



# CIVIL ENGINEERING SENIOR TECHNICIAN APPRENTICESHIP STANDARD LEVEL 4

Attract great talent, upskill your teams  
and plan for your future.

Suitable for both new and existing employees.



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# PROGRAMME OVERVIEW

## DURATION

The duration of this apprenticeship is typically 27 months (depending on experience)

## STUDY MODE

- Online with tutor led sessions. One day per week between 9am and 4pm.
- Learners will be required to attend block release at the LSP Head Office in Hull to complete exams and work on practical elements. (Approximately 4 weeks over the duration of the programme)
- There is an End-Point-Assessment for this apprenticeship. This is when the learner will demonstrate they have learnt the required knowledge, skills and behaviours.

## QUALIFICATIONS TO BE AWARDED

- Level 4 Civil Engineering Senior Technician Apprenticeship
- BTEC Level 4 Higher National Certificate in Construction and the Built Environment
- Functional Skills English and maths (if required)

## PROGRESSION OPPORTUNITIES

This apprenticeship aligns with Engineering Council (EngTech) for level 4. The experience gained and responsibility held by the apprentice on completion of the apprenticeship will either wholly or partially satisfy the requirements for registration at this level.

## DELIVERY

At enrolment learners will be within a cohort of students who are all undertaking a Level 4 Apprenticeship in Construction. This includes Digital Engineers, Site Engineers and Senior Technicians working across a wide area of construction activities.

On completion of the generic units undertaken across all disciplines, learners will move to a cohort consisting of students on their specific apprenticeship to complete the specialist units associated with the apprenticeship standard.

Learners will attend virtual workshops to complete the initial units on the prescribed day of attendance. However, to enable exams during the set exam windows and to complete appropriate practical exercises, the workshop days may change. Attending the appropriate block release weeks will also be required.

An official timetable will be finalised at enrolment.

## ON-PROGRAMME LEARNING

EPA

## KNOWLEDGE, SKILLS &amp; BEHAVIOURS

- Civil engineering technical knowledge and techniques
- Data collection analysis and evaluation
- Uses of resources and materials
- Industry standards, policies and regulatory requirements
- Communication
- Design, technology and models in civil engineering information
- Project management and safe systems of work
- Roles, responsibilities and engagement with others
- Personal and professional practice

EPA GATEWAY

END-POINT-ASSESSMENT

0-24 MONTHS

3 MONTHS

# KNOWLEDGE OVERVIEW

A CIVIL ENGINEERING SENIOR TECHNICIAN WILL BE ABLE TO UNDERSTAND AND HAVE KNOWLEDGE OF:

## K1

- Engineering principles, underpinned by relevant scientific, theoretical and technical knowledge and understanding to solve well-defined civil engineering problems.

## K2

- Civil engineering techniques, procedures and methods used for civil engineering systems, to either measure and test, design, install, commission, maintain or operate.

## K3

- Advanced mathematical, statistical and analytical problem-solving tools.

## K4

- Properties of, and selection criteria for materials, components or parts used in civil engineering solutions.

## K5

- Techniques and methods to collect data and technical information, to analyse and evaluate civil engineering problems.

## K6

- Design principles and control processes used in the civil engineering consultancy, construction or manufacturing process, and the common constraints faced.

## K7

- Technical drawings, designs, and models, using analytical and computer-based software packages.

## K8

- Uses and limitations of computational and digital models, including Building Information Modelling (BIM).

## K9

- Industry policies, standards, regulations and legislation, and codes of practice, including Building Safety legislation, Construction (Design and Management) (CDM) or Design Manual for Roads and Bridges (DMRB).

## K10

- Statutory health, safety and welfare policies, procedures, and regulations including the Construction (Design and Management) regulation.

## K11

- Risk assessment and mitigation processes, and their importance in the civil engineering environment.

## K12

- Principles of sustainable development and their impact on the lifecycle of civil engineering solutions, including United Nations Sustainable Development Goals (UNSDG), net-zero carbon emissions, environmental policies and legislations, and the climate change act.

**K13**

- Project management techniques, including quality and information management and assurance systems and continuous improvement processes.

**K14**

- Methods for planning and resourcing civil engineering tasks, and the impact on cost, quality, safety, security, and environment.

**K15**

- Methods of communication and when to use them, using appropriate engineering terminology and conventions.

**K16**

- Roles and responsibilities within the organisation, team dynamics and their own boundaries of authority.

**K17**

- Relationships between key organisations in the civil engineering sector (for example organisations, customers, partners and suppliers).

**K18**

- Equality, diversity and inclusion, its importance and impact on civil engineering solutions.

**K19**

- Ethical principles as applied to civil engineering including the need for the confidentiality and security of data and information.

**K20**

- Methods to maintain professional competence and technical knowledge including initial professional development (IPD) and continuing professional development (CPD).

