The Institution of Structural Engineers

IPD Guidance

Technician-Member

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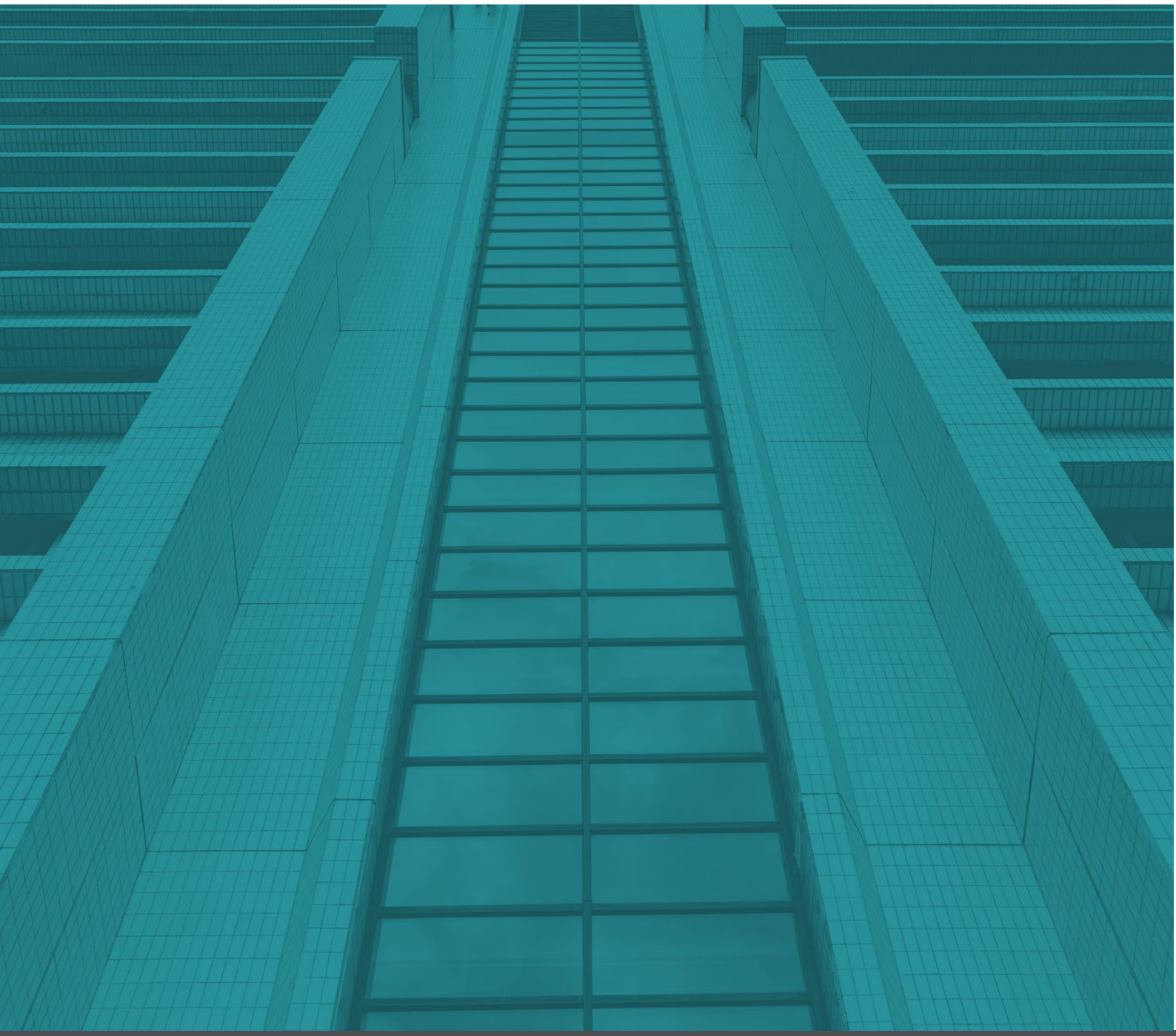

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Introduction

The Institution's Professional Review process for Technician-Membership requires candidates to pass the Professional Review. The initial application will be assessed by the Application and Professional Review (A&PR) Panel to determine whether the full Professional Review Interview (PRI) is required, or whether competence has been demonstrated in the portfolio.

Candidates who satisfy the Professional Review will be eligible for election to Technician-Membership.

This guide will help you prepare for your Professional Review.

Please ensure you read this document thoroughly to avoid any delays in processing your application.

What is an Engineering Technician?

Engineering Technicians apply proven techniques and procedures to the solution of practical engineering problems. You will need to demonstrate your engineering knowledge and understanding through applied technical and practical skills. Contributions to the design stages of projects is also essential. To be elected as an Engineering Technician you must demonstrate all of the required attributes rather than being exclusively proficient at modelling and drawing.

