ice

Shaping The World: Careers in Civil Engineering

ice-futures.com

What is civil engineering?

Civil engineers shape our world and transform lives by designing and building **safe structures** and providing essential **life-giving services**. They also tackle global environmental problems like **climate change** and **pollution** and take part in **disaster relief** efforts.

Civil engineers are problem-solvers.

New technologies are an important part of working as a civil engineer. For example:

- Computer Aided Design (CAD)
- Augmented and virtual reality (AR and VR)
- Drones and satellite technology to measure and photograph structures
- Designing and testing new materials e.g. self-healing concrete

The High Line

This innovative park in the heart of New York is a haven for wildlife and city dwellers. **ice.org.uk/high-line**

ArtScience Museum

A stunning modern and eco-friendly building which houses cutting-edge exhibitions. **ice.org.uk/artscience-museum**

Kingfisher and Bullet Train

The front of the high-speed Japanese Shinkansen train was redesigned to mimic the shape of a Kingfisher's aerodynamic beak.

Virtual Reality (VR)

Civil engineers use virtual reality to assess their designs for flaws and potential improvements.

Forth Rail Bridge

This iconic bridge is one of three vital crossings across the river Forth built between 1890 and 2017. **ice.org.uk/forth-crossings**

Burj Khalifa

The tallest building in the world, it helped to move Dubai's economy away from being reliant on oil to tourism. **ice.org.uk/burj-khalifa**

Could you be a civil engineer?

If you like **designing** or **building**, **solving problems** or **improving people's lives** then you'd enjoy a career in civil engineering!

To become a civil engineer you'll need to choose the right subjects at school or college. Check the requirements for any courses you're interested in, as they can vary a lot.

Maths at A level or Scottish Highers is needed to get onto nearly all civil engineering degree courses. A good grade at GCSE or equivalent will help you secure an apprenticeship.

Physics at A level or Scottish Highers is also asked for by many universities.

Other useful subjects for civil engineering include Geography, Art and Design, Design Technology, Computing, English and some specialist courses such as the Design Engineer Construct! programme.

Top career facts

Salary

The average start salary for UK civil engineers is around £30,000, rising to around £70,000 for experienced engineers and over £100,000 for those at the top of the profession. Professional qualification with an institution like ICE can help you earn more.

International

Civil engineers' skills are also in demand across the world and many get the chance to travel to and work in exciting places.

Opportunities

Studying to become a civil engineer can open doors to other careers: it keeps your options open!

Wellbeing

Civil engineering regularly features in polls of the happiest professions!

Development

It's a career which has clear routes through study and qualification.

Status

Qualified engineers have a high status similar to doctors and lawyers.

Employment

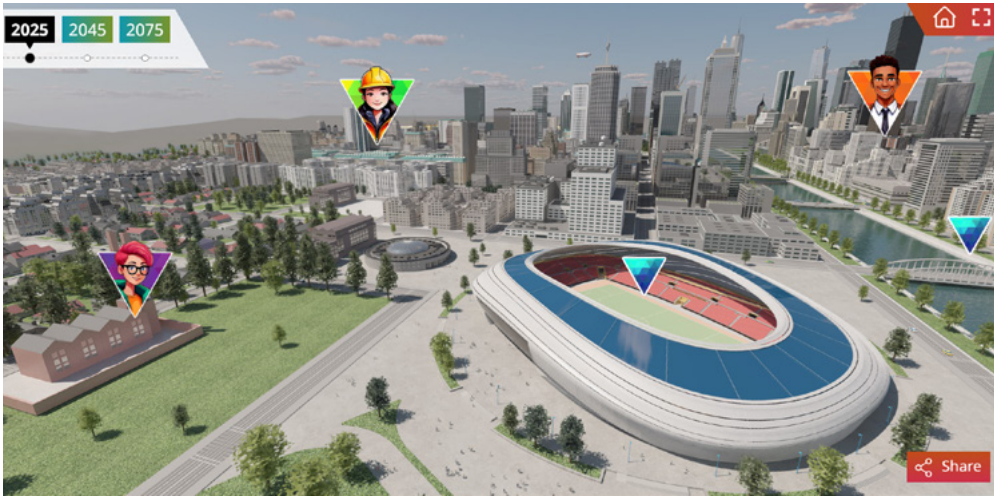
The UK needs lots more civil engineers in the near future.

Find out more:

ice.org.uk/education-faqs

ICE Futures – play your way into engineering

Ready for an adventure? ICE Futures isn't just a website...



Time-travel from the present, to 50 years into the future with civil engineers Mae, Omar and Robyn.

Unlock challenges and learn as you go how civil engineers build history, shape today's world, and design tomorrow's cities.

Every level reveals real-world engineering examples to spark your imagination as well as careers resources and videos of professionals in the industry.

Want to see if you've got what it takes to build the future? Engineering has never been this fun!

Jump in and start your journey at

ice-futures.com

Free virtual work experience

Civil Engineers: Shaping The World

Ever wondered how bridges, tunnels, and skyscrapers come to life? The ICE virtual work experience programme is your chance to step into the world of civil engineering, without leaving home!

