

An overview of the current National Building Regulations and their impact on engineering practice

BACKGROUND

The National Building Regulations and Building Standards Act 1977 (Act 103 of 1977) is the enabling Act under which the National Building Regulations (NBRs) are made. Section 17 of the Act establishes the framework within which the Minister may make regulations. This framework deals mainly with administrative matters, the protection of property and the general safety, health and convenience of the public in so far as they relate to the erection of buildings, and of users and occupiers of buildings. An expansive interpretation of the Act in the light of the Constitution has enabled regulations relating to environmental sustainability to be made.

The National Building Regulations, with the exception of Part A which covers administrative requirements and sets out general principles and functions, are generally functional in nature, i.e. they do not prescribe how a building should be constructed, but rather stipulate the qualitative performance requirements that the building design or construction of the building must satisfy. To facilitate the use and application of the National Building Regulations the functional regulations are supported by a set of deemed-to-satisfy rules which are published in SANS 10400, *The Application of National Building Regulations*. These deemed-to-satisfy provisions describe design and construction methods, materials and solutions, which if applied, will ensure that the building so designed and constructed will satisfy the functional requirements of the regulations.

THE PERFORMANCE FRAMEWORK FOR NATIONAL BUILDING REGULATIONS

The current National Building Regulations are based on the four-level performance framework set out in Figure 1.

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Objectives (level 1) are captured in Section 24 of the Bill of Rights of the Constitution of South Africa (Act 108 of 1996) and the National Building Regulation and Standards Act (Act 107 of 1977), while functional requirements in the form of functional regulations (level 2) are provided in the National Building Regulations issued in terms of the National Building Regulations and Building Standards Act. SANS 10400 establishes the level of performance (qualitative) and deemed-to-satisfy provisions and the means by which the functional requirements established in the regulations may be satisfied, namely by the application of a set of rules, a rational assessment or rational designs prepared by a competent person and Agrément certification (levels 3 and 4).

Regulation AZ4 of the National Building Regulations requires that all functional regulations be complied with by either:

- adopting building solutions that comply with the requirements of the relevant part of SANS 10400; or
- appointing a competent person to prepare a rational design or rational assessment which reliably demonstrates, or predicts with certainty, to the satisfaction of the appropriate local authority, that an adopted building solution has an equivalent or superior performance to a solution that complies with the requirements of the relevant part of SANS 10400, i.e. the benchmark in performance established in SANS 10400.

The third edition of SANS 10400, *The Application of National Building Regulations*, provides three methods to enable functional regulations to be satisfied, i.e. by:

- adopting design and construction rules; or
- appointing a competent person to prepare a rational design or undertake a rational assessment, and to inspect the construction or installation of buildings or components thereof; or
- using products or components that have Agrément certification.

The performance of a building or a part thereof needs to be fully described. The functional requirements in the National Building Regulations typically only partly describe performance. They provide qualitative statements of the ability of a building or a part thereof to fulfil objectives in terms of behaviour, i.e. behaviour related to reaction to agents (e.g. forces, vibration, radiation, heat and termites), influence to human activities (e.g. differences in levels, slippery surfaces, signs or poor air quality), impact on society (e.g. use of non-renewable energy) and changes in performance over time (e.g. weather tightness and structural durability). The full description of performance requires that a group of variables be used to quantitatively describe performance of attributes, or a group of indicators be used to evaluate performance. SANS 10400 completes the full description of performance (see Figure 1). Performance is accordingly fully described when the National Building Regulations are read together with SANS 10400.

The National Building Regulations read together with SANS 10400 establish a minimum mandatory level of performance. Different solutions that have an equivalent or superior perfor-

mance are permitted. Compliance with the design and construction rules contained in SANS 10400 is but one way of satisfying the minimum level of performance prescribed in law.

