A Professional Career in the Built Environment

An opportunity to transform our world
CONTENTS

A Professional Career in the Built Environment
An opportunity to transform our world

How to use this guide
We have split the various professional job roles and placed them under five basic headings as follows:

1. Spatial Design – the art and science of designing buildings and the spaces surrounding them including:
   • Architect
   • Architectural technologist / technician
   • Landscape architect
   • Urban designer

2. Engineering – the use of maths, science, creativity to solve problems and improve lives including:
   • Civil engineer
   • Structural engineer
   • Building services engineer

3. Surveying – the art and science of measuring, mapping and valuing land including:
   • Land surveyor
   • Quantity surveyor
   • Building surveyor

4. Management – taking overall responsibility for the planning, organisation, co-ordination of a construction project including:
   • Project manager
   • Construction manager
   • Facilities manager

5. Planning – the management of space in rural areas, towns and cities including:
   • Town Planner

Also included are:
• Quiz Answers
• Qualification progression tables for England, Wales, Northern Ireland and Scotland
A Professional Career in the Built Environment

Construction and the built environment is a large, diverse and exciting industry which provides you with many opportunities to change and improve the world around us!

Where are you now? Are you at home, at school or on a bus or tube? Each and every space that you use daily has been designed, planned and constructed by someone working in this amazing industry.

This guide has been developed to give you an insight into the construction industry and a better understanding of some of the many professional disciplines available to you.

What is a professional?
- A member of a body of people in a learned occupation
- A person working in an occupation requiring special education particularly in the liberal arts or sciences.

The careers outlined in this guide are part of the construction professional sector and each discipline (or job role) is represented by a professional institution. The institution’s role is to regulate, monitor and represent their membership. The professional institutions also accredit the specialized courses necessary to practice in the profession.

Did you know that approximately 1 in 14 of the UK’s working population work in the construction industry?

You can choose from a variety of professional careers in construction for example:
- Architecture
- Engineering
- Landscape Architecture
- Urban Design
- Surveying

This guide will explain what each of the professions listed above involves, and which interests and qualifications are useful or necessary and offer tips on getting the career you want.

A Definition of Construction
Construction is the act or art of constructing something: the building of something, especially a large structure such as a house, road, or bridge.
Why work in the construction industry?
There are many great things about working in such a vibrant industry including the opportunity to:

- Create new living, learning, working or leisure spaces
- See your ideas come to life
- Improve the environmental impact of buildings
- Enjoy a huge variety of work
- Gain professional status
- Gain opportunities to assist those in need, for example reconstruction following a natural disaster
- Earn a great salary
- Put your creative skills to the test
- Work as part of a team
- Have the opportunity to travel and work abroad

Which study route is best for me?
Your teachers and careers advisors can be a good source of advice on which of the routes are best for you from 14 years old and onwards. In England, Wales and Northern Ireland, you are able to study various types of qualifications based on your interests and abilities (see table 1).

You can choose to study courses which:

- Combine exams and coursework like GCSE's
- Combine coursework and practical experience like a BTEC Diploma
- Combine practical work and coursework like a young apprenticeship
- Combine coursework, project work, exams and practical experience

For more information on qualifications and progression in Scotland please refer to table 2 included as part of this pack and visit the following websites:
http://www.skillsdevelopmentscotland.co.uk/
- for information on apprenticeships and training in Scotland.
http://www.careers-scotland.org.uk
- for all of your career advice needs.

CAREER TIP
BTEC qualifications and apprenticeships offer an opportunity to specialise in a subject for those of you who already have an idea of the type of work you’d like to be involved in.

For more information visit the following website http://yp.direct.gov.uk

Routes into the Industry
A good grounding in subjects such as Maths, Art, English and Science are very useful, there are however still many routes available into the industry via vocational training.

Careers in construction require men and women who are practical, creative, like finding solutions to problems, want to help people and improve the world around us. These are all skills which you might not initially associate with working in construction; however they could be skills which you have that could lead to a stimulating career.
Whether you are looking for work or thinking about a future career it is worth considering the types of skills and attributes that companies look for in new employees. But can you guess which of the following attributes came in the top 5 when researchers asked 236 employers from the list below?

- **Commitment and drive**
- **Commercial awareness**
- **Motivation and enthusiasm**
- **Numeracy**
- **Team working**
- **Flexibility**
- **Risk taking**
- **Oral communication**
- **Customer focus**

**CAREER TIP**
Many schools offer activities and after school clubs. These extracurricular activities can be an excellent way to support your academic studies and experience a taste of possible career options. Universities, colleges and employers often look for candidates with more than just academic abilities.

