

Excavation in the highway

Certificate Aim

This certificate has been designed to allow the candidate to demonstrate the skills and knowledge required to carry out excavation in the highway. The candidate will be able to identify the characteristics of different types of footway and carriageway, including their construction layers. Candidates will be able to excavate safely, in line with the relevant specifications and codes of practice and will demonstrate the approved methods to safely support underground apparatus that is exposed during excavation. The candidate will also be able to identify, select and store excavated material that can be re-used as backfill.

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 Excavate in the highway

Assessment criteria:

- 2.1 select and use the appropriate personal protective equipment for excavating in the highway
- 2.2 ensure the worksite is safe and that the appropriate signing, lighting and guarding is in place
- 2.3 identify the type of footway or carriageway to be excavated
- 2.4 select the appropriate tools and equipment required to safely excavate in the highway
- 2.5 ensure that the equipment selected is fit for purpose
- 2.6 employ the appropriate safe working practices to reduce the risk of damaging underground services
- 2.7 safely operate equipment to cut and break-up surface layers of the footway or carriageway
- 2.8 utilise the appropriate techniques to safely excavate the construction layers and avoid undercutting
- 2.9 separate and safely store excavated materials for re-use or disposal
- 2.10 ensure that excavation techniques minimise the risk of reinstatement failure
- 2.11 ensure excavations meet the specified dimensions and comply with the appropriate specifications.

Learning Outcome 3 Understand how to excavate in the highway

Assessment criteria:

- 3.1 identify the appropriate tools and equipment used to safely excavate in the highway
- 3.2 define the requirements that equipment must meet to be considered fit for purpose
- 3.3 define the appropriate specifications that should be referred to when excavating in the highway
- 3.4 define the appropriate methods used to identify areas of high risk relating to excavation activities
- 3.5 identify the relevant control measures that should be in place when excavating in the highway
- 3.6 define the appropriate precautions to take to when excavating in areas of high risk
- 3.7 define the characteristics of excavation and trench categories in accordance with the appropriate specifications
- 3.8 identify the appropriate measures that should be taken to ensure that excavations can accommodate materials and equipment for compaction and reinstatement.

Learning Outcome 4 Support underground utilities apparatus during excavation in the highway

Assessment criteria:

- 4.1 identify damage to utilities apparatus and take the appropriate actions to limit further damage and reduce the risks to health, safety and the environment
- 4.2 select and safely use the appropriate equipment and materials to support and protect exposed utilities apparatus from damage.

Learning Outcome 5 Understand how to support and protect underground apparatus during excavation in the highway

Assessment criteria:

- 5.1 state the potential consequences of damaging different types of utilities apparatus
- 5.2 identify the steps that should be taken when reporting damage to utilities apparatus
- 5.3 state the appropriate methods to be used to safely support and protect exposed utilities apparatus
- 5.4 define the circumstances in which trench support systems would be required, and where to find the guidelines for their installation and safe use.

Learning Outcome 6 Identify, select and store excavated materials for re-use as backfill

Assessment criteria:

- 6.1 identify and segregate excavated materials that are suitable for re-use as backfill or sub-base
- 6.2 identify and segregate excavated materials that are not suitable for re-use and provide safe temporary storage for them
- 6.3 demonstrate how to safely store and protect re-usable materials from contamination and excessive drying or wetting.

Learning Outcome 7 Understand how to identify, select and store excavated materials for re-use as backfill

Assessment criteria:

- 7.1 define how excavated materials are classified and considered suitable or unsuitable for re-use as backfill material
- 7.2 identify the circumstances in which excavated materials can be re-used
- 7.3 define how to protect excavated re-usable materials from:
 - (a) contamination
 - (b) loss of fines
 - (c) excessive drying or wetting
- 7.4 state the requirements that excavated chalk should comply with for it to be considered suitable for re-use backfill material
- 7.5 define how to safely store and dispose of materials that are unsuitable for re-use
- 7.6 state the consequences of using unsuitable material for backfill or sub-base.

Learning Outcome 8 Identify and implement safe working practices

Assessment criteria:

- 8.1 perform tasks in line with the relevant health and safety legislation and guidance documents relating to:
 - (a) working practices within the construction environment
 - (b) working practices specific to excavation in the highway
- 8.2 identify the relevant health and safety legislation and guidance documents relating to:
 - (a) working practices within the construction environment
 - (b) working practices specific to excavation in the highway.

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) blocks or sett
 - (f) slab
 - (g) bed.
- 3. **Specifications, legislation and guidance documents** include:
 - (a) Specification for the Reinstatement of Openings in Highways

- (b) Health and Safety Guidance 47, *Avoiding Danger from Underground Services*
 - (c) Health and Safety Guidance 150, *Health and Safety in Construction*
 - (d) Manufacturers' operating procedures for powered tools and plant.
4. **Suitable equipment** may include as necessary:
- (a) appropriate hand tools – including square and round mouth shovels
 - (b) appropriate powered equipment – including pavement saw and breaking-out tools
 - (c) appropriate equipment for supporting exposed utilities – including slings, ropes and props.
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. **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. **Excavated materials** described in specifications include:
- (a) Class A
 - (b) Class B
 - (c) Class C
 - (d) Class D
 - (e) Class E.
8. **High risk areas** includes:
- (a) Working in close proximity to utilities apparatus
 - (b) Working in close proximity to trees
 - (c) Bad ground conditions
 - (d) Bridge abutments
 - (e) 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.