

# CONSTRUCTION ASSEMBLY AND INSTALLATION OPERATIVE

**Reference Number: ST0265**

## Details of standard

This occupation is found in the construction sector. On site assembly of manufactured components is a rapidly growing part of the construction sector, representing 15% of the market in 2018. Projects include; infrastructure, residential, commercial, retail, healthcare, education, rail, prisons and leisure. Structures and components are manufactured in factories and then transported to the construction site, ready for location, connection and finishing. Materials can include concrete, timber, modular and portable buildings and can include plastic and steel components. Projects can be small local ones such as a bespoke house or nationwide in large scale developments such as residential and social housing, schools and hospitals. These can be permanent, temporary or re-locatable.

The broad purpose of this occupation is to use elements manufactured off site, installed and assembled in a construction site environment.

In their daily work, an employee in this occupation interacts with team colleagues and supervisors as well as those from other organisations such as main contractors, sub-contractors, architects, engineers, plant operators, drivers, Health and Safety Executive representatives, Environment Agency, site managers, construction managers and other trades. The occupation involves working outside on a construction site, in a range of weather conditions, on projects anywhere in the UK. In some instances it will involve travelling and working away from home.

An employee in this occupation will be responsible for the assembly and installation of manufactured components to agreed design specification and tolerance. This includes the safe handling, moving, installing and finishing to specification and within deadlines under the guidance of senior team colleagues or a supervisor depending on the size of the organisation.

The apprenticeship consists of four optional routes:

1. Pre-cast Concrete
2. Timber Frame
3. Relocatable Modular and Portable Buildings
4. Permanent Modular Buildings

Typical job titles include precast installer, precast erector, slinger signaller, modular installer, concrete finisher, timber frame erector, modular and portable building operative, modular cabin fitter, modular building installer, timber framer, timber frame assembly operative, timber frame installer, structural insulated panels (SIP) installer.

CORE DUTY	KNOWLEDGE, SKILLS & BEHAVIOURS
Carry out pre-use checks of all lifting and handling equipment to be used for the project	K2, K8, K9, S5, S6, B1
Pre-use checks of equipment and resources	K2, K8, S2, B4
Check work area is safe at all times and in line with method statements and risk assessments	K1, S1, B1
Comply with the current legislation, work instructions and toolbox talks to carry out the work and maintain safe and healthy work practices	K1, K10, S1, S2, S3, S5, B1, B3, B4
Use a range of equipment, hand and power tools to carry out the assembly and installation	K2, K9, K14, S4, S7, S8, B6
Apply safe working techniques for moving, lifting and handling pre-assembled, manufactured elements	K2, K4, K8, K9, S1, S2, S4, B2, B3
Read, interpret and work to drawings, specifications and construction information e.g. lifting plan, logistics plan, manufacturers information	K3, K6, S2, S8, S10, B5, B8
Fixing temporary works for stability and safe access	K2, K10, K14, S2, S7, B7
Working under site supervision to align the installation into position according to specifications, drawings, models including digital equipment e.g. laser levels, theodolites, Global Positioning Systems	K3, K5, K6, K7, K15, S2, S9, S10, B2, B3, B5, B8
Follow connection details and ensure it has been installed according to specification	K6, K13, K14, K15, K16, S3, S6, S8,S9, S10, B6, B7
Select and use materials according to specification	K5, K11, K12, K14, S6, S7, S9, B4, B6
Carry out quality checks against specification and take remedial action where instructed	K3, K6, K13, K16, S8, S9, S10, B4, B8
Complete documentation related to the project e.g. timesheet, delivery notes, method statements	K3, K6, K16, S9, S10, B2
Maintain a clear and tidy workspace and ensure that waste materials are disposed of in accordance with current legislation	K1, K2, S1, B1

OPTION 1 : CONCRETE	KNOWLEDGE, SKILLS & BEHAVIOURS
Carry out dimensional checks of the slab and mark up positions e.g. starter bars and rails according to specifications and drawings.	O1K1, O1K3, O1K4, O1S1
Erect components such as panels, large format block work, staircases, columns, flooring, lintels and pods according to specifications and drawings.	O1K2, O1K5, O1K6, O1S2, O1S4
Install propping and other temporary works such as edge protection as per specifications and drawings.	O1K3, O1K4, O1S3
Carry out structural connections using items such as, rebar, strand, grout and specialist fixings as per specifications and drawings.	O1K5, O1K6, O1S4, O1S5
Carry out finishing works and installation of the ancillary items such as window formers, cavity trays and insulation products.	O1K6, O1K7, O1S5, O1S6

