

Structural 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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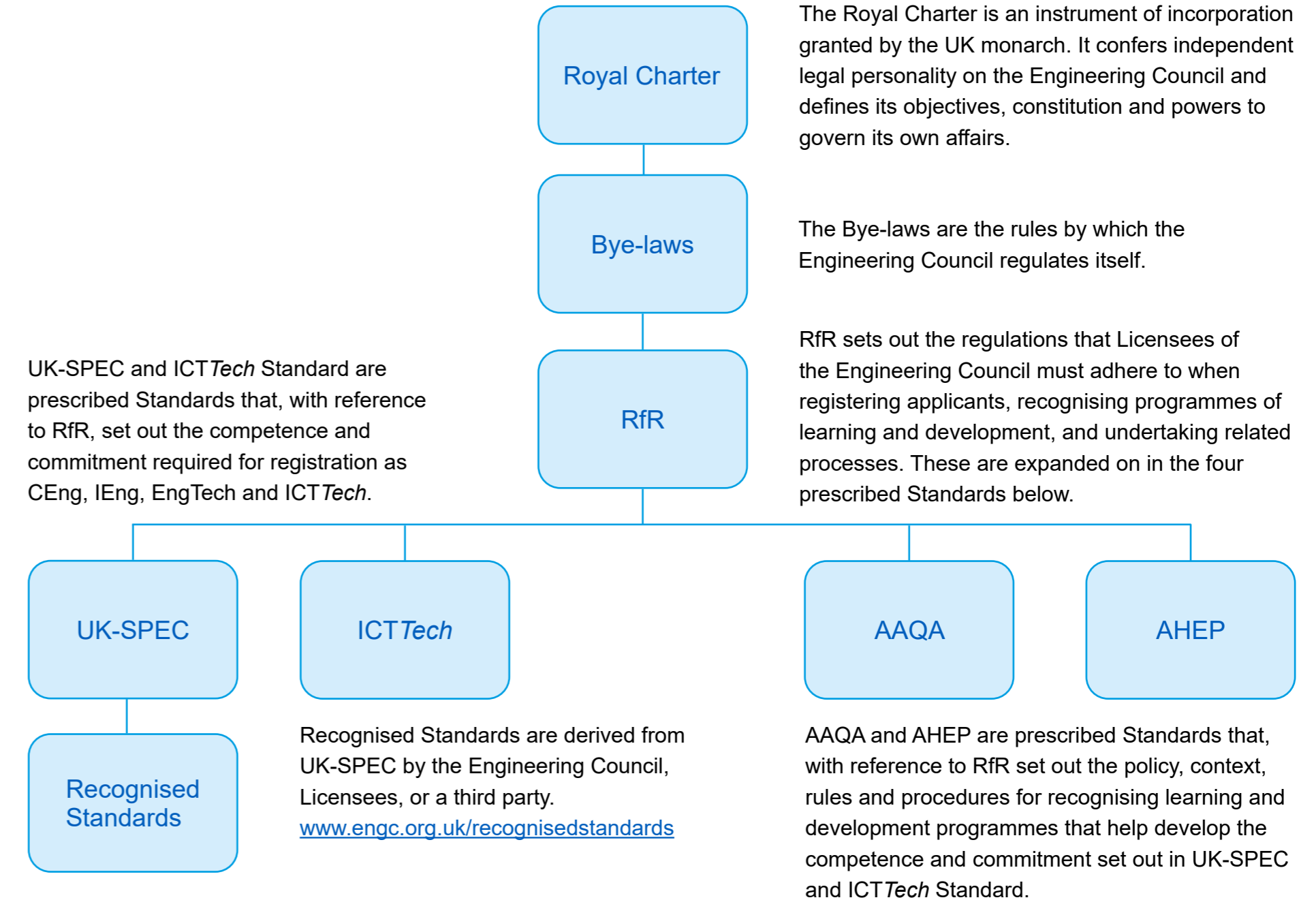
Hierarchy of regulations and standards

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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 (ICTTech 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:



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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.

Structural Annex for the Engineering Technician (EngTech) Standard

Engineering Technicians apply proven techniques and procedures to the solution of practical engineering problems.

Engineering Technicians shall demonstrate:

- Engineering knowledge and understanding to apply technical and practical skills
- Evidence of their contribution to the design, development, manufacture, commissioning, decommissioning, operation or maintenance of products, equipment, processes or services
- Supervisory or technical responsibility
- Effective interpersonal skills in communicating technical matters
- The ability to operate in accordance with safe systems of work and to demonstrate appropriate understanding of the principles of sustainability
- Commitment to professional engineering values

An Engineering Technician 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 context, nature and requirements of their role. They will demonstrate a level of competence and commitment in each area, (AA1–EE5), 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 those areas of limited experience 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 Engineering Technician level.

The examples of evidence are intended as guidance to help identify activities that might demonstrate the required competence and commitment for Engineering Technician 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-EE5 competences. Licensees' Professional Review assessors may request further evidence across any or all of the criteria.

Competence		Scope	
<p>AA. Knowledge and understanding</p> <p>Engineering Technicians shall use engineering knowledge and understanding to apply technical and practical skills.</p> <p>This competence is about having knowledge of fire, structural and life safety, legislation, technologies, standards and practices relevant to higher-risk buildings (HRBs) and having evidence of maintaining and applying this knowledge.</p>	<p>To the extent that it is relevant to their role, the applicant shall demonstrate that they:</p> <p>1. Review and select appropriate fire, structural and building life safety systems and principles, throughout the building life cycle of HRBs*.</p>	<p>Fire Science</p> <ul style="list-style-type: none"> Principles of heat transfer Properties of materials Principles of fire chemistry Principles of fire dynamics <p>Human Behaviour and Evacuation</p> <ul style="list-style-type: none"> Human behaviour and physiological response to fire Life safety design concepts and practice <p>Fire Safety Design and Specification</p> <ul style="list-style-type: none"> Fire protection systems Passive fire protection systems Active fire protection systems Fire detection and alarm systems Fire suppression systems <p>Fire Prevention</p> <ul style="list-style-type: none"> Fire performance of materials Compartmentation and spread of flame Principles of structural fire protection design Commissioning and interrogation of specialist analysis by others 	<ul style="list-style-type: none"> Access and facilities for fire and emergency services <p>Structural Safety</p> <ul style="list-style-type: none"> Structural design / fixing of cladding / facade at height Secondary fixings specification and design Disproportionate collapse <p>Protection from Falling or Collision</p> <ul style="list-style-type: none"> Stair safety Guarding / balustrades Balconies <p>Public Health</p> <ul style="list-style-type: none"> Air quality / ventilation Above ground drainage Water storage Combustion appliances <p>Building Services</p> <ul style="list-style-type: none"> Gas appliances and services Electrical safety Mechanical services Fire integrities <p>Building Fabric</p> <ul style="list-style-type: none"> Interstitial condensation / corrosion Maintenance Glazing and glazing systems

Examples of evidence	HRB specific criteria
<ul style="list-style-type: none"> 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 	<p>Wherever relevant, applicants shall demonstrate the knowledge and understanding of†:</p> <ul style="list-style-type: none"> The need for hazard identification and how this leads to associated risk mitigation measures, which are incorporated into the design of the building structure of a HRB. This must be especially with regards to the fire and structural hazards that can lead to a negative impact on the structural integrity of HRBs. This is in the context of delivery of design output for building structures The importance and need to eliminate or mitigate these risks as far as is reasonably practicable within the framework of a contractual and commercial environment. Demonstrate an understanding of how fire related hazards and associated risks sit alongside other important risks relating to the health and safety of the occupants of the building and the impact they have on the authoring of design documentation Internal, external and procedural hazards which might significantly affect the integrity of the structural design. Recognise the need to identify hazards that are of sufficiently low likelihood that no consideration is typically given in the design of lower-risk structures, but in relation to HRBs understand why awareness is needed on the part of the structural engineer and mitigation why must be clearly indicated within the design documentation given the severity of the consequences The process behind the identification of the root causes of hazards which might significantly affect the structural or fire safety of the building and how this will impact the authoring of design documentation in terms of time and effort The process behind the identification of the root causes of hazards which might significantly affect the structural or fire safety of the building and how this will impact the authoring of design documentation in terms of time and effort The importance and need to evaluate the consequential risks which might significantly affect the structural or fire safety of the building, should the hazards materialise and address them within the design documentation <p>* See Glossary: 'building life cycle' † See p5</p>

