The Architect + Designer's Guide to Architectural Ironmongery

Guild of Architectural Ironmongers

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The Guild of Architectural Ironmongers (GAI) supports, represents and assures the architectural ironmongery industry.

Working as a not-for-profit professional association, we promote the highest standards of education, technical excellence, and professionalism in our sector, and promote those standards to the wider construction industry and its clients.

Our work is built of three core pillars.

In education, we offer a worldwide programme and courses and qualifications, leading to specialist diploma qualifications and ultimately to GAI Registered Professional status, the benchmark for demonstration of professional competence in architectural ironmongery.

In technical standards, we advise on issues relating to the legislation, regulations and standards governing the use of architectural ironmongery and related hardware.

And as a membership organisation we provide the voice of the architectural ironmongery industry, bringing the sector's people and companies together and representing them on UK and international standards committees, drafting panels, industry consultations, and more.

Through its mission of 'advancing architectural ironmongery', the GAI works to ensure and improve the safety, security and accessibility of the worldwide built environment.

Guild of
Architectural
Ironmongers

The Architect + Designer's Guide to Architectural Ironmongery

Architectural ironmongery is a core component of any building project. It concerns the design, manufacture, specification, supply and installation of products which are critical to the performance of doors and can include hardware, access control, electronic locking and door automation. Other products such as signage, grab rails and washroom equipment can also be included in the packages supplied by an architectural ironmonger.

This guide brings together all the information you need to make the specification process of this package run smoothly and to achieve the best possible end result.

To ensure architectural ironmongery meets the latest standards, regulation, legislation and best practice, it is strongly recommended that it should be specified by a GAI Registered Professional:

- Registered Architectural Ironmonger (RegAI);
- Registered in Door Systems (RegDS); or
- Registered in Electric Hardware and Access Control (RegAC).

All GAI Registered Professionals have successfully completed a GAI diploma qualification, and continue to maintain and update their knowledge through the GAI continuing professional development (CPD) programme.

GAI Registered Professional status is a clear demonstration of professional competence in matters which are critical to building safety, accessibility and security.

Visit www.gai.org.uk/registered

Introduction

Published by the Royal Institute of British Architects (RIBA), the RIBA Plan of Work organises the process of briefing, designing, constructing and operating building projects into eight stages, to ensure that all aspects of the project are considered and addressed. Numbered 0 to 7, each stage represents a phase in the project lifecycle and explains the outcomes, core tasks and information exchanges required at each stage.

2. Design
Pages 14-21

1. Pre-Design
Pages 10-13

4. Handover

Pages 26-29

RIBA Plan of Work
Source: RIBA Plan of Work overview 2020

4 Technical Design

Technical details are finalised, including specifications, schedules, and drawings. The design is co-ordinated with other disciplines, and any necessary adjustments are made. This is also typically when the main contractor is appointed.

5 Manufacturing & Construction

Main contractor has been appointed at tender stage. Work then starts on site and is constructed according to the technical design, with regular site inspections and progress reports to ensure quality and compliance with the design.

6 Handover & Close Out

The project is handed over to the client after construction. Any defects or issues are rectified, and final documentation is provided.

7 In Use

The performance of the completed project is monitored and evaluated. Feedback is collected to inform future projects and improve the design process.

3. Construction

Pages 22-25

5. In Use

Pages 30-32

Introduction (cont'd)

The RIBA Plan of Work is only one example of how a building is designed and constructed and there are many international equivalents. Although each is different, they all have the same goals: to provide the project team with a road map for promoting consistency from one stage to the next, and to provide vital guidance to clients undertaking a building project.

	Pre-Design		Design				Construction	Handover	In Use	End of Life
RIBA (UK)	0	1	2		3	4	5	6	7	
	Strategic Definition	Preparation & Brief	Concept Design	NOT USED	Developed Design	Technical Design	Construction	Handover & Close Out	In Use	NOT USED
ACE (Europe)	0	1	2.1	2.2	2.3	2.4	3		4	5
	Initiative	Initiation	Concept Design	Preliminary Design	Developed Design	Detailed Design	Construction	NOT USED	Building Use	End of Life
AIA (USA)										
	NOT USED	NOT USED	Schematic Design	NOT USED	Design Development	Construction Documents	Construction	NOT USED	NOT USED	NOT USED
APM (Global)	0	1	2		3	4	5	6	7	
	Strategy	Outcome Definition	Feasibility	NOT USED	Concept Design	Detailed Design	Delivery	Project Close	Benefits Realisation	NOT USED
NATSPEC (Aus)			-	-	-	-	-		-	
	NOT USED	Establishment	Concept Design	Schematic Design	Design Development	Contract Documentation	Construction	NOT USED	Facility Management	NOT USED
NZCIC (NZ)		-	-	-	-	-	-		-	
	NOT USED	Pre-Design	Concept Design	Preliminary Design	Developed Design	Detailed Design	Construct	NOT USED	Operate	NOT USED
South Africa		1	2	3	-	4	5			
	NOT USED	Inception	Concept & Viability	Design Development	NOT USED	Documentation	Construction	Close Out	NOT USED	NOT USED

Comparison of international plans of work
Source: RIBA Plan of Work overview 2020

Overlays to RIBA Plans of Work

This architects and designer's guide seeks to provide clarification on where the architectural ironmonger is involved at each stage of the RIBA Plan of Work in the form of an overlay. A summary architectural ironmongery overlay can be found on pages 6 to 9. It should be noted that a number of overlays already exist, of which the following are felt to be the most applicable to the specification of architectural ironmongery.

