

Skills
Development
Scotland



A Foundation Apprenticeship in Civil Engineering at SCQF level 6

GL51 46

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This document provides you with information you will require to deliver a Foundation Apprenticeship in Civil Engineering.

If you need any further information please contact:

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Version Control			
Version Number	Revision(s)	Approved by	Date
1.0		Service Design and Innovation	January 2016
1.1	Minor changes; accuracy and typos	Brian Humphrey	Sept 2016
1.2	FA Code and unit codes	Brian Humphrey	June 2017
1.3	Minor changes to wording, links to relevant guidance	Graeme Hendry	April 2018

Background

One of the key recommendations of Sir Ian Wood's review on developing the young workforce was to "develop better connectivity and co-operation between education and the world of work to ensure young people at all levels of education understand the expectations of employers, and that employers are properly engaged" (Scottish Government response to "Developing the Young Workforce; 2015). The Scottish Government set ambitious targets to ensure this connectivity is delivered through a partnership of schools, colleges/training providers and employers.

SDS, alongside other partners, is working with industry to increase the range of work based learning opportunities for pupils in the senior phase of secondary schools. One of the ways this is being achieved is through the development of Foundation Apprenticeships and SDS is leading this initiative. Foundation Apprenticeships will allow pupils to gain vocational qualifications that combine sector specific skills alongside the knowledge that underpins these skills in a workplace setting while still at school.

The Foundation Apprenticeship in Civil Engineering will provide young people with the opportunity to gain valuable work experience and industry-recognised qualifications alongside their senior school education. This FA has been recognised as a formal route into a professional career by industry bodies including the Institution of Civil Engineers (ICE) and the Civil Engineering Contractors Association (CECA).

The Civil Engineering sector in Scotland

Civil Engineers and Civil Engineering Technicians play a pivotal role and are fundamental to all aspects of the built environment, from the design and construction of iconic structures to the provision of underground services.

Civil Engineering infrastructure projects deliver significant economic benefits for Scotland. Independent research shows that for every £1 spent, there is a return of £2.84 in wider economic activity.

Information on market intelligence and insight for the construction industry is produced by the CITB Construction Skills Network (CSN). It provides data highlights trends and how the industry will change year-on-year:

www.citb.co.uk/research/construction-skills-network/scotland

This labour market information evidences a growing demand for Civil Engineering related occupations – arising due to large infrastructure projects, existing skills shortages and an ageing workforce. An increased demand for a Technical workforce across a range of sectors in Scotland is also resulting in the current skills shortages.

Why choose Civil Engineering?

"Civil engineering is all about helping people and shaping the world. It's the work that civil engineers do to make our lives much easier.

They keep us switched on and powered up by supplying electricity and gas to our homes. They give us clean water and purify it so we can use it again. They build all sorts of things so we can get around, from roads and bridges to railways and airports.

Civil engineers also do lots of other things like finding clever ways of recycling our waste, and finding solutions to problems like pollution.”

www.ice.org (2015)

Further Information about Civil Engineering sector can be found at:

www.ice.org.uk/careers-and-professional-development/what-is-civil-engineering

What is the Foundation Apprenticeship in Civil Engineering?

Foundation Apprenticeships are a new opportunity being offered to pupils in the senior phase of secondary school. Pupils are given the opportunity to complete the first stages of a Modern Apprenticeship along with traditional subjects such as Maths and English.

The Foundation Apprenticeship (FA) in Civil Engineering provides candidates with achievement from component parts of two pathways sitting within CITB's Modern Apprenticeship Framework - Construction: Technical at SCQF level 6.

Normally starting in S5, pupils will also complete a placement or industry challenge with a local employer while working towards the qualification through school and college. Supported by school, learners will typically attend one day or equivalent per week in college for 2 years.

This FA will introduce the skills necessary for the modern professional Civil Engineering Technician and provide an insight to the many career options available.

All coursework and problem based learning will be based on real-life projects considering the roles of site engineers and consultancy teams in areas such as renewable energy, roads and bridges, flood alleviation, commercial buildings, marine works and environmental protection.

Background / rationale

This Foundation Apprenticeship supports the commitment to provide relevant work-based vocational education and training as part of the senior phase curriculum. This is offered to prepare young people entering the jobs market with the necessary skills and abilities while providing them with meaningful vocational pathways which they can do alongside other school subjects.

Partnership

In a Foundation Apprenticeship, it is important to provide the right balance between the taught elements of the programme (NC) and the experiential, work based elements (SVQ). However, in doing an SVQ the fusion of knowledge and skills acquisition to develop competence need to be present.

