Engineering Council

Facade Discipline Annex

to the UK Standard for Professional Engineering Competence and Commitment
Contextualised for Higher-Risk Buildings (UK-SPEC HRB)

First edition

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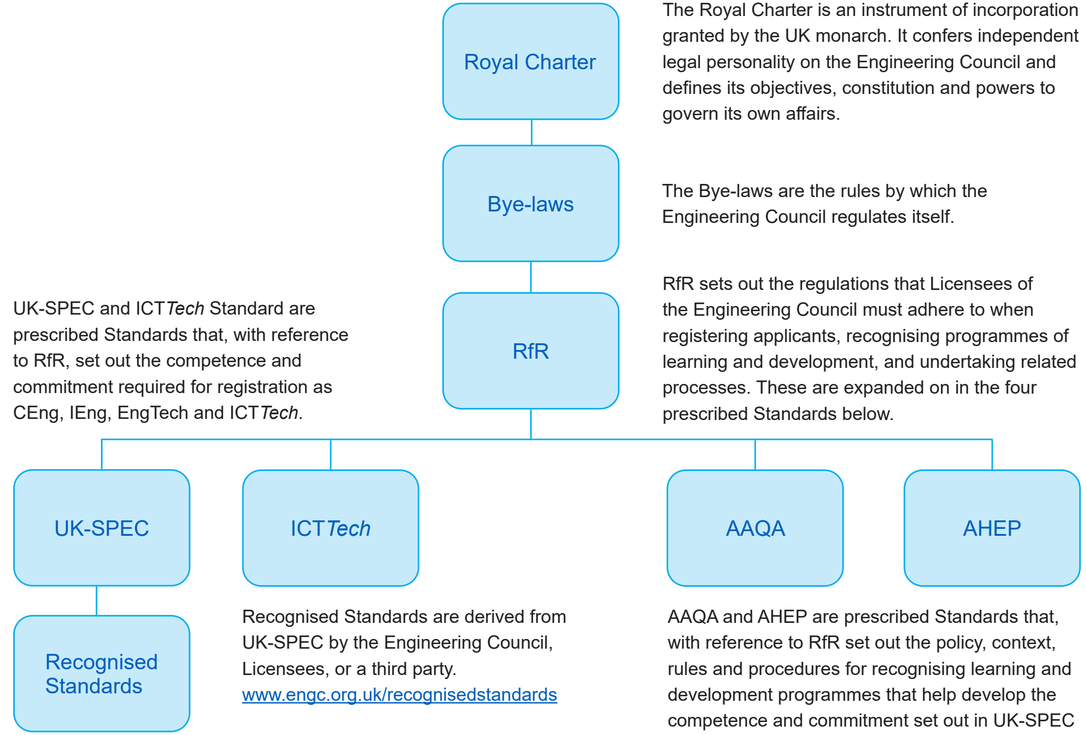
Hierarchy of regulations and standards

The Engineering Council is the UK's regulatory body for the engineering profession. It operates under a Royal Charter and is governed by a Board that represents UK Licensees as well as individuals from industries and sectors with an interest in the regulation of the profession.

This document is one in a series of closely related publications:

- **Regulations for Registration (RfR)**
- **Regulations for Licensing (RfL)**
- **The UK Standard for Professional Engineering Competence and Commitment (UK-SPEC)**
- **Information and Communications Technology Technician Standard (ICT*Tech* Standard)**
- **Approval and Accreditation of Qualifications and Apprenticeships (AAQA)**
- **Accreditation of Higher Education Programmes (AHEP)**

The Engineering Council publishes these documents on behalf of the UK engineering profession, with whom they were developed and are kept under review. The relationship between these publications is:



The Royal Charter is an instrument of incorporation granted by the UK monarch. It confers independent legal personality on the Engineering Council and defines its objectives, constitution and powers to govern its own affairs.

The Bye-laws are the rules by which the Engineering Council regulates itself.

RfR sets out the regulations that Licensees of the Engineering Council must adhere to when registering applicants, recognising programmes of learning and development, and undertaking related processes. These are expanded on in the four prescribed Standards below.

UK-SPEC and ICT*Tech* Standard are prescribed Standards that, with reference to RfR, set out the competence and commitment required for registration as CEng, IEng, EngTech and ICT*Tech*.

