

The JSD List of Structural Engineering Professionals

INTRODUCTION

Structural engineering is the science and art of designing and constructing, with economy and elegance, buildings, bridges, frameworks and other similar structures so that they can safely resist the actions to which they may be subjected. The design, construction and maintenance of structures, including temporary structures designed to provide support or means of access during construction, are regulated in South Africa through the following pieces of legislation:

- Construction Regulations issued in terms of the Occupational Health and Safety Act of 1993
- National Building Regulations issued in terms of the National Building Regulations and Building Standards Act of 1977
- The NHBRC Technical Requirements included in the Home Building Manual issued in terms of the Housing Consumer Protection Measures Act of 1998.

These pieces of legislation require competent persons to assume responsibility for the design of structures, including confirmation that design intent is met during erection, condition assessments to ensure that structures remain safe in use, and the provision of specifications for repairs and remedial work to the structure to ensure their continued safe functioning.

Competent persons are defined differently in terms of these different pieces of legislation. Clients, contractors, owners and home builders, depending upon the applicable Act, are responsible for appointing a competent person to assume responsibility for determining or confirming the structural safety and structural serviceability performance of structures during their working life. The definitions provided in the various pieces of legislation are linked to professional registration with the Engineering Council of South Africa (ECSA).

ECSA registration is a generic process, based on education, training and experience at an entry level to a profession. Registration as such confirms that

a person is capable of working independently. ECSA thereafter relies on the integrity of the registered persons (self-regulation) to not take on work which he or she is not competent to perform, and to perform work within the “norms of the profession”. Reliance on self-assessment of competence to undertake work in the field of structural engineering poses structural safety and serviceability risks, as no matter how ethical engineers may be, they are not capable of self-assessing what they do not know. This can lead to an underestimation of the influence of agents or the identification and the solving of the wrong problems, all of which results in the belief that a design is adequate when it is dangerously inadequate. This in turn can result in the employer of competent persons (clients, contractors, owners and home builders) suffering financial losses, experiencing severe delays to the completion of projects and paying for costly and inconvenient remedial work.

Structural safety and serviceability risks associated with a project can be improved upon should the structural engineering capabilities of a person registered with ECSA be verified by a third party. This approach aligns with the principles of quality management as espoused by ISO 9000:2005, *Quality Management Systems – Fundamentals and Vocabulary*, which defines competence as “**demonstrated ability** to apply knowledge and skills”.

The Joint Structural Division (JSD) of the South African Institution of Civil Engineering (SAICE) and the Institution of Structural Engineers (IStructE) List of Structural Engineering Professionals provides, through a peer-review process, a means of identifying persons who are not only professionally registered with ECSA as professional engineers and professional engineering technologists, but who also possess verified structural engineering capabilities. This list, which is complementary to legislative requirements, enables:



Dr Ron Watermeyer
SAICE 2004 President
watermeyer@ioptions.co.za

Tony Smith
Immediate Past Chairman
Joint Structural Division
ajs@buildsa.co.za

Marelize Visser
Chairperson
Joint Structural Division
m.visser@tmvconsulting.co.za

- built environment professionals who have structural engineering competencies to have their capabilities verified and recognised on a list accessible to the public, and
- clients, contractors, owners, home builders and regulators to confirm that engineers, who are appointed to provide structural engineering services, have verified structural capabilities to do so.

ADMISSION CRITERIA

Persons admitted to the JSD List of Structural Engineering Professionals need, at the time of admission to the list, to satisfy the following three criteria:

1. be registered in terms of the Engineering Profession Act, 2000 (Act No 46 of 2000) as either a Professional Engineer or a Professional Engineering Technologist
2. be actively engaged in structural engineering, and
3. have demonstrated to their peers the five outcomes listed in Table 1.

