

## Overview

This standard is about interpreting information, adopting safe and healthy working practices, selecting materials, components and equipment and preparing for and laying pipes, installing and testing new and/or replacement drainage

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

# COSVR639 – SQA Unit HL87 04

## Install drainage

### 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

## Install drainage

### 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

*You need to know and understand:*

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

#### Performance Criteria 3

##### Selection of resources

*You need to know and understand:*

- K10 the characteristics, quality, uses, sustainability, limitations and defects associated with the **resources** and how defects should be rectified
- K11 how the **resources** should be used and how any **problems** associated with the **resources** are reported
- K12 the organisational procedures to select **resources**, why they have been developed and how they are used
- K13 the **hazards** associated with the **resources** and **methods of work** and how they are overcome

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### Performance Criteria 4

#### Minimise the risk of damage

*You need to know and understand:*

K14 how to **protect work** from damage and the purpose of protection

K15 why **disposal of waste** should be carried out safely and how it is achieved

### Performance Criteria 5

#### Meet the contract specification

*You need to know and understand:*

K16 how **methods of work**, to meet the specification, are carried out and **problems** reported

K17 how **maintenance** of tools and equipment is carried out

### Performance Criteria 6

#### Allocated time

*You need to know and understand:*

K18 what the **programme** is for the work to be carried out in the estimated, allocated time and why deadlines should be kept

### Additional Information

#### Scope/range related to performance criteria

##### Performance Criteria 1

- 1 interpretation of drawings, specifications, schedules, risk assessments, method statements 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 at least four of the following
  - 2.1 methods of work
  - 2.2 safe use of health and safety control equipment
  - 2.3 safe use of access equipment
  - 2.4 safe use and 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, components and fixings
  - 3.2 tools and equipment

##### Performance Criteria 4

- 4 protection of the work and its surrounding area from damage
- 5 maintain a clear and tidy work space
- 6 disposal of waste in accordance with current legislation

##### Performance Criteria 5

- 7 demonstration of work skills to check, measure, mark out, cut, lay, position, fit, join, level, plumb, align, secure and test
- 8 use and maintain hand tools, power tools and ancillary equipment
- 9 lay bedding materials, install and test pipework (e.g. clay, concrete, metal or plastic) for new and/or replacement, foul and/or surface water drainage for at least one of the following to given working instructions
  - 9.1 inspection chambers (e.g. brick, concrete, metal or plastic)
  - 9.2 surface water systems (e.g. cells, culverts, high capacity, linear, balancing ponds, interceptors, recycling equipment, soak-a-ways, sustainable urban drainage systems)
  - 9.3 foul water systems (e.g. cess pools, septic tanks, reed beds, treatment plants)
  - 9.4 surround pipe with specified materials
  - 9.5 place backfill to trench using given work instructions for both compacted and free drainage materials

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### **Performance Criteria 6**

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

## Install drainage

### 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

#### **Hazards**

- 3 those identified by risk assessment, methods of work, manufacturers' technical information, statutory regulations and official guidance

#### **Health and safety control equipment**

- 4 identified by the principles of prevention for occupational use, types and purpose of each type, work situations and general work environment
  - 4.1 collective protective measures
  - 4.2 local exhaust ventilation (LEV)
  - 4.3 personal protective equipment (PPE)
  - 4.4 respiratory protective equipment (RPE)

#### **Information**

- 5 drawings, specifications, schedules, risk assessments, method statements, manufacturers' information, verbal, written and graphical instructions, permits, regulations and official guidance governing the installation and construction of drainage systems

#### **Legislation and official guidance**

- 6 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 and storage of materials by manual handling and mechanical lifting

#### **Maintenance**

- 7 operative care of hand tools, power tools and ancillary equipment

## Install drainage

### Methods of work

- 8 application of knowledge for safe and healthy work practices, procedures and skills relating to the method/area of work and materials used to:
  - 8.1 excavate trenches and provide trench support
  - 8.2 confirm ground conditions, site and excavations are suitable for the drainage installation work
  - 8.3 recognise the dangers of loads and structures at the edge of excavations
  - 8.4 deal with groundwater
  - 8.5 work around other utility services
  - 8.6 install geotextile materials
  - 8.7 prepare different types of bedding for pipework e.g. sand, shingle and cementious
  - 8.8 determine levels and gradients
  - 8.9 identify the differences between surface and foul water drainage
  - 8.10 measure, mark and cut drainage materials
  - 8.11 lay, position, level, plumb, align, fit, join, fix and secure new and replacement drainage systems
  - 8.12 lift and transport assembled drainage systems
  - 8.13 construct structures of a drainage system (storm alleviation, culverts, inspection chambers, lateral drains, overflows, sumps, filter drains, sustainable urban drainage systems)
  - 8.14 assemble pre-cast components (metal, concrete, clay and plastic) of a drainage system structure (inspection chambers, street iron work)
  - 8.15 connect and seal new systems to existing systems
  - 8.16 prepare for conducting smoke, water, ball, air and mandrel tests on drainage systems
  - 8.17 work with, around and in close proximity to plant and machinery including lifting plant
  - 8.18 store and dispose of removed drainage components
  - 8.19 follow specified hygiene procedures particularly when dealing with foul water draining systems
  - 8.20 recognise and determine when specialist skills and knowledge are required and report accordingly
  - 8.21 determine specific requirements for structures of special interest,



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traditional build (pre 1919) and historical significance

8.22 use hand tools, power tools and equipment

8.23 work at height and below ground level

8.24 use access equipment

9 team work and communication

10 needs of other occupations associated with installing drainage

### **Problems**

11 those arising from information, resources and methods of work

11.1 own authority to rectify

11.2 organisational reporting procedures

### **Programme**

12 types of progress charts, timetables, productivity targets and time scales

13 how times are estimated

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 pipes, fittings and ancillary components

16.2 pre-cast (metal, concrete, clay or plastic) components

16.3 bricks, blocks and sandbags

16.4 granular materials, aggregates, cement, concrete, mortars and sand

16.5 sealant materials (adhesives, compounds, solvents)

16.6 hand tools, power tools and ancillary equipment

17 how to confirm resources and materials conform with the given specification

18 methods of calculating quantity, length, volume, area and wastage associated with the method and procedure to install drainage

### **Security procedures**

19 site, workplace, company and operative

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### Behaviours

When performing to this standard you are likely to demonstrate the following behaviours:

- 1 **Work safely:** consider the safety of yourself and those around you, challenge unsafe behaviour
- 2 **Effective communication:** oral, written, electronic, listening, body language, presentation
- 3 **Respect:** apply equality, diversity and inclusion in dealing with others.
- 4 **Team work:** work effectively and safely with others with limited supervision.
- 5 **Independent working:** take responsibility for safe completion of your own work.
- 6 **Logical thinking:** use clear and valid reasoning when making decisions to safely undertake the work instructions.
- 7 **Working effectively:** undertake the work in a reliable, safe and productive manner.
- 8 **Time management:** use own time effectively to complete the work instructions to schedule, take the time to be safe.
- 9 **Adaptability:** be able to adjust to changes to the work instructions, put safety first

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## Install drainage

**Developed by** ConstructionSkills

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**Status** Original

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**Originating organisation** ConstructionSkills

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**Original URN** VR639

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**Relevant occupations** Construction Operatives

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**Suite** Construction and Civil Engineering Operations; Building Maintenance Multi-trade Repair and Refurbishment Operations);Trowel Occupations (Construction)

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**Key words** Pipes; Inspection chambers; Culverts; Soak-a-ways; Cess pools; Septic tanks; Reed beds; Overflows; Treatment plants; Interceptors; Mandrel