Inclusive Design

RIBA has set up this overlay alongside industry experts to address the following problem statement: 'There is currently no single industry source of reference for embedding inclusive design into programme delivery that can be understood and applied by all built environment professionals, from clients to operators, across the RIBA Plan of Work'. The overlay is a collaborative piece of work, with contributions from more than 100 professionals from 25 different built environment professions, offering insight and best practice into inclusive design.

www.architecture.com/knowledge-and-resources/resources-landing-page/inclusive-design-overlay-to-riba-plan-of-work

Security

The National Protective Security Authority (NPSA) in collaboration with the Royal Institute of British Architects (RIBA) and Police Crime Prevention Initiatives (Police CPI) has developed a Security Overlay to the RIBA Plan of Work to provide guidance on implementing security focused design through each stage and to enable informed decision making at the right time and order, to enable practical guidance on the best ways to embrace security.

www.architecture.com/knowledge-and-resources/resources-landing-page/security-overlay-to-the-plan-of-work

RIBA Plan of Work
Architectural Ironmongery overlay

RIBA Plan of Work
Architectural Ironmongery overlay

	0 Strategic Definition	1 Preparation & Briefing	2 Concept Design
Stage Outcome (at the end of the stage)	• The best means of achieving the **Client Requirements** confirmed. If the outcome determines that a building is the best means of achieving the **Client Requirements**, the client proceeds to Stage 1.	• **Project Brief** approved by the client and confirmed that it can be accommodated on the site.	• **Architectural Concept** approved by the client and aligned to the **Project Brief.** The brief remains "live" during Stage 2 and is derogated in response to the **Architectural Concept.**
Architect / Designer	• Consider an initial Security Risk Assessment as per Security overlay of RIBA Plan of Work. • Define the Design Team commitment to inclusive design as per Inclusive Design overlay of RIBA Plan of Work.	• Incorporate security risk assessment in to project brief as per Security overlay of RIBA Plan of Work. • Perform rigorous check against Secured by Design criteria as per Security overlay of RIBA Plan of Work. • Inclusive Design Lead to check the understanding of inclusion with the Design Team as per Inclusive Design overlay of RIBA Plan of Work.	• Develop security strategy and integrate with other project strategies such as fire and acoustics as per Security overlay of RIBA Plan of Work. • Consider competence requirements of those involved in early design decisions under Building Safety Act. • Consider implications of Golden Thread of information even from these early stages. • Apply inclusive design best practice standards, and guidance as relevant, or as outlined in the Inclusive Design Strategy as per Inclusive Design overlay of RIBA Plan of Work.
Architectural Ironmonger	• Be aware of the implications of security, fire safety, accessibility and acoustics in relation to standards and regulations. • Ensure that any staff engaging in specification activities have the required competence levels such as being a GAI Registered Professional.	• Be aware of the implications of security, fire safety, accessibility and acoustics in relation to standards and regulations. • Ensure that any staff engaging in specification activities have the required competence levels such as being a GAI Registered Professional.	• Be aware of the implications of security, fire safety, accessibility and acoustics in relation to standards and regulations. • Ensure that any staff engaging in specification activities have the required competence levels such as being a GAI Registered Professional.
Contractor/ Sub-contractor	• No liaison between architectural ironmonger (AI) and contractor at this stage.	• No liaison between architectural ironmonger (AI) and contractor at this stage.	• No liaison between architectural ironmonger (AI) and contractor at this stage.
Client / End User	• Define the inclusive design vision within the Project Brief and set out within the Inclusive Design Strategy as per Inclusive Design overlay of RIBA Plan of Work.	• Ensure the Project Brief commits to inclusive design across the life-cycle of the project as per Inclusive Design overlay of RIBA Plan of Work.	• Create an inclusive design review and feedback process as per Inclusive Design overlay of RIBA Plan of Work.

