



End-point assessment plan for Curtain Wall Installer apprenticeship standard

Apprenticeship standard reference number	Level of this end point assessment (EPA)	Integrated
ST0802	3	No

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Introduction and overview

This document sets out the requirements for end-point assessment (EPA) for the Curtain Wall Installer apprenticeship standard. It is for end-point assessment organisations (EPAOs) who need to know how EPA for this apprenticeship must operate. It will also be of interest to Curtain Wall Installer apprentices, their employers and training providers.

Full time apprentices will typically spend 21 months on-programme (before the gateway) working towards the occupational standard, with a minimum of 20% off-the-job training. All apprentices must spend a minimum of 12 months on-programme.

The EPA period should only start, and the EPA be arranged, once all of the pre-requisite gateway requirements for EPA have been met and they can be evidenced/available to an EPAO. The employer must be satisfied that the apprentice is consistently working at or above the level set out in the occupational standard. Apprentices must have compiled a portfolio of evidence, which underpins the EPA interview. For level 3 apprenticeships, apprentices without English and mathematics at level 2 must achieve these prior to taking their EPA.

The EPA will typically be completed within an EPA period typically lasting 3 months, after the apprentice has met the EPA gateway requirements.

EPA must be conducted by an organisation approved to offer services against this apprenticeship standard, as selected by the employer, from the Education & Skills Funding Agency's Register of End-point assessment Organisations (RoEPAO).

The EPA consists of three discrete assessment methods.

The individual assessment methods will have the following grades:

Assessment method 1: Observation with Questioning

- Fail
- Pass

Assessment method 2: Interview, underpinned by portfolio of evidence

- Fail
- Pass
- Distinction

Assessment method 3: Multiple-choice test

- Fail
- Pass

Performance in the EPA will determine the overall apprenticeship standard and grade of:

- Fail
- Pass
- Distinction

EPA summary table

On-programme (typically 21 months)	Training to develop the occupation standard's knowledge, skills and behaviours. Training towards English and mathematics level 2, if required Compilation of a portfolio of evidence
End-point Assessment Gateway	Employer is satisfied the apprentice is consistently working at, or above, the level of the occupational standard. Apprentice has achieved English and mathematics at level 2 Apprentice has compiled a portfolio of evidence, to underpin the EPA interview
End Point Assessment (typically 3 months)	Assessment Method 1: Observation with Questioning, graded fail, pass Assessment Method 2: Interview, underpinned by portfolio of evidence; graded fail, pass, distinction Assessment Method 3: Multiple-choice test; graded fail, pass

Length of end-point assessment period:

The EPA must be completed within an EPA period typically lasting 3 months, beginning when the apprentice has passed the EPA gateway.

Order of assessment methods

The assessment methods can be delivered in any order. The result of one assessment method does not have to be known before an apprentice starts the next one.

Gateway

The EPA period should only start once the employer is satisfied that the apprentice is consistently working at or above the level set out in the occupational standard, that is to say they are deemed to have achieved occupational competence. In making this decision, the employer may take advice from the apprentice's training provider(s), but the decision must ultimately be made solely by the employer.

In addition to the employer's confirmation that the apprentice is working at or above the level in the occupational standard, the apprentice must have completed the following gateway requirements prior to beginning EPA:

Apprentices without English and mathematics at level 2 must achieve these prior to taking their EPA.

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

For the interview, the apprentice must have completed and submitted a portfolio of evidence– see requirements below

Portfolio of evidence requirements:

- apprentices must compile a portfolio of evidence during the on-programme period of the apprenticeship
- it must contain sufficient evidence to demonstrate the KSBs that will be assessed by the interview, underpinned by portfolio
- It should contain typically no more than 10 discrete pieces evidence
- evidence must be mapped against the KSBs
- evidence may be used to demonstrate more than one KSB; a qualitative as opposed to quantitative approach is recommended
- evidence sources may include (but is not a definitive list):
 - workplace documentation, for example job cards/job sheets, check sheets/quality check records, accident records, equipment check/maintenance records
 - annotated specifications, for example drawings, cutting lists, work instructions

- annotated photographs
 - video clips (maximum duration in total typically 10-minutes) where video clips are used the apprentice must be visually identifiable at all times.
- it should not include any methods of self-assessment
 - any employer contributions should focus on direct observation of evidence (for example witness statements) of competence rather than opinions
 - the evidence provided must be valid and attributable to the apprentice; the portfolio of evidence must contain a statement from the employer confirming this
 - the portfolio of evidence must be submitted to the EPAO at the gateway point
 - The portfolio will not be directly assessed but will underpin the Interview conducted as Assessment Method 2.

Assessment methods

Assessment Method 1: Observation with Questioning

Overview

This assessment method has one component: observation with questioning.

Apprentices must be observed by an independent assessor completing work in their normal workplace, in which they will demonstrate the KSBs assigned to this assessment method. The EPAO will arrange for the observation to take place, in consultation with the employer.

One assessor may observe up to a maximum of one apprentice at any one time, to allow for quality and rigour.