**How much might you earn?**
Salaries can vary enormously depending on the type, size and geographical location of your employer. Economic changes can impact on the industry (which in turn is reliant on business and the economy). Below is a guide to what you can expect to earn compared to other professions:

<table>
<thead>
<tr>
<th>Profession</th>
<th>Average Starting Salary under 25 years old</th>
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<tbody>
<tr>
<td>Structural Engineer¹</td>
<td>£19,300 - £24,600</td>
</tr>
<tr>
<td>Project manager²</td>
<td>£25,000 - £35,000</td>
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<td>Architect³</td>
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<td>Accountant⁴</td>
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<tr>
<td>Hospital Doctor⁵</td>
<td>£22,000 - £25,300</td>
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<tr>
<td>Quantity Surveyor⁶</td>
<td>£18,000 - £26,400</td>
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</tbody>
</table>

Important note – the salary values shown are for guidance only.

¹From Building Magazine's 2011 Salary Survey
²From Building Magazine's 2011 Salary Survey
³From Building Magazine's 2011 Salary Survey
⁴From Building Magazine's 2011 Salary Survey
⁵From Careers Advice at Direct.gov
⁶From the British Medical Journal 2011 Survey, Foundation House Officer
⁷From Building Magazine’s 2011 Salary Survey
What is Spatial Design?

“The emphasis of the discipline is upon working with people and space” Source Wikipedia

What does an Architect do?

Architects come up with imaginative new buildings designed to meet the needs of users and the environment as well as solutions for restoring or reusing old buildings. Architecture is a very practical and creative field to work in and as an architect your work may involve:
- Working closely with the client to establish their requirements for a new building.
- Preparing design information for new building as drawings or models
- Using CAD – computer aided design
- Co-ordinating and managing others
- Problem solving
- Research
- Selecting materials and building elements such as window types or floor finishes

Which school subjects could lead to a career as an architect?

Having an interest in design, buildings, art and the environment is useful. It will also help if you enjoy the following school subjects:
- Design and technology
- Art and Design,
- Mathematics (although not essential)
- Science
- ICT
- History
- English
- Creative and Media Diploma
- Engineering diploma
- Modern Languages

The emphasis of the discipline is upon working with people and space” Source Wikipedia

Are you interested in?

- How buildings and streets look
- Construction and new technologies
- Environmental issues
- Working with communities

Do you like?

- Using your imagination
- Exploring buildings and urban spaces
- Interior design – furniture, decoration or products
- Making things
- Computer aided design

Then you’re probably interested in where you live and how space is created

Do you enjoy?

- Making things
- Computer aided design

You are starting to think about spatial design and the built environment

Spatial design can be defined as encompassing the whole built environment ranging from a large scale project such as designing the layout of a city, right down to the detail of which floor surface to specify in a play space for toddlers. Spatial design can include a wide range of design activities including the following professional disciplines:
- Architect
- Architectural Technologist/Technician
- Landscape architect
- Urban Designer

What school subjects could lead to a career in or related to spatial design

- Design and technology
- Art and Graphics
- Mathematics
- ICT
- Gardening and landscape
- Geography

These subjects are suitable for a career in or related to spatial design
Becoming an Architect...

Vocational routes such as construction trades can also lead to a career in architecture...

A fully qualified architect will typically have completed 5 years at university, starting with an architectural degree (lasting 3 years).

There are a number of different avenues that can lead to an architectural degree course. (These courses are validated by RIBA – Royal Institute of British Architects) Typically you’ll need:

• GCSEs including maths, English and science at grades A-C;
• Some architecture schools recognise a BTEC National Diploma or Diplomas in Construction Built Environment, Creative and Media and Engineering – please check with individual universities for their entry requirements.

Work experience is an essential part of the architecture course. In England and Wales it typically takes at least 7 years to become an architect as architecture students complete a minimum of 2 years in practice (work) prior to being considered for registration as an architect, as well as 5 years at university.

Universities who run architecture courses will normally require you to show a portfolio of your art and or design work at the interview.

Where do I go from here?

• Royal Institute of British Architects (RIBA)
  http://www.architecture.com
• RIBA’s Education and Careers Department has also produced a great booklet which you can download for FREE from the web called Think Architecture. http://www.architecture.com/EducationAndCareers/BecomingAnArchitect/Becominganarchitect.aspx#studying

Career Tip

Dot to Dot
Join the dots to unveil a famous structure – can you name this structure?
**What is Spatial Design?**

Architectural Technologist / Technician

**Becoming a Chartered Architectural Technologist / A Professionally Qualified Technician**

To become a Chartered Architectural Technologist, you would either complete an Honours degree programme in Architectural Technology or equivalent, although other routes to membership are available. You must also successfully complete the Professional and Occupational (POP) Record and the Professional Practice Interview.

To become a professionally qualified Architectural Technician it is recommended that you complete an Architectural Technology Associate degree, HND, HNC or Foundation Degree in Architectural Technology. If you choose not to study a formal qualification you may still join the Institute and progress as a professionally qualified Architectural Technician through experience and self-learning.

