



National Unit specification: general information

Unit title: Monitoring Reinstatement of Sub-base and Roadbase in Non-Bituminous Materials

Unit code: F93D 04

Superclass: TK

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Source: Scottish Qualifications Authority

Version: Second

Credit points and level

1 National Unit credit(s) at SCQF level 6: (1 SCQF credit points at SCQF level 6*)

**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 learner to demonstrate the skills and knowledge required to monitor the reinstatement of sub-base and roadbase in non-bituminous materials. The learner will be able to monitor the selection of non-bituminous materials, monitor the selection of compaction plant for the reinstatement of sub-base and roadbase and monitor the construction of the sub-base and roadbase. The learner will also be able to monitor site safety throughout sub-base and roadbase reinstatement.

Learning Outcome 1 Monitor the selection of non-bituminous materials for sub-base and base (roadbase) reinstatement**Assessment criteria:**

- 1.1 ensure that excavated **materials** for reuse or disposal are identified and checked against the current **specification**
- 1.2 ensure that imported **materials** selected for use are identified and checked against the current **specification**
- 1.3 ensure that the quantities of **materials** selected for use meet reinstatement requirements
- 1.4 ensure that re-usable and imported **materials** are stored in accordance with current **specifications and procedures**
- 1.5 ensure that safe temporary storage arrangements are made for **materials** not suitable for re-use in accordance with current **specifications and procedures**
- 1.6 check for any problems that arise with the selection and storage of sub-base and roadbase **materials** and confirm the appropriate action required.

Learning Outcome 2 Understand how to monitor the selection of non-bituminous materials for sub-base and roadbase reinstatement**Assessment criteria:**

- 2.1 describe the range of sub-base and roadbase **materials** permitted in the current **specification**
- 2.2 explain factors influencing the selection of **materials** for use in sub-base and roadbase and the consequences of using unsuitable **materials**
- 2.3 calculate quantities of different **materials** that are used in sub-base and roadbase reinstatement
- 2.4 describe safe storage arrangements for:
 - (a) re-usable **materials**
 - (b) imported **materials**
 - (c) **materials** unsuitable for re-use
- 2.5 describe potential problems with selection and storage of sub-base and roadbase **materials**, and the appropriate remedial action.

Learning Outcome 3 Monitor the selection of plant for compaction of sub-base and roadbase material

Assessment criteria:

- 3.1 ensure that the **compaction plant** is
 - (a) suitable to the location and **materials**
 - (b) suitable to dimensions and access provisions of the site
 - (c) in working condition and safe to use
- 3.2 check for any problems with the selection of **plant** for the compaction of sub-base and roadbase material, and confirm the appropriate action.

Learning Outcome 4 Understand how to monitor the selection of plant for compaction of sub-base and roadbase material

Assessment criteria:

- 4.1 explain the factors that influence the selection of **compaction plant**
- 4.2 describe how to check that the **compaction plant** is in working condition and safe to use
- 4.3 describe potential problems with the selection of **compaction plant** for sub-base and roadbase reinstatement, and the appropriate remedial action.

Learning Outcome 5 Monitor the construction of sub-base and roadbase materials

Assessment criteria:

- 5.1 ensure that the backfill or surround has been adequately prepared to receive subsequent layers
- 5.2 ensure that the non-bituminous layer is constructed in accordance with
 - (a) the **specification**
 - (b) the existing pavement structure and road type
- 5.3 using the correct **measuring equipment** check that the layers are constructed
 - (a) using suitable **powered equipment** and **materials**
 - (b) to the correct compaction level
 - (c) to the correct layer thickness and degree of compaction
 - (d) correctly in **high risk areas**
- 5.4 check for any problems with the construction of the sub base and roadbase, and confirm the appropriate action.

Learning Outcome 6 Understand how to monitor the construction of sub-base and roadbase materials

Assessment criteria:

- 6.1 explain how to identify when the backfill or surround is adequately prepared to receive subsequent layers
- 6.2 describe how to interpret the **specification** for constructing the non-bituminous layer in different **pavement structures and road types**.
- 6.3 describe how to check construction of the layers to ensure the
 - (a) correct use of equipment and **materials**
 - (b) achieved compaction level

- (c) correct layer thickness and degree of compaction
 - (d) correct construction in **high risk areas**
- 6.4 state the **measuring equipment** for checking the construction of the sub-base and roadbase
- 6.5 describe potential problems with the construction of the sub-base and roadbase, and the appropriate remedial action

Learning Outcome 7 Monitor site safety

Assessment criteria:

- 7.1 ensure that a risk assessment has been carried out
- 7.2 monitor site operations in accordance with health and safety requirements
- 7.3 assess site conditions in accordance with health and safety requirements
- 7.4 ensure that **safety equipment** is available and fit for purpose
- 7.5 ensure that **safe working practices** are followed in line with health and safety requirements and current relevant **specifications**
- 7.6 check for risks to site safety, and confirm the appropriate action required
- 7.7 ensure that the site is left in a clean and safe condition.

Learning Outcome 8 Understand how to monitor site safety

Assessment criteria:

- 8.1 explain the purpose of an on-site risk assessment
- 8.2 describe the health and safety requirements for site operations
- 8.3 describe the health and safety requirements for different site conditions
- 8.4 describe the **safety equipment** required during site operations and how to ensure that it is fit for purpose.
- 8.5 describe **safe working practices** on site
- 8.6 describe the potential risks to site safety and the appropriate remedial action
- 8.7 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. **Materials** include:
 - (a) Granular Type 1 sub-base material
 - (b) excavated granular sub-base material Class A
 - (c) category 3 cement-bound material (CBM3)
 - (d) foamed concrete

- 2. **Specifications and procedures** include:
 - (a) Specification for the Reinstatement of Openings in Highways

- (b) Health and Safety Guidance 150, Health and Safety in construction
- (c) Safety at Street Works and Road Works – A Code of Practice.

3. **Safe working practices** include:

- (a) safe use of tools and equipment
- (b) use of 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.

4. **Compaction plant/powered equipment** includes:

- (a) vibrotamper
- (b) vibrating plate
- (c) vibrating roller
- (d) percussive rammer
- (e) hand rammer.

5. **Measuring equipment** may include as necessary:

- (a) measuring devices, rule and tape.

6. **Safety equipment** may include as necessary:

- (a) adequate range of signing, lighting and guarding equipment (including signs, cones, signals, lamps, footway boards, barriers, portable traffic signals)
- (b) high visibility safety equipment
- (c) suitable **materials** to construct ramps.

7. **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.

8. **Pavement structures and road types** (AC 6.2)

- (a) Type 0, 1, 2, 3, and 4 Flexible road construction

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.