The rationale for this assessment method is:

- this is a practical role, best demonstrated through observation
- observation allows the assessment of work tasks in the apprentice's normal place of work, using tools and equipment with which they are familiar, which is likely to enable the apprentice to perform at their best
- observation is a cost effective assessment method, as it makes use of the employer's premises and resources
- the tasks chosen reflect something that would be completed by curtain wall installers in every company on a daily basis; tasks not necessarily completed on a daily basis or not best suited to direct observation are assessed via the other assessment methods
- the questioning component enables the checking of underpinning knowledge, skills and behaviours

Delivery

The observation will take seven hours. The observation may be split into discrete sections held over a maximum of two working days. The length of a working day is typically considered to be 7.5 hours. The assessor has the discretion to increase the time of the observation by up to 10% to allow the apprentice to complete a task at the end of this component of the EPA. The independent assessor must be unobtrusive whilst conducting the observation.

In advance of the observation, apprentices must be provided with information on the format of the observation, including timescales.

The following activities **MUST** be observed during the observation:

- 1) Prepare tools and materials, prepare the installation, and set out curtain wall system to gridlines and datums according to specification while following health and safety.
- 2) Finishing the installation, applying face caps and ensuring components of the installation are line, level and plumb and correct to specification while following health and safety.

The activities must require the apprentice to select and use of a range of machinery, equipment and/or tools.

Observation specifications must be of equal complexity, so as to require a competent person seven hours to complete.

Questions must be asked after the observation is complete. The independent assessor must ask a minimum of 5 open questions. They may ask follow up questions where clarification is required. The purpose of the questioning is to assess underpinning knowledge, skills and behaviours. Questions must be asked within a time period not exceeding 45-minutes (this is in addition to the 7 hour observation). The independent assessor has the discretion to increase the time of the observation by up to 10%, to allow the apprentice to complete their last activity.

KSBs observed, and answers to questions, must be documented by the independent assessor.

The independent assessor will make all grading decisions.

EPAOs must ensure that apprentices have a different observation specification and set of questions in the case of re-sits/re-takes.

Other relevant information

There may be breaks during the observation to allow the apprentice to move from one location to another as required.

Venue

The observation must take place in the apprentice's employer's premises, under normal working conditions or a workplace other than the employer's own premises (e.g. premises of a client). The employer must ensure the necessary materials and equipment/tools are available to the apprentice.

Support material

EPAOs will produce the following material to support this assessment method:

- observation specifications. The 'specification bank,' must be of sufficient size to prevent predictability and the EPAO must review it regularly (at least once per year) to ensure it is fit for purpose. The specifications, relating to underpinning KSBs must be varied, yet allow assessment of the relevant KSBs.
- open questions to assess related underpinning KSBs. Independent assessors must use the question bank as a source for questioning but must use their professional judgement to tailor those questions appropriately and are responsible for generating appropriate questions in-line with the assessors' training and the EPAO's standardisation process. The 'question bank' must be of sufficient size to prevent predictability and the EPAO must review it regularly (and at least once a year) to ensure that it, and its content, are fit for purpose. The questions relating to underpinning KSBs must be varied yet allow assessment of the relevant KSBs.
- assessment recording documentation
- guidance for apprentices and employers

It is recommended that questions are developed in consultation with employers of this occupation. EPAOs must maintain the security and confidentiality of their questions when consulting employers.

Assessment Method 2: Interview, underpinned by portfolio

Overview

This method has one component: Interview.

The rationale for this assessment method is:

- it allows the apprentice to be assessed against KSBs that may not occur naturally on a daily basis, would take too long to observe or do not lend themselves to direct observation
- the interview is underpinned by a portfolio of evidence, enabling the apprentice to demonstrate the application of skill and behaviours as well as knowledge
- allows for testing of responses where there are a number of potential answers that couldn't be tested through the multiple-choice test

Delivery

The interview must be appropriately structured to draw out the best of the apprentice's competence. Apprentices must be assessed against the KSBs assigned to this assessment method – as shown in mapping of KSBs.

EPAOs must make arrangements for this assessment method with the apprentice's employer.

Independent assessors must conduct and assess the interview on a one-to-one basis.

The interview must last for 75 minutes. The independent assessor has the discretion to increase the time of the professional discussion by up to 10% to allow the apprentice to complete their last answer. Further time may be granted for apprentices with appropriate needs, in-line with the EPAOs Reasonable Adjustments policy.

The independent assessor must ask a minimum of 15 open, competence-based questions. Independent assessors must use the question bank as a source for questioning but must use their professional judgement to tailor those questions appropriately, and are responsible for generating appropriate questions in-line with the assessors' training and the EPAO's standardisation process. Follow up questions devised by the independent assessor are allowed to seek clarification. Apprentices are expected to understand and use relevant occupational language that would be typical of an apprentice working in this occupation.

The questions will focus on coverage of prior activity to demonstrate the KSB's mapped to this method, underpinned by the apprentice's portfolio of evidence. Apprentices should refer to and illustrate their answers with evidence from their portfolio of evidence however the portfolio of evidence is not directly assessed.

Questions must cover the following themes (at least 3 questions per theme):

- 1) Inspection and Handover
- 2) Curtain Wall Systems and Components
- 3) Communication, Health and Safety
- 4) Specifications and Preparation
- 5) Waste and Environment

The independent assessor must use the assessment tools and procedures that are set by the EPAO to record the interview.