SUFFICIENT EVIDENCE OF SATISFYING ADMISSION CRITERIA

Sufficient evidence of demonstrating the five outcomes in Table 1 can be achieved by one of the following:

1. The demonstration of the five outcomes through a submission of a portfolio of work and an interview conducted by the JSD Assessment Committee
2. The passing of the IStructE Membership or Associate Member examination
3. Corporate membership of the Institution of Structural Engineers (IStructE), i.e. Fellow (FIStructE), Member (MIStructE), Associate (AIStructE) or Associate Member (AStructE)), or
4. Membership of a professional body which assesses structural

engineering competence as a pre-requisite to membership and is recognised by the JSD Assessment Committee for admission purposes, e.g. a Class 1 Structural Engineer registered with the Chinese Practice Qualification Registration Centre or a Professional Engineer licensed to practice structural engineering in the United States of America or Canada.

CONDITIONS ATTACHED TO LISTING

Persons admitted to the JSD List of Structural Engineering Professionals need to:

1. maintain their ECSA registration and immediately notify the list administrator of any change
2. confirm annually that they have undertaken continuing professional development (CPD) within the field of structural engineering, and are paying their annual renewal fee, and
3. provide services in accordance with the Standard for Structural Engineering Services as published on the JSD website (www.jsd.co.za).

MISCONDUCT

All persons admitted to the list are registered with ECSA. As a result all complaints regarding the breach of ECSA rules of conduct will be referred to ECSA.

APPEALS AGAINST DECISIONS OF THE JSD REGARDING ADMISSION TO THE LIST

Any person who is aggrieved by a decision of the JSD's Assessment Committee may appeal the decision to the SAICE Membership Committee who will rule on the matter.

PUBLICATION AND MAINTENANCE OF THE LISTING

The names of all persons recognised as satisfying the JSD's listing criteria are listed on the JSD's website (www.jsd.co.za) together with their contact particulars.

LISTING FEES

The fees payable are as follows:

- Assessment fee for admission to the list: R1 000 for a JSD member and R1 500 for a non-JSD member
 - Annual renewal fee: R500 for a JSD member and R750 for a non-JSD member.
- The assessment fees exclude any fees relating to the taking of the IStructE exams.

CURRENT JSD LIST OF COMPETENT PERSONS

The JSD several years ago established a list of competent persons, based on essentially the same admission criteria. This list will be withdrawn after all those persons on the current listing have been invited to confirm their wish to be listed on the new listing. Transfers to the new list will take place upon receipt of CPD confirmation and payment of the annual listing fee.

APPLICATIONS FOR LISTING

Applications for listing can be made on the JSD website (www.jsd.co.za). □

Table 1: Structural engineering outcomes and assessment criteria

Outcome		Assessment criteria
No	Description	
1	Communicate the environment within which structural engineering is practised.	<ul style="list-style-type: none"> ■ Professional bodies associated with structural engineering are described. ■ Codes of conduct regulating structural engineering are described. ■ Legislation governing structures is described. ■ Procurement arrangements for structural engineering works are identified. ■ Quality assurance systems are identified.
2	Produce viable structural solutions, within the scope of a design brief, taking account of structural stability, durability, aesthetics and cost.	<ul style="list-style-type: none"> ■ A brief is appraised in accordance with structural engineering principles and concepts. ■ Approximate structural engineering solutions are identified. ■ Two different structural designs are developed from a brief and are communicated. ■ The implications of changes to design briefs are identified and communicated.
3	Determine and document the form and size of principal structural elements from a proposed structure.	<ul style="list-style-type: none"> ■ Structural engineering problems are solved using a variety of suitable methods of analysis. ■ Structures are appraised for overall stability, resistance to progressive collapse, fire and performance of a structure as a whole. ■ Compliance with all relevant criteria for the design of primary structural materials (concrete, steel, masonry and timber) is demonstrated by calculation with all assumptions stated. ■ General arrangement plans, sections and elevations are prepared for estimating purposes. ■ Connection details associated with a given structure are sketched.
4	Specify and co-ordinate the use of primary structural materials.	<ul style="list-style-type: none"> ■ Properties and behaviour of primary construction materials (concrete, masonry, timber and steel) are defined. ■ Testing procedures are defined. ■ Storage and handling procedures are described. ■ Construction standards are described.
5	Communicate construction techniques and sequencing for structural engineering works.	<ul style="list-style-type: none"> ■ Basic construction techniques and equipment are identified. ■ Construction programmes and construction sequencing are described. ■ Site activities and safe working methods pertaining to structures are communicated.