

APPRENTICESHIP STANDARD FOR TUNNELLING OPERATIONS

Occupation	Tunnelling Operative (Construction)
Duration	Typically 12 – 18 months
Level	2

Occupational Profile

The primary role of a tunnelling operative is to assist with the excavation, support and forming of tunnels and shafts in the ground associated with the construction process to provide an underground space, tunnel or shaft; typical tunnelling methods will include hand tunnelling, machine tunnelling, pipejacking, sprayed concrete lining, shaft sinking and drill and blast. The tunnelling operative will be working as part of a larger team on a tunnelling project in which they will have responsibility for performing tasks which will include moving and handling materials, resources and components by mechanically assisted or manual means; loading and unloading, handling and conveying goods and materials to and from the workface. Other duties will include guiding and controlling the movement and operation of plant, machinery and vehicles; preparing, checking and maintaining machinery and equipment in use.

Core Skills

On completion of this apprenticeship, Tunnel Operatives will be able to demonstrate competence in the following:

- apply general workplace health, safety and welfare requirements when undertaking tunnelling activities
- work safely underground, follow safe tunnel entry systems and react appropriately in an emergency following the correct emergency escape procedures
- interpret and work to specifications including Control of Substances Hazardous to Health [COSHH] assessments, construction information and briefings
- plan and undertake work productively
- communicate with others and follow organisational procedures to conform to productive work practices
- supply information on the activities and progress of the work they are undertaking independently and as part of a team
- comply with environmentally responsible work practices and contribute to sustainable practices in tunnelling operations
- follow the technical requirements, at an operative level, associated with the different tunnelling processes and/or methods for one of the following; hand tunnelling, machine tunnelling (loco operator), pipejacking, sprayed concrete lining, shaft sinking and drill and blast, plan and use appropriate technologies associated with the different processes and/or methods
- apply safe working techniques for moving and handling materials, resources and components by mechanically assisted or manual means
- direct, guide and control the movement and operation of tunnelling plant, machinery and vehicles
- off load and load vehicles used in the tunnelling environment
- operate powered units, tools and pedestrian plant, machinery and equipment specific to tunnelling operations (e.g. pumps, generators, compressors, agitators, grouting equipment, segment-handling equipment)
- work individually and as part of a team, to install and remove tunnelling plant, components, machinery and equipment
- install and support the installation of back-up service systems for ventilation, pressurisation, communication, water supply, walkways and materials handling (rail, conveyor and piped)

Core Knowledge

On completion of this apprenticeship, Tunnel Operatives will have core knowledge of:

- the principles of health, safety, welfare and environmentally responsible work practices and how they must be applied in relation to the work, to others and to personal and occupational health
- the different tunnelling processes and/or methods; hand tunnelling, machine tunnelling, pipejacking, sprayed concrete lining, shaft sinking and drill and blast; inherent hazards and associated risks
- modern technologies linked to different tunnelling processes and/or methods
- sustainable practices in tunnelling and the environmental impact associated with tunnelling operations and the different tunnelling methodologies
- the responsibilities under current legislation, (including Health and Safety at Work Act, Provision and Use of Workplace Equipment, Working at Height Regulations, Lifting Operations and Lifting Equipment Regulations, Manual Handling Operations Regulations) and official guidance, (risk assessments,

Core Knowledge

- method statements and manufacturers guidance), to undertake work
- the different products and chemicals used in tunnelling operations, where to obtain the relevant information regarding safe use and disposal and the need to follow COSHH assessments
- how to communicate with others and follow organisational procedures to conform to productive work practices including sustainability
- how to support tunnelling operations including the duties and responsibilities of other members of the tunnelling team
- how to interpret types of information, drawings, method statements, risk assessments, manufacturers' information, briefings, work schedules and specifications particularly when assembling and positioning resources and components including loading and off-loading vehicles
- how building information modelling supports tunnelling operations
- how to direct, guide and control the movement and operation of tunnelling plant, machinery and vehicles
- the safe techniques to move, lift, handle and store tunnelling materials, resources and components
- the specific requirements for conducting lifting operations and how to check associated plant, machinery, lifting accessories and equipment and deal with unserviceable plant, machinery and equipment
- how to comply with quality requirements associated with tunnelling operations
- how to install, operate, maintain and remove tunnelling plant, machinery and equipment
- how to identify excavated soils and soil types and recognise changes in geology while tunnelling
- the principles and practices of working at height and the use of access equipment
- how to react in a tunnelling emergency including self-rescue or escape to a refuge using breathing and re-breathing apparatus
- occupational health risks in the tunnelling environment

Behaviours

- Effective communication:** oral, written, electronic, listening, body language and presentation.
- Respect:** apply equality, diversity and inclusion in dealing with others.
- Team work:** work effectively and safely with others under minimum supervision.
- Independent working:** take responsibility for safe completion of your own work.
- Logical thinking:** use clear and valid reasoning when making decisions to undertake the work instructions.
- Problem Solving:** use generic or improvised methods, in an orderly manner, to find solutions to problems.
- Risk Perception:** be able to make the correct decision regarding risk identification and safe working particularly in the enclosed, underground and tunnel environment.
- Working effectively:** undertake the work in a reliable, safe and productive manner.
- Time management:** use own time effectively to complete the work instructions to schedule.
- Adaptability:** be able to adjust to changes to the work instructions.
- Assertiveness and confidence:** be able to resist pressures to follow unsafe work practices.

Entry Requirements

Employers will set their own entry requirements when selecting candidates.

Qualifications

Candidates will be required to achieve the Level 2 NVQ Diploma in Tunnelling Operations prior to taking the end-point assessment.

Apprentices without Level 1 in English and Mathematics will need to achieve this level and take the test for Level 2 English and Mathematics prior to taking the end-point assessment.

Standard Review Date

This standard will be reviewed after three years.