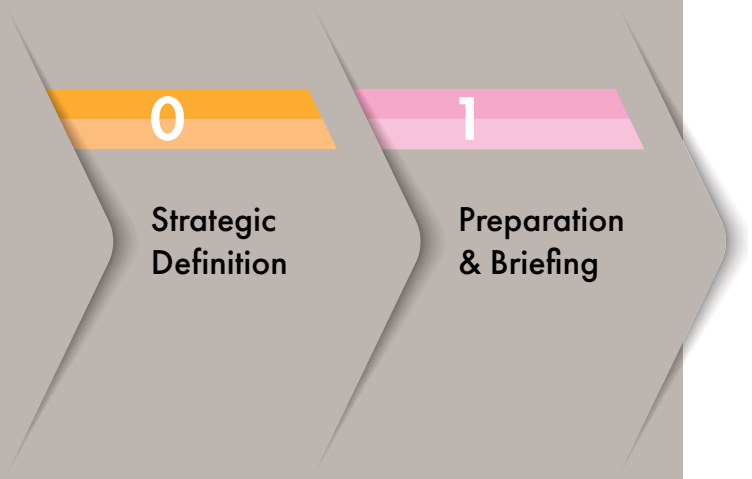
3 Spatial Co-ordination	4 Technical Design
• Architectural and engineering information **Spatially Coordinated.**	• All design information required to manufacture and construct the project completed. Stage 4 will overlap with Stage 5 on most projects.
• Consider implications of fire safety, accessibility and acoustics in relation to project which may impact the specification of the ironmongery and doors. • Co-ordinate security measures into the design of the project as per Security overlay of RIBA Plan of Work. • Work with the Inclusive Design Lead in consultation with the User Group to undertake an inclusive design review pre-planning submission, to ensure best practice is applied and regulations adhered to as per Inclusive Design overlay of RIBA Plan of Work.	• Make contact with architectural ironmonger (AI) to allow them to create a compliant ironmongery specification. • Ensure the AI you engage with has sufficient qualifications such as being a GAI Registered Professional and is therefore competent to create an ironmongery specification. • Provide AI with all relevant information including detailed floor plans, door schedule, joinery details of doors. • Consult with AI on what other products they are able to specify. Further packages such as doors, access control, door automation, signage, washroom equipment and grab rail packages may be applicable. This will reduce amount of specifiers and packages on the project. • Consider budgetary implications of requested specification. • Ensure no double count in packages where there may be cross over such as access control in the mechanical and electrical (M&E) package. • The design team are to prepare information for the relevant aspects of the security measures as per Security Overlay of RIBA Plan of Work.
• Consult on a preliminary basis with architect/designer on ironmongery and doors prior to preparation of specification. • Be aware of the implications of security, fire safety, accessibility and acoustics in relation to standards and regulations. • Ensure that any staff engaging in specification activities have the required competence levels such as being a GAI Registered Professional.	• Make contact with architect/designer to ask if they wish to have a compliant ironmongery specification created. • Create specification of ironmongery in accordance with relevant detail provided ensuring it is within outlined budget. • Ensure all specified products are within scope of harmonised and designated standards where applicable for fire and escape doors. • Consider implications of security, fire safety, accessibility, sustainability, third party certification and acoustics when specifying product. • Review with architect and designers which packages are required for specification as there may be an opportunity to specify doors, access control, door automation, signage and washroom accessories should any of these fall within your available portfolio of products. • Engage with quantity surveyor (QS) where possible to ensure ironmongery specification selected meets within the budget of the project. • Ensure that interfaces in access control and door automation are considered within the specification. • Price ironmongery specification at tender stage. • Negotiate with contractor/sub-contractor in respect of order. Secure order to supply ironmongery with written instruction.
• No liaison between architectural ironmonger (AI) and contractor at this stage.	• Approach specified architectural ironmonger (AI) for price at tender stage and ensure the quotation for specified product is used. • Secure contract and commence procurement of relevant packages. • On award of contract, engage with specified architectural ironmonger as early as possible to commence negotiations. • Place ironmongery order with specified AI providing sufficient time to allow smooth supply of package.
• Request the Inclusive Design Lead to provide inclusive design reviews in consultation with the User Group and Design Team as per Inclusive Design overlay of RIBA Plan of Work.	• Engage with architectural ironmonger (AI) where required if there are any client-specific requirements such as anti-bacterial finishes or anti-ligature product required. • Engage the Inclusive Design Lead to undertake an inclusive design review with the User Group and Design Team as per Inclusive Design overlay of RIBA Plan of Work.

5 Manufacturing & Construction	6 Handover & Close Out	7 In Use
• Manufacturing, construction and **Commissioning** completed. There is no design work in Stage 5 other than responding to **Site Queries**.	• Building handed over, **Aftercare** initiated and **Building Contract** concluded.	• Building used, operated and maintained efficiently. Stage 7 starts concurrently with Stage 6 and lasts for the life of the building.
• Work alongside architectural ironmonger (AI) on any changes in design which may impact the architectural ironmongery. • Work alongside main contractor to seek to ensure that ironmongery which has been specified is selected. • Ensure that there is no double count of specified product between ironmongery and other packages such as mechanical and electrical (M&E) package. • Check that agreed security designs are implemented correctly, otherwise the level of protection expected might be compromised as per Security overlay of RIBA Plan of Work.	• Oversee handover of all product information including doors and ironmongery as part of Golden Thread of information. • Check if any defects are to be rectified in any of the security measures, or if longer-term maintenance of these systems (e.g., three years) is a requirement of the Building Contract as per Security overlay of RIBA Plan of Work.	• Ensure training of building staff so that security measures are operated effectively as per Security overlay of RIBA Plan of Work.
• Agree delivery programme of ironmongery with main contractor or joinery sub-contractor. • Co-ordinate the contract in terms of ensuring material purchased, available and delivered as per agreed delivery schedule. • Supply ironmongery as required to desired location e.g. on site or at door manufacturers. • Work with client and architect to ensure master keying is correct. • Advise site personnel on any pertinent issues on installation of product. • Engage with chosen door manufacturer to enable co-ordination with the ironmongery specified.	• Engage with contractor to provide relevant information for operation and maintenance manuals such as Declarations of Performance, EPDs, certification, product data sheets.	• Provide maintenance information to end user if required • Supply relevant product such as keys, access control credentials, replacement product as required.
• Work closely and communicate with architectural ironmonger (AI) on requested timings of delivery of product. • Supply detailed information as requested by AI including site measurements for kicking plates, as well as details on interfaces with other allied packages such as access control and door automation. • Install ironmongery in accordance with manufacturers' instructions. • If there is a supply and install element in the ironmongery package then ensure it is being installed to appropriate standard where applicable, e.g. powered pedestrian doors must be installed to BS EN 16005 standard.	• Engage with architectural ironmonger (AI) for them to provide relevant information for operation and maintenance manuals such as Declarations of Performance, EPDs, certification, product data sheets.	• Engage with architectural ironmonger (AI) for supply of relevant product should facilities management be carried out by main contractor post hand-over.
• Engage with architectural ironmonger (AI) with details on master keying requirements.	• Receive relevant sections on architectural ironmongery and other specified items from operation and maintenance manuals.	• Engage with architectural ironmonger (AI) for provision of maintenance information if required. • Make contact with AI for supply of relevant product such as keys, access control credentials, replacement product as required. • If engaging the services of a fire door inspector, ensure that those contracted are fully qualified and have the required competences.

1.

Pre-Design

As Stage 0 and Stage 1 are the pre-design stages of the Plan of Works it is true that the specification of architectural ironmongery and fire doors is not foremost in the thoughts of those involved in the projects, but it is important to appreciate the effect competence can have throughout all stages of the project.



