



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

**Unit title:** Reinstatement in Hot-lay Bituminous Materials

**Unit code:** F937 04

**Superclass:** TK

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**Source:** Scottish Qualifications Authority

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## **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.*

## Reinstatement in hot-lay bituminous materials

### Certificate Aim

This certificate has been designed to allow the candidate to demonstrate the skills and knowledge required to carry out reinstatement using hot-lay bituminous surfacing material. The candidate will be able to prepare the pavement layer to receive hot-lay surfacing materials. The candidate will be able to identify and select materials to be used for the reinstatement and construction of the hot-lay bituminous binder course and the asphalt surface course using the correct equipment. The candidate will also be able to correctly identify and safely dispose of surplus materials and materials that cannot be re-used.

Learning Outcome 1	Prepare the layer of pavement structure to receive hot-lay surfacing materials
<p><b>Assessment criteria:</b></p> <ol style="list-style-type: none"> <li>1.1 remove loose, unacceptable or interim reinstatement materials from the area to be reinstated using suitable equipment</li> <li>1.2 identify and correct any pavement layer surface contamination or defects</li> <li>1.3 use suitable equipment to trim back edges where damage has occurred</li> <li>1.4 use suitable equipment to re-position displaced ironwork kerbs and edge restraints in accordance with established levels</li> <li>1.5 use the specifications to confirm that the correct depth is left for the hot-lay binder and surface course.</li> </ol>	
Learning Outcome 2	Understand how to prepare the layer of pavement structure to receive hot-lay surfacing materials
<p><b>Assessment criteria:</b></p> <ol style="list-style-type: none"> <li>2.1 state how the depth is checked to confirm that it is suitable for reinstating binder and surface course layers</li> <li>2.2 state why loose and unacceptable materials are removed from the area to be reinstated</li> <li>2.3 state the potential consequences of pavement layer surface contamination or defects</li> <li>2.4 define how pavement layer surface contamination or defects are identified and corrected</li> <li>2.5 state how to identify and correct edge damage and undercut</li> <li>2.6 define how displaced ironwork, kerbs and edge restraints are repositioned</li> <li>2.7 state the potential consequences of incorrect pavement layer construction.</li> </ol>	
Learning Outcome 3	Construct the bituminous binder course
<p><b>Assessment criteria:</b></p> <ol style="list-style-type: none"> <li>3.1 confirm the delivery temperature of hot-lay bituminous material prior to laying</li> <li>3.2 select compaction equipment and ensure that it is               <ol style="list-style-type: none"> <li>(a) suitable for the operation</li> <li>(b) in working condition and safe to use</li> </ol> </li> <li>3.3 maintain specialist tools at the correct temperature for working with hot bituminous material</li> <li>3.4 seal the edges according to the specification</li> <li>3.5 confirm the polished stone value (PSV) of the surface course materials meets specifications</li> </ol>	

- 3.6 select, spread and level hot bituminous material binder course
- 3.7 handle hot-lay bituminous material correctly
- 3.8 store hot-lay bituminous material correctly
- 3.9 compact the hot bituminous material according to the specification.

#### **Learning Outcome 4 Understand how to construct a bituminous binder course**

##### **Assessment criteria:**

- 4.1 state the quality requirements of the selected material
- 4.2 state the temperature ranges of hot-lay bituminous materials
- 4.3 define why it is important to maintain tool temperatures when working with hot-lay bituminous materials
- 4.4 state how the bituminous material in base and/or binder course and surface course layers is spread and levelled
- 4.5 define the factors that influence the selection of equipment for the prescribed operation
- 4.6 state the checks required to ensure that equipment is in working condition and safe to use
- 4.7 define the handling and storage procedures for hot-lay bituminous material
- 4.8 state why cavity edges are sealed before placing surface layers
- 4.9 define the compaction procedures for hot-lay bituminous material
- 4.10 state how to confirm that compacted layer thickness meets specifications.