Initial Professional Development (IPD)

IPD is the progressive development of the specialist knowledge and skills needed to practise as a structural engineer. It bridges the gap between your educational base and attaining professional qualifications. The Institution describes IPD in terms of Core Objectives, which are defined to minimum standards.

Gaining competence and experience at work will develop your ability to carry responsibility and make independent judgements. Early in your career your focus will be on broadening your experience and skills as you get involved with various projects. As you continue to progress, your understanding and abilities will develop to provide you the standards required to complete your IPD.

All relevant experience may be considered, including pre formal experience from 'sandwich', part-time or vacation work. However, the amount of pre formal experience which may be included will depend on the quality of the experience gained by the individual and its relevance to the Core Objectives.

You are available to apply at any stage of your career, although it is extremely unlikely that you will achieve an adequate range of experience/ability at work within the first few years.

Important note: In accordance with the Engineering Council's Regulations for Registration, the application, supporting documentation and interview shall be in English, subject only to the provisions of the Welsh Language Act 1993. Another language may be used purely for the clarification of a word or point, to enable the interview to continue. Candidates who submit IPD Forms and portfolios that do not comply with this regulation may be declined an interview.

Routes to completion of IPD

There are three routes for demonstrating achievement of IPD:

- Individually managed
- Accredited training schemes
- Retrospectively collated

It is important to note that you should pick the route most suitable for you. There is no clear difference in pass rates in the PRI based on route used.

Individually Managed

Where IPD is individually managed, you are responsible for managing your own training with the assistance of a personal mentor.

You must keep records of your training and experience to indicate your progress towards each Core Objective. The Institution has IPD quarterly report forms and progress summary records for this purpose.

You may also benefit from using a personal development diary which you should update weekly. This diary would include all activities relating to IPD and should make it easier to complete your quarterly reports. It is important that you have regular meetings with your personal mentor to review your progress in meeting the Core Objectives and agree your action plan.

You should also maintain your own record of continuing professional development (CPD). Further information on CPD can be viewed later in the document. You should keep a professional development action plan of your training objectives for subsequent periods of your training.

A mentor should preferably be a Chartered Member (Fellow, Member), Associate, Incorporated-Member or Technician-Member of the Institution of Structural Engineers, or an individual of equivalent standing. They will normally be an experienced engineer in your workplace and will provide guidance, advice, and training.

There may be situations where a mentor will not be available within your organisation. In these instances, you are recommended to contact your local Regional Group for advice on sourcing an appropriate mentor.

You may have several mentors throughout your period of IPD. The level of experience of your mentors should be appropriate to the relevant Core Objectives. Guidance for mentors, in the form of a mentor's handbook, is available from the website or by contacting the Membership Department.

Once you have satisfied the IPD requirements you should complete the Institution's IPD final report forms. These should be signed by your personal mentor and sent to the Institution when submitting your completed application at the appropriate time.

Following this route will also require you to submit your IPD quarterly report forms, progress summary records and portfolio of work directly to your reviewers when requested.

Accredited Training Schemes

The Institution does not accredit company training schemes but candidates following comparable training schemes accredited by other bodies (e.g., ICE, HKIE) may submit those training records to demonstrate compliance with the Institution's Core Objectives. The experience must be in structural engineering, and you will be required to submit your full records of training and portfolio of work when requested to do so by your reviewers. You will also be required to complete the Institution's IPD final report forms.

Retrospectively Collated IPD

Where a mentor or training scheme is not available to you, this route offers the ability to complete the required documents based on previous experience up to the point of application. A Chartered/Associate/Incorporated-Member/Technician-Member can still assist with this process, but they would not need to provide mentor comments or sign off any of the IPD final report forms.

Portfolio guidance

All candidates are required to prepare a portfolio of work in support of their IPD final report forms, which will need to be submitted at the point of application. This is essential to avoid unnecessary delays in the assessment process.

If you are following the Individually Managed or Accredited Training Scheme routes you will also have to submit your supporting documents, which do not contribute towards the total portfolio page count:

- Individually Managed - IPD quarterly report forms and Progress summary record
- Accredited Training Scheme – Signed training records

These additional documents must be submitted as part of your full application.

The portfolio must demonstrate that you have attained at least the minimum level of competence and responsibility for Technician-Membership. It is a vital element of the Professional Review process, and you should devote the necessary time and care to its production.

Completed portfolios must be submitted as part of your full application.

Core Objective 2 is about demonstrating ability in communication, and your IPD final report forms and portfolio will contribute to the assessment of this objective. It is therefore important to ensure that your documentation is of a high standard.

