

Specifiers' Guide to Aluminium Curtain Walling

Choosing the correct aluminium
Curtain Walling system for your project

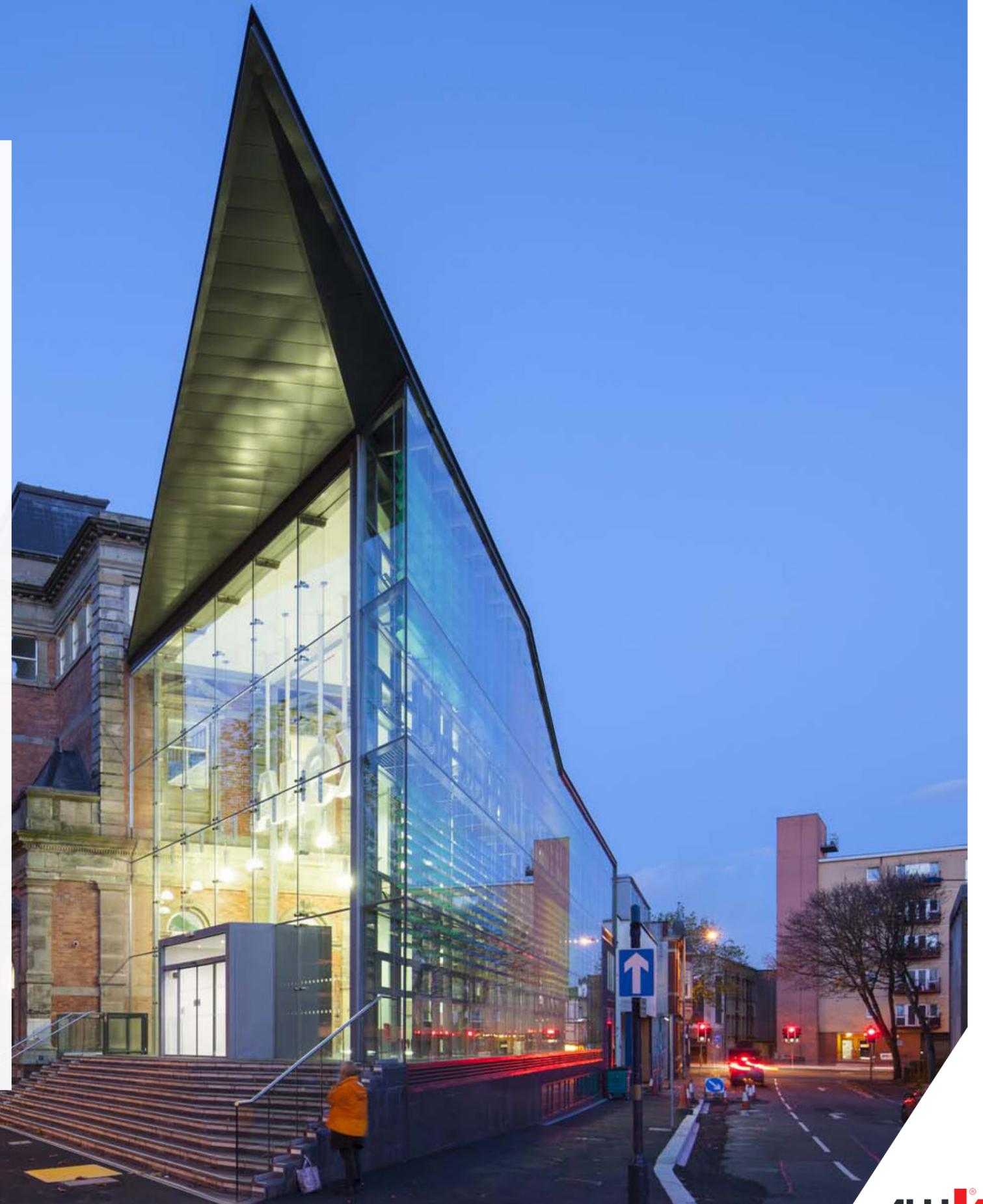
Background

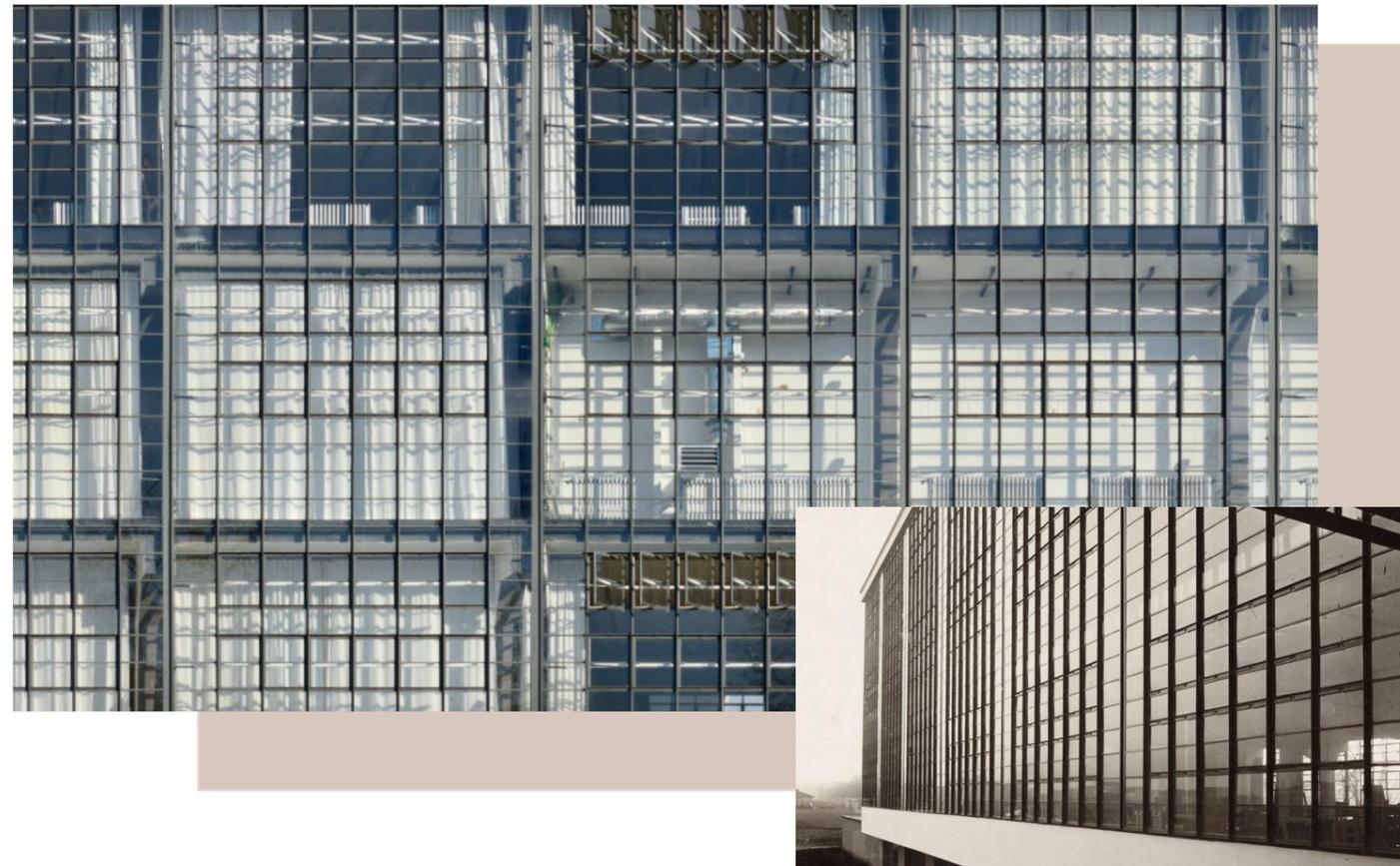
The advent of glazed curtain wall created an entirely new way for architects to shape our built environment. **For the first time in history, it was possible to express the inner life of our buildings and share them with the world outside the window.**

During the day, curtain walling illuminates the life of its occupants, gives expansive views and banishes gloomy interiors. At twilight and night, it comes to life sharing the secret inner life with the city. It changes the way we perceive space and form.

