

## Monitoring reinstatement of sub-base and base in non-bituminous materials

### Certificate Aim

This certificate has been designed to allow the candidate to demonstrate the skills and knowledge required to monitor the reinstatement of sub-base and base in non-bituminous materials. The candidate will be able to monitor the selection of non-bituminous materials, monitor the selection of compaction plant for the reinstatement of sub-base and base and monitor the construction of the sub-base and base. The candidate will also be able to monitor site safety throughout sub-base and base reinstatement.

### Learning Outcome 1 Monitor the selection of non-bituminous materials for sub-base and base 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 base (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 base reinstatement

#### **Assessment criteria:**

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

**Learning Outcome 3 Monitor the selection of plant for compaction of sub-base and base 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 base material and confirm the appropriate action.

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

**Assessment criteria:**

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

**Learning Outcome 5 Monitor the construction of sub-base and base 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 degree of compaction level and layer thickness
  - (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 base, and confirm the appropriate action.

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

**Assessment criteria:**

- 6.1 state how to identify when the backfill or surround is adequately prepared to receive subsequent layers
- 6.2 state how to interpret the specification for constructing the non-bituminous layer in different pavement structures and road types.

- 6.3 define how to check the construction of 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 define the measuring equipment for checking the construction of the sub-base and base
- 6.5 state the potential problems with the construction of the sub-base and base, 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 define the purpose of a site specific risk assessment
- 8.2 state the health and safety requirements for site operations
- 8.3 define the health and safety requirements for particular site conditions
- 8.4 define the safety equipment required during site operations and how to ensure that it is fit for purpose
- 8.5 state the safe working practices on site
- 8.6 define the potential risks to site safety and the appropriate remedial action
- 8.7 state 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
  - (b) impact soil testing equipment.
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. **Appropriate equipment for supporting and protecting utilities' apparatus** includes:
- (a) slings
  - (b) ropes
  - (c) props.
8. **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.
9. **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.
10. **Pavement structures and road types AC 6.2**
- (a) Type 0, 1, 2, 3, and 4 Flexible road construction

### **Assessment Requirements and Guidance**

Assessment for this unit consists of practical observations and a multiple-choice knowledge examination to cover the requirements of the learning outcomes.

Current requirements for practical observations, including Assessor and Internal Quality Assurer qualifications and facilities requirements are provided in the HAUC (UK) The Street Works Assessment Strategy.