Portfolio format

The portfolio must be a single PDF with a maximum of 300 pages including drawings, sketches and any calculations. You should also include a hyperlinked index to the sections of your portfolio and bookmarking if possible. If you exceed the number of pages, your application may be unable to be assessed and consequently may be rejected without the recommendation for an interview.

The pages of text within the portfolio must be A4 size, i.e. you cannot reduce your pages to A5 to fit two pages onto an A4 sheet. Drawings must be no greater than A3 size. The font size used in your portfolio and IPD final

report forms must be no smaller than Arial 10. You must ensure that all A3 pages can be clearly read on a computer screen and not contain information that is too small to be viewed.

The portfolio must contain evidence relating to all core objectives on which you are being assessed and allow easy cross-referencing with the IPD final report forms. Make sure that the information provided is relevant and relates directly to the core objectives and how you have achieved the standards.

You will be expected to include examples of work from a variety of projects that you have worked on. The portfolio must be sub-divided into the core objectives with only the relevant documents included in each section.

Where appropriate, you should provide comments and annotations on the submitted information to help demonstrate an understanding of the work and its relevance to the core objectives.

All work included within the portfolio must be your own. Submitting work carried out by other people is not permitted.

A portfolio checklist has been provided and is also available for download from the Institution's website. All candidates must include a signed version of the checklist as the first page of their portfolio. By completing the checklist, you are confirming that you have complied with the Institution's requirements in terms of the layout and variety of evidence provided within the portfolio. Failure to comply with these requirements will reduce the likelihood of success during the assessment and Professional Review Interview.

Portfolios must be provided as a single PDF document.

Examples of the type of information and documents you may wish to include are detailed within each Core Objective later in the guidance. You should avoid submitting repetitive designs or drawings and full reports of projects.

Inclusion of sensitive/confidential information

You may have worked on projects where some of the information, such as the client's name and cost of project, may be subject to a Non-Disclosure Agreement (NDA). If this applies to you, you are advised to redact the sensitive information but retain the key engineering aspects so that you can speak on them if questioned during the interview. The reviewers are professional members of the Institution and understand the importance of keeping confidential information solely for the purpose of the interview.

If the redacted information that you supply does not demonstrate that you meet the minimum requirements of the Core Objectives, you are advised not to include it in your portfolio.

The Professional Review

Your application

When you are ready to apply, you will be required to submit the following as a single document:

- A two-page experience report detailing your roles and responsibilities over the course of your career
- Your IPD final report forms for each of the 11 Core Objectives

Your portfolio is also required to be submitted at the point of application.

Your assessment fee will be paid online at the point of application to confirm your registration. If you have not previously made your initial application to begin the Professional Review process, and paid the appropriate fee, you will be asked to complete this before your application can be reviewed.

N.B. You will be elected as a Student-Employed member of the Institution during this application if you are not already one, incurring the appropriate pro-rated subscription fee at the time.

Begin your Technician-Member application - https://www.istructe.org/membership/technician-member

If you have already made your initial application to become a Technician-Member, you do not need to do this again.

When making your initial application, you must include the details of your supporter, who can either be a Fellow (FIStructE), Member (MIStructE), Associate (AIStructE), Incorporated-Member (IMIStructE) or Technician-Member (TIStructE) of the Institution of Structural Engineers. Your supporter may be contacted during the process to verify any aspect of your application.

If you are unable to find a suitable supporter we recommend that you:

- Try previous employment or colleagues. If they themselves are not professionally registered, they may know someone who is
- Contact the university where you studied to see if any professional members would be able to assist
- Contact your local Regional Group or representatives via the Institution's website
- Search the online members' directory for members in your area

Regional Group members are under no obligation to confirm themselves as a supporter. A supporter does not confirm that you are qualified to be a Technician-Member, but rather that you are a fit and proper person to become a professional member of the Institution after completing the Professional Review process.

Some members will either confirm they are happy for you to include their details, while others will only do so after they have met with you and reviewed your work, whilst some refuse to act as supporters.

The initial assessment and interview

Once your full application has been processed (Summary Report Forms, experience report, and portfolio), it will be initially reviewed by members of the A&PR Panel. They will determine whether you have satisfied the IPD within your submitted documents. If they determine that you have met the required standards, they will recommend to the Panel that you are put forward for election to Technician-Member. If they determine, however, that you have not initially met the required standards, they will recommend to the Panel that you will need to sit the PRI.

You may only be asked to be interviewed on three or fewer Core Objectives if the Panel deem it appropriate after your initial desktop review. Otherwise, you will be required to be interviewed against all 11 Core Objectives.