Evidence from the questioning must be assessed holistically using the grading criteria for this assessment method. The independent assessor will make all grading decisions.

EPAOs must ensure that apprentices have a different set of questions in the case of re-sits/re-takes.

Independent assessors must be developed and trained by the EPAO in the conduct of interviews and reaching consistent judgement.

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Venue

The interview should take place in a quiet room, free from distractions and influence.

The interview, can take place in any of the following:

- employer's premises
- a suitable venue selected by the EPAO, for example a training provider's premises

Video conferencing can be used to conduct the interview, but the EPAO must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided in some way.

Other relevant information

A question bank must be developed by EPAOs. The 'question bank' must be of sufficient size to prevent predictability and EPAOs must review it regularly (and at least once a year) to ensure that it, and its content, are fit for purpose. The questions relating to the underpinning knowledge, skills and behaviours, must be varied yet allow assessment of the relevant KSBs.

Supporting Material

EPAOs will produce the following material to support this assessment method:

- set questions, a question bank must be developed by EPAOs.
- guidance for apprentices and employers

Assessment Method 3: multiple-choice test

Overview

This assessment method has one component: multiple-choice test.

The rationale for this assessment method is:

- allows for the efficient testing of knowledge where there is a right or wrong answer
- allows for flexibility in terms of when it is taken

Test Format

Apprentices must be assessed against the knowledge assigned to this assessment method – as shown in mapping of KSBs.

The test can be:

- computer based
- paper based

It will consist of 40 questions.

These questions will consist of:

- Closed response questions (e.g. multiple-choice questions)
- Minimum of five questions must relate to health and safety (K9) and minimum of five questions must relate to legislation (K12).
- The test should include seven scenario based questions.
- Apprentices must choose one correct answer from a choice of four.
- Each question answered correctly will be awarded one mark. Any incorrect or missing answers will be assigned nil marks.

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Test administration

Apprentices must have a maximum of 60 minutes to complete the test.

The test is closed book which means that the apprentice cannot refer to reference books or materials.

Apprentices must take the test in a suitably controlled environment that is a quiet space, free of distractions and influence, in the presence of an invigilator. The invigilator may be the independent assessor or another external person employed by the EPAO or specialised (proctor) software, if the test can be taken on-line. The EPAO is required to have an invigilation policy that will set out how the test/examination is to be carried out. This will include specifying the most appropriate ratio of apprentices to invigilators to best take into account the setting and security required in administering the test/examination.

The EPAO is responsible for ensuring the security of testing they administer to ensure the test remains valid and reliable (this includes any arrangements made using online tools). The EPAO is responsible for verifying the validity of the identity of the person taking the test.

The EPAO must verify the suitability of the venue for taking the test and the identity of the person taking the test.

Marking

Tests must be marked by independent assessors or markers employed by the EPAO following a marking guide produced by the EPAO. Alternatively, marking by computer is permissible where questions types allow this, to improve marking reliability.

Any incorrect or missing answers must be assigned 0 marks, a correct answer must be assigned 1 mark.

The grade boundaries that apply to the test are detailed within the “Grading descriptors” section.

Question and resources development

Questions must be written by EPAOs and must be relevant to the occupation and employer settings. It is recommended that this be done in consultation with employers of this occupation. EPAOs should also maintain the security and confidentiality of their questions when consulting employers. EPAOs must develop a ‘test specification’ and ‘question banks’ of sufficient size to prevent predictability and review them regularly (and at least once a year) to ensure they, and the test specification and questions they contain, are fit for purpose.

Required supporting material

As a minimum EPAOs will produce the following material to support this method:

- A test specification
- sample tests and mark schemes
- live tests and mark schemes
- analysis reports which show areas of weakness for completed tests/exams and an invigilation policy.

Reasonable adjustments

The EPAO must have in place clear and fair arrangements for making Reasonable Adjustments for this standard. This should include how an apprentice qualifies for Reasonable Adjustment and what

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Reasonable Adjustments will be made. The adjustments must maintain the validity, reliability and integrity of the assessment methods outlined in this assessment plan.

Weighting of assessment methods

All assessment methods are weighted equally in their contribution to the overall EPA pass grade. The interview underpinned by portfolio determine whether a distinction grade is awarded.

Overall EPA grading

All EPA methods must be passed for the EPA to be passed overall.

Performance in the EPA will determine the apprenticeship grade of fail, pass or distinction. Independent assessors must individually grade each assessment method, according to the requirements set out in this plan.

EPAOs must combine the individual assessment method grades to determine the overall EPA grade. Apprentices who fail one or more assessment method will be awarded an EPA 'fail.' In order to 'pass' apprentices must achieve a pass in all three assessment methods.

Grades from individual assessment methods should be combined in the following way to determine the grade of the EPA as a whole:

Assessment method 1 – observation with questioning	Assessment method 2 – interview underpinned by portfolio	Assessment method 3 – multiple choice test	Overall grading
Fail	Any grade	Any grade	Fail
Any grade	Fail	Any grade	Fail
Any grade	Any grade	Fail	Fail
Pass	Pass	Pass	Pass
Pass	Distinction	Pass	Distinction

Re-sits and re-takes

Apprentices who fail one or more assessment method will be offered the opportunity to take a re-sit or a re-take. A re-sit does not require further learning, whereas a re-take does.