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# SKILLS OVERVIEW

A CIVIL ENGINEERING SENIOR TECHNICIAN WILL BE ABLE TO DEMONSTRATE THE FOLLOWING SKILLS WITHIN THE CONTEXT OF THE ORGANISATION:

## S1

- Apply engineering principles, using relevant scientific, theoretical and technical know-how to solve well-defined civil engineering problems.

## S2

- Apply civil engineering techniques, procedures and methods, and review the results, when measuring and testing, designing, installing, commissioning, maintaining or operating civil engineering systems.

## S3

- Employ a range of advanced mathematical, statistical and data interpretation tools, using analytical and computational methods to interpret and solve civil engineering problems.

## S4

- Interpret and compare performance information to choose compliant materials, components or parts.

## S5

- Select and use technical literature and other sources of information and data to address well-defined civil engineering problems.

## S6

- Produce and interpret civil engineering technical drawings, designs, and models, using analytical and computer-based software packages, recognising the limitations of the software used.

## S7

- Produce civil engineering technical solutions in accordance with relevant industry standards, procedures, codes of practice, regulations, and legislation.

**S8**

- Comply with, and encourage others to demonstrate, statutory health, safety and welfare policies, procedures and regulation.

**S9**

- Complete risk assessments to identify, evaluate and mitigate risks.

**S10**

- Apply principles of sustainable development, and assess the impact of these in their work.

**S11**

- Employ project management techniques, measuring and recording progress against civil engineering project plans.

**S12**

- Assess and report on quality using appropriate management and assurance systems and continuous improvement processes.

**S13**

- Identify and use resources, equipment and technology to meet project requirements, including specifications, budget and timescales.

**S14**

- Monitor and manage individual performance, and supervise others, recognising the need to comply with appropriate codes of practice and equality, diversity & inclusion (EDI) requirements.

**S15**

- Communicate using appropriate methods for the audience, using appropriate engineering terminology and conventions.

## S16

- Apply ethical principles to civil engineering projects, including the secure use of data and information.

## S17

- Plan, undertake and review their own professional competence, updating and reviewing their CPD to improve performance.

# BEHAVIOURS OVERVIEW

A CIVIL ENGINEERING SENIOR TECHNICIAN WILL BE ABLE TO DEMONSTRATE THE FOLLOWING BEHAVIOURS:

## BEHAVIOURS

- B1: Works to health, safety and welfare requirements, industry standards, statutory regulation and legislation, policies, and codes of practice, and ensuring others do likewise
- B2: Makes independent decisions when delivering civil engineering projects, whilst knowing their own limitations and when to ask for help or to escalate
- B3: Works individually and as part of a team, being aware of their actions and the impact they may have on others, and demonstrating awareness of diversity and inclusion issues so as to meet the requirement of fairness at work
- B4: Solves problems with attention to detail, accuracy, and diligence, and seeks to continually improve
- B5: Maintains professional and ethical working relationships with internal, external, and other stakeholders
- B6: Takes responsibility for their own professional development, seeking opportunities to enhance their knowledge, skills, and experience, and support others when requested



# BTEC LEVEL 4 NATIONAL CERTIFICATE IN CONSTRUCTION AND THE BUILT ENVIRONMENT

## MANDATORY UNITS

There are seven mandatory units, four internal and three externals. Learners must complete and achieve at near Pass grade or above in all mandatory external units.

### UNIT 1: INDIVIDUAL PROJECT (PEARSON-SET)

The aim of this unit is to support students in using and applying the knowledge and skills they have developed through other areas of their studies to complete and present an individual project. In addition, this unit will provide students with key study skills that will support them in further study. Students will be able to identify, define, plan, develop and execute a successful project by working through a clear process. They will develop a project brief; outlining a problem that requires a solution, as well as a project specification, the specific requirements of which the final outcome must meet. They will research the problem, undertaking a feasibility study, and consider a range of potential solutions using critical analysis and evaluation techniques to test, select and contextualise their preferred solution. Students will provide a work and time management plan, keeping a diary of all activities, reflecting on their process and their learning throughout the project.

This unit is assessed through 1 project assignment including a presentation.

This unit is delivered over a 1 week teams meeting plus a further 2 week block.

### UNIT 2: CONSTRUCTION TECHNOLOGY

This unit will introduce the different technological concepts used to enable the construction of building elements; from substructure to completion, by understanding the different functional characteristics and design considerations to be borne in mind when selecting the most suitable technological solution. Topics included in this unit are substructure, superstructure, finishes, building services and infrastructure components. On successful completion of this unit a student will be able to analyse scenarios and select the most appropriate construction technology solution.

This unit is assessed through 1 project assignment.

This unit is delivered remotely over a 9 week period.