Young people need to build real workplace skills that include skills that are specialist to the chosen career alongside workplace attributes that are more generic. It's only by being in a real work environment that this can be successfully achieved.

Foundation Apprenticeships are delivered by partnerships comprised of school, learning provider and employer. The learning provider is responsible for the approvals, delivery, assessment and quality assurance of the component units and qualifications. Where multiple learning providers are involved, arrangements between them will be detailed in an SQA Partnership Agreement.

The learning provider must have the appropriate SQA centre and qualification approvals in place before it can deliver the Foundation Apprenticeship. For further support and guidance on SQA's approval and quality assurance processes, please see:

Information for Centres on Foundation Apprenticeships:

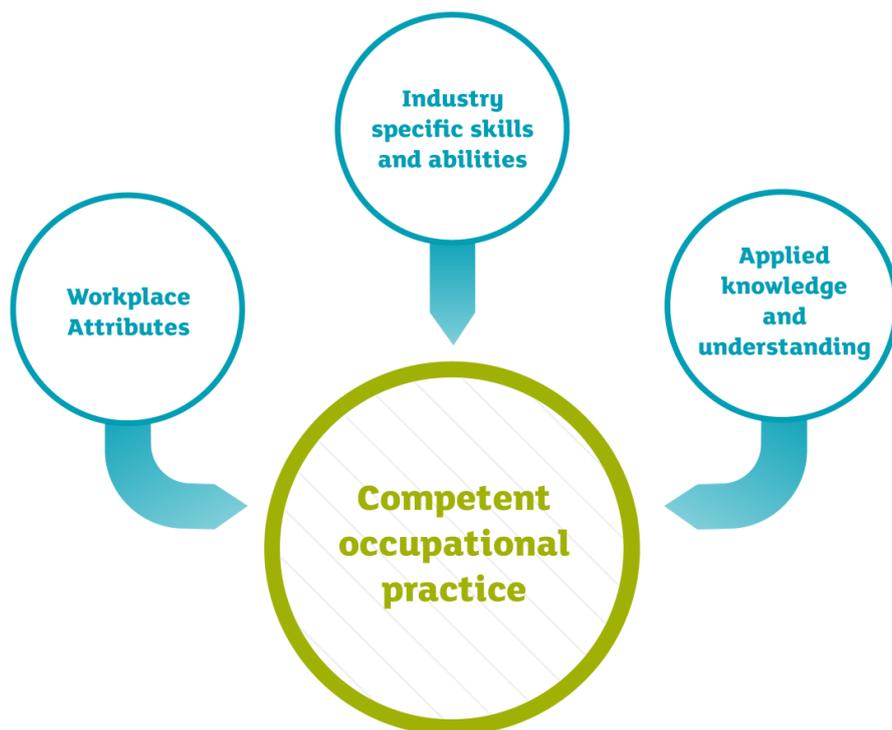
- https://www.sqa.org.uk/sqa/files_ccc/InformationForCentresFoundationApprenticeships.pdf

Information for Centres on SQA Partnership Agreements, where multiple learning providers are involved:

- https://www.sqa.org.uk/files_ccc/PartnershipAgreementTemplate.pdf

Employers may contribute to the partnership in a range of ways, from an industry challenge, to coaching and mentoring, to interviewing and selection. They may also be involved in the assessment of practice.

The Foundation Apprenticeship Product Specification, published by SDS, outlines principles for delivering an industry-related Foundation Apprenticeship. The partnership will provide to SDS a clear outline of how these principles will be met, of the arrangements they have made to ensure how necessary interdependencies are developed and maintained and of the roles and responsibilities of each of the partners.



Pastoral Care

It is important to remember that the pupils who are taking part in this programme are still at school and as such there is a duty of care. This includes providing appropriate health and safety training and measures to ensure the safety of the young people but also appointing a workplace mentor who will be a point of contact for the young person when they are out with the school environment.

Pastoral care in the Foundation Apprenticeship programme also includes making sure the placement is the right fit for the learner and ensuring you listen to any concerns the learner may have and provide the levels of personal support they might need to succeed.

Being aware that some young people are also young carers might affect some of the decisions you make about which is the most appropriate placement for the learner. This would include being aware of any restrictions that might be in place for travelling or for after school or holiday commitments.

The following diagram illustrates the outcome achieved for learners and for employers from bringing together the essential elements of work based learning in a Foundation Apprenticeship.