Architect Ludwig Mies van der Rohe believed that architecture should embody a continuous flow of space, blurring the lines between interior and exterior. It isn't an exaggeration to say that glass, plus aluminium has literally built our cities in the latter half of the 20th Century.

AluK are proud of the part we play in helping architects shape that world.





A Brief History of Curtain Walling

The separation of envelope and structural frame was pivotal in the creation of the world's first curtain walled buildings – in Liverpool, 16 Cook Street by Peter Ellis Architect 1864-66 was one of the first examples. The extensive glass walls allowed light to penetrate further into the building, utilizing more floor space and reducing lighting costs. The Bauhaus School designed by Walter Gropius in Dessau, Germany, completed in 1926 was a tour de force in the expression of the façade as a lightweight independent functional way to maximise daylight – an expression of functionalism at its purest. The rest, as they say, is history.

The nature of your project will dictate system choice

It is important to consider how your building will be designed to accommodate the optimum façade and curtain wall system. **Curtain walling requires integrated thinking early in the design stage to successfully combine with the structural system in use and incorporate appropriate thermal insulation etc.**

The integrity and in built tolerances of your building's structure are key to the lifespan of any curtain walling specified. Curtain walling can be fixed to the building structure in a variety of ways, each with its own implications, whether it is between floor slabs, over floor slabs or onto edge beams.

The height of the building and the area to be covered are the most important factors, but also distance between floor slabs and the required span of each panel.

Factors to consider:

- Location and layout of site during construction.
- Provision of on-site storage and protection*.
- Height of the building.
- Area to be covered.
- Distance between floor slabs.
- Required span of each panel.
- Regulations and standards.

*When specifying unitised systems, the storage space will need to be much larger and weatherproof.