OPTION 2: TIMBER	KNOWLEDGE, SKILLS & BEHAVIOURS
Survey, position, fit, level and fix soleplates according to specifications and drawings.	O2K1, O2S1
Erect timber frame panels to create walls on-site according to specifications and drawings.	O2K2, O2K3, O2K4, O2K9, O2S2, O2S3
Install and lay cassette floor decks and/or install floor joists according to specifications and drawings.	O2K2, O2K5, O2S2, O2S4
Erect timber roof structures and components, in-situ roofs and pre-assembled roof structures according to drawings and specifications.	O2K2, O2K6, O2K7, O2S2, O2S5, O2S6
Install ancillary items e.g. air tightness measures, damp-proofing, membranes, fire stops, cavity barriers according to drawings and specifications.	O2K2, O2K8, O2S2, O2S7

OPTION 3 : RELOCATABLE MODULAR AND PORTABLE	KNOWLEDGE, SKILLS & BEHAVIOURS
Follow organisational procedures to prepare the exterior building to meet customer specifications e.g. shot blasting, repainting the exterior, windows, stairways, linkways, doors, ironmongery, trims.	O3K1, O3K2, O3K3, O3K4, O3K5, O3S2, O3S4
Prepare the unit for safe transport e.g. temporary stability panels, temporary seals, covers.	O3S1
Apply internal finishings e.g. internal partitions, trims, configure interior layout, painting, electrical and plumbing, tiling.	O3K2, O2S4
Demonstrate the product and handover installation paperwork to customer.	O3K2, O3S5
Carry out maintenance to buildings in accordance with the planned schedule or in reaction to customer feedback e.g. broken component, different layout required.	O3K2, O3S2
Dismantle the building e.g. removing connections to utilities, removing staircases, removing linkways following the supplied lift plan to move the building onto transport.	O3K2, O3S2
Carry out after hire inspections and report findings once the building is returned to the depot in order to prepare invoice for damages.	O3K1, O3S5

OPTION 4 : PERMANENT MODULAR	KNOWLEDGE, SKILLS & BEHAVIOURS
Carry out dimensional checks of the slab and mark up positions, e.g.: grid, anchorages, ground cleats, services and drainage, according to specifications and drawings.	O4K1, O4K3, O4S1
Erect components such as modular units, panelised elements and secondary structures e.g.: support systems and balconies, bracketry, columns, lintels, external and internal fire stopping, service connections, internal fabric finishing materials according to specifications and drawings.	O4K2, O4S2, O4S4, O4S6
Install temporary works for transportation such as bracing, temporary seals and covers.	O4K4, O4S3
Carry out structural connections using items such as inter-modular bracketry, tie cleats, core cleat connections, ground anchors, grout and specialist fixings as per specifications and drawings.	O4K5, O4S6, O4S7
Carry out internal finishing works and installation of the ancillary items such as bay joints, service connections and completions, suspended ceilings, flooring, thresholds, internal fabric items, cavity trays, insulation products and decorative	O4K6, O4S8, O4S9

## KNOWLEDGE

### Core knowledge

#### A construction assembly and installation operative knows and understands:

K1: the principles of environment, health, safety and welfare and how they must be applied in relation to their work and to others.

K2: the responsibilities under current legislation and official guidance to undertake the work e.g. Lifting Operations and Lifting Equipment Regulations, Manual Handling and Working at Height Regulations.

K3: how to communicate with others and follow organisational procedures to conform to productive work practices.

K4: the different techniques and methods to move, lift and handle, pre-assembled, manufactured elements and modules.

K5: how to use, store and maintain hand tools, power tools and ancillary equipment.

K6: how to interpret various types of information for drawings and specifications in various types and formats including digital e.g. Building Information Modelling and Personal Digital Assistant models.

K7: how to comply with specifications and drawings when assembling, positioning and fixing manufactured elements and modules.

K8: the specific safe working practices for moving, lifting and handling pre-assembled, manufactured elements and modules including – risk assessments and method statements, lift plans, control of hand-arm vibration syndrome, dust and noise.

K9: the different techniques and methods to move, handle and store resources prior to installation.

K10: the principles and practice of working at height and the use of access equipment including: mobile elevated work platforms, scaffold, fall prevention systems and equipment.

K11: the principles of slinging and signalling.

K12: the use of different materials and how they work together for load bearing and non-load bearing purposes.

K13: the quality requirements of the materials and products that are being installed.

K14: the different methods of installation and removal of temporary works and/or formwork.

K15: the different methods of installation and removal of products such as structural elements, flooring units, stairs, pods, modules and cladding.

K16: how and when to follow organisational reporting procedures to identify and rectify problems arising from information, resources and methods of work.

### Option 1: Concrete

A Pre-Cast Concrete Construction Assembly and Installation Operative knows and understands:

O1K1: How to set out components in relation to datum points to maintain dimensional control.

O1K2: Component identification marks, their meaning and the implications on working methods e.g. lifting points marked on drawings, lifting configurations and sequencing.

