

Standard L3: Civil engineering technician

UOS reference number

ST0091_V1.1

Trailblazer reference number

TB0058

Title of occupation

Civil engineering technician

Trailblazer name

Civil Engineering

Core and options

No

Resubmission

No

Level of occupation

Level 3

Route

Construction

Typical duration of apprenticeship

36 months

Target date for approval

No target date

Occupational profile

Summary

This occupation is found in the construction and engineering sectors, with civil engineering technicians employed in a variety of organisation types and sizes. Civil engineering technicians will typically work for:

- Clients, for whom construction projects are carried out, with technicians supporting with the preparation and production of civil engineering information, project plans and resourcing, for consultants and contractors
- Consultancies, typically appointed by the client, to design, prepare or modify civil engineering designs, with technicians supporting the planning, design, coordination, management and monitoring of civil engineering projects, often in the pre-build phase, providing information for the client and contractor
- Contractors, typically appointed by the client, to coordinate the construction phase of a

civil engineering project, with technicians supporting the planning, management, monitoring and coordination of the build phase of civil engineering projects, complying with and providing information on the directions provided by the client or consultant

Civil engineering technicians support in the design, creation and connecting up of the world around us, making the villages, towns and cities work for the people that live in them, and are playing an ever increasing role in safeguarding and improving the environment into our future.

The broad purpose of the occupation is to support the planning, design, building, management, maintenance or dismantling of the built environment (such as buildings, structures, parks and public spaces, schools, offices, museums, hospitals) and infrastructure, such as transportation (road, rail, bridges, tunnels, ports and airports), water and waste management, marine and coastal engineering (irrigation systems, sustainable drainage systems (SuDS), flood, river and coastal defences), water and power supplies (utilities, hydropower, power stations, nuclear plants, on and offshore wind farms).

Civil engineering technicians assist in the preparation and production of plans, designs and documentation to relevant codes of practice and industry standards, such as Construction Design and Management (CDM) or the Design Manual for Roads and Bridges (DMRB), to statutory and regulatory requirements, and in compliance with health, safety and wellbeing requirements.

They will use and apply engineering principles and techniques, carry out calculations and data analysis, prepare and produce sketches, diagrams, and models, to support technical problem solving and in the delivery of civil engineering designs and technical solutions. They use a range of tools and techniques, including digital techniques (such as CAD or BIM) to aid the visualisation, communication, measurement and assessment of civil engineering projects.

Civil engineering technicians will also be challenged to consider how they will support improvements to, or mitigate the effects of their work, on the environment, with civil engineering projects having to respond to United Nations Sustainable Development Goals, climate change acts, and environmental policies and legislation, including net-zero emissions, and an increasing drive for sustainability.

Civil engineering technicians will contribute to the planning, design, programming, and delivery of engineering activities to agreed timescales and budgets, using quality systems and risk assessment procedures to monitor and manage projects and their risks. Technicians may also assist in site inspections or surveys, report progress against project plans, or check specified technical aspects of site activities.

In their daily work, employees interact with their line manager, typically a senior civil engineer or site manager, to confirm programmes of work and agree individual responsibilities, which in turn support the delivery of wider plans across civil engineering teams; these teams could include engineers across a range of disciplines, from various employer types (e.g. clients, consultancies, contractors), and project managers, where their

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collective outputs will be used to produce civil engineering solutions that are fit for purpose, safe, secure, environmentally sustainable, and meet customer and industry specifications.

Technicians shall also have a mentor who will support them in the development of their career plans, maintenance of their personal and professional development, and in some cases, progression into more advanced roles, such as civil engineers or technical specialists.

Technicians may also be exposed to other professional disciplines, such as surveyors, environmental practitioners, architects, planners or legal teams. As well as liaising with internal colleagues across a variety of multidisciplinary areas, some technicians will also be responsible for working with customers, suppliers, and stakeholders or with representatives from appropriate regulatory bodies.

Civil engineering technicians, depending on their employer, will spend their time in an office environment, working on site, working remotely or a combination of these. There is also potential for visiting customers or suppliers.

Employees are responsible for assisting in the delivery of accurate and quality civil engineering solutions, ensuring they are within agreed time and resource limits, compliant with industry and regulatory standards, such as the Common Safety Method (CSM), and to specification. Civil engineering technicians must also comply with health and safety regulations, welfare, wellbeing, and environmental and sustainability policies. They will typically report to an engineer or project manager, normally as part of a cross functional team, the size of this team and responsibilities varying with the scope of the project and size of the employer.

Technicians are able to use their own judgement when undertaking the occupational duties and applying their technical knowledge, skills and behaviours in a range of contexts and environments. They also have a responsibility to plan and organise their own work and contribute to the management of projects using a variety of business processes, procedures, and methods of working. They are also responsible for their own continuing professional development and recognising their own obligations to society.