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**What does a Chartered Architectural Technologist do?**

A Chartered Architectural Technologist (MCIAT) is a specialist in the science of architecture and they help make a building project come to life. As a Chartered Architectural Technologist you would work very closely with other construction professionals, creating solutions to enable a building to be constructed and even manage the process. Your role may involve:

- providing architectural design services and solutions
- specialising in the science of architecture, building design and construction
- forming the link between concept and construction
- negotiating the construction project
- managing the process from conception through to completion

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**What does a professionally qualified Architectural Technician do?**

As a professional qualified Architectural Technician (TCIAT), you will be a specialist in the application of technology in architecture, building design and construction. Architectural Technicians are recognised as having specialist skills enabling them to use their technical knowledge and skills to provide innovative solutions. Your role may include:

- Collating and organising technical information of use in design
- Preparing design proposals using CAD and preparing drawing, plans and specifications for construction work

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**Career Tip**

You can study Architectural Technology for either three or four years. The four year option gives you the opportunity to gain one year’s work experience then return to your studies. You can start work on your POP Record on your work experience year.

**Which school subjects could lead to a career in Architectural Technology**

An interest and ability in the following subjects will help:

- Design and technology
- Mathematics
- ICT
- Science
- Art and design
- Engineering Diploma
- Modern Languages

**Where do I go from here?**

To find out more about study and careers visit:

- The Chartered Institute of Architectural Technologists (CIAT) [http://www.ciat.org.uk/](http://www.ciat.org.uk/)
- CIAT is the professional institute representing Chartered Architectural Technologists and professional Architectural Technicians – visit this web page for more on careers and to download the free careers handbook called Your Career in Architectural Technology [http://www.ciat.org.uk/en/careers/](http://www.ciat.org.uk/en/careers/)
What does a **landscape architect** do?

Landscape architects plan, design and manage outdoor space while working very closely with the community. They often work with architects, planners and urban designers to bring an area to life.

As a landscape architect your role may involve:
- Master planning a large scale site like the Olympic Park
- Managing the maintenance of landscapes like national parks or play areas
- Designing the public squares and parks that we all use
- Consulting local people regarding a new proposal
- Choosing plants and trees for a new proposal

Landscape architects are creative, practical and happy working both indoors and out of doors.

**Which school subjects could lead to a career in landscape architecture?**

If you enjoy art and sciences then that is a good start however subjects such as the following also help:
- Geography,
- Art and design,
- Science (particularly biology and environmental science)
- Design and technology
- English
- Mathematics

**Landscape Word search**

Parks, towns and public squares are important places where people gather, live and work. Landscape architects ensure these places are safe, fun to be in and bring the community together. Some of the design concepts and elements that contribute to successful spaces are listed below. Can you find them in the puzzle?

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Another career option associated with spatial design is Urban Design – this is a relatively new discipline but very much in demand as it involves the design of groups of buildings, landscapes and successful urban spaces...

**Becoming an urban designer**
A degree in architecture, town planning, landscape architecture or geography provide a good grounding for a career in urban design – check with individual universities for their entry requirements for these courses.

**What does an urban designer do?**
Urban design is the process of shaping cities, towns and villages. It is the art of making places. Urban designers consider the bigger picture and their work may involve:
- Producing drawings and models of design proposals
- Involving local people in the process of creating new proposals
- Analysing existing spaces and working out how to improve them.
- Assessing the impact of change on different environments

Urban designers are good at understanding the use and function of spaces, they also enjoy coming up with innovative design solutions and are interested in how people live and use the city.

**Where can I go from here?**
For more information on urban design, study and careers visit the Urban Design Group’s site at [http://www.udg.org.uk/careers](http://www.udg.org.uk/careers)

**Which subjects could lead to a career as an urban designer?**
Urban designers need a good well rounded education; an interest in the following subjects is useful:
- Design and technology
- Art & design
- Mathematics
- ICT
- English
- Citizenship
- Geography
- History

**Career tip**
There is currently no single professional institution representing or monitoring urban designers as a profession, there are however a number of organisations providing information on careers and general information on urban design and regeneration.

Engineering is a huge subject area covering a multitude of subjects including construction.

Engineers in construction are involved in creating connective infrastructure such as bridges, roads or systems of distribution for utilities such as gas, water and electricity; providing structural solutions helping buildings withstand extreme weather and heavy loads.

Within the construction industry there are three main types of engineers who contribute to the process. These are:

- Civil Engineers,
- Structural Engineers and
- Building Services Engineers

Engineers tend to be practical, creative, have a keen interest in how things work and a good awareness of environmental issues.

What does a civil engineer do?
Civil Engineers work to connect people, places and resources together. They do this in many ways for example building transport connections, waterways, dams and buildings.

We can take for granted small things like travelling on the bus, getting the Eurostar to Paris and having constant access to clean drinking water but without civil engineers this would not be possible.