#### **Learning Outcome 5 Construct the surface course**

##### **Assessment criteria:**

- 5.1 apply tack coat as necessary
- 5.2 check the temperature of hot bituminous material before laying it
- 5.3 maintain specialist tools at the appropriate temperature for working with bituminous material
- 5.4 handle hot-lay bituminous material correctly
- 5.5 store hot-lay bituminous material correctly
- 5.6 use suitable equipment to select, spread and level hot bituminous material in a surface course layer
- 5.7 select compaction equipment that is in working condition and safe to use
- 5.8 compact the hot-lay bituminous material according to the specification
- 5.9 make adequate provision for skid resistance and texture depth in the surface course

#### **Learning Outcome 6 Understand how to construct the surface course**

##### **Assessment criteria:**

- 6.1 define the correct procedures and requirements for applying tack coat
- 6.2 define the quality requirements for the selected material
- 6.3 state why it is important to use hot-lay bituminous material at the correct temperature
- 6.4 state why it is important to maintain tool temperatures when working with hot-lay bituminous materials
- 6.5 define how to spread and level bituminous material in an asphalt surface course layer
- 6.6 define the factors that influence the selection of equipment for the prescribed operation
- 6.7 define the handling and storage procedures for hot-lay bituminous material
- 6.8 state how to check that equipment is in working condition and safe to use
- 6.9 define the compaction procedures for hot-lay bituminous material

6.10 state the method used to ensure skid resistance and texture depth from specifications

#### **Learning Outcome 7    Dispose of surplus materials**

***Assessment criteria:***

- 7.1 identify materials that are unsuitable for re-use or surplus to requirements
- 7.2 store surplus materials and those unsuitable for reuse in safe temporary storage
- 7.3 ensure materials for disposal are loaded safely for transportation

#### **Learning Outcome 8    Understand how to dispose of surplus materials**

***Assessment criteria:***

- 8.1 define how materials that are unsuitable for re-use or surplus to requirements are identified
- 8.2 state the importance of storing unsuitable and re-usable materials separately
- 8.3 state when surplus materials should be removed from site.

#### **Learning Outcome 9    Follow safe working practices for locating and avoiding underground apparatus and highways services**

***Assessment criteria:***

- 9.1 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.
- 9.2 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.
- 9.3 leave the site in a clean and safe condition
- 9.4 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 square and round mouth shovels, hand pick, hard bristle broom, profile board, measuring tape, rake hot hand tamper, tool heater, wheelbarrow, water butt, probe thermometer, bitumen bucket, edge seal applicator, Turk's head brush.
  - (b) powered equipment – including breakout equipment, pavement saw, vibrotamper, vibrating roller or vibrating plate, disc cutter, road saw
  - (c) tool heater
2. **Safe working practices** include:
  - (a) safe use of tools and equipment
  - (b) PPE (including, as necessary: high visibility jacket or waistcoat, hard hat, ear defenders, gloves, protective footwear, waterproof clothing, eye protection visor or goggles, glasses, 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 and pedestrians
  - (e) precautions to minimise danger or inconvenience to site personnel
  - (f) precautions to minimise damage to equipment or apparatus
  - (g) safe working practices for working with molten bitumen
  - (h) personal hygiene measures in connection with skin contamination.
3. **Specifications and procedures** include:
  - (a) Specification for the Reinstatement of Openings in Highways
  - (b) Safety and Street Works and Road Works – A Code of Practice
  - (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.
4. **Materials** identified for constructing a bituminous binder course include:
  - (a) dense binder course materials (20mm nominal aggregate size), hot rolled asphalt 50/20 binder course
  - (b) close graded surface course materials (10mm aggregate size), hot rolled asphalt 30/14 surface course.
5. **Materials** identified for constructing an asphalt concrete surface course to BS EN 13108 and PD 6691 in accordance with specifications to include:
  - (a) hot rolled asphalt binder and surface course
  - (b) close graded surface course materials (10mm stone size)
  - (c) asphalt concrete dense surface course
  - (d) stone mastic asphalt surface and binder course
  - (e) pre-coated 14mm or 20mm chippings
  - (f) edge sealants
  - (g) tack coat.
6. **Materials** for disposal include:
  - (x) unsuitable surplus materials
  - (y) surplus materials that are suitable for re-use.

7. Procedures for handling, transportation and laying of asphalt concrete in accordance with specifications BS 594987 and PD 6691. (*Note: These standards and documents replace earlier ones and should be used in conjunction with the BS EN 13108.*)

#### **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 and The Streetworks Centre Compliance Document.