O1K3: How to adjust temporary works to achieve alignment and level.

O1K4: How to select and fix specified temporary works, edge protection.

O1K6: Application methods of cementitious finishing products such as grouts and fillers.

O1K7: The range of insulation types their performance, options, quality and installation methods e.g. preventing cold bridges and forming fire stops.

## **Option 2: Timber Frame**

A Timber Frame Construction Assembly and Installation Operative knows and understands:

O2K1: The range of soleplate types available, their performance, material options, quality and installation and fixing methods.

O2K2: Timber component Identification marks, their meaning and the implications on working methods.

O2K3: Erection, installation and removal methods for temporary propping, bracing and protection measures.

O2K4: The range of timber frame panels available, their performance, material options, quality and installation methods including columns and beams, the purpose and use of wall plates.

O2K5: The range of floor types available, their performance, material options, quality and installation methods including cassettes, joists and combination systems.

O2K6: The range of roof structures available, their performance, material options, quality and installation methods, including hips and valleys, verges and eaves, parapet finishes.

O2K7: The range of roof components available, their performance, material options, quality and installation methods including false chimneys, windows, hatches, dormers, roof lights and vents.

O2K8: The range of ancillary components available, their performance, material options, quality and installation methods including membranes, damp proof courses, vapour barriers, fire stops and cavity barriers.

O2K9: The regulations and requirements of scaffolding, access equipment and working platforms with regard to timber frame structures.

## **Option 3: Relocatable Modular and Portable Buildings**

A Relocatable Modular and Portable Building Assembly and Installation Operative knows and understands:

O3K1: how to complete product paperwork, including pre-delivery inspection, handover documentation and after hire inspection reports, identify and record all damages and faults in accordance with company procedures.

O3K2: how to construct, install, maintain and dismantle modular and portable buildings including the following elements:

- how to maintain non-structural carpentry work
- how to complete like for like replacement of electrical fittings as instructed
- how to complete a pre-delivery electrical inspection
- how to maintain non-structural and structural components e.g. door frames, windows, partitions, structural supports
- how to install plumbing such as toilet and sink units
- how to apply paint by brush, roller and air spray
- how to prepare surfaces using abrasive blast cleaning
- how to install plaster board linings.

O3K3: How specific maintenance, installation and dismantling times are estimated to meet production sequencing requirements.

O3K4: how to use methods of calculating quantity, length, area and wastage associated with materials used to construct, install, maintain and dismantle modular and

O3K5: how to avoid heat loss and condensation by applying the principles of airtightness and ventilation

#### **Option 4: Permanent Modular Buildings**

A Permanent Modular Building Installation Operative knows and understands:

O4K1: How to set out components in relation to datum points to maintain dimensional control.

O4K2: Component identification marks, their meaning and the implications on working methods e.g. lifting points marked on drawings, lifting configurations, specialised handling restrictions and step areas on unit roof zones.

O4K3: How to install, check and record to achieve alignment and level.

O4K4: How to select and fix the appropriate temporary works for transportation, e.g.: edge protection, walk-on strips.

O4K5: The properties of a range of fixings, connections, materials and their applications e.g. the purpose and use of wall plates and brackets.

O4K6: Application methods of passive fire protection products such as mineral wools, intumescent tapes and fillers.

O4K7: The range of material types, their performance, options, quality and installation methods e.g.: preventing cold bridges and forming fire stops.

### **SKILLS**

#### **Core Skills**

##### **A Construction Assembly and Installation Operative can:**

S1: Identify and apply safe working practices in accordance with current legislation, health, safety and welfare regulations, Approved Codes of Practice, company guidance, site specific requirements and taking account of changing circumstances.

S2: Plan and undertake work practices productively.

S3: Identify and apply safe use, storage and maintenance of hand tools, power tools and ancillary equipment.

S4: Identify and apply safe working techniques when manual handling, working at height and using access equipment and plant such as – fall prevention systems e.g. fall arrest, restraint and access systems, harnesses and scaffold.

S5: Identify and apply safe working techniques when slinging and signalling the movement of loads.

S6: Apply different materials for load bearing and non-load bearing purposes according to design and specifications.

S7: Install and remove temporary works e.g. protection, formwork, propping, bracing and access ramps in accordance with schemes of work.

S8: Assemble, position and install manufactured components such as structural elements, flooring units, stairs, pods, modules and cladding.

S9: Complete post installation checks to ensure compliance with specification.

S10: Interpret information for drawings and specifications in various types and formats including digital e.g. Building Information Modelling and Personal Digital Assistant models.

#### **Option 1: Concrete**

A Pre-cast Concrete Construction Assembly and Installation Operative can:

O1S1: Measure, mark, align, position and set out lines, starter rails and/or dowel bars according to drawings and specifications.