Recognised Standards are derived from UK-SPEC by the Engineering Council, Licensees, or a third party. www.engc.org.uk/recognisedstandards

AAQA and AHEP are prescribed Standards that, with reference to RfR set out the policy, context, rules and procedures for recognising learning and development programmes that help develop the competence and commitment set out in UK-SPEC and ICT*Tech* Standard.

The Engineering Council also publishes policy statements, guidance for institutions and guidance for individuals. These, along with all the publications listed above, are available on the Engineering Council website: www.engc.org.uk

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Foreword

Following the Grenfell Tower tragedy in 2017, Dame Judith Hackitt, commissioned by the UK Government, undertook an independent review of UK building regulations and fire safety: 'Building a Safer Future' . This report identified inconsistency in the processes and standards for assuring the skills, knowledge, experience and behaviours of those working on higher-risk buildings (HRBs), constituting a major flaw in the current regulatory system.

In response, a Competence Steering Group was set up under the auspices of the Industry Response Group and subsequently published two reports – Raising the Bar (2018) and Setting the Bar (2020). These reports led to development of the BSI 8670. This code of practice sets core building safety criteria for bodies that assess the competence of designers, contractors, fire risk assessors, building managers and specialist technical or corporate roles including engineers/technicians working on higher-risk buildings. Dame Judith's report informed drafting of building safety legislation which led to the Building Safety Act 2022. The intention is to ensure that everyone undertaking design work or building work is competent to do their work in a way that ensures compliance with building regulations.

In response to these reports, the Engineering Council developed UK-SPEC HRB as a Proprietary Standard designed to assess the competence and commitment of individual engineers and technicians working on higher-risk buildings in the UK. UK-SPEC HRB incorporates the criteria from BSI 8670 and sets out a sector-specific competence framework consisting of a core document and discipline annexes. Demonstrating competence could involve registration against the core framework only, or a combination of the discipline annexes: Fire Engineering, Structural Engineering and Building Services Engineering.

The Chartered Engineer (CEng) Standard

Chartered Engineers develop solutions to complex engineering problems using new or existing technologies, and through innovation, creativity and technical analysis.

Chartered Engineers shall demonstrate:

- The theoretical knowledge to solve problems in new and established technologies and to develop new analytical techniques
- Successful application of the knowledge to deliver innovative products and services or taking technical responsibility for complex engineering systems
- Responsibility for the financial and planning aspects of projects, sub-projects or tasks
- Leadership and development of other professional staff through management, mentoring or coaching
- Effective interpersonal skills in communicating technical matters
- Understanding of the safety and sustainability implications of their work, seeking to improve aspects where feasible
- Commitment to professional engineering values

A Chartered Engineer will be able to demonstrate their competence in all of the areas listed, but the depth and extent of their experience and competence will vary with the nature and requirements of their role. They will demonstrate a level of competence and commitment in each area, (AA1–BB3), at a level which is consistent with their specific role. It is to be expected that they will have a higher level of competence in some areas than others and their role may provide limited experience in certain areas. However, they need to demonstrate an understanding of, and familiarity with, the key aspects of competence in all areas as a minimum requirement while demonstrating higher levels of competence in those areas which are critical to their role. Overall, they will demonstrate an appropriate balance of competences to perform their role effectively at Chartered Engineer level.

The examples of evidence are intended as guidance to help identify activities that might demonstrate the required competence and commitment for Chartered Engineer registration. They are intended as examples only as the most appropriate evidence will vary with each individual role. The list is not exhaustive and other types of evidence might be valid. There is no requirement to provide multiple examples of evidence for each area of competence, but examples from two or three projects or tasks would be useful.

† It is not expected that applicants will necessarily meet all the listed criteria, but they will be expected to demonstrate competence against a substantial proportion of the scope, using a variety of sources and types of evidence, wherever this is relevant to their role. As part of their continuing professional development (CPD), successful applicants have an obligation to remain alert to any changes in their role or responsibilities and ensure the appropriate underpinning knowledge and understanding are updated accordingly. This is applicable throughout the document where "wherever relevant, applicants shall demonstrate the ability to:" is mentioned.

