Higher-Risk Building Registration - Chartered HRB Engineer

Purpose

This guidance note provides an insight into the knowledge, skills, experience and behaviours expected. These will need to be evidenced in an application and interview to become a Chartered HRB Engineer. Registration will be reviewed in revalidation every five years.

Qualities and Competencies of an HRB Registered Engineer

A Chartered HRB Engineer is a highly knowledgeable and skilled professional dedicated to ensuring the safety and compliance of HRB's throughout the life of the building. The qualities and competences expected encompass a deep understanding of building design and construction, fire science, regulatory standards, team competences and management, ability to navigate the approvals process and a robust track record of relevant project experience and continuous professional development specific to HRBs.

Applicants for the Chartered HRB Engineer standard should have a portfolio of significant HRB projects completed under their direction. Applicants are likely to be senior designers with a minimum of 5 years' experience working on Higher Risk Buildings.

Am I eligible for the Chartered Engineer Standard?

You should refer to the Engineering Council's UK-SPEC HRB to check the required criteria for registration. You need to demonstrate your **specific HRB knowledge** for each criteria from **AA-EE**.

Building Services Engineers should refer to the Building Services Annex for the criteria for **AA-BB**.
Please review the below guidance for the Building Services Evidence required.

N.B Please read through this guidance fully to determine if you are eligible.

Routes to HRB Registration

There are two routes to HRB Registration:

1. **Academic Route –** applicants who already hold CEng Registration OR hold the required level of academics.*
2. **Experience Route –** applicants without the level of academics for CEng Registration.

**The academic requirement for CEng is a BEng(Hons) prior to 1999 or BEng(Hons) & MSc/MEng.*

Initial Application – approval to proceed

- Submit CV and summary detailing recent relevant HRB projects completed and your role/responsibilities.
- The CV should include an introduction of your career to date - no more than 500 words.

Academic Route Application

- HRB Competence Templates (AA-EE)
- Development Action Plan
- Organisation Chart (with your role highlighted)

Experience Route Application

- HRB Competence Templates (AA-EE)
- **CEng Experience template**
- Development Action Plan
- Organisation Chart (with your role highlighted)

**Applicants can gain CEng alongside Chartered HRB Engineer*

Writing and Submitting your HRB Competence Templates

All criteria **AA-EE** must be covered demonstrating how you meet these criteria. Your completed templates should be approx. 5000 words and focus on the fire safety aspects, systems and processes for a HRB building.

As a minimum (this is not an exhaustive list) candidates must be able to demonstrate an understanding of:

- Fire science, propagation and control in buildings
- Applicable standards relating to your field of engineering
- Levels of competency within the design and construction team, responsibilities and attitudes.
- Approvals process and requirements i.e. BSAct, Building Regulations.
- Challenges specifically for HRBs in terms of fire safety
- How to demonstrate to the BSR that your design complies with HRB standards.

Evidence of understanding Fire Science and Behaviours

A Chartered HRB Engineer will be required to demonstrate competence in Fire Science and Behaviours. In your HRB Competences Templates and Case Study addressing the AA-EE criteria you will need to demonstrate competence *to the extent that it is relevant to your role*. You should:

- Identify fire-related aspects that are intrinsic to M&E design responsibilities and demonstrate a sound theoretical and practical understanding of those aspects.
- Show active development of knowledge in these areas over time.
- Demonstrate a clear awareness of fire safety objectives that impact systems.
- Demonstrate how you integrate fire safety principles into your designs (e.g. compartmentation, fire stopping, suppression interfaces) and why certain systems are selected over others.
- Demonstrate how you work collaboratively with fire engineers or other specialists, showing an understanding of the other disciplines requirements and where overlaps exist. You should be able to demonstrate an understanding and awareness of why systems are required.
- Demonstrate appropriate HRB specific CPD demonstrating learning in fire safety.

The below table may assist you to demonstrate your knowledge when addressing the AA-EE criteria, although is not an exhaustive list:

Area of Focus	Fire Safety Relevance	Technical Understanding Required (Example)	Evidence of Competence
Smoke control systems	Maintains tenable conditions for evacuation and firefighting; mitigates smoke spread.	Knowledge of pressure differential thresholds, fan selection (duty/standby), interface with alarm systems, performance testing methods (e.g., CFD modelling, smoke tests).	CFD interpretation, control panel design, schematics showing zone logic, commissioning test data, reports validating airflow and pressure profiles.
Fire alarm & detection systems	Critical to early warning and automatic actuation of protective measures.	Understanding of detection types (ionisation, optical, aspirating), coverage design per BS 5839-1, cause and effect matrix logic, interfaces with suppression, smoke control, door release, BMS.	Design documents, programming schedules, testing protocols, commissioning reports, meeting minutes showing collaboration with fire engineers or AHJs.
Fire dampers, ductwork & fire stopping	Preserves fire compartmentation integrity; prevents fire and smoke spread via services.	Familiarity with fire-resistance ratings (EI), installation requirements (per BS 9999 / ASFP guidance), access for maintenance, intumescent materials,	Annotated layouts, product submittals, installation inspections, maintenance planning, coordination with passive fire protection strategies.