If you are required to be interviewed, you will be contacted by your regional group with the details of your two reviewers. You will then confirm the time and date of your interview.

The PRI will verify that you have achieved the Core Objectives to the minimum standards.

Interviews are conducted by two trained reviewers who will be experienced members of the Institution. These interviews are conducted remotely, typically via Microsoft Teams/Zoom.

The interview will normally be between 60 to 90 minutes in length. This can vary according to how long it takes for the reviewers to determine whether you have reached the required standard in each Core Objective. You must give a presentation of your career in structural engineering which should last approximately 10 minutes. You will be permitted to include no more than 10 slides when making the presentation, and it is expected that you will refer to the content in your portfolio and IPD Final Report Forms.

If you do not provide a presentation, it will result in you failing Core Objective 2, which is about your ability to communicate.

In the rare instance that your interview is conducted face-to-face, you are permitted to produce a handout of the 10 slides that you would have delivered online. You must provide a paper copy of the slides to each reviewer.

During the interview it is important to note that it is your responsibility to demonstrate that you have achieved the required standard for all 11 Core Objectives. Your reviewers will ask you questions primarily on the content of your portfolio but may also ask more general questions to help satisfy the requirements for each of the Core Objectives.

After the interview, the reviewers will inform the Institution of their decision which is then reviewed and approved by the Applications and Professional Review Panel before your result is released to you. Dates of the key meetings are published annually on the website.

If you have failed the PRI, the Institution will email you and advise you of the Core Objectives where you did not meet the standard. If you fail three or fewer objectives you will be re-interviewed on those objectives only. If you fail four or more objectives you will be required to re-sit the full interview. In both cases an updated submission will be required.

On request the Institution will provide you with the feedback comments from your reviewers which should help you understand where your application lacked sufficient detail. There is no limit on the number of times you can sit the PRI. However, should you fail up to three Core Objectives in your first interview, you will have three years to pass the failed Core Objectives before being required to resubmit IPD Final Report Forms for all 11 Core Objectives.

The use of AI during the interview

AI tools are not permitted for use during the interview in any capacity. If the reviewers suspect that you are using AI tools or software to help you answer their questions, your interview may be terminated and you may be reported to the Application and Professional Review Panel with a recommendation for your application to be voided.

Continuing Professional Development (CPD)

At the Professional Review Interview, you will be assessed on your commitment to CPD which is defined by the Institution as: The systematic maintenance, improvement and broadening of knowledge and skill and the development of personal qualities necessary for the execution of professional and technical duties throughout the practitioner's working life.

All members of the Institution have an obligation to keep their skills and knowledge up to date and as a potential Technician you will be expected to understand this commitment at an early stage in your career.

Evidence of your CPD can be demonstrated by regular use of a development action plan, a CPD record/diary, and keeping a portfolio of your work and responsibilities during the period of your IPD. You can update and submit your annual CPD record via My Account on the Institution's website.

Please note that the Institution operates mandatory reporting of CPD. Each year, 2000 members are selected to submit a CPD record for the previous year. Every newly elected Fellow, Chartered Member, Associate, Incorporated-Member and Technician-Member will be obliged to submit a CPD record on request or be removed from membership. It is therefore recommended that you develop the habit of recording and submitting your CPD every year.

Please visit the Institution's website for further details.

Ethics

All members of the Institution are expected to uphold ethical values. You should demonstrate within your application that you are committed to working in an ethical and socially responsible manner, as outlined in the Institution's Code of Conduct.

The Code of Conduct states that all members shall:

- Act with integrity and fairness
- Have regard to the public interest and to the interests of all those affected by their professional activities
- Uphold the reputation of the profession
- Maintain and broaden their competence, and assist others to do so

- Undertake only those tasks for which they are competent
- Exercise appropriate skill and judgement
- Not maliciously or recklessly injure or attempt to injure the reputation of another person
- Avoid conflicts of interest
- Members must disclose to the Institution if they have been convicted of a criminal offence.

The Institution believes that ethics should apply throughout all aspects of an engineer's working life, and it is not therefore represented by a single Core Objective as ethical issues can have an influence across multiple objectives. The reviewers expect to see examples of how you have upheld ethical values relevant to your working practices within your IPD Final Report Forms and portfolio, and you may also be asked to discuss this during your interview.

Appeals Procedure

The Institution has an appeals procedure for candidates who have been unsuccessful in their application. An appeal may be made on the following grounds only:

- Extenuating circumstances occurring immediately before or during the application process or interview, and/or
- Departure from the Institution's application or interview procedures.

Full details of the procedures are published on the Institution website.

Please note that recording of your interview by any means is not permitted and any such recording cannot therefore be used as evidence in an appeal or other disagreement with the judgement of the reviewers.