APPOINTMENT OF COMPETENT PERSONS

Regulation A19 (Appointment of persons responsible for design, inspection and assessment duties) deals with the appointment of competent persons. The key features of this regulation are:

1. The owner is required to allocate duties and responsibilities to competent persons using prescribed forms, and competent persons are required to accept such appointments.
2. A person wishing to assume responsibility for aspects of a building in terms of the Regulations is required to apply to the local authority for acceptance as an approved competent person.
3. The local authority is permitted to decline the appointment of a person as an approved competent person for reasons stipulated in the regulations, namely:
 - a) incorrect or incomplete information is provided on the prescribed form;
 - b) the person does not possess professional indemnity insurance cover, if not an employee of the owner of the building;
 - c) the person is not professionally registered in terms of the Engineering Professions Act 2000, the Architectural Professions Act 2000, or the National Scientific Professions Act 2003;
 - d) the person is, in the opinion of the local authority, inadequately qualified or has insufficient experience or contextual knowledge; or

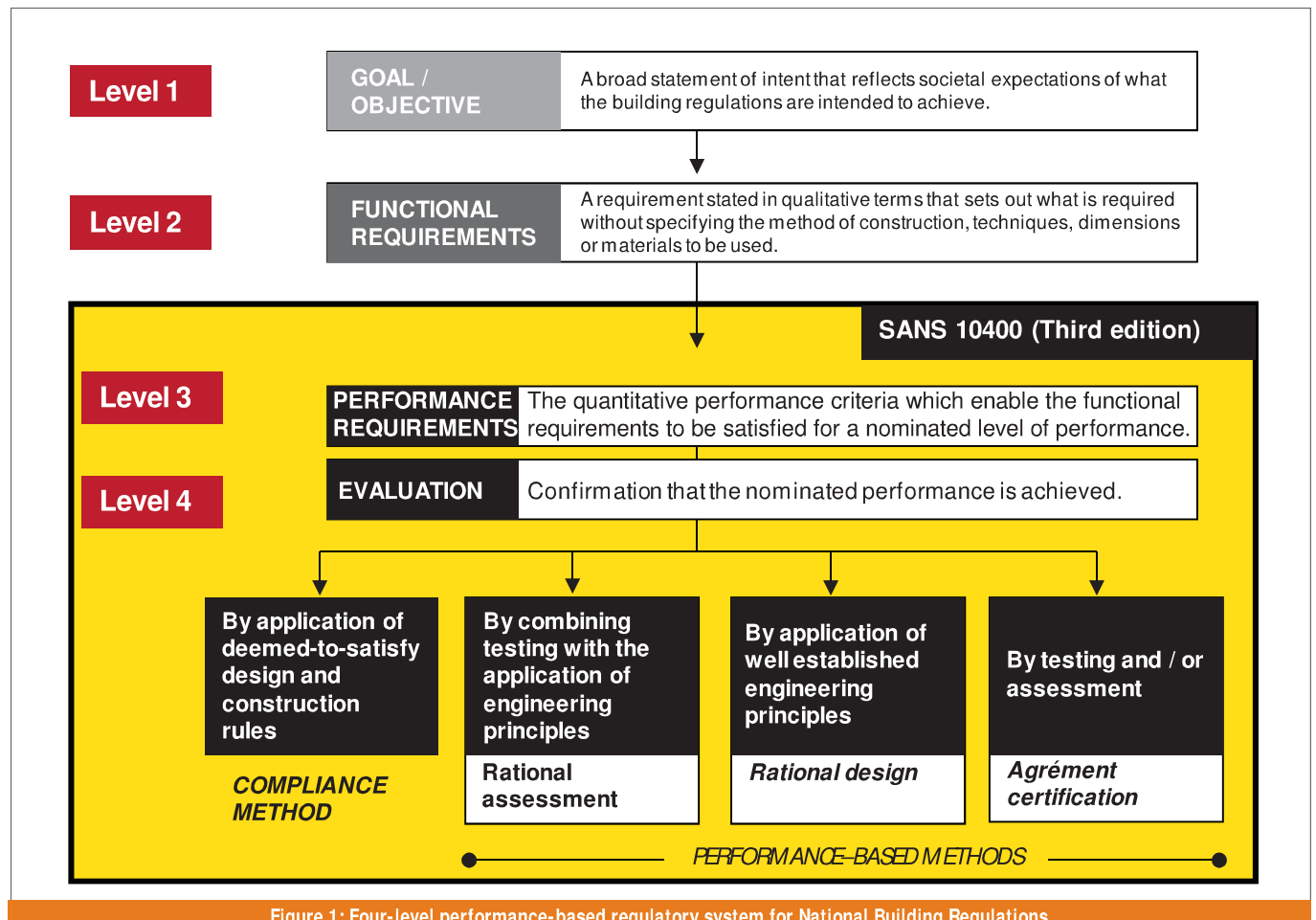


Figure 1: Four-level performance-based regulatory system for National Building Regulations