Competence	Scope
AA. Knowledge and understanding	

Examples of evidence	HRB specific criteria
	<ul style="list-style-type: none"> • What is meant by 'barriers' and why they exist within the design of a building and understand that their inclusion is to reduce or prevent hazards affecting the structural or fire safety of the building from materialising, or limit their consequences should they do so, and demonstrate knowledge of describing those barriers within the design documentation where appropriate as directed by the design team's leadership • The ability to describe the impacts of the basic characteristics of a structural material or form of construction and its behaviour under major accident fire and structural safety hazards in the context of reflecting this within the design documentation of a building's structure • The impact assessment of major accident fire and structural safety hazards on the performance of the structure, recognising that the necessary action may require mitigation beyond that set out in codes of practice, which is to then be reflected within the design documentation of the building's structure, as directed by the design team's leadership • The process behind selecting an appropriate design that addresses the identified major accident fire and structural safety hazards, by the design team leadership, in a manner consistent with ALARP principles • The processes behind the act of independently confirming the overall adequacy of the structural design for a scheme through independent order-of-magnitude checks, by way of peer reviews and detailed design checks in relation to mitigation of internal, and external hazards. Demonstrate an understanding of how these processes are incorporated into the development of and delivery of design documentation for building structures • The different means of protecting the structure against fire, their relationship to applicable regulations and contemporary practice and how to effectively communicate these principles within the design documentation of a building's structure • What information needs to be passed to other designers, the Principal Contractor, CDM Principal Designer, Principal Designer, and the client regarding their design, maintenance, inspection and repair and decommissioning implications and how to do this clearly within the design documentation of a building's structure

Competence	Scope	
AA. Knowledge and understanding		

Examples of evidence	HRB specific criteria
	<ul style="list-style-type: none"> • How the ways in which the structural design is evaluated against the way in which it may affect the fire safety of the building, and how the fire engineering design might impact on the structural safety of the building, while recognising how this would impact the methods by which the design of a building's structure is delivered • All of the identifying issues, within the design documentation, that relates to the operation, maintenance and planned repair of a building structure that might give rise to safety-related considerations, including the consideration of temporary works required in the maintenance in-use and the operation of the building are included and effectively communicated

Competence		Scope	
<p>AA. Knowledge and understanding</p>	<p>To the extent that it is relevant to their role, the applicant shall demonstrate that they:</p> <p>2. Use appropriate scientific, technical, engineering and information management principles to integrate fire, structural and building life safety systems throughout the building life cycle of HRBs*.</p>	<p>Fire Science</p> <ul style="list-style-type: none"> Principles of heat transfer Properties of materials Principles of fire chemistry Principles of fire dynamics <p>Human Behaviour and Evacuation</p> <ul style="list-style-type: none"> Human behaviour and physiological response to fire Life safety design concepts and practice <p>Fire Safety Design and Specification</p> <ul style="list-style-type: none"> Fire protection systems Passive fire protection systems Active fire protection systems Fire detection and alarm systems Fire suppression systems <p>Fire Prevention</p> <ul style="list-style-type: none"> Fire performance of materials Compartmentation and spread of flame Principles of structural fire protection design Commissioning and interrogation of specialist analysis by others 	<ul style="list-style-type: none"> Access and facilities for fire and emergency services <p>Structural Safety</p> <ul style="list-style-type: none"> Structural design / fixing of cladding / facade at height Secondary fixings specification and design Disproportionate collapse <p>Protection from Falling or Collision</p> <ul style="list-style-type: none"> Stair safety Guarding / balustrades Balconies <p>Public Health</p> <ul style="list-style-type: none"> Air quality / ventilation Above ground drainage Water storage Combustion appliances <p>Building Services</p> <ul style="list-style-type: none"> Gas appliances and services Electrical safety Mechanical services Fire integrities <p>Building Fabric</p> <ul style="list-style-type: none"> Interstitial condensation / corrosion Maintenance Glazing and glazing systems

Examples of evidence	HRB specific criteria
<ul style="list-style-type: none"> 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 	<p>Wherever relevant, applicants shall demonstrate the knowledge and understanding of:</p> <ul style="list-style-type: none"> The process of developing from concept stage through detailed design and construction a structural design in which the identified major accident hazards relating to fire and structural safety are managed in a manner consistent with ALARP principles and how this impacts the authoring of design documentation relating to the building's structure The structural robustness and how information contained within the design documentation of the building's structure includes references to disproportionate collapse and demonstrate knowledge of developing suitable methods of effectively communicating how structural robustness is achieved The presence of potential for secondary structural items, non-structural items and cladding to affect the fire and structural safety of the structural design, and to reflect their presence in the design documentation Including the joint consideration of permanent and temporary works (including a safe and economic construction sequence) on the fire and structural safety of the building during its lifetime and use, including by working in conjunction with other designers and contractors (including temporary works designers and contractors) within the design documentation of the building's structure Structural failures and lessons learned in the safety of structures under extreme events such as explosion, fire and structural collapse as a learning mechanism in design and construction practice when authoring design documentation for building structures How to effectively make use of Collaborative Reporting for Safer Structures (CROSS) as a learning mechanism in design and construction practice, especially when preparing design documentation for building structures Safety cases and the methods of developing the design of the structure in a way that is consistent with safety case principles, with an emphasis on designing out hazards and developing risk mitigation measures so the risks impacting on the integrity of the structure are demonstrably as low as reasonably practicable (ALARP) and how this is implemented within the authorship within the design documentation of a building's structure

Competence	Scope	
AA. Knowledge and understanding		

Examples of evidence	HRB specific criteria
	<ul style="list-style-type: none"> • Assisting with the process of identifying and evaluating key areas of risk or design details which are key in the importance they have in the structural or fire safety of the building, and in the development of a system of checking, procurement and inspection arrangements which are appropriate to the importance / risk by preparing documentation to ensure this task is completed effectively • Incorporating details of new technologies, innovations, and materials or construction methods outside areas of experience, which might include, inter alia, independent reviews, laboratory testing, structural analysis and load testing within the design documentation of a building's structure as directed by the design team's leadership • How to communicate the need to identify principal checks, and their independence, to undertake on the construction of the building to confirm it is constructed safely and in a way which is in accordance with the design intent, in order to assure the safety in use of the structure, and that these are clearly described within the design documentation of the building's structure • Clearly describing the required planned repair, maintenance and decommissioning actions over the lifespan of the structure to minimise safety risk as far as is reasonably practicable, and communicate significant residual risks to the owners, occupants and all relevant stakeholders to the building, and that these are clearly detailed and highlighted within the design documentation of the building's structure • Clearly describing the required planned repair, maintenance and decommissioning actions over the lifespan of the structure to minimise safety risk as far as is reasonably practicable, and communicate significant residual risks to the owners, occupants and all relevant stakeholders to the building, and that these are clearly detailed and highlighted within the design documentation of the building's structure • The process of peer reviews, recognising them as a mitigation measure for managing risk arising from design error and in relation to the risk arising from hazards that have not been eliminated from the design • How the need of peer reviews impacts on the effort required to create design documentation

Competence		Scope	
<p>BB. Design, development and solving engineering problems</p> <p>Engineering Technicians shall contribute to the design, development, manufacture, construction, commissioning, decommissioning, operation or maintenance of products, equipment, processes, systems or services in relation to HRBs.</p>	<p>To the extent that it is relevant to their role, the applicant shall demonstrate that they:</p> <p>1. Identify problems and apply appropriate theoretical and practical methods to design, construct, commission, operate, maintain, decommission and recycle building engineering processes, systems, services and product, in order to comply with relevant legislation, regulations, statutory guidance and standards of performance applicable to HRBs.</p>	<p>Construction legislation relevant to higher-risk buildings (HRBs) including:</p> <p>Construction Legislation</p> <ul style="list-style-type: none"> • The Building Act 1984 • The Building Safety Act 2022 and Regulations • Building regulations • Approved documents • Approved Document 7: Materials and Workmanship • Building regulations (procedural) • Local acts / enactments • Government communications / circular letters • Sustainable and Secure Buildings Act 2004 • Regulatory Reform (Fire Safety) Order 2005 • Construction (Design and Management) Regulations 2007 • Management of Health and Safety at Work Regulations • Health and Safety at Work Act 1974 • Gas Safety (Installation and Use) Regulations 1998 	<ul style="list-style-type: none"> • Relevant case law • Contract law <p>Related Guidance</p> <p>Authoritative guidance as typically published by institutions, industry bodies and individuals including Collaborative Reporting for Safer Structures UK (CROSS-UK).</p> <ul style="list-style-type: none"> • Royal Institute of British Architects (RIBA) plan of work • Building Services Research and Information Association (BSRIA) plan of work • Civil, criminal, and case law • Contract law • Law of agency • Employment law • The Housing Acts 1985, 1988, 1996, 2004 • Housing Health and Safety Rating System • Equalities Act 2010 • Town and Country Planning Act 1990 • Housing and Regeneration Act 2008 • Licensing legislation