		pressure drops, and actuator controls.	
Emergency lighting & power shutdown	Enables safe egress and supports fire-fighting operations.	Understanding BS 5266-1 coverage levels, dual power supplies, photometric design, signage requirements, and interface with fire panels.	Lighting design calcs, zone drawings, interface diagrams, battery backup test results, risk assessments or integration documents.
Suppression systems (sprinklers, water mist, gas)	Controls or extinguishes fire to prevent flashover or escalation.	Knowledge of hazard classifications (e.g., OH1–OH4), flow and pressure requirements, alarm valve assemblies, pre-action logic, room integrity tests for gas suppression.	System schematics, flow testing data, integration notes with FAP, supplier coordination records, drawings showing protected zones.
Life safety systems integration	Ensures that multiple safety systems (alarm, smoke control, e-lights, lifts) work together.	Understanding how timing, signal types (volt-free, BACnet, MODBUS), fail-safe protocols and redundancy interact across systems.	Cause and effect matrices, control strategy narratives, integrated system test records, system block diagrams, timing studies.

Evidence to be demonstrated for AA-BB - Building Services Annex

The competences and behaviours for a Chartered HRB Engineer are defined by UK SPEC- HRB and this must be considered the primary source for compliance with the scope, specific criteria and examples of evidence to demonstrate competence. To assist the candidate CIBSE have interpreted the requirements and provided further guidance on the specific competences expected of a Building Services Engineer.

Engineers will be expected to understand all aspects of the building structure, fabric and engineering systems in so far as they form a wholistic system which are inter-dependant and integrated with each other.

AA. Knowledge and Understanding	**UK SPEC – HRB Specific criteria**	**Evidence Required**
AA1 - To the extent that it is relevant to their role, the applicant shall demonstrate that they: Maintain, extend and develop a sound theoretical approach to application of relevant fire, structural and building life safety systems, principles and practices	Applicants shall demonstrate underpinning knowledge and understanding of: – The building as a system and how the technical interfaces contribute to the functionality and safety of the building and its occupants / residents	Demonstrate your understanding and experience of the following: – Fire science and the principles of fire propagation and control within buildings including the properties and influences of materials, interaction of systems and control processes.

throughout the building life cycle of HRBs*.	– The interrelationship of design and specification with fire performance – Key features and principles of passive and active fire protection (including suppression systems) Wherever relevant, applicants shall demonstrate the ability to: – Apply relevant fire safety principles and practices in the engineering of HRBs – Apply fundamental knowledge of fire science, (including key aspects of the fire performance of materials) in the engineering and specification of HRBs – Integrate key principles of human behaviour and fire escape design into the engineering and arrangement of escape provision in HRBs – Integrate and coordinate relevant passive and active fire protection systems into the engineering components of HRBs – Integrate and coordinate compartmentation and structural fire protection into the engineering of HRBs with particular reference to measures which prevent the spread of flame and smoke – Integrate and coordinate fire-fighting access	– The effects of fire/emergencies within buildings on human behaviours and how this affects the safe evacuation of the building. – Maintain, extend and develop a theoretical approach to the design concepts of appropriate fire detection and protection systems and develop solutions to address specific risks within buildings to ensure the safety of occupants and their safe escape. – Research and investigate how the building and its systems are likely to react in the event of a fire/emergency. Develop technical solutions that consider the building as system to ensure the integration and co-ordination of all fire/life safety systems and interfaces. – Developing and interrogating the commissioning strategy and operating regimes for fire detection and protection systems in relation to the building structure and means of escape. – Develop the access and maintenance principles and document within the design principles and operating and maintenance procedures