Content

This Foundation Apprenticeship provides candidates with component parts of one of two pathways within CITB's Construction: Technical Modern Apprenticeship Framework, as follows:

- National Certificate (NC) in Civil Engineering at SCQF level 6 (GJ4G 46), plus Either:
- SVQ unit *Develop and Maintain Working Relationships and Personal Development in Construction (HA3P 04)* from the SVQ in *Construction Contracting Operations: Site Technical Support* at SCQF level 6
or
- SVQ unit *Maintain professional relationships and practice in built environment design (HH8C 04)* from the SVQ in *Built Environment Design* at SCQF level 6

In addition, pupils should be registered with the Institution of Civil Engineers (ICE) or other Professional Institution as a student member. Throughout the duration of both the Foundation and Modern Apprenticeship the pupil will be aiming to become a Technician Member of the Institution of Civil Engineers (TMICE).

How should the Foundation Apprenticeship in Civil Engineering be delivered?

The Foundation Apprenticeship will typically be delivered one day per week or equivalent. Depending on timetabling this could be one full day at college/provider or two half days.

Within the sector of construction and engineering, there needs to be a balance between learning skills in a simulated environment and real-world work experience. Lead partners must provide adequate opportunity to support pupils in developing the skills off site that will be required during their workplace experience.

Delivery and assessment of the NC in Civil Engineering will typically begin in S5 and will be a blended approach between college/training provider and in placement.

The work placement element will be on site with evidence being gathered towards the relevant SVQ unit. Evidence from the work placement will be developed into a portfolio of work for assessment. Assessment of this evidence will be incorporated in the time at college.

In addition to gathering evidence for the SVQ unit(s), all relevant knowledge and experience may also count for initial Professional Development. The ICE evidence can be gathered throughout the Foundation Apprenticeship and can be obtained when undertaking formal academic education, when employed or when working in a voluntary capacity.

Assessment of the National Certificate will be through the use of the SQA Support Materials Assessment Support Packs.

Structure of the Foundation Apprenticeship in Civil Engineering

GL51 46 Foundation Apprenticeship in Civil Engineering			
Group Award Title	Unit Title	SCQF level	SCQF Credit points
GJ4G 46 National Certificate in Civil Engineering at SCQF level 6	Mandatory Units:		
	H66H 46 Civil Engineering Materials	6	6
	F3JH 12 Civil Engineering Project	6	6
	F3J6 12 Civil Engineering Site Work	6	6
	F3J7 12 Civil Engineering Technology	6	6
	H65V 46 Computer Aided Drafting: An Introduction	6	6
	F3JM 12 Construction Site Surveying: An Introduction	6	6
	H669 46 Health and Safety in the Construction Industry	6	6
	F3HV 11 Mathematics: Craft 1	5	6
	F3JC 12 Mechanics for Construction: An Introduction	6	6
	H70S 46 Mathematics for Construction Technicians Or HG51 45 Construction Engineering Mathematics	6 5	6
	Optional Units (Any 2 of the following)		

	H65X 46 Construction Technology: Ground works and Substructure	6	6
	H66G 45 Construction Calculations	5	6
	F3JK 12 Construction Measurement and Costing	6	6
	H66E 45 Drawing for Construction	5	6
	H66F 46 Environmental Building Science: An Introduction	6	6
	H66A 46 Modern Methods of Construction: An Introduction	6	6
	H65W 46 Construction Project Management: An Introduction	6	6
	H66C 46 Sustainability in the Construction Industry	6	6
SVQ Unit	HA3P 04 Develop and Maintain Working Relationships and Personal Development in Construction	6	12
	Or		
	HH8C 04 Maintain professional relationships and practice in built environment design	6	12
Foundation Apprenticeship Certification Unit	HE6E 04	-	0
TOTAL SCQF CREDIT POINTS			84
Optional additional SVQ units (can be offered to enhance the FA if appropriate)			
	F08A 04 Operate Health, Safety and Welfare Systems	6	12
	Or		
	H71C 04 Health and Safety in a Construction Environment	4	4

The Foundation Apprenticeship Diploma in Civil Engineering has a validation period from 01st August 2016.

1 SCQF credit point is equal to 10 notional hours of learning.

The full National Certificate group award specification can be downloaded [here](#) from the SQA website.

Certification

SQA will issue the commemorative certificate for the Foundation Apprenticeship.

Learning providers must ensure that they have appropriate SQA approvals in place for the Foundation Apprenticeship and all mandatory components. Candidates must be entered and resulted for all relevant units for verification and certification purposes.

Once all contributing results are entered on SQA systems, the candidate's commemorative certificate will be produced.