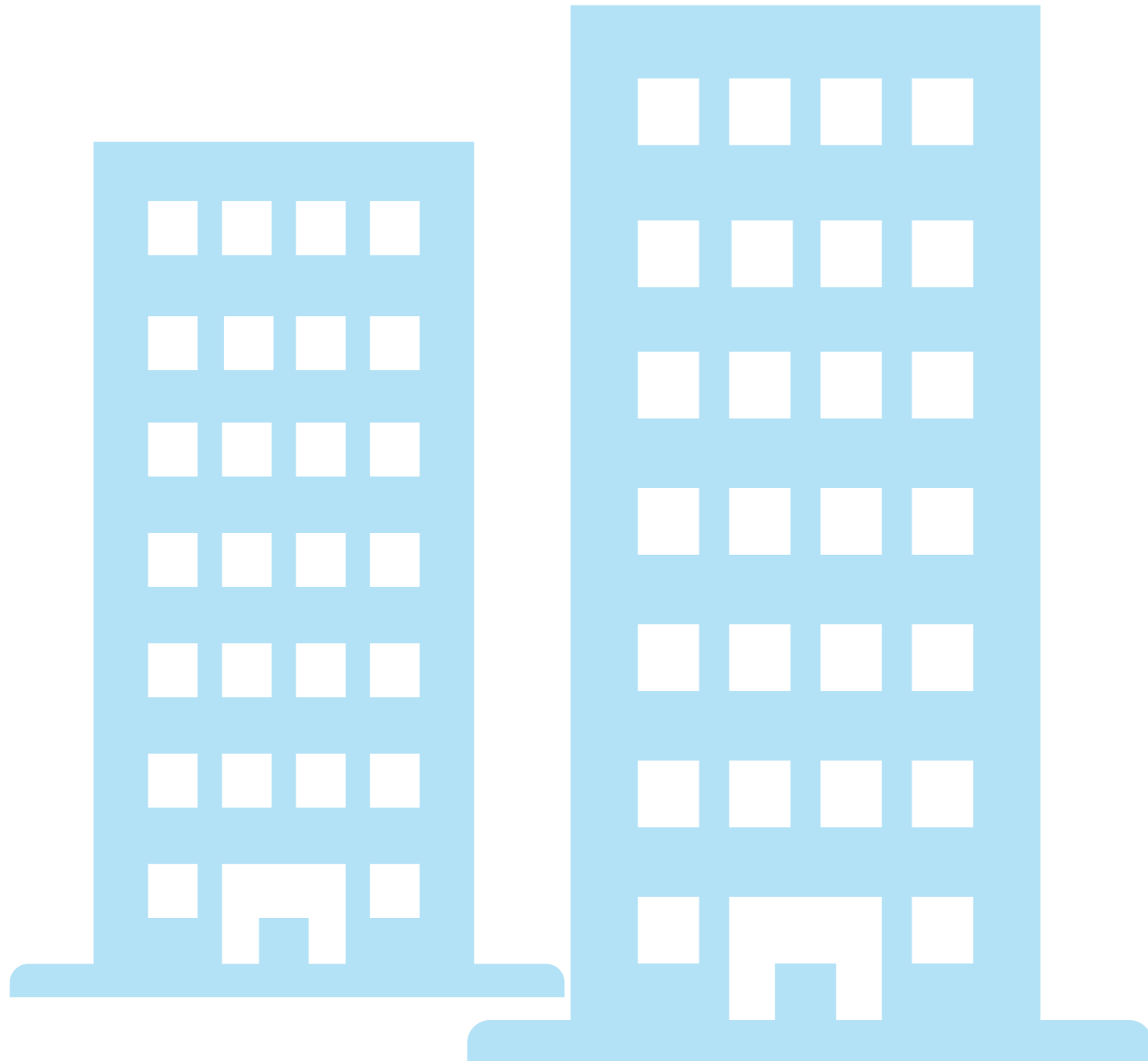
Examples of evidence	HRB specific criteria
<ul style="list-style-type: none"> • Identifying projects (for technical improvements to products, processes, or systems that are needed to undertake an engineering task within the development / design / application / integration) in regard to HRB fire safety, structural and building life safety systems • Preparing specifications on the development / design / application / integration of HRB fire safety, structural and building life safety system, 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 	<p>Wherever relevant, applicants shall demonstrate the knowledge and understanding of:</p> <ul style="list-style-type: none"> • Building related legislation: its rationale, duties, applicability and implications, including relevant case law, as it affects structural engineering and associated fire hazards and how they relate to the duties of the structural engineer to communicate their designs clearly and effectively • The RIBA Plan of Work, IStructE Plan of Work and other industry 'Plans of Work' eg BSRIA, the requirements, prerequisites, assumptions, degrees of uncertainty and level of design detail at different stages of design, the contribution and roles of different parties and issues not addressed by the Plans of Work, relevant to structural engineering and its interfaces with all other building engineering disciplines and how they impact the delivery of design information relating to a building's structure • Describing the contribution and roles of all disciplines forming part of the design, construction and operation teams eg client, architect, structural engineer, geotechnical engineer, building services engineer, façade engineer, specialist consultants, contractors (permanent and temporary works) manufacturers, facilities managers • The processes behind the identification, evaluation, development, and implementation of design team leadership approved techniques, systems, procedures and methods to undertake the engineering design, construction and operation of HRBs, and of the need to coordinate with other members of the design, construction and facilities management teams via design documentation as authored under the guidance of the structural engineer • The process of a documented control procedure for any design change. Similarly demonstrate knowledge of communicating all design changes within the appropriate documentation that has an auditable trail back to the source of the amendment that demonstrates its suggestion, review, and implementation

Competence		Scope
<p>BB. Design, development and solving engineering problems</p>	<p>To the extent that it is relevant to their role, the applicant shall demonstrate that they:</p> <p>2. Identify, organise 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 of HRBs.</p>	<ul style="list-style-type: none"> • British and international product standards • Testing standards, procedures, and interpretation of results • Good practice specification • Product characteristics and performance • System, component or assembly testing and performance • Prototyping / sample panel and testing • Maintenance requirements • Maintenance testing and commissioning of building systems and services

Examples of evidence	HRB specific criteria
<ul style="list-style-type: none"> • 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 	<p>Wherever relevant, applicants shall demonstrate the knowledge and understanding of:</p> <ul style="list-style-type: none"> • How to communicate the implementation of new and emerging materials or construction technologies within the development / design / application / integration of the structural system that have gained the necessary approvals by the design team leadership for them to be included within the design and construction of a building's structure • The level of detail required within the design documentation that relates to but is not limited to the specification and application of appropriate British and international material and product standards relating to the design of the building structure and appreciate those standards, materials and products that have an interface with the design, construction, and operational requirements for the structural and fire safety of the building design • How to communicate any relevant technical improvements to products, processes, or 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) within design documentation relating to the building's structure • The integrated nature of structural components and how they act together as a system, including safety-critical structural components and structural systems which have single points of failure, and the implications of safety criticality on execution standards and the methods by which this is efficiently and effectively communicated within the design documentation of the building's structure • The methods of ensuring that all design documentation is reflective of the approved specifications, including on a performance basis for contractor-led design, for the procurement, design and construction of structural packages, taking account of functional and other requirements

Competence	Scope	
<p>BB. Design, development and solving engineering problems</p>		

Examples of evidence	HRB specific criteria
	<ul style="list-style-type: none"> • How to effectively communicate the contents of the specification, procurement and management of suitable testing to determine the performance of the structure to the HRB through monitoring, load testing, destructive and / or non-destructive testing, with particular emphasis on testing to support safety-critical assumptions or design decisions and how these may all be included within the design documentation relating to the building's structure • How to effectively communicate the contents of the specification, procurement, and management of structural inspection, structural monitoring, performance testing or other in-use processes that are to be put into place and how they are to be suitably described within the design documentation relating to the building's structure



Structural Annex for the Incorporated Engineer (IEng) Standard

Incorporated Engineers maintain and manage applications of current and developing technology, and may undertake engineering design, development, manufacture, construction and operation.

Incorporated Engineers shall demonstrate:

- The theoretical knowledge to solve problems in established technologies using well proven analytical techniques
- Successful application of the knowledge to deliver engineering tasks or services using established technologies and methods
- Contribution to the financial and planning aspects of projects or tasks and contribution to leading and developing other professional staff
- Effective interpersonal skills in communicating technical matters
- The ability to specify and operate to safe systems of work and to demonstrate appropriate consideration of the principles of sustainability
- Commitment to professional engineering values

An Incorporated 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–EE5) 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 must demonstrate an appropriate balance of competences to perform their role effectively at Incorporated Engineer level.

The examples of evidence are intended as guidance to help identify activities that might demonstrate the required competence and commitment for Incorporated 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-EE5 competences. Licensees’ Professional Review assessors may request further evidence across any or all of the criteria.