### UNIT 3: SCIENCE AND MATERIALS

This unit aims to support students to make material choices to achieve the desired outcomes of a brief. This is approached from the perspective of materials being fit for purpose; as defined by testing standards and properties, but also by consideration of the environmental impact and sustainability. Awareness of Health & Safety is considered alongside the need to meet legislative requirements. The topics covered in this unit include: Health & Safety; storage and use of materials; handling, and problems associated with misuse and unprotected use; environmental and sustainable consideration in material choices; and human comfort performance parameters. Material choice is developed through the understanding of testing procedures to establish conformity to standards and define performance properties. The performance of materials to satisfy regulations and provide appropriate comfort levels is addressed through design and calculations.

This unit is delivered remotely over a 4 week period. Plus an additional 1 week block for the practical elements of the unit.

### UNIT 4: CONSTRUCTION PRACTICE AND MANAGEMENT

The aim of this unit is to develop and provide students with a holistic understanding of construction practice and management processes. Students will investigate and research the modern construction industry, both from the practical skills embedded within the industry through to its linkage with development on-site and the connection with construction management; including roles within the industry. The unit compares and investigates small, medium and large construction companies within the market place and how construction processes, for development, have evolved. Students will also explore how Health & Safety has evolved within the industry, including how the major stakeholders, from companies to site operatives, have embedded Health & Safety into their preferred areas of development and careers. In addition, students will explore Building Information Modelling and how it fits into construction processes/sequences ranging from domestic to large-scale and design and build projects.

This unit is delivered remotely over a 9 week period.

## UNIT 5: LEGAL AND STATUTORY RESPONSIBILITIES IN CONSTRUCTION

This unit will introduce the different areas of law that are relevant to the construction industry throughout the development process. This includes applying for planning approval to undertake construction activities and using building control regulations to evaluate building design and alterations at the preconstruction stage. The unit will explore the laws of occupiers' liability, trespass and nuisance to manage construction activities on-site, and the legal aspects of the sale and leasing process involved in the disposal of buildings; using the law of contract and land law. Topics included in this unit are: planning law, building control regulations, insurance, the law of tort and the law of contract and land law.

This unit is delivered remotely over a 9 week period.

## UNIT 6: CONSTRUCTION INFORMATION (DRAWING, DETAILING, SPECIFICATION)

Through this unit students will develop their awareness of different types of construction information and their uses in the process. Students will engage in the production, reading and editing of construction information, in order to understand how this information informs different stages of the process. Using industry standard tools and systems, students will consider the ways that information may be shared and, through this, the value of collaboration in the information process. Topics included in this unit are: construction drawing, detailing, Computer Aided Design (CAD), Building Information Modelling (BIM), schedules (door, window, hardware, etc.), specifications, schedules of work, bills of quantities and information distribution and collaboration.

This unit is delivered remotely over a 9 week period.

## UNIT 18: CIVIL ENGINEERING TECHNOLOGY

This unit explores the role of professional civil engineers, their essential involvement in the construction and maintenance of infrastructure, and the key technologies they apply. The technologies and processes of civil engineering, in the development of highways, bridges, drainage systems, substructure and superstructure, are crucial to support contemporary societies. Topics included in this unit are: earthwork activities, temporary and permanent dewatering procedures, methods and techniques used to create substructures, highways and superstructures and the common hazards, technical problems and solutions associated with modern civil engineering activities.

This unit is delivered remotely over a 9 week period.

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# BTEC LEVEL 4 NATIONAL CERTIFICATE IN CONSTRUCTION AND THE BUILT ENVIRONMENT

## SPECIALIST UNITS

There is one specialist unit specific to this apprenticeship standard. Learners must complete and achieve at near Pass grade or above in this unit.

### UNIT 7: SURVEYING, MEASURING AND SETTING-OUT

This unit explores the techniques used to set up controls and conduct topographic surveys. It also covers communication of results and methods of Setting-out structures. On successful completion of this unit students will be able to set up and assess the accuracy of control points. From these or any other control points the students will be able to complete a topographic survey or set out a structure. The students will also be able analyse errors in Setting-out and surveying.

This unit is delivered remotely over a 4 week period. Plus, an additional 1 week block for the practical elements of the unit.

## EPA GATEWAY

### END-POINT-ASSESSMENT GATEWAY READINESS

The EPA will be triggered by the following events:

- the minimum time duration allocated to the Standard has been met;
- judgement of readiness to go beyond the gateway is the decision of the Employer based on completion of all on-programme requirements.
- the apprentice believes they are ready to submit, to the EPAO, a selection of exemplary evidence, in their portfolio, which fulfil the knowledge, skills and behavioural practice in relation to the Standard.
- the employer to confirm that the portfolio is ready to submit to the EPAO
- the EPAO confirms that the portfolio has been received
- successful completion of English and maths: a minimum Level 2 qualification in English and mathematics and completion of a Level 4 qualification in Construction and Built Environment are required for this apprenticeship and must be achieved prior to the End-point Assessment (EPA), and confirmed by the employer.