	requirements and provision of fire-fighting facilities into the engineering design and layout of HRBs – Integrate new engineering approaches, theories or techniques into engineering practice while ensuring safe outcomes	
AA2 - To the extent that it is relevant to their role, the applicant shall demonstrate that they: 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.	Applicants shall demonstrate underpinning knowledge and understanding of: – The process by which different aspects of building safety should be successfully integrated for all life safety components during the life cycle of the HRB – The critical safety engineering principles relevant to structure, public health and building services – Fire, building services, life safety and structural engineering principles relevant to maintaining the integrity of the building fire strategy – The benefits of multi-disciplinary and multi-organisational collaboration in achieving a well performing and safe HRB Wherever relevant, applicants shall demonstrate the ability to: – Evaluate and integrate new technology safely into the engineering design of HRBs taking into account:. Building life cycle Buildability Maintenance and refurbishment – Map out and execute the interfaces of all life safety components throughout the building life cycle of HRBs – Recognise when advice from	Demonstrate your understanding and experience of the following: – The application of the Building Regulations and appropriate fire safety standards and recognised guidance in respect of life safety systems within HRB. – Identifying system boundaries and interfaces with other life safety and building systems develop appropriate control and monitoring strategy to ensure the operation and function of the system. – The resilience of the primary electricity supply and assess potential risk to loss of supply and develop a strategy to ensure that critical life safety systems are protected by appropriate secondary supplies. – The resilience of the water supply and assess potential risk to loss of supply and develop a strategy to ensure that critical life safety systems are maintained. – the levels of risk and develop the design of appropriate fire detection and methods of raising the

	others including specialist professionals is needed, obtain this and ensure it is integrated effectively into the engineering design of the HRB – Co-ordinate the engineering, specification and assessment of building fabric including where necessary commissioning, collaborating with and integrating the work of other specialist building professionals to achieve safe performance throughout the building life cycle – Integrate new engineering approaches, theories or techniques into engineering practice while ensuring safe outcomes – Undertake statistically sound appraisal of data to underpin safe engineering outcomes – Understand original design intent and principles and maintain these when making minor or major modifications to an HRB	alarm appropriate for HRB. – The levels of risk and develop the design of appropriate emergency lighting systems for safe means of escape appropriate for HRB. – The levels of risk and develop the design of appropriately rated fire suppression systems appropriate for HRB. e.g. sprinklers, water mist systems to requirements of the fire strategy. – The areas of high risk and select appropriate automatic fire suppression systems. e.g. switchrooms, computer rooms etc. – The requirement for dry or wet risers to assist the fire fighters within HRBs. – Alternative domestic water services to HRB. Demonstrate understanding and control system pressures and select appropriate fittings for manageable/maintainable /resilient systems. – Alternative drainage systems appropriate for HRB with particular attention to fire stopping to maintain fire compartments where non-metallic materials are used. – The assessment and selection of the suitable use of passive fire protection and how they may be impacted by the installation of services within the building. Select appropriate passive

		protection methods/systems to maintain fire integrity of the building. – Developing a strategy for the testing and commissioning of the life safety systems individually and as integrated system to demonstrate function and operation in respect of the design intent e.g. Black building test. – In the operation and correct function of the life safety systems and undertake regular performance tests to demonstrate the systems continue to meet the fire safety strategy and systems design intent for the HRB
BB. Design, development and solving engineering problems BB1 - To the extent that it is relevant to their role, the applicant shall demonstrate that they: Take an active role in the identification and definition of project requirements, problems, and opportunities throughout the building life cycle of HRBs.	**UK SPEC – HRB Specific criteria** Applicants shall demonstrate underpinning knowledge and understanding of: – Relevant legislation, regulations, statutory guidance and standards of performance in the engineering of HRBs – The respective responsibilities of roles specified in the regulations and the relationship of their own role to that of the duty holder and other professions, trades or engineering disciplines Wherever relevant, applicants shall demonstrate the ability to: – Identify, review and select techniques, procedures and methods to undertake engineering tasks – Contribute to the design and development of engineering solutions within an HRB	**Evidence Required** Demonstrate your understanding and experience of the following: – To understand, respect and appreciate the contribution and roles of all disciplines forming part of the design, construction and operation teams e.g. Architect, Structural Engineers, Specialists, Contractors, Manufacturers, Facilities Managers/Engineers etc. – Being a leader and contribute to the co-ordinated design and development of engineering solutions suitable for HRB to ensure safety in construction, use, maintenance and demolition. – To develop, implement and evaluate appropriate techniques, systems,

	– Implement design solutions and contribute to their evaluation. – Establish the static and dynamic life safety systems and their design interfaces – Review the test and commissioning plan – Ensure a co-ordinated life safety solution is achieved	procedures and methods to undertake the engineering design, construction and operation co-ordinating at all times with other members of the design, construction and facilities management teams. – To identify and establish interfaces with static and dynamic life safety systems and co-ordinate the outcomes with other team members to ensure the building and systems are fully compatible and function to the required performance. – To implement suitable testing and commissioning of the life safety systems individually and as integrated system to demonstrate function and operation in respect of the design intent e.g. Black building test – The operation and correct function of the life safety systems and undertake regular performance tests to demonstrate the systems continue to meet the fire safety strategy and systems design intent for the HRB – To maintain the Golden Thread by ensuring all appropriate of information with importance on fire safety and means of escape including performance and interfaces of life safety systems, the engineering services and building fabric are fully documented and issued to the appropriate parties throughout the building life cycle.