O1S3: Install temporary protection, propping and bracing according to drawings and specifications.

O1S4: Assemble components in accordance with specification and drawings including move, measure, align, fit, level, plumb, position and secure.

O1S5: Use appropriate materials and fixings in accordance with drawings, specifications and manufacturer's instructions.

O1S6: Apply finishing products to specified quality standard.

### **Option 2: Timber**

A Timber Frame Construction Assembly and Installation Operative can:

O2S1: Measure, mark, align, position and secure soleplates according to drawings and specifications.

O2S2: Identify and select components according to material identification marks.

O2S3: Assemble timber frame wall panels including move, measure, mark out, align, fit, level, plumb, finish, position and secure.

O2S4: Install floor systems according to drawings and specifications including cassettes, joists and combination systems.

O2S5: Erect roof structure carcassing components according to drawings and specifications e.g. false chimneys, hips and valleys, verges and eaves, parapet finishes.

O2S6: Form roof openings according to drawings and specifications e.g. hatches, dormers, roof lights and vents.

O2S7: Install ancillary items according to drawings and specifications e.g. membranes, damp proof courses, vapour barriers, fire stops and cavity barriers.

### **Option 3: Relocatable Modular and Portable**

A Relocatable Modular and Portable Building Assembly and Installation Operative can:

O3S1: prepare relocatable modular or portable buildings for loading onto transport vehicles, and assist in securing for travel, in line with supplied lift plan and method statements; e.g. temporary stability panels, temporary seals, and covers.

O3S2: commission, operate and decommission powered units, machinery and equipment specific to the relocatable modular and portable building operations e.g. pumps, generators, compressors, pressure washers and lighting sets.

O3S3: Disassemble relocatable modular and portable buildings according to specification including link-way connections, staircases and access ramps.

O3S4: complete maintenance on relocatable modular and portable buildings including replacement and repair of interior and exterior systems using carpentry, electrical, inspection, plumbing and painting skills.

O3S5: demonstrate product to a customer, completing all paperwork for pre-delivery inspection, handover documentation and after hire inspection reports.

### **Option 4: Permanent Modular**

A Permanent Modular Building Installation Operative can:

O4S1: Interpret survey information supplied. Measure, mark, align, position and set out lines, ground-cleats, anchorages and modular landing grids according to drawings and specifications.

O4S2: Identify and select components according to material identification marks, unique identification numbers, references and construction-installation sequence.

O4S3: Install temporary protection, and utilise the specified mounted safety equipment according to drawings and specifications.

O4S4: Assemble and record components in accordance with specifications, sequence and drawings including landing, securing, activating retaining components, positional

O4S5: Use weatherproofing and external inter-modular fire stopping materials and fixings in accordance with drawings, specifications, manufacturer's instructions and regulatory compliance.

O4S6: Select, pre-form, assemble and install internal inter-modular service connections in accordance with drawings, specifications, manufacturer's instructions and regulatory compliance.

O4S7: Carry out and record validation testing of connected services upon installation and connection, in accordance and alignment with the applicable standards and regulations.

O4S8: Select, pre-form, assemble and install internal inter-modular fire stopping and internal building fabric-finishing components and materials in accordance with drawings, specifications, manufacturer's instructions and regulatory compliance.

O4S9: Apply finishing products to quality standard in accordance with drawings and project specifications.

## Behaviours

### A Construction Assembly and Installation Operative demonstrates:

- **B1: Working safely:** in accordance with legal, regulatory, contractual and company procedures.
- **B2: Effective communication:** oral, written, listening, body language, digital and personal presentation.
- **B3: Team work:** work effectively and respectfully with others with minimum supervision, having consideration for equality and diversity.
- **B4: Independent working:** take responsibility for completion of your own work.
- **B5: Logical thinking:** use clear and valid reasoning when making decisions to undertake the work instructions.
- **B6: Working effectively:** undertake the work in a timely and productive manner.
- **B7: Adaptability:** be able to adjust to changes to the work instructions.
- **B8: Customer focus:** deliver work to required quality standards.

### Entry Requirements:

Individual employers will set their own selection criteria.

### Qualifications:

Slinger and signaller CPCS A40

### English and Maths:

Apprentices without Level 1 English and maths will need to achieve this level and take the tests for Level 2 prior to taking their end point assessment.

For those with an education, health and care plan or a legacy statement the apprenticeships English and maths minimum requirement is Entry Level 3 and British Sign Language qualification are an alternative to English qualifications for whom this is their primary language.

### Duration:

Typically 18 months.

### Level:

2

### Standard Review:

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**Version log**

VERSION	CHANGE DETAIL	EARLIEST START DATE	LATEST START DATE	LATEST END DATE
1.0		03/07/2019	Not set	Not set