

CHARTERED ENGINEER

Statements of Competence and
Commitment

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This document sets out

- The competence and commitment standards expected of a chartered engineer by the Engineering Council
- Guidance from IHE on applying the standards to highways and transportation.

What is a Chartered Engineer?

Chartered Engineers develop appropriate solutions to engineering problems, using new or existing technologies through innovation, creativity and change. They might develop and apply new technologies, promote advanced designs and design methods, introduce new and more efficient techniques, marketing and construction concepts, pioneer new engineering services and management methods. Chartered Engineers are technical and commercial leaders and exercise effective interpersonal skills. They demonstrate a personal and professional commitment to society, to their profession, and to the environment.

Network managers, traffic engineers, transportation planners, highway designers and project managers are typical chartered level positions. You may have broad responsibilities or may specialise in one or more aspects but the Reviewers are looking for rounded awareness of the bigger picture, creative problem solving and independent thinking in all cases.

Remember that, although you may lead a team, the Institute wants to know what you do, and the extent of your personal responsibility.

The following pages set out the Engineering Council's Statements of Competence and Commitment with IHE guidance alongside and list typical documents you could select to illustrate your experience.

You will be expected to have a knowledge and understanding of each role (A1, A2 etc) and to be competent overall in each broad statement (A, B, C, D and E). You must be competent in Health and Safety, Role E2.

A. Use a combination of general and specialist engineering knowledge and understanding to optimise the application of existing and emerging technology

A.1

Maintain and extend a sound theoretical approach in enabling the introduction and exploitation of new and advancing technology and other relevant developments.

Typically this includes an ability to:

- Identify the range of your personal knowledge and skills
- Continue to extend your technical capability
- Broaden and deepen your knowledge through research and experimentation

In your submission, show you:

Read widely

Have an understanding of current design & construction standards/methods and can extend these methods to new situations

Are aware of evolving policy and practice for design, construction and maintenance of transport projects

Have a comprehensive knowledge of relevant data collection methodologies, design techniques, audit processes and contract documents in your field

Use and evaluate innovative solutions/techniques in your projects

Identify new areas for development and research

Evaluate the need for policy changes

Evaluate options and recommend solutions based on evidence

A.2

Engage in the creative and innovative development of engineering technology and continuous improvement systems.

Typically this includes an ability to:

- Establish users' needs
- Assess marketing needs and contribute to marketing strategies
- Identify constraints and exploit opportunities to develop and transfer technology
- Promote new applications
- Develop and evaluate continuous improvement systems

In your submission, show you:

Take part in early client contacts eg. presentations, analyses

Investigate, identify and agree client, user and community requirements

Plan and interpret data collection, draw conclusions and make recommendations

Identify and implement innovative schemes

Prepare test reports of the suitability of strategy options

Prepare a brief

Supervise and present project proposals

Assess and recommend strategy options

Prepare reports with policy guidance and advice to members or clients

A. Use a combination of general and specialist engineering knowledge and understanding to optimise the application of existing and emerging technology

Typical documents which you have produced and might submit:

Client briefs

Inception reports

Feasibility reports

Commissioning reports

Design option appraisals with costings

Interpretation and analysis and application of survey results or other data in reaching a design solution

Transport policies, strategies and plans, (LTPS, Local frameworks) which you wrote

Transport assessments, Travel plans

Safety audits or exception reports

Materials investigation reports

Failure investigations

Appeal Statements

Cost benefit analyses

Value engineering exercises

Correspondence demonstrating engineering knowledge

Research commissions

Environmental assessments

These are suggestions only, your choice will depend on your work experience.

The same documents may also be used for Statement B etc.

B. Apply appropriate theoretical and practical methods to analyse and solve engineering problems

B.1

Identify potential projects and opportunities.