Applicants shall provide evidence from the HRB-specific criteria when developing their portfolio across the AA1-BB3 competences. Licensees' Professional Review assessors may request further evidence across any or all of the criteria.

Competence		Scope	
AA. Knowledge and understanding **Chartered Engineers shall use a combination of general and specialist engineering knowledge and understanding to optimise the application of advanced and complex systems.** This competence is about the ability to understand underpinning technical principles in fire, structural and life safety relevant to the applicant's area of practice and applying them to develop technical solutions. This could involve technical solutions for novel problems or dealing with significant technical complexity. This may involve the integration of a range of technologies and consideration of other factors. This competence requires that an applicant is maintaining and developing their knowledge in their field of practice and not just that required for specific tasks.	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1. Maintain, extend and develop a sound theoretical approach to application of relevant fire, structural and building life safety systems, principles and practices throughout the building life cycle of HRBs*.	**Fire Science** • Principles of heat transfer • Properties of materials • Principles of fire chemistry • Principles of fire dynamics **Human Behaviour and Evacuation** • Human behaviour and physiological response to fire • Life safety design concepts and practice **Fire Safety Design and Specification** • Fire protection systems • Passive fire protection systems • Active fire protection systems • Fire detection and alarm systems • Fire suppression systems • Access and facilities for fire and emergency services • Behaviour of structural materials when exposed to fire • Compartmentation and spread of flame • Principles of fire protection design to elements of the structural system	• Commissioning and interrogation of specialist analysis of fire mitigation measures by others **Structural Safety** • Hazards that might affect the safety of the structure, and in particular fire and major accident hazards • Principles for achieving safety in structural design in relation to foreseeable hazards. • Principles for design against disproportionate or progressive collapse in the design of building structures • Compliance-based ("deemed-to-satisfy") and first principles ("engineered") approaches to both fire engineering and design against disproportionate or progressive collapse • Principles of tolerability of risk and ALARP in the design of building structures

Examples of evidence	HRB specific criteria
• Formal training related to your role in the application of relevant fire, structural and building life safety systems, as well as the principles and practices that are important throughout the building life cycle of HRBs • Learning and developing the engineering knowledge needed to work in an industry area or discipline where the application of relevant fire, structural and building life safety systems, principles and practices are required • Understanding the current and emerging technology and technical best practice, principles and practices throughout the building life cycle of HRBs, in the relevant fire, structural and building life safety systems • Developing a broader and deeper knowledge base through research and experimentation in the relevant fire, structural and building life safety systems, principles and practices that are important throughout the building life cycle of HRBs • Learning and developing new engineering theories and techniques on the relevant fire, structural and building life safety systems, principles and practices that are important throughout the building life cycle of HRBs • Recognising, consulting with, updating and applying the golden thread of information on any development / design / application / integration for HRB fire safety, structural and building life safety systems. This will include any related life critical sub-systems	Wherever relevant, applicants shall demonstrate the ability† to: • Understanding of the nature of design safety risk with regard to the fire and structural safety of HRBs and demonstrate an ability to eliminate or mitigate them as far as is reasonably practicable, within the framework of a contractual and commercial environment • Understand how safety risk associated with fire and structural safety sits alongside other important risks • Demonstrate a deep knowledge and understanding of the internal and external hazards which might significantly affect the structural and fire safety of the building envelope and identify internal and external hazards which are remote but to be normally excluded from consideration in design • Identify the causes of the hazards which might significantly affect the structural or fire safety of the building envelope • Extensively evaluate the consequences of the hazards which might significantly affect the structural or fire safety of the building envelope, should the hazards materialise • Extensively identify the barriers in place that reduce or prevent hazards affecting the structural or fire safety of the building envelope from materialising, or limit their consequences should they do so, and demonstrate an [extensive] ability to evaluate the effectiveness of those barriers • Extensively anticipate and assess the potential impact of major accident fire and structural safety hazards on the performance of the external wall, beyond prescriptive requirements necessary for regulatory and compliance • Understand the difference between performance-based ("engineering," or first-principles) approaches and compliance-based approaches in demonstrating design against structural (including disproportionate) collapse and against fire hazards within the external wall zone * See Glossary: 'building life cycle' † See p5