Competence		Scope
<p>AA. Knowledge and understanding</p> <p>Incorporated Engineers shall use a combination of general and specialist engineering knowledge and understanding to apply existing and emerging technology.</p> <p>This competence is about having knowledge of the technologies, standards and practices relevant to HRBs and the applicant's area of practice and having evidence of maintaining and applying this knowledge.</p>	<p>To the extent that it is relevant to their role, the applicant shall demonstrate that they:</p> <p>1. Maintain and extend a sound theoretical approach to the application of relevant fire, structural and building life safety systems, principles, and practices throughout the building life cycle of HRBs*.</p>	<p>Fire Science</p> <ul style="list-style-type: none"> Principles of heat transfer Properties of materials Principles of fire chemistry Principles of fire dynamics <p>Human Behaviour and Evacuation</p> <ul style="list-style-type: none"> Human behaviour and physiological response to fire Life safety design concepts and practice <p>Fire Safety Design and Specification</p> <ul style="list-style-type: none"> Fire protection systems Passive fire protection systems Active fire protection systems Fire detection and alarm systems Fire suppression systems <p>Fire Prevention</p> <ul style="list-style-type: none"> Fire performance of materials Compartmentation and spread of flame Principles of structural fire protection design Commissioning and interrogation of specialist analysis by others <ul style="list-style-type: none"> Access and facilities for fire and emergency services <p>Structural Safety</p> <ul style="list-style-type: none"> Structural design / fixing of cladding / facade at height Secondary fixings specification and design Disproportionate collapse <p>Protection from Falling or Collision</p> <ul style="list-style-type: none"> Stair safety Guarding / balustrades Balconies <p>Public Health</p> <ul style="list-style-type: none"> Air quality / ventilation Above ground drainage Water storage Combustion appliances <p>Building Services</p> <ul style="list-style-type: none"> Gas appliances and services Electrical safety Mechanical services Fire integrities <p>Building Fabric</p> <ul style="list-style-type: none"> Interstitial condensation / corrosion Maintenance Glazing and glazing systems

Examples of evidence	HRB specific criteria
<ul style="list-style-type: none"> 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 	<p>Wherever relevant, applicants shall demonstrate the experience of†:</p> <ul style="list-style-type: none"> Understanding the nature of hazard identification and the implementation of associated risk mitigation measures into the design of the building structure of a HRB. This must be especially with regard to the fire and structural hazards that can lead to a negative impact on the structural integrity of HRBs Eliminating or mitigating these risks as far as is reasonably practicable when developing designs within the framework of a contractual and commercial environment. Demonstrate an understanding of how fire related hazards and associated risks sit alongside other important risks relating to the health and safety of the occupants of the building and their impact in the design process Understanding the internal, external, and procedural hazards which might significantly affect the integrity of the structure of the building and their impact on its design. Assisting with the Identification of hazards that are of sufficiently low likelihood that no consideration is typically given in the design of lower-risk structures, but in relation to HRBs awareness is needed on the part of the structural engineer and mitigation may be indicated given the severity of the consequences Assisting with the identification of the root causes of hazards which might significantly affect the structural or fire safety of the building and their impact on the design of the structure Assisting with the evaluation of consequential risks which might significantly affect the structural or fire safety of the building, should the hazards materialise and their impact on the design of the structure Assisting with the identification of the barriers that should be in place that reduce or prevent hazards affecting the structural or fire safety of the building from materialising, or limit their consequences should they do so, and demonstrate experience of evaluating the impact of these barriers have on the design of the structure <p>* See Glossary: 'building life cycle' † See p23</p>

Competence	Scope	
AA. Knowledge and understanding		

Examples of evidence	HRB specific criteria
	<ul style="list-style-type: none"> • Identifying the basic characteristics of a structural material or form of construction and its behaviour under major accident fire and structural safety hazards within the framework of the design of the building's structure • Assisting with the assessment of the potential impact of major accident fire and structural safety hazards on the performance of the structure, recognising that the necessary action may require mitigation beyond that set out in codes of practice and how this would impact the design of the building's structure • Understanding 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-related hazards • Assisting with the selection of an appropriate design that addresses the identified major accident fire and structural safety hazards in a manner consistent with ALARP principles • Assisting with the independent confirmation of the overall adequacy of the structural design for a scheme through reasonable order-of-magnitude checks, by way of peer reviews and detailed design checks in relation to mitigation of internal, and external hazards • Assisting with correctly identifying areas of sensitivity in the design of the structure to an HRB, and in particular identify areas of sensitivity which might result in fire-related or structural safety risks • Understanding the expected change in the behaviour of the structure if a structural or fire-related action and its impact on the design of the structure where the action would be deemed to be larger than anticipated, or the strength or stiffness were to be lower than anticipated or were to undergo a larger-than-expected change following an event • Understanding the different means of protecting the structure against fire, their relationship to applicable regulations and contemporary practice within the confines of the delivery of a design of a building's structure

Competence	Scope	
AA. Knowledge and understanding		

Examples of evidence	HRB specific criteria
	<ul style="list-style-type: none"> • Understanding what information needs to be passed to other designers, the Principal Contractor, CDM Principal Designer, Principal Designer, and the client regarding their design, maintenance, inspection and repair and decommissioning implications and the means by which this is to be done clearly and efficiently • Understanding the difference between direct protection of structural elements against fire and the fire engineering design of the structural frame, and the effect on the behaviour of the structure under fire conditions within the confines of the delivery of a design of a building's structure • Understanding the ways in which the decisions made during the development of structural design may affect the fire safety of the building, and how the fire engineering design might impact on the structural safety of the building • Assisting with the identification of issues in relation to the operation, maintenance and planned repair of a building structure that might give rise to safety-related considerations, including the consideration of temporary works required in the maintenance in-use and the operation of the building, all within the confines of the delivery of a design of a building's structure

Competence		Scope	
<p>AA. Knowledge and understanding</p>	<p>To the extent that it is relevant to their role, the applicant shall demonstrate that they:</p> <p>2. Use a sound evidence-based approach to problem solving to apply relevant principles and technical standards for fire, structural and building life safety systems throughout the building life cycle of HRBs, and support continuous improvement in building safety.</p>	<p>Fire Science</p> <ul style="list-style-type: none"> Principles of heat transfer Properties of materials Principles of fire chemistry Principles of fire dynamics <p>Human Behaviour and Evacuation</p> <ul style="list-style-type: none"> Human behaviour and physiological response to fire Life safety design concepts and practice <p>Fire Safety Design and Specification</p> <ul style="list-style-type: none"> Fire protection systems Passive fire protection systems Active fire protection systems Fire detection and alarm systems Fire suppression systems <p>Fire Prevention</p> <ul style="list-style-type: none"> Fire performance of materials Compartmentation and spread of flame Principles of structural fire protection design Commissioning and interrogation of specialist analysis by others Access and facilities for fire and emergency services 	<ul style="list-style-type: none"> Collaboration and system integration <p>Structural Safety</p> <ul style="list-style-type: none"> Structural design / fixing of cladding / facade at height Secondary fixings specification and design Disproportionate collapse <p>Protection from Falling or Collision</p> <ul style="list-style-type: none"> Stair safety Guarding / balustrades Balconies <p>Public Health</p> <ul style="list-style-type: none"> Air quality / ventilation Above ground drainage Water storage Combustion appliances <p>Building Services</p> <ul style="list-style-type: none"> Gas appliances and services Electrical safety Mechanical services Fire integrities <p>Building Fabric</p> <ul style="list-style-type: none"> Interstitial condensation / corrosion Maintenance Glazing and glazing systems

Examples of evidence	HRB specific criteria
<ul style="list-style-type: none"> 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 	<p>Wherever relevant, applicants shall demonstrate the experience of:</p> <ul style="list-style-type: none"> Assisting with the development of a design of a building's structure from concept through to detailed design and construction stage in which the identified major accident hazards relating to fire and structural safety are managed in a manner consistent with ALARP principles Delivering a design for a structure which will behave predictably under major accident fire and structural safety hazards and, should the design be intended to remain stable after the event, to not then be at risk of sudden and / or catastrophic collapse Understanding the nature of disproportionate collapse and demonstrate an experience in assisting with the development of suitable methods of achieving structural robustness against major accidents through design and detailing methods, including the impact they have on the design of the building's structure The awareness of non-linear second-order effects, in the structural design and how, and if relevant, they might be applicable to the structural safety of the building Understanding the potential for secondary structural items, non-structural items and cladding to affect the fire and structural safety of the structural design, and to deliver a design of the building's structure that adequately provides for such items which is appropriate to the significance they have in the fire and structural safety of the building (including the safety of those items dependent upon the secondary items) Assisting with the evaluation of 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 during its lifetime and use, including by working in conjunction with other designers and contractors (including temporary works designers and contractors) Applying knowledge of design led outcomes, including structural failures and lessons learned in the safety of structures under extreme events such as explosion, fire and structural collapse as a learning mechanism in design and construction practice Applying knowledge of how to effectively make use of Collaborative Reporting for Safer Structures (CROSS) as learning mechanisms in design, delivery and construction practice