Over six modules you'll explore real-life projects, gaining insider knowledge about everything from sustainable design to cutting-edge technology. Plus, you'll pick up brilliant career-readiness tips, hear from industry experts and take part in quizzes and activities developing the practical skills that employers love. And even earn a certificate to boost your CV.

Whether you're curious about construction, fascinated by infrastructure, or just love solving problems, this experience will open doors to exciting career paths.

Enrol immediately!
You can start the course straight away!

Age range
This programme is open to anyone aged 14+.

Boost your CV
Get a certificate and skills chart upon completion.

Complete at your own pace
Over 8 hours worth of free content.

Join the ICE Virtual Work Experience at

ice.springpod.com

Real-life civil engineers: shaping the world

Ellie Thomas

Assistant civil engineer, AtkinsRéalis

I wanted my work to be meaningful and to help improve lives.

Studying geography at school, I learned about how civil engineers help to connect communities, provide access to safe drinking water and contribute to a sustainable future.

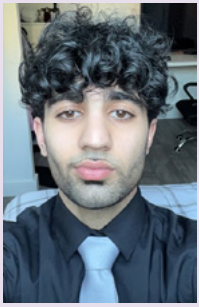
This really inspired me to pursue a career in civil engineering.

It's inspiring seeing how passionate civil engineers are about their work and how willing people are to help others develop!

I've had the opportunity to learn and get advice from lots of great engineers that will benefit my career.

ice.org.uk/ellie-thomas

Yoosuf Khan



Civil engineering degree apprentice, National Highways

When I was younger, I held a lot of self-doubt around my future.

I believed that an individual like me from a diverse background did not belong in a STEM career.

However, since finding civil engineering, I've discovered that it's a career that's open to all, regardless of your background.

Since starting my apprenticeship, I have become a much more confident and sociable individual!

ice.org.uk/yoosuf-khan

Civil engineers can be designers, technicians, managers, researchers or consultants and work in a whole range of specialisms – like tunnelling, structures or environmental.

Vanessa Quansah

Head of construction engineering, Bovis Construction

I actually wanted to be a hairdresser, and my mum asked me to just think about all the options available to me.

Not long after that chat, I had a chance discussion with another student in high school that changed my mind.

She wanted to go to Oxford to study civil engineering. I didn't know what it was, so I looked it up and was instantly interested. The rest is history.

On top of that I still love to do hair and experiment a lot, so I get the best of both worlds!

ice.org.uk/vanessa-quansah

Jacob Bates

Engineering apprentice at JBA Consulting

My interest in civil engineering was sparked as a kid when I visited the London 2012 Olympic Games stadium.

I was amazed by how easily one giant structure could turn thousands of individuals into a vast sea of noise - I was in awe of the scale and complexity of it all!

I would recommend a career in civil or infrastructure engineering because it offers the chance to shape the world around you in meaningful, lasting ways.

ice.org.uk/jacob-bates

How do I become a civil engineer?

Advice for 11-15s

If you're interested in becoming a civil engineer, start by focusing on subjects that build strong problem-solving and analytical skills.

Maths and **science**, especially **physics**, are essential because they help you understand forces, materials, and measurements. **Design and technology** can also be useful for learning how things are built and **art** is great for developing your visual communication skills and **creativity**.

Outside of school, try activities that develop **teamwork** and **problem-solving**, such as STEM clubs, coding workshops, or even building projects at home. Explore your interests and you'll discover civil engineering everywhere you look – from the transport you take to the sports stadium your team plays in. Keep asking questions, stay curious, and look for opportunities like work experience or career talks to learn what engineers do.

Explore more: www.ice.org.uk/11-15s

Advice for 16-18s

If you're serious about civil engineering, your next steps matter. Most civil engineers in the UK study for a degree accredited by the Institution of Civil Engineers (ICE), so aim for strong A-levels or equivalents in **maths** and **physics**. Some universities also value subjects like **geography** or **design technology**.

Research **degree courses** early and check entry requirements – many offer integrated masters' programmes or even **degree apprenticeships** that combine work and study.

If university isn't your preferred route, consider a **higher apprenticeship** which provides hands-on experience while earning a qualification. ICE also supports many apprenticeship schemes – integrating a world-leading professional qualification with employer training.

Employers look for practical skills, so summer placements or volunteering on construction projects can give you an edge.

Understanding the different sectors and types in roles in civil engineering could help you when deciding on which degree or apprenticeship to pursue – as some can be more specialised than others – so it's worth looking into which areas excite you most.

Explore more: www.ice.org.uk/16-18s

What next?

For all ICE education resources please visit:
ice.org.uk/education-resources

Take part in our yearly Autumn careers competitions for 14-18s:
ice.org.uk/CityZen

Research our scholarships giving financial awards to study:
ice.org.uk/QUEST

Ask a question or invite an ICE STEM Ambassador to your school or college:
careers@ice.org.uk

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