Typically this includes an ability to:

- Review the potential for enhancing systems or services
- Identify new opportunities
- Use your knowledge to assess the viability of opportunities

In your submission, show you:

Know how projects are financed and funds obtained and managed

Understand forward planning and legal processes

Deliver either new or improved infrastructure or maintenance projects

Evaluate options and recommend appropriate solutions

Device implementation plans including risk analyses

Use up to date research and evaluation of techniques

B.2

Conduct appropriate research and design and develop engineering solutions.

Typically this includes an ability to:

- Identify and agree appropriate research methodologies
- Assemble the necessary resources
- Carry out necessary tests
- Collect, analyse and evaluate relevant data
- Draft, present and agree design recommendations taking account of cost, quality, safety, reliability, appearance, fitness for purpose and environmental impact.
- Undertake engineering design

In your submission, show you:

Establish and agree the basis of designs including eg. cost and plan deliverables and implementation programmes

Prepare option studies, whole-life performance costings, designs or programmes to solve problems and meet objectives

Can deal with complex schemes or projects

Use up to date research to generate and evaluate solutions

Lead design teams

Produce concept designs

'Design' may cover, for example, maintenance regimes, network management plans, transportation plans or modelling, signal control installations as well as road or traffic management designs

B. Apply appropriate theoretical and practical methods to analyse and solve engineering problems

B.3**Implement design solutions and evaluate their effectiveness.****Typically this could include an ability to:**

- Ensure that the application of the design results in the appropriate practical outcome
- Implement designs solutions taking account of critical constraints
- Determine the criteria for evaluating the design solutions
- Evaluate the outcome against the original specification
- Actively learn from feedback on results to improve future design solutions

In your submission, show you:

- Design and implement methods of assessing performance against objectives
- Set the evaluation criteria
- Evaluate options
- Present optimum solutions
- Can respond to unforeseen circumstances
- Learnt from past projects to improve delivery of a later project
- Are innovative in identifying progressive solutions to non-standard situations

C. Provide technical and commercial leadership

C.1**Plan effective project implementation.****Typically this includes an ability to:**

- Identify the factors affecting project implantation
- Lead the preparation and agreement of implementation plans and method statements
- Ensure the necessary resources are secured and brief the project team
- Negotiate the necessary contractual arrangements

In your submission, show you:

Played a key role in a major project involving other professionals and disciplines

Manage the design development process

Agree legal investigation requirements

Obtain statutory consent

Conduct negotiations. Resolve disputes

Contribute to the management of the commercial aspects of projects

Manage projects

Negotiate and finalise agreed non-standard contracts

Approve interim valuations and final accounts

Schedule responses

Monitor and control

Manage evaluations

C. 2**Plan, budget, organise, direct and control tasks, people and resources.****Typically this includes an ability to:**

- Set up appropriate management systems
- Agree standards, programmes and budgets
- Lead work teams, coordinating project activities
- Ensure variations from standards or the programme are identified and that corrective action is taken
- Evaluate performance and recommend improvements

In your submission, show you:

Control projects by, for example,

- Issuing approvals for projects
- Preparing budgets for programmes of work
- Controlling expenditure and activities against budgets of some size
- Agreeing targets for delegated work

Prepare or evaluate/recommend tenders and/or bids

Evaluate proposed changes and make recommendations or issue appropriate instructions

“Budgets” can be broadly interpreted to cover procuring and allocating money, resources and people

“Projects” are whatever you are responsible for – a design, materials research, a feasibility study, a construction site, a highway maintenance programme

C. Provide technical and commercial leadership

C.3**Lead teams and develop staff to meet changing technical and managerial needs.****Typically this includes an ability to:**

- Agree objectives and work plans with teams and individuals
- Identify team and individual needs and plan for their development
- Lead and support teams and individual development
- Assess team and individual performance and provide feedback
- Take responsibility

In your submission, show you:

- Provide team leadership
- Identify and agree collective goals
- Provide guidance on values at work
- Develop team spirit and resolve disputes
- Manage crises or resolve disputes
- Manage contractual issues
- Induct and brief teams
- Conduct appraisals
- Exercise sound holistic judgement and take responsibility