Apprentices should have a supportive action plan to prepare for the re-sit or a re-take. The apprentice's employer will need to agree that either a re-sit or re-take is an appropriate course of action.

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An apprentice who fails an assessment method, and therefore the EPA in the first instance, will be required to re-sit/re-take any failed assessment methods only.

Re-sits and re-takes are not offered to apprentices wishing to move from pass to distinction.

Where any assessment method has to be re-sat or re-taken, the apprentices eventual final overall grade is not capped at a pass.

Roles and responsibilities

Role	Responsibility
Apprentice	<ul style="list-style-type: none"> • complete the on-programme element of the apprenticeship • prepare for and complete the EPA
Employer	<ul style="list-style-type: none"> • determines when the apprentice is working at or above the level outlined in the standard and is ready for EPA • support the apprentice to achieve the KSBs outlined in the standard to their best ability • select the EPAO • confirm all EPA gateway requirements have been met • confirm arrangements with EPAO for the EPA (who, when, where) in a timely manner • ensure apprentice is well prepared for the EPA • Should not be involved in the delivery of the EPA
EPAO	<p>As a minimum EPAOs should:</p> <ul style="list-style-type: none"> • appoint administrators/invigilators and markers to administer/invigilate and mark the EPA • provide training and CPD to the independent assessors they employ to undertake the EPA • have no direct connection with the apprentice, their employer or training provider i.e. there must be no conflict of interest • have processes in place to conduct internal quality assurance and do this on a regular basis • organise standardisation events and activities in accordance with this plan's IQA section • organise and conduct moderation of independent assessors' marking in accordance with this plan • have, and operate, an appeals process
Independent assessor	<p>As a minimum an Independent assessor should:</p> <ul style="list-style-type: none"> • be independent of the apprentice, their employer and training provider(s) i.e. there must be no conflict of interest • meet the experience and qualification requirements in accordance with this plan and have had training from their EPAO in terms of good assessment practice, operating the assessment tools and grading

	<ul style="list-style-type: none"> • attend the required number of EPAOs standardisation and training events per year
Training provider	<p>As a minimum the training provider should:</p> <ul style="list-style-type: none"> • work with the employer to ensure that the apprentice is given the opportunities to develop the KSBs outlined in the standard and monitor their progress during the on-programme period • advise the employer, upon request, on the apprentice's readiness for EPA prior to the gateway <p>• Plays no part in the EPA itself</p>

Internal Quality Assurance (IQA)

Internal quality assurance refers to the requirements that EPA organisations must have in place to ensure consistent (reliable) and accurate (valid) assessment decisions. EPA organisations for this EPA must:

- appoint independent assessors who have knowledge of the following occupational areas:
 - comprehensive verifiable experience of curtain wall installation i.e. five years or more experience in the sector plus:
 - recent relevant experience of the occupation/sector i.e. worked in the sector in the last three years or can demonstrate current knowledge and skills developed through continued professional development plus:
 - hold or be working towards an independent assessor qualification, for example TAQA (Training and Quality Assessment)
- provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading
- have robust quality assurance systems and procedures that support fair, reliable and consistent assessment across the organisation and over time.
- operate induction training and standardisation events for independent assessors when they begin working for the EPAO on this standard, before they deliver an updated assessment method for the first time and at least annually after that.

Affordability

Affordability of the EPA will be aided by using at least some of the following practice:

- online assessment
- using an employer's premises and resources
- using an employer's premises, equipment and resources for the observation

Mapping of knowledge, skills and behaviours (KSBs)

Assessment method 1: Observation with questioning

Knowledge
K8 How to ensure a product is compliant with specification and no damage or marking has occurred during transportation.
K16 Specifications, work instructions, diagrams, surveys, system specific checklists etc. what they include, how to complete them, different interpretations, query/error procedures.
K20 Quality Assessments e.g. damage from transport affecting aesthetic appearance of the frame according to BS EN 12206 Part 1
K24 How to check access/scaffold is correctly installed to allow; access to correct levels for work, positioning of products by handling equipment, safe working practices
K33 What is line, level and plumb, how to check and how to overcome problems. How to use technology such as cross line lasers and laser levels.

Skills
S1 Select the correct type and quantity of materials, components and equipment for each task in line with specifications/instructions.
S2 Read and interpret specifications, diagrams, CAD, and work instructions including BIM; following instructions.
S3 Prepare the work area effectively, making the site safe and ensuring all parties are considered (occupiers, children, pets, the general public and other trades people)
S4 Perform dynamic risk assessments, identifying risks and hazards in the workplace and control measures.
S5 Complete tools and equipment checks and adjustments. Use tools and equipment safely.
S6 Handle, load, unload and store products safely to minimise damage;
S7 Follow health & safety and environmental policy and procedures. Re-use, re-cycle and dispose of material, waste and scrap from the work area, as appropriate.
S9 Communicate with colleagues/customers; using relevant industry terminology appropriately and accurately.
S11 Use lifting and handling equipment/plant (with appropriate licenses) that is required for the installation.
S12 Use access equipment safely including the use of harnesses and appropriate PPE.
S14 Set out the curtain wall system to gridlines and datums.