Competence		Scope
AA. Knowledge and understanding		• Effect that the structural design has on fire safety eg effect of structural movements and tolerances on integrity of barriers providing compartmentation • Effect that the fire engineering design has on the structural design eg effect that the required fire resistance has on the design of the structural system • Effect that modification in-use and effect that temporary works in use and operation of the building has on fire and structural safety • Importance of co-ordination between the structural engineer and other designers as regards fire and structural safety • Importance of effective communication of significant residual risks and other safety-critical information to those affected or who have a need for this understanding

	HRB specific criteria
	• Extensively anticipate and assess the potential impact of major accident fire and structural safety hazards on the performance of the external wall, beyond prescriptive requirements necessary for regulatory and code compliance • Independently confirm the overall adequacy of the external wall design for a scheme through independent order-of-magnitude checks and review of loading and movement data in relation to mitigation of internal or external hazards • Correctly identify areas of sensitivity in the external wall design and identify areas of sensitivity which might result in fire-related or structural safety risks • Understand the different ways the external wall behaves in fire and contribute to fire safety, their relationship to applicable regulations, and what information needs to be passed to the contractor and the client regarding their maintenance, inspection and repair, and decommissioning implications • Extensively understand how different materials and components respond and potentially propagate fire • Understand the ways in which facade design impacts structural design and how the facade design may affect the fire safety of the building • Develop a suitable construction sequence for a given form of external wall construction and identify construction methods and equipment that might be required to support the proposed sequence and the considerations applicable to the safety of them in such a way as to not undermine mitigation measures against fire and structural safety-related hazards

Competence		Scope	
AA. Knowledge and understanding	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 2. Address and develop solutions to complex or challenging building safety problems with significant levels of risk. Apply knowledge and understanding of relevant principles and technical standards to co-ordinate and integrate these into the building design.	**Fire Science** • Principles of heat transfer • Properties of materials • Principles of fire chemistry • Principles of fire dynamics **Human Behaviour and Evacuation** • Human behaviour and physiological response to fire • Life safety design concepts and practice **Fire Safety Design and Specification** • Fire protection systems • Passive fire protection systems • Active fire protection systems • Fire detection and alarm systems • Fire suppression systems • Access and facilities for fire and emergency services • Behaviour of structural materials when exposed to fire • Compartmentation and spread of flame • Principles of fire protection design to elements of the structural systems	• Commissioning and interrogation of specialist analysis of fire mitigation measures by others **Structural Safety** • Hazards that might affect the safety of the structure, and in particular fire and major accident hazards • Principles for achieving safety in structural design in relation to foreseeable hazards. • Principles for design against disproportionate or progressive collapse in the design of building structures • Compliance-based (“deemed-to-satisfy”) and first principles (“engineered”) approaches to both fire engineering and design against disproportionate or progressive collapse • Principles of tolerability of risk and ALARP in the design of building structures

Examples of evidence	HRB specific criteria
• Conducting technical research and development across all aspects of development / design / application / integration of HRB fire safety, structural and building life safety systems • Developing systems and processes for the design / application / integration of HRB fire safety, structural and building life safety systems and considering new or evolving technology • Conducting complex and / or non-standard technical analyses on the development / design / application / integration of HRB fire safety, structural and building life safety systems • Developing solutions involving complex or multidisciplinary technology in relation to HRB fire safety, structural and building life safety systems • Developing and evaluating continuous improvement systems on HRB fire safety, structural and building life safety systems, including any related life critical sub-systems	Wherever relevant, applicants shall demonstrate the ability to: • Develop from concept stage through detailed design and construction an external wall design in which the identified major accident fire and structural safety hazards are managed in a manner consistent with ALARP principles • Design an external wall system which will behave predictably under major accident fire and structural safety hazards and, should the design of the wider building envelope be intended to remain stable after the event, so to not then be at risk of sudden and / or catastrophic collapse • Understand the nature of disproportionate collapse and demonstrate the ability to develop suitable methods of achieving structural robustness against major accident fire and structural safety hazards through design and detailing methods, including evaluation of the pros and cons of each • Demonstrate a broad knowledge of different external wall systems, components and materials in terms of physical properties and structural performance, their most common fabrication technical when used as façade components, common issues and limitations of application of these elements • Design the external wall to avoid water penetration, inertial condensation, air tightness, overheating, be durable, meet performance requirements • Demonstrate a knowledge of the key building physics principles related to the flow of heat, energy and light through the most common types of external walls, related performance requirements (regulated and otherwise) and common methods used to assess these • Understand the nature, limit and mitigation processes to the use of brittle and fragile materials in facades