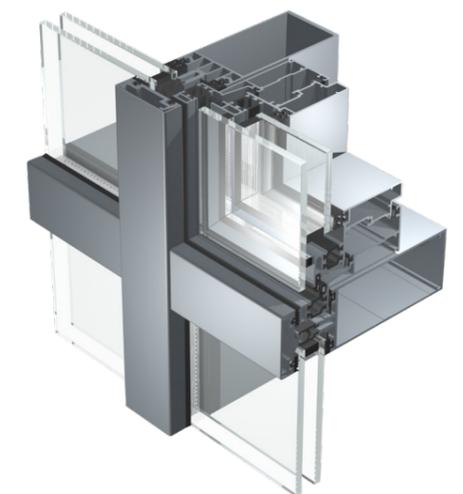
Two systems of curtain walling

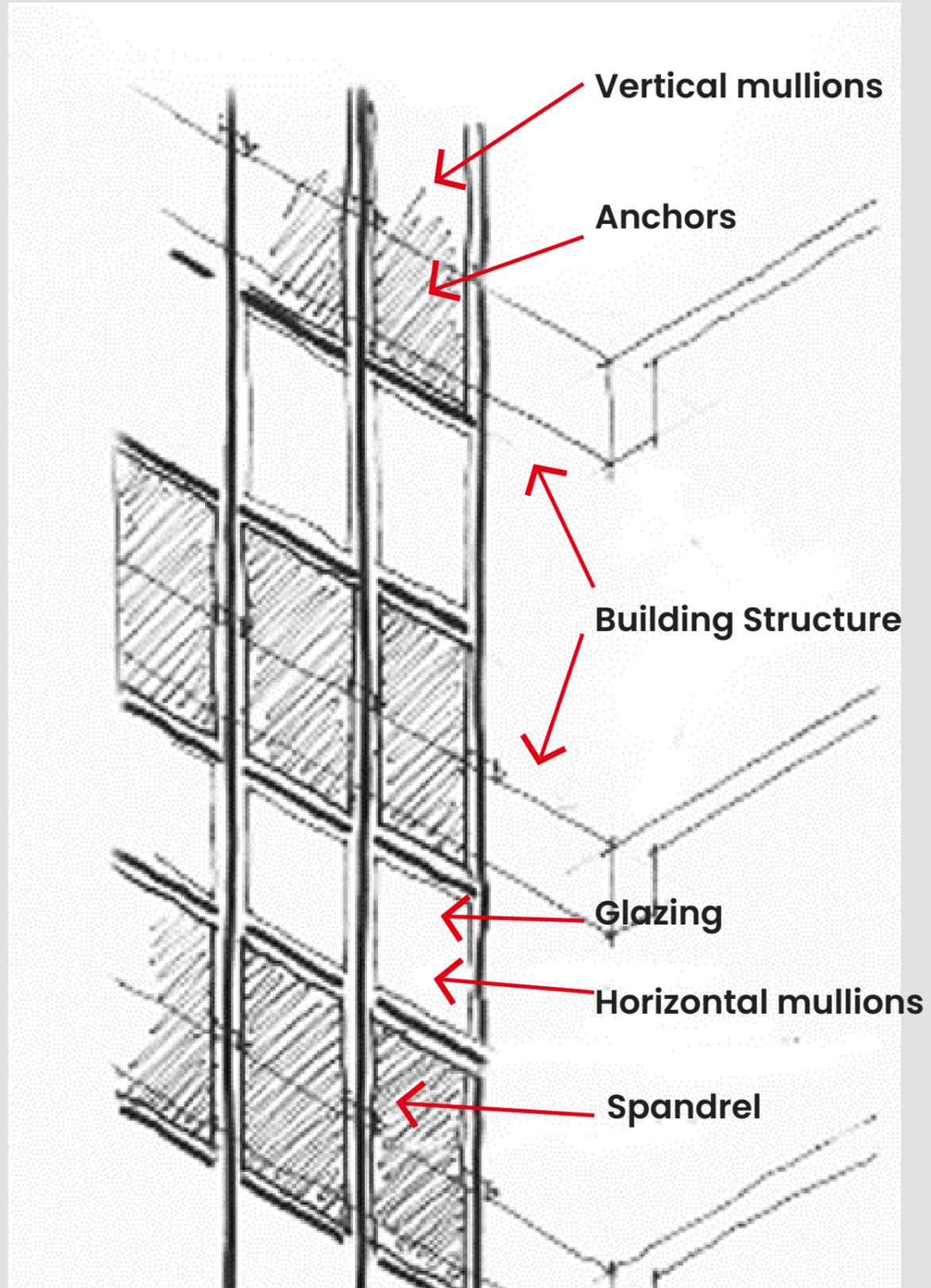
Fundamentally, there are two types of aluminium curtain walling – 'Stick Systems' or 'Unitised Systems'.

Stick systems

As the name suggests, Stick systems **are delivered to site as a series of individual components and 'sticks' which are in turn assembled and glazed onsite.** They are economical, require shorter fabrication periods and simpler access requirements. But they do typically have longer site installation time and construction subject to site conditions.

Stick systems are ideally suited to small areas of glazing or panelling, industrial, commercial and residential applications for heights of around three stories or less. They require scaffolding and take between four and five months for site delivery from order. **Installation is usually around 50 m2 per week per installer.**