Competence	Scope	
AA. Knowledge and understanding		

Examples of evidence	HRB specific criteria
	<ul style="list-style-type: none"> • Assisting with the development of the design of a building's structure in a way that is consistent with safety case principles, with an emphasis on designing hazards and understanding the impact risk mitigation measures have on the design output so that the risks impacting on the integrity of the structure are demonstrably as low as reasonably practicable (ALARP) • The application of ALARP principles: Demonstrate experience of applying ALARP principles in relation to design delivery in relation to risk • Assisting with the identification and evaluation of key areas of risk or design details which are key in the importance they have in the structural or fire safety of the building, and to assist with the development of a system of checking, procurement, and inspection arrangements which are appropriate to the importance / risk • Evaluating the proposed implementation of new technologies, innovations, and materials or construction methods outside areas of experience, which might include, inter alia, independent reviews, laboratory testing, structural analysis and load testing within the framework of delivering a design of a building's structure • Assisting with the identification of the principal checks, and their independence, to undertake on the construction of the building to confirm it is constructed safely and in a way which is in accordance with the design intent, to assure the safety in use of the structure's occupants • Assisting with the identification of planned repair, maintenance, and decommissioning actions over the lifespan of the structure to minimise safety risk as far as is reasonably practicable and ensure that the design documentation effectively communicates all of the significant residual risks to the owners, occupants, and all relevant stakeholders to the building

Competence		Scope
AA. Knowledge and understanding		

Examples of evidence	HRB specific criteria
	<ul style="list-style-type: none"> • Understanding how to incorporate peer reviews within the design process of a building's structure, including as a mitigation measure for managing risk arising from design error and in relation to the risk arising from hazards that have not been eliminated from the design. The competence of those who can and should conduct a peer review must also be appreciated and valued in terms of the efficacy of the commentary on the proposed design and how it is to be implemented • Assisting with the identification of 'standard work tasks' and 'non-standard work tasks' for the design, construction, planned repair and maintenance phases, so that the commonplace may be noted, and established procedures followed, but the effort in mitigating risk is directed into the latter • How the residual risks from latter 'non-standard' work tasks must be included within the design documentation for the building's structure, that forms part of the design delivery

Competence		Scope
<p>BB. Design, development and solving engineering problems</p> <p>Incorporated Engineers shall apply appropriate theoretical and practical methods to design, develop, manufacture, construct, commission, operate, maintain, decommission and recycle engineering processes, systems, services and products.</p> <p>This competence is about the ability to identify appropriate methods and approaches to use to undertake a task within their area of practice and to make a significant contribution to the development of a design or process or the maintenance of operations in relation to HRBs.</p>	<p>To the extent that it is relevant to their role, the applicant shall demonstrate that they:</p> <p>1. Identify, review and select appropriate techniques, procedures, and methods to design, construct, commission, operate, maintain, decommission and recycle building engineering processes, systems, services and products, in order to comply with relevant legislation, regulations, statutory guidance and standards of performance applicable to HRBs.</p>	<p>Construction legislation relevant to higher-risk buildings (HRBs) including:</p> <p>Construction Legislation</p> <ul style="list-style-type: none"> • The Building Act 1984 • The Building Safety Act 2022 and Regulations • Building regulations • Approved documents • Approved Document 7: Materials and Workmanship • Building regulations (procedural) • Local acts / enactments • Government communications / circular letters • Sustainable and Secure Buildings Act 2004 • Regulatory Reform (Fire Safety) Order 2005 • Construction (Design and Management) Regulations 2007 • Management of Health and Safety at Work Regulations • Health and Safety at Work Act 1974 • Gas Safety (Installation and Use) Regulations 1998 <ul style="list-style-type: none"> • Relevant case law • Contract law <p>Related Guidance</p> <p>Authoritative guidance as typically published by institutions, industry bodies and individuals including Collaborative Reporting for Safer Structures UK (CROSS-UK).</p> <ul style="list-style-type: none"> • Royal Institute of British Architects (RIBA) plan of work • Building Services Research and Information Association (BSRIA) plan of work • Civil, criminal, and case law • Contract law • Law of agency • Employment law • The Housing Acts 1985, 1988, 1996, 2004 • Housing Health and Safety Rating System • Equalities Act 2010 • Town and Country Planning Act 1990 • Housing and Regeneration Act 2008 • Licensing legislation

Examples of evidence	HRB specific criteria
<ul style="list-style-type: none"> • Identifying projects (or technical improvements to products, processes, or systems that are 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 	<p>Wherever relevant, applicants shall demonstrate the experience of:</p> <ul style="list-style-type: none"> • Understanding building related legislation: its rationale, duties, applicability and implications, including relevant case law, as it affects structural engineering and associated fire hazards within the context of the delivery of the design of building structures • Understanding of the rationale, duties, applicability and implications of the following specific legislation and relevant case law, within the context of the delivery of the design of building structures: <ul style="list-style-type: none"> ▶ Building Safety Act and secondary legislation, including relevant case law ▶ CDM Regulations ▶ Building regulations ▶ Approved Documents (specifically A, B, M, Q and 7) • Understanding of the RIBA Plan of Work, IStructE Plan of Work and other industry 'Plans of Work' eg BSRIA, the requirements, prerequisites, assumptions, degrees of uncertainty and level of design detail at different stages of design, the contribution and roles of different parties and issues not addressed by the Plans of Work, relevant to the delivery of structural engineering designs of building structures and all interfaces with other relevant building engineering disciplines • Describing the contribution and roles of all disciplines forming part of the design, construction and operation teams eg client, architect, structural engineer, geotechnical engineer, building services engineer, façade engineer, specialist consultants, contractors (permanent and temporary works, including associated designers) manufacturers, facilities managers* <p>* This is in the context of how this impacts the design delivery of a building's structure and not the overall understanding necessary to adopt the requests made by other interest parties and / or stakeholders.</p>

Competence	Scope	
<p>BB. Design, development and solving engineering problems</p>		

Examples of evidence	HRB specific criteria
	<ul style="list-style-type: none"> • Evaluating and supporting the decisions made by the design team leadership and contributing to the co-ordinated design and development of engineering designs suitable for HRBs such that adequate levels of safety in construction, use, maintenance and demolition are achieved and reflecting this with the design delivery of the building's structure • Assisting with the identification of evaluating, developing and suggesting appropriate techniques, systems, procedures and methods to undertake the engineering design, construction and operation of HRBs and assisting with the necessary co-ordination with other members of the design, construction and facilities management teams prior to their adoption within the design of the building's structure • Reacting to a documented control procedure for any design change and implementing it within the delivery documentation. Similarly demonstrate an understanding of and experience of incorporating the outcomes of properly managed 'value engineering' sessions

Competence		Scope
<p>BB. Design, development and solving engineering problems</p>	<p>To the extent that it is relevant to their role, the applicant shall demonstrate that they:</p> <p>2. Contribute to the design and development of engineering solutions through application of relevant standards, testing, site inspection, assessment and maintenance procedures for building materials, products, components, assemblies and systems effectively throughout the building life cycle of HRBs.</p>	<ul style="list-style-type: none"> • British and international product standards • Testing standards, procedures, and interpretation of results • Good practice specification • Product characteristics and performance • System, component or assembly testing and performance • Prototyping / sample panel and testing • Maintenance requirements • Maintenance testing and commissioning of building systems and services

