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# Reinforced Concrete Frame Sector Occupational Skills Pathways

INFORMATION FOR THOSE CONSIDERING  
A CAREER IN CONSTRUCTION



# Thinking about your career choice?

# Think Big!

With a career in construction, you'll be part of a global industry with loads of exciting and rewarding construction jobs to choose from. Construction accounts for over 2 million jobs in the UK meaning it's one of the biggest and most diverse sectors in the country. Construction enables you to make your mark on the world, whether by helping to design or build a family's home, a hospital providing life-saving care or the tallest skyscraper in the world!\*

**Construction isn't just about hard hats and hi-vis...**

\*Source: Go Construct

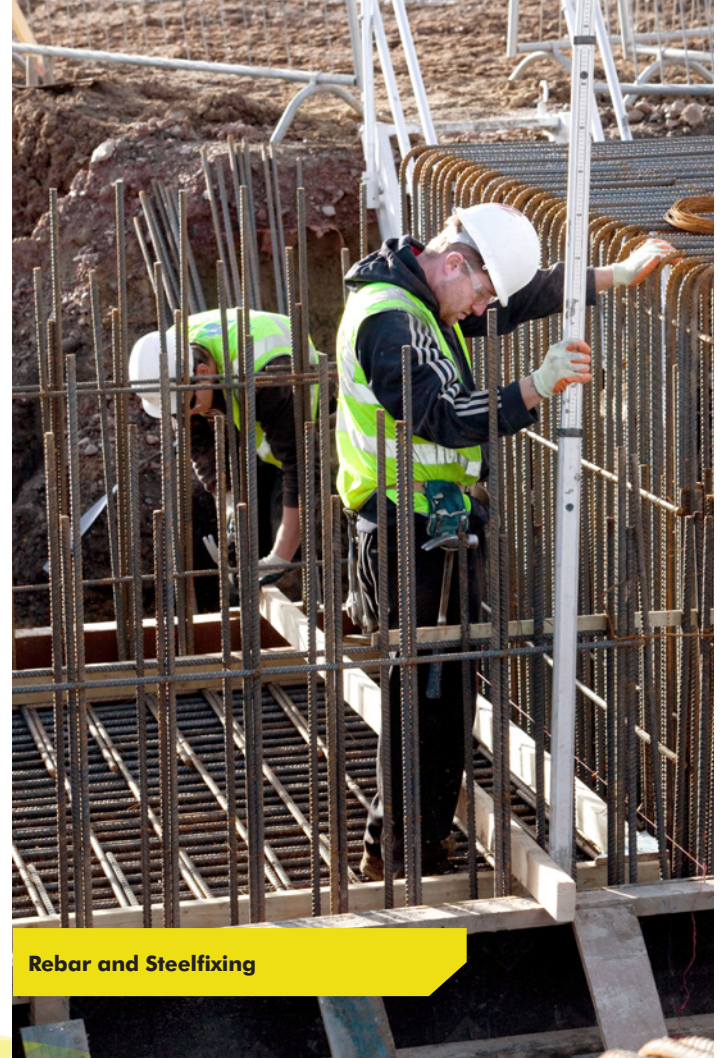


# Contents

<b>Introduction to the Reinforced Concrete Frame Construction Sector</b>	<b>4</b>	<b>Skilled Craft Trades</b>	<b>19</b>
Job Roles in the reinforced concrete frame sector	8	Concrete Placer/Finisher	19
Routes into the sector	9	Formwork Carpenter	20
<b>Health and Safety Training and other training requirements</b>	<b>11</b>	Steelfixer	21
<b>Construction Site Based Roles - Progression for the Reinforced Concrete Frame and Groundworks Sectors</b>	<b>13</b>	Specialist Groundworker	22
<b>Reinforced Concrete Frame Occupations related information</b>	<b>14</b>	Post Tensioning Operative	23
Site Operative Roles	15	General Plant Operative	24
General Labourer	15	<b>Specialist Plant Operatives</b>	<b>25</b>
Logistics Operative	16	Concrete Pump or Placing Boom Operator	25
Groundworker	17	Slinger Signaller	26
Formwork Erector Striker	18	Crane Operator	27
		Site Supervisor	28
		Site Manager	29
		Project Manager	30
		<b>Glossary</b>	<b>31</b>
		<b>Further Information</b>	<b>33</b>
		<b>Notes</b>	<b>34</b>
		<b>Who Are Construct</b>	<b>35</b>

# Introduction to the Reinforced Concrete Frame Construction Sector

Concrete is the most commonly used construction material on earth. People have been using concrete to create pioneering buildings since Egyptian times. The Romans used it to create such enduring architectural wonders as the Pantheon in Rome.



**Rebar and Steelfixing**



The properties of concrete make it an extremely versatile building material, flexible when freshly mixed, yet strong and durable once hardened. Concrete frame structures are a very common and reinforced concrete construction is used to build a huge variety of structures, from skyscrapers and roads to bridges and dams.