Core Objectives

Introduction

The following list of compulsory Core Objectives details the requirements for IPD for candidates intending to apply for the Technician-Member PRI.

The minimum standards required for the Core Objectives are:

Standard		Description
A	Appreciation	A general appreciation of the subject is required, as well as an understanding of how the subject may affect, or integrate, with other subjects.
K	Knowledge	A knowledge and understanding of the subject and its application is required.
E	Experience	The subject should be performed independently or under supervision.
B	Ability	Perform the subject without supervision and be competent to advise others.

The Core Objectives, plus notes and examples are included below.

IPD final report forms

IPD final report forms are available to download from the website.

General advice for completing the IPD final report forms:

Personal: the reviewers will not be interested in what your company does, they are only interested in what you have done. Therefore, ensure that you state what you have personally undertaken and try to avoid generic statements about how your company operates.

Positive: do not sell yourself short. Try to avoid statements such as 'I have limited/some experience' – you either have experience or not. Try and ensure that the correct words are applied to the relevant Core Objectives, e.g., if it's an 'ability' Core Objective, do not use 'experience' or 'knowledge' always use 'ability'.

Practical: ensure you state how you have achieved the Core Objective standards; candidates often fall into the trap of simply describing the Core Objective or stating why it is important. This is not what the reviewers will want to know. There is no benefit in describing the properties of various materials (Core Objective 5) as the reviewers will already know this; what they need to know is how you have developed your understanding of materials and what practical knowledge you have.

1 PROFESSIONAL STANDARDS AND ENGINEERING RESPONSIBILITY (Minimum standard - Knowledge)

This objective is intended to demonstrate knowledge of professional conduct, a commitment to continuous professional development and engagement with the Institution and wider industry.

The candidate must demonstrate that they have knowledge of:

- the structure and purpose of the Institution of Structural Engineers, together with an awareness of the Institution's Code of Conduct
- an involvement in Institution affairs appropriate to their individual circumstances and location
- the limits of their technical competency in recognising complexity in problems and solution methods
- the importance of sharing knowledge and data across the industry
- the importance of CPD, the Institution requirements for CPD and a record of appropriate training
- their need to plan for an ongoing commitment to CPD
- being supportive of the needs and concerns of others, especially where this relates to diversity and inclusion
- the ethical issues that may arise in their role and how they should carry out their responsibilities in an ethical manner

In addition, candidates may choose to demonstrate a further understanding of:

- how social inclusion, diversity, equality and the UN Sustainable Development Goals (UN SDGs) all relate to being a professional engineer
- the need for ongoing change and evolution of the role and responsibility of the engineer.
- the importance of sharing knowledge and data across the industry
- the benefits of ongoing involvement in Institution affairs appropriate to their individual circumstances and location
- the relationship between the IStructE and the Engineering Council
- the institutions of other related disciplines in the candidate's home country and around the world (e.g. ASCE, CIBSE, HKIE, IEAust, ICE, IEE, IEI, IES, RICS, RIBA, SAICE, SEI).

Examples of evidence to demonstrate compliance with this objective

Attendance at technical meetings and seminars, whether in person or remotely (via live broadcast or recorded video). The candidates may list their involvement with a brief overview of all activities and a brief commentary two events.

A completed CPD record showing a variety of learning along with a plan for the learning to be undertaken over the following year.

By giving an example of where the candidate has applied:

- ethical principles as described in the Engineering Council's Statement of Ethical Principles and /or
- ethical principles as defined by the Institutions Code of Conduct or their employer.

Candidates are strongly encouraged to support, and encourage others to support, Institution activities in universities, colleges and schools by giving careers talks, lecturing, providing case studies, assisting in the marking/critiquing of project work, etc.

- Regular contact with members of the Regional Group committee
- Knowledge of and adherence to the Institution's Code of Conduct
- Knowledge of the Institution's Council and committee structure and the work of those committees
- Regular use of the Institution's website
- Regular review of the Structural Engineer journal
- Knowledge of the Institution's services including CPD courses and the library
- Knowledge of the international dimension of the Institution
- Knowledge of other institutions and disciplines

2 COMMUNICATION (Minimum standard - Ability)

This objective is intended to demonstrate candidates have an ability to communicate effectively in a variety of situations and demonstrate appropriate interpersonal skills.