Competence

What should be considered during Stage 0 & Stage 1, as well as throughout the project is the competence of those seeking to undertake all works.

Since the tragic events of the fire at Grenfell Tower in London in 2017, the UK construction industry is being driven to increase its levels of competence across the whole sector. The UK Government define competence as "the combination of training, skills, experience and knowledge that a person has and their ability to apply them to perform a task safely."

The Government is currently setting the bar higher and higher in respect of what competence is and how it can be demonstrated through the UK Building Safety Act 2022 and those in the construction industry will have to respond to this accordingly. Competence is broken down in the Building Safety Act as Skills, Knowledge, Experience and Behaviour (SKEB).

Under the new regime it will not be sufficient to state that you are competent to perform a task, the onus will be on demonstration of this competence. Architects, when selecting specifiers to advise on the correct solution should look towards those who can demonstrate their competencies in their field.

Relevant standards for competence

The following BSI competency standards will make it easier for different parts of the built environment industry to work together by establishing agreed core principles, terminology, and requirements on competence, providing a shared understanding of roles along the delivery supply chain.

They will also provide a bridge to wider competence requirements being developed for the professional, technical and artisanal skills of those working in the built environment, raising the quality of work, the behaviour and the culture of individuals working in the built environment.

- **BSI Flex 8670: v3.0 2021-04 Built environment** – Core criteria for building safety in competence frameworks – Code of practice
- **PAS 8671:2022 Built environment** – Framework for competence of individual Principal Designers – Specification
- **PAS 8672:2022 Built environment** – Framework for competence of individual Principal Contractors – Specification
- **PAS 8673:2022 Built environment** – Competence requirements for the management of safety in residential buildings – Specification

Competence in Architectural Ironmongery

A GAI Registered Professional is a fully qualified architectural ironmongery professional, committed to maintaining the highest level of skill and knowledge regarding products, legislation and industry standards.

A GAI Registered Professional:

— has undertaken a three-year study programme leading to a Diploma of the Guild of Architectural Ironmongers (DipGAI) qualification

— is registered on the GAI Continuing Professional Development (CPD) programme which mandates a required amount of personal development every year

— is up to speed with latest technical innovations, standards and legislation in this increasingly complex and fast-moving field

— can offer comprehensive advice on all door hardware

By insisting on a GAI Registered Professional for your project;

- a Registered Architectural Ironmonger (RegAI),
- Registered in Door Systems (RegDS),
- Registered in Electric Hardware & Access Control (RegAC), or
- Certificated Advisor in Standards and Regulation (CertSRA),

you can be assured that your hardware specifications and schedules have been prepared by a specialist who has completed at least three years of relevant study and ongoing continuing professional development.

Find your GAI Registered Professional at **www.gai.org.uk/registered**

These standards are all available to download at no cost at www.bsigroup.com. In relation to competence in construction products, a white paper has been published that sets out how the entire built environment sector can unite behind a single, agreed standard to determine, demonstrate and recognise construction product competence (CPC). www.constructionproducts.org.uk

1. Pre-Design (cont'd)

Golden Thread

Architects and designers need to be aware, even at this early stage, of the Golden Thread of information. This is defined as the information that allows an individual to understand a building and the steps needed to keep both the building and people safe, now and in the future.

The Golden Thread will hold the information that those responsible for the building require to identify, understand, manage and mitigate building safety risks in order to prevent or reduce the severity of the consequences of fire spread or structural collapse throughout the lifecycle of the building. The information stored in the Golden Thread will be reviewed and managed so that the information retained at all times achieves this purpose.

In the results from a recent consultation from UK Government, 87% of respondents agreed that building information should be stored electronically as well as agreeing that information should be accurate, up-to-date, and secure.

Therefore, there is a need for construction product information to be made available in a consistent, structured and digital format.

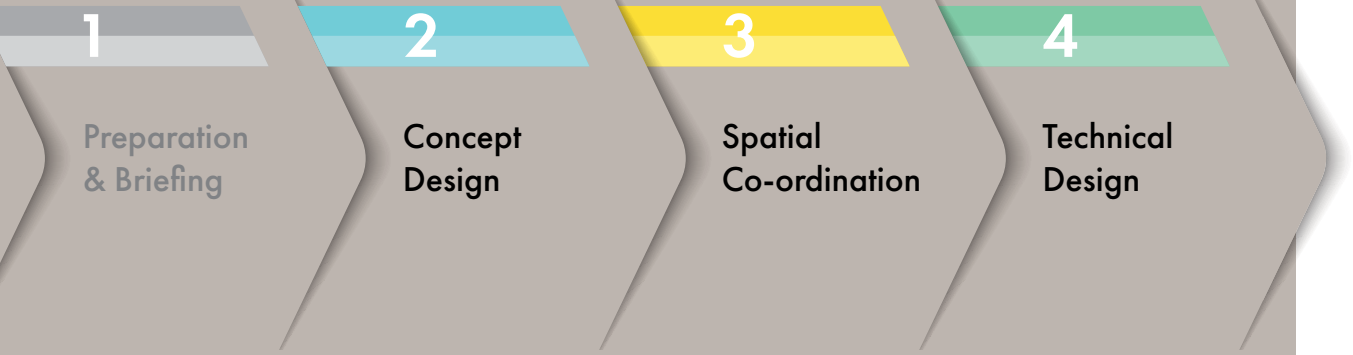
In response to this, the GAI has produced a range of Product Data Templates (PDTs) – essential documents in Building Information Modelling (BIM) – for use by members. These templates can be used to help generate information about a specific product. When a manufacturer completes a PDT it becomes a Product Data Sheet (PDS) – a 'digital description' of the product.