As the name suggests, this type of building consists of a frame or skeleton of concrete. Horizontal members of this frame are called beams, and vertical members are called columns. Humans walk on flat planes of concrete called slabs. Of these, the column is the most important, as it is the primary load-carrying element of the building. If you damage a beam or slab in a building, this will affect only one floor, but damage to a column could bring down the entire building

The concrete frame rests on foundations, which transfer the forces - from the building and on the building - to the ground. Groundworkers



**Groundworks**



**Columns & Slabs**

prepare the ground and foundations required for the building; these operations involve the use of construction plant and equipment.

Reinforced concrete (RC) frame structures are built from concrete that contains steel bars, called reinforcement bars, or rebar. This combination works very well, as concrete is very strong in compression, easy to produce at site, and inexpensive and steel is very strong in tension. To make reinforced concrete, first a mould is made, called formwork; this will contain the liquid concrete and give it the form and shape needed. Formwork erectors and Formwork Carpenters create these moulds according to the design drawing specifications.



**Concrete pumping using truck mounted pump and boom**

Then in line with the structural engineer's drawings the Steelfixer places in the steel reinforcement bars, and ties them in place using wire. The tied steel is called a reinforcement cage, because it is shaped like one.

Once the steel is in place, the concrete is prepared by mixing cement, sand, stone chips in a range of sizes, and water in a cement mixer, and pouring in the liquid concrete into the formwork until exactly the right

level is reached. On large projects the concrete is mainly delivered to site ready mixed, having been made offsite in a concrete batching plant and is pumped to where it is required on site using a piece of equipment known as a concrete pump; this can be a dangerous operation due to the pressure required to pump the concrete through the delivery line.



### RC Frame building in construction

The concrete will become hard in a matter of hours, but takes much more time to cure and reach its full strength. Therefore it is usually propped up during this period. Concrete can be manufactured using different chemical additives to provide different strengths depending on whether the concrete is being used to build a bridge or high rise building.

Reinforced concrete structures that are built in this way are known as “in situ” but components of a structure can be created in the same way in a factory type environment and these are known as “precast concrete”, an example would be staircases which are precast off site.

Other processes such a pre-stressing and post tensioning can be used to provide even more strength to the concrete.



# Job Roles in the reinforced concrete frame sector

Job Roles within the reinforced concrete frame sector include site based and office based.

## Site based will include:

- Craft operatives in different skill areas;
- Plant and specialist plant operatives;
- Site supervisor
- Site manager and
- Project manager

Each requires specific training, knowledge and skills plus a formal or vocational qualification is often required; details of these are contained within the pages of this document.

Office based job roles are varied and include professional roles such as quantity surveyor; materials buyer; cad designer; and estimator all of whom assist with the build process directly. Health and safety officers, environmental officers and quality managers help site management teams to deliver and manage the works in line with current legislation; manage risks; keep workers safe and manage the quality of the work/building. Plant mechanics are also employed to help maintain the plant and equipment used on site.

Further support roles are required in the office in the form of finance and accounts; payroll; human resources; training and general administration support.





## Routes into the sector

Routes into the sector include via formal apprenticeships; trainee and graduate opportunities.

Direct employment into an unskilled job role for those with some existing construction experience is also an option and this can lead on to an apprenticeship and/or other formal training.

Employers will generally advertise apprenticeship and graduate opportunities for the roles they specifically wish to recruit for. An apprenticeship averages at two years in total for level 2 trade occupations or 3 years for advanced and supervisory level 3 qualifications.

Higher apprenticeships in management and professional occupations are also becoming more widely available and help with trained career progression whilst offering the same opportunity to earn while you learn. Higher apprenticeship courses can lead to construction related degrees and are an alternative to full time university courses, with the employer paying for the cost of the course.

A RC Frame Sector apprenticeship cannot be studied as a full time college course and direct employment is required of the apprentice by an employer. This is because learning is undertaken through 80% on site experience and practice and minimum 20% off site college time.

Apprenticeship courses also provide training on the functional skill areas of Maths and English and personal learning and thinking skills.



There are a number of apprenticeship routes available; these may differ between the four UK Nations and individuals should check what is available for their location. This booklet's main focus is for options in England.

Individuals interested working in a RC Frame related occupation should try direct contact with employers; seek pre-employment programs offered by local authorities and colleges close to where works are taking place or seek work experience opportunities.

The site work requires a lot of time spent out doors and there is a frequent need to work at height in a team environment. As concrete is a main production material, timing of works is essential to ensure the concrete is poured and finished before it begins to set hard.

Salaries in the sector reflect experience, knowledge and competence with demand for skills impacting on the rates at which trades are hourly paid. Apprentices can progress at a slower salary rate during training period but may progress much quicker once formal training and qualifications are complete.

Trades are generally paid on an hourly basis giving opportunity to earn more for working more hours; the supervisor and manager levels are more likely to be paid on a salary basis with experienced individuals earning in excess of £60,000, although all wages are subject to regional variances.

Higher Apprenticeships offer career progression and a chance to gain a degree whilst earning a wage



## Health and Safety Training and other training requirements

The management of health and safety is an extremely important part of working in the construction industry and there is a lot of focus given to identifying and managing risks so that work can be carried out safely and with minimal accidents and incidents occurring.

