

Compact career guide to civil engineering

Are you ready to build a better world?

ice
Institution of Civil Engineers



Build a better world...

Become a civil engineer



Why civil engineering?

Civil engineering is an interesting, rewarding, diverse career, offering the chance to work on all manner of projects all over the world, using your expertise and skills to help people and improve society.

Without civil engineering society could not function. Civil engineers build the infrastructure which supports daily life – hospitals, schools, sports stadiums, roads and harbours, railways and airports. They provide us with clean drinking water and protection from the elements.

So what makes a good civil engineer?

Civil engineers mix sound technical ability with management skills to make the judgements necessary to help solve society's problems. They thrive on challenges and are capable of making important decisions which have an impact on budgets and public safety. Civil engineers take pride in their work, and with good reason - as a civil engineer you'll have the satisfaction of knowing that thousands, perhaps millions of people will see and also benefit from what you've created.

ICE

The Institution of Civil Engineers (ICE) is a leading professional qualification body, a globally recognised and respected organisation with over 80,000 members worldwide. ICE can offer you guidance, advice and information about becoming a professionally qualified civil engineer. This guide, produced by ICE, was created to give you an insight into the industry and help you make an informed career choice.





Ross Smith:
Design Engineer,
Ramboll Whitbybird

Make your mark

The opportunity to make your mark on the built environment and the sense of pride in what you have helped create are what draw many to the civil engineering profession.

As a civil engineer you solve problems, you get to be creative and you get a tangible end result. It's an amazing feeling when a project you've been working on is finally complete.

One of the first projects that I worked on was a city academy, which was built in a disadvantaged area. It was fantastic to see the reaction of the pupils and the teachers when they first saw their new school, and the difference it made to their lives.

When a project is finished and you can say 'I helped make that', you get a real sense of pride.

Every project is different and every day is different. I feel like I'm learning and improving all the time and I know that will continue throughout my career.

As a civil engineer I have helped change the face of cities and the lives of the people who live there for the better – not many other professions can say that.



Jay Mistry:
Group Leader,
Atkins Rail



I've been interested in engineering since I was little – I was always a dab hand with Lego.

I chose to go into civil engineering as the end results are so impressive. The impact civil engineers have made on society is evident everywhere.

Civil engineering has given me the opportunity to travel. After I became chartered I worked in Dubai and I'm planning to go abroad again soon, maybe to Australia.

Civil engineering gives you an enormous sense of pride and achievement. There is no better motivation than seeing something you have designed being built and knowing that society will benefit from it and that everyone will see it.

I am always really proud when I tell people what I do. I can't think of any other career which gives you quite the same sense of satisfaction.



International opportunities

Civil engineering offers unparalleled opportunities to work abroad. As a civil engineer your skills are in demand all over the world. When you become professionally qualified you will be able to enter the international workplace and work on a wide range of projects across the globe.

Helping the developing world

Civil engineers are needed after earthquakes, during droughts and at times of war to help the local population rebuild or maintain their communities. The infrastructure problems presented by the developing world are among the most challenging the civil engineering sector faces. The help civil engineers can offer is invaluable.

If you have a real sense of adventure and a commitment to using your skills to help disaster and relief efforts worldwide then get in touch with RedR.

RedR is a charity which helps in times of disaster by providing aid workers with the skills they need to make a difference. RedR runs UK and international training programmes, has a members' network and recruits aid workers for disaster areas. It also provides support for relief workers out in the field.

To become a RedR member you need to have practical experience of disaster relief. But if you don't yet have the necessary skills, RedR runs introductory courses for all those considering doing relief work.

RedR also works together with Engineers Without Borders UK to provide opportunities for young people to gain international work experience on development projects.

redruk www.redr.org.uk
+44 (0) 20 7233 3116

Job satisfaction

Civil engineers have the satisfaction of seeing the tangible results of their hard work, from designing and constructing the infrastructure for the 2012 Olympics to coming up with ways of improving flood defences. The infrastructure which a civil engineer creates can benefit society for many years to come.

This makes for a happy profession. In the most recent Graduate Satisfaction Survey commissioned by the Royal Bank of Scotland, graduate civil engineers were number one in the UK's Top 10 Most Satisfied Graduate Professions.

ICE's 2007 Salary Survey showed that 73% of the civil engineers surveyed were satisfied or very satisfied in their current role.

Ongoing opportunities

Civil engineering is a growing industry. An increasing population and the need for better and more secure infrastructure means more civil engineers are needed.

Civil engineering attracts a broad range of people because it draws on many different artistic and scientific talents. The opportunities and roles within the profession are diverse.

ETB (Engineering and Technology Board) recently discovered that more than half of engineering graduates find employment in their preferred career area.