- e) the person is under investigation by a disciplinary tribunal of the council that he/she is registered in and the chief executive officer of such a council has expressed an opinion that he/she should not be approved.
4. Persons who declare to the local authority that they satisfy the definitions for competent persons in SANS 10400 in relation to the duties and responsibilities, for which approval of their credentials is applied for, are automatically deemed to have sufficient qualifications, experience and contextual knowledge.
 5. An applicant who is not approved as a competent person may lodge an appeal with the Review Board, and if upheld, the local authority is required to accept the appointment of the appellant as a competent person.
 6. The person appointed as an approved competent person to design an element of the structural, fire protection, artificial ventilation, stormwater disposal or non-waterborne sanitary disposal, fire installation or drainage installation system is required to:
 - a) assume responsibility for satisfying the functional regulation relating to that particular system in its entirety; and
 - b) where parts of the system are designed by other competent persons, ensure that the component designs are generally in accordance with the requirements of the regulations, will achieve the objectives of the systems and, in the case of the structural system, the interaction of the various component elements will be such that the structural adequacy of all the parts of the building and the overall stability of the building is assured; and
 - c) countersign copies of designs, plans and specifications prepared by other competent persons should the local authority so require, and may require competent persons who design elements of the system to:
 - i) complete a prescribed form and provide information and documents in respect of the work he or she has designed;
 - ii) modify their designs, plans and specifications if these do not comply with the provisions of the regulations; and
 - iii) certify completion on the prescribed form.
 7. Approved competent persons on completion of the structural, fire protection and fire installation system for which they have assumed responsibility, or if they are responsible for the energy usage design, are required to complete a prescribed form and to submit such form to the local authority.
 8. The local authority is permitted to request that an approved competent person certify, on completion, specifically identified work other than that relating to the structural, fire protection or fire installation.
 9. Any person providing incomplete or false information is guilty of an offence. Any person who falsely claims that he/she satisfies the definitions contained in SANS 10400 is not only guilty of an offence in terms of the Regulations, but also of fraud.
- The requirement for an approved competent person to assume responsibility for an entire system as a single point of responsibility (see Regulation A19(8)(a)) has implications for the consulting profession, as parts of a system may be satisfied by others who:
- apply the deemed-to-satisfy rules contained in SANS 10400; and
 - undertake rational designs or rational assessments for the de-

sign of components of a system, e.g. prefabricated roof trusses. The consultant who assumes responsibility for the system as a whole and who is not responsible for the design of all its parts, needs to satisfy himself that the components designed by other designers are acceptable in relation to the system as a whole, and to coordinate the overall design. Consultants need to be remunerated for this additional service.

LINKAGES BETWEEN THE NATIONAL BUILDING REGULATIONS AND SANS 10400

The Standards Act of 2008 (Act No 8 of 2008) requires that South African National Standards be developed and maintained through a national consensus-building process. The Act defines consensus as *“general agreement, characterised by the absence of sustained opposition to substantial issues by an important part of the concerned interests, arrived at by a process that involves seeking to take into account the views of the parties concerned and to reconcile any conflicting arguments.”*

Section 28 of the Act enables a South African National Standard, or any provision thereof, which may affect public safety, health, or environmental protection, to be incorporated in any law by referring to the title and the number; or the title, the number and the year or edition number. If the South African National Standard, or any provision thereof, is subsequently amended, such amendment is deemed to be incorporated into such a law.

The National Building Regulations makes several references to SANS 10400. These Regulations require that SANS 10400 provide:

- building solutions which, if complied with, enable compliance with functional regulations of the National Building Regulations to be achieved;
- forms and certificates which are prescribed in the National Building Regulations to enable such Regulations to be effectively implemented;
- minimum criteria for establishing the abilities of competent persons to make determinations in terms of the National Building Regulations; and
- particulars in addition to those prescribed in the National Building Regulations which need to be included in submissions to local authorities.