Health and safety is the responsibility of every person working on site to protect themselves and others and much is controlled under legislation.

Individual employees will be required to attend training courses to ensure they know how to work safely.





Example courses which may be attended and refreshed on a regular basis include the following but this list is not exhaustive:

- Company and site inductions
- Working at height – legal requirements; safe working practices and equipment used to keep a worker safe
- Manual handling training
- Asbestos awareness training – where asbestos might be present; how to identify and work in areas where asbestos may be present
- Fire awareness – minimising risks of fire and what to do if fire breaks out
- Confined spaces – the risks of working in confined spaces; safety procedures for entry; breathing equipment and emergency procedures
- First aid training
- Using and fitting respiratory personal protective equipment
- General health and safety awareness – industry minimum
- Safe use of abrasive wheels /petrol saws and small tools training
- Use of plant and access equipment
- Behavioural safety training
- Environmental awareness
- Control of substances hazardous to health – COSHH
- Using of equipment to trace underground services such as electricity cables; water supply; gas supply and drainage pipes
- Site Management Safety Training and/or Site Supervisor Safety Training Scheme

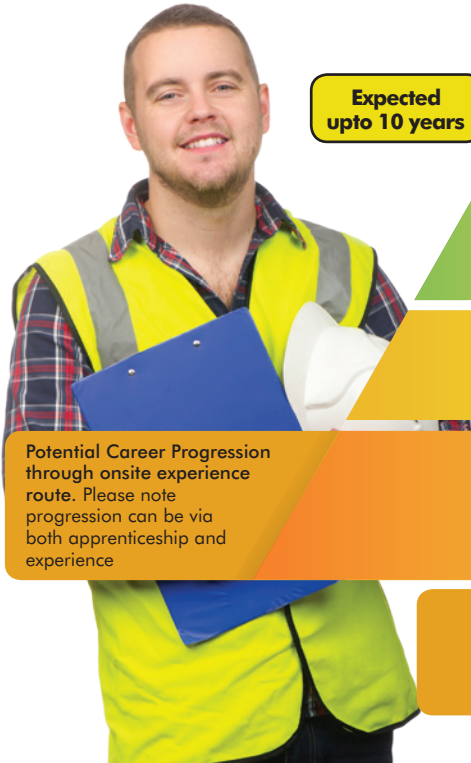
Other training in areas of leadership and management, diversity, mental health and occupational health may also be provided depending on the roles and responsibilities undertaken by the individual employee.

The diagram on the next page identifies the different role types and possible entry points and progression options and this is followed by more detailed information on the different site based roles relevant to the Reinforced Concrete Frame sector.



# Construction Site Based Roles

Progression for the Reinforced Concrete Frame and Groundworks Sectors



Expected upto 10 years

Potential Career Progression through onsite experience route. Please note progression can be via both apprenticeship and experience

**Example entry routes :** Pre-Employment programmes; work experience; school work experience; direct employment; apprenticeship opportunity; shared apprenticeship previous experience; Bridge into construction course; career change.

**Site Operative**

Potential Entry & Career Progression through Apprenticeship Options  
Please note progression can be via both apprenticeship and experience

**Experienced Craft  
Specialist Site Operative**

Intermediate Trade Apprenticeship entry routes available at level 2

**Specialist Plant Trades**

**Site Supervisor**

Supervisory Apprenticeship entry or progression route available at level 3

**Site Manager**

Graduate entry or progression through study for part time Higher or Degree apprenticeship

**Project Manager**

Apprenticeship options of higher and degree or further education study through Bachelor or Masters degree

On to Senior Management or Director Positions with relevant experience and/or qualifications

# Reinforced Concrete Frame Occupations Related Information

## Occupation & Description

All roles include relate to the Reinforced Concrete Frame Sector but may also cross over into other Sectors of the Construction Industry



## Apprenticeship Option

Identified where applicable



## Skills and Knowledge specific to the role

The skills and knowledge listed in this booklet identify some of the skills required by each role and additional training will be required to achieve full competence. All roles require workers to:

- Conform to general health, safety and welfare in the workplace
- Establish work area protection and safety in the workplace
- Move, handle and correctly store resources in the workplace



## Formal Qualification and industry recognised card scheme

- Vocational qualifications are widely accepted throughout the construction industry and assess the individuals training, knowledge and ability to prove competence against industry agreed standards
- Construction specific professional qualifications and degrees are also recognised
- Card schemes are used as a way of recording the training and qualifications a worker has attained





## Site Operative Roles

### Occupation & Description:



#### General Labourer

General Labourers are unskilled workers undertaking vital basic duties on site and providing practical support to other skilled and qualified trade operatives on site. Individuals in these roles would have opportunity to work on construction sites involved in many different types of build.

### Apprenticeship Option - No



### Skills and Knowledge specific to the role



- Provides support to skilled workers
- Excavation work
- Marking out and setting out a safe working area
- Potential to use hand and power tools after provision of instruction and training
- May be required to work at height

### Formal Qualification & industry recognised card scheme



- QCF Level 1 or SCQF level 4 in Health and Safety in a Construction Environment
- Construction Skills Certification Scheme (CSCS) Labourer (Green) card

## Site Operative Roles

### Occupation & Description:



### Logistics Operative

This is a role that can take a number of directions and duties including responsibility for gate keeping security duties; controlling vehicular traffic access to site; marshalling of plant and deliveries outside and inside site; co-ordination of walkways and traffic routes within the site and also control and issue of site stores and materials.