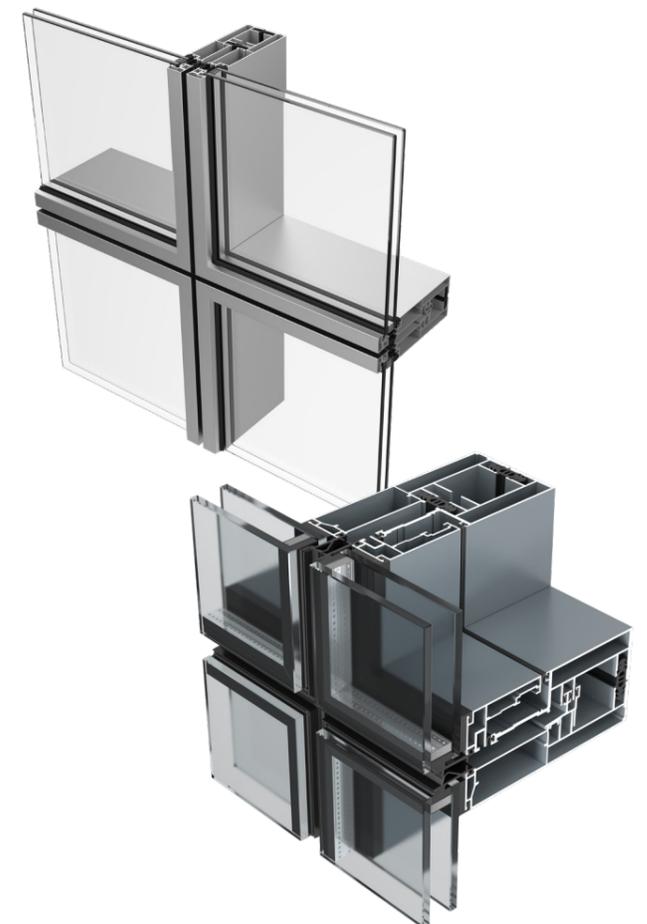
Unitised systems

Unitised systems **are installed as a series of pre-assembled, pre-glazed frames which interlock during site installation.** They offer factory sealed weather tightness, shorter site installation and fewer health and safety considerations. But they need more complex access requirements, have larger frame sightlines, less flexible installation. They also require longer lead times and potentially increased cost.

Unitised systems offer more features albeit at higher component cost compared to stick systems. But they offer increased installation speed, better accuracy in production tolerances, and do not require scaffolding, thus reducing overall costs compared to stick systems. They generally are not recommended for buildings of less than three stories, or applications above 3000m².

Unitised systems take around five to six months for site delivery but **can be installed more quickly - 75 to 150 m² per day per installer, depending on complexity.**

