



Could you be a civil engineer?

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

There are lots of different ways you can start on a career. You can choose to study at university, work and study at the same time, or you might be able to get an apprenticeship with a civil engineering company and be paid to study!



Useful subjects for civil engineering

Maths - all routes into the industry need you to have good basic maths skills but if you want to study at university, a level maths or its equivalent is usually required.

Other really useful subjects for a career in civil engineering are:
Physics (required for some degrees)
Geography
Art and design
Design technology
Computing
English

Find out more:
(up to 14 years) ice.org.uk/education
(14 years+) ice.org.uk/nextsteps

The everything you need to know guide to civil engineering

Financial support to study: QUEST scholarships

You can apply for funding to help you study civil engineering at either university or on a vocational course through the ICE QUEST fund. QUEST Undergraduate Scholarships offer up to £8,000. QUEST Technician Scholarships offer up to £1,500. Find out more: ice.org.uk/quest

Free student membership

When you begin studying civil engineering you can sign up for free student membership of ICE. Find out more or apply: ice.org.uk/students

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What is civil engineering?

Civil engineering is the art of planning and building the infrastructure all around us. In other words: the roads, buildings, wind turbines, bridges, railways, airports, tunnels, flood defences and much much more.

Our world has been shaped by civil engineering – from the amazing roads built by the Romans, to the complex networks of communications cables we use today. Civil engineers make modern life possible.

Civil engineers understand how to design and build really large structures. They use their knowledge and problem-solving skills to make sure:

- Structures are strong and built of the right materials.
- That the ground the structure stands on or goes through (in the case of tunnels), is stable.
- Structures can withstand winds, water and earthquakes.
- That the right people are working on a project and that work is completed to time and budget.

How does civil engineering help us?

Today civil engineers are providing the things we need every day – like clean water, transport and electricity – as well as lots of things we need that you might never have thought of.



Civil engineers save more lives than doctors!

James Newlands created nearly 300 miles of sewer systems in Liverpool from 1847-1869. Before he began, life expectancy in the city was just 19, but by the time he retired, it had more than doubled!

Civil engineers are always improving things and take on responsibility for making our society safer. They have a lot of pride in their work – imagine how it would feel to know that thousands, perhaps millions of people are benefitting from your work!



Healthy, happy and learning
Around the world up to 443 million school days are lost every year because of water-related illnesses and many children die. In countries where civil engineers can provide clean drinking water this doesn't really happen!



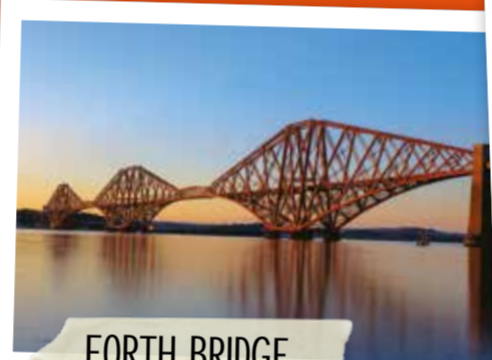
Bridge the gap
Civil engineers working for Bridges to Prosperity build sturdy footbridges to connect remote villages around the world to others. These help people get access to vital healthcare, sell their goods and make money, and prevent deaths from crossing dangerous rivers.

EMIRATES STADIUM



Emirates Stadium image courtesy of Buro Happold.

OFFSHORE WIND FARM



FORTH BRIDGE



BURJ KHALIFA



HIGH LINE, NEW YORK

High Line Image by Eric Soltan courtesy of Buro Happold

Meet some civil engineers

Real-life civil engineers

SUSIE MCALLISTER



Student, MEng Civil & Environmental Engineering, Imperial College London

My course combines the theoretical, creative and practical sides of civil engineering. We've been on field trips, surveying, looking at geology and also done a 'constructionarium' where we built scaled down copies of real-life structures.

I chose to do civil engineering because I want to have a positive impact on people's lives. Global issues like urbanisation and climate change pose some big challenges, which civil engineers are tackling head-on.

After graduation I plan to get chartered, and then I hope to be involved in international projects and see the world!

ERIC S.W. LEUNG



Assistant Resident Engineer, AECOM, Hong Kong

One of my first jobs was the detailed design of the 1.8km Cross Bay Link Bridge in Hong Kong. This landmark structure serves a million residents, myself included, and will significantly improve traffic.

I'm excited about what civil engineering will do in the future to transform lives. We're using smart technology to build sustainable cities and address the biggest global environmental issues – it makes me proud to be part of that.

JOE MUIR



Structural Computer Aided Design (CAD) Technician WSP|Parsons Brinckerhoff

In my job I create and maintain a digital 3D building model. Seeing something you have created on a screen develop into a real life structure is very rewarding.

I did A levels in design technology and I.T. which were a good start in terms of preparing me for studying engineering design. I also did two work experience placements. However, looking back I would have picked maths and physics, as they would have given me a greater knowledge base. I'm doing an HNC now and it's great to study and earn a salary at the same time. I've also got the option to do a degree to become a professionally qualified engineer in the future.

AYO SOKALE



Graduate Civil Engineer, The Environment Agency

I got interested in engineering as a child when I saw how engineers had transformed the lives of a community in Nigeria.

One of the best things about being a civil engineer is the variety. Some days I'm in the office writing a business case, or organising planning and the next I'll be on-site speaking with contractors and surveying.

My favourite part of the job is helping people - for example, protecting families from flooding.

JENNY GILES



Senior Civil Engineer, Geomarine Guernsey

I loved art and drama at school, but also science and maths. When I found civil engineering I realised that I could combine my love of arts and science – using my creativity to solve problems and make things that have a real impact on society.

Part of my job is to look after coastal defences. I've designed and fixed lots of seawalls and I've even repaired a boat landing to a lighthouse 3km offshore. I love the challenge of working with the unpredictable conditions, trying to calculate the forces that the wind and waves may exert on the structures.

Top career facts

Civil engineers regularly feature in polls of the top happiest jobs! **

Qualified engineers have a high status similar to doctors and lawyers

The average (mean) starting salary for UK civil engineers in 2014/15 was £25,885***, and the general average salary for members of the Institution of Civil Engineers in 2013 was £49,793, while those at the top of the profession earn over £100,000

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

The UK needs lots more civil engineers in the near future

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

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

** <https://www.theguardian.com/money/2015/apr/07/going-to-work-with-a-smile-on-your-face>
*** Engineering UK Report 2017, table 8.14, page 166

