

## **The Research and Development Review: Guidance to candidates**

Candidates applying for membership via the Research and Development Route are required to complete form M/R or AM/R as appropriate. It is unlikely that candidates working in research or development for a period of less than three years since gaining a PhD will have had enough time to produce sufficient research output for consideration by the Research Review Panel.

Candidates are also required to submit three identical copies of the following additional documents with their application if submitting it by post or one if making a submission electronically:

1. A Research and Development Summary Report
2. A Set of Research and/or Development Publications

### **Chartered Membership:**

#### **A Research and Development Summary Report**

The report should be no longer than 2000 words and should summarise the candidate's research and development experience and, in particular, explain how the Institution's requirements for AM and CM have been satisfied.

Candidates are expected to show evidence of important structural engineering research or development work of an original nature that has been carried out over a sustained period.

In this context, structural engineering includes but is not limited to improving the understanding of existing structures and the development of new structural materials, software, components and/or design and analysis methods in concrete, glass, masonry, polymers, steel, timber and various other structural composites. It also encompasses any discipline that involves the investigation of the action of internal or external force systems on a variety of structural forms including those found in aeronautical, aerospace, geotechnical, marine and medical engineering.

Research undertaken for a higher degree or as part of a postgraduate research project will not, of itself, be sufficient. The research or development work should normally have a blend of experimental and mathematical or numerical investigation. Some evidence of research or development leadership is expected.

The quality of each candidate's submission will be judged on its own merits.

Candidates need to indicate the importance and originality of their research or development work and their contribution to the activity. It is therefore expected that candidates will, as a minimum, describe the following in their Research and Development Report:

- a) Their role and level of responsibility in the research team.
- b) Their contribution to the development of the research methodologies for example, the development of test methods, design of test apparatus, development and specification of instrumentation systems, field monitoring, modelling (physical and numerical), etc.
- c) Their contribution to the development of the research hypothesis, the development and application of theoretical principles, analysis and appraisal of test data, etc.
- d) Their development of research findings into design guidelines, manuals, recommendations for construction, etc.
- e) How their research or development work has contributed to the development of their particular field of structural engineering.

## **A Set of Research and/or Development Publications**

Candidates will be required to submit at least five high quality papers (conference papers will not normally be accepted) that have been published in high quality refereed journals. Examples of acceptable refereed journals include, but are not limited to, The Structural Engineer, the Proceedings of the Institution of Civil Engineers (Buildings and Structures), the American Society of Civil Engineering Journal of Structural Engineering, the American Concrete Institute Structures Journal, Journal of Solids and Structures or similar.

It is expected that the majority of the papers submitted by the candidate will either be sole authored or the candidate should be the principal co-author. The candidate should also have played a principal part in the development and leadership of some of the research work described in the papers. For each co-authored paper, the candidate is required to include a statement signed by a co-author indicating the contribution of the candidate to the research.

## **Development work**

A candidate offering development work for assessment must have played a major part in the activity. The work should be reasonably generic in content rather than be limited to a proprietary system. Normally the output from the development work should take the form of studies, papers and reports, perhaps culminating in design guides, codes or manuals of which the candidate is the sole author or the principal co-author. The candidate will also be expected to have taken a leading role in the management of a development group or team.

## **Associate-Membership**

### **A Research and Development Summary Report**

Those candidates applying for Associate-Membership via the Research and Development Route must have contributed to important research or development work over a sustained period as a member of a research or development team. Research undertaken for a higher degree or as part of a postgraduate research project will not, of itself, be sufficient but may form a large part of the candidate's submission.

The work undertaken by the candidate may be of a more routine nature than is required from a candidate seeking Chartered Membership, e.g. it could include research work undertaken to confirm the findings of previous work undertaken by others or it could be the development of structural engineering software based on design guidelines developed by others.

The Research and Development Report should be no longer than 2000 words and must reflect the candidate's scope and extent of their research or development activity. It is therefore expected that candidates will, as a minimum, describe the following in their Research and Development Report:

- a) Their role and level of responsibility in the research team.
- b) Their contribution to the development of the research methodologies for example, the development of test methods, design of test apparatus, development and specification of instrumentation systems, field monitoring, modelling (physical and numerical), etc.
- c) Their contribution to the development of the research hypothesis, the development and application of theoretical principles, analysis and appraisal of test data, etc.
- d) Their development of research findings into design guidelines, manuals, recommendations for construction, etc.

## **A Set of Research and/or Development Publications**

Candidates will be required to submit at least five papers that have been published in refereed journals or the proceedings of structural engineering-related conferences.

It is expected that the majority of the papers submitted by the candidate will be either sole authored or the candidate should be the principal co-author. As an approximate guide, it is unlikely that candidates working in research or development for a period of less than five years since gaining a BEng or BSc degree will have had enough time to produce sufficient research output for consideration by the Research Review Panel.

### **Development work**

A candidate offering development work for assessment must have played a significant part in the activity such as undertaking parametric studies, evaluating test data, undertaking design studies, development of software or other elements of development work that will form part of a research report, design manual, guide or code.

## **Consideration of submissions**

The Report and the publications submitted by the candidate will be considered by a Research Review Panel once the candidate has passed the Professional Review Interview. The Research Review Panel will normally consist of at least two members or fellows of the Institution nominated by the Applications and Professional Review Panel. Normally both members of the Research Review Panel will have knowledge and experience of structural engineering research and development activity. It would be preferred that one member of the panel is a practising engineer experienced in this type of review. The Research Review Panel will report its recommendations to the Applications and Professional Review Panel.

The recommendation will normally be either "Pass" or "Fail". Should the Research Review Panel have conflicting recommendations, a third Reviewer will be asked to assess the submission. Where candidates have failed they are to be advised, in writing, of the principal deficiencies of their submission by the secretary to the Application and Professional Review Panel. In situations where the candidate has failed and is no longer engaged in research or development activity, the candidate may be advised to attempt the AM or CM Examination.

As with all other candidates attempting to pass the Institution's Professional Review, candidates applying for Associate-Membership or Chartered Membership through the Research and Development Route have the right of appeal.

### **Appeals Procedure**

An appeal may be made on the following grounds only:

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

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

### **Preliminary Applications**

For those candidates unsure of the strength of their application, may wish to submit a preliminary application. This will allow applicants the opportunity to test the water before they attempt to gain the support of colleagues and peers. For details on what to submit, please contact the Membership Department on [membership@istructe.org](mailto:membership@istructe.org).

### **Registration with Engineering Council**

Candidates who are successful may apply to Engineering Council for registration as an Incorporated Engineer (IEng) or a Chartered Engineer (CEng). This further demonstrates your proven knowledge and competence. In particular, registration demonstrates a commitment to professional standards and to the development and enhancement of competence.

For further information, please refer to the Engineering Council Registration for Academics brochure available on our website: [www.istructe.org/membership/Documents/registration-for-academics.pdf](http://www.istructe.org/membership/Documents/registration-for-academics.pdf).