2.

Design

It is during the design stages, most notably at Stages 3 and 4 that the architectural ironmonger (AI) is called in to be consulted and to put together the ironmongery specification. The AI receives the project brief and must then be in possession of all the information needed to begin scheduling.

It is essential that they possess a comprehensive understanding of what the building will be used for, who will use it, how they will use it and why it will be used in that way, in order to produce an accurate and optimal ironmongery schedule in accordance with the client's and architect's instruction.



An architectural ironmonger works with architects, interior designers, contractors and others to specify the hardware needed for every door in a building, producing a full ironmongery schedule of all the hardware items.

Architectural ironmongers are experts in hardware used in domestic and commercial buildings for the functioning of doors, door assemblies and doorsets. Their expertise covers many products and includes hinges, door closing devices, locking devices, pull handles, lever furniture, letter plates, disabled grab rail kits, specialist window fittings, washroom equipment and signage, as well as sophisticated electronics to control locking and access.

GAI Registered Professional status is the only recognised guarantee of professional competence in architectural ironmongery to current British and European standards.

To ensure demonstrable professional competence in architectural ironmongery, the hardware in your specification should be scheduled by a GAI Registered Professional [i.e. Registered Architectural Ironmonger (RegAI); Registered in Door Systems (RegDS); or Registered in Electric Hardware & Access Control (RegAC)].

There are a number of considerations an architect or designer should be aware of when working with an architectural ironmonger:

- What are the key impacts ironmongery has on the project?
- What type of building is it for?
- What function is it expected to perform?
- What period or style is the building?
- What finishes are required?
- What is the budget?

2. Design (cont'd)

What are the key impacts ironmongery has on a project?

Architectural ironmongery has a key impact on many aspects of a building's performance. It is subject to more than 60 British and European standards, which are regularly updated, as well as relevant Building Regulations. Architectural ironmongers should have competence in many areas including security, fire safety, accessibility and acoustics.

Handover can also be delayed if door hardware doesn't meet all the required standards of safety or security. To avoid any such last-minute snags you must be sure all hardware complies with relevant and current standards and legislation, including correct fitting on site. A qualified GAI Registered Professional such as a Registered Architectural Ironmonger (RegAI) will provide you with advice on this.

What type of building is it for?

Getting the right hardware for a particular building involves functional as well as aesthetic considerations.

Hospitals, schools and care homes, for example, will need fittings appropriate for less physically able and vulnerable users. Safety and security requirements also vary between types of building. There is a wide range of specialist architectural ironmongery available to accommodate different needs – including antibacterial finishes, anti-ligature fittings, biometrics, and braille/accessible signage. Some projects may have a requirement for bespoke products, tailored to the client's requirements. An example of a project which demonstrated the ability for the ironmonger to create bespoke product is Centre Point in London (below). This project was the winner of the residential category at the 2019 GAI RIBA Specification Awards.

CENTRE POINT, LONDON

Taking visual architectural cues from the building's 1960's geometric patterning and monochromatic styling, the bespoke ironmongery comprised handles, locks, lever sets, wardrobe pulls and shower door pulls. These were made from mirror polished nickel with an unusually high standard of polishing applied to all surfaces, even on the reverse. This was on the request of the client and underlined the quality of finish throughout.

What function is it expected to perform?

It should be considered whether the door needs to be self-closing, held-open, locked, latched, free from fastenings or with lever handles.

Getting the right fittings in the right location will enhance a user's experience of a building. Door hardware is the building's most tactile aspect and one they will come into contact with on a constant basis. The choice of hardware will also impact on building performance issues such as acoustics, airflow and draughts that affect the experience and comfort of the building's users.

Durability and longevity are also considerations with items such as handles and door closing devices which will be in almost constant use.

A good example of a project which was significantly impacted by the selection of door hardware was Adare Manor in Ireland (right). This was judged to be the winner of the Jubilee Award in the 2022 GAI RIBA Specification Awards.

ADARE MANOR HOTEL & GOLF RESORT, IRELAND

The Adare Manor project required the hardware specification of the renovation of the existing manor house and the new build extensions of this world class hotel and golf resort (approximately 1500 doors).

With an enormous amount of bespoke products and the requirement for a number of products to operate with the Vingcard locking system, the architectural ironmongers worked diligently to design and test the products to ensure they work perfectly in harmony with the access control requirements across the entire project.

ROYAL ACADEMY OF ARTS, LONDON

A selection of products were required of different style and finish, ranging from grade 316 stainless steel through to real bronze furniture. Bespoke designed pulls in aged brass were manufactured from new castings made specifically for the building, whilst handles were specified that had been designed by the architectural practice owner. In addition, the architectural ironmonger managed the refurbishment of some of the existing decorative hardware from the 18th century.

2. Design (cont'd)

What period or style is the building?

Aesthetics is naturally a prime consideration for most specifiers who are concerned to ensure the door hardware complements and enhances the finished project.

To achieve this you don't need to specify the exact fittings, but you do need to identify the period or style of building they will be reflecting, so the architectural ironmonger can make the best choice from the huge array of products and finishes available. It will also help the architectural ironmonger to co-ordinate the different hardware items throughout the project and,

GRANTLEY HALL, RIPON

This special project required an extraordinary level of design care to integrate the older listed and modern parts of the hotel. As well as organising the hand restoration and renovation of existing historic hardware such as handles and hinges, the architectural ironmonger carefully adapted hardware designs and finishes throughout the building to reflect different styles and functions. Antique brass and stainless steel were chosen where appropriate to ensure that the hardware scheme worked seamlessly across the piece.

where necessary, match new fittings with pre-existing hardware.