A civil engineer’s role is varied and stimulating and may include:
- Concept and detailed design proposals for new bridges or tunnels
- Preparing drawings and detailed reports on new proposals for clients
- Computing calculations for new structures
- Overseeing the construction process on site
What is Engineering?

Which school subjects could lead to a career in civil engineering?

Subjects that will help you to progress towards further study in civil engineering are:

- Mathematics
- Science
- Geography
- Design and technology
- ICT
- Art and design

Becoming a Civil Engineer

You will typically need:
- Five GCSEs and A-Levels (including Mathematics) or alternatively an Advanced Diploma in Engineering or CBE, or a BTEC National Diploma in Civil Engineering or Construction.

Check with the individual universities for their entry requirements.

You will normally need to have a higher level qualification such as a degree, BTEC or HND or Foundation Degree (accredited by the Institution of Civil Engineers or ICE) in civil engineering to progress to becoming incorporated or chartered engineer. To become an engineering technician, a BTEC National is needed.

Civil Engineering Challenge

Civil and structural engineers have to consider how to make a building or structure stand up. The shape of the building or structure affects how strong it is.

Imagine you are a civil engineer and you are tasked with designing a bridge. You must build a model of what your bridge will look like. Using only using only one piece of paper and sellotape, can you make your bridge span a distance of 20 cm? Your bridge needs to hold a weight of 10 pennies.

(Tip: Span your bridge between two books)

Try this out at home, at school or in a club and see how many more coins/ pennies you can get on your bridge.

Where to go from here

For more info on Civil Engineering visit the Institution of Civil Engineer’s website which has an ‘education zone’ that shows the routes into civil engineering and qualifications in more detail.

http://www.ice.org.uk

CAREER TIP

You can also do civil engineering as part of an apprenticeship scheme. For more information visit the Engineering Construction Industry Training Board website.

http://www.ecitb.org.uk/
Becoming a structural engineer

You will typically need:

• Five GCSEs and two A-Levels (including mathematics and a science orientated subject).
• Or an equivalent qualification such as the Engineering diploma

Check with the individual universities for their entry requirements.

Where do I go from here?

If you are in full or part-time education, or intending to study on a course (e.g. A Levels, CBE and engineering diploma or the equivalent) accredited or recognised by the Institution of Structural Engineers, you can apply to join the Institution as a student member for free.

For more info on becoming a structural engineer and becoming a member of the Institution visit the Institution’s website: www.istructe.org

Which school subjects could lead to a career in structural engineering?

If you have an interest in unusual buildings or structures and you enjoy these subjects this could be the career for you:

• Design and technology
• Mathematics
• Science
• ICT
• Modern Languages
Building Services Engineer

What does a building services engineer do?

Building services engineers make buildings comfortable and safe for people to live, work and learn in. They work with the other members of the design team to ensure a building is the right temperature, well ventilated and well lit.

A building services engineer’s role may include:
- Ensuring buildings use resources like water and energy in an environmentally sensitive way
- Designing the lighting levels and choosing appropriate light sources
- Using design software to create the best layout for power outlets and computer points
- Planning how gas, electricity and water will enter and be distributed around a building

Did you know?
“The hotel lifts [in the Burj Dubai, possibly the world’s tallest building] are among the world’s fastest, travelling up to 7m per second.” From the Little Book of Civilization 2

As a Building Services Engineer you will be at the forefront of the climate change challenge, developing new technologies and ground breaking research such as intelligent buildings. BS Engineers need to be practical, have good numeracy skills and an understanding of environmental issues.

Becoming a building services engineer
You will typically need:
- Five GCSEs and two A-Levels, including mathematics and science subject or equivalent qualifications such as the new Diplomas or the BTEC National Diploma.

CAREER TIP
An apprenticeship, a further Education college course or a university degree can all lead to a career in building services engineering.

What is Engineering?

Which school subjects could lead you to a career in building services engineering?

If you have an interest in energy and resources and enjoy these subjects this could be something for you:
- Design and technology
- Mathematics
- Science (particularly physics and environmental science)
- ICT
- Engineering or Diploma

Where do I go from here?

To find out more information on careers building services engineering, take a look at the following website:
- The Chartered Institution of Building Services Engineers (CIBSE) have a number of useful factsheets about careers in building services [http://www.cibse.org](http://www.cibse.org)
- The Good Day website provides additional information about a career in building services engineering while highlighting the various routes into the industry [http://www.goodday.org.uk](http://www.goodday.org.uk)

For general information visit:
- Tomorrow’s Engineers is a website that can inform you all about careers engineering and technology [http://www.tomorrowsengineers.org.uk/](http://www.tomorrowsengineers.org.uk/)
Do you like?

- Working with numbers
- Maps
- The idea of being in charge of large sums of money
- Understanding the construction of buildings

Then you probably enjoy subjects which are central to surveying.