A responsible job which will bring the individual in to contact with many other site occupations and delivery drivers.

### Apprenticeship Option - No



### Skills and Knowledge specific to the role



- Prepare and operate powered units, tools or pedestrian plant, machinery or equipment in the workplace
- Controlling vehicular traffic on construction sites
- Maintain and control pedestrian walkways on construction sites
- Control and issue of stores and equipment

### Formal Qualification & industry recognised card scheme



- Level 2 VQ in Site Logistics Operations (Construction) – General or
- Level 2 VQ in Site Logistics Operations (Construction) – Plant or
- L2 VQ in Plant Operations (Construction) - Movement Guide
- Construction Skills Certification Scheme (CSCS) Skilled Worker (Blue) card

## Site Operative Roles

### Occupation & Description:



### Groundworker

Groundworkers are also known as general construction operatives and do many varied jobs on construction sites. This is a good place to start if you want to gain a wider understanding of the industry.

Groundworkers often work alongside skilled trades people helping to build everything from a new home to a new road layout.

### Apprenticeship Option - Yes

- Level 2 - Construction Civil Engineering Construction Operations (Framework) - will change to a Level 2 Construction and Civil Engineering Groundworker (Standard)
- Modern Apprenticeship option available in Scotland



### Skills and Knowledge specific to the role

Uses a wide range of skills including:

- Digging and shoring excavations
- Placing and finishing non specialist concrete;
- Marking up areas
- Laying drainage pipes, pavements and manhole covers
- There may also be the need to operate tools such as drills, pumps and compressors



### Formal Qualification & industry recognised card scheme

- Level 2 VQ in Construction Operations - General Construction
- Construction Skills Certification Scheme (CSCS) Skilled Worker (Blue) card





## Site Operative Roles

### Occupation & Description:



### Formwork Erector Striker

Formwork Erector Strikers work in teams to erect a temporary mould in which concrete is poured to form a structure. The temporary moulds made from metal and are known as proprietary system formwork. Formwork moulds can also be made from timber and a formwork erector/striker maybe responsible for maintaining both timber and proprietary formwork systems in the workplace.

Once the concrete has been poured and has set hard, the formwork moulds are removed which is known as striking.

### Apprenticeship Option - No



### Skills and Knowledge specific to the role

- Maintain timber and proprietary formwork systems in the workplace
- Erect and strike timber and proprietary formwork in the workplace to create walls; column; beams and bases
- Erect and strike proprietary formwork systems to given working instructions for the use of climbing; jumping; slipform and panel systems
- Install/remove edge protection, public protection and access ways



### Formal Qualification & industry recognised card scheme

- Level 2 VQ in Formwork (Formwork Erector and Striker)
- Construction Skills Certification Scheme (CSCS) Skilled Worker (Blue) card



Progression to skilled craft trades

## Skilled Craft Trades

### Occupation & Description:



### Concrete Placer/ Finisher

A concrete placer/finisher would be involved in the 'placing' or 'pouring' of wet concrete into a specific area.

The role would also involve compaction of the concrete and a further part of this process would involve the 'finishing' of the wet concrete.

A specific concrete finisher would also be expected to 'finish' (or improve the finish) of a concrete element that has already been cast and the concrete has already set and gone hard. Finishes include brush, screed, polished.

### Apprenticeship Option - No



### Skills and Knowledge specific to the role



- Pour concrete to form structures in the workplace
- Erect and striking proprietary formwork in the workplace
- Place and compact concrete in the workplace
- Use hand and/or powered tools, slump test equipment, skips, poker vibrator, tampers, floats and trowels.
- Work closely with other trades including formwork operatives and concrete pump operators to ensure safe pumping and concrete pour

### Formal Qualification & industry recognised card scheme



- Level 2 VQ in Construction Operations and Civil Engineering Services - Construction Operations (Construction) - Structural Concreting
- Construction Skills Certification Scheme (CSCS) Skilled Worker (Blue) card

## Skilled Craft Trades

### Occupation & Description:



### Formwork Carpenter

Sometimes referred to as shuttering carpenters or joiners, this role involves the use of wood and metal systems on construction sites to create forms or moulds.

Steel bars and cages are used to increase the strength before concrete is poured into the moulds. When the formwork mould is removed the resulting structures will form the frame of a structure.