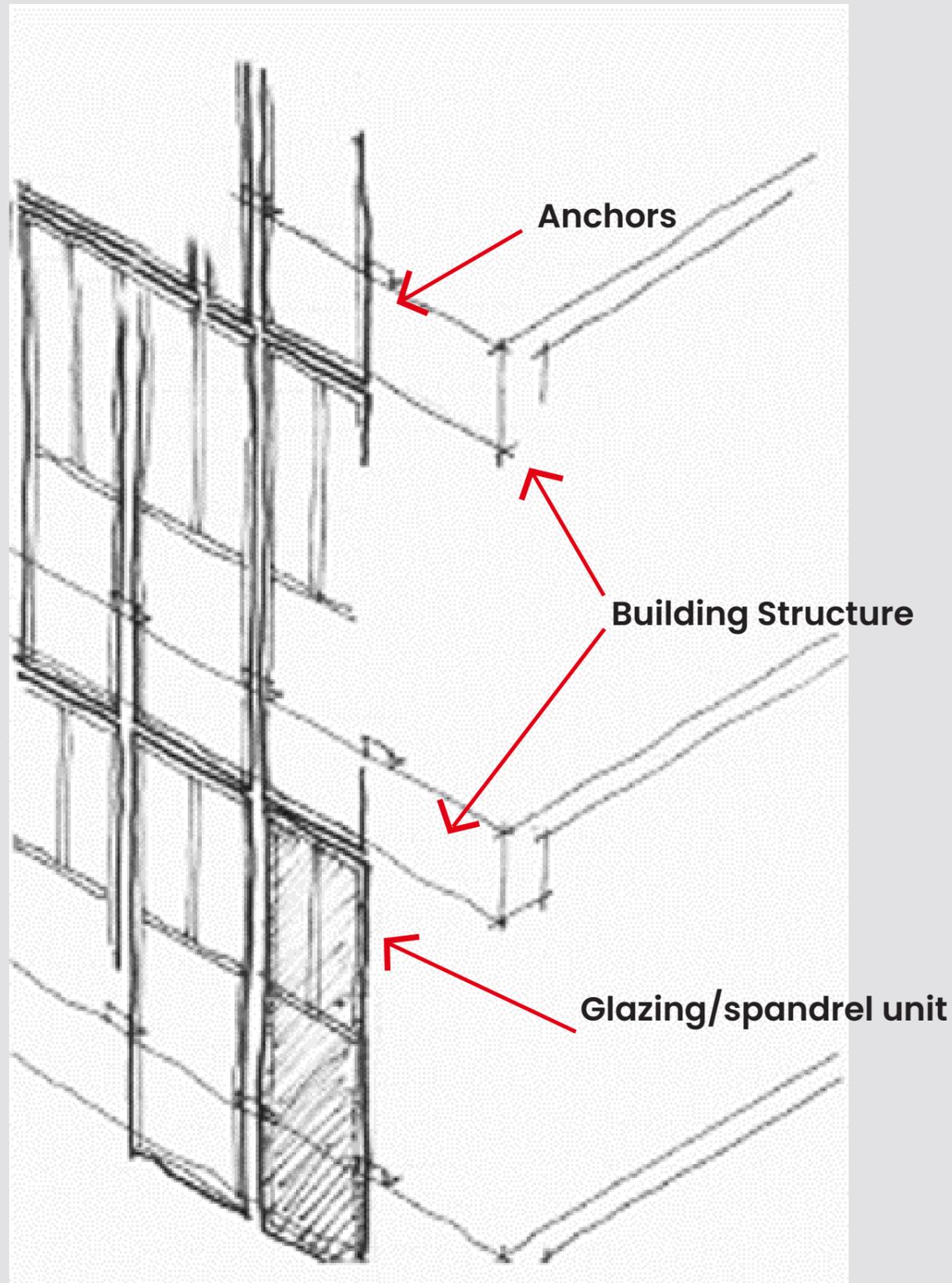
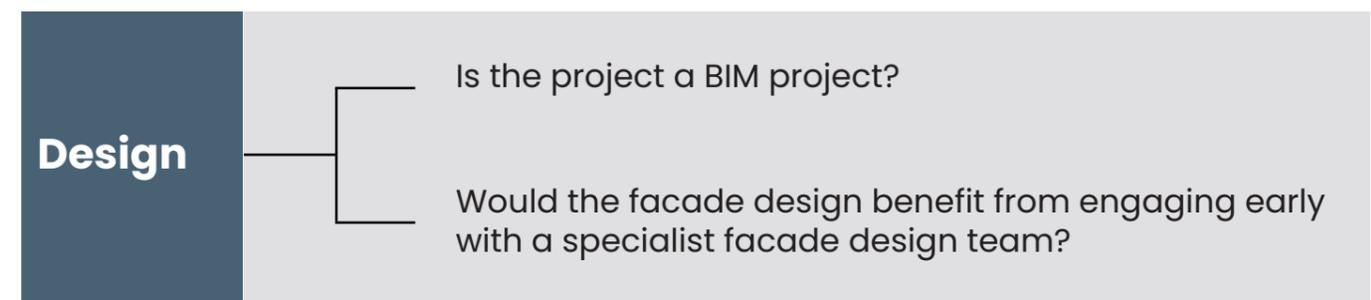
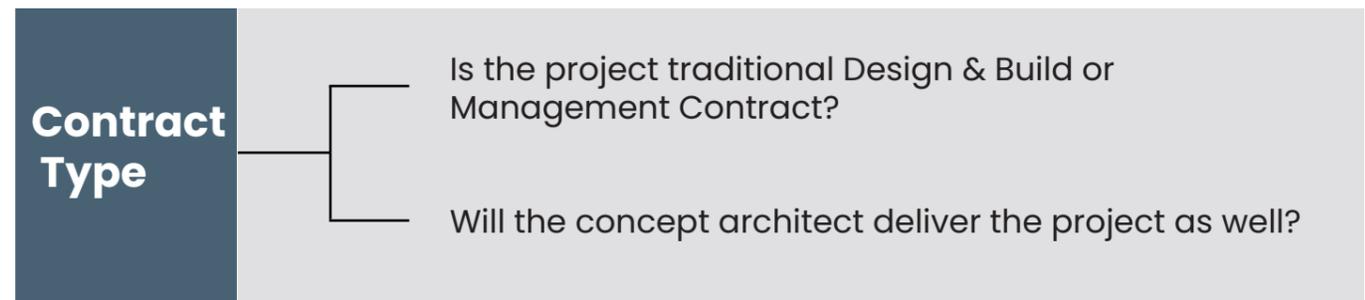
High rise buildings and skyscrapers are almost exclusively clad in unitised systems. They require specialist designers, engineers, and contractors to be involved at the outset in their design and installation, often in the form of third-party facade companies who may offer all three services. When selecting a supplier for your curtain walling, make sure to look at their design experience and track record, examples of their work and in-house resources and facilities.