C. 4**Bring about continuous quality improvement through quality management.****Typically this includes an ability to:**

- Promote quality through your organisation and its customer and supplier networks
- Develop and maintain operations to meet quality standards
- Direct project evaluation and recommend improvements

In your submission, show you:

- Manage change
- Monitor, maintain and improve delivery
- Establish or manage in-company quality processes
- Participate in damage limitation/reparation where QA is compromised
- Organise or participate in quality groups
- Carry out quality audits
- Evaluate your own work and are self-critical

C. Provide technical and commercial leadership

Typical Documents which you have produced and might submit:

Work instructions

Non standard tenders, manuals and guides written by you

Progress meetings and action plans managed by you

Work programmes

Exchange of letters

Scheme briefs and monitoring reports

Minutes of meetings you led

Budget control cash flow analyses

Schedule of tasks with the delivery monitored

Audit reports

Preparation or evaluation of estimates, bids and tenders

Contract variations you negotiated

Monitoring reports

Estimates

Planning gain arrangements

Partnering arrangements showing your role

Monitoring reports

Quality system reviews

Materials laboratory reports

D. Demonstrate effective communication and interpersonal skills

D.1**Communicate in English and interact with others at all levels.****Typically this includes an ability to:**

- Contribute to, chair and record meetings and discussions
- Prepare letters, documents and reports on complex matters
- Exchange information and provide advice to technical and non-technical colleagues

In your submission, show you:

Establish and maintain effective working relationships with colleagues, client and others

Respond effectively and efficiently to received communications

D.2**Present and discuss proposals.****Typically this includes an ability to:**

- Prepare and deliver presentations on strategic matters
- Lead debates with audiences
- Feed the results back to improve the proposals
- Communicate new concepts and ideas

In your submission, show you:

Communicate fluently verbally and in writing at a professional level

Manage information

Prepare reports on complex matters

Participate in and lead meetings

Provide advice to colleagues

Negotiate variations and instructions

Explain processes, rationales and constraints to client and colleagues

Make presentations to prospective clients or communities

D.3**Demonstrate personal and social skills.****Typically this includes an ability to:**

- Know and manage your strengths and weaknesses
- Be aware of the needs and concerns of other people and communities
- Be confident and flexible in dealing with new and changing interpersonal situations
- Lead work towards collective goals
- Resolve conflicts
- Create, maintain and enhance productive working relationships and resolve conflicts

In your submission, show you:

Reflect on your work and actions

Establish and maintain effective relationships

Give clear and accurate instructions

Deal with conflict

Mentor colleagues

Know/carry out disciplinary procedures

D. Demonstrate effective communication and interpersonal skills

Typical Documents which you have produced and might submit:

Committee or cabinet reports

Correspondence conducted by you

Internal documents or briefing materials

Minutes which show your participation

Advice and recommendations you made

Interpretative reports

Public consultations you conducted. Public exhibitions you prepared or participated in

Public inquiry evidence you prepared

Appropriate presentation of data

Impact and environmental assessments

“All levels” means colleagues, subordinates, line managers, clients, consultants, utilities, developers, contractors, elected members, interest groups, the public, local press – as applies to your job.

“Teams” may be your staff or all those concerned with delivering your project, including the public, clients, consultants and contractors.

The documents can be those already used for Roles A, B and C.

Appropriate voluntary activities may provide evidence for D1, D2 and D3

Your Review submission and your presentation at interview will be taken into account for Role D

Your Employer Proposer should comment on your performance in Form 301 sent with your Review submission.

E. Demonstrated a personal commitment to professional standards, recognising your obligations to society, the profession and the environment

E. 1**Comply with relevant codes of conduct.****Typically this includes and ability to:**

- Understand and comply with IHE's rules of professional conduct
- Lead work within all relevant legislation and regulatory frameworks, including social and employment legislation.