In tricky cases, for example when new fittings have to be matched to existing ones, you can talk to your architectural ironmonger about bespoke solutions. One such project which demonstrated the ability of the ironmonger to match the style of the ironmongery to a Grade II listed building was the Royal Academy of Arts (left) building in London, which was shortlisted in the Commercial and Hospitality section of the 2019 GAI RIBA Specification Awards.

What finishes are required?

Door hardware comes in a wide selection of materials, including, stainless steel, aluminium, brass, iron or other metals as well as wood, with a range of finishes. Your first concern is likely to be the appearance of the finish, but there are functional considerations which need to be factored into the final choice; some finishes are unsuitable for certain environments. Certain grades of stainless steel, for example, are vulnerable to the chemicals in a swimming pool environment or a chemical factory, while lacquered brass is liable to degrade in a seaside setting.

Grantley Hall, Ripon (above), the Winner of Winners Award in the 2022 GAI RIBA Specification Awards, demonstrates this ability to specify multiple finishes in one project beautifully.

What is the budget?

Discussions relating to the ironmongery will proceed more quickly and effectively if you have at least a ballpark figure for the architectural ironmongery budget. This will assist the ironmonger as the ironmongery schedule will ultimately provide you with a "cost per door" figure.

2. Design (cont'd)

The relationship between architect/ designer and architectural ironmonger should be built on trust. Once the specification has been agreed, you should feel comfortable leaving your architectural ironmonger to manage the door hardware element of the project and bring it to a successful conclusion, consulting with you when necessary.

At the start of a new working relationship it is worth investing time in one or two face-to-face or virtual meetings, to establish clear lines of communication. This will speed up your future interactions and help you work together smoothly and efficiently.

GAI top tips for getting more from this relationship include:

Think 'door hardware' early on

As touched on earlier, don't leave it until the last moment to approach an architectural ironmonger. Architectural ironmongery is a core component of the project, not an add-on.

Think 'door details'

It will speed up the specification process if your architectural ironmonger is supplied with a floor plan with all the doors numbered individually, joinery details of the door frame, head and jamb and a door schedule listing each door and Its dimensions and make-up. An architectural ironmonger must have all these details to ensure the ironmongery being specified is correct for each door type. It is worth remembering not to allow doors to be manufactured unless the door specification has been checked for compatibility with the ironmongery schedule.

Think 'interfaces'

If there are other parties that are already involved in the door hardware provision, things will go more smoothly

and efficiently if you inform your architectural ironmonger at the outset.

Electronic locking and access control, for example, is sometimes supplied as a separate package and the architectural ironmonger and supplier will need to liaise, and be clear about which of them is providing the specification and co-ordinating their efforts.

If the project involves an existing building the architectural ironmonger will need to be provided with details of existing hardware such as the master-keyed suite, and may require a site visit to assist with co-ordination of finishes.

Think 'CPD'

There are many architectural ironmongers who can provide you with CPD presentations, some of these having been RIBA approved. GAI has created a number of RIBA approved CPDs which can be delivered by GAI members. www.gai.org.uk/GAI/GAI/Knowledge/CPD-Presentations.aspx

3.

Construction

This stage is when the project has the main contractor appointed at tender stage. Work then starts on site and is constructed according to the technical design, with regular site inspections and progress reports to ensure quality and compliance with the design. On receipt of instruction, the architectural ironmonger is called upon at this stage to supply relevant product to the appointed contractor or sub-contractor. This will be in accordance with the requirements of the project.

Issues can arise with door hardware which may affect the whole project at this stage in particular, causing delays, impacting on costs and even delaying hand-over which can lead to penalties. This includes changes after specification as well as incorrect installation.

Changes after specification

Changes in specification represent one of the biggest risks in relation to architectural ironmongery.

The architectural ironmonger will provide a quotation for their ironmongery specification or price the relevant material in the bill of quantities to the bidding contractors or sub contractors at tender stage. Then follow up the quotation with the successful party. In an ideal world they will receive the order. There are, however, occasions when the specified product is not selected by the contractor. This can be for a number of reasons, including:

- Reduction of costs (value engineering)
- Pressure on timescales for supply
- Design changes

It should be noted that making a change to an existing compliant and agreed ironmongery specification is fraught with risk, particularly bearing in mind that a high percentage of doors in an ironmongery specification are fire and escape doors. Changing essential ironmongery can have a hugely damaging impact on the correct performance of a fire door as follows:

- Closing devices - incorrect/badly performing door closers can cause inability to close a fire door from any angle.
- Hinges - incorrect hinges can cause a fire door to drag on the floor and therefore not close fully in to its frame.
- Locks – locks which are not CE marked to EN 12209 must not be used on fire doors according to the Construction Products Regulation (CPR).
- Seals - intumescent seals and hardware protection must be as per fire test evidence.

3. Construction (cont'd)

Reduction of costs (value engineering)

Value engineering can be defined as "a process which is used to solve problems and identify and eliminate unwanted costs, while improving function and quality."

Sadly, whilst these intentions are well placed, the reality is that in seeking to value engineer a project, many products which have been specified correctly for the intended purpose can be changed for a lesser quality as well as cheaper alternative.

Speaking in October 2018, in the aftermath of the Grenfell Tower fire, Dame Judith Hackitt, author of the Hackitt review of the building regulations and fire safety, final report, criticised the industry for value engineering, saying it is a phrase she would be "..happy to never hear again. It is anything but value, it is cutting costs and quality."

According to Dame Judith, ridding the industry of value engineering would be one part of a necessary culture change that the industry has woken up to after the Grenfell tragedy, and that "needs to be embraced to deliver buildings that are fit for purpose."

Should a reduction in cost to the agreed specification be required it is preferable to engage with the original specifier who will be able to advise on best courses of action, due to them having an intrinsic knowledge of the project from design stages.

