



National Unit specification: general information

Unit title: Excavation in the Road/Highway

Unit code: F933 04

Superclass: TL

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Source: Scottish Qualifications Authority

Version: Second

Credit points and level

1 National Unit credit(s) at SCQF level 5: (1 SCQF credit points at SCQF level 5*)

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

Unit Aim

This unit is designed to allow the candidate to demonstrate the skills and knowledge required to carry out excavation in the highway. The candidate will be able to identify the characteristics of different types of footway and carriageway, and their construction layers. They will be able to excavate safely, in line with the relevant specifications and codes of practice, and will show that they can support underground apparatus that they encounter during excavation. The candidate will also be able to identify, select and store excavated material that can be re-used as backfill.

Learning Outcome 1 Understand how to Identify different types of footway and carriageway**Assessment criteria:**

- 1.1 identify the main **types of footway and carriageway** in accordance with current relevant specifications
- 1.2 describe the characteristics of the main **types of footway and carriageway** structure
- 1.3 describe the characteristics of a high duty or high amenity footway, footpath or cycle track
- 1.4 describe how to distinguish between different **types of footway and carriageway**
- 1.5 identify different **construction layers** in the main **types of footway and carriageway** in accordance with current relevant specifications.

Learning Outcome 2 Excavate in the highway**Assessment criteria:**

- 2.1 identify the type of footway or carriageway to be excavated
- 2.2 select **equipment** required for the excavation activity
- 2.3 check that the **equipment** to be used is fit for purpose
- 2.4 excavate materials at all **construction layers** according to specifications
- 2.5 use working methods that minimise the risk of reinstatement failure
- 2.6 excavate trenches to the specified dimensions.

Learning Outcome 3 Understand how to excavate in the highway**Assessment criteria:**

- 3.1 describe the types of **equipment** required for excavation activities
- 3.2 explain how to select **equipment** that is fit for purpose
- 3.3 identify the specifications for excavating trenches
- 3.4 explain how to identify areas of high risk for excavation activities
- 3.5 describe the precautions to take when excavating in **high risk areas**
- 3.6 describe working methods that minimise the risk of reinstatement failure
- 3.7 describe the differences between shallow excavations, deep openings, narrow trenches and small excavations

3.8 explain how to ensure excavations can accommodate for subsequent reinstatement.

Learning Outcome 4 Support underground utilities apparatus during excavation

Assessment criteria:

- 4.1 identify damage to **utilities apparatus** and take remedial action to limit further damage
- 4.2 report damaged apparatus to the relevant person
- 4.3 use suitable equipment to support and protect exposed **utilities apparatus**.

Learning Outcome 5 Understand how to support underground apparatus during excavation

Assessment criteria:

- 5.1 explain the implications of damage to the different types of underground **utilities apparatus**
- 5.2 state the person to whom damaged **utilities apparatus** should be reported
- 5.3 describe the different types of support for exposed **utilities apparatus**
- 5.4 explain how to use different types of equipment to support and protect apparatus safely
- 5.5 describe the circumstances in which trench sidewall support is required, and where to find the guidelines for its provision.

Learning Outcome 6 Identify, select and store excavated materials for re-use as backfill

Assessment criteria:

- 6.1 identify and select **excavated materials** that are suitable for re-use as backfill or sub-base
- 6.2 store re-usable materials safely and protect them from contamination and excessive drying or wetting
- 6.3 identify materials that are not suitable for re-use and provide safe temporary storage for them.

Learning Outcome 7 Understand how to identify, select and store excavated materials for re-use as backfill

Assessment criteria:

- 7.1 describe **excavated materials** that are suitable and unsuitable for re-use as backfill
- 7.2 describe the storage requirements for different types of re-usable materials
- 7.3 explain how to protect stored re-usable from:
 - (a) contamination
 - (b) loss of fines
 - (c) excessive drying or wetting
- 7.4 describe the correct procedures for storage and re-use of chalk
- 7.5 describe how to safely store and dispose of materials that are unsuitable for re-use
- 7.6 explain the implications of using unsuitable material for backfill or sub-base.

Learning Outcome 8 Follow safe working practices

Assessment criteria:

- 8.1 follow current relevant health and safety **regulations, standards and other legislation** relating to:
 - (a) **working practices** within the construction environment
 - (b) **working practices** specific to any practical task that they are required to carry out
- 8.2 identify the current relevant health and safety **regulations, standards and other legislation** that must be applied in relation to:
 - (a) **working practices** within the construction environment
 - (b) **working practices** specific to any practical task that they are required to carry out.

Evidence Requirements / Scope

Some terms, used in the assessment criteria, cover a range of situations, as follows:

1. **Types of footway and carriageway** include:
 - (a) flexible footway and carriageway
 - (b) modular footway and carriageway
 - (c) rigid footway and carriageway
 - (d) composite carriageway.
2. **Construction layers** in footways and carriageways include:
 - (a) surface course
 - (b) binder course
 - (c) base (roadbase)
 - (d) sub-base
 - (e) blocks or sett
 - (f) slab
 - (g) bed.
3. **Regulations, standards and other legislation** includes:
 - (a) Specification for the Reinstatement of Openings in Highways
 - (b) Health and Safety Guidance 47, *Avoiding Danger from Underground Services*
 - (c) Health and Safety Guidance 150, *Health and Safety in Construction*
 - (d) manufacturers' operating procedures for powered tools and plant.
4. Suitable **equipment** may include as necessary:
 - (a) appropriate hand tools – including square and round mouth shovels
 - (b) appropriate powered equipment – including pavement saw and breaking-out tools
 - (c) appropriate equipment for supporting exposed utilities – including slings, ropes and props.
5. Safe **working practices** may include:
 - (a) safe use of tools and equipment
 - (b) use of appropriate PPE (including, as necessary: high visibility jacket or waistcoat, hard hat, ear defenders, gloves, protective footwear, waterproof clothing, eye protection visor or goggles, dust mask)
 - (c) use of risk assessment methods to identify and control hazards on site
 - (d) precautions to minimise danger or inconvenience to road users
 - (e) precautions to minimise danger or inconvenience to site personnel
 - (f) precautions to minimise damage to equipment or apparatus.

6. **Utilities apparatus** includes:
 - (a) plastic and metallic gas mains
 - (b) plastic and metallic water mains
 - (c) sewers and drains
 - (d) high- and low-voltage electricity cables
 - (e) telecommunications and television cables.

7. **Excavated materials** described in specifications include:
 - (a) Class A
 - (b) Class B
 - (c) Class C
 - (d) Class D
 - (e) Class E.

8. **High risk areas** include:
 - (a) utilities apparatus
 - (b) in close proximity to trees
 - (c) Bad ground conditions
 - (d) special engineering difficulty.

Assessment Requirements

Assessment for this unit consists of practical observations and knowledge questioning to cover the requirements of the learning outcomes.

Current requirements for practical observations, including assessor and verifier qualifications and facilities requirements are provided in the joint awarding organisation centre document.