SANS 10400 currently addresses all of the above. However, it falls short of establishing definitive minimum criteria for establishing the abilities of competent persons. The current definitions are too generic to assist building control officers in making the determinations required by the Regulations. This puts the safety of buildings at risk. More work is needed to address this critical area, particularly as South Africa permits self-certification of design work by registered professionals to satisfy the Regulations in a system where professional registration occurs only at the point of entry to the engineering profession. In quality management systems competence is linked to demonstrated ability to apply skills and knowledge in a given context. Competence in the high-risk engineering practice areas should, in the case of the National Building Regulations, be linked to demonstrated ability to develop solutions which satisfy the performance requirements of such Regulations.

There are a number of tensions surrounding the drafting and content of SANS 10400. SANS 1-1, *Standard for standards Part 1: The development of South African National Standards*, states that “South African National Standards are voluntary in that there is no obligation to apply them or to comply with them, except in those cases where their application is directly demanded by regulatory instruments or contractual obligations.” The regulator of buildings has delegated specific aspects of the National Building Regulations to those responsible for drafting the various parts of SANS 10400. The drafters of the various parts of SANS 10400 have not always understood their role, and have in some instances strayed from their mandate. For example, Regulation XA2 provides the drafters of SANS 10400-XA with no mandate to deal with hot water heating requirements. It is a prescriptive regulation. The current requirements for dealing with water installations in buildings and solar installations in SANS 10400-XA therefore have no legal mandate. These anomalies need to be dealt with by the South African Bureau of Standards’ technical committee responsible for SANS 10400.

CERTIFICATION OF COMPLIANCE WITH REQUIREMENTS

Regulation A19(13) states that, “Where any person provides any information or certificate required in terms of this regulation or which he or she knows to be incomplete or false, such person shall be guilty of an offence.” Section 24 of the National Building Regulations and Building Standards Act of 1977 makes provision for a fine not exceeding R4 000, or imprisonment for a period not exceeding 12 months, if convicted of an offence.

The signing of Form 4 on completion without being capable of demonstrating compliance with function regulations is an offence in terms of the National Building Regulations and Building Standards Act. It can have a number of other implications, namely:

1. a solution which has been falsely certified does not comply with the requirements of the National Building Regulations, leaving the owner exposed to non-compliance with the requirements of National Building Regulations;
2. disciplinary action by the Engineering Council of South Africa leading to a fine or withdrawal of professional registration status;
3. a professional indemnity insurance claim being refused on the grounds that dishonesty is excluded from the policy in its entirety, and that only employees, and not partners and directors, are covered for dishonesty, or the policy specifically excludes wilful breach of any statute, leaving the competent person fully exposed to litigation; and
4. a potential offence in terms of the Prevention and Combating of Corrupt Activities Act 2003, which defines “gratification” in such a way that it includes an agreement for a service and makes a person guilty of the offence of corruption should they give any person a “gratification” in a manner that is illegal, amounts to the misuse of the carrying out of a statutory duty or legal obligation or the abuse of a position of authority, or violates a legal duty or set of rules, or is designed to achieve an unjustifiable result.

Those signing Form 4 need to think carefully about signing the form if they are not able to demonstrate to their peers compliance with the requirements of the National Building Regulations.

RECOMMENDATIONS FOR SPECIFYING CONSTRUCTION STANDARDS

Sub-regulation A14(1)(a) (Construction) of the National Building Regulations requires that *the construction of any building or element be such that the building or element as constructed does not compromise the design intent of any design solution that satisfies the requirements of a functional regulation*. This sub-regulation is deemed to be satisfied if such construction satisfies the requirements of the relevant part of SANS 10400. The deemed-to-satisfy construction rules contained in SANS 10400 reference the SANS 2001 standards for construction.

It is advisable that competent persons include the following in contracts with contractors if they do not issue bespoke specifications for their designs:

The Contractor shall only incorporate in the works materials (substances that can be incorporated into the works), products (items manufactured or processed for incorporation into the works), components (products manufactured as distinct units to serve a specific function or functions) and assemblies (set of related components attached to each other) which are:

- a) *fit for their intended purpose; and*
- b) *capable of fulfilling required functions under intended use conditions or when in use, with planned maintenance, under the influence of the environmental actions or a result of a self-ageing process for a period of time within industry-accepted norms.*

The construction of elements of the building that are the subject of National Building Regulations shall, unless otherwise indicated on the construction drawings or elsewhere specified in the Scope of Work, be in accordance with the relevant provisions of the corresponding part of SANS 10400, The Application of National Building Regulations. ■