Pressure on timescales for supply

A large project may involve hundreds of doors and literally thousands of items of door hardware. If insufficient time is allowed for all the hardware to be signed off by the architect/designer, purchased by the contractor, sourced and delivered by the architectural ironmonger and then fitted on site, there is a risk that hand-over could be delayed.

If you are working with a GAI Registered Professional such as a RegAI they will have a good knowledge of their own lead times, and will be able to plan and manage a schedule which takes all of these factors into account.

Design changes

It is within the very nature of a construction project that design changes are required. Working closely with the original ironmongery specifier who will have made numerous revisions throughout the early design stages and will know the project intimately will give confidence that any changes required on site can be dealt with effectively and that any impacts to supply and installation of product will be kept to a minimum.

Incorrect installation

It is a sad fact that the good work of specification undertaken over many years can be quickly undone through incorrect installation of product on site. GAI always recommend that manufacturers' instructions be strictly adhered to, this is of particular importance in respect of fire and escape doors where ironmongery plays a vital role in these life-saving devices.

GAI has recently gone further in this by co-operating with a number of cylinder manufacturers and other trade associations to provide industry guidance on the safe and correct installation of cylinders for locks.

www.gai.org.uk/users

4.

Handover

This is the stage where the project is handed over to the client after construction. Any defects or issues are rectified, and final documentation is provided. The architectural ironmonger still retains involvement at this stage in terms of supply of information and future supply of relevant product.

The provision of information to the contractor on ironmongery is of vast importance. A number of documents and products should be issued to the client during handover, many of which are pertinent to ironmongery and doors.

These can include an operation and maintenance manual, up to date testing and commissioning data in respect of electrical products such as automatic door operators, as well as all certificates and warranties in respect of the works.

Handover of product information

The correct handover of product information is of the utmost importance, ironmongery fitted to fire doors as well as fire doors themselves are all critical fire safety products and are therefore covered within Regulation 38 of the Building Regulations in England.

Much of the information is now being handed over in a digital format through product data sheets or through outputs from BIM models or objects. The digital format of handover information is now of utmost importance due to the importance of the Golden Thread, as previously detailed.

In addition to information, the keys including master, sub and differ keys as well as any access control credentials are handed over.

Operation and maintenance manuals:

In respect of ironmongery the following elements can be expected within the operation and maintenance manual:

- Description of materials: This details the appropriate ironmongery and groups it by product type and by manufacturer.
- Manufacturer's details: providing name, address and contact details of the appropriate manufacturer
- Installer's details: Dependent on who has installed product, it could be the main contractor, joinery sub-contractor or even electrical contractor.
- Details of guarantee/warranty: This sets out the length of guarantee provided – please note that certain manufacturers may have different guarantees and also that electronic product tends to have a shorter guarantee than mechanical. This section can also detail some exclusions to warranty relating to neglect, installation or unreported defects. Any further specific exclusions to warranty as a result of company policy from the issuing company can also be inserted within this section.
- Technical data sheets: This section provides a data sheet on each relevant product supplied.
- Product Certification:
  + Third Party Certification Scheme certificates: This can include copies of certificates from third party schemes such as BSI, IFC, Certifire or Q-Mark.
  + Declarations of Performance: Under the European and/or UK Construction Products Regulation it is now mandatory for manufacturers to apply conformity marking such as CE/UKCA marking to any of their products which are

4. Handover (cont'd)

covered by a harmonised/ designated European standard or Technical Assessment. Therefore in addition to a valid conformity mark, manufacturers must now legally provide a Declaration of Performance (DoP) with every conformity marked product, either with the product or on their website. Without a DoP, the conformity mark is invalid. GAI have provided a number of DoP templates for their members in respect of both CE and UKCA marking which can be accessed at www.gai.org.uk/DOP

+ Environmental Product Declarations (EPDs) -
An Environmental Product Declaration (EPD) is defined by ISO 14025 as a third party verified declaration that "quantifies environmental information on the lifecycle of a product to enable comparisons between products fulfilling the same function."

Many ironmongery manufacturers will possess EPDs across a range of products and these can therefore be made available to the architect, designer or contractor as part of the operation and maintenance requirements.

Influence of BIM

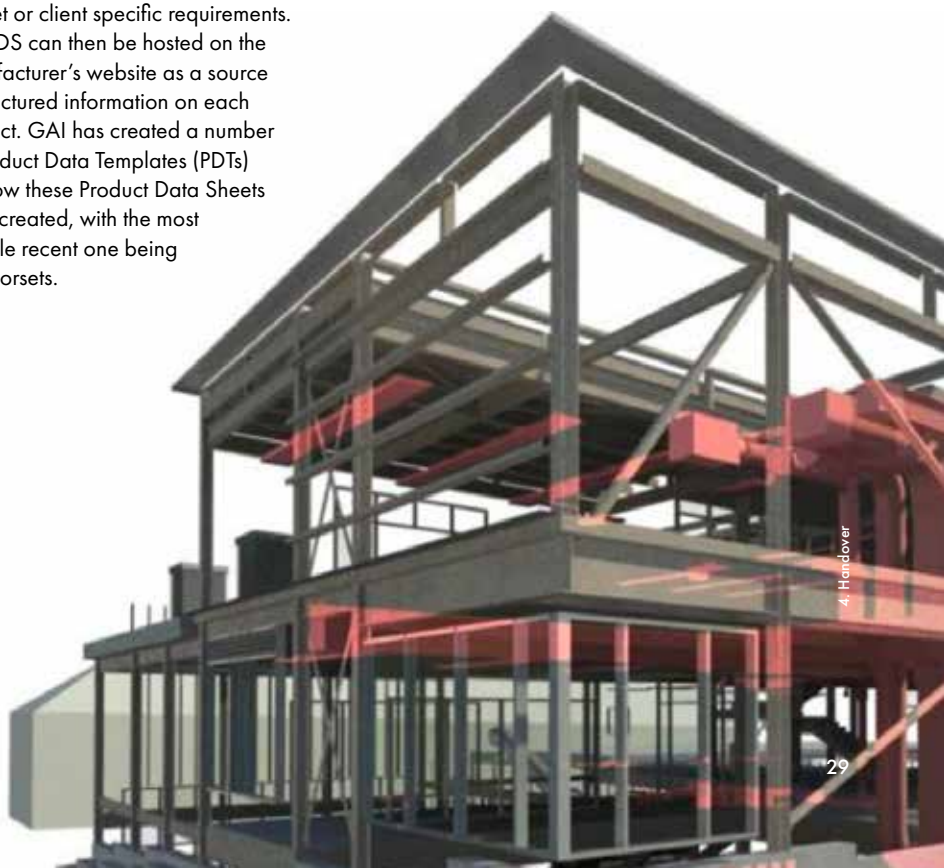
From an architectural ironmongery and door perspective there have been some developments in BIM which can aid the architect and designer as well as the contractor and end user to have product data in a structured format.

