



National Unit specification: general information

Unit title: Reinstatement of Concrete Slabs

Unit code: F938 04

Superclass: TG

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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 the reinstatement of a concrete slab. The candidate will be able to prepare the sub-base to receive the concrete slab, to prepare the edges of the existing slab for concrete reinstatement, to lay mesh reinforcement, and to form the concrete slab, using the correct equipment. 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 Prepare sub-base to receive concrete slab**Assessment criteria:**

- 1.1 remove loose and unacceptable **materials** from the area to be reinstated using suitable **equipment**
- 1.2 make good any defects in the sub-base using specified materials
- 1.3 select sub base compaction **equipment** and ensure that it is
 - (a) suitable for the operation
 - (b) in working conditions and safe to use
- 1.4 compact the sub base according to specification
- 1.5 check that the finished sub-base level accommodates the correct slab thickness.

Learning Outcome 2 Understand how to prepare sub-base to receive concrete slab**Assessment criteria:**

- 2.1 explain why loose and unacceptable **materials** are removed from the area to be reinstated
- 2.2 describe how to remove loose and unacceptable **materials** from the area to be reinstated
- 2.3 identify different sub-base defects that could be encountered
- 2.4 identify approved **sub-base materials** for replacing unacceptable materials
- 2.5 describe the **procedures** for replacing defective **sub-base materials** with approved materials
- 2.6 explain the factors that influence the selection of sub base compaction **equipment** for the prescribed operation
- 2.7 explain how to check that **equipment** is in working condition and safe to use
- 2.8 explain how to check that the **sub-base material** is adequately compacted
- 2.9 explain how to ensure the cavity depth will accommodate the specified slab thickness.

Learning Outcome 3 Prepare the edges of existing slab to receive concrete reinstatement**Assessment criteria:**

- 3.1 saw-cut the edge of the existing slab according to the specification, using the appropriate **equipment**
- 3.2 prepare the unsawn section of the exposed slab edge according to the specification to form a **support** using steel dowel bars
- 3.3 place the slip membrane in position and overlap it
- 3.4 clean and wet all edges prior to placing the concrete.

Learning Outcome 4 Understand how to prepare the edges of existing slab to receive concrete reinstatement

Assessment criteria:

- 4.1 describe how to saw-cut the edge of an existing slab correctly
- 4.2 explain how to rough-cut the unsawn section of the exposed slab edge to form a taper-edge **support**.
- 4.3 explain how to provide **support** for concrete slab reinstatement using dowel bars including
 - (a) how to drill the unsawn section to provide a sliding fit for dowel bars
 - (b) the diameter and length of dowel bars required for the reinstatement
 - (c) how to cut and position dowel bars
- 4.4 explain the problems that may be caused by not placing slip membranes in accordance with **specifications**
- 4.5 explain the importance of cleaning and wetting the edges of the existing slab prior to the placement of concrete.

Learning Outcome 5 Lay mesh reinforcement

Assessment criteria:

- 5.1 expose the existing **mesh reinforcement**
- 5.2 select new **mesh reinforcement** to match the existing reinforcement
- 5.3 cut the **mesh reinforcement** to the correct size, including the required overlap
- 5.4 tie the new **mesh reinforcement** securely to the existing reinforcement.

Learning Outcome 6 Understand how to lay mesh reinforcement

Assessment criteria:

- 6.1 describe the minimum length of the existing reinforcement to expose, and when to use further trimming
- 6.2 explain the factors that influence the selection of **mesh reinforcement**
- 6.3 describe **procedures** for measuring and cutting **mesh reinforcement**
- 6.4 explain how to position new reinforcement and attach it to existing reinforcement

Learning Outcome 7 Form concrete slab

Assessment criteria:

- 7.1 replace missing or damaged **joints** to match existing **joints**
- 7.2 carry out slump testing of concrete to confirm workability
- 7.3 place concrete to a uniform level according to the specification
- 7.4 compact the concrete using suitable **equipment** to achieve maximum density
- 7.5 finish the concrete surface to the approved texture to ensure skid resistance
- 7.6 apply an approved curing membrane.

Learning Outcome 8 Understand how to form concrete slab

Assessment criteria:

- 8.1 identify the **types of carriageway** on which concrete reinstatement is carried out
- 8.2 describe the correct **procedures** for replacing and constructing different types of **joints**
- 8.3 describe how to check that **concrete** conforms to **specifications** and quality requirements
- 8.4 identify **equipment** required to compact **concrete** safely and achieve maximum density
- 8.5 state the strength of **concrete** required prior to opening to traffic
- 8.6 describe how to confirm the workability and strength of **concrete**
- 8.7 describe the texture and skid resistance required for the finished surface
- 8.8 explain how to apply the range of approved curing membranes.

Learning Outcome 9 Dispose of surplus materials

Assessment criteria:

- 9.1 identify **materials** that are unsuitable for re-use or surplus to requirements
- 9.2 store surplus **materials** and those unsuitable for reuse in safe temporary storage
- 9.3 ensure **materials** for disposal are loaded safely for transportation.

Learning Outcome 10 Understand how to dispose of surplus materials

Assessment criteria:

- 10.1 explain how to identify **materials** that are unsuitable for re-use or surplus to requirements
- 10.2 explain the importance of storing unsuitable and re-usable **materials** separately
- 10.3 describe how to load **materials** safely for transportation
- 10.4 explain when surplus **materials** should be removed from site.

Learning Outcome 11 Follow safe working practices

Assessment criteria:

- 11.1 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.
- 11.2 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
- 11.3 leave the site in a clean and safe condition
- 11.4 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. **Equipment** includes:
 - (a) hand tools – including as necessary square mouth shovel, hand pick, rake, hand rammer, reinforcing bar cutters, wire cutting tools, trowel, hand tamping beam, hard bristle broom.
 - (b) powered equipment – including as necessary vibrotamper, powered concrete cutting equipment, powered concrete drill, powered saw, a proprietary vibrator.
2. **Sub-base material** includes:
 - (a) granular sub-base Type 1 material
 - (b) pavement quality concrete (as described in specifications and SHW 1000)
 - (c) alternative reinstatement materials (ARMs).
3. 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.
4. **Specifications and procedures** include:
 - (a) Specification for the Reinstatement of Openings in Highways
 - (b) Specification for Highways Works Series 1000
 - (c) Health and Safety Guidance 47, *Avoiding Danger from Underground Services*
 - (d) Health and Safety Guidance 150, *Health and Safety in Construction*
 - (e) manufacturers' operating procedures for powered tools and plant.
5. **Support** must be provided using
 - (a) steel dowel bars of 20mm or 25mm nominal diameter.
6. The **mesh reinforcement** includes standard weights of mesh reinforcement.
7. **Joints** include:
 - (a) contraction joints
 - (b) expansion joints
 - (c) warping joints.
8. The **concrete** includes:
 - (a) Class 40 concrete
 - (b) air entrainment additive.
9. **Materials** for disposal include:
 - (a) unsuitable surplus materials
 - (b) surplus materials that are suitable for re-use.
10. **Types of carriageway** includes Types 0, 1, 2, 3 and 4 concrete and bituminous overlaid concrete roads.

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.