S16 Correctly utilise the appropriate fixings and method to secure the curtain wall system to the structure
S18 Check that the installation is plumb, line and level
S20 Install infill panels/glass and secure them into place
S21 Apply face caps and gaskets to correct specification.
S22 Complete own work correct to specification within the defined schedule.
Behaviours
B1 Has a health & safety-first attitude, for example, resists pressures to follow unsafe working practices.
B2 Professional, for example, develops working relationships recognising dependencies, uses co-operative approaches to optimise workflow and productivity with limited supervision, shows respect for colleagues
B3 Takes responsibility, for example, completes own work to required quality standards.
B5 Works effectively, for example, undertakes work in a reliable, tidy and productive manner.

Assessment method 2: interview underpinned by portfolio

Knowledge
K3 Who they need to communicate with and when, and communication techniques; verbal, digital and written. Limits of autonomy; reporting channels. What is expected of the workforce during handovers.
K4 How a curtain wall system is designed and fabricated, how different designs will affect the specifications and the fabrication.
K15 Environmental considerations: safe disposal of waste, minimizing waste (re-use and re-cycle), waste contractors permit, energy efficiency. How recycled aluminum is used in the industry.
K19 Drawings and Scheduling systems including comprehensive working drawings and installation diagram dictating the installation schedule (start and finish points of the screen)
K21 Toolbox talks and inductions and how they should affect working practices
K25 Basic surveying techniques for setting out such as measuring and comparing to approved drawings
K27 The different components and ancillary items within a curtain wall system such as air seal gasket, thermal breaks, support/setting blocks, perimeter closers, face caps, sealing pieces, pressure plates. How and why they are used, their importance and the consequences of being omitted or misused.
K30 Reporting and Recording measures, why they are important (i.e. contractual)
K36 How to install windows and doors into their positions, the considerations such as adjustments, and any problems that can occur and how to overcome them.

K37 Requirements for ventilation, how ventilation systems work in curtain walling, the considerations and hazards and the problems that can occur and how to overcome them.
K38 What are pocket closers, balancer profiles, Ethylene Propylene Diene Monomer (EPDM) carriers and pressed metal closure profiles and what are they used for.
K39 Torque settings and how to find the appropriate setting in systems manuals.
K42 How to inspect work and how to report defects. Inspection and Handover Documentation as per company policy or systems house manuals.
K43 How to ensure all work is complete to avoid delays and what effect delays would have on the company and the company's profitability. How and why you ensure all additional works are recorded to support additional cost claims.
Skills
S6 Handle, load, unload and store products safely to minimise damage;
S8 Check and inspect own work. Report work outcomes and problems.
S10 Complete all relevant documentation to the job such as system specific checklists and accident and emergency reporting methods.
S13 Inspect the structure and survey the work area to ensure the drawings are accurate, the specification is correct and the installation can take place.
S15 Correctly utilise the appropriate fixings, anchors and brackets to secure to the structure
S17 Correctly use the appropriate sealants and sealing methods according to specification
S19 Locate support/setting blocks to system house recommendations.
S23 Carry out the handover process.
Behaviours
B4 Applies logical thinking, for example, uses clear and valid reasoning when making decisions related to undertaking the work instructions.
B6 Applies time management, for example uses their time effectively to complete work to schedule and always arrives at, and ready to work on time.
B7 Adaptable when required, for example adapts to changes to work instructions or variations in workplace contexts and environments.

Assessment method 3: multiple-choice test

Knowledge
K1 The role of curtain walling in the fenestration industry. Key markets for curtain wall products - domestic, commercial, public sector and their requirements.
K2 Different types of products and their purpose, including specialist products for blast mitigation, safety, security, and fire resistance

K5 What project specific testing will be needed and why. How and when testing takes place. Types of testing. What happens during testing and why. Consequences of unsatisfactory results.
K6 How scheduling and planning affect specifications, an installers' working practices and what risk assessments need to take place.
K7 What is the purpose of snagging, what does it look for and what are its implications.
K9 Health and safety regulations and procedures, including: Health & Safety at Work Act, personal protective equipment (PPE), manual handling, Control of Substances Hazardous to Health (COSHH), Provision and Use of Work Equipment Regulations (PUWER), Local Exhaust Ventilation (LEV) how they must be applied in the workplace. RAMS (Risk assessments, dynamic risk assessments and method statements) and how they inform your work. Safe methods of work including working at height regulations, person safe systems, scaffold/ harnessing and limited access areas found in roof glazing. Accident and Emergency Procedures and reporting methods and why these are important including basic knowledge of first aid and RIDDOR.
K10 Methods for the safe handling, movement and storage of frames and infills. Authority/licenses required to use moving and handling equipment such as cranes, forklift trucks and manipulators. Different types of handling equipment/plant as required by various heavy frames and profiles. Working limits of handling equipment. Problems or damage that can occur and avoidance methods.
K11 How to stack and store products and materials safely, effectively and securely. Problems or damage that can occur with stored resources and how to overcome them.
K12 Legislation, regulations and industry standards, including Centre for Window and Cladding Technology (CWCT) guidelines window energy rating standards, CE marking, secure by design, building regulations such as Approved Documents Parts A-J, K-N, P, Q and Regulation 7
K13 How to use MEWP (Mobile Elevating Work Platforms), the hazards and how to control the risks, what training is required and inspection, maintenance and examination.
K14 When a road needs to be closed and how to deal with road closures.
K17 Product types including specific fabrication elements to be checked prior to installation.
K18 Architectural finishes and how to ensure they are free of damage or imperfections prior to installation
K22 Safe use of hand/power tools understanding the limitations of battery powered tools. Basic RCD and PAT Knowledge and how it affects the tools and equipment used on site.
K23 Types of errors that occur; reporting and rectification. Error investigation techniques.
K26 How to check the structure is correct to approved drawings, know how to check all floors to allow curtain wall to run full height without structural clashes and how to adjust initial setting out to compensate for irregularities between the building structure and approved drawings
K28 Types of bracketry and their uses (load bearing, wind restraint) and being able to determine their position. Remedial and corrective measures such as adjustable brackets to accommodate movement and settlement
K29 Materials compatibility e.g. what can happen if two materials are incompatible and preventing bi-metallic corrosion by use of an isolation component.