BIM objects

There are a number of hardware and doorset manufacturers who have created BIM objects which can be downloaded in to BIM software. These can create an intelligent 3D model of a doorset that automatically updates as the specifications of elements (including ironmongery) are changed within it.

Product Data Sheets

A Product Data Sheet summarises the performance and other technical characteristics of each construction product, material or component according to specific regulatory, market or client specific requirements. This PDS can then be hosted on the manufacturer's website as a source of structured information on each product. GAI has created a number of Product Data Templates (PDTs) to allow these Product Data Sheets to be created, with the most notable recent one being on doorsets.

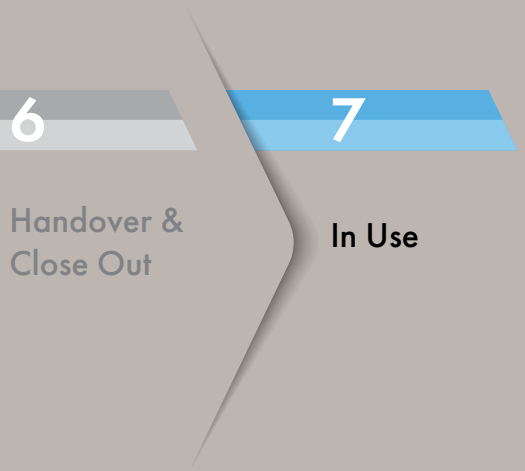


4. Handover

5.

In Use

At this stage, the performance of the completed project is monitored and evaluated. Feedback is collected to inform future projects and improve the design process.



The role of the architectural ironmonger continues post completion, particularly in respect of the relationship between the AI and the end user.

Ongoing supply

The end user will have need of products from the AI in respect of: additional or replacement keys and master keys; access control credentials such as cards or fobs; replacement ironmongery due to damage or normal wear and tear.

Maintenance guidance

The building occupier should ensure any limited maintenance that can be carried out by a non-professional on the door hardware, safety devices and safety systems is regularly carried out to the manufacturer´s specification. It is also a duty of care to ensure that the equipment is subject to a schedule of maintenance to be carried out by a professional authorised technician. In order for these works to be carried out competently there is a requirement for the appropriate maintenance information to be made available. Much of this will be supplied already at handover stage as part of the operation and maintenance manual. The architectural ironmonger can, however provide further specific detail from the hardware manufacturer when requested.

In addition to this GAI has published a series of free guides which look at architectural ironmongery (also known as building hardware) from the point of view of the end user. These end-user guides address the needs of clients, occupiers, users, developers, facilities managers, and all who are involved with, and use the building following its handover. They address maintenance recommendations and care of finishes for relevant materials as well as providing some useful checklists which can help the end user with critical products such as fire doors or automatic doors.

These are available from www.gai.org.uk/user

5. In Use

5. In Use (cont'd)

Inspection of fire doors

Fire doors are an essential part of a building's passive fire protection, ensuring that the building is compartmentalised, helping to prevent the spread of fire whilst allowing occupants time to escape. It is therefore imperative that the condition of the fire doors is included as part of the building's fire risk assessment. Fire door inspections requires particular specialist knowledge and a thorough inspection of the fire door and surrounding construction will need to be performed.

Inspection and maintenance should only be undertaken by a competent person according to BS 8214 Timber-based fire door assemblies code of practice.

In addition to this, regulation 10 of the Fire Safety (England) Regulations 2022 state that building owners must: undertake quarterly checks of all fire doors (including self-closing devices) in the common areas as well as carry out – on a best endeavour basis – annual checks of all flat entrance doors (including self-closing devices) that lead onto a building's common areas.

To assist with this GAI has produced a 10-point door closer safety checklist which assists users to check the device itself as well as the operation of the door and how it is impacted. This can be downloaded from www.gai.org.uk/user

6. Useful links for further advice

GAI Members and Registered Professionals

www.gai.org.uk/registered

GAI End User Guides

www.gai.org.uk/user

GAI Specifiers Guides

www.gai.org.uk/specifiers

GAI Glossary of Architectural Hardware Terms

www.gai.org.uk/user

Code of Practice for hardware on fire and escape doors

www.firecode.org.uk

The British Standards Institute

www.knowledge.bsigroup.com

Appendix A - RIBA Plan of Work stage comparison

www.architecture.com/knowledge-and-resources/resources-landing-page/riba-plan-of-work

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