SQA Awarding Body quality assurance requirements apply to the delivery of the SQA component units and group awards. Centres are required to sign up to the relevant Assessment Strategy for the SVQ and comply with all its requirements.

With learners achieving the SVQ unit *Develop and Maintain Working Relationships of Personal Development* and/or the SVQ unit *Maintain Professional Relationships and Practice in Built Environment Design* they will also have gathered evidence towards the ICE development objectives.

Selecting an Industry Challenge in Civil Engineering

To help to support practice, training providers, working directly with employers, may set up an "industry challenge" project. It can be done as a group activity to help introduce a concept or as an individual's own challenge.

It is important that the industry challenge reflects everyday work experience for the learners. At all stages the partnership between the school, training provider and employer is central to the success of the challenge and so the Foundation Apprenticeship.

Through Work Placements, Foundation Apprentices will begin their initial Professional Development through the acquisition and development of the special skills and a professional approach. Pupils will need to practise as a civil engineering technician. This will be developed in college as well as during work placements.

CITB has developed a range of educational resources that can be delivered in partnership with employers. These can be accessed by registering with [Goconstruct](https://www.goconstruct.org/en/information-for-employers/resources/dashboard) at: www.goconstruct.org/en/information-for-employers/resources/dashboard

Some examples of suitable industry challenges might include:

Building Bridges CREST Challenge - Bronze Level

A team activity for 11 to 16 year olds where participants must design a bridge to go across the Learning River, considering the client's expectations regarding drainage, sustainability, aesthetics and the environment.

CREST Casement Park SOS Challenge - Silver Level

A team activity for 14 to 16 year olds which invites participants to create a newspaper report about the transformation of Casement Park stadium into a sustainable outreach shelter.

Go Bridge Building Challenge

A simple bridge building activity for 11 to 16 year olds which highlights the different styles of bridges and focuses on the role of civil engineers.

Other organisations with materials that may be suitable industry challenges might include:

The Institution of Civil Engineers
Institution of Structural Engineers
STEMNET
National STEM Centre
Expedition Workshed
TaTa Steel

These are examples of projects that schools and training providers in collaboration with employers could suggest so that learners can use the Foundation Apprenticeship to put theory into practice in a Civil Engineering setting.

Civil Engineering placements for the Foundation Apprenticeship

Work Placements are critical to the successful achievement of a Foundation Apprenticeship and it is essential that strong partnerships with employers are established.

Support for the coordination and delivery of work placements is available through [Goconstruct](#) which hosts resources such as:

- Construction Site Visit Guide
- Student Workbook
- Employer's Work Experience Guide.

There are a wide range of careers videos which can complement other resources or can be used as a stand-alone resource. The careers videos include case studies of role models of all ages and from a wide range of craft, technical and professional roles as well as some general videos which give a good overview of construction careers.

In preparation for work placements, delivery centres should note that many contractors require everyone to have a **Construction Skills Certification Scheme (CSCS)** card to access building sites.

It is anticipated however, that for many employers, Foundation Apprentices will not need a card as they are not in employment.

For a pupil who is employed or on an extended work placement on site, learners can apply for a CSCS provisional card if they wish but this is only valid for 6 months, costs £30 and can only have 1 in their lifetime.

This is achieved by passing the relevant Health and Safety Test however; learners have to be at least 16 before they can sit the test.

Alternatively learners could complete the relevant Health and Safety Test without applying for their CSCS card and delivery Centre's would then work with placement employers to ensure sufficient evidence that learners can access these sites.

More Information can be found on: www.cscs.uk.com

For all young people involved in Foundation Apprenticeships learning contracts are advised.

Selection of pupils and entry requirements for the Foundation Apprenticeship in Civil Engineering

Pupils are selected for the programme by their school, which will put them forward to apply to the college. College interviews will then take place as with any other college admission.

Pupils need to be ready to work at SCQF level 6 (the same level as Higher). It is also expected that a Foundation Apprentice will be working towards gaining their Higher Mathematics alongside working on their apprenticeship. This level of maths will prove useful throughout the programme of Civil Engineering.

Pupils should be working at SCQF Level 5 or 6 in Science, Technology, Engineering and Maths subjects.

Colleges will then be looking for an excellent attendance record at school and a reference from school to support applications.

Good practice also involves inviting employers to become involved in the selection process.