A formworker will be involved in anything built out of concrete, including foundations, beams and staircases, high rise buildings

### Apprenticeship Option - Yes



- Level 2 - Construction Civil Engineering Formwork Occupations (Framework), will be changing to Level 2 Formworker (Standard)
- Modern Apprenticeship option available in Scotland

### Skills and Knowledge specific to the role



- Fabricate and maintain timber and proprietary formwork systems in the workplace
- Erect and strike timber and proprietary formwork in the workplace
- Use timber, timber sheets and non-timber based sheet material; proprietary formwork and associated items
- Use saws; tie systems; soldiers and waling's; protective coatings; access equipment; hand tools, portable power tools and equipment.
- Erect and strike formwork for walls, columns, beams, soffits, bases, kickers, stop ends and pre-cast units
- Erect and strike proprietary climbing, jumping, slip form and panel systems

### Formal Qualification & industry recognised card scheme



- Level 2 VQ in Formwork (Formwork Carpenter)
- Additional option of Level 3 VQ in Formwork
- Construction Skills Certification Scheme (CSCS) Skilled Worker (Blue) card



## Skilled Craft Trades

### Occupation & Description:



### Steelfixer

Steel bars and cages are used to increase the strength before concrete is poured into formwork moulds.

Steelfixers work out where the steel is needed and decide on the size, shape and number of reinforcing bars to use by reading plans and drawings.

Steelfixers work on creating cages to provide additional strength and support in columns; walls; slabs and other forms of concrete structures.

### Apprenticeship Option - Yes

- Level 2 - Construction Steelfixing (Standard)
- Or Steelfixing Occupations Major Projects (Framework)



### Skills and Knowledge specific to the role

- Cut and bend reinforcement steel to shape in the workplace
- Fixing steel in situ in the workplace
- Prefabricate reinforcement steel sections in the workplace
- Take and apply measurements from drawings and plans to the steel rebar forms



### Formal Qualification & industry recognised card scheme

- Level 2 VQ in Steelfixing Occupations (Construction)
- Construction Skills Certification Scheme (CSCS) Skilled Worker (Blue) card



## Skilled Craft Trades

### Occupation & Description:



### Specialist Groundworker

Groundworkers have the option specialise in to specific skilled areas which include drainage; excavation and reinstatement; laying kerbs and channels or modular pavement construction.

These specialisations can provide an individual to become multi skilled through additional training for example New Roads and Street works to specifically work in the highway and may also include a requirement to learn how to operate plant and machinery.

### Apprenticeship Option - Yes



- Level 2 Construction Civil Engineering Construction Operations (Framework) - will change to a Level 2 Construction and Civil Engineering Groundworker (Standard)
- Modern Apprenticeship option available in Scotland

### Skills and Knowledge specific to the role



Sample selection only:

- Installing drainage
- Segregating the area for highways works in the Workplace
- Reinstating ground condition
- Use of temporary excavation support
- Locating and protecting utilities apparatus and sub-structures
- Preparing and operating powered units, tools or pedestrian plant, machinery or equipment

### Formal Qualification & industry recognised card scheme



- Level 2 VQ in Construction Operations and Civil Engineering Services - Construction Operations (Construction) in
- Pathway 1: Drainage Construction or
- Pathway 2: Excavation and Reinstatement or
- Pathway 3: General Building Operations or
- Pathway 4: Laying Kerbs and Channels or
- Pathway 5: Modular Pavement Construction
- Construction Skills Certification Scheme (CSCS) Skilled Worker (Blue) card

## Skilled Craft Trades

### Occupation & Description:



### Post Tensioning Operative

Post tensioning is a technique for reinforcing concrete. Post tensioning tendons, which are prestressing steel cables inside plastics ducts or sleeves, are positioned in the forms before the concrete is placed. Afterwards, once the concrete has gained strength, the cables are pulled tight or tensioned, and anchored against the outer edges of the concrete.

A post tensioning operative will be involved in the operation of casting tendons into ducts or sleeves ready for tensioning to be applied to the structure.

### Apprenticeship Option - No



### Skills and Knowledge specific to the role



- Install and assemble post tensioning components in the workplace
- Carry out stressing operations for post tensioning systems
- Grout or wax post tensioned tendons and/or bars in the workplace (bonded)
- Use hand tools, power tools and equipment
- Work at height
- Use access equipment as required
- There are two types of post tensioning – Bonded and Un-bonded.

### Formal Qualification & industry recognised card scheme



- Level 2 VQ in Post Tensioning Operations (Construction) - Bonded or
- Level 2 VQ in Post Tensioning Operations (Construction) - Un-bonded
- Construction Skills Certification Scheme (CSCS) Skilled Worker (Blue) card
- Post Tensioning (PT) ID Card (issued by UK CARES)

## Skilled Craft Trades

### Occupation & Description:



### General Plant Operative

Plant Operators are in charge of machines such as bulldozers and dumper trucks, mobile elevated work platforms, giant cranes, compactors and excavators (JCBs). Working in construction in this role also involves unloading and moving building materials with rough-terrain forklifts and telescopic handlers.

With this type of role, it is normal to become an expert in one type of large machinery, and do everything from driving and operating the machinery to keeping it running properly.