K31 The importance of fixings and heavier anchors, how to use them in accordance with installation drawings/manufacturers instructions.
K32 The methods of sealing that can be used, when and why to use them and how to overcome problems that can occur
K34 What is deflection, what can cause deflection, what are the consequences of deflection.
K35 How to install glazed elements and infill panels. The considerations, hazards and problems that can occur and how to overcome them.
K40 Drainage types used in different systems, how they work. Any problems that can occur with them and how to overcome them.
K41 Toggle and/or pressure plate and why it is used.
K44 Employment rights and responsibilities, contracts and what you should be aware of e.g. Working Time Directive, Employment Rights Act 1996. Equality and diversity policies in the workplace.

Grading descriptors

Curtain Wall Installer – Grading descriptors

Assessment method 1: Observation with questioning

Knowledge	Pass Apprentices must achieve all of the following to achieve a pass:
<p>Curtain Wall system and Components</p> <p>K33 What is line, level and plumb, and how to check the installation for this.</p> <p>S18 Check that the installation is plumb, line and level</p> <p>S1 Select the correct type and quantity of materials, components and equipment for each task in line with specifications/instructions.</p> <p>S14 Set out the curtain wall system to gridlines and datums.</p> <p>S16 Correctly utilise the appropriate fixings and method to secure the curtain wall system to the structure</p> <p>S20 Install infill panels/glass and secure them into place.</p> <p>S21 Apply face caps and gaskets to correct specification.</p> <p>S22 Complete own work correct to specification within the defined schedule.</p> <p>B3 Takes responsibility, for example, completes own work to required quality standards.</p>	<p>Checks for line, level and plumb and identifies any problems. (K33, S18)</p> <p>Selects the correct type and quantity of materials, components and equipment according to the specification. (S1)</p> <p>Obtain access to gridlines and datums and set out the curtain wall system within tolerance to datums given (S14)</p> <p>Select the appropriate fixings and method to secure the curtain wall system according to drawings and specifications. (S16)</p> <ul style="list-style-type: none"> • Installs infill panels without damage. • Secures appropriately as per specification. • Ensures panel is square. • Uses stitch plates effectively. • Applies pressure plates and face caps to correct specification. (S20, S21) <p>Completes work correct to specification within defined schedule. (S22)</p> <p>Carries out quality check in accordance with their organisation and BS EN 12206 Part 1. (B3)</p>

<p>Waste and Environment</p> <p>S7 Follow health & safety and environmental policy and procedures. Re-use, re-cycle and dispose of material, waste and scrap from the work area, as appropriate.</p> <p>(NB re-use, recycle and disposal will be tested in AM2)</p>	<p>Follows the organisations procedures to re-use, re-cycle and dispose of waste/surplus material. (S7)</p> <p>Works in a way that does not endanger themselves or others. Follows site specific procedures safely. Wears correct PPE. (S7)</p>
<p>Specifications and Preparation</p> <p>K16 Specifications, work instructions, diagrams, surveys, system specific checklists etc. what they include, how to complete them, different interpretations, query/error procedures. (specs n prep)</p> <p>K24 How to check access/scaffold is correctly installed to allow; access to correct levels for work, positioning of products by handling equipment, safe working practices</p> <p>S2 Read and interpret specifications, diagrams, CAD, and work instructions including BIM; following instructions.</p> <p>S3 Prepare the work area effectively, making the site safe and ensuring all parties are considered (occupiers, children, pets, the general public and other trades people)</p> <p>S4 Perform dynamic risk assessments, identifying risks and hazards in the workplace and control measures.</p> <p>S5 Complete tools and equipment checks and adjustments. Use tools and equipment safely.</p>	<p>Works to specification, work instructions, diagrams, completed checklists etc. appropriately. (K16)</p> <p>Checks for evidence of the scaff tag or equivalent ticket. Accesses the work area safely and positions products using appropriate equipment. (K24)</p> <p>Demonstrates the use of workplace documentation such as specifications, diagrams, CAD and work instructions to complete the installation correctly. (S2)</p> <p>Carries out a visual risk assessment and prepares the work area accordingly to ensure work area is safe. (S3, S4)</p> <p>Checks tools and equipment at the start of the task and uses them safely throughout the task, adjusting tools and equipment where required. (S5)</p>