An impressive 16% of directors of FTSE 100 companies have an engineering degree. In the manufacturing sector the number is even higher, with the proportion of the top executives who are qualified engineers standing at 41%.

Know your industry

Civil engineering employers range from small firms to multinational companies. It is important to make sure you choose the right company for you.

Civil engineering organisations are involved with the planning, design, construction and maintenance of:

Transport systems

– roads, railways, airports, canals, harbours, jetties, bridges and tunnels to transport goods and people swiftly and safely.

Public health services

– water supplies, dams, reservoirs, pipelines to provide safe water and hydroelectric power; sewers, sewage treatment works, sewage outfalls to prevent pollution and disease; irrigation and drainage schemes to increase arable land.

Structures

– bridges, viaducts, oil platforms, electricity distribution grids, foundations and structural frameworks for buildings of all types from houses and schools to offices and factories, sports stadiums and hospitals; flood and coastal protection, land drainage, river embankments, breakwaters and sea walls.





Work outdoors or in the office

You may be involved in visiting sites, overseeing construction or leading design teams. At other times you could be discussing the nature and impact of engineering works with local people, liaising with the client, solving problems and being generally 'hands-on'.

Broadly speaking there are three types of civil engineering employer:

Clients

The organisation or individual that commissions the project is called the client. Some clients do not have engineers on their staff full time so they bring in external consultants. But others – like the Highways Agency, Environment Agency, Network Rail, water companies and property developers – are responsible for building, running and managing assets that require full-time input from engineers.

You could get involved with feasibility studies and outline design, detailed design, project management and, ultimately, managing the finished asset. Usually once a project has been planned by in-house engineers, the client hands it over to consultants and contractors to carry out the detailed design and building.

Consultancy firms

Consultants get involved with planning and designing projects. They translate the client's ideas into reality. Consulting engineers may be brought in at the start of a project to help with feasibility and costing, or may be called in later, when the client wants detailed design work carried out. Work includes preparing tenders, technical design, preparing design calculations, site surveys and detailed drawing. Much of a consultant's work is office based, but they also supervise on-site work.

Contractors

Contractors build the projects, employing labour and bringing in equipment and materials to translate the designer's plans into reality. Contractors employ engineers to implement the designs and manage the work on-site.

All three of these employ graduate engineers, often offering a training plan, such as those granted ICE approval. It is possible for a civil engineer to move between these types of employer. For example, some consultants will second staff to a contractor for six months' work experience, or take in engineers who work on-site to provide them with high quality design experience.

What could you earn?

The Association of Graduate Recruiters winter review 2007 reports that the median starting salary for civil engineers in the UK is £23,000.

The Institution of Civil Engineers 2007 Salary Survey showed that:

- Average total income for under 30s is **£29,026**
- ICE working members of all grades earn an average total income of **£49,990**
- ICE members with the most senior level of responsibility (MD/CEO/Partner) earn an average total income of **£101,989**

Total income includes overtime, bonuses and secondary income.

Finding a job

Work placements

Tips for finding a summer work placement:

- Your university engineering department may have existing links with major clients, contractors or consultants who offer summer work.
- Many larger firms visit universities looking for students to employ. Use these opportunities to find out about holiday work placements and the deals they will be offering.
- Research company websites. Some will offer summer work and you can apply directly.

Finding a job when you graduate

Many larger firms will visit your university or come to regional careers fairs to showcase their graduate recruitment schemes. These are superb opportunities to find out about potential employers and the roles they have to offer. Face to face contact is great for learning about what's out there. Don't be scared to ask the employer whatever you want to.

There are a wide range of magazines, guides and web resources to help you find a job. Your university advisory service is a good place to start. They should have copies of the latest careers publications (such as Target – Civil and Structural Engineering, Realworld, Engineering Opportunities, Prospects).

The web is also a good source of graduate jobs and you can apply directly online.

www.icerecruit.com
www.targetjobs.co.uk
www.get.hobsons.co.uk
www.insidecareers.co.uk
www.jimfinder.com
www.jobsite.co.uk
www.justengineers.net
www.realworldmagazine.com
www.engineeringjobs.co.uk

What is ICE?

The Institution of Civil Engineers promotes and progresses civil engineering around the world. We are the main qualifying body for civil engineering and have over 80,000 members in 152 countries worldwide. We ensure that the professional high standards needed to become a civil engineer are met. Our members are amongst the very best civil engineers in the world and uphold our core values of integrity, trust, ethical behaviour, quality and professionalism.