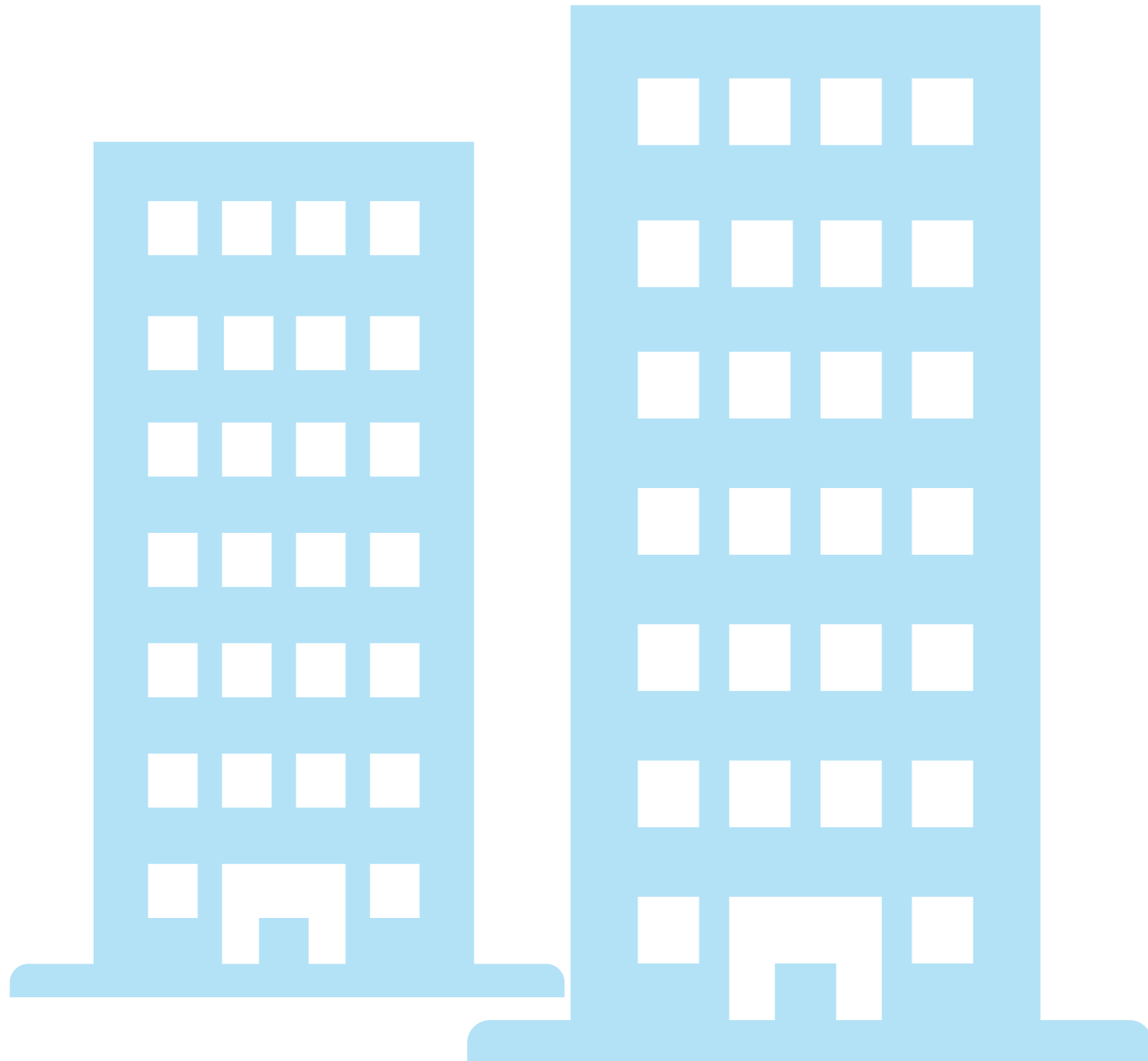
Examples of evidence	HRB specific criteria
<ul style="list-style-type: none"> • Identifying and agreeing appropriate research methodologies on the development / design / application / integration of HRB fire safety, structural and building life safety systems • Investigating a technical issue within 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 	<p>Wherever relevant, applicants shall demonstrate the experience of:</p> <ul style="list-style-type: none"> • Assisting with the evaluation, consideration and eventual implementation of new and emerging materials or construction technologies within the development / design / application / integration of the structural system within the confines of delivering the design of a building's structure • Understanding of the requirements of the structural Eurocodes and supporting National Annexes, additional supporting British Standards and other standards, non-contradictory complementary information and background documents and their interrelationship with the building regulations / other applicable legislation, with emphasis on the structural and fire safety requirements when developing design output for building structures • Assisting with the conducting of technical risk analysis on the design of the building's structure of the HRB and the identification of mitigation measures where necessary on the grounds of structural or fire safety • Researching, understanding and assessing the appropriateness of the specification and selection of appropriate British and international material and product standards relating to the design of the building structure and appreciate those standards, materials and products that have an interface with the design, construction, and operational requirements for the structural and fire safety of the building when developing design output of the building's structure • Assisting with the identification of technical improvements to products, processes, or 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). Any such experience will be related to the impact they would have in the design process and delivery of a building's structure • Understanding the performance of structural components and how they act together as a system, including safety-critical structural components and structural systems which have single points of failure, and the implications of safety criticality on execution standards • Demonstrating an understanding of how the knowledge must be reflected and clearly communicated in the design output and delivery of a building's structure

Competence	Scope	
<p>BB. Design, development and solving engineering problems</p>		

Examples of evidence	HRB specific criteria
	<ul style="list-style-type: none"> • Assisting with the evaluation of different potential contractual arrangements and selection of a contractual arrangement which is appropriate to the management of safety-related risk, including the experience with suggesting reasons why alternative arrangements are not preferred • Assisting with the preparation of specifications, including on a performance basis for contractor-led design, for the procurement, design and construction of structural packages, taking account of functional and other requirements that reflect the decisions made by the design team's leadership • Assisting with the review of specifications and tenders to identify technical issues and suggesting potential improvements, with specific focus on elements concerning the development / design / application / integration of the structural design output and delivery and aspects of the tender package having the potential to influence the structural and fire safety of the building structure. These reviews must also consider, contribute, and innovate towards the continuation of the golden thread of information, which must be implemented within the design documentation • Assisting with the specification, procurement and management of suitable testing to determine the performance of the structure to the HRB through monitoring, load testing, destructive and / or non-destructive testing, with particular emphasis on testing to support safety-critical assumptions or design decisions. • Demonstrate experience in implementing the outcomes of these tasks being included within the design delivery of the building's structure • Assisting with the specification, procurement, and management of structural inspection, structural monitoring, performance testing or other in-use processes are in place. This is to ensure that the performance of individual structural components and the overall structural system continues to meet the structural and fire safety design intent and to comply with the structural and fire safety strategy • Communicating these aspects of the design of the structure are included within the documentation and are clearly identified

Competence	Scope
<p>BB. Design, development and solving engineering problems</p> <p>To the extent that it is relevant to their role, the applicant shall demonstrate that they:</p> <p>3. Implement design solutions for equipment or processes and contribute to their evaluation.</p>	<ul style="list-style-type: none"> • Design solutions applicable across the life cycle of HRBs

Examples of evidence	HRB specific criteria
<ul style="list-style-type: none"> • 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 	<p>Wherever relevant, applicants shall demonstrate the experience of:</p> <ul style="list-style-type: none"> • Ensuring the application of the design is inclusive of all products, components and systems to implement the fire safety strategy and safety in design, construction and operation for the building within the confines of the design delivery of a building's structure • Assisting with the identification of the constraints of the building, development and the implementation of fire safety design related items that consider safety and wellbeing of occupants, sustainability, resilience and future proofing in operation, decommissioning and disposal within the confines of the design delivery of a building's structure • Assisting with the evaluation of existing building systems and installation within the designs or processes during construction, commissioning and operation, and of suggesting corrective actions and, once evaluated and agreed upon by the design team leadership, implement them. Implement lessons learnt and suggest alternative designs to reflect the outcomes of prior experiences within the development of, design, application and integration of fire safety and evacuation systems, including any related life critical sub-systems • Actively learning from reviews and / or audits in operation including feedback from the operators and occupants of the building on its processes and systems when developing design delivery of a building's structure • Implementation and integration of agreed and authorised corrective measures and / or development of future designs to improve and build on best practice within the development, design for the application and integration of fire safety and evacuation systems, including any related life critical sub-systems



Structural Annex for 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–EE5), 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-EE5 competences. Licensees’ Professional Review assessors may request further evidence across any or all of the criteria.

Competence		Scope
<p>AA. Knowledge and understanding</p> <p>Chartered Engineers shall use a combination of general and specialist engineering knowledge and understanding to optimise the application of advanced and complex systems.</p> <p>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.</p>	<p>To the extent that it is relevant to their role, the applicant shall demonstrate that they:</p> <p>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*.</p>	<p>Fire Science</p> <ul style="list-style-type: none"> Principles of heat transfer Properties of materials Principles of fire chemistry Principles of fire dynamics <p>Human Behaviour and Evacuation</p> <ul style="list-style-type: none"> Human behaviour and physiological response to fire Life safety design concepts and practice <p>Fire Safety Design and Specification</p> <ul style="list-style-type: none"> Fire protection systems Passive fire protection systems Active fire protection systems Fire detection and alarm systems Fire suppression systems <p>Fire Prevention</p> <ul style="list-style-type: none"> Fire performance of materials Compartmentation and spread of flame Principles of structural fire protection design Commissioning and interrogation of specialist analysis by others <ul style="list-style-type: none"> Access and facilities for fire and emergency services <p>Structural Safety</p> <ul style="list-style-type: none"> Structural design / fixing of cladding / facade at height Secondary fixings specification and design Disproportionate collapse <p>Protection from Falling or Collision</p> <ul style="list-style-type: none"> Stair safety Guarding / balustrades Balconies <p>Public Health</p> <ul style="list-style-type: none"> Air quality / ventilation Above ground drainage Water storage Combustion appliances <p>Building Services</p> <ul style="list-style-type: none"> Gas appliances and services Electrical safety Mechanical services Fire integrities <p>Building Fabric</p> <ul style="list-style-type: none"> Interstitial condensation / corrosion Maintenance Glazing and glazing systems