The candidate must demonstrate that they have the ability to:

- produce appropriate drawings, sketches, or 3D models (physical or digital) to communicate ideas
- contribute to the production of formal reports
- produce both formal and informal communications appropriately
- communicate verbally and demonstrate effective inter-personal skills
- prepare and deliver presentations
- produce documents suitable for a variety of appropriate audiences
- create, maintain and enhance productive working relationships, and resolve conflicts
- evaluate and provide positive critical feedback on the work of others
- exchange information and provide advice to technical and non-technical colleagues

Examples of evidence to demonstrate compliance with this objective

The ability to communicate verbally will be assessed during the interview. The overall standard of the candidate's portfolio will be included in the assessment of this objective. Sketches and diagrams included in objective 3 may also be considered as support to this objective provided they are referenced in the summary report form.

Possible examples that may be included are:

- In-house/client presentations
- Design stage reports, feasibility studies, reports to support planning applications etc. Technicians are not necessarily expected to have produced full reports and studies, but should clearly annotate documents to indicate their personal contribution to the documents included in the portfolio
- Drawings, sketches, diagrams or visualisations illustrating design concepts or details, structural behaviour, or construction methodology
- Communications or reports describing engineering solutions or principles to a non-technical reader
- Communications (emails) illustrating the candidate's collaboration with other parties, or situations where the candidate has contributed to working relationships or conflict resolution
- Presentations to schools, colleges, universities, etc.
- Team building exercises
- Institution competitions e.g. Young Structural Engineers' International Design Competition or other competitions supported by other institutions

3 CONCEPT CREATION AND DESIGN (Minimum standard - Ability)

This objective is intended to demonstrate an appreciation of the process of concept creation and design. This would include designing for safety, carbon, durability, reuse aesthetics and cost.

The candidate must demonstrate that they have an appreciation of:

- the assessment of the brief to identify possible solutions
- determining appropriate loading and design criteria
- establishing load paths and stability systems
- considering robustness and accidental actions, including fire
- the process to estimate embodied carbon
- the way construction issues impact on design choices
- collaboration and coordination with other disciplines

The candidates may also wish to demonstrate an appreciation of:

- the reuse of existing structures
- designing for deconstruction or reuse at the end-of-life
- considering inclusive design

In completing the Summary Report Form the candidate should be prepared to discuss their appreciation of concept design and creation and how it has affected the projects they have produced drawings and documentation for.

Examples of Evidence to demonstrate compliance:

- Examples of how the various aspects of concept design have influenced drawings and other information produced by the candidate
- Estimations of embodied carbon for early stage designs

4 DESIGN AND ANALYSIS (Minimum standard - Knowledge)

This objective is intended to demonstrate knowledge of the processes involved in the analysis and design of structures.

The candidate must demonstrate that they have knowledge of:

- the processes involved with the design of individual components in at least one primary structural material (i.e. derivation of forces/stresses/deflections and maintaining equilibrium)
- the application of appropriate loading criteria
- the use of appropriate design standards, codes of practice etc
- the elements within a structure which determine overall stability, robustness and structural integrity
- limits of the structural model and its outputs (approximations, simplifications etc)
- the verification of analysis using hand checks, simple approximation and engineering judgment

The candidates may also wish to demonstrate knowledge of:

- the use of appropriate software in the process of analysis and design
- the process to justify the reuse or existing structures

Examples of Evidence to demonstrate compliance:

- example calculations for simple components undertaken by the candidate, including shear force and bending moment diagrams
- examples of where the candidate has verified their analysis and design
- the Certificate in Structural Behaviour may be used to assist the candidate in demonstrating the requirements of parts of this objective
- derivation of appropriate loads for element design
- examples of how stability is provided in a design the candidate has undertaken

5 MATERIALS (Minimum standard - Knowledge)

This objective is intended to demonstrate knowledge of how materials are specified and incorporated into the structure.

The candidate must demonstrate knowledge of specifying and designing with materials in response to an understanding of:

- the behaviour and structural properties (including strength, stiffness, ductility, and directionality) for different materials and their common grades/subgrades; and how these impact design and detailing requirements
- the effects on carbon emissions related to production methods, material sourcing and supply chains
- durability requirements
- detailing requirements, including an appreciation of how these affect end-of-life disassembly and reuse
- movement behaviour including creep, drying, and thermal movement.

Whilst candidates often choose to specialise in one or two materials (and thus will have developed knowledge in determining their behaviour) they must still have some appreciation of the carbon credentials, availability, behaviour, cost, manufacture, principal engineering properties and potential applications of a wider range of construction materials.

Examples of evidence to demonstrate compliance:

- appropriate selection and use of materials in response to their characteristics
- appropriate interfaces between materials
- response to carbon emissions that has been affected by material type, sourcing, and production methods, including the interpretation or use of Environmental Product Declarations (EPDs) where applicable
- contributing to the production of material specifications including aspects such as protective finishes, paints, reinforcement cover etc.
- the appropriate use of materials considering manufacturing technologies, locale and culture

6 SUSTAINABILITY (Minimum standard - Knowledge)

This objective is intended to demonstrate knowledge in applying structural engineering in a way that minimises (and ultimately, reverses) negative environmental impacts whilst maximising societal benefit.