ICE is an internationally recognised source of civil engineering knowledge and expertise. Thanks to our members, ICE has the authority to inform and advise government by producing reports on issues ranging from sustainable engineering, to transport and waste management. We also respond to government consultations, give evidence at government inquiries and publish briefings and position statements to influence politicians and key decision makers.

ICE is also recognised by the national, local and trade press as an industry authority, with our members often called upon by the media to give expert comment on a range of issues.

“I see ICE as the figurehead of the industry, lobbying Parliament and influencing decision making at the highest level. It should be a benchmark for engineering excellence around the world in terms of training and development. ICE is the spokesperson of the industry to other professions and society in general.” Jay Mistry, Atkins Rail



Joining ICE

The Institution is here to offer you help, support, training, information and awards throughout your career. By joining ICE you become part of a highly respected organisation, founded in London in 1818 and now representing civil engineering professionals around the world.

The professional community which makes up ICE's membership is wide and varied and our grades of membership reflect this. There are different grades for different career stages and different career paths.

Some professionally qualified members can also apply for chartered environmentalist (CEnv) status with the Society for the Environment (SocEnv). Qualification involves satisfying an independent chartered environmentalist professional review.

ICE grade structure

Student

Studying civil engineering (or similar) courses that could lead to future membership. Student membership of ICE is free and applications can be made online.

Graduate

Has completed a course of study and is working towards becoming professionally qualified.

Technician

Applies proven techniques to solve practical engineering problems. Members who have satisfied all the requirements of a technician professional review (TPR) can register as EngTech with Engineering Council UK (EC^{UK}).
Post nominals: EngTech TMICE

Associate

Works in a profession that is closely allied with the work of civil engineers in the built environment. Associates act as advocates of their respective disciplines and work in the broad field of civil engineering.
Post nominals: AMICE

Member

Qualifies at one of two levels:

■ The first level is for those who have satisfied all the requirements of the member professional review (MPR) and if educational base meets EC^{UK} standard can register as an Incorporated Engineer (IEng).
Post nominals: IEng MICE

■ The second level is for those who have satisfied all the requirements of the chartered professional review (CPR) and if educational base meets EC^{UK} standard can register as CEng and call themselves Chartered Civil Engineers.
Post nominals: CEng MICE

Fellow

Attains the highest class of membership by making a significant contribution to the civil engineering profession or advancing the practice of engineering.

Post nominals: FICE



Becoming professionally qualified

"As a chartered engineer and member of ICE your qualifications will be recognised globally, so you can work pretty much wherever you want." [Ross Smith, Ramboll Whitbybird](#)

Why become professionally qualified?

Professional qualification is recognised around the world as a sign of your dedication and commitment and as an indicator of your expertise and skill.

Becoming professionally qualified with ICE demonstrates you have an in-depth understanding of the industry and that you are dedicated to practising ethically, responsibly, sustainably and safely.

A professional qualification can help you move up the ladder and improve your career prospects. It gives you more weight when applying for the best jobs and it can give you the chance to work on interesting projects at home and abroad.

When you qualify, your status will be recognised by peers and employers and you will join a community of highly qualified, experienced professionals, making an essential contribution to the industry and to society.



Student membership

Becoming a student member of ICE is an important step. You are setting out on a new career in civil engineering and choosing to do so as a member of ICE demonstrates to your peers, tutors and potential employers that you are ambitious, industry-aware and serious about your new profession.

Student membership of ICE is free.
Benefits include:

- Ask Brunel! Our online service enabling you to ask any question about civil engineering and receive an answer within 24 hours ice.org.uk/askbrunel

- Help and advice from ICE representatives on campuses around the UK
- Reduced rate subscription to New Civil Engineer (NCE) magazine and discount on special journals
- Free access to a range of online services exclusive for registered members ice.org.uk/myice
- Opportunity to win prizes and awards
- National and regional forums regularly held for student members by ICE's Graduates and Students Network (GSNet) ice-gsnc.org.uk

You'll also receive regular newsletters and information, you can join your local graduates and students committee, you'll have free access – both in person and online – to ICE's impressive civil engineering library housed at our headquarters in One Great George Street, London, United Kingdom.

Student membership of ICE is the first stage in a long and rewarding professional relationship that can last throughout your career. Membership of ICE improves your career prospects and earning potential and sets you on course to becoming a professionally qualified civil engineer.

You can apply for student membership online at ice.org.uk/students.

How do I join?

If you submitted your email address to an ICE representative we will contact you soon.

ICE student membership is free and you can apply online today at ice.org.uk/students.

If you have any questions about membership or how to apply please email students@ice.org.uk.

Contact us

ice.org.uk/contact

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Registered charity number 210252

Charity registered in Scotland number
SC038629

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The content is printed using vegetable based inks, which are fully biodegradable.