Competence		Scope	Examples of evidence	HRB specific criteria
AA. Knowledge and understanding		• Effect that the structural design has on fire safety eg effect of structural movements and tolerances on integrity of barriers providing compartmentation • Effect that the fire engineering design has on the structural design eg effect that the required fire resistance has on the design of the structural system • Effect that modification in-use and effect that temporary works in use and operation of the building has on fire and structural safety • Importance of co-ordination between the structural engineer and other designers as regards fire and structural safety • Importance of effective communication of significant residual risks and other safety-critical information to those affected or who have a need for this understanding		• Demonstrate a knowledge of external wall maintenance and cleaning requirements, access techniques and equipment, repair and replacement strategies for different typologies. Demonstrate detailed knowledge of verification techniques for external walls elements to demonstrate compliance with performance requirements including analysis, calculation, material and component testing (eg mechanical tests, small specimen impact tests etc.) and tests of complete wall assemblies for structural, weather resistance, air permeability, fire and acoustics including site testing and sampling as required • Demonstrate detailed knowledge of fabrication and installation techniques of relevant facade typologies, the sequence of installation and the impact these potentially have on the quality of work, potential for poor execution and challenges in establishing appropriate QA inspection and testing regimes • Evaluate the relevance of the joint consideration of permanent and temporary works (including a safe and economic construction sequence) on the fire and structural safety of the building, including by working in conjunction with temporary works and main contractors • Demonstrate and apply knowledge of facade failures and lessons learned in the safety of facades under extreme events such as explosion, fire and disproportionate collapse as a learning mechanism in design and construction practice. Also, learn from existing facades their life expectancy, the deterioration of materials and components and the potential loss of performance and increased safety risks and increased maintenance requirements and replacement • Understand risks, potential hazards and appropriate strategies for elements attached to the external walls including shading, projecting features and signage • Demonstrate knowledge of different manufacturing methods, techniques and assembly processes as well as transportation methods

Competence		
AA. Knowledge and understanding		

	HRB specific criteria
	• Develop the structural facade design in a way that is consistent with safety case principles, with an emphasis on designing out hazards and developing risk mitigation measures so that the risks impacting on the fire and structural safety of the building envelope are as low as reasonably practicable (ALARP). Demonstrate the ability to identify opportunities to further design out hazards or reduce the risk arising so the risks impacting on the fire and structural safety of the building envelope are demonstrably as low as reasonably practicable (ALARP). Demonstrate an in-depth understanding of ALARP principles in relation to design in relation to risk • Identify and evaluate key areas of risk or design details which are key in the importance they have in the structural or fire safety of the building envelope, and to assist in developing a system of checking, procurement and inspection arrangements which are appropriate to the importance / risk • Propose a rational basis for developing design in a new technology, material or construction method outside their area of established competence, which might include, inter alia, laboratory testing, structural analysis and load testing • Identify the principle checks to undertake on the fabrication and installation of external wall elements and façade systems to confirm they are constructed safely and in a way which is in accordance with the finalised design • Identify planned key inspections, safe methods of accessing all parts of the envelope in order to conduct repair, maintenance, replacement, and decommissioning actions over the lifespan of the external walls and facades to minimise safety risk as far as is reasonably practicable and communicate significant residual risks to others • Understand how to make effective use of peer review, including as a mitigation measure for managing risk arising from design error and in relation to the risk arising from hazards that have not eliminated from the design • Demonstrate knowledge of service life, prescriptive maintenance requirements to maintain validity of warranties, to durability and potential degradation of materials and elements due to time and prolonged exposure