### Apprenticeship Option - Yes

- Level 2 Construction Civil Engineering Plant Operations (Framework)
- Modern Apprenticeship option available in Scotland



### Skills and Knowledge specific to the role

Options are preparing and operating plant in the following areas:

- forklift trucks
- extracting - excavators
- transporting loads – dumpers
- laying and distributing
- compacting - rollers
- processing
- loading and securing
- work platforms



### Formal Qualification & industry recognised card scheme

- Level 2 VQ in Plant Operations for the specific plant pathway will need to be achieved and these are in line with the skills shown in the column to the left
- Construction Plant Competence Scheme (CPCS) Card or
- National Plant Operators Registration Scheme (NPORS) Card





## Specialist Plant Operatives

Within the RC Frame Sector specific plant required to ensure materials and equipment is available when and where it is needed on site.

### Occupation & Description:



### Concrete Pump or Placing Boom Operator

Concrete on RC Frame sites is pumped to the point where it is needed through a supply line using a concrete pump. The concrete is delivered to site in concrete mixer trucks and must be pumped before it starts to set hard. There are two types of pump – truck mounted and trailer mounted static. A LGV licence will need to be held for the truck mounted pump. Concrete is pumped at high pressures over horizontal and vertical areas through the supply line.

Where space is a premium a static concrete placing boom may be used in conjunction with a static concrete pump to get the concrete to where it needs to be poured.

### Apprenticeship Option - No



### Skills and Knowledge specific to the role

Specific training and assessment would include:

- Use the pump in accordance with manufacturers requirements as per the handbook
- Understand the controls & undertake pre use checks including manoeuvring the vehicle into position
- Arrange, anchor & secure all pipes & lines
- Confirm a given mix is available to pump
- Arrange, use & comply with communication procedures with the concrete placing team
- Pump & control materials accurately
- maintain safe working situations
- Know how blockages occur and the correct actions to take to ensure safety of self & others



### Formal Qualification & industry recognised card scheme



- Level 2 VQ in Plant Operations (Construction) Transporting Loads Plant
- Pathway 1: Truck Mounted Pump Or
- Pathway 2: Trailer Mounted Pump and Static Concrete Pump Or
- Pathway 3: Static Concrete Placing Boom
- Construction Plant Competence Scheme (CPCS) Card or
- National Plant Operators Registration Scheme (NPORS) Card

## Specialist Plant Operatives

Within the RC Frame Sector specific plant required to ensure materials and equipment is available when and where it is needed on site.

### Occupation & Description:



### Slinger Signaller

Movement of materials, equipment and plant is a constant requirement on RC Frame sites and the role of a slinger signaller is to ensure the load to be moved is slung with straps or chains securely to keep the load from becoming unsafe or slipping when in transit. Many loads are lifted from one point to another by mobile and tower cranes; sometimes from ground level to a point at height. The slinger signaller must communicate with the crane operator to ensure the load is lifted, transported and placed where it is needed – this is done using hand signals or in some cases where the crane operator cannot see the pick up or drop off points then radios are used.

### Apprenticeship Option - No



### Skills and Knowledge specific to the role



Specific training and assessment would be required to cover:

- Identify the correct slings or chains for the load
- The correct way to sling different types of load
- Identification of the weight of the load and safe lifting limit of the slings or chains used
- Knowledge of the methods of communication with crane operators and correct hand signals
- Safe guidance and transportation of loads
- Use of exclusion zones
- Ensuring safety of self and others.
- Understand and knowledge of lifting plans
- Working with Lifting Supervisor and other trades

### Formal Qualification & industry recognised card scheme



- Level 2 VQ in Controlling Lifting Operations – Slinger/Signaller
- Construction Plant Competence Scheme (CPCS) Card or
- National Plant Operators Registration Scheme (NPORS) Card

## Specialist Plant Operatives

Within the RC Frame Sector specific plant required to ensure materials and equipment is available when and where it is needed on site.

### Occupation & Description:



### Crane Operator

There are three main types of crane and it will be the type of site and lifts the determine which will be used:

- **Tower:** static cranes used on sites where height and radius is required
- **Crawler:** cranes mounted on tracks. These are mobile and able to achieve heavy lifts
- **Mobile:** wheeled cranes used in a variety of lifting situations

On RC Frame sites Tower cranes are often used throughout the construction phases with the other two cranes used for specific heavy lifting in/out of equipment including the erection and dismantling of tower cranes.

An apprentice would follow one occupational route and become qualified to operate one crane type but all apprentices would also train to be slinger signallers.

### Apprenticeship Option - Yes

- Level 2 Apprenticeship for Construction Lifting Technician (Standard)



### Skills and Knowledge specific to the role

Specific training and assessment would include:

- Conform with manufacturer's and employer's operational and H&S requirements
- Identify the sequence of lifting operations
- Communicate and organise work with others
- Undertake all pre use checks, configure and set the crane for lifting duties
- Set up and conform with crane's electronic information systems
- Direct and guide the movement of loads and accurately place using a variety of communication methods.
- Lift various loads using up to the full capabilities of the crane
- Accurately place the load, minimising swinging of loads and following signals and instructions
- Maintain stability and safe working situations
- Work at height
- Place cranes out of service, isolate and secure
- Prepare and ready lifting accessories and the area of operation for the lifting of loads
- Attach and secure various types of loads to a lifting hook



### Formal Qualification and industry recognised card scheme

- Level 2 VQ in Plant Operations with option of
- Mobile crane Or Tower crane Or Crawler crane
- National Plant Operators Registration Scheme (NPORS) Card
- Apprentices would also gain a Level 2 VQ in Controlling Lifting Operations – slinger signaller
- Construction Plant Competence Scheme (CPCS) Card or



## Site Supervisor

### Occupation & Description:



### Site Supervisor

Site Supervisors oversee the daily supervision of a small team of site operatives and delivery of work to daily schedule. Site Supervisors are also required to ensure implementation of health and safety and quality of work undertaken.