The system design decision tree

The following flowcharts describe the selection process that specifiers can use to determine the most appropriate system for their project. The idea is to run through the decision tree and consider each section from strategic considerations to details and material choices.

01. Project and contract



02. Design, construction and finishes

Colour and finish

- Are the aluminium frames powder coated or anodised?
- Is the inside the same colour as the outside?
- Is the building in a corrosive environment or by the sea?

Opening Elements

- Do the windows open? If so, in or out (refer to cleaning strategy)?
- Do any curtain walling screens require opening elements?
- Are swing doors or sliding doors required within the curtain walling screens?

Build programme

- When does the building start on site?
- What is the duration of the scheme?

03. Details and performance 1

Thermal requirements

- What is the glazing U value target?
- What are the sizes of your windows?

Cleaning

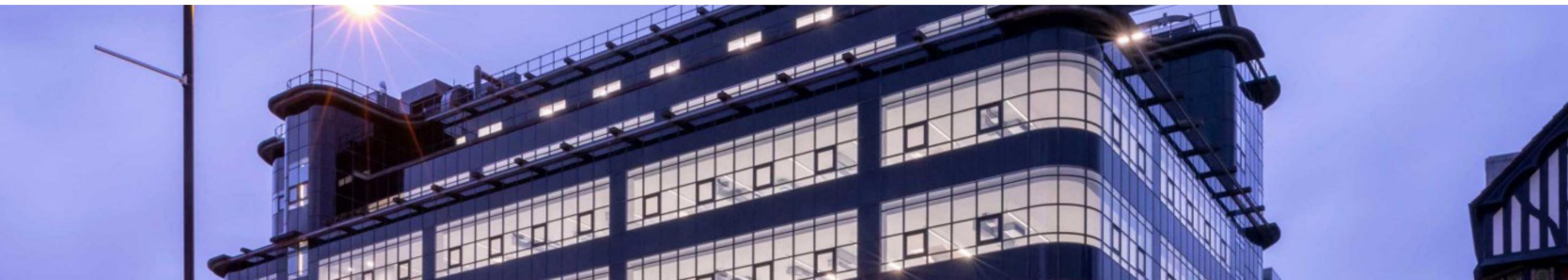
- Are the windows to be cleaned from the inside or outside?

DDA

- How many doors require low threshold?
- How many windows require a low handle height?

Ventilation

- Is the building naturally or mechanically ventilated?
- Is purge ventilation required?
- Are trickle vents required?



04. Details and performance 2

Fixing and brackets	<ul style="list-style-type: none">What structure will provide the load bearing fixing points?What is the project wind load?What are movement and tolerances of the building?
Testing required	<ul style="list-style-type: none">Do windows/doors fall within the manufacturer's tested system range?Does the façade need to meet CWCT/BS test criteria?Does the building programme allow for any extra testing required?
Security	<ul style="list-style-type: none">Are the windows/doors required to be Secured by Design?Does some or all of the glazing need to have an acoustic rating?
Acoustic requirements	<ul style="list-style-type: none">What are the RW + Ctr noise reduction requirements?Is there a flanking noise reduction required?

