational reporting procedures



### **Programme**

- 13 types of progress charts, timetables and estimated times
- 14 organisational procedures for reporting circumstances which will affect the work programme

### **Protect work**

- 15 protect work against damage from general workplace activities, other occupations and adverse weather conditions

### **Resources**

- 16 materials, components and equipment relating to types, quantity, quality, sizes and the sustainability of standard and/or specialist
  - 16.1 engineering controls (e.g. lasers, drill patterns, profile boards, string lines, square marks and software controls), hand, mechanical or drill and blast excavation equipment and ancillary equipment
- 17 confirm resources conform with the specification

### **Security procedures**

- 19 site, workplace, company and operative

## Excavate and profile tunnels

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