Competence		Scope	
BB. Design, development and solving engineering problems **Chartered Engineers shall apply appropriate theoretical and practical methods to the analysis and solution of engineering problems.** This competence is about the ability to apply engineering knowledge effectively and efficiently to the individual tasks which need to be undertaken in the applicant's role in relation to HRBs.	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1.Take an active role in the identification and definition of project requirements, problems, and opportunities throughout the building life cycle of HRBs.	Construction legislation relevant to higher-risk buildings (HRBs) including: • Construction Legislation • The Building Act • Building Safety Act and regulations • The Building Regulations • Approved Documents • Local acts / enactments • Government communications / circular letters • Sustainable and Secure Building Act • Regulatory reform Fire Safety Order • CDM Regulations • Management of Health and Safety at Work regulations • Health and Safety at Work Act • Health and Safety (Miscellaneous Amendments) Regulations 2002 Regulation 4A • Relevant criminal and case law • Contract law	**Related Guidance** Authoritative guidance as typically published by institutions, industry bodies and individuals including Collaborative Reporting for Safer Structures UK (CROSS-UK). • RIBA plan of work • BSRIA plan of work • IStructE Plan of Work

Examples of evidence	HRB specific criteria

• Identifying projects (or technical improvements to products, processes, or systems needed to undertake an engineering task within the development / design / application / integration) in regard to HRB fire safety, structural and building life safety systems.
• Preparing specifications on the development / design / application / integration of HRB fire safety, structural and building life safety systems, and taking account of functional and other requirements.
• Establishing user requirements for improvements in HRB fire safety, structural and building life safety systems.
• Reviewing specifications and tenders to identify technical issues and potential improvements, with specific focus on elements concerning the development / design / application / integration of HRB fire safety, structural and building life safety systems. These reviews must also consider, contribute, and innovate towards the continuation of the golden thread of information.
• Conducting technical risk analysis on HRB fire safety, structural and building life safety systems, and identifying mitigation measures.
• Considering and implementing new and emerging technologies within the development / design / application / integration of HRB fire safety, structural and building life safety systems
	Wherever relevant, applicants shall demonstrate the ability to:
	
	• Apply knowledge of building related legislation: its rationale, duties, applicability and implications, including relevant case law
	• Demonstrate an [extensive] knowledge of the rationale, duties, applicability and implications of the following specific legislation and relevant case law:
	  ▸ Building Safety Act and subordinate regulations, including relevant case law.
	  ▸ CDM Regulations
	  ▸ Building Regulations
	  ▸ Approved Documents A, B, F, K, L, M, O, Q and Regulation 7
	• Articulate the contribution and roles of all disciplines forming part of the design, construction and operation teams eg client, architect, structural engineer, building services engineer, façade engineer, specialist consultants, contractors, manufacturers, facilities managers and the relevant processes
	• Demonstrate extensive experience in leading and contributing to the co-ordinated design and development of engineering solutions suitable for HRBs to ensure safety in construction, use, maintenance and demolition and the application of suitable verification and testing
	• Demonstrate extensive experience in identification, evaluation, development and implementation of appropriate techniques, systems, procedures and methods to undertake the engineering design, construction and operation of HRBs, coordinating at all times with other members of the design, construction and facilities management teams

Competence		Scope
BB. Design, development and solving engineering problems	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 2. Undertake research, analysis and development to define, refine and apply relevant standards, testing, assessment, site inspection and maintenance procedures for building materials, products, components, assemblies and systems effectively throughout the building life cycle.	• British and international design standards • British and international product standards • Testing standards, procedures, and interpretation of results • Good practice specification • Choice of contractual arrangements (relating to management of risk) • Product characteristics and performance • System / component / assembly testing and performance • Prototyping and sample panel and testing • Maintenance requirements • Maintenance testing and commissioning of building systems and services • Design processes • Software developments (management of risk)