<p>Inspection & handover</p> <p>K8 How to ensure a product is compliant with specification and no damage or marking has occurred during transportation.</p> <p>K20 Quality Assessments e.g. damage from transport affecting aesthetic appearance of the frame according to BS EN 12206 Part 1</p> <p>B5 Works effectively, for example, undertakes work in a reliable, tidy and productive manner.</p>	<p>Completes visual inspection of products to ensure there is no damage or marks. (K8, K20)</p> <p>Ensures the work area is clear and tidy. Completes own work. Works in a logical sequence. (B5)</p>
<p>Communication, Health and Safety</p> <p>S6 Handle, load, unload and store products safely to minimise damage; (NB only handling will be seen on observation, loading, unloading and storage in AM2)</p> <p>S9 Communicate with colleagues/customers; using relevant industry terminology appropriately and accurately.</p> <p>S11 Use lifting and handling equipment/plant (with appropriate licenses) that is required for the installation.</p> <p>S12 Use access equipment safely including the use of harnesses and appropriate PPE.</p> <p>B1 Has a health & safety-first attitude, for example, resists pressures to follow unsafe working practices.</p> <p>B2 Professional, for example, develops good working relationships recognising dependencies, uses co-operative approaches to optimise workflow and productivity with limited supervision, shows respect for colleagues.</p>	<p>Follows correct manual handling procedures.</p> <p>Uses lifting and handling equipment/plant.</p> <p>Stores materials/components/consumables safely. (S6)</p> <p>Compares and contrasts the benefits and weaknesses of alternative lifting and handling equipment/plant. (S6)</p> <p>Communicate appropriately and accurately with colleagues and/or customers using relevant industry terminology. (S9, B2)</p> <p>Select the appropriate access equipment and PPE to carry out the task. (S11)</p> <p>Works in a way that does not endanger themselves or others. Follows site specific procedures safely. Wears correct PPE. (S12, B1)</p>
<p>Fail – apprentices will fail the assessment method where they do not demonstrate all of the pass criteria</p>	

Assessment method 2: Interview underpinned by portfolio

KSB	Pass	Distinction
<p>Curtain Wall System & Components</p> <p>K4 How a curtain wall system is designed and fabricated, how different designs will affect the specifications and the fabrication.</p> <p>K27 The different components and ancillary items within a curtain wall system such as air seal gasket, thermal breaks, support/setting blocks, perimeter closers, face caps, sealing pieces, pressure plates. How and why they are used, their importance and the consequences of being omitted or misused.</p> <p>K36 How to install windows and doors into their positions, the considerations such as adjustments, and any problems that can occur and how to overcome them.</p> <p>K37 Requirements for ventilation, how ventilation systems work in curtain walling, the considerations and hazards and the problems that can occur and how to overcome them.</p> <p>K38 What are pocket closers, balancer profiles, Ethylene Propylene Diene Monomer (EPDM) carriers and pressed metal closure profiles and what are they used for.</p>	<p>Apprentices must achieve all of the following to achieve a pass</p> <p>Describes how a curtain wall system is designed and fabricated, detailing how different designs will affect the specifications and fabrication. (K4)</p> <p>Describes the range of available components and ancillary items and describes their key features e.g. performance, installation methods. Explain how and why they are used, their importance and the consequences of being omitted or misused. (K27)</p> <p>Lists key steps taken during installation of windows and doors including adjustments, potential problems and solutions (K36)</p> <p>Describes 2 ventilation methods, states a problem that can occur and describes how this can be overcome. (K37)</p> <p>Identifies pocket closers, balance profiles, ethylene propylene diene monomer (EPDM) carriers and pressed metal closure profiles and states their uses. (K38)</p>	<p>Apprentices must achieve the pass plus at least two statements from each of the following boxes to achieve a distinction</p> <p>Explains the problems that can occur when using non-specified components. (K4)</p> <p>Evaluates different methods of installing windows and doors providing benefits of each. (K36)</p> <p>Compares and contrasts 2 different ventilation systems. (K37)</p> <p>States the benefits of EPDM when pressure testing a building (K38)</p>

<p>S15 Correctly utilise the appropriate fixings, anchors and brackets to secure the structure</p> <p>S17 Use the appropriate sealants and sealing methods according to specification</p> <p>S19 Locate support/setting blocks to system house recommendations.</p> <p>B4 Applies logical thinking, for example, uses clear and valid reasoning when making decisions related to undertaking the work instructions</p> <p>B6 Applies time management, for example uses their time effectively to complete work to schedule and always arrives at, and ready to work on time.</p>	<p>Provides examples of selecting the appropriate fixings, anchors and brackets according to drawings and specifications and explains correct procedure to set out and prepare for fixings, anchors and brackets for different substrates e.g. steel, concrete, timber, blockwork etc. (S15)</p> <p>Provides examples of selecting and using sealants and explain why they were the most appropriate for the task. (S17)</p> <p>Provides examples of placing support/setting blocks in appropriate positions according to system house recommendation. (S19)</p> <p>Identifies a logical installation order, conducts checks and identifies any issues. (B4)</p> <p>Provides evidence of effective time management both in terms of personal punctuality and completion of work. (B6)</p>	<p>Explains the consequences of not selecting the appropriate fixings, anchors and brackets. (S15)</p> <p>Explains the consequences of using the wrong sealant and sealing method. (S17)</p> <p>Explains the consequences of not positioning the setting blocks according to system house recommendations. (S19)</p> <p>Explains the importance of effective time management in terms of self, customer and organization (B6)</p>
<p>Waste & Environment</p> <p>K15 Environmental considerations: safe disposal of waste, minimizing waste (re-use and re-cycle), waste contractors permit, energy efficiency. How recycled aluminum is used in the industry.</p>	<p>Explains which products can be recycled or re-used and the purpose of a waste contractors permit. (K15)</p> <p>Explains energy efficiency and its use in the curtain walling sector (K15)</p>	