BB2 - To the extent that it is relevant to their role, the applicant shall demonstrate that they: 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.	Applicants shall demonstrate underpinning knowledge and understanding of: – Relevant standards, testing, assessment and maintenance procedures for building materials, products, components, assemblies and systems. – Methods and practice of building maintenance. Wherever relevant, applicants shall demonstrate the ability to: – Apply this underpinning knowledge and understanding effectively as part of the engineering process to ensure safety throughout the life cycle of the building – Apply this underpinning knowledge and understanding to ensure the building performs safely as a system – Conduct testing and verify quality and suitability of delivered / procured products and materials	Demonstrate your understanding and experience of the following: – To research and assess the appropriateness of the specification and selection of appropriate materials and products standards insofar as they relate to your particular expertise and appreciate those standards, materials and products that have an interface with the design, construction and operational requirements for the life safety systems as designed. – To assess and be satisfied the appropriateness of the selected products, components, assemblies and systems will ensure that the building and its life safety systems operate and perform safely throughout its life cycle. – To ensure that the design of the life safety system respects the methods and requirements for ongoing regular maintenance throughout the life of the building to ensure the correct function of the systems and that they are operational at all times. – To verify through inspection, commissioning and testing the quality and suitability of the installed life safety systems.
BB3 - To the extent that it is relevant to their role, the applicant shall demonstrate that they: Can implement engineering tasks and evaluate the effectiveness of engineering solutions.	Applicants shall demonstrate underpinning knowledge and understanding of: – Identifying the resources required for implementation – Implementing design solutions and taking account of critical constraints including due concern for	Demonstrate your understanding and experience of the following: – The need to research specialists, manufacturers, products and components suitable for solutions and or processes to implement the fire safety strategy and

	safety and sustainability – Identifying problems during implementation and taking corrective action – Contributing to recommendations for improvement and actively learning from feedback	safety in design, construction and operation for the building. – To identify the constraints of the building and develop solutions that are safe, sustainable, resilient, future proof and promote the health and wellbeing of its occupants. – To identify and investigate any problems or shortcomings with the building systems during construction, commissioning and operation and make corrective actions and propose alternative solutions. – To undertake reviews and or audits in operation including feedback from the operators and occupants of the building on its processes and systems. Actively identify learning opportunities and implement corrective measures and or development of future design solutions.

Evidence to be demonstrated for CC-EE

Refer to UK SPEC HRB

What happens next

Your application is reviewed by the Membership team to check that all documentation is complete.

Your application will be sent to the assessors who will review all the information provided. The assessors may ask for further information on specific competences and these requests will be passed on through the membership team.

You will either be invited to interview stage, asked for more detail or not approved to interview. If you are not approved to the next stage feedback will be provided.

Preparing for interview – The Case Study (refer to Case Study Guidance)

The interview will be a Case Study Presentation and Professional Review Interview.

You are required to submit a Case Study Presentation covering the HRB Competences AA-EE that you will present at interview.

You should expect the interview to last approx. 2 hours.

The interview will follow this structure:

- Introductions and admin. Candidates will be asked to show their photo ID on camera to confirm their identity.
- Presentation on your Case Study (approximately 90 minutes with questions).
- Further discussion based on your Case Study to ensure all competences are covered in the required depth.
- Candidates will be asked if they are satisfied with their interview experience and they will be advised when they will hear about their results. The Candidate may then leave the interview.

After the Interview

The assessors will discuss the interview and make a recommendation to our Members and Registration panel this will be one of two outcomes: Recommended for registration or a deferral.

The scoresheets and recommendations are sent to the panel who will review the applications that have been made and confirm the outcome. Candidates are informed when the panel meeting will take place and that they should expect the results from the panel meeting up to three weeks later depending on the number of applications that the panel have to consider.

Revalidation

HRB Registration is valid for 5 years and you must re-validate before this period ends. You will be required to submit a portfolio of evidence of your HRB related practice since your interview and a CPD record for that period. You may also be invited to re-interview.

Fees

Application Fee for non-members: **£104**

Interview Fee: **£150**

HRB Entry Fee: **£64.31**

MCIBSE Subscription Fee (if applicable): **£331**

CEng Entry fee (if applicable:) **£64.31**