Typical job titles

['Civil Engineering Technician', 'Engineering Technician', 'Assistant Technician', 'Design Technician', 'Construction Technician', 'Highways Technician', 'Site Technician', 'Junior Site Technician', 'Civil/Structural Technician', 'Civil Infrastructure Technician', 'Structural Technician']

Duty	Knowledge	Skills	Behaviours
D1: Contribute to civil engineering solutions by preparing, producing and modifying engineering diagrams, drawings or models, documents and engineering specifications, to industry codes, regulations, standards, and procedures	K1, K2, K6	S1, S2, S5	B1
D2: Assist in the development of civil engineering solutions, by collecting and interpreting technical information and data, carrying out calculations and analysing the outputs	K1, K3	S1, S2	B2, B3
D3: Utilise digital technologies and techniques, such as computer aided design (cad) or building information modelling (bim), to prepare, produce and present civil engineering designs and visualisations in accordance with approved design procedures and systems	K4, K6	S3, S5	B1, B2
D4: Ensure compliance with health, safety & welfare requirements, apply safe systems of work, such as common safety methods (csm), and identify hazards and mitigate risks in their own work	K5	S4	B1
D5: Comply with relevant legislation, regulations, policies, strategies, and technical guidance, such as such as construction design and management (cdm) or design manual for roads and bridges (dmrb), ensuring they are interpreted correctly and communicated appropriately	K6	S5	B1
D6: Comply with environmental policies and practice sustainable principles, supporting the civil engineering projects they work on to assist in the achievement of united nations sustainable development goals and net-zero carbon emissions	K7	S6	B1
D7: Use the quality management and assurance systems available to plan, manage, monitor and contribute to the delivery and implementation of civil engineering projects to specification, budget and agreed targets, respecting the need for the security of data and information	K9, K11	S7, S9, S11	B4
D8: Communicate and liaise effectively with own project team, customers, internal or external stakeholders	K10	S10	B4
D9: Work reliably and effectively independently and as a member of a team, taking responsibility for their own work	K9	—	B2, B4, B5
D10: Ensure compliance with equality, diversity & inclusion (edi) and ethical standards	K8, K11	S8, S11	—
D11: Maintain own learning and skills development by carrying out continuing professional development in line with professional codes of conduct and/or industry specifications and obligations	K12	S12	B6

Knowledge

K1: Appropriate engineering principles, underpinned by appropriate mathematical, scientific and technical knowledge and understanding, relating to civil engineering and the construction process

K2: Appropriate civil engineering techniques and methods used to design, build and maintain infrastructure and buildings, the standards, contracts and specifications used, and their impact on the construction process

K3: Key principles, techniques and methods of data collection, analysis and evaluation used in delivering civil engineering models, designs, and technical solutions

K4: Technical drawings, modelling and designs, using computer-based software packages, such as Computer Aided Design (CAD) or Building Information Modelling (BIM), and their use in the sector

K5: Statutory health, safety and welfare policies, procedures, and regulations, including risk management, in relation to civil engineering project delivery

K6: Industry policies, standards, and regulations, such as Common Safety Method (CSM), Construction Design and Management (CDM) or Design Manual for Roads and Bridges (DMRB), that must be adhered to in the civil engineering environment

K7: Environmental policies and the principles of sustainable development, including those relating to the United Nations Sustainable Development Goals (SDG) and net-zero carbon emissions, and their impact on the civil engineering projects

K8: Understanding of equality, diversity and inclusion, and its impact on civil engineering solutions

K9: Project management, quality management and assurance systems and continuous improvement as applied to civil engineering

K10: Methods of communication and when to use them, including how to write technical reports and using appropriate engineering terminology and conventions

K11: Ethical principles as applied to civil engineering and the security of data and information

K12: The values and standards by which they maintain their personal, professional and technical knowledge and skills through initial professional development (IPD) and continuing professional development (CPD)

Skills

S1: Apply appropriate civil engineering principles, techniques, and methods, including mathematical, scientific, and technical know-how, to civil engineering and the construction process

S2: Apply key principles, techniques and methods of data collection, analysis, and evaluation to support the delivery of civil engineering models, designs, and technical solutions

S3: Operate appropriate software packages for data gathering and analysis, such as Computer Aided Design (CAD) or Building Information Modelling (BIM), to create technical drawings, models and designs using relevant conventions and engineering terminology

S4: Apply statutory health, safety and welfare policies, procedures, and regulations in the civil

engineering environment, using risk management processes, procedures, and documentation

S5: Support and contribute to the production or modification of civil engineering technical solutions in accordance with relevant industry standards, regulations, and procedures

S6: Apply environmental policies and sustainable principles in civil engineering projects, recognising the need to reduce carbon use, lower emissions and plan for wider sustainability

S7: Plan, carry out and manage own work in line with quality assurance, recognising the wider implications to customer needs, and within cost and resource limitations

S8: Consider equality, diversity and inclusion in the delivery of civil engineering projects

S9: Apply document control processes and procedures using the approved processes, maintaining quality compliance when creating or amending engineering documentation

S10: Communicate using appropriate methods for the audience, and incorporate relevant and appropriate terms, standards, and data

S11: Apply ethical principles to civil engineering projects, including the secure use of data and information

S12: Plan, undertake and review their own professional competence, regularly updating and reviewing their CPD to improve performance