<p>Specifications and Preparation</p> <p>K19 Drawings and Scheduling systems including comprehensive working drawings and installation diagram dictating the installation schedule (start and finish points of the screen)</p> <p>K25 Basic surveying skills for setting out such as measuring and comparing to approved drawings</p> <p>S13 Inspect the structure and survey the work area to ensure the drawings are accurate, the specification is correct and the installation can take place.</p>	<p>Identifies CAD and Scheduling systems used by the organisation. (K19)</p> <p>Describes how installation schedule is determined in the organisation. (K19)</p> <p>Provides portfolio examples of using basic surveying skills for setting out. (K25)</p> <p>Lists the key steps taken to compare the installation with approved drawings. (K25)</p> <p>Provides examples of having carried out visual inspection of the work area to ensure drawings and specifications are accurate and explain the process followed. (S13)</p>	<p>Explains how CAD and scheduling systems influence the installation process. (K19)</p> <p>Compares the use of digital and analogue tools when setting out. (K25)</p> <p>Provide examples of where the structure and the drawings do not correspond and explain what steps were taken to overcome this. (S13)</p>
<p>Inspection & Handover</p> <p>K30 Reporting and Recording measures, why they are important (i.e. contractual)</p> <p>K42 How to inspect work and how to report defects. Inspection and Handover Documentation as per company policy or systems house manuals.</p> <p>K43 How to ensure all work is complete to avoid delays and what effect delays would have on the company and the company's profitability. How and why you ensure all additional works are recorded to support additional cost claims.</p>	<p>Lists reporting and recording measures and can explain why they are important. (K30)</p> <p>Explains how to inspect work and report defects in accordance with company policy or systems house manuals. (K42)</p> <p>Explains the effect delays have on the company and the responsibility they have as part of the organisation. (K43)</p> <p>Explains how to record additional works to support additional cost claims (K43)</p>	<p>Explains the linkages between accurate reporting and the installation programme and/or contract. (K30)</p> <p>Explains the potential benefit of continual inspections. (K42)</p>

<p>S8 Check and inspect own work . Report work outcomes and problems.</p> <p>S10 Complete all relevant documentation to the job such as system specific checklists and accident and emergency reporting methods.</p> <p>S23 Carry out the handover process.</p> <p>B7 Adaptable when required, for example adapts to changes to work instructions or variations in workplace contexts and environments</p>	<p>Provide examples of having carried out interim and final inspections and explain the appropriate reporting processes. (S8)</p> <p>Provides examples of accurately, legibly and fully completed documentation/reporting methods as required and explains the steps taken to ensure it was completed. (S10)</p> <p>Provides examples of workplace documentation completed and explains the process followed. (S23)</p> <p>Follows instructions and changes to the work schedule. (B7)</p>	<p>Explain the importance of the handover process for all parties involved. (S23)</p> <p>Working proactively, prompting changes to the work schedule and can acknowledge the benefits of change. (B7)</p>
<p>Communication, Health and Safety</p> <p>K3 Who they need to communicate with and when, and communication techniques; verbal, digital and written. Limits of autonomy; reporting channels. What is expected of the workforce during handovers.</p> <p>K39 Torque settings and how to find the appropriate setting.</p>	<p>States who they need to communicate with, the information they need to pass on and what method/s of communication are the most appropriate. (K3)</p> <p>Describes what makes a professional handover process and what is included. (K3)</p> <p>States why torque settings are important.</p> <p>Explains how to set torque settings</p>	<p>Explains the problems that can occur due to miscommunication. (K3)</p> <p>Explains the consequences of using a higher or lower torque setting than stated. (K39)</p>

<p>K21 Toolbox talks and inductions and how they should affect working practices</p> <p>S6 Handle, load, unload and store products safely to minimise damage; (NB handling will be seen in the observation so does not need to be tested as part of this method)</p>	<p>Explains where to find appropriate torque setting. (K39)</p> <p>Explains what a tool box talk / induction covers and how this affects working practices. (K21)</p> <p>Explains how to prevent or minimise damage when loading unloading and storing products. (S6)</p>	<p>Explains what a suitable and safe location to store the materials is. (S6)</p>
<p>Fail – apprentices will fail the assessment method where they do not demonstrate all of the pass criteria</p>		

Assessment method 3: Multiple-choice test

K1, K2, K5, K6, K7, K9, K10, K11, K12, K13, K14, K17, K18, K22, K23, K26, K28, K29, K31, K32, K34, K35, K40, K41, K44.

Grade	Minimum Score	Maximum Score
Pass	30	40
Fail	0	29