



## **National Unit specification: general information**

**Unit title:** Reinstatement and Compaction of Backfill Materials

**Unit code:** F934 04

**Superclass:** TK

**Publication date:** October 2014

**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 backfill an excavation. The candidate will be able to identify the different types of footway and carriageway, and their construction layers, to select appropriate materials for use as backfill, and to backfill the excavation safely to the correct level. They will also be able to identify and dispose correctly and safely of surplus materials, and materials that cannot be re-used.

**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 characteristics of the main **types of footway and carriageway**
- 1.3 describe 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 Select materials for backfill****Assessment criteria:**

- 2.1 identify the type of footway or carriageway to be reinstated
- 2.2 identify and select excavated **materials** that are suitable for backfill
- 2.3 calculate the quantities of **materials** required for the reinstatement
- 2.4 store re-usable **materials** safely and protect them from excessive drying or wetting
- 2.5 Identify imported **materials** that are suitable for use as backfill
- 2.6 unload and provide safe storage for imported **materials**
- 2.7 identify the correct backfill **materials** to use in **high risk areas**
- 2.8 store **materials** on site without obstructing or damaging essential facilities and street furniture.

**Learning Outcome 3 Understand how to select materials for backfill****Assessment criteria:**

- 3.1 describe different types of excavated **materials** and their suitability for use as backfill
- 3.2 describe different types of imported **materials** and their suitability for use as backfill
- 3.3 describe correct storage arrangements for backfill **materials**
- 3.4 describe backfill **materials** that are suitable as surround to **utilities apparatus**
- 3.5 explain the implications of using unsuitable material for backfill
- 3.6 describe correct backfill **materials** to use in **high risk areas**
- 3.7 explain how to minimise the obstruction of essential facilities and damage to street furniture.

#### Learning Outcome 4 Backfill the excavation

**Assessment criteria:**

- 4.1 select reinstatement and compaction **equipment** that:
  - (a) is suitable to the material type and trench dimensions
  - (b) avoids damage to underground **utilities apparatus**
  - (c) is in working condition and safe to use
- 4.2 reinstate the backfill layer to the correct level
- 4.3 complete backfilling without damaging underground **utilities apparatus**
- 4.4 compact backfill **materials** to provide a firm base for advancement and minimise the risk of reinstatement failure.

#### Learning Outcome 5 Understand how to backfill an excavation

**Assessment criteria:**

- 5.1 explain the factors that influence the selection of reinstatement and compaction **equipment** to suit the material type and trench dimensions
- 5.2 describe types of **equipment** that will minimise the potential for damage to underground **utilities apparatus**
- 5.3 state the level of backfill layer required for different pavement types
- 5.4 state the amount of compaction required for each layer using specific **equipment**.

#### Learning Outcome 6 Dispose of surplus materials

**Assessment criteria:**

- 6.1 identify **materials** that are unsuitable for re-use or surplus to requirements
- 6.2 store surplus **materials** and those unsuitable for re-use in safe temporary storage
- 6.3 ensure that **materials** for disposal are loaded safely for transportation.

#### Learning Outcome 7 Understand how to dispose of surplus materials

**Assessment criteria:**

- 7.1 explain how to determine whether excavated **materials** are unsuitable for re-use or are surplus to requirements
- 7.2 explain the importance of storing unsuitable and re-usable **materials** separately
- 7.3 describe how to load **materials** safely for transportation
- 7.4 explain when surplus **materials** should be removed from site.

## 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
- 8.3 leave the site in a clean and safe condition
- 8.4 describe how to leave the site in a clean and safe condition.

### 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) block or sett
  - (f) slab
  - (g) bed.
3. **Specifications** and procedures include:
  - (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. **Materials** encountered during reinstatement include:
  - (a) Class A
  - (b) Class B
  - (c) Class C
  - (d) Class D
  - (e) Class E.
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. **Equipment** for reinstatement may include as necessary:

- (a) appropriate hand tools – including square mouth shovel, tape measure, travelling site stick or depth-gauge and hard bristle brooms.
- (b) appropriate powered equipment – including vibrotamper or vibrating plate, percussive rammer and vibrating roller.

7. **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.

8. **High risk areas** includes:

- (a) as a surround to 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.