Site Supervisors are often an individual with previous experience in a trade but this is not mandatory.

Supervisor ratio normally around 1:5 operatives depending on size of site/ complexity of work but could supervise more than 5 operatives.

There will also be the need to use information technology to monitor construction performance, prepare site reports and review designs and drawings.

### Apprenticeship Option - Yes

- Level 3 Occupational Work Supervision, Or
- Level 4 Construction Site Supervision (Construction Site Supervisor Standard in development)



### Skills and Knowledge specific to the role

Specific training and assessment would include:

- Reading drawings, taking measurements and implementing these to the project
- Coordinate and organise work
- Ensure quality and accuracy of work
- Work with and supervise others
- Monitor work progress against schedules
- Allocate and monitor the use of plant & equipment
- Confirm and communicate method of work
- Assess and recommend work methods for carrying out site operations
- Implement and control health & safety of team & work site
- Communication with the workforce; other supervisors and other management levels
- Maintain supplies of materials to meet project requirements
- Allocate work and check people's performance in the workplace
- Leadership and management skills



### Formal Qualification and industry recognised card scheme

- Level 3 VQ in Occupational Work Supervision (Construction) Or
- Level 4 VQ in Construction Site Supervision - Building and Civil Engineering
- Construction Skills Certification Scheme (CSCS) Supervisory (Gold) card





## Site Manager

### Occupation & Description:

#### Site Manager



Site Managers are responsible for the day to day running of a construction site; a role that requires office and site based duties. Depending on the size of site there is often only one or two site managers per construction site.

This is a proactive role which may include the need to liaise with clients and report of progress; deal with professional staff and the public.

The role requires supervision duties of other contracted trades and subcontractors. Making safety inspections; maintaining quality control and day to day problem solving are all key elements to the site manager role.

There will also be the need to use information technology to monitor construction performance, prepare site reports and review designs and drawings.

### Apprenticeship Option - Yes

This role is generally achieved via a progressive route through knowledge and/or formal further education qualification routes. Higher and

Degree apprenticeship options are in development and may be an option for some individuals.



### Skills and Knowledge specific to the role

Specific training and assessment would include:

- Knowledge of construction processes
- Supervision and leadership of others
- Health, safety and welfare obligations
- Planning and organising work, setting objectives and targets and monitoring of these
- Quality management control and working to required standards
- Knowledge and ability to manage legal and contractual matters relating to the site and work
- Understand the environmental impact of construction activities and be able to manage and minimise negative impacts
- Project management knowledge including planning, budgeting, project funding and payment processes to enable effective leadership and delivery of the project
- Leadership and management skills



### Formal Qualification and industry recognised card scheme

Depending on the route followed i.e. apprenticeship; further education route or site based experienced the following example relevant qualifications maybe achieved:

- Foundation Degree
- BA(Hons) Professional Practice in Construction Management
- BSc (Hons) Construction Management
- Level 6 VQ Construction Site Management
- Construction Skills Certification Scheme (CSCS) Management (Black) card



## Project Manager

### Occupation & Description:



### Project Manager

The project manager has overall responsibility for the project from start to finish including planning; monitoring progress; reporting to client, other contractors and professionals; and managing the budget.

This is a senior management role requiring developed project management skills and knowledge of the construction process. This is a forward planning site office based role with the project manager responsible for setting clear timescales and detailed plans for how to achieve each stage of the project.

Communication with clients, contractors, colleagues and suppliers along with negotiating for materials and services will form an important part of this role

### Apprenticeship Option - Yes

This is a role that is generally achieved via a progressive route of promotion. A higher apprenticeship option is in development.



### Skills and Knowledge specific to the role

Specific training and assessment would include:

- Developed project management skills
- Construction process knowledge
- Communication and leadership ability
- Computer knowledge for reporting and progress monitoring
- Negotiation skills
- Target setting and monitoring of quality, budgets and progress against plans
- Management of others



### Formal Qualification and industry recognised card scheme

- Depending on the route followed i.e. apprenticeship; further education route or site based experienced the following relevant qualifications maybe achieved:
  - Foundation Degree
  - BA(Hons) Professional Practice in Construction Management
- BSc (Hons) Construction Management
- Level 7 VQ Construction Senior Management
- Construction Skills Certification Scheme (CSCS) Management (Black) card



# Glossary

## Admixtures

Chemicals added to concrete in small quantities during mixing to change its properties (for example, workability, setting or frost resistance) before or after it has hardened.

## Aggregate

Gravel, crushed rock or sand which forms up to 80% of the volume of concrete

## Cast insitu concrete

Concrete cast in its final position on a construction site, rather than in a factory. Many building structures and civil engineering projects are built with insitu concretes, as are domestic items such as floors and worktops.