Examples of evidence	HRB specific criteria
<ul style="list-style-type: none"> 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 	<p>Wherever relevant, applicants shall demonstrate the ability to[†]:</p> <ul style="list-style-type: none"> Understand the nature of hazard identification and associated risk mitigation measures incorporated into the design of the building structure of a HRB. This must be especially with regards to the fire and structural hazards that can lead to a negative impact on the structural integrity of HRBs Eliminate or mitigate these risks as far as is reasonably practicable within the framework of a contractual and commercial environment. Demonstrate an understanding of how fire related hazards and associated risks sit alongside other important risks relating to the health and safety of the occupants of the building Understand internal, external and procedural hazards which might significantly affect the integrity of the structural design. Identify hazards that are of sufficiently low likelihood that no consideration is typically given in the design of lower-risk structures, but in relation to HRBs awareness is needed on the part of the structural engineer and mitigation may be indicated given the severity of the consequences Identify the root causes of hazards which might significantly affect the structural or fire safety of the building Evaluate the consequential risks which might significantly affect the structural or fire safety of the building, should the hazards materialise Identify the barriers in place that reduce or prevent hazards affecting the structural or fire safety of the building from materialising, or limit their consequences should they do so, and demonstrate an ability to evaluate the effectiveness of those barriers Identify the basic characteristics of a structural material or form of construction and its behaviour under major accident fire and structural safety hazards Assess the impact of major accident fire and structural safety hazards on the performance of the structure, recognising that the necessary action may require mitigation beyond that set out in codes of practice <p>* See Glossary: 'building life cycle' [†] See p47</p>

Competence	Scope	
AA. Knowledge and understanding		

Examples of evidence	HRB specific criteria
	<ul style="list-style-type: none"> • Understand of 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-related hazards • Select an appropriate design solution that addresses the identified major accident fire and structural safety hazards in a manner consistent with ALARP principles • Independently confirm the overall adequacy of the structural design for a scheme through independent order-of-magnitude checks, by way of peer reviews and detailed design checks in relation to mitigation of internal, and external hazards • Correctly identify areas of sensitivity in the design of the structure to an HRB, and in particular identify areas of sensitivity which might result in fire-related or structural safety risks • Understand the expected change in the behaviour of the structure if a structural or fire-related action were to be larger than anticipated, or the strength or stiffness were to be lower than anticipated or were to undergo a larger-than-expected change following an event • Understand the different means of protecting the structure against fire, their relationship to applicable regulations and contemporary practice • Understand the information needs to be passed to other designers, the Principal Contractor, CDM Principal Designer, Principal Designer, and the client regarding their design, maintenance, inspection and repair and decommissioning implications • Understand the difference between direct protection of structural elements against fire and the fire engineering design of the structural frame, and the effect on the behaviour of the structure under fire conditions • Understand the ways in which the structural design may affect the fire safety of the building, and how the fire engineering design might impact on the structural safety of the building • Identify issues in relation to the operation, maintenance and planned repair of a building structure that might give rise to safety-related considerations, including the consideration of temporary works required in the maintenance in-use and the operation of the building

Competence		Scope	
AA. Knowledge and understanding	<p>To the extent that it is relevant to their role, the applicant shall demonstrate that they:</p> <p>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.</p>	<p>Fire Science</p> <ul style="list-style-type: none"> Principles of heat transfer Properties of materials Principles of fire chemistry Principles of fire dynamics <p>Human Behaviour and Evacuation</p> <ul style="list-style-type: none"> Human behaviour and physiological response to fire Life safety design concepts and practice <p>Fire Safety Design and Specification</p> <ul style="list-style-type: none"> Fire protection systems Passive fire protection systems Active fire protection systems Fire detection and alarm systems Fire suppression systems <p>Fire Prevention</p> <ul style="list-style-type: none"> Fire performance of materials Compartmentation and spread of flame Principles of structural fire protection design Commissioning and interrogation of specialist analysis by others Access and facilities for fire and emergency services 	<ul style="list-style-type: none"> Collaboration and system integration <p>Structural Safety</p> <ul style="list-style-type: none"> Structural design / fixing of cladding / facade at height Secondary fixings specification and design Disproportionate collapse <p>Protection from Falling or Collision</p> <ul style="list-style-type: none"> Stair safety Guarding / balustrades Balconies <p>Public Health</p> <ul style="list-style-type: none"> Air quality / ventilation Above ground drainage Water storage Combustion appliances <p>Building Services</p> <ul style="list-style-type: none"> Gas appliances and services Electrical safety Mechanical services Fire integrities <p>Building Fabric</p> <ul style="list-style-type: none"> Interstitial condensation / corrosion Maintenance Glazing and glazing systems

Examples of evidence	HRB specific criteria
<ul style="list-style-type: none"> 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 	<p>Wherever relevant, applicants shall demonstrate the ability to:</p> <ul style="list-style-type: none"> Understand building related legislation: its rationale, duties, applicability and implications, including relevant case law, affects structural engineering and associated fire hazards Understand the rationale, duties, applicability and implications of the following specific legislation and relevant case law: <ul style="list-style-type: none"> Building Safety Act and secondary legislation, including relevant case law CDM Regulations Building regulations Approved Documents A, B, M, Q and 7 Understand the RIBA Plan of Work, IStructE Plan of Work and other industry 'Plans of Work' eg BSRIA, the requirements, prerequisites, assumptions, degrees of uncertainty and level of design detail at different stages of design, the contribution and roles of different parties and issues not addressed by the Plans of Work, relevant to structural engineering and its interfaces with all other building engineering disciplines Describe the contribution and roles of all disciplines forming part of the design, construction and operation teams eg client, architect, structural engineer, geotechnical engineer, building services engineer, façade engineer, specialist consultants, contractors (permanent and temporary works) manufacturers, facilities managers Lead and contribute to the co-ordinated design and development of engineering designs suitable for HRBs such that adequate levels of safety in construction, use, maintenance and demolition are achieved Identify, evaluate, develop, and implement 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 Articulate the need for a documented control procedure for any design change. Similarly demonstrate an understanding of and the ability to communicate the purpose and benefits of properly managed 'value engineering' sessions and the pitfalls of poorly managed sessions

Competence	Scope	
AA. Knowledge and understanding		

Examples of evidence	HRB specific criteria
	<ul style="list-style-type: none"> • Develop the design of the structure 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 integrity of the structure are demonstrably as low as reasonably practicable (ALARP) • Apply 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, and to develop a system of checking, procurement and inspection arrangements which are appropriate to the importance / risk • Propose a rational basis for developing design in new technologies, innovations, and materials or construction methods outside areas of experience, which might include, inter alia, independent reviews, laboratory testing, structural analysis and load testing • Identify the principal checks, and their independence, to undertake on the construction of the building to confirm it is constructed safely and in a way which is in accordance with the design intent, in order to assure the safety in use of the structure • Identify planned repair, maintenance and decommissioning actions over the lifespan of the structure to minimise safety risk as far as is reasonably practicable, and communicate significant residual risks to the owners, occupants and all relevant stakeholders to the building • 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 been eliminated from the design. The competence of those who can and should conduct a peer review must also be understood and valued in terms of the efficacy of the commentary on the proposed design • Identify 'standard work tasks' and 'non-standard work tasks' for the design, construction, planned repair and maintenance phases, so that the commonplace may be noted, and established procedures followed, but the effort in mitigating risk is directed into the latter

Competence		Scope	
<p>BB. Design, development and solving engineering problems</p> <p>Chartered Engineers shall apply appropriate theoretical and practical methods to the analysis and solution of engineering problems.</p> <p>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.</p>	<p>To the extent that it is relevant to their role, the applicant shall demonstrate that they:</p> <p>1. Take an active role in the identification and definition of project requirements, problems, and opportunities throughout the building life cycle of HRBs.</p>	<p>Construction legislation relevant to higher-risk buildings (HRBs) including:</p> <p>Construction Legislation</p> <ul style="list-style-type: none"> • The Building Act 1984 • The Building Safety Act 2022 and Regulations • Building regulations • Approved documents • Approved Document 7: Materials and Workmanship • Building regulations (procedural) • Local acts / enactments • Government communications / circular letters • Sustainable and Secure Buildings Act 2004 • Regulatory Reform (Fire Safety) Order 2005 • Construction (Design and Management) Regulations 2007 • Management of Health and Safety at Work Regulations • Health and Safety at Work Act 1974 • Gas Safety (Installation and Use) Regulations 1998 	<ul style="list-style-type: none"> • Relevant case law • Contract law <p>Related Guidance</p> <p>Authoritative guidance as typically published by institutions, industry bodies and individuals including Collaborative Reporting for Safer Structures UK (CROSS-UK).</p> <ul style="list-style-type: none"> • Royal Institute of British Architects (RIBA) plan of work • Building Services Research and Information Association (BSRIA) plan of work • Civil, criminal, and case law • Contract law • Law of agency • Employment law • The Housing Acts 1985, 1988, 1996, 2004 • Housing Health and Safety Rating System • Equalities Act 2010 • Town and Country Planning Act 1990 • Housing and Regeneration Act 2008 • Licensing legislation