Equalities

We expect those involved in the development, recruitment and delivery of Foundation Apprenticeships to be pro-active in ensuring that no-one should be denied opportunities because of their age, disability, gender reassignment, marriage and civil partnership, religion or belief, sex or sexual orientation or pregnancy and that any barriers (real or perceived) are addressed to support all pupils. These are the protected characteristics of the Equality Act 2010 and training providers and employers must comply with this Act to ensure that applicants are not discriminated against in terms of entry to and promotion within the industry.

Our emphasis throughout is upon equality and diversity both for new entrants to the sector and opportunities for progression for the existing workforce.

Enhancement

The ability to think and write reflectively is a skill which will enhance learners' abilities both across the curriculum and into the world of work. By undertaking the Foundation Apprenticeship learners not only develop skills and knowledge in Civil Engineering they also develop core skills valued by employers particularly those of numeracy, communication, problem solving and working with others. These skills are necessary for working in a range of other related professions such as Construction or Engineering.

Recognition of Prior Learning

SQA's policy is to recognise prior learning as a method of assessing whether a learner's experience and achievements meet the evidence requirements (i.e. the standard) of a SQA Unit or Units and which may or may not have been developed through a course of learning.

More information can be found on the [SQA website](#).

Pathways into the workplace and into post-secondary education

On completion of the Foundation Apprenticeship learners will have the opportunity to continue their studies in this area and have several options available to them.

They may be in a position with their placement employer that they are offered employment and to continue their apprenticeship. In this case the learner can move to a Modern Apprenticeship and apply their FA to this, reducing the duration of this apprenticeship by a minimum of one year.

Learners may instead wish to continue their studies academically and attend College full time where they can work towards an HND in Civil Engineering, or another related subject, which could also provide them with direct entry into a Degree programme.

Other possible progression routes include:

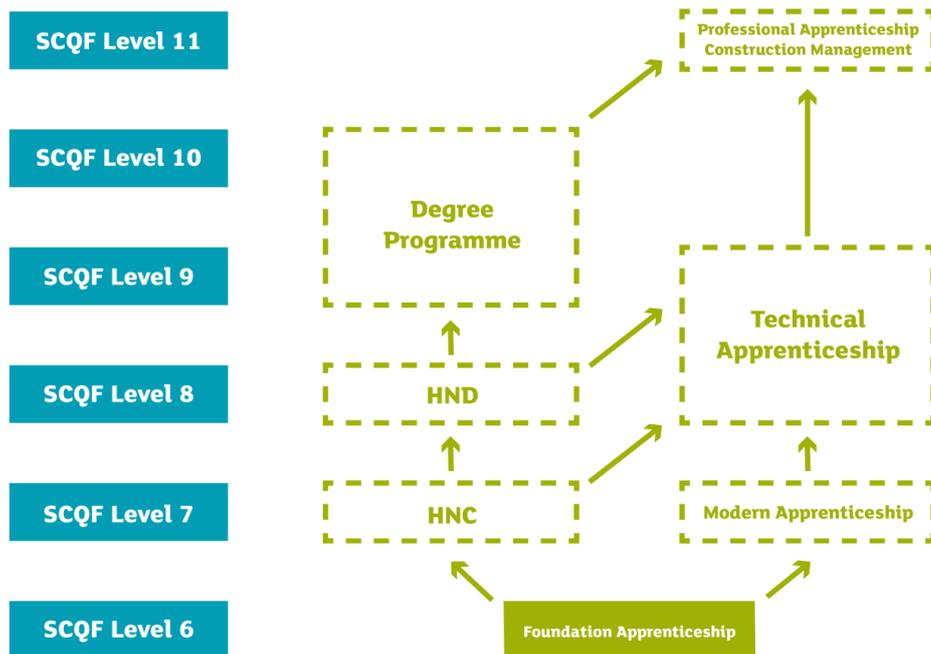
Careers or further study in construction in roles such as:

- Quantity Surveying
- Building Surveying
- Construction Management
- Architectural Technology

There are Modern Apprenticeship frameworks for these roles in addition to a wide range of courses in both colleges and Universities.

The following diagram provides a summary of the pathfinder and associated progression pathways:

Pathways into the workplace and into post-secondary education



Further information

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Annex 1

Sector Skills Council endorsement

The framework and content of this Foundation Apprenticeship has been agreed with ConstructionSkills, the Sector Skills Council for Construction.

This Foundation Apprenticeship provides training that is recognised within the CITB Technical Modern Apprenticeship's framework. On completion of the foundation, apprentices would then work towards their SVQ level 3 and professional membership as Modern Apprentices.

Progression from the Foundation Apprenticeship will provide direct entry to year 2 of the Modern Apprenticeship and will reduce the duration of the apprenticeship by a minimum of 1 year.