## Concrete

A mixture of cement, coarse and fine aggregate, and water, often also containing additions and admixtures, which can be formed into numerous shapes, and given many different surface finishes. It hardens to form a strong rock like mass, and is used in innumerable applications in housing, industrial and commercial building, civil engineering and infrastructure projects.

## Curing

Keeping fresh concrete damp for the first few days after placing so its strength and other properties develop fully.

## Formwork

Temporary structure or mould in which fresh concrete is placed until it hardens. It may be made of steel (propriety formwork), timber or glass fibre reinforced plastic, and faced with materials to give particular surface finishes. Some forms are suitable for a few uses, while others such as steel can be used hundreds of times.

## Jumpform

These are two formwork systems used for construction of multi storey vertical concrete elements. The jumpform systems comprise the formwork and working platforms for cleaning/fixing of the formwork, steel fixing and concreting. The formwork supports itself on the concrete cast earlier so does not rely on support or access from other parts of the building or permanent works. This system can be raised by a crane or can be self-climbing using hydraulic jacks to climb up on rails.

### **Mass concrete**

Concrete without any reinforcement, commonly used for engineering applications where high strength is not needed.

### **Mix design**

The process of selecting the proportions of cement, aggregates etc that will produce the right concrete for the job.

### **Mortar**

A paste of cement, sand and water laid between bricks, blocks and masonry.

### **Precast concrete**

Concrete elements that are made away from the construction site, often in a factory. Usually used when large numbers of identical units or special finishes are needed. Examples range from small lintels and blocks to large beams of floors and bridges, and cladding panels.

### **Prestressed concrete**

Concrete containing highly tensioned wires or bars, to control cracking and deflections, widely used for large span elements.

### **Ready-mixed concrete**

For most building and construction projects concrete is delivered to the site already mixed, and ready to be placed straight into position. The controls at a ready mixed concrete plant ensure that a consistent mix is produced.

### **Reinforced concrete**

Concrete containing differing amounts of steel bars or mesh, which reinforces the material and enables it to carry much higher loads than mass concrete.

### **Slipform**

Slipform is similar in nature and application to jumpform, but the formwork is raised vertically in a continuous process. The formwork is raised, and the concrete is placed at such a rate that the concrete is sufficiently cured before it becomes exposed at the bottom of the rising





## Further Information

The content of this booklet is designed to provide a basic introduction to Reinforced Concrete Frame Sector site related occupations, the skills that will be learnt and used and an indication of the apprenticeship routes and formal qualifications which an individual learner could achieve.

There are many other aspects and roles within the wider Construction Industry and the following organisations can provide further information on training, qualifications and further industry and professional accreditation processes.

Organisation & Website	Description
<b>GO CONSTRUCT</b> <a href="http://www.goconstruct.org">www.goconstruct.org</a>	Provides information on construction careers; what it's like to work in construction; how to get into construction; qualifications; links to work experience opportunities & case studies.
<b>Bconstructive</b> <a href="http://www.citb.co.uk/bconstructive">www.citb.co.uk/bconstructive</a>	Specifically relates to apprenticeships in construction through the Construction Industry Training Board (CITB). Portal to apply for apprenticeship course & more information on construction apprenticeships
<b>Get In Go Far</b> <a href="http://www.getingofar.gov.uk">www.getingofar.gov.uk</a>	General apprenticeship information for apprenticeships in England. Includes a search vacancy function.
<b>Apprenticeships.Scot</b> <a href="http://www.apprenticeships.scot">www.apprenticeships.scot</a>	Information relating to apprenticeships specifically in Scotland including information on Modern, Foundation and Degree level courses
<b>Careerswales</b> <a href="http://www.careerswales.com">www.careerswales.com</a>	Information relating to apprenticeship course options in Wales and a vacancy / apprenticeship search and register facility
<b>CIOB - Chartered Institute of Builders</b> <a href="http://www.ciob.org">www.ciob.org</a>	Information pathways to a professional career in the built environment through the CIOB qualifications, programmes and accrediting courses that meet their standards
<b>RICS - Royal Institution for Chartered Surveyors</b> <a href="http://www.rics.org/uk">www.rics.org/uk</a>	Information on the role of a Surveyor and the professional training, qualification and membership options
<b>ICE - Institution of Civil Engineers</b> <a href="http://www.ice.org.uk">www.ice.org.uk</a>	Learn more on what Civil Engineering is; what civil engineers do and how to train for a career as a civil engineer



# Who are CONSTRUCT?

CONSTRUCT is the Trade Federation which represents contractors and suppliers operating in the Reinforced Concrete Frame Structures sector of the UK Construction industry. CONSTRUCT does not employ a trade workforce or provide apprenticeship training directly. We work with our member companies and training providers to encourage and facilitate the offer of new entrant employment and provision of apprenticeship and trainee opportunities in our sector of construction.

We have developed this booklet for those interested in a construction career with a specific insight into our sector. We acknowledge the information contained may change over time.

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**[www.construct.org.uk](http://www.construct.org.uk)**





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