Do you enjoy these subjects?

- Mathematics
- Geography
- Business Studies
- Law
- Economics

Then you are probably thinking about the right subjects for a career in surveying.

Are you interested in?

- Looking after buildings
- Helping people to see the value of pieces of land
- Helping and advising people
- Construction and development as a business

A career in surveying could be for you.

Surveying is a huge area of work and surveyors are essential to the development and construction of new and existing buildings by providing expertise and advice to clients, and the design team.

Surveyors can be involved in a variety of work including:

- Spotting the potential of a piece of land or proposal
- Advising businesses on acquiring property
- Advising on the economic issues on a regeneration project
- Mapping and recording the features and area of a piece of land
- Looking closely at an existing building and noting the features and any problems
- Ensuring that construction measures up to the current building regulations

There are many different roles within this area, some of the key ones related to construction are:

- Land surveying
- Quantity surveying
- Building surveying

For more information on more surveying opportunities go to the student area of the Royal Institute of Chartered Surveyors website at:

http://www.rics.org/studentmembership

LAND (GEOMATICS) SURVEYORS

What do Land Surveyors do?

Land surveyors (known as Geomatic Surveyors) advise on the features of a particular piece of land by providing accurate measurements of natural and man-made structures. As you can imagine when you create a new building it is important to have detailed information on the land levels, or the exact position of water features, underground services like drains and pipes and trees before starting construction.
Did you know?
That without land surveyors there would be no maps!

Land surveyors need to have good observational skills, be comfortable working with numbers and confident using computers and software. Land surveyors tend to work outdoors a lot as well as in an office.

As a land surveyor your role could involve:
- Measuring and recording, storing and communicating geographical information
- Using CAD computer aided design and geomatic software to create site plan drawings or models

Did you know?
“Land surveying is considered world’s second-oldest profession...... This profession started in Egypt and Babylonia”. Source Articlesbase.com

CAREER TIP
Becoming a land surveyor
- It will depend on your progression route but normally five GCSEs followed by three A-levels for entry to a degree in a surveying discipline (accredited by RICS Royal Institution of Chartered Surveyors)
- Alternatively a BTEC Higher National Diploma or Certificate (HND or HNC) can get you started in this career.
- If you decide to do a degree once you’ve completed it you need to begin a two year course of structured training and practical experience to become fully qualified. The training is accredited by the RICS.

CAREER TIP
It is possible to get into land/geometric surveying without a degree or via a non surveying degree background.

Which school subjects could help you progress to a career in land surveying?
You should choose subjects you enjoy at school however these subjects will help:
- Mathematics (particularly geometry and trigonometry)
- Geography
- Design and technology
- Science
- ICT
- Engineering diploma

Did you know?
“Land surveying is considered world’s second-oldest profession...... This profession started in Egypt and Babylonia”. Source Articlesbase.com

CAREER TIP
Land surveying information and analysis has a key role in a diverse range of sectors giving you lots of opportunity to either specialise or have lots of variety in your career. Here are some of the sectors:
- construction;
- property;
- map making;
- offshore engineering to find natural sources of fuel
- working with electronic ways of mapping the land

CAREER TIP
One of the great things about a career in quantity surveying is that this area of work is open to everyone studying courses in construction; however a degree in quantity surveying is available.

What does a Quantity Surveyor do?

Quantity surveyors (also known as cost consultants) manage and advise on all of the costs of a construction project. Quantity Surveyors may work closely with the client or the contractors to ensure a project is both efficient, on budget and profitable.

Quantity surveyors are the accountants of the industry enjoying high levels of responsibility. They are comfortable working with numbers, analysing drawn or written information and reporting back to the client or design team. They also have a great understanding of the building process and the legal issues involved.

Which subjects could lead you towards a career in quantity surveying?

You should choose subjects you enjoy at school however the following subjects will help:

- Mathematics
- Design & technology
- English
- Engineering diploma
- ICT
- Modern Languages

Becoming a quantity surveyor

- You will need five GCSEs followed by a HND or HNC or three A-levels for entry to a degree in a surveying or construction discipline – check with your university on their entry requirements.

On most projects, your key responsibilities could involve:

- Carrying out initial studies to estimate materials, time and labour costs
- Putting together detailed information listing all of the materials and processes required to complete a project so that the contractors can put in an accurate price.
- Monitoring each stage of construction to make sure that costs are in line with forecasts
- Providing financial reports to clients
- Providing legal and contract advice to the client

QUANTITY SURVEYORS

**What does a Building Surveyor do?**

Building surveyors provide professional advice on the design, maintenance; repair and refurbishment of buildings.

The nature of the work may vary in scale from multimillion-pound structures to modest adaptations and repairs. It may also include working with buildings of architectural or historic importance.

Building surveyors have good observational skills, a very good understanding of how buildings are constructed, are practical with good problem solving skills.