Rules, regulations and standards

Part L is the building regulation section for the conservation of fuel and power. This has a major impact on the design of curtain walling. **Regulations have required increased and improved performance over time from glazing systems.** The regulations presently call for area weighted U-values:

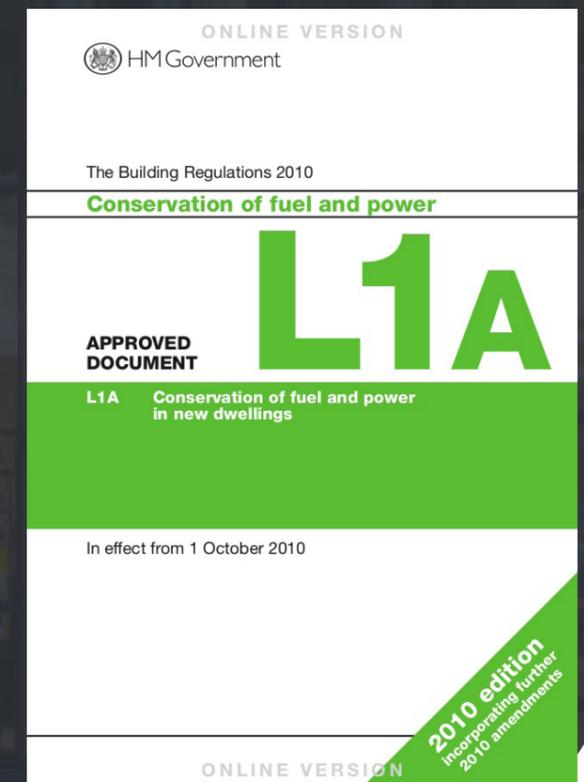
Document L1A – for new dwellings calls for a maximum area weighted average U-value of 2.0W/m²k for the entire glazing package of the building.

Document L1B – for existing dwellings does not detail any requirements relating to curtain walling.

Documents L2A and L2B – relate to buildings other than dwellings and are the most likely to apply to your project when using curtain walling.

Document L2A details a maximum area weighted U-value requirement of 2.2W/m²k in new buildings, which again relates to the entire glazing package and not just a single element.

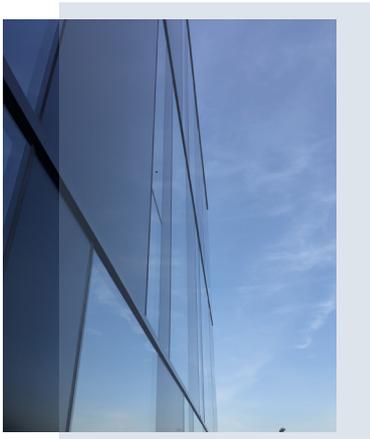
Document L2B however is slightly different, this specifically calls for the curtain walling element to achieve a maximum U-value of 1.8W/m²k.



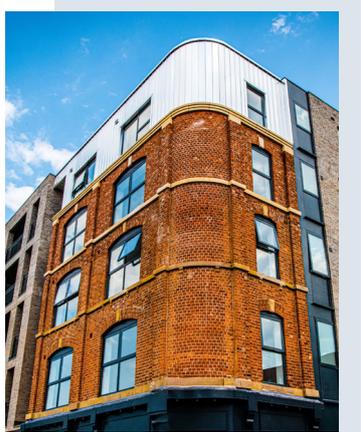
About AluK

AluK International is a global leader in the design and engineering of aluminium window, door and curtain walling systems. With more than 60 years' expertise and operations in major countries around the globe, our façade systems have been specified and installed in buildings as diverse as the RIBA Stirling Prize shortlisted Burntwood School in London and the Park Towers commercial complex in Dubai.

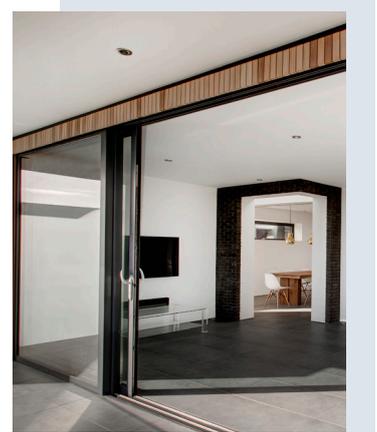
AluK prides itself on its ability to collaborate with clients and specifiers at every stage in the design, fabrication and installation of curtain walling, adding value with advice and support which streamlines the process and potentially saves time and money on projects.



Curtain Walling Systems



Window Systems



Sliding Door Systems



Entrance Doors and GFT



Folding Door Systems