Examples of evidence	HRB specific criteria
<ul style="list-style-type: none"> • 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 	<p>Wherever relevant, applicants shall demonstrate the ability to:</p> <ul style="list-style-type: none"> • Understand building related legislation: its rationale, duties, applicability and implications, including relevant case law, affecting structural engineering and associated fire hazards • Understand the rationale, duties, applicability and implications of the following specific legislation and relevant case law <ul style="list-style-type: none"> ▶ Building Safety Act and secondary legislation, including relevant case law ▶ CDM Regulations ▶ Building regulations ▶ Approved Documents A, B, M, Q and 7 • Understand the RIBA Plan of Work, IStructE Plan of Work and other industry 'Plans of Work' eg BSRIA, the requirements, prerequisites, assumptions, degrees of uncertainty and level of design detail at different stages of design, the contribution and roles of different parties and issues not addressed by the Plans of Work, relevant to structural engineering and its interfaces with all other building engineering disciplines • Describe the contribution and roles of all disciplines forming part of the design, construction and operation teams eg client, architect, structural engineer, geotechnical engineer, building services engineer, façade engineer, specialist consultants, contractors (permanent and temporary works) manufacturers, facilities managers • Lead and contribute to the co-ordinated design and development of engineering designs suitable for HRBs such that adequate levels of safety in construction, use, maintenance and demolition are achieved • Identify, evaluate, develop, and implement 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 • Articulate the need for a documented control procedure for any design change. Similarly demonstrate an understanding of and the ability to communicate the purpose and benefits of properly managed 'value engineering' sessions and the pitfalls of poorly managed sessions

Competence		Scope
<p>BB. Design, development and solving engineering problems</p>	<p>To the extent that it is relevant to their role, the applicant shall demonstrate that they:</p> <p>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.</p>	<ul style="list-style-type: none"> • British and international product standards • Testing standards, procedures, and interpretation of results • Good practice specification • Product characteristics and performance • System, component or assembly testing and performance • Prototyping / sample panel and testing • Maintenance requirements • Maintenance testing and commissioning of building systems and services

Examples of evidence	HRB specific criteria
<ul style="list-style-type: none"> • 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 	<p>Wherever relevant, applicants shall demonstrate the ability to:</p> <ul style="list-style-type: none"> • Consider and implement new and emerging materials or construction technologies within the development / design / application / integration of the structural system • Understand the requirements of the structural Eurocodes and supporting National Annexes, additional supporting British Standards and other standards, non-contradictory complementary information and background documents and their interrelationship with the building regulations / other applicable legislation, with particular emphasis on the structural and fire safety requirements • Conduct technical risk analysis on the design of the structure of their HRB and identify mitigation measures where necessary on the grounds of structural or fire safety • Research, fully understand and assess the appropriateness of the specification and selection of appropriate British and international material and product standards relating to the design of the building structure and appreciate those standards, materials and products that have an interface with the design, construction, and operational requirements for the structural and fire safety of the building design • Identify technical improvements to products, processes, or 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) • Understand the performance of structural components and how they act together as a system, including safety-critical structural components and structural systems which have single points of failure, and the implications of safety criticality on execution standards • Evaluate different potential contractual arrangements and select a contractual arrangement which is appropriate to the management of safety-related risk, including the ability to explain why alternative arrangements are not preferred • Prepare specifications, including on a performance basis for contractor-led design, for the procurement, design and construction of structural packages, taking account of functional and other requirements

Competence	Scope	
<p>BB. Design, development and solving engineering problems</p>		

Examples of evidence	HRB specific criteria
	<ul style="list-style-type: none"> • Review specifications and tenders to identify technical issues and potential improvements, with specific focus on elements concerning the development / design / application / integration of the structural design and aspects of the tender package having the potential to influence the structural and fire safety of the building structure. These reviews must also consider, contribute, and innovate towards the continuation of the golden thread of information • Demonstrate experience in the specification, procurement and management of suitable testing to determine the performance of the structure to the HRB through monitoring, load testing, destructive and / or non-destructive testing, with particular emphasis on testing to support safety-critical assumptions or design decisions • Demonstrate experience in the specification, procurement, and management of structural inspection, structural monitoring, performance testing or other in-use processes are in place. This is to ensure that the performance of individual structural components and the overall structural system continues to meet the structural and fire safety design intent and to comply with the structural and fire safety strategy

Competence		Scope
<p>BB. Design, development and solving engineering problems</p> <p>3. Can implement engineering tasks and evaluate the effectiveness of engineering solutions.</p>	<p>To the extent that it is relevant to their role, the applicant shall demonstrate that they:</p>	<ul style="list-style-type: none"> Engineering solutions applicable across the building life cycle of HRBs

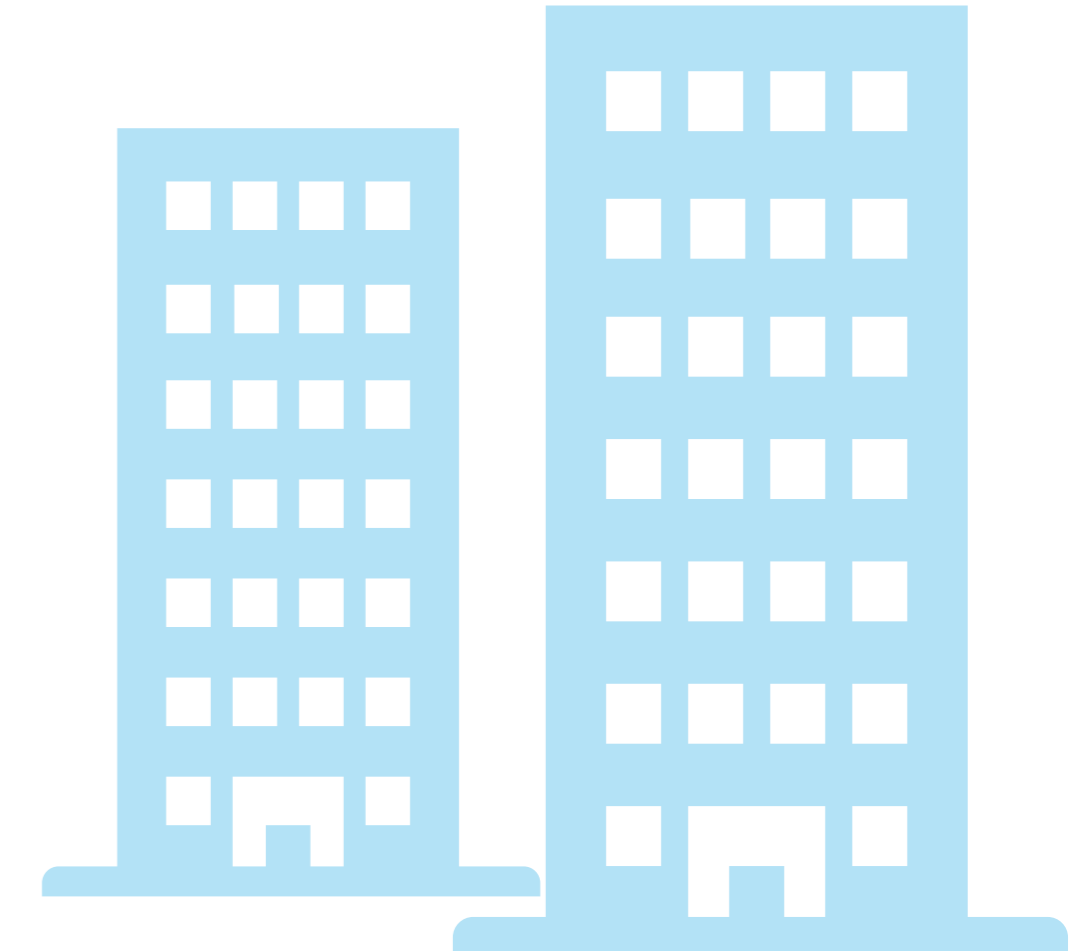
Examples of evidence	HRB specific criteria
<ul style="list-style-type: none"> Ensuring that the application of the design within HRB fire safety, structural and building life safety systems, results in the appropriate practical outcome Implementing design solutions and taking account of critical constraints. 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. 	<p>Wherever relevant, applicants shall demonstrate the ability to:</p> <ul style="list-style-type: none"> Ensure the application of the design is inclusive of all products, components and systems to implement the fire safety strategy and safety in design, construction and operation for the building Identify the constraints of the building, develop and implement fire safety design solutions that consider safety and wellbeing of occupants, sustainability, resilience and future proof in operation, decommissioning and disposal Evaluate existing building systems and, installation within the designs or processes during construction, commissioning and operation. Make corrective actions and implement lessons learnt, propose alternative solutions. within the development of, design, application and integration of fire safety and evacuation systems, including any related life critical sub-systems Actively learn from reviews and / or audits in operation including feedback from the operators and occupants of the building on its processes and systems. Implement and integrate corrective measures and / or development of future design solutions to improve and build on best practice within the development, design for the application and integration of fire safety and evacuation systems, including any related life critical sub-systems

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, and will contain at least two residential units, or be a care home or hospital, as specified in the regulations set out at: www.legislation.gov.uk
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.

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.
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