Your responsibilities could include:
- Assessing structural faults in buildings
- Providing solutions for structural problems
- Advising on the building regulations
- Taking action on dangerous structures
- Attending court to present evidence

**Where do I go from here?**

For more information about a career in surveying take a look at the following websites:

- The Chartered Institute of Building website offers advice on all aspects of the building profession and details of training available [http://www.ciob.org.uk/home](http://www.ciob.org.uk/home)

**Which school subjects could lead you to a career in building surveying?**

You should choose subjects you enjoy at school however the following ones are helpful:
- Design and technology
- Art and design
- Mathematics
- English
- Science (particularly physics and chemistry)

**Becoming a building surveyor**

It will depend on your progression route but normally five GCSEs followed by 3 A-levels for entry to a degree in a surveying discipline (accredited by RICS Royal Institution of Chartered Surveyors) or a BTEC Higher National Certificate or Diploma (HNC or HND).

**Spot the Difference**

Building surveyors need a keen eye for detail – can you spot the 5 differences between the images below?

---

With thanks to the ODA and Balfour Beatty for granting permission to use these photos.
Most industries employ managers to ensure work is completed to an agreed timescale, budget and level of quality. Managers have high levels of responsibility, including managing people and resources.

In relation to the construction industry, there are many types of manager, three quite different types are:

- Project managers
- Construction managers
- Facilities managers

Project managers bring about the successful completion of a project. A "project" could be coordinating anything from a relatively small scale building like the conversion of a loft in a house right up to a huge project such as building the Olympic Park. Project managers are good leaders and are able to communicate well in writing. They are very good organisators who enjoy a challenge, working to deadlines and have good problem solving skills.

In doing so, they take responsibility for the total control of a project from initial conception to the finished product. They have to coordinate a lot of different professionals, which involves a significant amount of communicating and organising.

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Do you enjoy?

- working as part of a team
- problem solving
- thinking creatively
- working with deadlines
- presenting

Do you like?

- communication
- presenting
- organising
- working with deadlines
- new challenges

Project Manager

What do project managers do?

- You are starting to think like a manager.
- New challenges need to be solved.
- You may enjoy some of the tasks of being a manager.
- You don’t have to be a leader, but you need to be able to guide and motivate the team. They also need to be able to coordinate a large number of people and have good problem solving skills.

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**Which school subjects could lead to a career in project management in the construction industry?**

At school level there aren’t specific qualifications linked to project management but the following subjects will be useful:

- English
- ICT
- Mathematics
- Citizenship
- Science
- Modern Languages
- Design and Technology

**Becoming a project manager**

You can get into project management via many routes, you don’t have to have knowledge of the construction industry but you can take conversion courses to help your progress.

It may be helpful to study a more general construction subject such as Building Studies or Building Management and then follow on with specific project management courses.

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**Programme Management Challenge**

Part of being a project manager is being able to deal with lots of different tasks and people simultaneously. Imagine you are currently working on a construction site to build a new sports stadium. Using the table below, can you prioritise the following tasks in number order?

(Place a tick in the correct box)

- a) Installing the light fittings in the roof
- b) Laying the foundation for the stadium
- c) Erecting the main stadium structure
- d) Testing the retractable roof
- e) Installing the audio visual system
- f) Erecting the retractable roof structure

**CAREER TIP**

Many project managers within the industry have come from incredibly varied backgrounds; they may be former architects, engineers or quantity surveyors. They may also have moved from other industries too.

**Programme Management Challenge**

E.g. Wimbledon Tennis Roof


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**Stadium Design Project**

<table>
<thead>
<tr>
<th>Task Order</th>
<th>Task 1</th>
<th>Task 2</th>
<th>Task 3</th>
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</table>
Construction Manager

What does a construction manager do?

Construction site managers run building sites, liaise with architects, planners, engineers, surveyors, trades people and suppliers to ensure that projects are completed safely, on time and on budget.

They can often be described as site managers as their role is to run a construction site. They are different to project managers, who coordinate all aspects of the overall project, whereas construction managers are responsible for coordinating the building of the project.

Construction managers must be good problem-solvers and forward planners. They have great people skills and are good at presenting and debating ideas in meetings. They have an in-depth knowledge of all aspects of the construction business, are well organized and have good numeracy skills.

Your work would typically include:

- Discussing construction proposals with the design team and client
- Working to the construction programme
- Managing the work and safety of all staff working on or visiting the site
- Monitoring progress, costs and checking quality
- Reporting regularly to the client and design team
- Liaising with the local authority to ensure the building is constructed to building regulation standards

Which school subjects could lead to a career in construction management?

A mix of science and arts subjects at school will be useful, and a degree can help. Or you could work your way up to construction manager from trades person.