Examples of evidence	HRB specific criteria
• Identifying and agreeing appropriate research methodologies on the development / design / application / integration of HRB fire safety, structural and building life safety systems • Investigating a technical issue within the development / design / application / integration of HRB fire safety, structural and building life safety systems. Then identifying potential solutions, and determining the factors needed to compare them • Identifying and conducting physical tests or trials on HRB fire safety, structural and building life safety systems • Conducting technical simulations or analysis with regards to the development / design / application / integration of HRB fire safety, structural and building life safety systems • Preparing, presenting, and agreeing design recommendations, with appropriate analysis of risk on the development / design / application / integration of HRB fire safety, structural and building life safety systems. Then taking account of, quality, safety, reliability, accessibility, appearance, fitness for purpose, cost, security (including cyber security), intellectual property constraints and opportunities, as well as environmental impact	Wherever relevant, applicants shall demonstrate the ability to: • Consider and implement new and emerging materials, construction techniques, opportunities for prefabrication and off-site assemblies, sourcing of materials, manufacturing processes, testing, and the impact of the materials and their processing and transport on the embodied carbon of the finished cladding systems • Demonstrate extensive knowledge of the requirements of the Eurocodes and supporting National Annexes, supporting British Standards and other standards, non-contradictory complementary information and background documents and their interrelationship with the Building Regulations, Building Safety Bill, and other applicable legislation, with particular emphasis on the structural, environmental and fire performance of the building envelope • Incorporate and reconcile industry guidance from bodies such as Centre for Window and Cladding Technology against regulations and requirements of standards • Conduct technical risk analysis on the constructional build-up of the envelope, its interfaces with the supporting structure, internal fit out components and M&E systems, with reference to their structural, environmental and fire performance design and identify mitigation measures where indicated on the grounds of fire safety • Research, fully understand and assess the appropriateness of the specification and selection of appropriate materials and product standards relating to the design of the building envelope and appreciate those standards, materials, built up wall systems, and products that have an interface with the design, fabrication, transportation and operational requirements for the structural, environmental and fire safety of the building design • Identify technical improvements to products, processes, fabrication to systems needed to undertake an engineering task within the development / design / application / integration of the structural design of a HRB (including safety-critical components and design criteria)

Competence		
BB. Design, development and solving engineering problems		

	HRB specific criteria
	• Understand the performance of the building envelope components and how they act together as a facade system, including safety-critical components such as mode of structural attachment to the primary structural frame, issues such as progressive collapse, detachment of components, components designed to limit fire spread such as cavity barriers / smoke stops which may have single points of failure, and the implications of safety criticality on execution standards • Evaluate different potential contractual arrangements, including but not necessarily limited to Design and Build, Single Stage Tender, two stage Tender, Pre-contract Service Agreement, and assist the client and Design Team in selecting a contractual arrangement which is appropriate to the management of safety-related risk, including the ability to explain why alternative arrangements may not be preferred should that be the case • Understand the impacts of splitting the external wall into a number of interfacing packages and the associated complication of design, installation and responsibilities • Demonstrate extensive experience in the preparation of specifications, including the articulation of performance basis designs and specifications for contractor-led design, and occasionally the need to include prescriptive elements in the designs and specifications, taking account of functional, procurement, manufacturing and fabrication, delivery and installation and in-service requirements • Demonstrate experience in reviewing specifications and tenders to identify technical issues and potential improvements, with specific focus on elements that relate to the technical performance of facade systems concerning the development / design / application / integration of their design and aspects of the tender package having the potential to influence the fire safety of the building envelope. Review potential areas of value engineering as may be offered by tenderers and assess these for suitability against the required performance criteria. These reviews must also consider, contribute, and innovate towards the continuation of the golden thread of information

Competence		
BB. Design, development and solving engineering problems		

	HRB specific criteria
	• Demonstrate experience in the specification, procurement, specification, and management of suitable prototype off site testing procedures for both assembled facade systems and individual component testing to demonstrate the performance of the facade systems and components, with particular emphasis on testing to support safety-related assumptions or design decisions. • Demonstrate experience in the process of conducting factory inspections for primary materials elements eg glass, tracking the routing of facade components via the procurement chain leading up to the assembly of completed facades systems in pre-fabricated modules. Demonstrate experience and appreciation of the importance of site inspections to monitor the quality of installation and experience of site-based testing eg. water tightness. Demonstrate particular experience in the inspection of the compartmentation of the facade systems as designed to limit fire spread and to comply with the fire safety strategy

Competence		Scope
BB. Design, development and solving engineering problems	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 3. Can implement engineering tasks and evaluate the effectiveness of engineering solutions.	• Engineering solutions applicable across the building life cycle of HRBs

