

Reinstatement and compaction of backfill material

Certificate Aim

This certificate has been designed to allow the candidate to demonstrate the skills and knowledge required to backfill an excavation. The candidate will be able to identify recognised footway and carriageway designs and their different construction layers in order to select the appropriate backfill materials to reinstate excavations safely to the correct level. 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 Understand how to identify different types of footway and carriageway

Assessment criteria:

- 1.1 identify the recognised footway and carriageway designs in accordance with the appropriate specifications
- 1.2 define the different construction layers within the recognised footway and carriageway designs in accordance with the appropriate specifications
- 1.3 identify the characteristics of recognised footway and carriageway designs
- 1.4 establish the characteristics of high duty and high amenity footways, footpaths and cycle tracks.

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 identify, segregate and temporarily store excavated materials not suitable for re-use
- 2.4 identify imported materials that are suitable for use as backfill
- 2.5 store backfill materials safely and protect them from excessive drying and wetting
- 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 identify the different types of excavated materials and their suitability for use as backfill
- 3.2 define the different types of imported materials and their suitability for use as backfill
- 3.3 state why excavated materials may be unsuitable for backfill
- 3.4 define the correct storage arrangements for backfill materials
- 3.5 identify backfill materials that are suitable as surround to utilities apparatus
- 3.6 state the consequences of using unsuitable material for backfill
- 3.7 identify the correct backfill materials to use in high-risk areas
- 3.8 state how to prevent the obstruction or damage of essential facilities and 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 excavation dimensions
 - (b) avoids damage to underground utilities apparatus and highways services
 - (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
- 4.5 Confirm the degree of compaction has been achieved.

Learning Outcome 5 Understand how to backfill an excavation

Assessment criteria:

- 5.1 define the factors that influence the selection of reinstatement and compaction equipment to suit the material type and excavation dimensions
- 5.2 identify the 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 footway and carriageway designs in accordance with the appropriate specifications
- 5.4 identify the required amount of compaction for each layer using specific equipment
- 5.5 state how the degree of compaction can be confirmed.

Learning Outcome 6 Dispose of surplus materials

Assessment criteria:

- 6.1 identify excavated materials that are surplus to requirements or unsuitable for re-use
- 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 specify how excavated materials are determined as surplus to requirements or unsuitable for re-use
- 7.2 state the importance of storing unsuitable and re-usable materials separately
- 7.3 state how 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) 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** 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
- (c) impact soil testing equipment.

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
- (f) fibre optic cables.

8. **Highways services** includes:

- (a) highway drainage
- (b) culverts
- (c) land drains
- (d) Street lighting and traffic signal equipment
- (e) highways/road with special engineering controls.

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.

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.