A good general educational background is useful as is an interest of enjoyment of the following school subjects:

- Mathematics
- Design and technology
- ICT
- Science
- Engineering diploma
- Modern Languages

As a construction manager, it is your job to manage any risks associated with a construction project. Risks can include health and safety when working on a construction site. Imagine you were faced with the following problems on site:

1) There is no clear pedestrian route marked out for moving around the site
2) There are no tea/coffee making facilities on site
3) No one on site is wearing protective clothing e.g. gloves and goggles

In what order would you sort out these problems?
A) 3, 2, 1  B) 1, 3, 2  C) 3, 1, 2
Facilities Manager

What does a facilities manager do?

Once a construction project is complete, facilities managers are employed to make sure that buildings and their services meet the needs of their users as efficiently, safely and cost effectively as possible.

Facilities management is one of the fastest growing professions in the UK. They manage the operations within the building such as lighting, heating and air conditioning systems and so on. Facilities managers are also responsible for the people or teams that carry out the services.

A Facilities Manager’s role may include:
- managing refurbishment, renovations and office moves
- managing general maintenance e.g. landscaping
- making sure that the building meets health, safety and environmental standards
- finding ways to save energy in the building
- managing facilities such as cleaning, waste disposal, catering and parking
- managing budgets
- managing others including security personnel, caretaker, reception desk and visitors
- managing office systems e.g. IT and remote working

Becoming a facilities manager

Entry can be made with a college qualification such as a BTEC Higher National Diploma (HND)/foundation degree and it is helpful if the qualification is in a relevant subject such as facilities management, business studies or management. Entry without a degree/HND is possible but prior experience of the industry is required.

CAREER TIP
Entry is open to graduates of all disciplines although certain subjects are particularly useful. Other relevant subjects include: building management, construction, surveying, business studies, engineering and property.

Which school subjects could lead to a career in facilities management?

If you have an interest in how buildings or structures operate and you enjoy these subjects this could be the career for you:
- Citizenship
- English
- Mathematics
- Science
- ICT
- British Institute of Facilities Management Qualifications in Facilities Management
- Engineering diploma
In the UK, 40 per cent of CO2 emissions are caused by people, mostly from energy used in the home, driving and air travel. There are many actions people can take to reduce their own carbon emissions.

Which three things do you think could provide the biggest CO2 reduction?

- Using ‘green’ travel
- Using energy efficient light
- Recycling
- Growing your own food
- Planting trees
- Use alternative energy resources
- Turning down the heating
- Collecting rainwater

**Extension Activity:** Why don’t you find out what your own carbon footprint is using this Carbon Calculator
http://www.cooltheworld.com/kidscarboncalculator.php
What is planning?

“Planning is a balancing act between constructing modern communities and conserving our natural and built heritage...” Source the Royal Town Planning Institute Website

Do you enjoy?

• Thinking about how to improve your area
• Learning about geography and the environment
• Meeting people

You may enjoy some of the tasks of being a planner.

Do you like?

• Geography
• Environmental Science
• Citizenship
• Law
• Sociology

Then you probably like some of the subjects useful to become a planner.

Are you interested in?

• Engaging communities
• Social justice
• Protecting the environment

You are starting to think like a planner and how planning can be used in your career.

What does a town planner do?

Planners manage the use of space in towns and the countryside on everyone’s behalf. They have a challenging role in trying to encourage new development while considering the environmental and social impacts. They tend to be great communicators and are interested in how economic development, the local environment and the population interlink.

CAREER TIP

Town planners are in greater demand and in shorter supply than ever - so, if you’re interested in making decisions on how our space is used, now is a great time to get into the profession.

A town planner’s work may involve:

✓ Consulting local residents, businesses and other stakeholders over planned development.
✓ Reviewing and commenting on proposals for new buildings or changes in use of an existing building.
✓ Developing new strategies for how an area should develop.
✓ Making sure new buildings are sustainable and environmentally friendly
✓ Protecting historic buildings or areas

Which school subjects could lead to a career in town planning?

Having an interest in architecture, geography, historic buildings, landscape architecture and transportation are very useful as well as an interest in the following subjects:

• Geography
• Citizenship
• Science
• English
• Mathematics
• ICT
Becoming a town planner

You will typically need:
- Three GCSEs (including maths and English)
- And two A levels, for entry to a four-year planning degree accredited by the Royal Town Planning Institute (RTPI).

CAREER TIP
There are still many ways to enter the profession following a degree (i.e. at post graduate level). A degree in subjects as varied as sociology to transportation can give you a great grounding for further study and a career in planning.