Examples of evidence	HRB specific criteria

• Ensuring that the application of the design within HRB fire safety, structural and building life safety systems, results in the appropriate practical outcome
• Implementing design solutions and taking account of critical constraints. This includes due concern for safety, sustainability, and disposal or decommissioning, within HRB fire safety, structural and building life safety systems
• Identifying and implementing lessons learned
• Evaluating existing designs or processes within the development / design / application / integration of HRB fire safety, structural and building life safety systems. Then identifying faults or potential improvements including risk and life cycle considerations
• Actively learning from feedback to improve future design solutions and establish best practice within the development / design / application / integration of HRB fire safety, structural and building life safety systems
	Wherever relevant, applicants shall demonstrate the ability to:
	
	• Understand and validate how product substitutions and design variations can affect performance and fire safety. Including the assessments of product information and supporting data sheets including interpretation of test outcomes provided
	• Inspect site works relative to approved designs and identify where performance risks, in particular relating to fire safety, can emerge, and how such risks can be mitigated
	• Identify defects in constructed works and evaluate their impact on performance and fire safety
	• Learn lessons through the design and construction of building facades and bring about continuous improvement in personal development. Demonstrate the ability to apply lessons learned on future projects
	• Understand the Golden Thread and the designer's duties to undertake project reviews according to Gateways
	• Demonstrate an understanding of Golden Thread requirements for record-keeping and design information to be kept by the client and building operator
	• Demonstrate a knowledge of how physical testing and modelling can be used to address technical issues where conventional analytical and assessment methods are not sufficient
	• Understand of the importance of and an ability to effectively implement project reviews in the form of, for example:
	  ▸ Gateways
	  ▸ Other design reviews appropriate to the nature of the design
	  ▸ Post project reviews
	• Undertake reviews and or audits in operation, including feedback from the operators and occupants of the building, on the building processes and systems. Actively identify learning opportunities and implement corrective measures and or development of future design solutions. This could extend into durability of materials and systems, the performance of the external envelope and any performance gap

Glossary

BSI 8670	Relates to 'Built environment – Core criteria for building safety in competence frameworks – Code of practice' See: www.bsigroup.com
Building Safety Act 2022 (BSA)	Gives **residents** and **homeowners** more rights, powers, and protections resulting in safer homes. It overhauls existing regulations and makes clear how residential buildings should be constructed, maintained, and made safe. See: www.legislation.gov.uk
Building life cycle	This includes selecting appropriate techniques, procedures and methods to design, construct, commission, operate, maintain, refurbish / repurpose, decommission, demolish and recycle. These can apply to building engineering processes, systems, services and products. This ensures compliance with relevant legislation, regulations, statutory guidance and standards of performance applicable to HRBs.
Building Safety Regulator (BSR)	They oversee the safety and standards of all buildings, helping and encouraging the built environment industry and building control professionals to improve their competence. Leading implementation of the new regulatory framework for high-rise buildings. See: www.hse.gov.uk/building-safety/regulator.htm
CROSS	Collaborative Reporting for Safer Structures UK (CROSS-UK) is a confidential reporting system which allows professionals working in the built environment to report on fire and structural safety issues. These are published anonymously to share lessons learned, create positive change, and improve safety.
Higher-risk building (HRB)	For a building to qualify as a higher-risk building it will meet either the height (18 metres or higher) or storeys (seven storeys or more) threshold.
Joint Competent Authority (JCA)	Consists of local authority building standards, fire and rescue authorities, and the Health and Safety Executive. Proposed by Dame Judith Hackitt in her review of building regulations and fire safety.
Occupant	An individual who occupies a house, office, vehicle on a regular basis. The occupant does not extend to living in or use the space as their own.
Owner/ homeowner	The legal owner or leaseholder of a property or individual dwelling.
Resident	A person who lives somewhere permanently or on a long-term basis.
UK-SPEC HRB	The UK Standard for Professional Engineering Competence and Commitment Contextualised for Higher-Risk Buildings UK-SPEC HRB. The document sets out the competence and commitment requirements for registration as an EngTech, IEng or CEng. UK-SPEC HRB is one of the Standards the Engineering Council publishes, along with UK-SPEC, AAQA, AHEP, and the ICTTech Standard.