The candidate must demonstrate knowledge of:

- contributing to the communication of the impact of a structural design within the context of climate and biodiversity issues.
- contributing to the questioning of the brief to reduce negative impacts whilst achieving the client's desired outcomes.
- working with the wider design team to reduce the overall project carbon.
- considering wider sustainability aspects within their work

The candidates may also wish to demonstrate experience in:

- balancing the reduction of upfront embodied carbon and whole-life carbon.
- use of circular economy principles.
- environmental rating schemes and design standards e.g. BREEAM, LEED, Passivhaus.
- regenerative design principles and biodiversity net gains.
- advocating for reuse and 'build less' design approaches.

Examples of Evidence to demonstrate compliance:

- examples of information collated by the candidate to assist in the design team's assessment of embodied carbon or meeting requirements of environmental rating schemes
- designs that use circular economy principals such as design for future adaptation, deconstruction, and reuse
- consideration of wider sustainability impacts during design such as those outlined in The Climate Framework and the Living Building Challenge, for example:
  - global context, sustainability policy
  - health and wellbeing, pollution, and contamination
  - human factors such as social value, labour rights, traceability
  - waste management and recycling
  - land use, protection of plants and habitats
  - economic sustainability such as involvement in new markets

7 CONSTRUCTION (Minimum standard - Experience)

This objective is intended to demonstrate candidate's experience of the practical process to convert design work into completed structures and should demonstrate that they are able to contribute to this in a meaningful way. Practical experience of site conditions and working practices is essential to the safe design and specification of projects.

The candidate must demonstrate that they have gained experience of:

- construction sites. This may include site visits, undertaking surveys, visiting fabrication/manufacturing locations, responding to site queries, communicating sequence and buildability matters
- construction techniques, construction plant and machinery
- reviewing temporary support systems
- reviewing construction programmes and construction sequencing
- reviewing or producing fabrication or shop drawings
- erection methodologies
- identification and correction of potential errors
- how their observations of construction/fabrication has informed their approach to design/buildability

The candidates may also wish to demonstrate experience in:

- designing or specifying temporary support systems

Experience may be demonstrated by providing records of some or all of:

- work placement on site
- site meetings
- site visits
- inspections
- surveys
- testing procedures
- supervision of works
- checking of as installed features
- dealing with site queries

Evidence which may be provided:

- site visit and site meeting notes
- inspection records

- survey notes
- construction sequence diagrams or outline method statements produced to support design work
- demolition drawings
- temporary works proposals/designs or comments on temporary work drawings
- movement and monitoring specifications

8 HEALTH AND SAFETY (Minimum standard - Knowledge)

This objective is intended to demonstrate a candidate's knowledge of meeting health and safety requirements and legislation.

The candidate must demonstrate knowledge of:

- using appropriate health and safety standards
- reviewing CROSS (Collaborative Reporting for Safer Structures) publications
- communicating risk and hazard assessments
- designing out risk
- safety on construction/fabrication sites

Examples of evidence to demonstrate compliance with this objective

Candidates may provide evidence such as:

- risk assessments and communication of residual hazards in connection with their projects
- how risk has been considered or mitigated in their design work
- where learning from CROSS publications has been used in their work
- sharing information with CROSS for others to learn from
- where health and Safety legislation has impacted on their design work
- assessment of site conditions, including soil conditions, during planning and design
- obtaining relevant qualifications and certifications

9 MANAGEMENT (Minimum standard - Knowledge)

This objective is intended to demonstrate a candidate's knowledge of management skills and responsibility.

The candidate must demonstrate knowledge of:

- contributing to the management of individuals/self and/or teams and data/information
- cooperation with team leadership and management
- programming and project control.
- interdisciplinary/inter team liaison and interface management.

Examples of evidence to demonstrate compliance with this objective

- Examples of project control documents and reports generated and/or used by the candidate, such as:
  - programmes
  - budgets
  - resource planners
  - information schedules
  - team briefings and feedback
  - quality plans
  - meeting notes and minutes
- attendance at project meetings (design and contract)
- Examples of where the candidate has completed challenging tasks
- Examples of where the candidate has checked the work of others#
- Examples of giving or receiving feedback and taking action to improve

10 COMMERCIAL (Minimum standard – Appreciation)

This objective is intended to demonstrate a candidate's appreciation of commercial, financial, and contractual matters relevant to the country and industry in which they work.