# END-POINT-ASSESSMENT

## END-POINT-ASSESSMENT METHODS

The end-point-assessment consists of two assessment methods:

1. Technical project report and presentation with questioning
2. Professional discussion underpinned by a portfolio

## TECHNICAL PROJECT REPORT WITH QUESTIONING

A project involves the apprentice completing a significant and defined piece of work that has a real business application and benefit. The project must start after the apprentice has gone through the gateway.

The technical project report and presentation with questioning must be structured to give the apprentice the opportunity to demonstrate the KSBs mapped to this EPA method to the highest available grade.

The project must meet the needs of the employer's business and be relevant to the apprentice's occupation and apprenticeship. The EPAO must confirm that it provides the apprentice with the opportunity to demonstrate the KSBs mapped to this EPA method to the highest available grade. The EPAO must refer to the grading descriptors to ensure that projects are pitched appropriately.

This EPA method includes 2 component(s):

- Project with a project output
- Presentation with questions and answers

The project and any components must be assessed holistically by the independent assessor when they are deciding the grade for this EPA method.

Apprentices must complete a project which may be based on any of the following:

- A Specific Problem
- A Recurring Issue
- An Idea Or Opportunity

The EPAO must provide detailed specifications with what must be included in the project to allow an apprentice to evidence the KSBs mapped to the EPA method to the highest available grade.

The project output must be in the form of a report.

## PROFESSIONAL DISCUSSION

In the professional discussion, an independent assessor and apprentice have a formal two-way conversation. It gives the apprentice the opportunity to demonstrate their competency across the KSBs as shown in the mapping.

The professional discussion is a valid method to assess those KSBs that are not likely to occur in the technical project report. Civil engineering senior technicians will be expected to be able to discuss their portfolio, where evidence and results of work-based tasks or projects carried out as part of their apprenticeship, can be used to underpin assessment in a formal setting and where apprentices' will be able to explain in detail their work.

The professional discussion must be structured to give the apprentice the opportunity to demonstrate the KSBs mapped to this EPA method to the highest available grade.

The purpose of the independent assessor's questions will be to:

- Clarify any questions the independent assessors have from their review of the portfolio
- Explore aspects of the work, including how it was carried out, in more detail
- Require the apprentice to draw on their portfolio evidence to demonstrate the KSBs

The EPAO must give an apprentice 3 weeks notice of the professional discussion. The independent assessor must have at least 3 week(s) to review the supporting documentation.

Apprentices must have access to their portfolio of evidence during the professional discussion.

Apprentices can refer to and illustrate their answers with evidence from their portfolio of evidence, however the portfolio of evidence is not directly assessed.

The professional discussion must last for 40 minutes. The independent assessor can increase the time of the professional discussion by up to 10%. This time is to allow the apprentice to respond to a question if necessary.

## GRADING AND DETERMINATION

The EPA methods contribute equally to the overall EPA grade.

Performance in the EPA will determine the apprenticeship grade of:

- Fail
- Pass
- Distinction

Independent assessors must individually grade the: technical project report and presentation with questioning and professional discussion underpinned by a portfolio according to the requirements set out in this EPA plan.

EPAOs must combine the individual assessment method grades to determine the overall EPA grade.

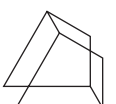
Apprentices who fail one or more assessment method will be awarded an overall EPA fail.

Apprentices must achieve at least a pass in all the EPA methods to get an overall pass. In order to achieve an overall EPA 'distinction', apprentices must achieve a distinction in both assessment methods.

## COSTS

This programme costs £11,000 and is covered through a companies Apprenticeship Levy.

If the employer does not pay into the levy they will only pay £550 if they have more than 50 employees or if the apprentice is aged 19+. Employers with less than 50 employees receive full funding if the apprentice is aged 16-18.



## INCENTIVES

### INCENTIVE FOR HIRING A YOUNG APPRENTICE

Employers will receive £1,000 for hiring an apprentice aged 16-18 or under 25 with an education, health and care (EHC) plan or who has been in the care of their local authority.

### CONSTRUCTION APPRENTICESHIP GRANTS (CITB)

Employers are eligible to apply for the [CITB Apprenticeships](#) grant which covers:

- Off-the-job attendance with an approved Apprenticeship Provider - £2,500 per year
- Achievement of an Apprenticeship Standard - £3,500 on successful completion of the apprenticeship

### TRAVEL TO TRAIN (CITB)

The Travel to Train grant is available to all grant-eligible employers with apprentices in training on or after 1 April 2021. CITB will reimburse 80% of accommodation costs for apprentices where overnight stays and travel to/from a hotel are required to attend block release.





# MORE INFORMATION

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