Behaviours

B1: Comply with health, safety and welfare requirements, industry standards, statutory regulations, and policies

B2: Work independently, operating in a systematic, proactive, and transparent way, using resources effectively to complete tasks, knowing their limitations and when to ask for support or escalate

B3: Applies a structured approach to problem solving with attention to detail, accuracy, and diligence

B4: Is motivated when collaborating in teams, offering sensible challenge, reflects on and provides constructive feedback and contributes to discussions

B5: Maintains professional and ethical working relationships with internal, external, and connected stakeholders

B6: Takes responsibility for their own professional development, seeking opportunities to enhance their knowledge, skills, and experience

Duty	OTJ days
D1: Contribute to civil engineering solutions by preparing, producing and modifying engineering diagrams, drawings or models, documents and engineering specifications, to industry codes, regulations, standards, and procedures	0
D2: Assist in the development of civil engineering solutions, by collecting and interpreting technical information and data, carrying out calculations and analysing the outputs	0
D3: Utilise digital technologies and techniques, such as computer aided design (cad) or building information modelling (bim), to prepare, produce and present civil engineering designs and visualisations in accordance with approved design procedures and systems	0
D4: Ensure compliance with health, safety & welfare requirements, apply safe systems of work, such as common safety methods (csm), and identify hazards and mitigate risks in their own work	0
D5: Comply with relevant legislation, regulations, policies, strategies, and technical guidance, such as such as construction design and management (cdm) or design manual for roads and bridges (dmrb), ensuring they are interpreted correctly and communicated appropriately	0
D6: Comply with environmental policies and practice sustainable principles, supporting the civil engineering projects they work on to assist in the achievement of united nations sustainable development goals and net-zero carbon emissions	0
D7: Use the quality management and assurance systems available to plan, manage, monitor and contribute to the delivery and implementation of civil engineering projects to specification, budget and agreed targets, respecting the need for the security of data and information	0
D8: Communicate and liaise effectively with own project team, customers, internal or external stakeholders	0
D9: Work reliably and effectively independently and as a member of a team, taking responsibility for their own work	0
D10: Ensure compliance with equality, diversity & inclusion (edi) and ethical standards	0
D11: Maintain own learning and skills development by carrying out continuing professional development in line with professional codes of conduct and/or industry specifications and obligations	0

Qualification	Basis for mandate
<p>Pearson Edexcel Level 3 Diploma in Civil Engineering for Technicians (Institution of Civil Engineers)</p> <p>Level: 3</p> <p>Type: Type 1 Qualification that accredits occupational competence</p> <p>Ofqual regulated: Yes</p> <p>Awarding bodies</p>	<p>Professional Body Requirement</p>
<p>Pearson BTEC Level 3 National Diploma in Civil Engineering (603/1217/8)</p> <p>Level: 3</p> <p>Type: Type 1 Qualification that accredits occupational competence</p> <p>Ofqual regulated: Yes</p> <p>Awarding bodies</p>	<p>Professional Body Requirement</p>

Entry requirements

Individual employers will set the selection criteria for their Apprenticeships. Apprenticeship candidates will typically have at least 5 GCSEs at Grades A*-C / 9-4 including Maths (Grade B / 5 or 6), English and Science or their equivalent.

Professional recognition

Professional body	Level	Full or partial recognition	What further requirements are needed for full recognition
Engineering Technician	Institution of Structural Engineers (IStructE)	Full	—
Engineering Technician	Institute of Highways Engineers (IHE)	Full	—
Engineering Technician	Chartered Institute of Highways & Transportation (CIHT)	Full	—
Engineering Technician	Institute of Civil Engineers (ICE)	Full	—

Progression routes

ST0417: L6: Civil engineer (degree)

Progression routes comments

N/A

Notice period

No notice period specified

Trailblazer membership details

Chair

Kim Blackmore (Arup)

Facilitator

Caroline Sudworth (Technical Apprenticeship Consortium)

Employer members

Name	Employer
Andrew Nicholson	WSP
Christine Crossley	Atkins Global
Chris Weedon	CH2M
Craig Beresford	Waterman Group
Emily Mahoney	WSP
Erol Erturan	Adept
Graham Nicholson	Tony Gee
Iain Maiden	Jacobs
Jane Saynor	Clancy Group
Jason Alcolm Eddleston	MWH Global
Jason Murphy	Odyssey
John Lows	TSP
Karen Britton	Aecom
Mark Griffin	Mott MacDonald
Martin Roach	Transport for London
Matthew Curtis	WSP
Mike Green	CH2M
Paul Dilley	Mott MacDonald
Paul Oregan	Tideway
Peter Desouza	Peter Brett
Steve Wooler	BWB Consulting
Victoria Hynes	Kier
Will House	Arup

Other members

Additional information (continued)

Name	Organisation
Brian Duffy	
Eion Coakley	
Felicite Ruddock	
Jamie Stevenson	
John Savage	
Jonathan Haynes	
Julie Palmer	
Mukesh Limbachiya	
Rosa Wells	