Where do I go from here?
Town planners are represented by a professional institution called the Royal Town Planning Institute. They feature information and case studies on planning careers on their website http://www.rtpi.org.uk/education_and_careers/

PLANNING CROSSWORD

Across
5. People use parks to _______
6. A whole fruit jam; or another way of saving energy
7. The total of people inhabiting a country or city
8. It is larger than a village but smaller than a city

Down
1. The person you live next to
2. An area where children can have fun
3. A tall building found in a city
4. To carry or move from one place to another

Finally
For more general information on going to university, what it’s like to work in construction, the following websites may be useful:

- The “Bconstructive” website not only covers careers in construction but also gives you the opportunity to find out about the industry from those currently working in it, visit - http://www.bconstructive.co.uk/

- Women into science, engineering and construction http://www.wisecampaign.org.uk/

- www.notgoingtouni.co.uk provides information and guidance on alternatives that exist outside of the traditional university route.

- CIC provides information and guidance on professional careers in the built environment along with resources, films and careers route map. www.cicskills.org.uk or www.cic.org.uk

- Building Visions DVD - In our industry sponsored DVD we hope to show you some of the creative and inspiring career opportunities in the construction profession. To view clips of the Building Visions DVD please visit http://www.cic.org.uk/BuildVisions/fullvideo.shtml

The choice is yours
We do hope this guide is of use to you whatever stage of your career pathway you are at.

As you can see, the construction and built environment industry provides you with the option to have a diverse and dynamic career. The aim of the guide is to provide you with a good insight into all subject areas, once you start exploring the subject, you will find even more possibilities open to you.

Do as much research as you can before finalising your study and career decisions including:

- Speaking to people who are already in the job you would like to do.
- Doing a work experience placement, visit www.work-experience.org for more information.
- Attending careers fairs and events.
- Speaking to your careers advisors.

Good luck!
(1) Employability Quiz
*Source Association of Graduate Recruiter 2006, www.vitae.ac.uk
1. Commitment and drive
2. Motivation and enthusiasm
3. Team working
4. Oral Communication
5. Flexibility

(2) Dot to Dot
Sydney Opera House, Australia

(3) Landscape Word search

(4) Civil Engineering Challenge
An example is shown in the photo below of a rectangular shaped bridge holding 10 pennies. The rectangle has been formed by folding the piece of paper 11x to form a rectangle.

If you are testing your bridge to collapse you might see the bridge fail in several ways:
- Collapse in the middle by bending but not breaking
- The paper tears or rips and the bridge collapses
- The bridge twists or folds

(5) Spot the difference

(6) Programme management challenge

<table>
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<td>✔</td>
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<td></td>
</tr>
<tr>
<td>f) Erecting the retractable roof structure</td>
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</tbody>
</table>

(7) “You’re the boss” dilemma
Answer: C – The highest priority is No 3. It is mandatory by law for everyone working on a construction site to wear personal protective equipment (PPE). This includes a hard hat, high-visibility clothing, steel top cap boots, eye protection and ear protection if required and gloves. The next priority is No. 1 as it is important to ensure all construction workers can safely move around the site.

(8) Planning crossword

(9) Low Carbon Challenge
1) Using alternative energy sources
2) Turning down the heating
3) Promoting ‘green’ travel
In England, Wales and Northern Ireland you have a variety of routes that you can pursue to qualify for a professional discipline. You can follow an academic, vocational or mix of both - in addition you could move between different qualification types for example go from GCSE to Apprenticeship to BTEC HND. To find out more about qualifications and progression you can visit [http://careers.cicskills.org.uk](http://careers.cicsskills.org.uk) or [http://www.careerswales.com](http://www.careerswales.com)

Please note the future of the 14 – 19 diplomas programmes are being reviewed under the National Curriculum review.
In Scotland you have a variety of routes that you can pursue to qualify for a professional discipline. You can follow an academic, vocational or mix of both. To find out more about qualifications and progression you can visit [http://careers.cicsskills.org.uk](http://careers.cicsskills.org.uk) or [http://www.myworldofwork.co.uk](http://www.myworldofwork.co.uk)
CIC would like to thank everyone involved in producing this information pack including the following professional institutions:

**Association for Project Managers (APM)**  
**British Institute of Facilities Management (BIFM)**  
**Chartered Institute of Architectural Technologists (CIAT)**  
**Chartered Institution of Building Services Engineers (CIBSE)**  
**Chartered Institute of Building (CIOB)**  
**Institution of Civil Engineers (ICE)**  
**Institution of Structural Engineers (IStructE)**  
**Landscape Institute (LI)**  
**Royal Institute of British Architects (RIBA)**  
**Royal Institution of Chartered Surveyors (RICS)**  
**Royal Town Planning Institute (RTPI)**

**Images**

Construction drawings were generously provided by Mott MacDonald with the kind permission of Docklands Light Railway and Skanska VolkerRail Joint Venture and Weston Williamson Architects and Designers. Thanks to the ODA and Balfour Beatty for providing the spot the difference image.

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ConstructionSkills is the Sector Skills Council for Construction. It is a partnership between the Construction Industry Council (CIC), CITB-ConstructionSkills and CITB Northern Ireland.