In your submission, show you:

- Know your organisation's goals and ethos
- Behave appropriately and professionally
- Demonstrate integrity
- Base opinions or statements on adequate knowledge
- Are objective and truthful
- Know the purpose of professional institutions
- Know the duty of an engineer under EC and IHE Codes and Rules of Conduct
- Participate in IHE activities
- Work with a variety of conditions of contract

Include an example of where ethical behaviour has been an issue at work or of how a conflict of interest was resolved, or the procedures for doing so

Refer to your company's standing orders, equal opportunities and conduct statements in your submission but do not include them

At your interview, expect to discuss the profession's values, your aspirations and practical ethical issues arising from work

E. Demonstrated a personal commitment to professional standards, recognising your obligations to society, the profession and the environment

E. 2**Manage and apply safe systems of work.****Typically this includes and ability to:**

- Identify and take responsibility for your obligations for health, safety and welfare issues
- Ensure that schemes satisfy health, safety and welfare requirements
- Manage health, safety and welfare within your own area of responsibility
- Identify and deal with potential hazards
- Analyse, assess and manage risk
- Manage, evaluate and improve these systems.

In your submission, show you:

Design or plan safe systems

Analyse, assess and control risk

Identify and deal with potential hazards

Work safely

Accept responsibility for your own and other's safety

Know your role under the CDM Regulations

Are aware of emergency measures

Comply with HASWA, CDM regulations, company safety policy, all relevant legislation, codes of practice, transport and road safety

Typical Documents could include:

Risk Assessments

Application of CDM regulations, Chapter 8 etc.

COSHH assessments and method statements

Environmental or social impact assessments

Reports recommending improvements in safety or the environment

Safety audits

Pre-tender health and safety plans

Include in your submission:

Two CPD days on health and safety (including road safety) in the last two years

Additional Guidance Notes on E2 and E3 are available from IHE.

E. Demonstrated a personal commitment to professional standards, recognising your obligations to society, the profession and the environment

E.3**Undertake engineering activities in a way that contributes to sustainable development.****Typically this includes and ability to:**

- Operate and act responsibly, taking account of the need to progress environmental, social and economic outcomes simultaneously
- Use imagination, creativity and innovation to provide products and services which enhance the quality of the environment and the community, and which meet financial objectives
- Understand and secure stakeholder involvement of all relevant parties

In your submission, show you:

Implement solutions, which comply with environmental regulations

Actively promote and implement sustainable practice

Help clients to embrace sound environmental principles

Provide whole-life performance information

Consult the public

Typical documents could include:

Reports of consultations with conservation and local groups

Environmental assessments

Waste disposal/ recycling in your projects

LTPs, travel plans or green transport initiatives you wrote or to which you made a significant, identifiable contribution

Include in your submission:

One CPD day on Sustainability issues in the last two years

Guidance on Sustainability is published by the EC and IHE.

E. Demonstrated a personal commitment to professional standards, recognising your obligations to society, the profession and the environment

E.4

Carry out the continuing professional development necessary to maintain and enhance competence in your area of practice.

Typically this includes and ability to:

- Review your development needs
- Prepare action plans to meet personal and organisational objectives
- Carry out CPD activities
- Maintain evidence of developing your competence
- Evaluate outcomes against your action plans
- Assist others with their CPD

In your submission, show you:

- Set goals to achieve personal and organisational objectives
- Undertake professional development to enhance competence
- Prepare and maintain a professional action plan
- Keep CPD records of professional development activities
- Help others plan their developments

Include in your submission:

- A record, over at least the last two years, showing 5 days p.a. of structured development which can include reading and research.
- A list of 10 'CPD days' of off the job education and training in the last two years
- A structured Professional Development Plan including the years following a successful Review or copies of recent annual appraisals

Expect to discuss your learning experiences to date at the Review interview