The candidate must demonstrate that they have an appreciation of:

- commercial pressures within the construction industry, including the effects of national and international current affairs on the costs.
- the methods of calculating construction costs, including estimating and monitoring the cost of design work.
- sensitivity of cost variations in construction techniques.
- relevant forms of contract used in projects for which they are involved, for both design and construction.
- the procurement routes relevant to the work in which they are involved and the impact on their scope of work
- the role of the expert witness

In preparing their Summary Report Forms the candidate should be prepared to discuss their understanding of commercial matters and how they have affected the projects they have worked on.

Examples of Evidence to demonstrate compliance:

- Records of value engineering exercise to which they have contributed
- Fee assessments and quotations to which they have provided input
- Monitoring the control of project costs within their office
- Examples of correspondence (internal or external) where the candidate has discussed commercial or contractual matters
- Examples of their involvement with different project procurement routes
- Activities and learning points from attendance at courses

11 TECHNOLOGY, DOCUMENTATION & PROCESS (Minimum standard - Ability)

This objective is intended to demonstrate ability in the production, control and management of engineering documentation and systems.

The candidate must demonstrate that they have ability in:

- the production of general arrangement drawings
- the creation of detail drawings showing the interface between components and materials
- the coordination of details and information received from other parts of the design team with the structural information
- the control and documentation of information received from and issued to third parties
- the use of standard procedures and drawing standards, either company specific or based on industry standards
- the production of appropriate schedules (such as bar bending schedules, lintel schedules, beams schedules, pile schedules, material take offs for use in pricing or embodied carbon calculations)
- the communication of risks and hazards
- the implementation of and compliance with Project Quality Plans

The candidates may also wish to demonstrate ability in:

- the use of Building Information Modelling (BIM)
- the use of a Common Data Environment (CDE)
- the application of Quality Management Systems (i.e. ISO9001 etc)
- the use of Total Quality Management
- their contributions to and use of Environmental Management Systems.

Where local legislation requires specific systems of document control and information sharing/communication, candidates must show how they contribute to this process.

Examples of Evidence to demonstrate compliance:

- Examples of drawings, schedules and documents produced by the candidate
- Reports taken from CDE's to which the candidate contributes
- Issue sheets and records produced by the candidate to manage the flow of information into and out of their team
- Extracts from BIM models
- Examples of how the candidate has applied Quality Management Plans / Project Quality Plans
- Example of how the candidate has applied Total Quality Management

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Portfolio Checklist

All candidates must complete this checklist and include a signed version as the first page of their portfolio. By completing this checklist, you are confirming that you have complied with the Institution's requirements in terms of layout and variety of evidence provided within the portfolio. Failure to comply with these requirements will reduce the likelihood of success in the Professional Review Interview.

Portfolios must be no larger than 300 pages in total. Any pages above this maximum limit will be removed by your reviewers and cannot be used during the interview.

Please ensure that your portfolio is sub-divided into the core objectives, with only the relevant documents included in each section.

Evidence	Suggested Examples	Included
Evidence relating to all core objectives being assessed		
All supporting documents are supplied in English language		
Project correspondence	• Letters, emails, reports, site instruction records, site inspection notes, meeting notes etc.	
Hand drawn conceptual design sketches and sketch details		
CAD project drawings including evidence on the drawing, by way of annotation, of the candidates' part played in the drawing production		
Examples of methods of analysis	• Both manual and computer aided	
Examples of design calculations	• Both manual and computer aided	
Examples of embodied carbon understanding	• Carbon calculations used to communicate importance to client	
Specification documents or specification notes	• Carbon emission checks on materials	
Risk assessment procedures	• How assessed risks are dealt with and/or communicated to other, including (if appropriate) details of any personal involvement with health and safety issues on site	
Engagement with structural safety	• CROSS reports	
An understanding of environmental/sustainability issues	• Personal involvement on a project showing expected carbon impact of a design • Background reading • Attendance on relevant courses	
Site experience	• Photographs taken during site visits • Site inspection notes / Site meeting notes • Correspondence relating to site issues etc.	
Basic management skills and responsibilities	• Programming of design works and staff resources	

Evidence	Suggested Examples	Included
	• Release schedules • Budget management • Additional works	
Quality assurance systems	• In-house issuing procedures • In-house checking procedures • Checking of subcontract/specialist design information etc.	
Demonstration of an understanding of basic forms of contract	• Personal involvement on a project • Background reading • Attendance on relevant courses	
Ethics	• Where you have exercised your duties in an ethical manner • Where you have applied ethical principles • Where you have upheld ethical principles as defined by your organisation or company	
A CPD record	• Attendance certificates • Personal notes etc.	

I confirm that the evidence I have submitted in the portfolio of work is my own work

Signed:

Date:

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